SATURATION PROCESSOR

LUXGRIT

Eight knobs of oversampled saturation, crush and neural box tone.
Built for drums, samples and the whole beat.



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01 Welcome to Luxgrit

Luxgrit is a saturation processor in a single console: eight knobs and one button that take a sound from gently warmed to completely crushed. It is tuned for the things a beat is made of: drum breaks, sampled loops, bass and the full mix bus.

At its heart is one tape style saturation curve that runs at eight times the session sample rate, which keeps the harmonics it creates clean even when you drive it hard. Around that curve sit the tools that decide how the grit sits in your track: BIAS for even harmonics and density, TILT for tone, CRUSH for heavy compression with low end thump, and BOX, a neural network model of an analog box tone. MIX blends the result with your original signal, perfectly time aligned, and OUTPUT sets the final level.

Highlights

- **Eight times oversampled saturation.** The curve runs at 8x the host rate to keep aliasing down at high drive.
- **Automatic level matching.** While the saturator is working, Luxgrit pulls the saturated level back toward your input level, so DRIVE adds character instead of just volume and you can judge the tone honestly. BIAS is the exception and deliberately adds level, and CRUSH comes after the level matching and can make the sound louder.
- **BIAS** makes the curve clip asymmetrically for even harmonics, plus a thicker, denser and louder sound.
- **TILT** is a broad tone control that pivots around 700 Hz, after the saturator.
- **CRUSH** is a heavy compressor and limiter with an added low thump layer.
- **BOX** is a neural network model of an analog box tone, level matched so it changes color, not loudness.
- **Phase aligned MIX** for parallel saturation without comb filtering.
- **PUNISH** adds 18 dB of extra drive with one click.
- **MIDI learn** on all eight knobs, with high resolution 14 bit controller support.
- **Gold and dark themes** and a resizable window from 50% to 300%.

ABOUT THIS MANUAL

Control names appear as they are printed on the plugin, like **DRIVE** or **PUNISH**. Values appear as Luxgrit displays them, like **12.0 dB**, **-20.0 %** or **35.0 %**. Every screenshot in this manual is the real Luxgrit interface.

02 Getting Started

Formats and compatibility

PLATFORM	PLUGIN FORMATS	SYSTEM
macOS	VST3, Audio Unit (AU), AAX for Pro Tools	macOS 10.13 or later, Apple silicon and Intel
Windows	VST3	Windows 10 or 11, 64 bit

Luxgrit is an audio effect. It works on mono and stereo tracks (the input and output channel counts always match) and has no sidechain input. It accepts any sample rate your host runs at. In your plugin list it appears as **Luxgrit** from **Langston Masingale Industries x Cosmic Audio Lab**.

Installation

Run the installer for your platform and follow the prompts.

- **macOS:** the installer places **Luxgrit.vst3** in **/Library/Audio/Plug-Ins/VST3**, **Luxgrit.component** in **/Library/Audio/Plug-Ins/Components** and **Luxgrit.aaxplugin** in **/Library/Application Support/Avid/Audio/Plug-Ins**.
- **Windows:** run the Setup program; it installs the VST3 plugin.

Restart or rescan your host if Luxgrit does not appear in its plugin list.

Activation

Luxgrit is activated through your Cosmic Audio Lab account. When no license is active, the license panel opens over the plugin about a second after you open the Luxgrit window, and you can open it at any time with the **LICENSE** button.

1. **Open the license panel.**
   Click **LICENSE**, or wait for the panel headed *Activate Luxgrit*.
2. **Activate online.**
   Click *Activate online*. Your web browser opens; sign in to your Cosmic Audio Lab account and confirm this computer.
3. **Return to your music.**
   Luxgrit picks up the activation automatically and shows *You're all set*. Click *Open Luxgrit*.

No internet on the studio computer?

Choose *No internet? Activate offline*. Click *Save machine file* to save a small file that identifies this computer. On a computer that is online, open the activation address shown in the panel and exchange the machine file for a license file, then drop the license file onto the panel (or click to browse for it) and click *Activate offline*.

