scrawLFO

by kalikoDSP

Hand-drawn modulation as MIDI CC. Draw a shape and scrawLFO loops it out of four lanes, one CC each, to your host's modulators, another plug-in or a hardware synth.

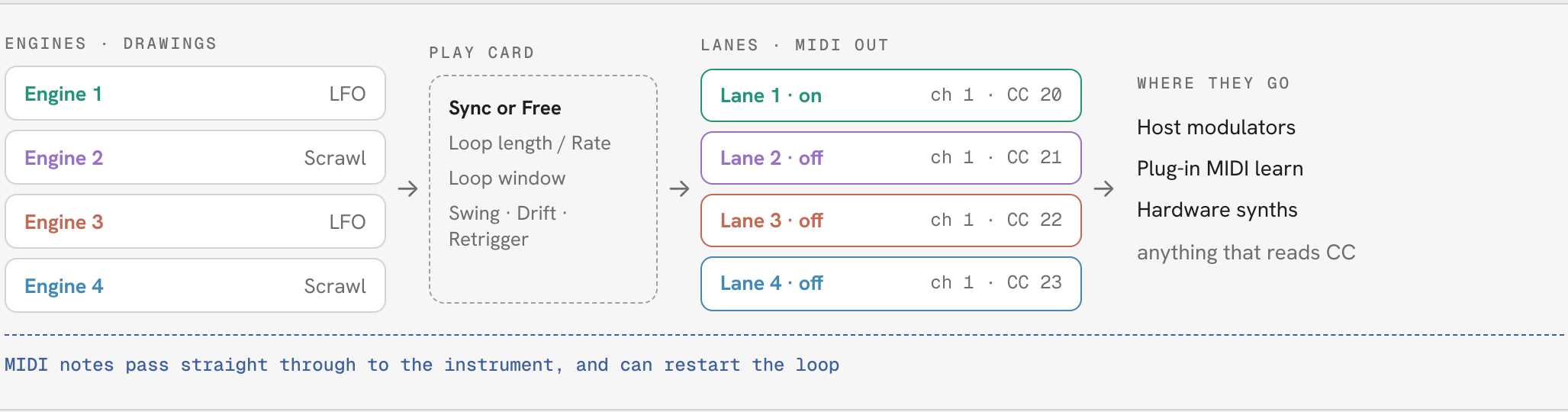
Format	VST® 3 MIDI effect, no audio
Hosts	Any DAW that takes VST 3 MIDI; tested in Bitwig Studio, Cubase, FL Studio, REAPER and Studio Pro (page 4)
System	macOS 11 or later, Apple Silicon or Intel
Sends	4 lanes, CC 0–127, any channel; up to 500 values a second each
Support	support@kalikodsp.com

Using Ableton Live? Read the **Max for Live guide**: there you map parameters directly, no CCs involved.

Quick start

1. **Install**
   Run Install scrawLFO VST3 from the VST3 disk image.
2. **Put it on a track**
   Before the instrument, or where your host takes MIDI effects (page 4).
3. **Route the CCs**
   Send its MIDI to the target. Lane 1 sends CC 20 on channel 1.
4. **Map and play**
   MIDI-learn a control, or link it to CC 20, then press play.
5. **Draw**
   Redraw the LFO, drag on a Scrawl pad, roll the Dice `N` or pick a preset.

Engines draw, lanes send CCs



Each lane reads **any** engine, so two lanes can play one drawing at different speeds or depths. An engine is a **Scrawl** (a gesture drawn on an XY pad, played back with your timing) or an **LFO** (one cycle of a waveform).

In this guide · 2 Install · 3 Routing · 4 Other hosts · 5 Window · 6 Header and tools · 7 Scrawl or LFO · 8 Drawing · 9 Timing · 10 Lanes · 11 Help

Install, then pick the channel and CC

scrawLFO is a MIDI effect: it takes notes in, passes them on, and adds its CCs to the stream. It makes no sound and has no audio inputs or outputs.

Install

Open the **VST3** disk image and run **Install scrawLFO VST3**. The plug-in goes to `/Library/Audio/Plug-Ins/VST3`, for every user on the Mac. Ableton Live has its own disk image. **Uninstall scrawLFO**, on either, removes everything.

Not in your host's list? Rescan plug-ins in its settings. Listed twice? An older copy sits in `~/Library/Audio/Plug-Ins/VST3`: delete it.

Put it on a track

1. Add it **before** the instrument, so its CCs travel down the chain with the notes. Hosts that take it only as an audio effect route its MIDI to another track (page 4).
2. Open its window from the device. That's where you draw and set the lanes.
3. Lane 1 is already sending: with the transport playing, its meter moves.

Activate, or try the demo DEMO

The first time scrawLFO's window opens, it asks for your licence key: the one you were sent on Patreon, starting `SCRAWL-`. Paste it and click **Activate**, with the computer online. One key works on two computers; to move it, click **Deactivate this computer** under **Licence…** in the logo menu first.

No key yet? Click **Try demo**. The demo is the whole of scrawLFO, saving as usual, except that **every 45 seconds its lanes hold still for 3 seconds**: they keep their last value (they send nothing, so a target stays where it is), then carry on from where the loop has got to. The instrument after it goes quiet for those 3 seconds too: notes still sounding are ended and new ones held back, then notes pass through again. The **DEMO** badge beside the logo opens the licence screen again; activating a key unlocks every open scrawLFO straight away, and projects and presets made in the demo open unchanged.

scrawLFO checks the key online now and then. If it can't reach the licence server for 90 days it goes back to the demo: connect to the internet and click **Activate**, the key already filled in.

