# RHYTHMER

## SOUND INTO MOTION.

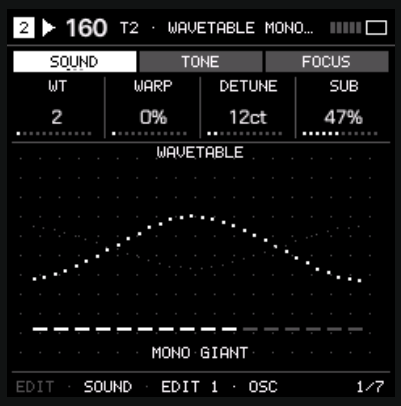
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# USER MANUAL

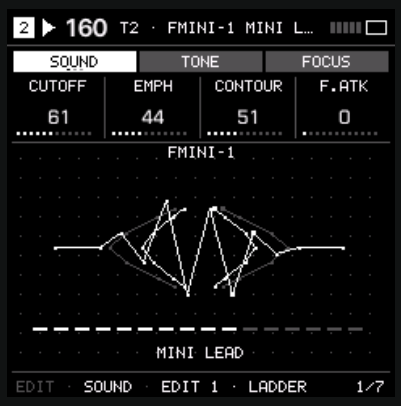
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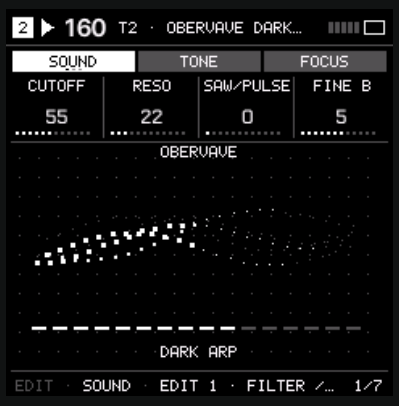

DRUM



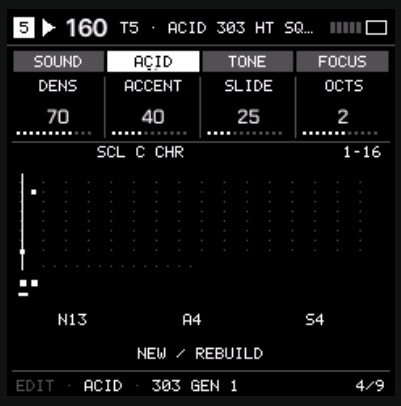

WAVETABLE



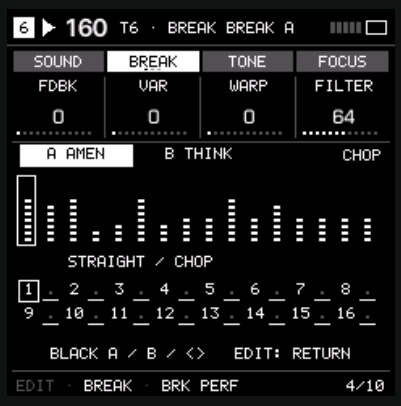

FMINI-1




OBERVAVE




ACID




BREAK

A groovebox with up to six assignable tracks.

Jazzy Rhythmer / Built on JIANT / Free and open source

# Find the button.
# Make the move.

Read the manual before your first session. Follow a chapter, try its controls, then return when you need the next move. This print edition contains the same chapters as the web guide, plus credits and useful links.

Up to six assignable tracks are available. Fresh settings activate four; Chapter 03 explains how to enable six and confirm the CPU notice.

Open the searchable web manual / Play in the browser


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# 01 / Start here

## Your first groove

FMINI-1 has 43 factory sounds; OberVave has 32. Analog, Wavetable, FM6, FM+STAT, SWAV-SAW and SID-6581 are still available. PHASE, LOFI and WHEEL are retired. Projects that used a retired engine load with Analog in its place; back up the original if you want to use it with the previous release.

Rhythmer is a hands-on groovebox firmware built on JIANT, made for exploring sound, building patterns and developing ideas through play. The firmware starts in **4-track mode**. T5 and T6 retain their sounds and notes while inactive. To enable them, choose **6 TRACK MODE** in GLO / SYSTEM or MENU / AUDIO, read the CPU notice and press **OCT+**; OCT- cancels. The default layout is T1 DRUM, T2 WAVETABLE, T3 FMINI-1, T4 OBERVAVE; T5 and T6 are EMPTY (unassigned) in the initial four-track setup. When you confirm six-track mode, an empty T5 receives Acid and an empty T6 receives Break. Existing assignments and sequences are kept; if Break already belongs to another track, T6 remains empty. Choose EMPTY in the engine list to clear an instrument assignment without deleting its sequence. Empty tracks allocate no voices or instrument DSP. Any track can take another eligible sound. Multiple Acid tracks are allowed; only one Break machine is available.

> **A fresh project is intentionally silent.**
> All six sequences start empty. Break selects A / Amen, with a two-bar length ready. Loading an existing saved project keeps its music. To hear a first groove, generate an arrangement, create an Acid line, or write a straight Break sequence below.

**01.** On HOME, use the **ALGORITHM knob to select a track**. Despite its printed name, it selects the track in Rhythmer.

**02.** Hold **HOME** and turn **SELECT** until the **GEN** group appears, then release HOME.

**03.** On GEN 1, use knob 1 for GENRE. Use knob 4 to select **ALL LOOP**, then press **OCT+**. This fills eligible active slots: four in four-track mode or six in six-track mode. Manually assigned Acid/Break tracks and inactive slots are kept.

**04.** Press **PLAY**. Choose ACID or BREAK on any active track to follow its tutorial. Enable six tracks only when you need the extra slots. Save a section when you like the result.

In the browser, open PLAY and click **Start Rhythmer** to enable audio. The web editor edits project data; use PLAY to hear that data through the firmware.

