Edition	Implementation snapshot	Document focus
1.0	March 2026	Operation + DSP behavior

Document scope

This manual describes the public operating behavior of the current FRACTURE implementation, aligned to the audited source and the supplied UI captures. It explains what the module is for, how the signal path behaves at production level, what every control changes, and how to dial it in without exposing internal IP-sensitive tuning details.

FRACTURE at a glance

A practical orientation page before the detailed control reference.

Area	Summary
What FRACTURE is	FRACTURE is a rhythmic fragment repeater. It listens to the recent input, captures short audio slices around musically useful moments, loops them for the duration of a step, and blends that result with the dry signal.
Where it excels	Use it on drum tops, percussive synths, bass stabs, vocals, arps, FX throws and transition material. Its strongest value is controlled rhythmic disruption that still follows the pulse of the track.
What it is not	FRACTURE is not a long granular processor, not a pitch shifter, and not a traditional delay. The effect stays intentionally short, step-based and event-driven, so the result feels like a living repeat engine rather than a wash.
Core operating idea	Start with Mix at zero. Decide whether the module should follow the DAW grid or run freely. Set Division / Rate and Slice first, then use Gate and Repeat to shape the phrase length. Add Chance, Jitter, Reverse and Spread only after the basic groove works.

Section	Focus
1. Overview	What FRACTURE does and when to use it
2. Interface	Compact and expanded views
3. DSP architecture	Signal flow and sonic consequences
4. Controls	Every parameter, range and listening cue
5. Visualizer	How to read the monitor
6. Working method	Dial-in sequence, safety and timing practice
7. Starting recipes	Fast production presets
8. Technical appendix	Defaults, timing behavior and public-safe implementation notes

Key implementation fact

The current code initializes Mix to 0.00, Sync enabled, the timing control at a mid normalized position, Slice at 72 ms, Repeat at 3 cycles, Gate at 74%, Chance at 65%, Swing at 56%, Jitter at 18%, Reverse at 12% and Spread at 25%. In practice, a newly inserted FRACTURE instance is safe until you deliberately bring the wet layer in.

1. Interface and operating model

The module presents two working views: a fast core view and a full-detail programming view.

FRACTURE exposes the same DSP engine through two layouts. Compact view is for fast timing decisions and quick preset browsing. Expanded view reveals the probability, groove and stereo controls that determine how aggressively the step engine fractures the source.