Trials and license details

While a trial is active, the license panel shows how many days remain and an *Unlock full version* button that opens the store page in your browser. Once activated, the license details screen shows your plan and, for online activations, offers *Deactivate this device* when you move to a new computer.

IMPORTANT

Luxgrit needs an active license or trial. In VST3 and Audio Unit hosts, without one it mutes its output; your sessions still open with all settings intact, so activate to hear Luxgrit again. The AAX version for Pro Tools is not muted by this license, and its license panel does not open on its own.

03 Quick Start

Five minutes from insert to grit. Load a drum loop or a sampled break, press play, and work left to right.

1. **Insert Luxgrit**
   on a drum bus, a sample, a bass or your full beat. At the default settings the saturator is switched off and the signal passes cleanly, so you always start from your original sound.

2. **Turn up DRIVE.**
   The curve fades in over the first 6 dB, then pushes harder all the way to **36.0 dB**. Luxgrit keeps the level close to your input while you do this, so listen for character rather than volume.

3. **Shape it with BIAS and TILT.**
   BIAS adds even harmonics, weight and a lot of level, so turn OUTPUT down as you add it. TILT brightens (turn right) or darkens (turn left) the saturated sound.

4. **Add CRUSH or BOX to taste.**
   CRUSH squashes and adds low end thump; BOX adds the color of an analog box.

5 **Blend and level.**
Pull MIX down for parallel saturation that keeps your original transients. Then set OUTPUT so the processed sound matches your bypassed level. Nothing limits the signal after OUTPUT, so keep an eye on your channel meter.

TIP

Want it nastier in a hurry? Click **PUNISH**. It adds 18 dB to whatever DRIVE is set to.

04 Interface Tour

Everything in Luxgrit lives on one screen. The eight knobs read left to right in the same order the signal flows.



1. **INPUT** sets the level going into the saturator.
2. **DRIVE** sets how hard the saturation curve is pushed.
3. **BIAS** makes the curve asymmetric for even harmonics and density.
4. **TILT** brightens or darkens the saturated sound.
5. **CRUSH** adds heavy compression, limiting and low thump.
6. **BOX** blends in the neural analog box tone.
7. **MIX** blends processed and original signal.
8. **OUTPUT** sets the final level.
9. **Value readouts** show each setting; click one to type a value.
10. **Theme key** switches between the gold and dark themes.
11. **PUNISH** adds 18 dB of drive. Lit red when on.
12. **LICENSE** opens the activation and license window.
13. **Version** of Luxgrit you are running.
14. **Credits.** Click the glowing carved symbol to show the credits; click the panel to close it.
15. **Resize corner.** Drag to scale the whole window.



DARK THEME. The same console in graphite and silver. Click the theme key to switch.