# 02 / Buttons & navigation

## Find a page without losing your place

Open **EDIT -> SOUND -> PRESETS** with EDIT or SELECT to pick an engine and browse just its sounds. Mark favorites or choose a sound type there. Away from that page the PRESETS encoder browses the full sound catalog.

| Control | What it does |
|---|---|
| ALGORITHM | Selects the active track. Four-track mode limits selection to T1-T4. |
| PRESETS | On HOME and other EDIT pages, browses sounds across eligible engines. In EDIT / SOUND / PRESETS, stays within the engine chosen with knob 2 and follows the LIST filter. In SEQ it opens PHRASES, and in GEN it selects the genre. |
| SELECT | Moves one page at a time in either direction and stops at each end. |
| Section buttons | Tap to enter a section. Tap again to advance one page, including pages under the same tab. The last page wraps to the first. |
| Knobs 1-4 | Edit the four labeled values currently on screen. Read those labels before turning. |
| HOME | Returns to the main instrument view. Hold HOME + turn SELECT to reach GEN. It does not reset the Break sound. |
| EDIT | Cycles the selected machine's editing pages. Acid and Break have dedicated tabs; other tracks do not show those tabs. |
| SEQ | Opens sequence editing. Hold on a Break track for the special Break authoring keyboard. Release to return to ordinary playing. |
| SCL / ARP | Root, scale and chord controls / arpeggiator pages. |
| ENV / LFO | Track envelopes and destinations / modulation slots and two LFOs. |
| FX | Track sends and effects. Hold for the shared performance-effect key map. This is a separate context from Break's BRK PERF page. |
| GLO | Live controls, mixer, global settings and SYSTEM, including four-/six-track mode. |
| SAVE | Sound storage, A-D sections, arrangement and project library. Tap SAVE again or turn SELECT to move between pages. |
| PLAY / REC | Transport / recording. REC behavior depends on whether you are on a step editor or live performance page; check the armed indicator. |

> **The same key can have different roles.**
> The Break performance map, held-SEQ authoring map and held-FX map are separate contexts. Follow the page and button-hold instructions in each tutorial; release a held button before playing normally.

# 03 / Four & six tracks

## Enable six tracks when you need them




6 TRACK MODE / CPU NOTICE / OCT+ CONFIRM / actual host-rendered firmware UI

Rhythmer starts in **4-track mode**: T1-T4 play and can be selected. T5 and T6 keep their sounds, notes and automation while inactive. Enabling six tracks makes those two parts available without generating a pattern. Existing machines and sequences are preserved. On confirmation, an empty T5 receives Acid and an empty T6 receives Break; if Break is already assigned elsewhere, T6 is kept empty.

### GLO -> SYSTEM

**01.** Press **GLO**, then use **SELECT** to reach the **SYSTEM** page. You can also tap GLO repeatedly to find its pages.

**02.** Turn **knob 1 / TRACKS** from **4 TRACK MODE** to **6 TRACK MODE**. The CPU notice shown here opens, while four tracks remain active.

**03.** Read the notice. **Busy six-track patterns may cause noise or glitches.** If this happens, mute tracks or reduce simultaneous voices and effects.

**04.** Press **OCT+** to confirm and enable T5-T6. Press **OCT-** to cancel and stay in four-track mode.

**05.** Use **ALGORITHM** to select an extra slot. After confirmation, empty T5/T6 receive the default Acid/Break machines as described above. Change an engine with PRESETS / ENG whenever needed. Your confirmed track-mode choice is saved.

### Alternative: MENU -> AUDIO

Hold **HOME** to open MENU. Use **SELECT** to reach the **AUDIO** page, then turn **knob 2 / TRACKS** to six tracks. The same notice requires **OCT+**; choosing the setting alone does not activate the extra tracks. MENU / SYSTEM is a different page used for CPU cores and clock.

> **Return to four tracks at any time.**
> Choose 4 TRACK MODE on GLO -> SYSTEM or MENU -> AUDIO. T5-T6 become inactive immediately, and their music is preserved for the next time you enable six tracks.

Track count is independent of the machines assigned to those tracks. Four complex parts can still exceed the CPU budget. For track-mute keys, polyphony and effects advice, see CPU load & troubleshooting -> .

# 04 / GEN & new genres

ALL uses the active track count: four slots in four-track mode, six in six-track mode. EMPTY slots may receive a new drum or synth. Manually assigned ACID and BREAK tracks are preserved wherever they are placed; use TARGET MIDI or BREAK to regenerate them explicitly. The existing SR_ACID sound recipe now selects native Hortator Acid for its mono bass part (for example Acid House and Breaks). Acid is not added to ordinary bass, melody or chord sound pools. Automatic sound selection still excludes BREAK, FM6, FM+STAT and SWAV-SAW. SID-6581 is a rare mono lead only, never a chord/pad assignment. Wavetable remains available with one automatic instance. No extra MD-only hit cap is added.

## Generate a song, or replace just one part




HOME / GEN / TARGET MIDI / actual host-rendered firmware UI

**01.** Hold HOME + turn SELECT to GEN; open **GEN 1**.

**02.** Choose GENRE with knob 1. Choose the scope with knob 4, labeled **TARGET**.

**03.** Set ENERGY, then use SELECT for the other GEN pages: role amounts, COMPLEX, SWING and HUMAN.

**04.** Press **OCT+**. Repeating with the same settings chooses another seed. **OCT-** goes back; it is not the Acid MUTATE action here.

**05.** To recover the previous generated music, hold **GLO and press G4** for the existing undo action. Save the result as a section.

| TARGET | Changed | Kept |
|---|---|---|
| ALL LOOP / ALL PARTS / ALL SONG | The whole-arrangement generator for eligible active slots (four or six). LOOP is the initial form. | Current Acid/Break parts are not automatically regenerated by ALL. |
| T1 MIDI ... T6 MIDI | Only that track's sequence, using the genre currently selected in GEN. | Tempo, sound/preset, scale, loop settings, effects, envelopes, both LFOs, automation, other tracks and active track count. |

| TARGET | Changed | Kept |
|---|---|---|
| BREAK | The existing Break machine's chop sequence, wherever it is assigned. | Audio banks A/B, selected source, sound settings and all other tracks. If no Break exists, NO BREAK TRACK appears and nothing is changed. |

### Ten new profiles / 59 styles in total

- BOUNCE HOUSE
- 90S HOUSE
- G-FUNK
- NOCTURNAL HH
- TRIP HOP
- LOFI HOUSE
- ABSTRACT IDM
- AMBIENT IDM
- ATMOS BREAKS
- DRUNKEN HH

Existing R&B, Neo Soul, Jazzy Chords, Boom Bap, Jungle, Liquid DnB, UK Garage and Future Bass profiles are also refined. Genre-specific sound choices guide full-arrangement GEN without locking every result to one synth. Wavetable remains eligible with an automatic instance allowance.

**ENERGY** changes activity, **COMPLEX** changes detail, and **HUMAN** scales humanized timing and dynamics. For a loose beat, try DRUNKEN HH with a moderate HUMAN value. For rolling space and pads, try ATMOS BREAKS. Start with lower complexity, then add detail.

> **MIDI-only means your sound stays yours.**
> Selecting T1-T6 MIDI does not replace an expensive manually selected synth with a cheaper one, activate a disabled track, or analyze every possible polymetric chord change. Pitched notes follow SCL; Break chops are audio commands and are not retuned to the scale.