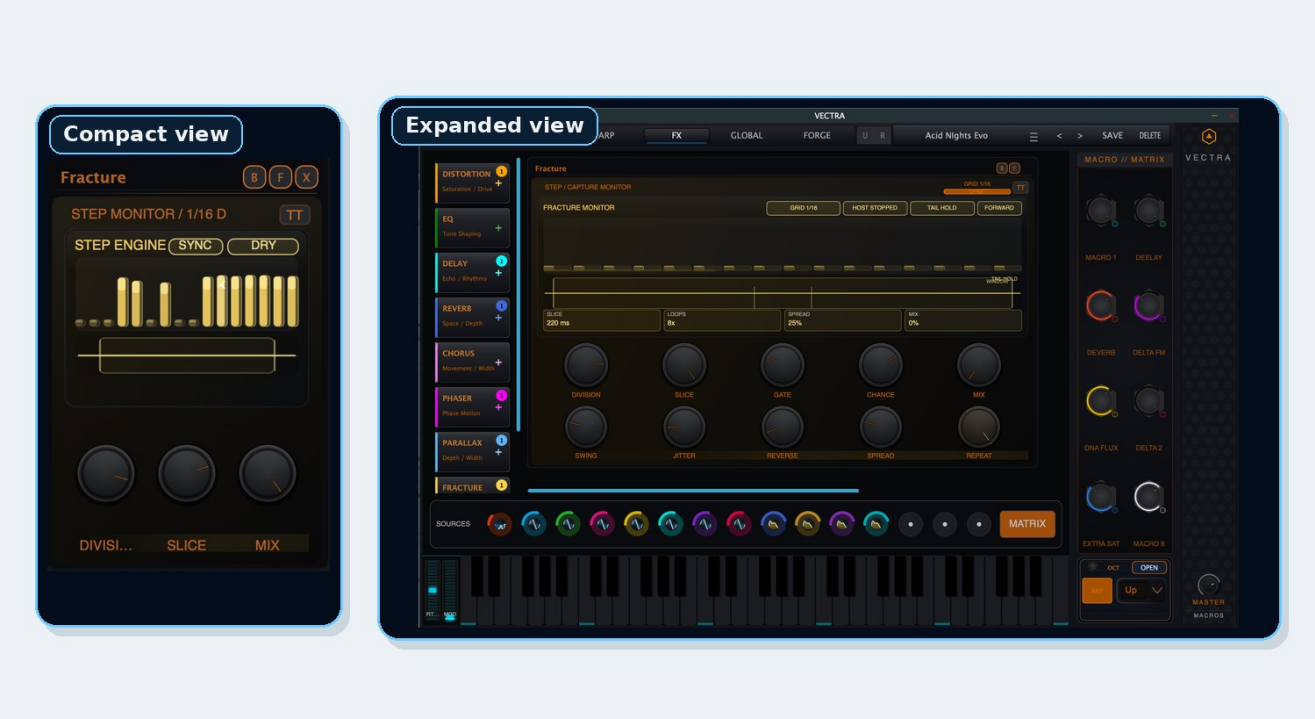

Figure 1. Compact view gives immediate access to Division / Rate, Slice and Mix. Expanded view adds Sync, Repeat, Gate, Chance, Swing, Jitter, Reverse and Spread.

View	Primary use	What is visible
Compact	Fast rhythmic shaping and safe enhancement	Step Monitor plus Division / Rate, Slice and Mix.
Expanded	Detailed pattern design and troubleshooting	Full Step Monitor, clock status, capture telemetry, Sync, Repeat, Gate, Chance, Swing, Jitter, Reverse, Spread and Mix.

Operational shortcut

Treat Compact view as the decision layer and Expanded view as the correction layer. Lock the pulse and fragment size first, then expand only if the part needs more groove variation, more randomness or more stereo movement. The TT button in the module frame toggles contextual tooltips; it is a UI aid, not an audio state control.

2. DSP architecture

What the module does under the hood, translated into production language.

At the algorithm level, FRACTURE is a step-scheduled capture-and-repeat processor with transient-aware fragment selection, optional host sync, swing-aware timing, probabilistic triggering, reversible playback, stereo start-offset spread, crossfaded loop recycling and linear dry/wet blending.

