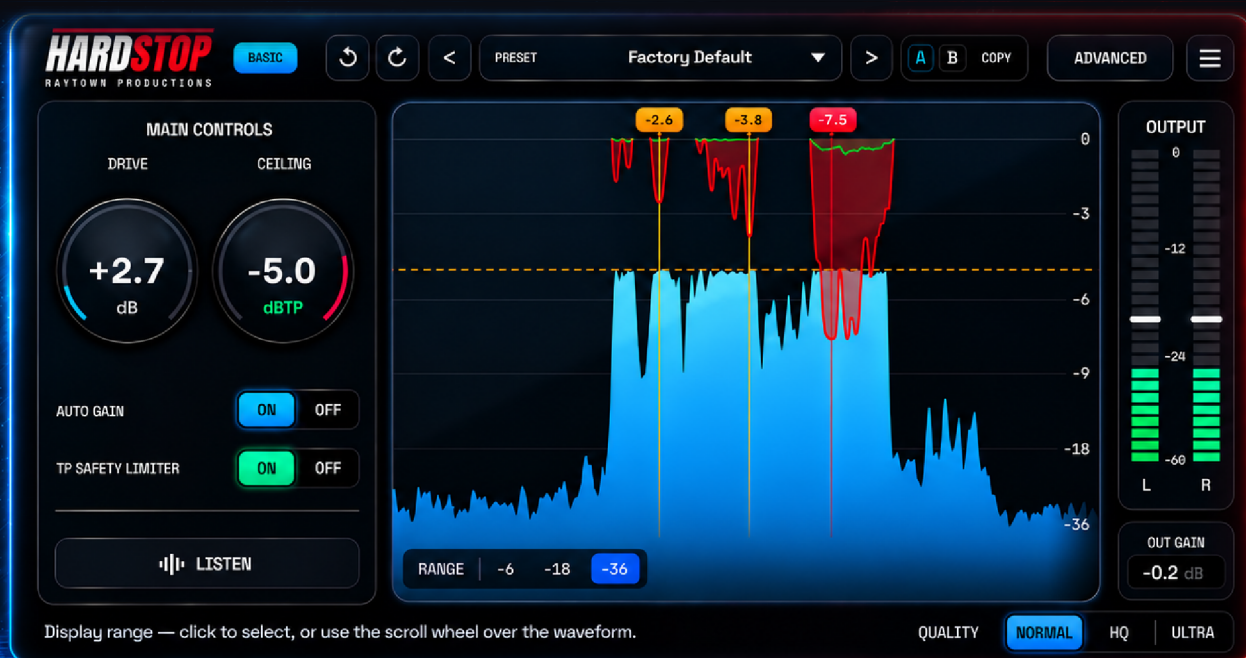


HARDSTOP

RAYTOWN PRODUCTIONS



BASIC **PRO** ADVANCED MASTERING-GRADE CLIPPER

User Manual

Slam it hard. Keep the punch. Everything you need to drive, clip, and stay true peak safe.

Basic and Pro Versions in one guide.

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Your first five-minute loudness win

Drop HardStop on your mix or master bus. These five steps get you a louder, cleaner result without touching a single Pro control — everything here works in Basic.

Set your Ceiling

- 1 Pull **Ceiling** down to about **-1.0 dB** — this is the level nothing will pass. You can also drag the dashed line directly on the waveform.

Turn the TP Safety Limiter on

- 2 Leave **AUTO GAIN** on and set **TP SAFETY LIMITER** to **ON**. Your output now stays under the ceiling in true peak, the level your listeners' converters actually play, as long as **Out Gain** stays at 0 dB or below (and, in Pro, **Mix** at 100%). -1 dBTP is a sensible ceiling.

Raise Drive until the red folds appear

- 3 Raise **Drive** slowly. Auto Gain compensates for the added Drive, so you hear the *character* of the clipping, not just "louder". It doesn't guarantee exact loudness matching. Watch the red folds appear on the waveform where peaks are being clipped.

Set Quality to HQ

- 4 Switch **Quality** from Normal to **HQ**. This anti-aliases the clipping so the extra loudness stays clean instead of turning to fizz.

Trust your ears — then turn Auto Gain off

- 5 Toggle **Auto Gain** off to hear the real loudness gain, and back on to fine-tune character at matched level. When it sounds right, you're done.

