



MULTIBAND TRANSIENT SHAPER

User Manual

Version 1.0.0 · Audio Unit and VST3 · macOS and Windows



Made in Brazil by Kyantech Labs

Free and open source

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Everything in this manual was produced from the plugin itself. The screenshots come straight out of the interface and every curve is a measurement of the running DSP, not a drawing.

What a transient shaper does

A compressor asks how loud something is and turns it down when it crosses a line. A transient shaper asks a different question: is this sound arriving, or is it leaving? It then treats the two halves separately.

Pakku decides by running two envelope followers side by side. One reacts almost instantly, the other lags behind. When a hit lands, the fast one shoots up while the slow one is still climbing, and the gap between them is the attack. As the sound decays the gap closes and reverses, and that difference is the tail. Gain is applied from those two differences, so the plugin never needs to know how loud the material is in absolute terms.

That is why a transient shaper works the same on a quiet room mic and a slammed snare: it responds to shape, not to level. It is also why there is no ratio and no makeup gain to chase.

What that buys you

- Pull a kick forward in a mix without raising its level.
- Take room and bleed out of drums by shortening the tail, no gate, no chatter.
- Add sustain to a guitar or a synth that decays too fast.
- Soften a harsh pick or stick attack while leaving the body untouched.

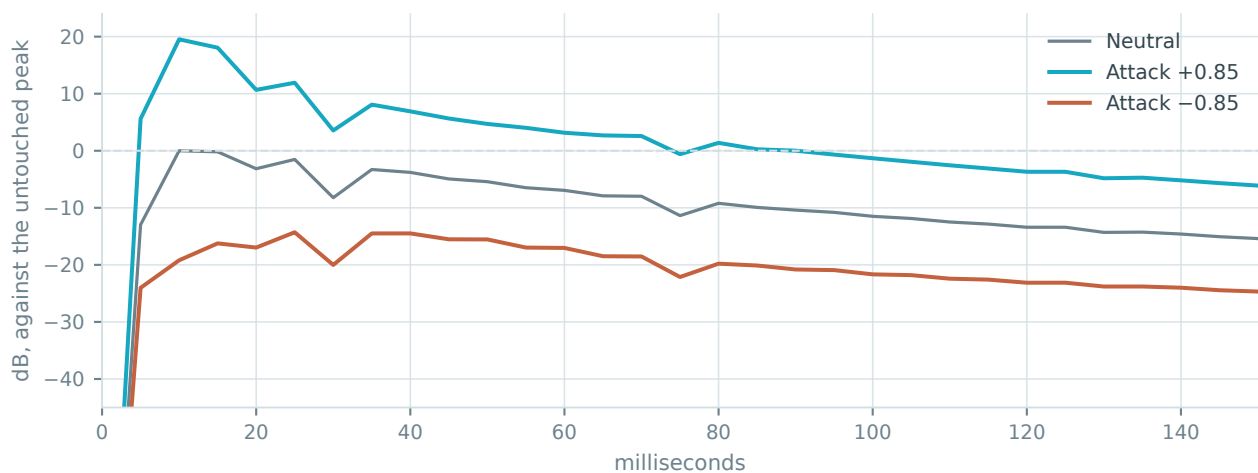
Level-independent does not mean it ignores level entirely. The Threshold control sets a floor below which nothing is shaped, so noise and bleed between hits are left alone.

Attack and Length

Two faders flank the display. TRANSIENTS on the left works on the arrival of a sound; LENGTH on the right works on what happens after. Both are centred at zero and go in either direction.