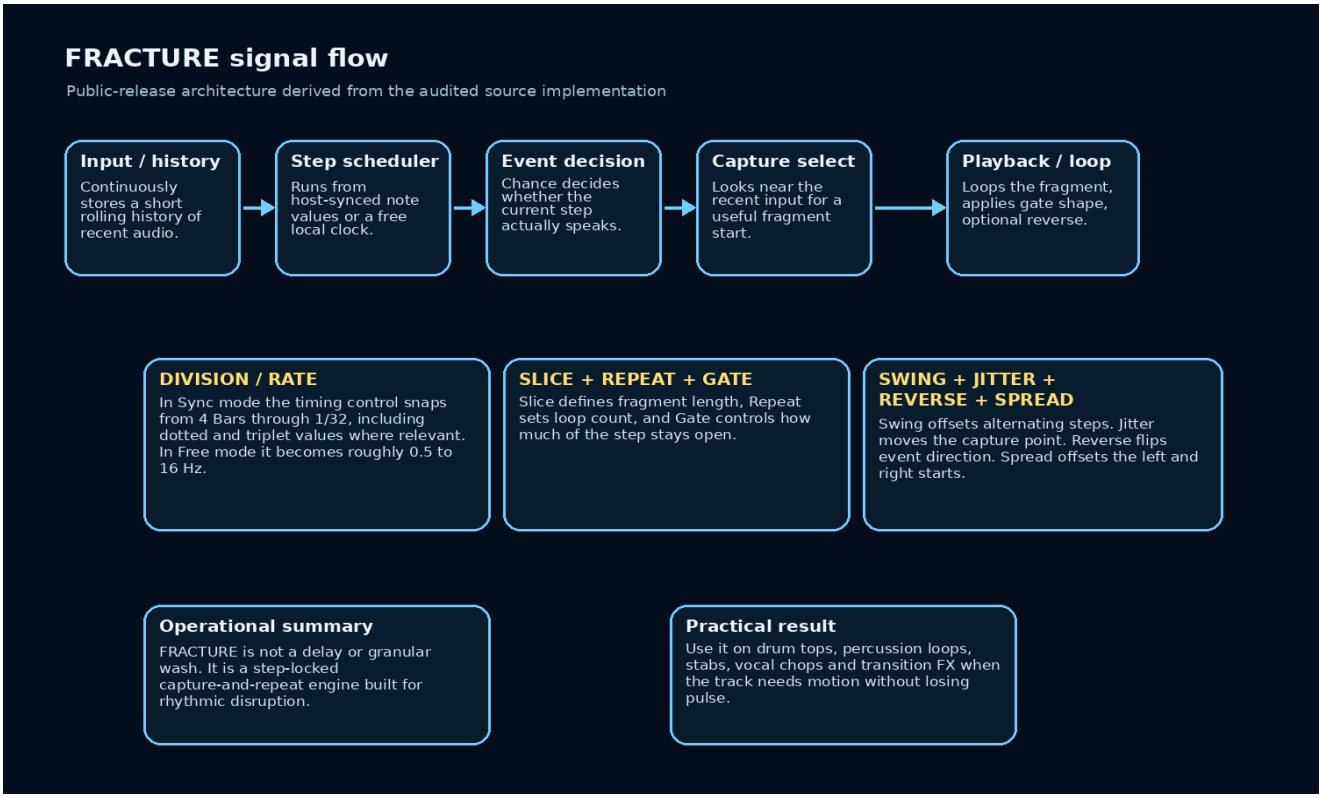

Figure 2. High-level signal path of the current FRACTURE implementation.

- The module continuously stores a short rolling history of the input, then draws event fragments from that history rather than from a fixed sample file.
- Each step is timed either by the host grid or by a free-running internal clock. In free mode the local rate spans roughly 0.5 to 16 Hz. In sync mode the timing control snaps to musical divisions from 4 Bars down to 1/32, including dotted and triplet values where relevant.
- Chance determines whether a step actually fires. Reverse is probabilistic per event, not a global direction switch.
- Slice defines fragment length. Repeat determines how many loop passes live inside the active event. Gate controls how much of that step remains open.
- Jitter nudges the capture point around the step anchor. Spread offsets the left and right capture starts, creating width without turning the effect into a reverb cloud.
- Captured fragments are conditioned with short fades and adaptive crossfades before final dry/wet blending, which keeps the result controlled and less click-prone in real use.

What you hear	Why it stays musical
Division / Rate changes the pulse. Slice changes the material. Gate and Repeat shape phrase length and insistence. Chance and Swing decide how the groove breathes. Jitter, Reverse and Spread add instability and width.	FRACTURE does not simply retrigger arbitrary snippets at fixed intervals. The capture stage favors usable recent input moments, rejects weak or obviously decaying tails, and shapes loop boundaries so the module usually feels intentional rather than messy.

3. Control reference - timing, probability and texture controls

Ranges and defaults are taken from the current implementation.