What a new instance sends

LANE	STARTS	ENGINE	CHANNEL	CC	SPLIT
1	on	1 · LFO	1	20	Off
2	off	2 · Scrawl	1	21	Off
3	off	3 · LFO	1	22	Off
4	off	4 · Scrawl	1	23	Off

CCs 20–23 are free in the MIDI spec, so they rarely collide with a synth's own controls. Switch a lane on with its number on the Lanes card.

Change the channel and CC

On the Lanes card, each lane has a **Ch** box (1–16) and a **CC** box (0–127). Drag or scroll to change one, double-click to type. Match what the receiving end listens for, and keep clear of CC 120–127: they are channel mode messages such as All Notes Off, so the box turns amber there.

Two lanes, one CC

If two lanes send the same CC on the same channel, both boxes get an **amber outline**: the receiver would see two values fighting. Give one of them another CC or channel.

Getting the CCs where they're needed

Plug-in MIDI learn

Many plug-ins learn a CC: right-click a control, choose learn, and it takes the next CC it hears.

1. Switch **off** every lane but the one you want, so the plug-in hears one CC.
2. Start learn on the plug-in, then press play (or set the Play card to Free).
3. Once it has learned, switch the other lanes back on.

Hardware synths

Send scrawLFO's MIDI out to the synth's port, the way your host does it (Other hosts, page 4), and set the lane's channel and CC to what the synth's manual lists.

A 5-pin MIDI cable carries about **1000 CCs a second** in all: if the synth lags behind several fast lanes, move fewer lanes or step them with Quant.

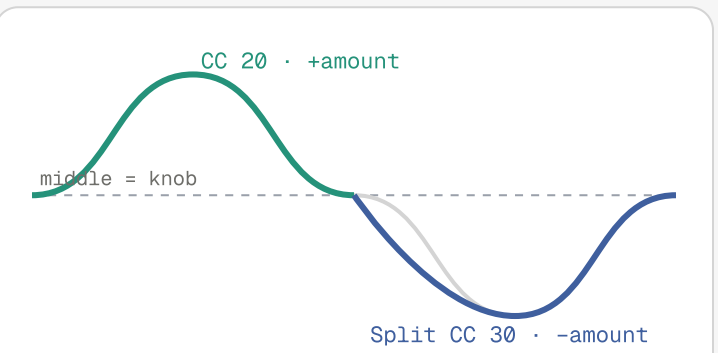
Split: modulation both ways

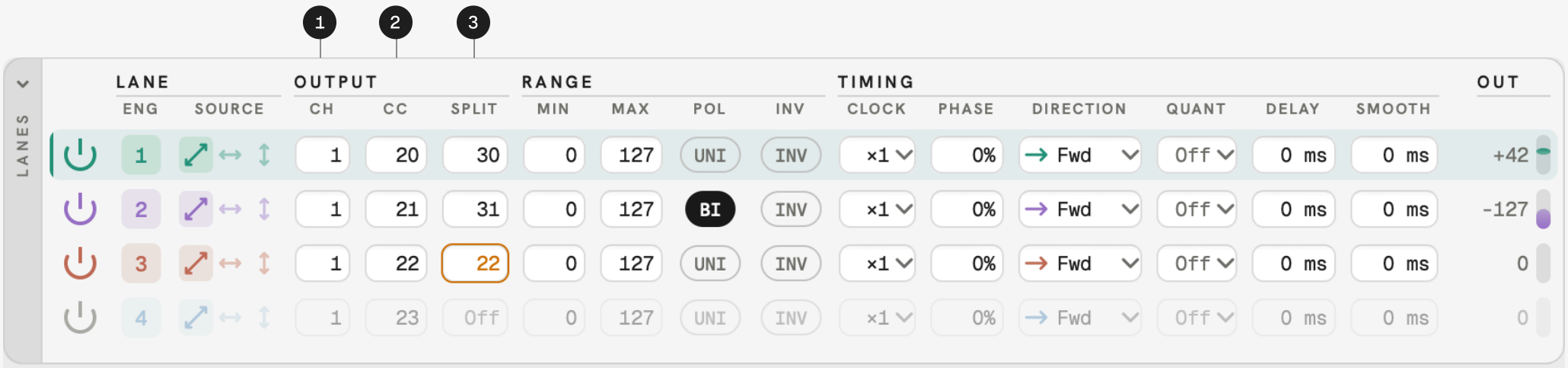
for modulators that only add

Give a lane a **Split** CC and it sends two: its own CC carries the movement **above** the drawing's middle, the Split CC the movement **below** it. Each rests at 0 while the drawing sits in the middle.

Read each with its own modulator on the same parameter, at the same amount: the Split one **negative**. Together they swing the knob up and down around where it sits.

Dragging up from Off lands on the CC after the lane's own (just below it for a lane on 119 or higher). A Split that equals the lane's own CC gets the amber outline and plays as Off; one on 120–127 is amber too.





1. **Ch** · the MIDI channel, 1–16
2. **CC** · the lane's own CC
3. **Split** · Off, or the second CC. Lane 3's matches its own, so it's amber.

4 · OTHER HOSTS

Getting the CCs out into your DAW

VST® 3 has no formal MIDI-effect slot, and a plug-in's CCs leave it through a later addition to the standard that not every host reads. So each DAW differs in where scrawLFO can go and whether its CCs come out. scrawLFO 1.0 is made for **any DAW that hosts VST 3 plug-ins** and is tested in Bitwig Studio, REAPER, FL Studio, Cubase and Studio Pro; this is how each host routes a plug-in's MIDI. Try it in yours before relying on it.