# 05 / Drum kits & individual sounds

## Change one drum, keep the rest of the kit




DRUM / EDIT / SOUND / SELECT / actual host-rendered firmware UI

**01.** Select a DRUM track with ALGORITHM. Choose a starting kit with PRESETS.

**02.** Press EDIT repeatedly, or use SELECT, to reach **SOUND -> SELECT**. The page title is DRUM VOICE.

**03.** Knob 1 **LANE** selects the drum, such as BD, SD or CH. Knob 2 **BANK** filters ALL, KITS, MD TRX, MD EFM or LXR-X.

**04.** Knob 3 **SOUND** loads a real sound into only that lane. Tap its lane key to audition. Knob 4 **LEVEL** balances it.

**05.** Use SOUND / SOUND 2 / SOUND 3 for the selected sound's macros, then save the section/project.

There are **55 Hortator MD factory sounds** alongside the original drum sounds, alongside **12 LXR-X kits** made with Drum-X synthesis. The LXR-X kit voices can also be selected individually. MD LAB 1 and MD LAB 2 are the two experimental kits. Conventional kits use shorter, more general-purpose closed hats. MD is synthesized percussion; it is not a folder of Machinedrum recordings. Hortator MODERN and CLASSIC banks are not included.

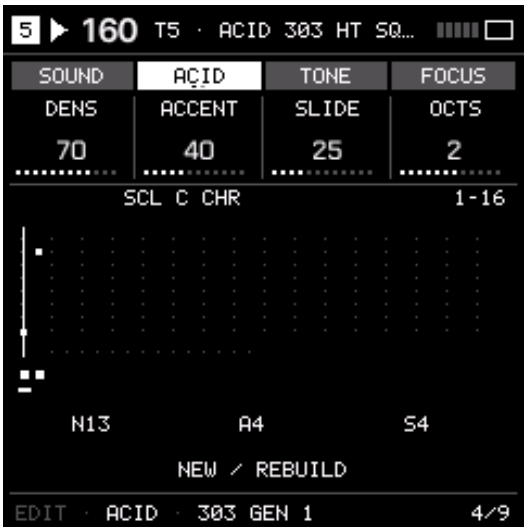
> **Drum kit sharing**
> The section's kit is shared by its Drum tracks. A lane sound change therefore affects Drum tracks using that kit in the same section; track tuning and effects remain independent. Save a separate section if you want another version of the kit.

MD uses the ordinary drum voice pool: up to eight physical lanes per Drum track, without a separate MD-only limit. Each new drum transient is protected for approximately 40 ms. After that, old drum tails participate in the normal shared-budget and overload management; long percussion tails are not exempt from CPU protection. Same-lane retriggers and intentional hi-hat choke still apply.

# 06 / Acid: create your first line

## A 303 line in your key

Fresh factory presets open the Acid filter at 80, except HT SCREAMER at 50. Loading an existing project keeps its saved cutoff.




ACID / EDIT / 303 GEN 1 / actual host-rendered firmware UI

**01.** Select any active track using ALGORITHM, then choose the **ACID** engine and **HT SQUELCH** preset. The generator edits that selected track; Acid is not tied to a track number.

**02.** Open **SCL**. Set ROOT and SCALE before generating. The default SCL is CHR (chromatic). Acid displays and uses this same ROOT/SCALE; choosing another scale changes the next NEW/MUTATE result.

**03.** Press EDIT repeatedly, or use SELECT, until the **ACID** tab and **303 GEN 1** appear.

**04.** Try **DENS 70, ACCENT 40, SLIDE 25, OCTS 2**. Press **OCT+** for NEW. It replaces this Acid track's line.

**05.** Press PLAY. Press **OCT-** on the Acid generator page to MUTATE the current line. NEW and MUTATE always follow the current SCL root/scale.

**06.** Open SEQ to edit individual notes, lengths and articulation. Save the section when you want to keep it.

| 303 GEN 1 | Meaning |
|---|---|
| DENS | How much of the sequence is occupied by notes. Reduce it for more space. |
| ACCENT | How often generated notes use the 303 accent articulation. |
| SLIDE | How often generated notes use slides between pitches. |
| OCTS | Generated pitch span: one, two or three octaves. |

| 303 GEN 2 | Meaning |
|---|---|
| ROOT / SCALE | The same key settings as SCL, kept linked rather than a second independent key. |

| 303 GEN 2 | Meaning |
|---|---|
| OCTAVE | The register used for the generated line. |
| MUT BARS | Automatic mutation every chosen number of global bars while playing; 0 disables it. This changes the sequence, so save a version before enabling it. |

### Shape the sound separately

SOUND provides cutoff, resonance, envelope amount and decay, then accent response, wave, slide and drive. Generator ACCENT/SLIDE control the pattern's articulation; sound ACCENT/SLIDE shape how that articulation is heard. Try lower cutoff with a medium envelope amount, then introduce resonance gradually.

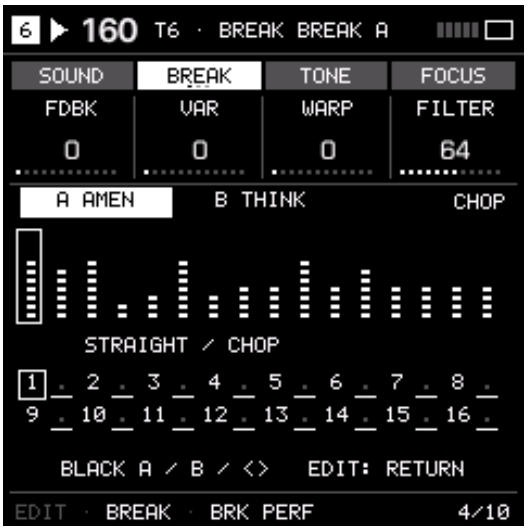
The Acid machine is a native Hortator-based monophonic synth with four presets: **HT SQUELCH, HT DEEPBASS, HT SCREAMER and HT SQUAREAC**. WAVE selects SAW or SQR. The X0X audio engine is removed; only its TB-3PO-derived MIDI generation and mutation remain. Other synth presets have distinct names.

> **Two kinds of generation**
> EDIT -> ACID -> 303 GEN is the dedicated X0X-derived NEW/MUTATE interface. HOME -> GEN -> the assigned track's TARGET MIDI is the genre-driven mono-bass sequence generator and keeps your chosen Acid sound. ALL LOOP/PARTS/SONG can also select this engine through the existing, explicitly named Acid sound recipe; it is excluded from ordinary bass, melody and chord pools. You can run more than one Acid track, each with its own sound and sequence.