Control	Range / default	What it changes
Division / Rate	0.00 to 1.00 normalized | default 0.42	In Sync mode the control snaps to musical divisions from 4 Bars down to 1/32. In Free mode it becomes the local step speed, approximately 0.50 to 16.00 Hz. This is the master timing control.
Sync	Off / On | default On	Switches the timing control between free-running Hertz and host-synced note divisions. Use On when the repeats must lock to the grid; use Off when you want local, oscillator-like stepping.
Slice	10 to 220 ms | default 72 ms	Sets how much audio is captured for each fragment before it loops. Lower settings sound tighter and more percussive; higher settings sound more phrase-like and textural.
Repeat	1 to 8 cycles | default 3 cycles	Determines how many times the captured fragment loops inside the active event. More cycles sound more insistent and more obviously stuttered.
Gate	0.10 to 1.00 | default 0.74	Controls how much of each step remains open. Lower values make clipped, punctuated cuts; higher values let the fragment occupy more of the step.
Mix	0.00 to 1.00 | default 0.00	Linear dry/wet balance. Lower settings behave like rhythmic enhancement. Higher settings turn the source into a stronger step-repeat effect.

Listening order

For most sources, Division / Rate decides the pulse, Slice decides the material, Gate decides the phrase contour, Repeat decides insistence, and Mix decides the final commitment. Build the pattern in exactly that order.

Control	Range / default	What it changes
Chance	0.00 to 1.00 | default 0.65	Probability that a step actually triggers a fragment. Lower values create negative space. Higher values create more continuous activity.

Swing	50 to 75% | default 56%	Offsets alternating steps for groove. At 50% there is effectively no swing; higher values push the pattern into a more shuffled feel.
Jitter	0.00 to 1.00 | default 0.18	Randomly nudges the capture point around the step anchor. Low settings keep the repeats disciplined; higher settings sound more unstable and improvised.
Reverse	0.00 to 1.00 | default 0.12	Probability that a triggered fragment plays backward. It is not a global reverse switch; it is a per-event behavior.
Spread	0.00 to 1.00 | default 0.25	Offsets the left and right capture start points. Low settings stay direct and mono-safer; higher settings introduce stereo width and motion inside the fragment.

Critical interaction: Division / Gate / Repeat

Division / Rate sets the step size, Gate sets how much of that step stays open, and Repeat decides how many loop passes live inside the event. If the pattern becomes crowded, lower Repeat or Gate before changing the main pulse.

Critical interaction: Chance / Jitter / Reverse

Chance controls how often the engine speaks, Jitter controls how stable the capture point is, and Reverse controls whether those captures flip direction. Raise them in that order. If you start with too much Jitter or Reverse, the groove loses its anchor quickly.

Figure 3. Compact monitor examples. The left view shows Sync with a hold state after capture rejection. The right view shows Sync with a dry-state display while the recent step history remains visible.

Visible UI state	What it means in practice
STEP MONITOR / 1/16 D	In Sync mode the monitor badge surfaces the active musical division. In Free mode it switches to FREE and the main timing label becomes RATE rather than DIVISION.
STEP ENGINE: SYNC / FREE	Confirms whether the scheduler is following the DAW grid or the local free-running clock.
STEP ENGINE: LIVE / DRY / HOLD	LIVE indicates active event playback, DRY indicates no current event, and HOLD appears when the recent capture has been vetoed or frozen for safety.

Important naming note

The large timing knob is presented as DIVISION when Sync is enabled and as RATE when Sync is disabled. The underlying parameter is the same normalized timing control; the UI label changes to match the operating mode.

4. Practical control behavior

How the controls combine on real material.

Subtle enhancement settings

Keep Mix below roughly one quarter, Gate fairly high and Repeat modest. This mode is ideal on loops, percussion buses or bass material that only needs movement and rhythmic emphasis rather than total disruption.

Transformative settings

Raise Mix, shorten Slice, then increase Repeat. Add Chance for pattern breathing, then Jitter and Reverse for instability. Use Spread only after the mono and groove picture are already working.