TIPS & BEST PRACTICES

CLIP FIRST	Clip <i>before</i> your final limiter, not instead of it. HardStop shaves the peaks so your limiter works less and you get more LUFS with transients intact. That said, HardStop's built-in mastering-grade true peak limiter can do everything in a bind.
LISTEN	Listen — hear exactly what's removed. Click Listen (Delta) to solo only the audio being removed; unclipped material nulls to silence. With HardStop Pro you can choose the clipper or the TP limiter — great for dialing in a release that adds groove or bounce.
GR DISPLAY	The GR display is honest. Red on the waveform is clipper gain reduction; green is the TP limiter. Both are drawn from the audio you hear and checked against ground-truth measurements. The flags (small dB tags) mark up to three of the deepest clipper hits; turn them off with Show Clip Flags in the menu.

Welcome — what a clipper does

In plain English. Every mix has a few peaks that stick out far above everything else. To get the track louder, something has to deal with those peaks. A clipper does the most direct thing possible: it flattens the very top off the peaks so the rest of the track can come up. Done gently it's inaudible; done hard it becomes a sound — the tight, aggressive loudness of modern rock, metal, pop and EDM.

Technical details. HardStop Basic is a hard clipper with a true peak limiter. You add gain with **Drive**, and any sample that would exceed the **Ceiling** is clamped to it. Unlike a compressor or limiter, there is no attack or release envelope in the clip itself — it acts instantly, sample by sample, which is what keeps transients punchy instead of pumping. A true peak safety stage then catches the intersample overshoots a raw clipper can't see, so the reconstructed (true-peak) level stays under your ceiling.

HardStop Basic does clipping excellently, but **HardStop Pro** also helps thicken and balance signals through two flavors of harmonic saturation, a tonal adjustment knob, and an adaptive clipping mode that is transient aware and reshapes the clipping behavior to better match transients — keeping them hitting hard while sustained notes distort less. Both shape peaks as cleanly as the latest scientific research will allow, and the waveform display shows you exactly what's being clipped so you're never guessing. In this manual, every Pro-only feature is marked with a **PRO** badge so you know. Try HardStop Pro anytime with a free 14-day trial within the plugin!

HOW TO READ THIS MANUAL

Wherever a concept matters, you get a **plain-English** explanation first, then the **precise, measured** one. Skip whichever you don't need. Claims here are always measured and tested — where we quote a number, it's a real measurement.

Installation & formats

Run the HardStop installer and restart your DAW. On first launch, HardStop opens as HardStop Basic — fully functional, no account required. To try Pro, click any locked Pro control, or open the menu (≡) and click **UPGRADE**. The license window opens, where you can start a free 14-day trial or enter a key (see Chapter 10).

FORMATS

VST3 · AU · AAX, 64-bit

Windows 10/11: VST3 and AAX. macOS: VST3, AU and AAX, native on Apple silicon and Intel.

SAMPLE RATES

44.1 – 192 kHz

Stereo and mono. Latency is reported to the host for automatic compensation.

System requirements

WINDOWS

- Windows 10 or newer, 64-bit.
- Needs a VST3 or AAX host: Ableton Live, Pro Tools, FL Studio, Cubase, Reaper and others.
- Minimum 4 GB RAM.

macOS

- macOS 10.13 High Sierra or newer, Apple silicon or Intel.
- Needs a VST3, AU or AAX host: Logic Pro, Ableton Live, Pro Tools, FL Studio and others.
- Minimum 4 GB RAM.

HardStop checks in with its license server for license info and updates when it can, but never needs an internet connection to run once it's activated.

The installer puts HardStop in the standard plug-in folders for each format: VST3 and AAX on Windows; VST3, AU and AAX on macOS.

Wherever you place it, HardStop reports its latency to your DAW so playback stays in sync. In **Normal** quality the plugin adds zero latency; higher quality tiers and True Peak Safety Limiter mode add a small, constant amount (see Chapter 5).

The interface

The waveform display *is* the interface — you set your ceiling on it, and it shows exactly what's being clipped. Below is the Basic view; the callouts map to the guide underneath.



Figure 1. HardStop Basic view. Pro adds a full Advanced page (Chapter 7).

- 1 Top bar.** Preset ◀▶ and browser, A|B, ADVANCED / BASIC view (never changes the sound), ≡ menu.
- 2 Main controls.** Drive, Ceiling, AUTO GAIN, TP SAFETY LIMITER and LISTEN (solo what the clipper removes).
- 3 Waveform.** Red folds: clipper. Green folds: TP limiter. dB Clip flags: gain reduction on deepest hits. Click to set Ceiling; RANGE zooms waveform in and out.
- 4 Output.** L/R true-peak meter and OUT GAIN (±24 dB).
- 5 Quality.** NORMAL, HQ or ULTRA anti-aliasing.