Ableton Live

Works

USE	Live doesn't load VST 3 MIDI effects. Use the **Max for Live devices**, scrawLFO MIDI and scrawLFO Audio: they map parameters directly, no CCs. See the Max for Live guide.

Bitwig Studio

Works

PLACE	Before the instrument, on the same track.
PARAMETER	Add a **MIDI** modulator to the target device, set it to the lane's channel and CC, and drag its arrow onto the parameter. It only adds: set the knob at the bottom of the movement.
HARDWARE	A **HW Instrument** after scrawLFO, its MIDI output on the synth's port.

Cubase

Works

PLACE	An **Insert** slot on an audio track; it's under **Tools**. (MIDI Insert slots take only Steinberg's own MIDI effects.)
ROUTE	Add a MIDI track and set its **Input Routing** to **Plug-ins › scrawLFO - MIDI Output**. Record-enable it or turn on **Monitor**.
HARDWARE	That MIDI track's **Output Routing**: the synth's port.
PARAMETER	Set the MIDI track's output to a VST instrument instead, and MIDI-learn the control there. Not yet tested.

FL Studio

Works

PLACE	An effect slot on a mixer track. It follows FL's transport.
OUT	In scrawLFO's wrapper: the cog at its top left › **Settings › MIDI › Output port**. Pick a number, such as 1.
HARDWARE	**Options › MIDI settings › Output**: select the synth's port and set its **Port** to the same number.
PARAMETER	Set the target plug-in's **Input port**, on its own wrapper's Settings page, to the same number, then MIDI-learn the control. Not yet tested.

REAPER

Works

PLACE	First in the track's FX chain: every plug-in after it hears its CCs.
PARAMETER	In the target plug-in's window: **Param › Parameter modulation/MIDI link ›** the parameter. Tick **Link from MIDI or FX parameter**, then pick **MIDI ›** the lane's channel and CC.
RECORD	Arm the track with its record mode on **Record: output (MIDI)** to capture the CCs as an item.
HARDWARE	The track's routing: **MIDI hardware output**.
WATCH	A MIDI link and automation on one parameter fight each other.

Studio Pro · Studio One

Works

PLACE	An **Insert** on an audio track: drag it in from **Browser › Effects**.
ROUTE	Add an instrument track and, in its Inspector, set **In** to **scrawLFO**. Arm it or turn on monitoring; recording captures the CCs as a part.
HARDWARE	Set that track's **Out** to an External Device whose **Send To** is the synth's port. Not yet tested.
PARAMETER	Set its **Out** to a VST instrument and MIDI-learn the control there. Not yet tested.

Reason

No

WHY	Reason loads VST 3 in its rack but doesn't take MIDI out of a VST, so the CCs go nowhere.

Logic Pro

No

WHY	Logic loads Audio Units only, not VST 3. scrawLFO 1.0 has no Audio Unit.

Wherever you are

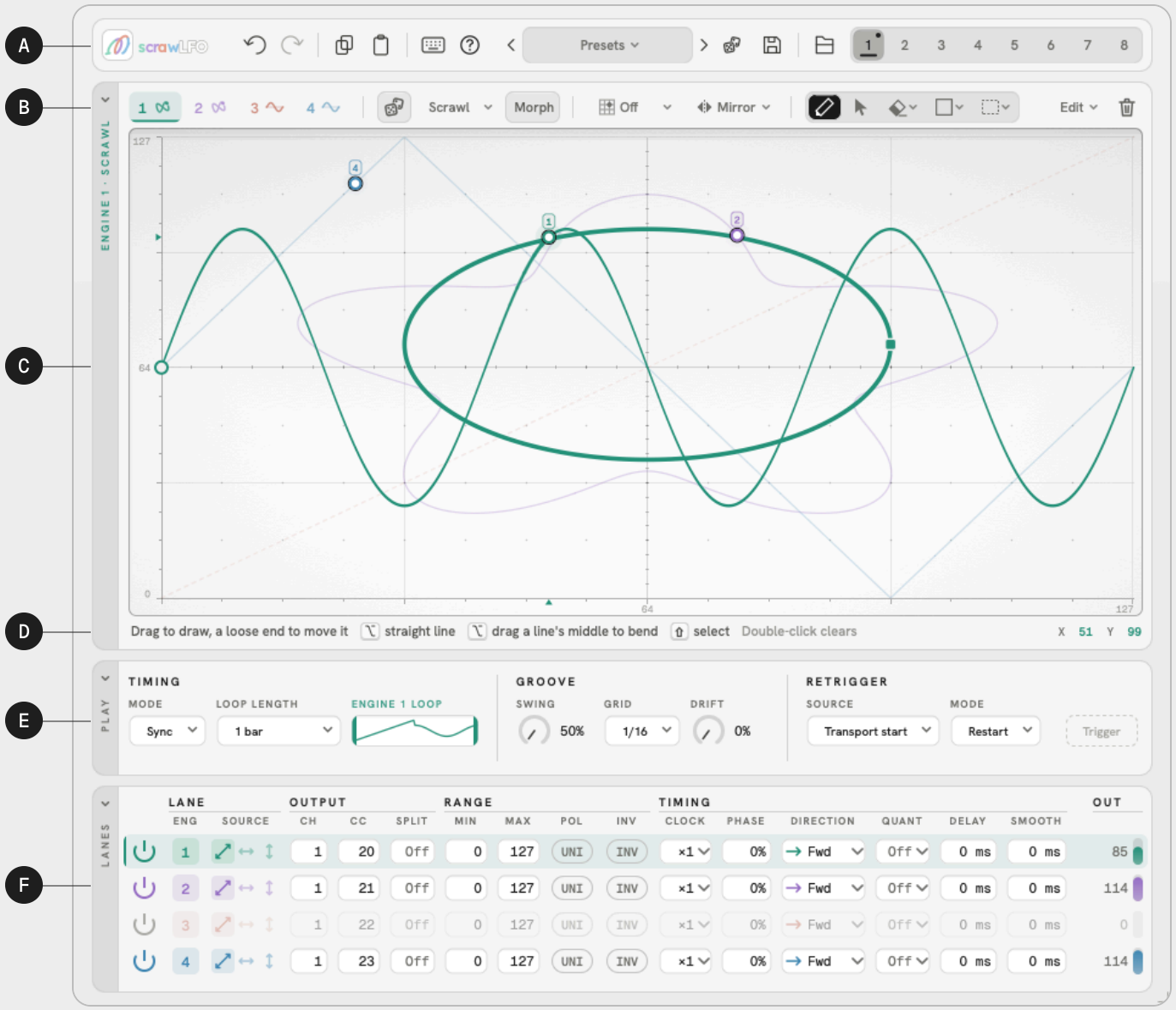
One lane while learning. MIDI learn takes the first CC it hears: switch the other lanes off.