Transients

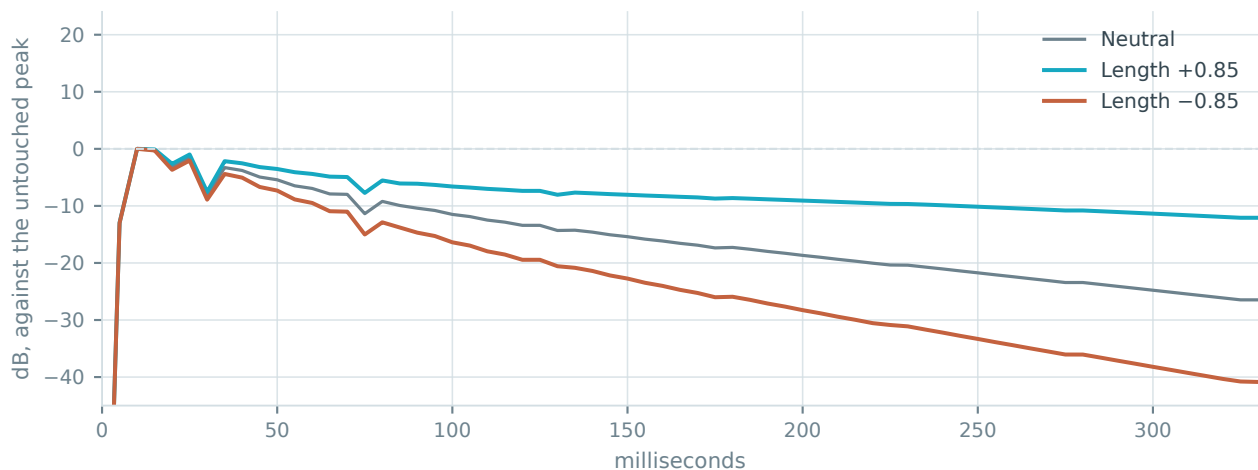
Positive values sharpen the leading edge — the stick, the pluck, the consonant. Negative values round it off. The figure below is a single drum hit rendered through Pakku three times: untouched, with Attack pushed up, and with Attack pulled down.



Measured through the plugin. The lift is steepest at the onset and eases off over the following tens of milliseconds, as the slow detector catches up with the fast one.

Length

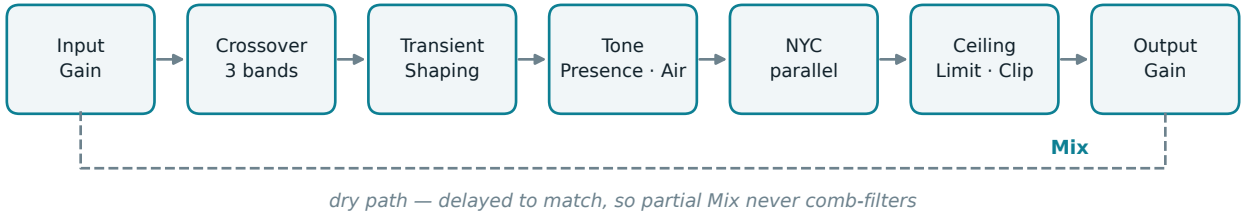
Positive values hold the tail open, which pulls up room, sustain and decay. Negative values close it early, which is the cleanest way to dry out a drum kit or tighten a bass note.



Same hit over a longer window. The first milliseconds are identical in all three; the curves separate as the tail runs on, which is exactly where Length works.

Signal flow

Knowing the order matters, because it explains why some controls interact and others do not.



STAGE	WHAT IT DOES
Crossover	Linkwitz-Riley, 4th order, 24 dB per octave. Each band is 6 dB down at the crossover point and the three sum back flat.
Transient shaping	Runs per band in multiband mode, or once across the full range in single band mode.
Tone	Presence and Air, applied after shaping so they colour the result rather than feeding the detectors.
NYC	Parallel compression blended in, New York style.
Ceiling	The last thing in the chain, so nothing after it can push the signal back over.
Dry path	Delayed to match the wet path exactly. Without that, any Mix below 100% would comb-filter.

Reported latency is 239 samples at 48 kHz — 5 ms of lookahead the ceiling needs to catch a peak before it happens. Your host compensates for this automatically on playback.

Install on macOS

Requires macOS 11 Big Sur or later. The build is universal, so it runs natively on both Apple Silicon and Intel.

- 1 Download Pakku-1.0.0.pkg from the releases page.
- 2 Double-click the package. If macOS says it cannot verify the developer, right-click the file instead, choose Open, then confirm with Open in the dialog. You only need to do this once.
- 3 On the second screen, tick the formats you want. Audio Unit covers Logic Pro, GarageBand and Live; VST3 covers Cubase, Reaper, Studio One, Bitwig and most others. Installing both is fine.
- 4 Enter your password when asked — the plug-in folders belong to the system, so the installer needs permission to write there.
- 5 Restart your host, or ask it to rescan plug-ins. Most only look on startup.