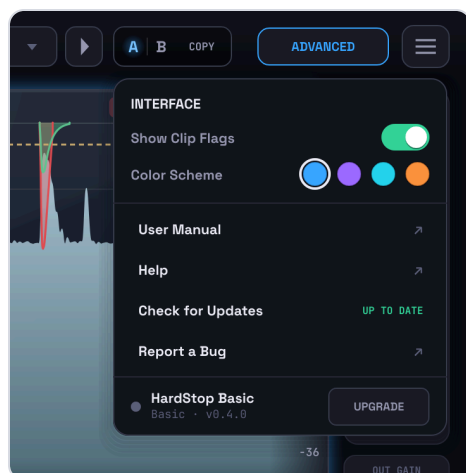


Figure 2. Basic view menu (≡), with UPGRADE in the footer.

Show Clip Flags Turns the dB tags on the waveform on or off.

Color Scheme Blue, Violet, Aqua or Sunset.

User Manual Opens this manual.

Help Opens the support web pages.

Check for Updates Checks for a new version of the plugin right away.

Report a Bug Opens an email to support, pre-filled with your system details.

Footer Shows your license info and version. The button reads **MANAGE** if you own Pro, **UPGRADE** if not and opens the license manger.

Controls reference

Every user-facing parameter and its range. Pro-only controls are badged; everything else is available in Basic.

CONTROL	RANGE / DEFAULT	PURPOSE
Drive	0 to +24 dB · default 0	Pre-gain into the clipper. More drive = more clipping.
Ceiling	0 to -24 dBFS · default 0	The clip ceiling; draggable on the waveform. Reads dBTP when TP is on.
Auto Gain	ON / OFF · default ON	Compensates for added Drive so you can judge the clipping without being distracted by volume. It does not guarantee exact loudness matching.
TP Safety Limiter	ON / OFF · default OFF	Keeps the output under the ceiling in true peak. Basic uses fixed lookahead and release.
Quality	Normal / HQ / Ultra	Anti-aliasing quality. All three modes are available in Basic and Pro.
TP Release PRO	1 – 1000 ms · default 50 ms	How quickly the true peak limiter recovers after a peak.
TP Lookahead PRO	0.1 – 5 ms · default 0.18 ms	Limiter lookahead window. Latency stays constant regardless of the value.
Listen	LISTEN (Basic) LISTEN CLIP / LIMIT (Advanced)	Solo what the clipper removed. LIMIT (Pro, TP on) solos what the limiter caught. Unclipped audio nulls to silence.
Shape PRO	SOFT (0) to HARD (100) · default HARD	Clipper knee: HARD = pure hard clip; toward SOFT = wider, rounder, denser. Applies in CLASSIC; in ADAPTIVE this knob becomes Reactivity.
Reactivity PRO	ADAPTIVE only. CALM (-100) to ACTIVE (+100) · default BALANCED	How readily Adaptive treats a sound as a hit, and how fast it lets go. Click the label for Recover : Fast / Medium / Slow (default Medium).
Mode PRO	Classic / Adaptive	Adaptive keeps transients punchy and softens on sustained notes.
Density PRO	TUBE (-100) to PUNCH (+100)	Saturation color: TUBE = even-harmonic glue, PUNCH = odd-harmonic excitement and waveshaping. Ceiling-exact.
Tone PRO	WARM (-100) to BRIGHT (+100)	Pre-clip tilt with opposing ugly-band cuts.
L/R Link PRO	DUAL MONO (0%) to Linked (100%), default 100 %	Stereo linking. 100% preserves the image; lower to clip channels more independently.
Mix PRO	0 to 100% · default 100%	Latency-matched parallel blend of clean input with the clipped signal. Below 100 % the output can go over the ceiling.
Out Gain	±24 dB	Final output trim; type-in or drag.

Quality modes

In plain English. Clipping creates brand-new, ultra-high frequencies. Without anti-aliasing, those frequencies “fold back” into what you can hear as harsh, grainy fizz. HardStop uses the latest science to suppress the aliasing artifacts that make clippers sound harsh — so the distortion you hear is only the distortion you asked for.