Notes but no CCs? The host passes notes but not plug-in CCs. Route through a second track, or use another host.

Check the channel. A receiving track set to one channel ignores lanes on the others; "Any" or "All" takes them all.

Six areas, top to bottom

Open it from the plug-in device in your host. Everything happens here: drawing, timing and the CC lanes.



A **Header**

Undo, copy and paste, help, presets, files and the 8 pages. Page 6.

B **Tool row**

Engine tabs, Dice and Morph, grid, mirror, drawing tools and edits. Page 6.

C **Canvas**

The active engine's drawing. Other engines show faintly behind it; each lane's playhead rides its drawing in the lane's colour. Pages 7 and 8.

D **Hint line**

What the current tool does and which keys change it; the pointer's position on the right.

E **Play card**

Timing, loop window, swing, drift and retrigger. Page 9.

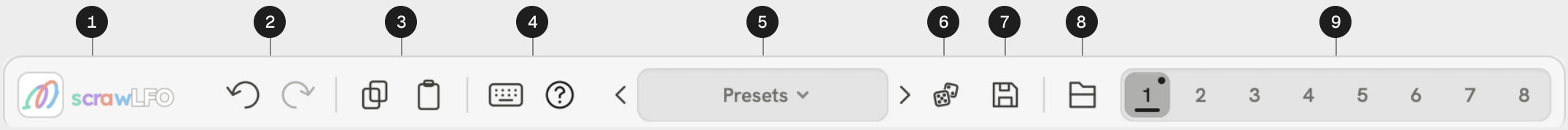
F **Lanes card**

One row per CC lane: engine, channel, CC and Split, range, speed and shaping. Page 10.

Each card folds to a bar with its chevron. Drag the window's corner to resize it. Click the logo for the skin, **Graphite** (dark) or **Studio** (light), this **Manual** and the **Tutorial**: 23 stops round the window, with a section on each Type's drawing tools to try; it also opens by itself the first time.

6 · A · HEADER

Header

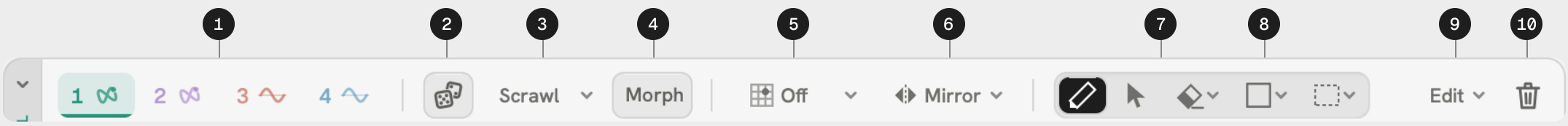


1. **Logo** · the skin (Graphite or Studio), **Manual** (this guide), the **Tutorial**, Credits and **Licence…**; without a key, a **DEMO** badge beside it opens the licence screen (page 2).
2. **Undo / Redo** · every drawing edit, across all four engines. ⌘Z ⇧⌘Z
3. **Copy / Paste** · the active engine's drawing, between engines, pages or instances. ⌘C ⌘V
4. **Shortcuts card** ? and the **tooltips** switch.
5. **Presets** · 96 factory drawings plus your own; **Init** starts afresh. [ ] step through them.
6. **Random preset** of the active engine's type. \
7. **Save** the drawing as a user preset, with a name and a hint.
8. **Files** · export or import pages, revert the page, choose the presets folder.
9. **Pages 1–8** · a dot marks a page you have edited.

6 · B · TOOL ROW · SCRAWL ENGINE

Tool row: Scrawl

This applies to the **Scrawl engine** (an XY gesture on the pad). Its controls act on the active engine: click a tab or press 1–4 to change it; a tab pulses while its engine plays. An LFO engine has its own row, below.