If STOP SONG TO GENERATE appears, stop the arrangement/chain before generating. If you cannot find the ACID tab, confirm that this track is actually assigned an Acid preset.

# 07 / Break: first two-bar loop

## From silence to a straight break




BREAK / EDIT / BRK PERF / actual host-rendered firmware UI

**01.** Select any active track using ALGORITHM, then choose the **BREAK** engine. It starts with source A (Amen) and the track's existing sequence is preserved. Clear its sequence if you want to start empty. Break follows its assigned track; enable six-track mode only if you need T5 or T6.

**02.** Hold **SEQ**. The keyboard now shows Break authoring commands. Press the white key **F3 / STRAIGHT**, then release SEQ.

**03.** Press **PLAY**. STRAIGHT writes a 32-step, two-bar sequence: C1-C16 in source order, each followed by a TIE. It also sets the straight length, division, swing and gate needed for that reconstruction.

**04.** Open SEQ to see and edit those actual events. This is the same sequence that plays with all other tracks.

**05.** Press EDIT to reach **BREAK -> BRK PERF** for hands-on variations. Keep that page open for the performance key map.

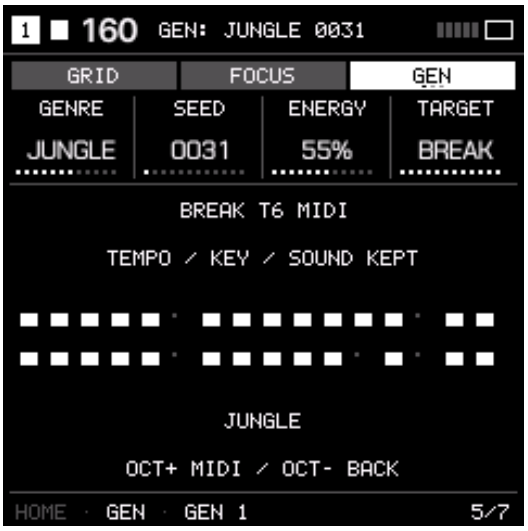
Each bank is a two-bar loop, divided into 16 evenly spaced chops. At 160 BPM the full loop is three seconds. A / Amen and B / Think are two global audio slots shared by all projects. B uses the corrected drums-only, level-matched Think edit.

> **A performance reset is not a sequence rewrite.**
> EDIT -> BREAK -> BRK RETURN, then OCT+ APPLY, returns the manipulator's variation/warp to its straight state. It does not replace the sequence with ordered chops or undo every track effect. To rewrite ordered two-bar playback, hold SEQ + F3 STRAIGHT. HOME remains the normal Home button.

Only one Break machine can be assigned. While it is assigned, its presets/models are hidden from other tracks. Change that owner to another sound before moving Break to a different track.

# 08 / Break: edit & generate chops

## The sequence is the playback




GEN / BREAK target / actual host-rendered firmware UI

| Event | What it means |
|---|---|
| C1-C16 | Trigger one of the 16 chops. These are chop labels in the editor, not the names of physical piano keys. |
| R1-R16 | Performance commands, such as repeats, pitch up/down and shrinking rolls. See the table in the performance section. |
| A / B | Select the global sample bank. A source-only event does not itself create a new chop. |
| RET | Return the manipulator toward its straight state. It is distinct from writing a STRAIGHT sequence. |
| NOTE / TIE / REST | Trigger the step / keep the held event going / release the sequence gate. A TIE needs an earlier event. Empty sequences remain silent. |

SEQ contains the shared pattern controls and a BREAK group with **BRK SET, BRK STEP and BRK PLAY**. SOURCE chooses LOOP or CHOP: CHOP follows explicit cut triggers; LOOP keeps source-position playback while sequence gating and performance commands still control what is heard. Use STRAIGHT for an unambiguous starting pattern.

### A simple edit in the web editor

**01.** Open the matching editor, then Sequencer. Select the track assigned to Break.

**02.** In the first NOTE step, enter **C1 A**. Let following steps TIE it. Put **C9** at the second bar for a different cut.

**03.** Near the end, try **C13 R9**: trigger a chop, then apply a 1/16 repeat. A later chop releases the prior roll. Use **B C1** to start a chop from bank B.

**04.** Use REST to leave a deliberate gap. Up to four commands fit in a step. Export SAVE FOR PLAY and import it into PLAY to audition browser edits.

### Genre-aware Break GEN

**01.** Keep your other parts running. Hold HOME + turn SELECT to GEN.

**02.** Choose a genre. Set TARGET to **BREAK** and press OCT+. GEN finds the machine on any track; it does not assign a second Break.

**03.** Try DRUNKEN HH for repeatable push/pull and dynamics; BOOM BAP for space; JUNGLE for active cuts and phrase-end answers; ATMOS BREAKS for a less aggressive rolling pattern.

**04.** Press OCT+ for another result. Your tempo, sample A/B, Break sound, loop settings and other tracks stay. Hold GLO + G4 to undo.

Hip-hop profiles avoid high-rate roll banks. At 120 BPM or above, hip-hop Break GEN uses a half-time event grid without changing master BPM or LEN. Jungle uses bounded 1/16 answers; higher complexity can add short 1/32/up/down responses. HUMAN scales the intentional timing offsets. Simultaneous events in one step share that step's timing.

> **Start with an aligned source.**
> GEN slices evenly; it does not detect which transient is a kick or remove pitched instruments. Use a clean, correctly aligned two-bar drum loop. A custom loop with different hit placement may need manual chop edits. SCL does not retune Break audio.

# 09 / Break: perform & record

## Play the repeat, up/down and cut controls

Open **EDIT -> BREAK -> BRK PERF**. Here the white keys are performance commands, the lower black keys trigger selected chops, and the upper black keys select A/B. These assignments are only for the BRK PERF page, with SEQ and FX released.

| Physical white key | Editor command | Performance |
|---|---|---|
| F3 | R1 | 1/4 repeat |
| G3 | R2 | Build |
| A3 | R3 | Stretch |
| B3 | R4 | Echo |
| C4 / D4 / E4 / F4 | R5 / R6 / R7 / R8 | 1/8 repeat / down / up / shrink |
| G4 / A4 / B4 / C5 | R9 / R10 / R11 / R12 | 1/16 repeat / down / up / shrink |
| D5 / E5 / F5 / G5 | R13 / R14 / R15 / R16 | 1/32 repeat / down / up / shrink |

**C#5 selects A, D#5 selects B, F#5 toggles A/B.** The lower black keys are cut triggers. Hold a white key for its effect and release it to release that held performance; the underlying sequence continues. Leaving BRK PERF also releases held live repeats.