Theme key

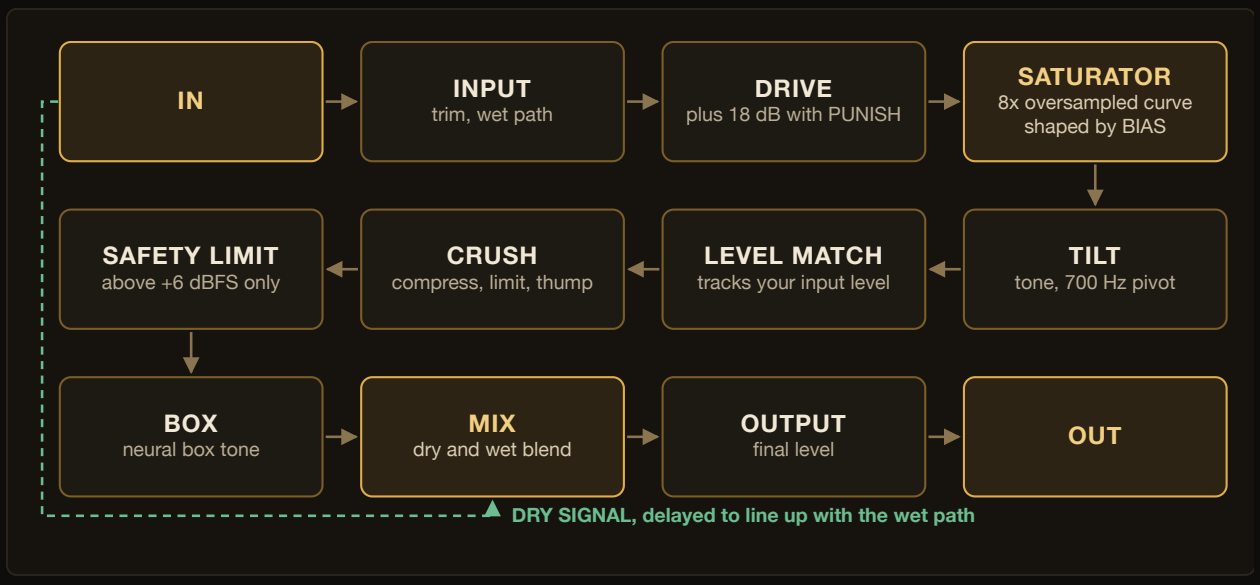
In the gold theme the key shows a sun. Click it to switch to the dark theme.

In the dark theme it shows a crescent moon. Click it to return to gold.

Your choice is remembered on this computer and shared by the other Lux plugins, so every Luxgrit window and every new session opens in the theme you picked last.

05 Signal Flow

Knowing the order of the stages explains most of what you hear. The processed (wet) signal travels through the stages below; the original (dry) signal is split off at the input, delayed by exactly the time the processing takes, and blended back in at MIX.



What the order means in practice

- **INPUT affects only the processed signal.** The dry copy is taken before INPUT, so at MIX 0% INPUT does nothing.
- **TILT shapes the saturated sound**, not what goes into the curve. Turning TILT does not change how hard you are driving.

- **Level matching sits after TILT and before CRUSH.** While the saturator or CRUSH is engaged, Luxgrit measures the loudness of your input and steers the signal going into CRUSH toward it. BIAS deliberately raises that target, and CRUSH adds its own make up gain afterwards, so both can raise the level. When DRIVE, BIAS and CRUSH are all at zero and PUNISH is off, the level matching is switched out, so INPUT and TILT change the level directly.
- **BOX is part of the processed signal**, so MIX controls how much BOX you hear as well.
- **OUTPUT is the last stage** and affects both dry and wet. There is no limiter after it.
- **Latency is fixed at 65 samples** at every sample rate. Luxgrit reports it to your host for automatic compensation, and the dry signal inside the plugin is delayed by the same amount, so every MIX setting stays phase aligned.

06 The Controls

Every knob shows its value underneath. Ranges and defaults below are exactly what the plugin uses; the pictures show the knobs at example settings.



INPUT

RANGE	DEFAULT	STEP
-24.0 to 24.0 dB	0.0 dB	0.1 dB

Sets the level going into the saturator. Like DRIVE, it decides how hard the curve is hit, with a range that also lets you turn a hot source down before it reaches the curve.

How to use it: gain stage first. If a loud drum bus distorts too much even with DRIVE low, pull INPUT down; if a quiet sample barely reacts, push it up. While the saturator or CRUSH is engaged and BIAS is at zero, Luxgrit's level matching keeps the level going into CRUSH close to your input, so INPUT changes character more than volume. With DRIVE, BIAS and CRUSH all at zero and PUNISH off, it simply changes level.



DRIVE

RANGE	DEFAULT	WITH PUNISH
0.0 to 36.0 dB	0.0 dB	18 to 54 dB effective

Pushes the signal into Luxgrit's tape style saturation curve. At **0.0 dB** (with BIAS at zero and PUNISH off) the curve is switched out completely. The curve fades in over the first 6 dB of travel, then drives progressively harder. On its own the curve is symmetric, so it adds mostly odd harmonics; BIAS adds the even ones.