Important behavior to remember

In Sync mode, the timing control is quantized to a fixed note-value grid. In Free mode it becomes continuous. If a preset feels too rigid, disabling Sync may change the character more effectively than altering several other controls.

A useful mental model is that Division / Rate and Slice decide the identity of the fragment, Gate and Repeat decide the phrase shape, Chance and Swing decide the groove, Jitter and Reverse decide the instability, Spread decides how far the fragment opens, and Mix decides how much of FRACTURE becomes part of the finished sound.

Mode	When it works best	Typical moves
Subtle	Loops, buses, supportive rhythmic motion	Lower Mix, modest Repeat, disciplined Slice, low Jitter.
Transform	Fills, vocal chops, animated synth material	Shorten Slice, raise Repeat, then add Chance and Reverse.
Free-run texture	Experimental motion outside the arrangement grid	Disable Sync, set Rate between about 2 and 6 Hz, keep Swing irrelevant, use moderate Jitter.

5. Reading the visualizer

The display combines step-state information with live capture telemetry.

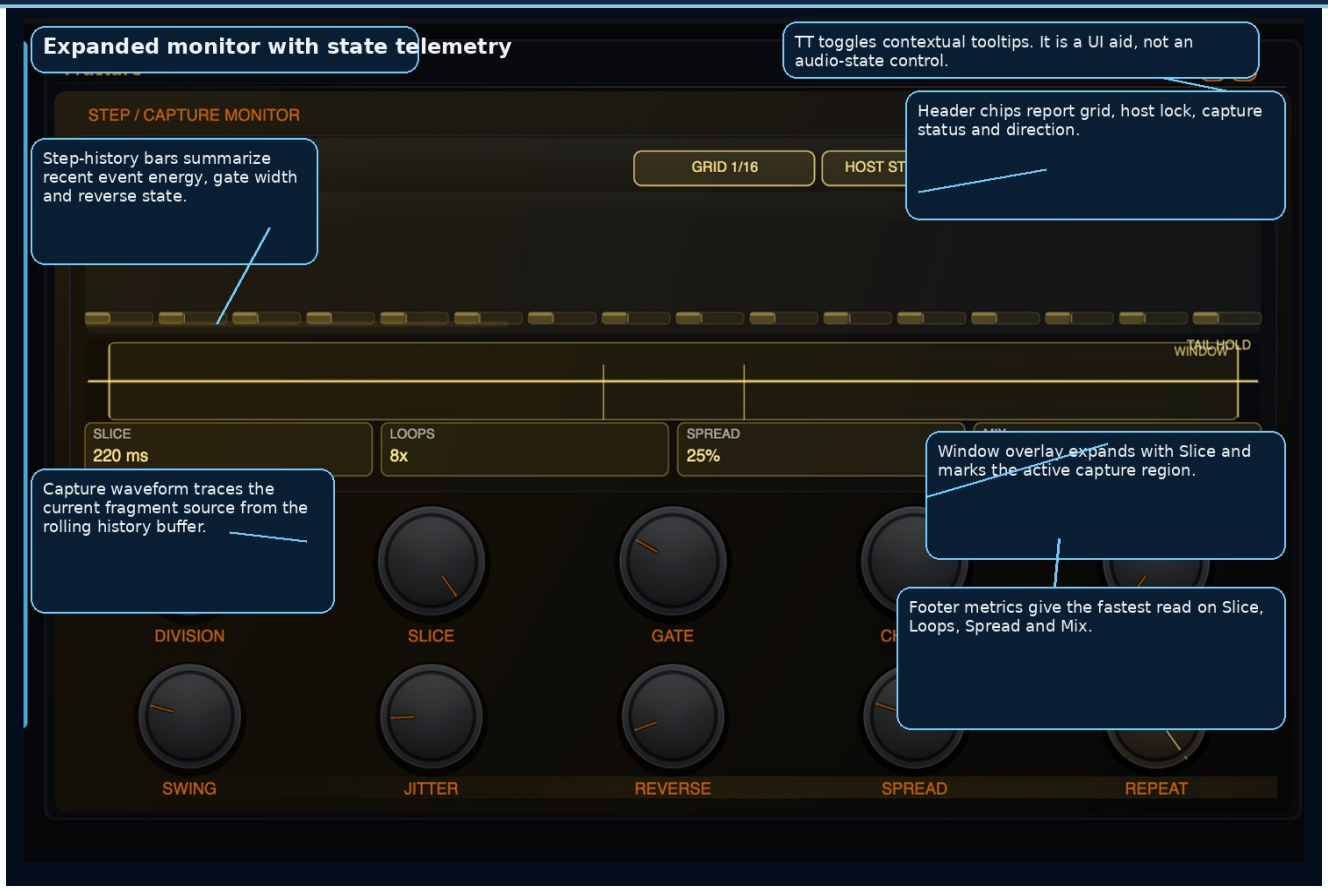

Figure 4. Expanded monitor, showing the step-history bars, capture waveform, playback window, header state chips and footer metrics.

Element	Meaning	How to use it
Mode chip	Shows Sync or Free operation.	Confirms whether the timing control is following the host grid or the local clock.
State chip	Shows Host Locked, Host Stopped or Host Acquire in expanded view; Live, Dry or Hold in compact view.	Useful when troubleshooting why the engine is or is not firing.
Truth chip	Shows CAPTURE OK, LOW CONF, LOCKED or TAIL HOLD.	Explains why the engine may be rejecting weak or obviously decaying source material.
Direction chip	Shows FORWARD or REVERSE for the current event.	Confirms whether the active fragment is playing normally or backward.
Step-history bars	Recent bars summarize activity, gate width, event energy and reverse state.	Read them as a compact history of how active and how dense the pattern has been.
Capture waveform	Displays the currently captured fragment.	Use it to judge whether the module has grabbed a tight transient, a phrase fragment or a weak tail.