**01.** Create a straight or generated sequence and start playback. Open BRK PERF.

**02.** Try C4 for a 1/8 repeat. Release it; then try E4 for the upward variation. Add short G4 repeats near the end of the phrase.

**03.** Switch A/B with the upper black keys. With recording disarmed, these are live changes.

**04.** For a saved performance, arm live recording with REC, confirm the recording indicator, then play the gestures while transport runs. Press REC again to leave recording.

**05.** Return to SEQ and inspect the written chop/repeat/A/B events. Correct unwanted events, save the section, and replay with recording off.

> **Edit shapes the sound; SEQ keeps the performance.**
> FBDK, VAR, WARP and the Amenity-style FILTER shape the manipulator. The ordinary track filter, ENV and both LFOs also affect Break. Knob changes are not automatically a saved sequence of changes: use the recording/automation controls when you want motion. The held-FX punch-in map is a separate shared effect layer.

# 10 / Break: variations & automation

## Hold SEQ for a different keyboard

Select the Break track, then hold SEQ. These keys author the sequence and are not recorded as played notes. Releasing SEQ returns normal playing.

| Held-SEQ white key | Action |
|---|---|
| F3 | STRAIGHT: replace with the ordered 32-step two-bar loop. |
| G3 | MUTATE: vary off-beat chops while retaining quarter-note anchors. |
| A3 | RANDOM: a new cut order, keeping an opening downbeat. AMOUNT controls added activity. |
| B3 | FILL: author a repeated/rolled phrase tail. |
| C4 | SHUFFLE: reorder complete beats, preserving each beat's internal events. |
| D4 | REVERSE: reverse event order, not the sample audio. |
| E4 / F4 | SHIFT the sequence left/right by one step, with its recorded motion. |
| G4 | A/B SEQ: bank A at the beginning, B at the midpoint. |
| A4 / B4 | Select loaded bank A / B. |
| C5 | CLEAR the selected sequence inside LEN. |
| D5 | REVERT using the available mutation anchor. |
| E5 | CLR MOTION: clear this track's recorded automation and locks. |
| G5 | Existing CLR STEP command. |

### Have a new variation every four bars

**01.** Make a pattern you like and save a section. Hold SEQ on the Break track.

**02.** Set knob 2 **AMOUNT** to a modest value. Set knob 3 **EVERY** to 4 bars.

**03.** Set knob 4 **AUTO ACT** to MUTATE, FILL or RANDOM. Knob 1 controls LEN.

**04.** Use the black-key ORBIT/DRIFT choice: **ORBIT** varies the captured starting anchor; **DRIFT** keeps evolving the latest pattern. Release SEQ and play.

**05.** Set EVERY to OFF to stop scheduled generation. FREEZE pauses automatic edits. Save the project to retain the interval/action/mode and authored events.

The black keys offer OFF, 2/4/8/16-bar shortcuts, the three actions, and ORBIT/DRIFT. Enabling an interval on an empty pattern can create a straight starting pattern. A generated FILL remains part of the sequence and repeats until replaced; it is not a one-shot momentary fill. Clearing motion does not disable generation: use OFF for that.

# 11 / Your own Break samples

## Your own Break samples

**The easiest preparation: 160 BPM, 4/4, two bars - exactly 3.000 seconds.** Export a clean WAV or FLAC with the first downbeat at the very start. Keep the original file.

### Prepare in your DAW

**01.** Set your DAW to **160 BPM and 4/4**. If your loop was recorded at another tempo, use your DAW's pitch-preserving stretch before export to retain its pitch.

**02.** Align the first beat and select **exactly two bars / eight quarter-note beats**. Export only those three seconds, with no added lead-in or extra tail.

**03.** Use clean, unclipped audio. Mono is simplest; stereo is accepted but summed to mono. Check the mono version for phase cancellation.

### Convert, compare and send

**01.** Open **EDITOR -> SAMPLES** and choose shared bank **A or B**. Choose your audio or a previously converted **.slot** bank.

**02.** Enter the **original source BPM** and set **START / SECONDS** to its downbeat. For the recommended DAW export, enter **160**. A longer file can be cropped here. Any suggested BPM assumes the whole file is two bars; it is **not automatic tempo detection**.

**03.** Select **CONVERT TWO BARS**. Listen to **ORIGINAL TWO-BAR CROP** and **DEVICE PREVIEW / 160 BPM**. Check the beat, loop boundary, pitch and loudness.

**04.** **Download the converted .slot bank**, retain the original, and confirm the preview and audio rights.

**05.** **Browser Workspace** saves browser audio only. To replace device audio, select **USB FM-1**, connect the matching firmware, review A/B replacement and confirm the write. Keep power/USB connected until **COMPLETE / device validated**. Retry the whole slot if interrupted.

**06.** On the instrument, choose A or B on a Break track. To start ordered two-bar playback, hold **SEQ + F3 / STRAIGHT** to write its sequence, then press PLAY. STRAIGHT replaces that track's sequence; save any pattern you want to keep first.

## Limits and sound changes

| Item | Current support |
|---|---|
| Input | 24 MiB or less, 0.5-60 seconds, with two complete bars available in the selected region. WAV/FLAC recommended; other audio depends on browser decoding. Up to eight decoded channels and 12 million decoded samples; a short mono/stereo loop is best. |
| Source tempo | 40-320 BPM, entered manually. |
| Saved format | 160 BPM, two bars, 3.000 seconds; mono, 16 kHz, packed 12-bit. A/B are 80 KiB each. Stereo becomes mono and very high frequencies are reduced. |
| Pitch | Classic repitch changes pitch when the duration changes. No pitch-preserving time-stretch in the converter; prepare at 160 BPM in your DAW to retain pitch. |
| Chops | 16 equal divisions across two bars. No transient detection or automatic hit alignment. Edge fades reduce clicks but do not repair timing, source clipping or wrong BPM. |

## A/B are shared - protect your originals

**Replacing A changes A in every project and every Break track using it; replacing B changes B everywhere.** Bank audio is shared rather than stored inside an individual track or project.

- **The device's current sample audio cannot be downloaded through this USB protocol.** Keep the original and converted .slot files before replacement.
- Musical archives include projects, sounds and settings, **not sample audio**.
- In Browser Workspace, **SAVE FOR PLAY / ALL PROJECTS + BOTH SAMPLES** includes the browser's projects and audio for Web Play. It does not read the samples currently on a physical FM-1.
- **Firmware installation replaces A/B with the package's factory loops.** Re-upload your own retained banks afterward.

Use audio you have permission to use. Conversion and real-device transfer are separate operations.