How to use it: for subtle warmth on a mix bus stay in the first 6 to 10 dB. For drums that bite, try 12 to 24 dB. With BIAS at zero, the processed level is matched to your input, so a big DRIVE move will not jump out of the speakers in normal use (at extreme settings on quiet material it can still get a little louder); compare settings by ear, then use OUTPUT for the final level. The curve runs at eight times the host sample rate, which keeps the top end clean at extreme settings.



BIAS

RANGE	DEFAULT
0.0 to 100.0 %	0.0 %

Offsets the saturation curve so it clips harder on one side of the waveform. That asymmetry creates even harmonics (second, fourth and up), the warm, thick quality associated with tubes and tape. The amount grows smoothly with the knob, and the offset itself is removed from the output, so BIAS never leaves a DC shift behind.

BIAS also switches the saturator on by itself: any BIAS above zero engages the curve even with DRIVE at **0.0 dB**.

How to use it: add BIAS when DRIVE alone sounds thin or buzzy, and turn OUTPUT down as you add it. BIAS raises the level a lot, because Luxgrit's level matching deliberately keeps the bias offset in its loudness target. Measured with Luxgrit on a drum break playing at about -17 dBFS RMS, 10 % of BIAS added about 4.5 dB with DRIVE at 0 dB and about 10 dB with DRIVE at 12 dB. Higher settings and quieter sources add more, past 20 dB in extreme cases, and peaks can rise well above 0 dBFS.



TILT

RANGE	DEFAULT	PIVOT
-100.0 to 100.0 %	0.0 % (flat)	about 700 Hz

A broad tilt equalizer placed after the saturator. Turn right to brighten: at **100.0** % the highs rise by about 4 dB while the lows drop by about 8 dB. Turn left to darken: at **-100.0** % the lows rise by about 4 dB and the highs drop by about 8 dB. At **0.0** % TILT is perfectly flat. The slope is gentle, so the change is musical rather than surgical.

How to use it: darken heavily driven drums to tame fizz, or brighten a dull sample so the saturation reads in the mix. Because TILT comes before the level matching, its tone change will not throw your levels around while the saturator is working.



CRUSH

RANGE	DEFAULT
0.0 to 100.0 %	0.0 % (off)

A heavy compressor and limiter with an added layer of low end thump, after the saturator. CRUSH is both the intensity and the amount: it drives the stage harder, raises the compression ratio from 8:1 toward 48:1, and blends in more of the crushed sound as you turn it up. The response is gentle in the first half of the travel and slams near the top. The fast attack (1 ms) and quick release (80 ms) pump with the groove, and both channels are compressed together so the stereo image stays steady. At **0.0** % the stage is skipped entirely.

How to use it: 15 to 30 percent glues a drum loop; 50 percent and up gives the squashed, pumping sound of an overdriven drum bus. For the best of both, set CRUSH high and bring MIX down for parallel compression.



BOX

RANGE
0.0 to 100.0 %

DEFAULT
0.0 % (off)

Blends in the tone of an analog box, recreated with a neural network model that is built into Luxgrit. The model's output is level matched to the signal, so BOX changes color, not loudness. It rolls off both the extreme lows and highs, giving a darker, boxier, more vintage sound. At **100.0 %** you hear the full box tone; settings in between blend it with the signal. The model works on the center of your stereo signal and adds its color equally to both sides, so your stereo width is preserved. At **0.0 %** the model is switched off completely and uses no processing power.

How to use it: try 30 to 50 percent on breaks and samples for an aged, boxed in quality. BOX sits after CRUSH and before MIX.



MIX

RANGE
0.0 to 100.0 %

DEFAULT
100.0 % (fully processed)

Blends the processed signal with the original. At **100.0 %** you hear only the processed signal; at **0.0 %** only the original. Everything from INPUT to BOX is part of the processed signal. The original is delayed to line up exactly with the processing, so parallel blends do not comb filter.

How to use it: parallel saturation keeps the punch of your dry drums while adding the weight of a crushed copy. Start around 30 to 50 percent with heavy settings.