Technical details. HQ and Ultra take a layered approach to anti-aliasing that significantly outperforms traditional oversampling approaches. The layers work together to maximize alias rejection while keeping CPU usage low.

Note: Ultra quality mode uses 1/8th the CPU for equivalent anti-aliasing performance as standard oversampling!

NORMAL 0 SAMPLES LATENCY	Trivial hard clip, no anti-aliasing. The zero-latency “character” tier — aliases by design when pushed. Ideal for tracking or deliberate grit.
HQ 114 SAMPLES	Advanced anti-aliasing, linear-phase reconstruction. The daily driver: clean top end at mix-bus drive levels — in-band flat to ±0.002 dB. HQ and Ultra share one latency, so switching between them never shifts your timing.
ULTRA 114 SAMPLES	Highest anti-aliasing performance — equivalent to roughly 40× oversampling, but at about one-eighth the CPU cost of doing 40× oversampling the old-fashioned way. Very high alias rejection that can easily run on big sessions. Recommended anytime you use the Density knob PRO and/or heavy clipping. Flat to ±0.0003 dB.

LATENCY (SAMPLES)	TP OFF	TP ON · 44.1 kHz	TP ON · 48 kHz
Normal	0	463	482
HQ	114		
Ultra	114		

The TP Safety Limiter adds a fixed 349 samples at 44.1 kHz (368 at 48 kHz). With TP on, every Quality mode reports the same total. Tone adds no latency.

True Peak mode & streaming safety

In plain English. A raw clipper only sees the individual samples. But when your track is played back through speakers, the signal is reconstructed *between* those digital samples — and those in-between points can peak higher than any sample did. That's a true peak, and it can cause distortion in converters and lossy encoders. Turn **TP Safety Limiter** on and HardStop keeps the output under your ceiling in true peak, as long as **Out Gain** stays at or below 0 dB and **Mix** stays at 100%. Streaming loudness normalization is a separate process: it turns tracks up or down by LUFS or song loudness, which TP does not change.

Technical details. With TP on, a lookahead true-peak limiter running at 4× oversampling catches the intersample overshoots the clipper can't see. Its gain reduction is smooth, so it adds no new aliasing. HardStop's true-peak meter outperforms the industry requirement: it measures TP at 4×, as ITU-R BS.1770-5 requires, then refines each peak between samples. TP controls peaks, not loudness, so streaming services will still turn tracks down by LUFS so trust your ears for dynamics instead of reading a meter. The ceiling holds as long as Out Gain stays at or below 0 dB and Mix stays at 100%.