PREPARE IN THE BROWSER -> OPEN USB SAMPLE EDITOR ->

# 12 / Notes, steps & arrangement

## Keep the parts editable

In **SEQ -> GEN**, pick Euclid, Mutate, Turing, Cellular or Grids. On drums choose a lane; on synths reuse notes, or choose root, scale or chords; on Break generate chops. Turn SELECT for **GEN MAP** and **GEN OPTIONS**. **OCT+** writes the result to the current sequence and **OCT-** undoes it. Choose a sound first on an empty track.

SEQ opens PATTERN, TRACK, BAR, STEP, GEN and AUTO groups; Break also has its own group. SELECT moves through pages. Read the bottom tab/title and the four parameter labels to see the current editing context.

- **Synth/Acid:** use the piano roll and NOTE/STEP pages for pitch, velocity, timing and articulation. The viewport follows the note register after track/bar changes and edits.
- **Drum:** the grid shows the selected lane; white keys toggle steps and lane selection changes which drum you are editing.
- **NOTE / TIE / REST:** a trigger, continuation, or gap. They are musically different; a TIE at the start needs an earlier held note/event.
- **LEN / DIV / OFFSET / GATE:** define each track's loop and timing. A 32-step loop at the normal sixteenth-note division is two bars in 4/4. Other divisions change its duration.
- **SCL / CHORD / ARP:** choose key, chord voicing/strum and arpeggiation for pitched tracks. Break commands do not become scale notes.
- **Automation:** use the recorded motion/step-lock controls and AUTO pages. Move a sequence with its tools when you want its motion to move with it.

A-D are section snapshots within a project. Use SAVE's SECTIONS and ARRANGE pages to keep variations and build a section sequence. Switching to four-track mode silences/disables the last two tracks without deleting their stored parts.

# 13 / Envelopes, LFOs & FX

## Give a pattern movement

To connect a class-compliant USB MIDI controller, stop playback, unplug the computer, then enable **MENU -> USB -> USB HOST** and confirm. Connect your controller using a USB host adapter. Return to Device mode before using the browser editor or installer. Host mode is for MIDI; the USB-audio duck input uses Device mode.

**01.** Select the track and open **ENV**. Start with its amplitude envelope, then use the destination pages for additional modulation. A long release can keep more voices active.

**02.** Open **LFO -> MOD**. Pick one of the four slots, choose its source (including LFO 1 or LFO 2), destination and amount.

**03.** Press LFO again to move through the **MOD / LFO 1 / LFO 2 / MSEQ** tabs. Each LFO has **RATE, WAVE, MODE and FADE**; turn SELECT within that tab for its **PHASE** and **DEST** pages. Turn SELECT within each tab to find its dedicated destinations.

**04.** For a first Break test, choose a filter destination and a small amount. Play a straight sequence, then compare with modulation disabled. The track filter and Amenity-style FILTER are separate controls.

**05.** Open FX for sends and effects, including distortion, phaser, delay and reverb. Hold FX for the on-screen shared performance key map. Release the held key/button when finished.

### Two independent LFOs on every track

T1-T6 each have their own LFO 1 and LFO 2: changing T2's rate does not change T3's. In **MOD**, knob 1 selects slot 1-4, knob 2 selects **LFO 1** or **LFO 2**, knob 3 selects the destination, and knob 4 sets a signed amount. Both sources can run together. A zero amount or OFF destination is silent modulation, even while the waveform moves.

| Setting | What to expect |
|---|---|
| RATE | Choose a tempo division or a free rate. Tempo divisions follow the playing transport grid. |
| WAVE | Independent sine, triangle, saw, square or sample-and-hold shape for each LFO. |
| MODE / PHASE | TRIG restarts a fresh phrase from its start phase; FREE runs without that note restart. Tempo-synced rates stay aligned to the transport. PHASE is dimmed in FREE. |
| FADE | How slowly the modulation reaches full depth. A long fade can make a short sound seem unaffected. |
| LFO 1 DEST / LFO 2 DEST | Each source has its own PITCH, FILTER, SHAPE and AMP depths. These do not consume or replace the four MOD slots. |
| Save | Sound presets and A-D project sections keep both LFO settings and source assignments. Save a section before replacing it. |

Try T2 with MOD slot 1 = LFO 1 -> PAN at a small amount, and slot 2 = LFO 2 -> FILTER at a different rate. For Break, use a straight chop sequence and a cutoff below its fully open setting so the movement is audible. In the web editor, open Sound -> LFO 1 DEST / LFO 2 DEST for the four direct depths. MOD adds other destinations; its SRC order is OFF -> LFO 1 -> LFO 2 -> ENV and the remaining sources.

Track filters, ENV and both LFOs affect Break as well as the ordinary engines. If a filter seems inactive, confirm the selected track, filter type/cutoff, audible sequence gate and modulation source/amount. Sound shaping and sequence generation remain separate operations.

Sidechain and Kick Link ->

# 13A / Sidechain & Kick Link

## Choose what makes the mix duck

Open **FX -> MASTER -> DUCK** with SELECT, then choose **SRC**.

| Source | Trigger |
|---|---|
| AUTO | A recognized kick in Rhythmer or a Kick Link message from another FM-1. Factory kick sounds still trigger after a lane swap. The MD bass-drum family is identified by its model. |
| T1-T6 | A selected track's audio above THR. For a drum kit, LANE can follow ALL or a lane such as BD. The trigger track stays at its own level. |
| USB | Incoming USB audio above THR. In Device mode, set MENU -> USB -> USB AUDIO to IN+OUT or STEMS+IN and send isolated audio from a host. Mute the last active track if the feed is for triggering only. |
| MIDI | Matching Note On. Choose CH 1-16 or ANY, and NOTE (36 by default). Any positive velocity triggers the same envelope. The matching Note On is consumed as a trigger. |

In **DUCK ENV**, **ATK** controls how quickly the gain falls, **REL** controls the return, and **AMT** controls depth. **MASTER -> DUCK** and AMT edit one value. Save the section to keep the settings.

### Let one FM-1 trigger the other

**01.** Connect two FM-1s with a host adapter and a data cable. Set **MENU -> USB -> USB HOST** on one unit and leave the other in Device mode.

**02.** On the unit playing the kick, set **MENU -> MIDI -> MIDI OUT** to **KICK LINK**. On the other unit, set **DUCK -> SRC = AUTO** and raise **DUCK ENV -> AMT**.

**03.** Play the kick on the sender. If the receiver plays a qualifying local kick, its own kick takes priority for two beats.

Both RHYTHMER and JAZZY can send or receive. Read the JAZZY sidechain guide

For tempo and transport sync, see Sync two FM-1s over USB.