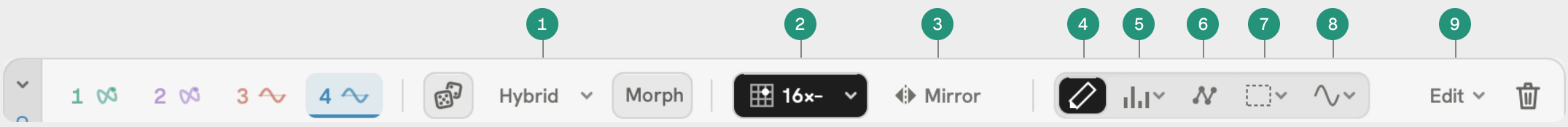


1. **Engine tabs** · right-click for Scrawl / LFO, Copy to, Off, Solo and Hide.
2. **Dice** · click for a new drawing N, drag up for more detail. Right-click undoes.
3. **Dice style** · Scrawl (a mix), Polygon, Line or Stepped.
4. **Morph** · nudges the drawing you have. Click for a little B, drag for more.
5. **Grid** · Snap to grid and Grid X / Y. Off to start.
6. **Mirror** · copies each stroke as you draw: Left/Right, Top/Bottom or Both.
7. **Tools** · Draw, Cursor, Erase, Shape, Select. Page 8.
8. **Shape** S · click it for the library of 46 stamps, then drag on the pad to place one.
9. **Edit** · Flip, Reverse, Smooth and more. **Show all** edits all four engines at once.
10. **Clear** the drawing.

6 · B · TOOL ROW · LFO ENGINE

Tool row: LFO

This applies to the **LFO engine** (a drawn waveform): make an LFO engine active and the row changes to suit it. The tabs, Dice, Morph and Clear work as on a Scrawl; **these differ**:



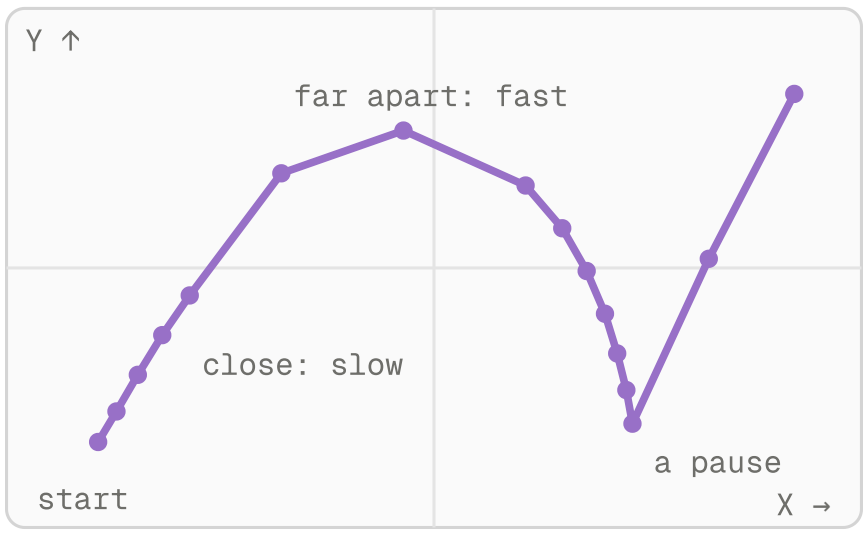
1. **Dice style** · Hybrid (a mix), Line, Curves or Stepped.
2. **Grid** · reads columns × rows: **16×–** is 16 columns, no rows. Lit because Snap is **on** to start. Grid X also sets the Step tool's columns, unless its menu picks a count.
3. **Mirror** · on or off, no menu: keeps the cycle symmetric, each edit copied across its middle.
4. **Pencil** D · draw over the curve; ⌘-drag for a straight ramp, ⌥-drag bends a segment, double-click adds a point.
5. **Step** T · paint a level per column. Its menu stamps a Ramp, Triangle, Sine, Alternate or Random run across a drag, and sets **Steps**: Grid, 4, 8, 16 or 32 columns.
6. **Points** P · click adds a point, joined straight to its neighbours; drag a point to move it; double-click or right-click deletes one; ⌥-drag bends a segment.
7. **Select** M · click a point (Shift-click for more), or draw a rectangle or lasso round several; move, scale or tilt them.
8. **Templates** (the sine glyph, in place of Shape) · 19 waveforms to start from: Sine, Saw, Square, Sidechain pump, S&H and more.
9. **Edit** · Flip horizontal H, Flip vertical F, Straighten curves L, Simplify S (far fewer points, the same line), Segment Type (Curve, S-Curve, Hold or Smooth), Delete points, Select all, Show all.

Scrawl or LFO: how each one plays

Every engine holds both a Scrawl and an LFO drawing; its type decides which one plays. Right-click an engine tab to switch: the other drawing is kept, so you can switch back. The difference is **where time lives**.

Scrawl

TIME IS IN YOUR HANDS

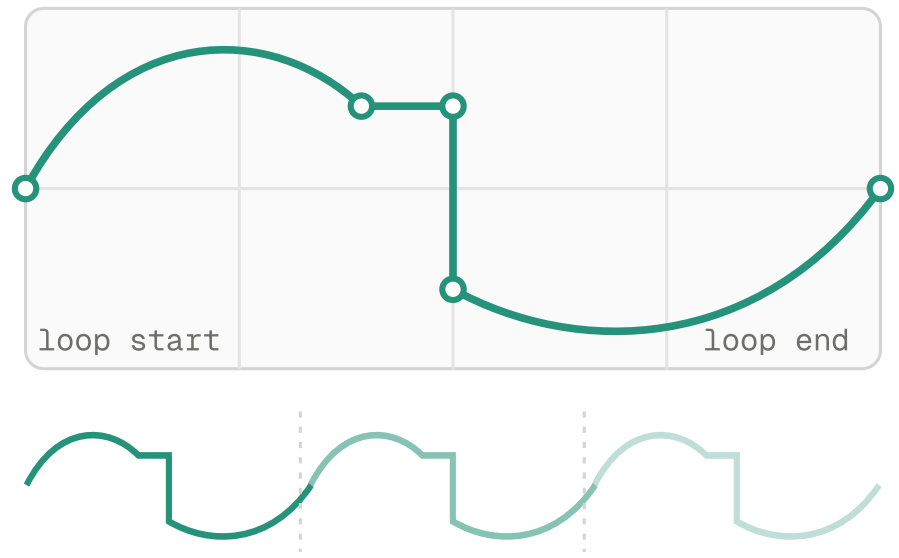


You perform it. Drag on the pad and scrawLFO records where the pointer is every millisecond, for up to 60 s. Playback retraces the path **at the speed you drew it**: a quick flick becomes a fast sweep, a pause becomes a hold.