Where things land

ITEM	PATH
Audio Unit	/Library/Audio/Plug-Ins/Components/Pakku.component
VST3	/Library/Audio/Plug-Ins/VST3/Pakku.vst3
Presets	~/Library/Audio/Presets/Kyantech Labs/Pakku/

To uninstall, delete the two bundles above. Your presets live elsewhere and are left alone.

Install on Windows

Requires 64-bit Windows 10 or later. Windows hosts use VST3; Audio Unit is a macOS-only format and is not part of this installer.

- 1 Download Pakku-1.0.0-Setup.exe from the releases page.
- 2 Run it. If SmartScreen puts up a blue panel, click More info, then Run anyway. This appears because the installer is not code signed yet, not because anything is wrong with it.
- 3 Accept the elevation prompt. The shared VST3 folder is owned by the system, so the installer needs administrator rights.
- 4 Restart your host, or rescan plug-ins.

Where things land

ITEM	PATH
VST3	C:\Program Files\Common Files\VST3\Pakku.vst3
Presets	%APPDATA%\Kyantech Labs\Pakku

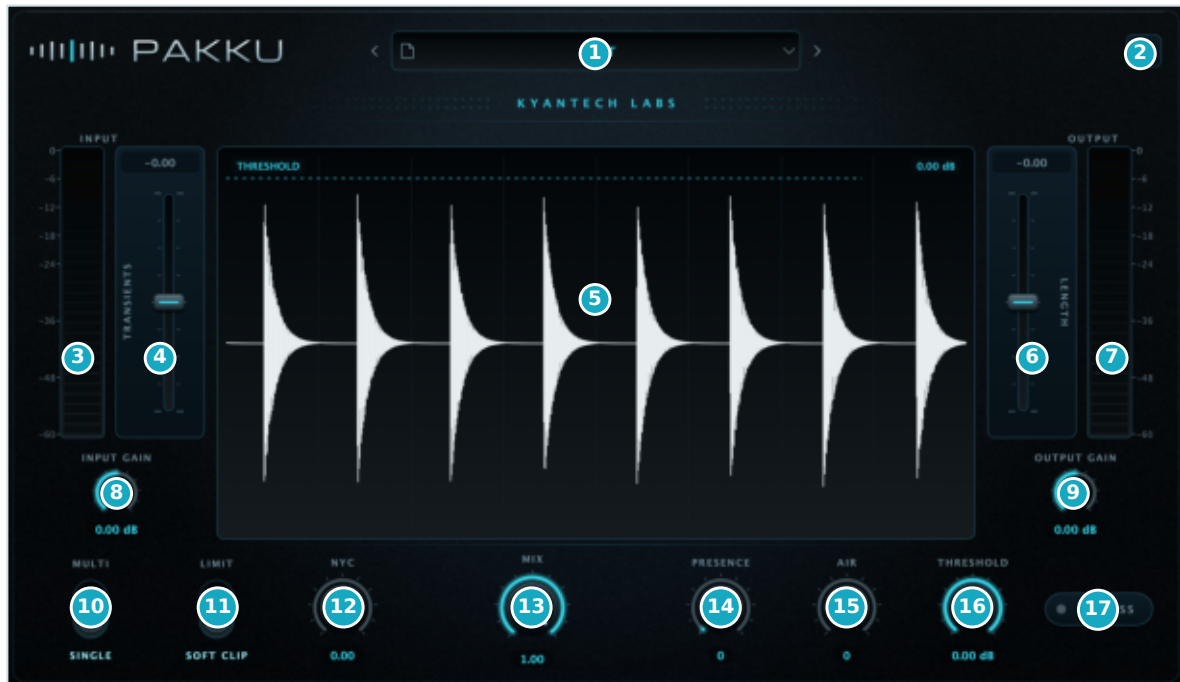
Uninstalling

Pakku registers a normal uninstaller. Use Settings → Apps, or run it from the folder above. Your presets are kept.

Some hosts keep their own scan cache. If Pakku still does not appear after a restart, find the plug-in manager in your host and force a full rescan rather than an incremental one.