# 13B / USB tempo sync

## Sync two FM-1s over USB

Example: RHYTHMER sets the tempo and JAZZY follows.

**01.** Stop both FM-1s. On JAZZY, set **MENU -> USB -> USB HOST** to ON and confirm with **OCT+**. Leave RHYTHMER in USB Device mode.

**02.** Connect the FM-1s with a USB data cable through an externally powered USB host hub or adapter on the JAZZY side. The FM-1 host port does not supply USB bus power. Wait for **USB MIDI CONNECTED** on JAZZY.

**03.** On RHYTHMER, set **GLO -> GLOBAL -> CLOCK** to **INT** and **MENU -> MIDI -> MIDI OUT** to **CLOCK**. Set the tempo on RHYTHMER.

**04.** On JAZZY, set **GLO -> GLOBAL -> CLOCK** to **USB** and **MENU -> MIDI -> MIDI OUT** to **OFF**.

**05.** Press **PLAY** on RHYTHMER. JAZZY follows its tempo and start/stop commands. To check timing, try 120 BPM and listen to both patterns for several bars.

USB Host is the connection role. In this example JAZZY hosts the cable while RHYTHMER leads the tempo. Enable Host again after restarting JAZZY.

On current builds, CLOCK and KICK LINK are separate MIDI OUT modes. Use CLOCK on RHYTHMER for this example.

JAZZY tempo sync guide

# 14 / Projects, sections & backups

## Save the music in more than one place

SAVE tabs are **SONG -> PROJECT -> SOUND**. To empty a saved section or project, stop playback and open **SAVE -> PROJECT -> CLEAR**. Select the project and section, choose the matching clear action and confirm with OCT+. Export a backup before clearing work you may need again.

| Save type | Contains | Use it for |
|---|---|---|
| Device project / A-D | Four projects with section music, sounds and settings. | Keep a groove on the instrument; save a section before loading another. |
| Browser workspace | Current edits and four separate browser projects with A-D sections. | Work without a device. Browser storage can be cleared and is not a downloaded backup. |
| Musical archive | All four projects, sections, sounds and settings; no Break audio. | Back up or restore matching Rhythmer music through the editor. |
| SAVE FOR PLAY / .fm1save | Emulator firmware/session data, all projects and both sample banks. | Move a browser workspace into PLAY with its audio. It is not a file for the stock firmware updater. |
| Original audio / .slot | Your original sample or a converted A/B bank. | Preserve custom Break audio independently of musical archives. |

### On the instrument

Press SAVE. Hold SAVE + SELECT to reach SECTIONS, ARRANGE or PROJECTS. Follow the displayed save/load action and OCT+ confirmation. Save the current section before recalling another; use the on-screen project library for the four project slots. Saving a sound preset and saving project music are separate actions.

### In the web editor

**01.** Use **Browser Workspace** for local editing or explicitly select **USB FM-1** to work with the device. They are different destinations.

**02.** In the project manager, choose a section A-D and click **SAVE CURRENT MUSIC**. Confirm replacement if that section is already used.

**03.** Choose **OPEN PROJECT** for another project. The Save & Open dialog saves outgoing music to the selected section before switching. Cancel if you are unsure. A failed save does not complete the switch.

**04.** Use the musical archive export, then click its prepared **DOWNLOAD** link and check that the file is on your computer. Preparing a download is not the same as saving the file.

**05.** If you also need audio, use SAVE FOR PLAY and keep your sample originals. Before firmware changes, keep both musical and sample backups outside browser storage.

Browser data stays at that browser and site origin. The local test site and the public GitHub Pages site have different storage. Export from one and import into the other deliberately. Loading a new firmware hash in PLAY does not erase older saved sessions; choose the matching import rather than assuming an old session became the new version.

# 15 / CPU & troubleshooting

## CPU load, warnings & keeping the groove

Six tracks are available, but the cost depends on what they play. Dense chords, overlapping release tails, unison layers, demanding engines and complex effects can exceed the FM-1's processing capacity, even with both cores working. Five busy tracks can cost more than six simple ones. A combination becoming too heavy does not identify Acid, Break or any single machine as the cause.

### Before enabling six tracks

Follow the four-/six-track setup guide and see the confirmation screen ->

Busy six-track patterns may cause noise or glitches. If this happens, mute tracks or reduce simultaneous voices and effects. The mode changes only after **OCT+** confirms the notice. Returning to four tracks keeps the music on T5 and T6 for later.

### The on-screen CPU warning

> **CPU HIGH: REDUCE INSTRUMENTS**
> Rhythmer briefly shows this message during sustained high load or recent audio deadline misses. It is rate-limited so it does not interrupt every transient, and existing dialogs or held-button maps take priority. A missing warning is not a guarantee of spare capacity.

The CPU meter measures the time needed to deliver the next audio buffer. Near 100%, there is little room for the next chord or effect change; peaks can exceed the deadline even when the average looks lower. Check **MENU -> ABOUT -> OCT+ / PROFILE** to compare track and effect costs while the same passage plays.

### Reduce load without rebuilding your song

**01.** Keep the same passage playing. Hold **FX** to see the key map; the first six black keys toggle track mutes for T1-T6. Mute one track, release FX and listen. Press that track-mute key again to restore it.

**02.** If muting one part restores stable playback, simplify that part: use fewer simultaneous notes, shorter releases or less unison, or try a lighter sound. Muting a different part may also free enough time; the combined load matters.

**03.** Reduce demanding shared effects, long feedback or layered processing. Effect tails may remain briefly after a track is muted. Lowering the track volume alone usually does not remove the work of rendering its voices.

**04.** Bring tracks back one at a time and leave headroom for accents, chord changes and live FX. Use four-track mode if the arrangement does not need six tracks.

Ordinary parts have an engine-dependent ceiling of up to eight voices per track and twelve shared on two cores, subject to mode and CPU protection. Polyphony includes held notes, release tails and unison voices. DRUM hits, including MD, have approximately 40 ms of transient protection from shared-budget stealing and overload shedding. After the attack, their old tails can fade under the ordinary voice/CPU budget. MD uses the same eight physical lanes per drum track, without a separate MD-only 2/3/4-hit ceiling. Same-lane retriggers and intentional hi-hat choke still apply. Protected drums still consume CPU; dense MD arrangements can overload the device. Break does not take ordinary synth-note voices, but its sample manipulation, filter and modulation still use CPU. These are ceilings, not a promise that every combination can meet the deadline.