Across the pad is not time: a stroke can double back, circle or cross itself. The pointer's position gives **two signals**, X (left to right) and Y (bottom to top). Each lane takes X, Y, or their average.

LFO

TIME RUNS LEFT TO RIGHT



You design it. The editor shows **one cycle**: the left edge is the start of the loop, the right edge its end, and the height is the value. The cycle repeats, the same every time.

Take your time: draw with the Pencil, paint Steps, or place Points and bend the lines between them, with Snap on the grid. It is **one signal**, so every lane reading an LFO plays the same curve, whatever its Source says.

	SCRAWL	LFO
You draw	a path on an XY pad, in real time	a curve: value over one cycle
Timing	from how fast you moved	from the horizontal axis
Signals	two, X and Y; lanes pick X, Y or both	one, the same for every lane
Feel	human, uneven, alive	exact, repeatable, on the grid
Edit with	Draw, Erase, Shape, Select, Dice, Morph	Pencil, Step, Points, Templates, Dice, Morph

What they share

Both loop on the Play card. In **Sync** the whole drawing stretches to fill the Loop length, so a three-second gesture and a single cycle both fill one bar; in **Free** both loop Rate times a second. The loop window, swing, drift, retrigger and every lane setting (Clock, Phase, Direction, Quant, Delay, Smooth) work the same on either.

Which one?

SCRAWL
A filter that breathes
The push and drag of a hand on a knob, looped.

SCRAWL
Two controls, one move
Lane 1 on X to cutoff, lane 2 on Y to resonance.

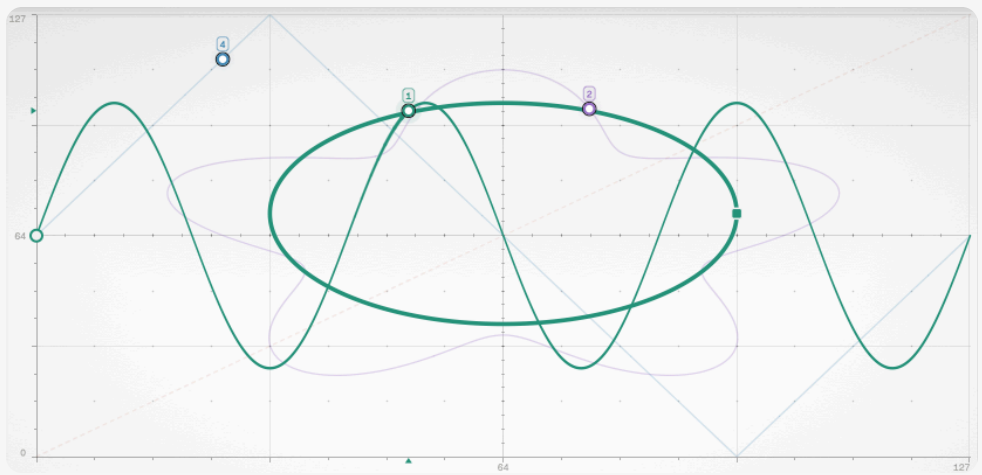
LFO
A pump on the beat
A ramp or a dip that lands on every quarter note.

LFO
A stepped pattern
Paint 16 steps with the Step tool, Snap on.

Two ways to draw

Right-click an engine tab to make it a Scrawl or an LFO. The canvas follows the active engine. A new instance opens engines 1 and 3 as LFOs, 2 and 4 as Scrawls. How they play differs: page 7.

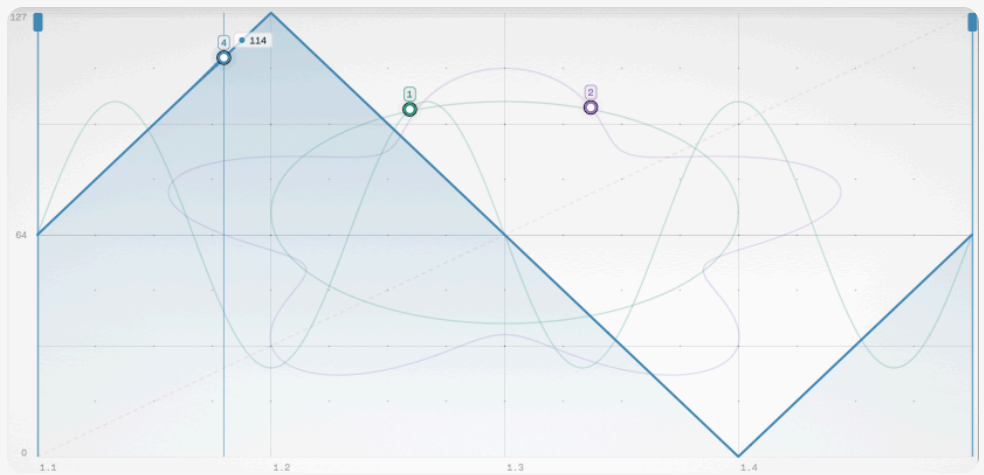
Scrawl XY pad



Drag to record a gesture in real time, up to 60 s. It loops with your timing. X and Y are two signals; each lane picks X, Y or both.