The interface

Everything Pakku does is on one screen. Nothing is hidden behind a tab or a page.



- | | |
|-----------------------------------|--------------------------------------|
| 1 Preset selector | 10 Band mode — Multi or Single |
| 2 Settings and credits | 11 Ceiling — Limiter or Soft Clipper |
| 3 Input meter, with peak hold | 12 NYC — parallel compression |
| 4 TRANSIENTS — attack | 13 Mix — dry against wet |
| 5 Display — waveform and spectrum | 14 Presence |
| 6 LENGTH — sustain and tail | 15 Air |
| 7 Output meter | 16 Threshold |
| 8 Input gain | 17 Bypass |
| 9 Output gain | |

Any knob: drag up and down to change it, double-click to return it to default. Hold Shift while dragging for fine control.

Controls, one by one

CONTROL	RANGE	DEFAULT	WHAT IT DOES
TRANSIENTS	−1.00 to +1.00	0.00	Attack. Positive sharpens the leading edge, negative rounds it. In multiband mode this fader edits whichever band is selected in the spectrum, and the caption changes to say which.
LENGTH	−1.00 to +1.00	0.00	Sustain and tail. Positive holds the decay open, negative closes it early. Same band-following behaviour.
THRESHOLD	−50 to 0 dB	0.00 dB	The floor below which nothing is shaped. Leave it at 0 to shape everything. Pull it down to keep bleed, room and noise between hits out of the detectors. Draggable straight off the dashed line in the waveform.
MIX	0.00 to 1.00	1.00	Blends the processed signal against the untouched one. The dry path is delay-compensated, so partial settings stay phase-correct.
NYC	0.00 to 0.50	0.00	Parallel compression folded in underneath, New York style. Adds density and weight without flattening the peaks you just shaped.
PRESENCE	0 to 100	0	Upper midrange lift, after the shaping. Cuts through a dense mix without touching the detectors.
AIR	0 to 100	0	High shelf for openness on top. Small amounts go a long way on cymbals and acoustic sources.

Controls, continued

CONTROL	RANGE	DEFAULT	WHAT IT DOES
INPUT GAIN	–inf to +15 dB	0.00 dB	Level going in. Because shaping is level-independent, this is for gain staging and for driving the ceiling, not for changing how much the plugin shapes.
OUTPUT GAIN	–inf to +15 dB	0.00 dB	Level coming out, after the ceiling.
MULTI / SINGLE	two states	Single	Three bands with their own shaping, or one shaper across the whole range. In single band mode the spectrum steps aside and the waveform takes the whole display.
LIMIT / SOFT CLIP	two states	Soft Clip	Which ceiling catches the peaks. See page 13.
BYPASS	on or off	off	Takes the whole chain out. Latency stays reported either way, so the comparison is time-aligned and honest.

Interface size

Three sizes, chosen in the settings panel and stored with the session: 850 × 493, 1000 × 580 and 1250 × 725. The whole interface scales as one piece, so proportions, line weights and type stay identical at every size. The window has no drag handle on purpose.

Automation

Every audible control is exposed to the host and can be automated. The crossover frequencies are exposed but marked non-automatable, because sweeping a crossover during playback is rarely what anyone actually wants. Solo and Mute per band are exposed for recall but not for automation either.