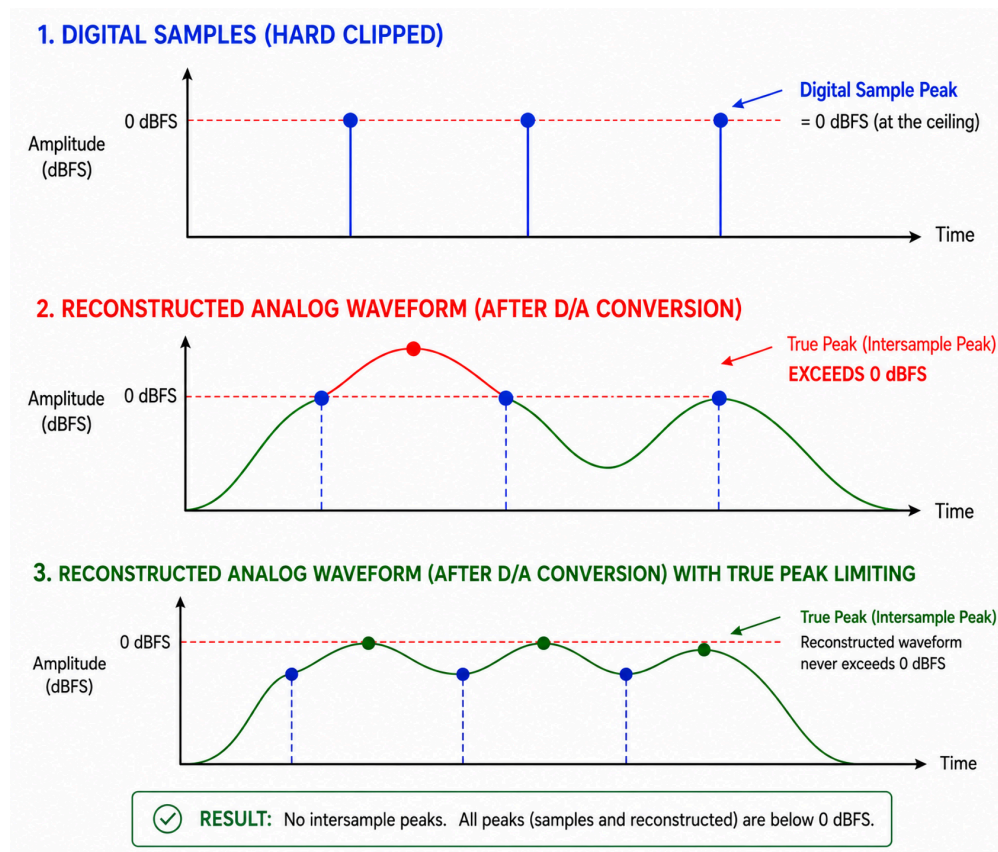


Figure 3. Intersample peaks (ISPs) form when the smooth analog waveform reconstructed on playback rises higher between two digital samples than either sample itself — so a signal that reads at or below 0 dBFS in samples can still overshoot in true peak.

The character section

Out of the box, HardStop Pro is a byte-exact transparent hard clipper (identical to Basic) until you reach for these character knobs which are tuned by ear for maximum flexibility and audio fidelity. Clicking the ADVANCED button reveals them below the waveform:



Figure 4. HardStop Advanced (Pro) — the character & limiter rows and the LUFS strip.

- 1 **Mode** — Classic / Adaptive clipping.
- 2 **Lookahead** — how far ahead the TP limiter scans for peaks.
- 3 **Release** — how fast the limiter recovers; dial in groove & bounce.
- 4 **Shape (CLASSIC) / Reactivity (ADAPTIVE)**. The same knob position does both jobs depending on the clipping mode.
- 5 **Density** — tube-to-punch saturation.
- 6 **Tone** — warm-to-bright pre-clip tilt.
- 7 **L/R Link** — from fully unlinked (dual mono) to fully linked and image preserving.
- 8 **Mix** — parallel-clip blend to restore transients.
- 9 **LUFS strip** — Integrated / Short-term + session peak with reset button on right side.
- 10 **LISTEN CLIP / LIMIT**. One at a time. LIMIT needs TP on.

The character controls, one by one

Take them in order: Shape sets the edge, Adaptive decides when that edge applies, and Density and Tone color what comes out.

Shape

In plain English. Sets how sharp the clip is. HARD is an instant, transparent clip that cuts the peak flat; toward SOFT the corner rounds off, softening the clip so it sounds warmer and denser — all without leaving the anti-aliased engine. Shape applies in CLASSIC. In ADAPTIVE the knob becomes Reactivity.

Technical details. The transfer function morphs from an instantaneous hard clip to a smoothly rounded polynomial knee (PolyKnee). Below the knee the signal passes at unity gain; through the knee the slope ramps smoothly from 1 to 0 via a hand-tuned smoothstep curve.

Reactivity (only in Adaptive mode)

In plain English. Adaptive clips hard where the hits land and rounds the clip off everywhere else, so drums keep their punch while sustained bass and cymbals distort less. The **Reactivity** knob decides what counts as a hit. Turn it right, toward ACTIVE, and it catches more hits and recovers faster between quick ones, which suits double kick or a busy drum bus. Turn it left, toward CALM, and it waits for the big hits and holds them longer. BALANCED, the center, is our tuned default. Click the REACTIVITY label for **Recover** (Fast / Medium / Slow), which sets how quickly it lets go after a transient.

Technical details. A transient detector that rides between a soft resting knee and a hard corner. Reactivity acts as a macro knob and intelligently moves the whole detector circuit. The hardening always runs at full depth.



Figure 5. Adaptive mode: the knob becomes Reactivity, with the Recover menu open.

Density

In plain English. Colors the clipped signal to add either glue (TUBE) or aggression (PUNCH).

Technical details. TUBE adds tube-style saturation: odd and even-order harmonics, with a DC-offset filter. PUNCH adds odd harmonics plus subtle waveshaping to drive excitement into the clipped signal. Either way, the ceiling stays exact.