Window overlay	Highlights the active slice length inside the waveform area.	As Slice increases, the overlay expands, making the captured fragment visibly longer.
Spread markers	In Expanded view, markers move outward with Spread.	Confirms how far the left and right capture starts are separating.
Footer metrics	Expanded view shows Slice, Loops, Spread and Mix.	This is the fastest place to confirm the active operating footprint while turning knobs.

Status language

TAIL HOLD indicates the engine recently rejected a weak or decaying fragment. LOW CONF indicates a less certain capture. LOCKED or CAPTURE OK indicates stable capture behavior. These indicators are there to explain why the monitor may show fewer events than the raw step clock suggests.

6. Recommended working method

A robust dial-in sequence for production sessions.

- Set Mix to 0 and get the dry source behaving correctly first.
- Decide whether the part should follow the host grid. Leave Sync on for arrangement work; switch it off for freer, more synthetic repetition.
- Set Division / Rate until the pulse feels musically right.
- Set Slice until the engine is capturing the right amount of material.
- Use Gate and Repeat to determine how assertive or clipped the repetition should be.
- Use Chance to create holes before you reach for Jitter or Reverse.
- Add Swing only if the pattern needs groove displacement.
- Add Jitter and Reverse carefully. They are best treated as spice, not foundation.
- Raise Spread only after the groove is working and after checking mono behavior.
- Bring Mix up last and stop as soon as the pattern reads clearly in context.

Mono and low-end safety

On kick, bass or full-mix material, keep Spread moderate and Jitter restrained. FRACTURE can still work on low-frequency sources, but it is strongest when the transient or midrange articulation remains clear.

Source selection

FRACTURE is strongest on sources with clear timing information: hats, claps, stabs, vocal chops, gated pads, arps, percussion loops and transition FX. It can work on sustained pads, but only when Slice, Gate and Chance are disciplined enough to prevent a smeared wash.