D	Draw: drag to record a stroke
C	Cursor: audition a position, record nothing
E	Erase: rub out, in three brush sizes
S	Shape: click to stamp, drag to size
M	Select: click a stroke to pick it, ⌘ adds, ⌥ removes; move, scale, rotate
⌥ drag	Straight line, or from a stroke's last point carry the path on; bend a line from its middle, or curve a lone stroke
⌥ dbl-click	Straighten a lone stroke between its ends
⇧ or ⌥ over a point	It lights: drag to move a line's end or a shape's corner, its lines following
Drag a line's loose end	Stretch a straight line
Double-click	Clear the active engine

LFO waveform editor

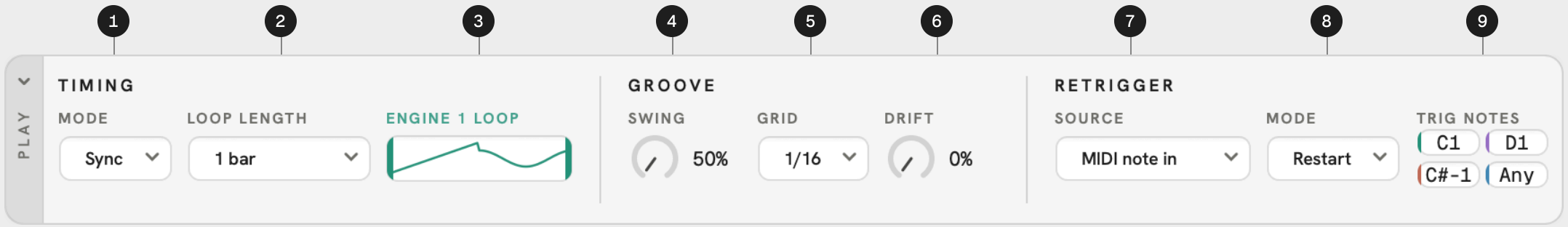


One cycle of a waveform, repeated. Draw it freehand, place breakpoints, or paint steps. Snap is on by default.

D	Pencil: draw over the curve; drag a lit point to move it; double-click adds one
T	Step: paint held steps, or stamp a ramp, sine or random run
P	Points: click adds a point, drag moves one; double-click or right-click deletes it
M	Select: click a point or box several; move, scale, tilt
⌘ drag	Pencil: a straight line; ends land on points, ⇧ keeps it level
^ drag	Pencil: draw free with Snap on
⌥ drag	Bend a segment (by its type)
Right-click a segment	Its type: Curve, S-Curve, Hold or Smooth
⌥ dbl-click	Straighten a bent segment

In either editor, **hold Shift** for a quick Select in any tool: over a point, a drag moves just that point; a box picks several. Let go and the selection stays: drag it, press Delete, or roll the Dice on just that part. H F flip, R reverses, arrow keys nudge. On a waveform, L straightens its curves and S simplifies it to a few bent segments. Edit ▸ Segment Type sets the type for a selection.

Timing and retrigger



1. **Mode** · **Sync** (default) follows the host's tempo and moves only while the transport plays; **Free** runs at its own rate, playing or not.
2. **Loop length** (Sync) 1/16 to 16 bars, dotted and triplet too, or **Rate** (Free) 0.01–50 Hz.
3. **Engine loop** · drag the ends to play part of the cycle; cross them to play it backwards. ⌘-drag sets all four; ⌥-drag lands on 5% steps.
4. **Swing** · 50% is straight, 66.7% a triplet feel. Sync only.
5. **Grid** · swing on 1/8 or 1/16.
6. **Drift** · fresh random variation on every pass.
7. **Source** · what restarts the loop: Off, Button, Transport start (default: each time you press play) or MIDI note in.
8. **Mode** · **Restart** jumps to the start; **Hold** freezes while the note is down; **Trigger** moves only while the note or Trigger is held, stops where you let go and carries on from there next time. **One-shot** plays each lane's loop once, then holds where it ended; **One-shot Hold** plays it while the note or Trigger is held and stops where you let go; **One-shot Reset** sends the lanes back to their start when you let go. With Source Off they loop like Restart; from Transport start Trigger plays as Restart, the held One-shots as One-shot.
9. **Trig Notes** · the note that restarts each engine (or Any). With Button, the **Trigger** button.

Restart the loop from notes

Set Source to **MIDI note in**. Every note that reaches scrawLFO restarts the loop; to have only one note do it, set the engine's **Trig Notes** box (middle C, note 60, is C3). The notes carry on to the instrument either way.

From a clip

On the same track: draw notes where the loop should restart.