Tone

In plain English. Tilts the sound brighter or warmer before the clipper, cleaning up mud and harshness on the way. **Technical details.** A tilt filter shifts the balance between highs and lows. Brightening also cuts mud, boxiness, and harshness in the problem areas. Bass stays put either way. Past center toward WARM, the top end softens and a gentle high cut takes off the digital edge that commonly makes clipped music fatiguing. Output level is partly compensated, so BRIGHT never reads louder than center. Tone adds no latency.

Presets & A/B

Browse. Step with ◀ ▶, or click the name to open the browser. Search, star favorites, and filter by **All**, **User**, **Vocal**, **Drum**, **Guitar**, **Bus** or **Other**. With the browser open, ↑ / ↓ load each preset as you land on it, and ← / → change category.

Save. **SAVE NEW** stores your settings, **RE-SAVE** updates the user preset you're on, and **DELETE** removes it. Factory presets can't be overwritten or deleted.

Right-click. **Rename**, **Overwrite with Current Settings**, **Export Preset**, **Import Preset** and **Open Preset Folder**. You can also drag a preset's name out of HardStop to your desktop or a folder to export it.

A/B holds two complete snapshots of every setting. Click **A|B** to flip and compare, and use **Copy** to duplicate the active slot into the other to experiment with different settings.

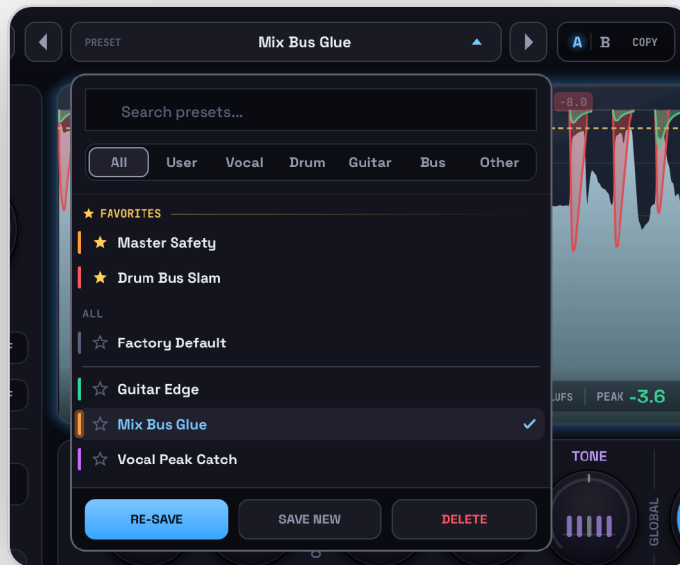


Figure 6. The HardStop Pro preset browser.

Basic includes user save/load and A/B. A curated library of Pro presets is included with the Pro License. A Pro preset loaded with a Basic license bypasses the Pro controls. Unlock Pro and the full sound is restored.

Importing presets by drag and drop

Drag presets in. Drop .rpreset files, a folder or a .zip onto HardStop to import them, several at once, anywhere on the plug-in. While you drag, the waveform shows **Drop to import presets**.



Figure 7. Drop overlay while dragging presets in.

Each preset goes into the category it was saved with, or into **User** if it has none. Presets already in your library with the same settings are left alone. **Import Preset** in the right-click menu works the same way.

Same name, different settings

If a preset with the same name already exists in the same category, HardStop asks before changing anything. Choose **Replace mine**, **Skip**, or **Keep both** (imports as "Name (2)"). Tick **Do this for the other clashes** to apply your answer to all of them. **Cancel import** (or Esc) stops the whole drop and imports nothing. Replacing the loaded preset doesn't change your sound until you load it again.

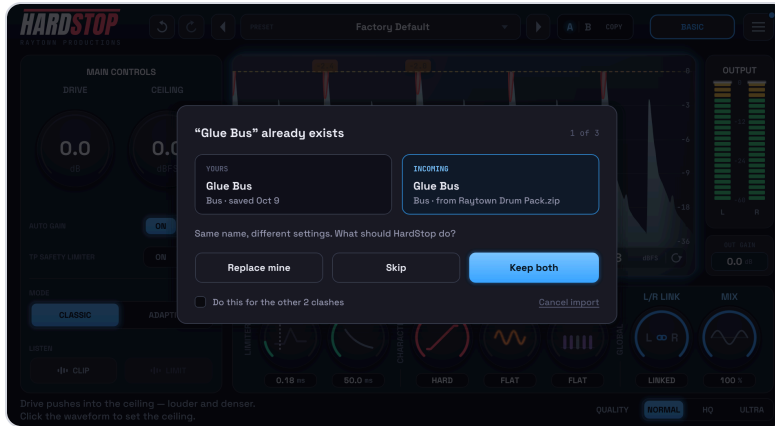


Figure 8. Duplicate preset name window.