Working in three bands

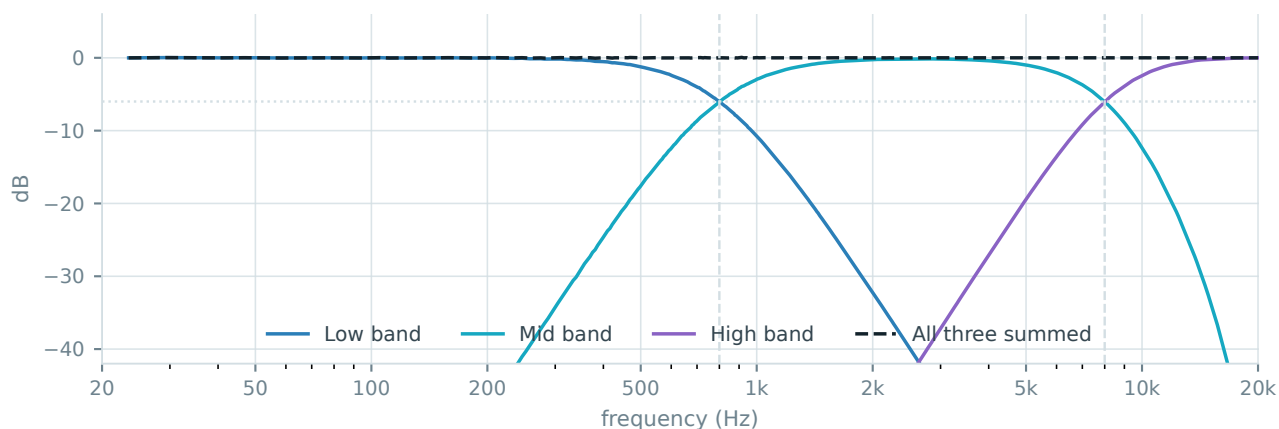
Switch the left toggle to MULTI and the display splits: the spectrum appears under the waveform with two draggable dividers, and each band gets its own attack and sustain.



- 1 The selected band, lifted while the other two sit under a veil
- 2 Crossover divider — drag it
- 3 Mute and Solo, per band
- 4 The faders now edit band 1

How to work it

- 1 Click anywhere inside a band on the spectrum to select it. The band lights up, the other two dim, and the two faders rebind to it — the captions change to TRANSIENTS 1, LENGTH 1 and so on.
- 2 Drag a divider to move a crossover point. The frequency is written alongside it while you drag.
- 3 Use S to hear one band on its own while you dial it in, and M to drop a band out of the sum.
- 4 Switch back to SINGLE at any time. Each mode keeps its own settings, so you can compare without losing either.



Measured at the default 800 Hz and 8 kHz. Each band is 6 dB down at its crossover point; the three sum flat within 0.06 dB.

Reading the display



- | | |
|----------------------------|---|
| 1 Threshold line — drag it | 3 Live spectrum |
| 2 Scrolling waveform | 4 Frequency grid: 100 Hz, 1 kHz, 10 kHz |

The waveform

The top half scrolls the signal as it plays. The dashed line across it is the Threshold, and anything reaching past it is picked out in colour — that is exactly the material being shaped. Move the cursor near the line and it thickens and grows handles: drag it to set Threshold without leaving the display. The knob follows, because both are the same parameter.

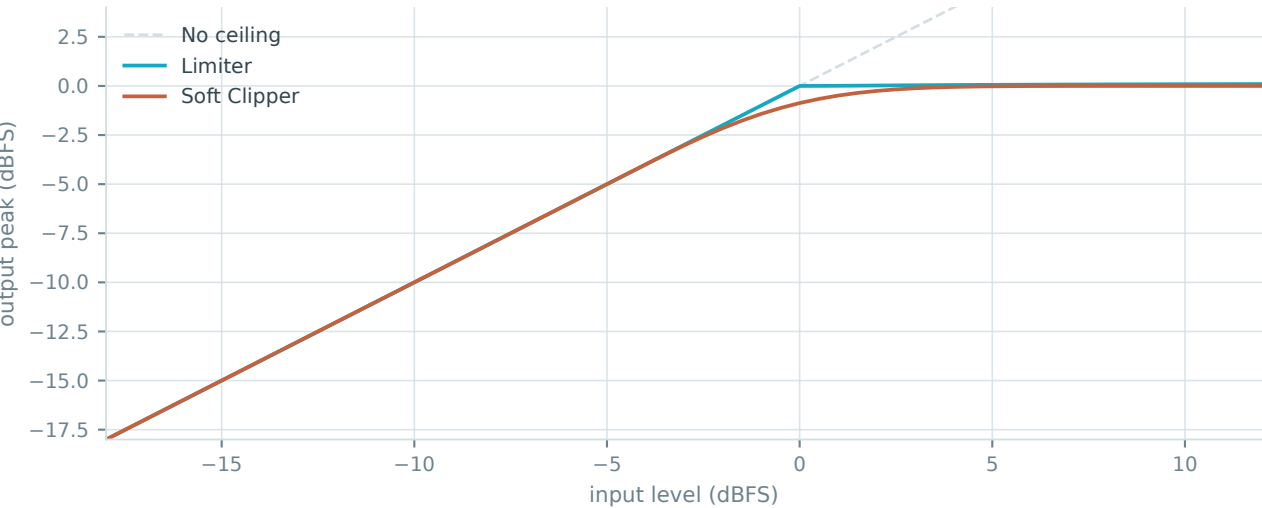
The spectrum

The bottom half appears in multiband mode only. It shows the live spectrum with a frequency grid, the two crossover dividers, and the selected band lifted while the others sit under a veil.