From a keyboard

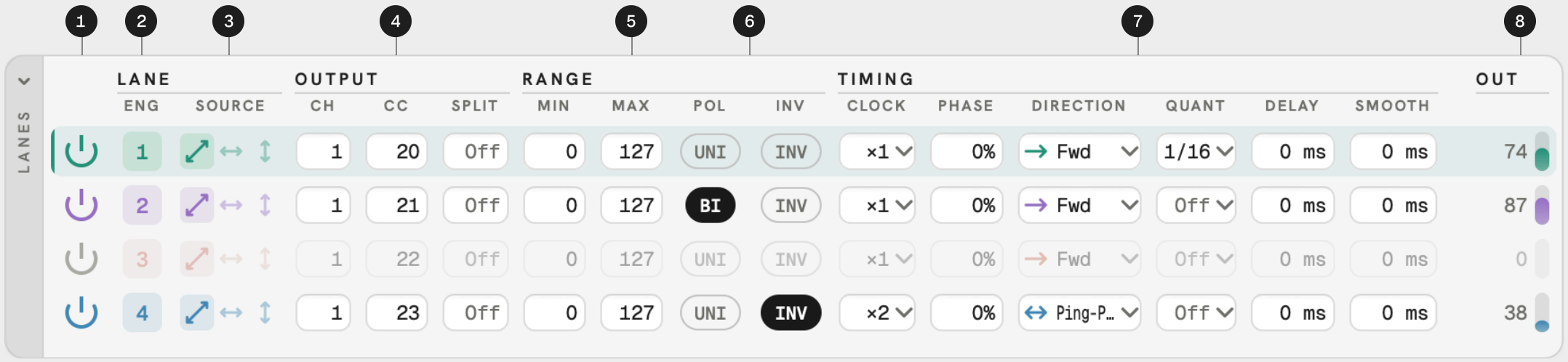
Arm the track or turn on its input monitoring. Use Free to play with the transport stopped.

From another track

Route another track's notes into scrawLFO's track, if your host can: restart on every kick.

Lanes

One row per lane. Each reads one engine and sends it as a CC.



COLUMN	WHAT IT DOES	RANGE
1-3 · LANE		
On	Switches the lane. Lane 1 starts on. Right-click to copy its settings to another lane.	on · off
Eng	The engine the lane reads. Click to step, right-click to pick.	1-4
Source	For a Scrawl: the average of X and Y, X alone, or Y alone. Every lane starts on X&Y. An LFO plays its waveform whatever this says.	X&Y · X · Y
4 · OUTPUT		
Ch · CC	Where the lane sends. Amber when two lanes share a channel and CC, or on CC 120–127, which an instrument may take as commands (All Notes Off and the like).	1-16 · 0-127
Split	A second CC for the movement below the middle; amber on 120–127 too. Page 3.	Off · 0-127
5, 6 · RANGE		
Min · Max	The CC values the drawing's bottom and top become.	0-127
Pol	**UNI** stretches the drawing's lowest to highest point across Min–Max; a flat line sends the level it's drawn at. **BI** reads it as drawn, from the middle, both ways.	UNI · BI
Inv	Flips the lane.	on · off
7 · TIMING		
Clock	Speed against the loop: half time, double time and so on.	/8 … ×8
Phase	Starts the lane further through the drawing.	0-100%
Direction	Fwd, Back, Ping-Pong, Meander, Random, or **Seq**: click the Seq glyph for a sequencer of up to 16 steps that jumps around the drawing; Esc or a double-click outside it closes the window.	6 modes
Quant	Samples and holds on the beat grid, for stepped movement.	Off · 1/1 … 1/32
Delay	Plays the lane that far behind the playhead, from the first beat. In ms, or in steps of a note value so it follows the tempo: right-click the box for **Delay in**, Milliseconds or a note value from 1/64 to 1/1 (triplet and dotted too), and the box counts steps, reading 1/16 or 3 × 1/16. Up to 5 s either way.	0-5000 ms 0-32 steps
Smooth	Glides between values to soften steps and jumps.	0-500 ms
8 · OUT		
Meter	The CC value going out now. With Split, signed: + on the lane's CC, – on the Split CC.	0-127

Every box: **drag** or scroll to change, **double-click** to type, **⌥- or ⌘-click** to reset; the Rate, Swing and Drift wells too. The lane boxes are host parameters too, so you can automate them.

Pages, presets, shortcuts, help

Pages

8 pages, each a complete set of four drawings and every setting. Switch pages to change the whole patch at once.

Click	Go to the page
Shift-click	Copy this page there
Shift-⌥-click	Empty the page
Right-click	Duplicate, revert or empty
Automate Page	Switch pages from the host's automation (the page follows a moment later, not on the beat)

Presets and saving

Ships with 48 Scrawls and 48 LFO; a preset replaces the active engine's drawing. Save your own with the disk icon.

Your **host project** keeps everything: drawings, settings and all 8 pages. To move a sound to another project or another computer, **Export** and **Import** from the Files menu, or drop a .json file on the window.

Shortcuts

Press `?` in the window for the full card.

ANYWHERE

`⌘Z` `⇧⌘Z`	Undo, redo
`⌘C` `⌘V`	Copy, paste drawing
`1`–`4`	Active engine
`N` `B`	Dice, Morph
`[` `]` `\`	Presets

DRAWING

`D` `C` `E` `S` `M`	Scrawl tools
`D` `T` `P` `M`	LFO tools
hold `⇧`	Quick Select
`H` `F` `R`	Flip, flip, reverse
`L` `S`	LFO: straighten, simplify
`⌘A` `Esc`	Select all, deselect
`←` `↑` `→` `↓`	Nudge the selection

PAGES

`⇧1`–`8`	Go to a page
`C` `V`	Over a page button: copy it, paste onto it

LANES

Right-click Delay	Delay in: ms, or steps of a note value

If no CC arrives

- [ ] The lane's **On** switch is lit and its **meter** moves.
- [ ] In **Sync**, the host's transport is playing.
- [ ] **Min** and **Max** differ.
- [ ] CCs and notes stop for 3 s every 45 s? That's the **demo**: click the **DEMO** badge and activate your key (page 2).
- [ ] Its engine isn't **Off**, or silenced by another engine's **Solo**.
- [ ] The receiver reads the same **CC** and **channel** the lane sends.
- [ ] scrawLFO sits **before** the receiver in the chain.

If scrawLFO ever crashes, it leaves a report, and the next time its window opens it offers it: **Send report** puts it in an email to support for you to send, **Show file** finds it, **Don't send** lets it go.

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