When to back off

If the groove becomes unreadable, reduce Jitter or Reverse first. If the part becomes too busy, reduce Repeat or Chance before changing Division / Rate. If the image gets cloudy, lower Spread before lowering Mix.

7. Starting recipes

These are reliable starting points, not fixed rules. Adjust by ear to match the source.

Source / goal	Core settings	Support settings
Tight drum-top glitch	Rate 1/8 or 1/16 sync | Slice 25 to 55 ms | Mix 0.10 to 0.22	Gate medium-high, Repeat 2 to 4, Chance medium, Jitter low, Reverse very low, Spread low.
Percussive synth stutter	Rate 1/8T to 1/16 | Slice 35 to 80 ms | Mix 0.14 to 0.28	Gate medium, Repeat 3 to 5, Chance medium-high, Swing light, Jitter low-medium.
Vocal chop animator	Rate 1/4T to 1/8 | Slice 60 to 120 ms | Mix 0.12 to 0.30	Gate medium, Repeat 2 to 4, Chance medium, Reverse low-medium, Spread low-medium.
FX transition fracture	Rate 1/16 to free-fast | Slice 20 to 90 ms | Mix 0.25 to 0.55	Repeat high, Chance high, Jitter medium-high, Reverse medium, Spread medium-high.
Loose free-run texture	Free mode around 2 to 6 Hz | Slice 50 to 140 ms | Mix 0.15 to 0.35	Gate medium, Repeat 2 to 5, Chance medium, Swing irrelevant in free mode, Jitter medium, Reverse low.
Bass-safe repeater	Rate 1/8 | Slice 20 to 45 ms | Mix 0.06 to 0.16	Gate high, Repeat 1 to 3, Chance medium, Jitter low, Reverse off or minimal, Spread minimal.

Best way to adapt a recipe

If the source is already busy, reduce Chance first. If it is already wide, reduce Spread before touching Mix. If it is already legato, shorten Slice before increasing Repeat.

8. Technical appendix

Implementation details that matter in real use, presented at public-release level.

Item	Current public-safe detail	Practical consequence
Parameter smoothing	Continuous controls use approximately 20 ms smoothing.	Automation and modulation stay controlled in real time and less prone to abrupt stepping.
Clocking	FRACTURE can follow host timing or a local free-running clock.	The module covers both precise arrangement work and more experimental stepped motion.
Sync grid	Sync mode exposes note divisions from 4 Bars to 1/32, including dotted and triplet values where relevant.	The timing control can move from broad arrangement gestures to tight stutter work without changing modules.
Capture logic	Fragment capture is transient-aware and confidence-checked before playback is allowed.	The module tends to grab usable moments and suppress weak or obviously decaying tails.
Slice range	10 to 220 ms.	The effect can move from short tick-like cuts to phrase fragments, but it stays intentionally short rather than turning into a granular wash.
Stereo spread	Spread offsets the left and right capture starts by a short amount rather than creating a modulated chorus path.	Width comes from capture timing separation, not from long tails or pitch drift.
Loop conditioning	Captured fragments are DC-conditioned and shaped with short fades and adaptive loop crossfades.	Looping remains cleaner and less click-prone when Repeat is raised.
Default state	Sync On, normalized timing 0.42, Slice 72 ms, Repeat 3 cycles, Gate 0.74, Chance 0.65, Swing 56%, Jitter 0.18, Reverse 0.12, Spread 0.25, Mix 0.00.	The neutral loading state favors safety and requires intentional wet commit.
Modulation exposure	The panel surfaces the most performance-relevant timing, gating, probability, motion and mix controls as modulation-aware destinations.	Core rhythmic moves are easy to animate while the monitor keeps the result readable.

Final operating summary

Use FRACTURE when a source needs rhythmic disruption without losing track pulse. Division / Rate and Slice establish the timing identity, Gate and Repeat define the phrase contour, Chance / Swing / Jitter / Reverse / Spread decide how human or unstable the result becomes, and Mix determines how much of that engine enters the finished production.