The result

When the import finishes, the tip bar tells you what happened, for example: "5 presets imported: 2 new, 1 replaced, 1 skipped, 1 kept as both." Presets that were already in your library are noted separately at the end of the message Find them in the browser under their category, or under **All**.



Figure 9. Imported presets in the browser, under Drum.

Basic vs Pro

Basic and Pro are editions; Basic view and Advanced view are layouts, and switching views never changes the sound. Basic is deliberately simple — not artificially limited. Its output at default settings is byte-identical to Pro at defaults; Pro adds character, control and metering.

CAPABILITY	BASIC	PRO
Drive + Ceiling, hard clip	●	●
Quality tiers	Normal · HQ · Ultra	Normal · HQ · Ultra
True-peak safety (TP)	on / off	+ lookahead & release
Delta listen	●	+ source select
Auto gain, meters, waveform + GR display	●	●
Shape knob (soft ↔ hard knee)	—	●
Mode: Classic / Adaptive, with Reactivity and Recover	—	●
Density knob (tube ↔ punch)	—	●
Tone knob (warm ↔ bright)	—	●
Stereo Link	linked	variable
Mix (parallel dry/wet)	—	●
Factory presets	—	Factory Default; Pro library coming
LUFS metering (INT / SHORT + session peak)	—	●

A running trial or purchase upgrades in place — your presets and settings carry over.



Figure 10. Advanced view while not activated: dimmed controls, trial banner and LUFS.

Trial, buying, license & machines

Start a 14-day free trial

Click **ADVANCED** and press **START 14 DAY FREE TRIAL!** (or click any locked Pro control, or **UPGRADE** in the menu). Enter your email under **Start HardStop Pro** and click **Start My Free HardStop Pro Trial**. Enter the 6-digit code we email you (good for 10 minutes) and click **Start Trial**. Every Pro feature unlocks at once, no card needed. The 14 days start when you activate, and each email gets one trial.

Figure 11. License window: Start HardStop Pro.

Figure 12. Trial code step.

Buy & activate

HardStop Pro is a one-time purchase that never expires. Buy from the license window or the website, and your key is emailed to you. On **Have a License?**, enter your email and key and click **Activate HardStop Pro**. Buying with your trial email upgrades the trial automatically at the next check-in. Each license runs on three computers at once. **Activate All RP Plugins** activates every Raytown plug-in you own here with one emailed code.

License window

Open it from the menu (≡): **MANAGE** if you own Pro, **UPGRADE** if not. The badge reads PRO, FREE TRIAL or BASIC, and **CONTACT SUPPORT** sits at the bottom of every tab.

- LICENSE** **License:** your status, plus **Check In Now**, **Resend License Email** and **Restore all my plugin licenses** →. Pro adds **Deactivate This Machine**.
- MACHINES** **Machines:** every activated computer, with its name, OS and last check-in, and THIS DEVICE marked. Each other machine has its own **Deactivate**, and **Deactivate All Other Machines** frees them all at once. Trial seats stay put until the trial ends.
- ACCOUNT** **Account:** email, license, masked key and build, plus **Change email address**, **Order history & receipts**, **Help and tutorials** and **Sign Out Of This Machine**. Signing out removes your license from this computer but keeps its seat reserved. Sign Out is grayed out during a trial; click it to see why.

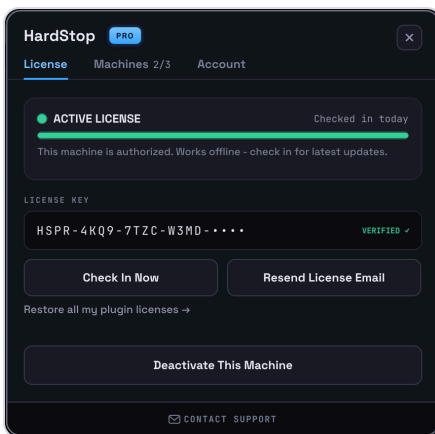


Figure 13. License tab and Machines tab (Pro).