In single band mode there is no crossover to show and no band to choose, so the spectrum steps aside and the waveform takes the whole display.

The ceiling

Sharpening transients makes peaks. The ceiling is what stops them leaving the plugin above 0 dBFS, and it sits last in the chain so nothing after it can undo the job.



Measured: a 220 Hz sine driven into the ceiling, output peak on the vertical axis. The dashed line is where the signal would land with nothing holding it.

DRIVEN TO	LIMITER OUTPUT	SOFT CLIP OUTPUT
0 dBFS	0.00 dB	−0.87 dB
+6 dBFS	+0.07 dB	−0.01 dB
+12 dBFS	+0.10 dB	0.00 dB

Limiter

Transparent and firm. It looks 5 ms ahead, so it catches a peak before it arrives instead of reacting after the fact, and it holds the line almost exactly — driving it 12 dB past the ceiling still lands within a tenth of a decibel. Use it when the transient shape you dialled in is the point and you want it kept.

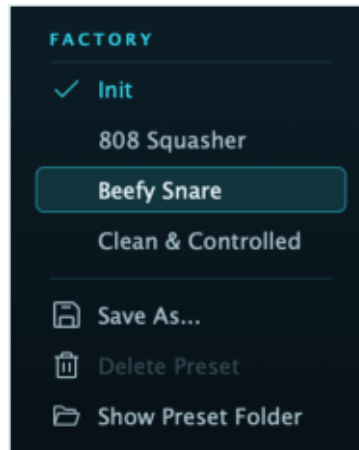
Soft Clipper

Musical rather than invisible. The knee opens below the threshold and the curve bends into it, so the loudest peaks round over and pick up harmonics on the way. The curve is odd-symmetric, which means odd harmonics only and no second-harmonic buzz. Use it when you want the drums to feel pushed and glued.

Threshold and the ceiling are separate ideas. Threshold decides what gets shaped; the ceiling decides what gets out. Setting one does not move the other.

Presets

Pakku ships with 31 factory presets. Init heads the list and is the neutral starting point — every parameter at its default. You can always get back to it.



Click the preset name to open the list. Arrows on either side step through it without opening anything.

Saving your own

- 1 Set the plugin up the way you want it.
- 2 Open the preset menu and choose Save As.
- 3 Type a name. Factory names are refused, so you cannot overwrite one by accident.

Where they live

FOLDER	WHAT IT HOLDS
Factory/	The 31 shipped presets, written to disk on first run. Kept in step with the copies compiled into the plugin, so an update can deliver new ones and a deleted or damaged file comes back on its own.
User/	Yours. Saved from the plugin, or dropped in from anywhere — a preset from a friend is just a file. Nothing in here is ever touched by an update.

Show preset folder in the settings panel opens the parent of both. Rescan preset folder re-reads them, which is what you want after dropping a file in while the plugin is open.

A preset is a small binary file ending in .pkku. It stores real values — decibels, hertz, percent — rather than normalised ones, so files stay meaningful even if a range changes in a later version.

Settings

The gear at the top right opens one panel with everything that is not a sound control. Press Escape, click the X, or click outside the card to close it.



- 1

Interface size
- 2

Show preset folder
- 3

Rescan preset folder
- 4

Restore defaults
- 5

Support the project

ROW	WHAT IT DOES
Interface size	Three fixed sizes. Stored with the session, so a project reopens the way you left it.
Show preset folder	Opens the folder holding Factory and User.
Rescan preset folder	Re-reads both folders and restores anything missing from Factory.
Restore defaults	Returns every parameter to its default without loading a preset.
Pakku version	Which build you are running.
Latency	What the plugin reports to the host, in samples.

Recipes

None of these are rules. They are places to start, with the reason behind each move so you can tell when to break it.