Automatic protection is a fallback, not extra CPU capacity. It may thin notes or produce brief gaps under overload. Follow the exact build's test notes: an experimental protection build is not proof that timing or audio is resolved on hardware. If the groove slows, timing wavers or high-pitched artifacts remain, mute/simplify a part and report the

pattern and build rather than relying on the protection to keep a dense arrangement intact.

| Symptom | Try this |
|---|---|
| CPU warning, crackle or high peaks | Use the track mutes to compare the same passage, then lower chord density/voice count, shorten releases or simplify shared FX. Turning down volume alone is not a CPU fix. Leave headroom rather than relying on overload protection. |
| New project is silent | The initial sequences are empty and T5/T6 are unassigned. Use ALL LOOP, or select ACID/BREAK on an active track before Acid NEW or Break STRAIGHT. Confirm PLAY, track level, mute state and four-/six-track mode. |
| Break is silent | Confirm the Break owner is active, A/B is loaded, and a NOTE/chop starts the sequence. A source-only A/B command or leading TIE does not create a new chop. Try held SEQ + F3 STRAIGHT. |
| NO BREAK TRACK in GEN | Assign one Break machine first, or select its existing owner. GEN does not create another automatically. |
| Break loops badly after upload | Check original BPM, eight-beat crop and downbeat alignment. Fades reduce clicks; they cannot repair wrong musical timing. |
| A generated Acid line is in an unexpected key | Set SCL explicitly before NEW/MUTATE. GEN 2 displays the same ROOT/SCALE as SCL. CHR stays chromatic; there is no separate Acid default. Check the register/OCTS too. |
| Custom sample disappeared after installation | Firmware installation restores the package's factory A/B audio. Re-upload from your retained original or .slot bank. |
| Editor or installer cannot connect | Use desktop Chrome/Edge with Web MIDI, one FM-1 and a data cable. Close other MIDI apps/installers; do not open the USB editor during a transfer. |
| Browser emulator stutters | Pause other emulator tabs and heavy browser work. Browser speed is not a measurement of physical FM-1 CPU performance. |

For an audio report, include release version/hash, track engines, chord density, effects, CPU average/peak and what ABOUT / PROFILE shows. A minimal saved pattern is more useful than only a screenshot of a high percentage. Keep private device dumps and tokens out of public issues.

# 16 / Installation & recovery

## Install, wait and verify

**Manual checked against public firmware build 20261112.1 and installer 20261116.1.** Firmware sound and controls are unchanged.

**01.** Use a current desktop Chrome or Edge, a USB data cable and stable power. Stop playback, use **USB Device mode**, and connect only the intended FM-1. Close other installers, USB editors, DAWs and MIDI tools. Grant the browser MIDI/SysEx permission.

**02.** Keep the automatic musical archive outside this browser. It includes projects, sounds and settings, **not the audio currently in Break A/B**. Keep your original audio and converted .slot banks separately.

**03.** Official **V15 and V16** are supported. V15 recovery is included; a V16 unit needs its unmodified, matching official V16 FM-1.fwsc selected and verified. Do not downgrade to V15 as a workaround. **RHYTHMER and JAZZY can update directly to either companion** after backup and review; other custom firmware must follow its own documented return-to-official route.

**04.** Review the source device, target product, hash and backup notices. Installation includes **A / Amen and B / Think** and replaces any custom audio in those banks. Keep this page visible and the computer awake; do not disconnect USB or power during writing.

**05.** Wait through loader staging, USB reconnection, transfer, firmware restart and final checks. The loader is a different USB MIDI identity; its first connection may need an OS driver. **100% is shown only after the required identity and bank checks**, not merely because the last data packet was served. Test sound, save/load and controls on the FM-1 afterward.

### If progress stops

- **Package download / verification:** no device write has begun. A network or missing-file error must be fixed before Start is enabled.
- **Backup:** keep playback stopped. Wait for the CRC-checked archive and save it before the final review. A timeout here is not a firmware write failure.
- **Stage update loader:** sparse header reads can leave the percentage still while the request counter changes. If it stops, retain the report; an incompatible boot-area comparison or rejection by the currently installed firmware may be responsible. Do not force a different recovery image.
- **Reconnect update loader / firmware:** keep power stable and allow the MIDI ports to return. The installer refreshes the port list and waits through transient duplicate endpoints. Do not open another installer while it waits.
- **Transfer firmware:** served byte counts are not flash readback. Repeated requests without progress, missing requests and disconnection now end with a visible error instead of waiting indefinitely. Inspect the device before any retry.
- **Final identity or bank check:** the firmware may already be installed. Check its screen and the diagnostic report before trying recovery or writing again.

After an error, save **DOWNLOAD REPORT** and note the current FM-1 screen, installer stage, browser and OS. Use Disconnect and inspect again. Resume only the **same reviewed package** when a matching update loader and saved checkpoint are recognized. If the device exposes no responding USB MIDI loader, this browser cannot provide hardware recovery. Do not deliberately interrupt a write to test it.

A separate bootloader tool successfully installing the same file can indicate a problem in browser MIDI handling or the running firmware-to-loader transition. It does not identify the exact failed stage by itself. Keep the original error/report for diagnosis.

OPEN INSTALLER -> / OFFICIAL RECOVERY ->

# Credits & useful links

## Built on shared work

Rhythmer is developed by Jazzy Rhythmer on JIANT's sequencing and system foundation. Felucca provides the platform; Hortator provides native Acid and MD percussion; X0X / TB-3PO contributes MIDI generation; Amenity contributes Break manipulation; Garden-FM and MONO2K contribute synthesis models; Felucca and OberVave contribute the two new synths; Elixir contributes SEQ generation and inspires the LXR-X kits. Original authors, source links and component licenses remain credited in the repository.

## Code and recordings are different

The source is GPL-3.0-only with retained component notices. Amen / The Winstons and Think / Lyn Collins are third-party recordings, separate from the code license. The owner directs their inclusion with credits; recording/composition redistribution permission is not documented. Credits or installation acknowledgements do not grant a sample license. Replace either audio bank with your own material or obtain rights appropriate to your use.

## Independent community firmware

Rhythmer is not affiliated with M-VAVE or Elektron. Product names belong to their owners. Follow the installer's backup, power, risk and audio-rights notices. This manual describes the current controls; it does not establish physical installation or recovery results for a package.

**Project / manual**
https://jazzyrhythmer.github.io/rhythmer/#guide

**Install / official recovery**
https://jazzyrhythmer.github.io/rhythmer/installer/

**Web editor**
https://jazzyrhythmer.github.io/rhythmer/editor/

**Source / licenses**
https://github.com/jazzyrhythmer/rhythmer

**Third-party credits**
https://github.com/jazzyrhythmer/rhythmer/blob/main/docs/THIRD_PARTY.md

**Creator**
https://jazzyrhythmer.github.io/