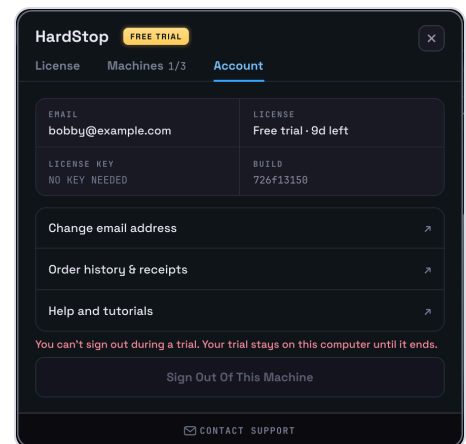
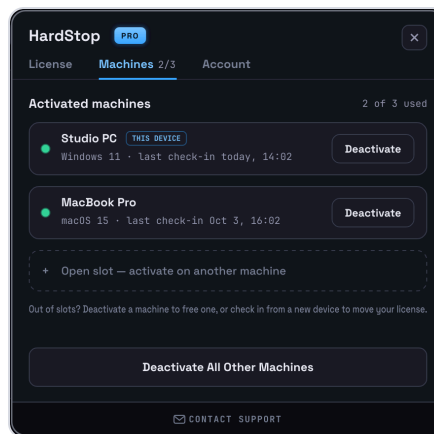


Figure 14. Account tab during a trial: Sign Out is grayed out.

Offline & updates

Offline. An activated HardStop Pro works offline indefinitely, with no grace period and no deadline. When you're online it checks in about once a day, which picks up license changes and upgrades. A trial also runs offline until its 14 days are up.

Updates. HardStop checks for updates when you open the menu, at most once a day; clicking **Check for Updates** checks right away. The check sends only the plug-in name, version and operating system: no email, key or machine ID. There are no usage analytics in HardStop, apart from counting installations.

Restore

Lost your key, or setting up a new computer? On the License tab, choose **Restore all my plugin licenses** →, then **Restore My Licenses**. Enter the email you bought with and the 6-digit code, and every Raytown license on that email is restored on this computer. If a license is full, pick a machine and click **Free Seat**. Anything not restored is listed in red under NOT RESTORED. Trials can't be restored.

Troubleshooting & support

HardStop doesn't appear in my DAW

Restart the DAW and rescan. Logic loads only AU, Pro Tools only AAX, and most others VST3. Check the plug-in is in the standard folder for your format (see Chapter 2); if it isn't, run the installer again.

My trial code didn't arrive

Codes come from licenses@raytownproductions.com and expire after 10 minutes. Check spam, then click **resend code** → under the code box, or **Use a different email** →.

"All activation seats are in use" (Error 3103)

All three seats are taken. On an activated computer, open the **Machines** tab and click **Deactivate** next to one you no longer use, or **Deactivate All Other Machines**. You can also free a seat during Restore. Signing out does not free a seat, and trial seats can't be moved.

The output still peaks over my ceiling

Turn **TP** on, keep **Out Gain** at 0 dB or below, and set **Mix** to 100% in Pro. Check for downstream processing or gain changes that could raise the measured level. Without TP, intersample (true) peaks can exceed the sample ceiling; that isn't a defect, it's how clippers work.

Error codes

When something goes wrong with licensing, HardStop shows one error code at a time, as **Error XXXX** · **Get help** at the bottom right. Clicking on **Get help** opens the help page for that exact error.

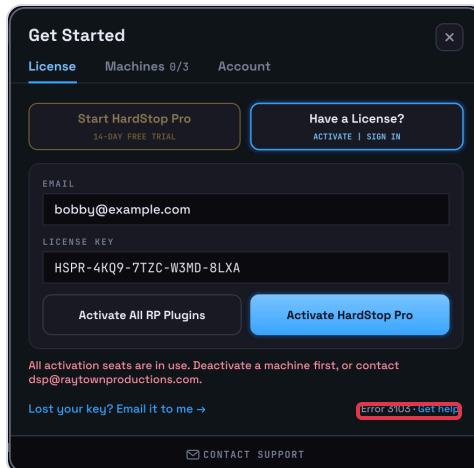


Figure 15. Error 3103: all activation seats in use.

CONTACTING SUPPORT

Click **CONTACT SUPPORT** at the bottom of the license window, or **Report a Bug** in the menu. Your mail app opens a message to dsp@raytownproductions.com with your diagnostic info already filled in (never your full key). If support asks for a log, it's in %APPDATA%\Raytown Productions\HardStop\Logs (Windows) or ~/Library/Logs/Raytown Productions/HardStop/Logs (macOS).