Kick forward in a dense mix

Single band · Transients +0.35 · Length -0.15 · Soft Clip

The attack lift puts the beater back in front without adding level, and the small tail cut stops the low end blooming into the snare. Soft Clip glues the result.

Snare with too much room

Multi · band 1 Length -0.50 · band 2 Transients +0.30 · Threshold -18 dB

The tail cut lives in the low band where the room sits; the attack lift lives in the mids where the crack is. Threshold keeps the decaying room out of the detectors so it fades instead of pumping.

Overheads, tighter

Multi · band 3 Length -0.40 · Mix 0.70

Only the cymbal band shortens. Mixing back to 70% keeps the kit sounding like a room rather than a sample library.

Bass that will not sit

Single · Transients +0.25 · Length -0.20 · NYC 0.20 · Limiter

Finger or pick definition up, note decay reined in, then parallel compression underneath to hold the floor steady.

Acoustic guitar, less pick

Single · Transients -0.30 · Air 25

Negative attack takes the edge off the pick without dulling the instrument; Air puts the sparkle back above it.

Drum bus glue

Multi · gentle everything · NYC 0.15 · Soft Clip · Mix 0.85

Small moves per band, parallel compression to fuse them, soft clip to round the peaks. Mix slightly under 100% keeps the original dynamics in view.

Troubleshooting

SYMPTOM	WHAT TO DO
The plugin does not show up in my host	Force a full rescan rather than an incremental one — many hosts cache their plug-in list. On macOS confirm the bundle is in /Library/Audio/Plug-Ins, and remember Logic and GarageBand only load Audio Units, never VST3.
macOS refuses to open the installer	Right-click the .pkg, choose Open, then confirm with Open. The build is not code signed yet, so Gatekeeper asks once.
Windows shows a blue SmartScreen panel	Click More info, then Run anyway. Same reason as above.
It sounds thin or hollow at partial Mix	That is the classic sign of an uncompensated dry path — but not here. Pakku delays the dry signal to match the wet one exactly. If you hear it, check whether your host is compensating latency on the track, and whether you have a second copy of the plugin in the chain.
Raising Threshold makes things louder, not quieter	Threshold is not a ceiling. It sets the floor below which nothing is shaped, so raising it means less material gets shaped. If you want peaks held down, that is the Ceiling section.
Nothing happens when I move the faders	Check the Threshold. If it is above the level of the material, the detectors never engage. Also check Mix, and whether Bypass is lit.
A factory preset went missing	Open Settings and press Rescan preset folder. Factory presets are restored from copies inside the plugin, so nothing is ever lost for good.
My own preset disappeared after an update	It should not — the User folder is never touched. Check that the file is in User/ and not in Factory/, which is kept in step with the plugin.
The interface is too small or too large	Settings, first row. Three sizes, remembered with the session. There is no drag handle on the window by design.

Specifications

Formats	Audio Unit (macOS), VST3 (macOS and Windows)
Channels	Stereo in, stereo out
Sample rates	Any rate the host provides; all filters are derived from it at prepare time
Latency	239 samples at 48 kHz — 5 ms of ceiling lookahead, reported to the host for automatic compensation
Crossover	Linkwitz-Riley, 4th order, 24 dB per octave, with allpass compensation on the low band so the three bands sum flat within 0.06 dB
Crossover range	50 Hz to 15 kHz, both dividers
Parameters	29 exposed to the host
Presets	31 factory, unlimited user, .pkku format
Interface	Three sizes: 850 × 493, 1000 × 580, 1250 × 725
macOS	11 Big Sur or later, universal (Apple Silicon and Intel)
Windows	64-bit Windows 10 or later

Licence and credits

Pakku is free and open source, released under the GNU Affero General Public License v3.0. The source, the issue tracker and every release live at github.com/danielalves96/pakku-vst.

Built on the JUCE framework. Interface icons from Phosphor Icons (MIT). Display typeface Michroma, under the SIL Open Font License. Full licence texts ship with the source.

Pakku is made in Brazil by Daniel Luiz Alves, under Kyantech Labs. It is free and it stays free. If it earns a place in your chain, you can support the next release at github.com/sponsors/danielalves96.