OUTPUT

RANGE
-24.0 to 24.0 dB

DEFAULT
0.0 dB

The final level control, after MIX, applied to both the processed and the original signal. OUTPUT is a plain gain stage with no limiter after it, so high settings can clip the next stage in your chain.

How to use it: bypass Luxgrit, note your level, then match it with OUTPUT so you can compare honestly. Remember that BIAS and CRUSH can raise density and loudness.



Off



On

PUNISH

TYPE
On or off

DEFAULT
Off

Adds 18 dB on top of the DRIVE setting with one click, so DRIVE effectively covers 18 to 54 dB and the saturation curve is always fully engaged. It does not change any other stage. The switch glides in smoothly over a fraction of a second, so it does not click.

How to use it: click it for instant aggression on drum fills, a breakdown or an intro, and automate it in your host for dramatic moments. The DRIVE readout still shows the knob value, so remember that the real drive is 18 dB higher while PUNISH is lit.

07 Working With Luxgrit

Adjusting the knobs

ACTION	RESULT
Drag up or to the right	Raises the value. Drag down or to the left to lower it.
Hold **Cmd** while dragging (**Ctrl** on Windows)	Switches to speed sensitive dragging: slow movements make very small changes for fine adjustment.
Option click a knob (**Alt** click on Windows)	Returns it to its default, like a double click.
Scroll wheel or trackpad over a knob	Turns the knob.
Double click a knob	Returns it to its default: **0.0 dB** for INPUT, DRIVE and OUTPUT, **0.0** % for BIAS, TILT, CRUSH and BOX, and **100.0** % for MIX.
Click a value readout, type, press **Return**	Sets an exact value. Some hosts keep keyboard focus for themselves; if typing does not reach the plugin, use the mouse instead.
Right click a knob (or **Ctrl** click on macOS)	Opens the MIDI menu (see below).

MIDI learn

All eight knobs can follow a hardware controller. Luxgrit listens to MIDI control change messages on any channel; your host must send MIDI to the track or plugin that Luxgrit is on.

1. Right click a knob and choose *MIDI learn (14-bit)...* from the menu. The label under the knob name reads **LEARN...** until a controller arrives; choose the menu item again to cancel.
2. Move a knob or fader on your controller. The first control change Luxgrit receives is assigned, and the label shows the controller number, for example **CC 21/53**.
3. From now on the controller moves the knob. To change it, right click and choose *Re-learn MIDI CC (14-bit)...*; to remove it, choose *Forget CC* (the item shows the controller number).



LEARN. DRIVE is waiting for a controller.



ASSIGNED. DRIVE on CC 21 with its partner CC 53.



ASSIGNED. INPUT on CC 1 and CC 33.

- **High resolution controllers.** Controller numbers 0 to 31 can pair with a second message (the number plus 32) for 14 bit precision, which is why they show as a pair like **CC 1/33**. Ordinary 7 bit controllers on those numbers work too. Controllers 64 to 127 are standard 7 bit and show as a single number. If your controller sends on 32 to 63, Luxgrit stores the pair, so CC 53 shows as **CC 21/53**.
- **Last touch wins.** If you move a knob with the mouse or host automation, the controller lets go of it. It takes over again once you move the controller through the knob's current position (within about 2.5 percent), so there are no sudden jumps.
- **Saved with your session.** Assignments are stored with the plugin settings in your project. One controller can drive several knobs at once if you learn it on each.
- **PUNISH** cannot be MIDI learned, but your host can automate it.

VST3 HOSTS

VST3 has no direct MIDI control change messages, so Luxgrit creates a long list of helper parameters named *MIDI CC* that carry controller data from your host. You may see them in your host's parameter or automation lists. They are normal; you can ignore them.

Automation

All nine controls can be automated by your host. They appear as *Input*, *Drive*, *Bias*, *Tilt*, *Crush*, *Box*, *Mix*, *Output* and *Punish*. Changes to the knobs are smoothed, so automation moves without zipper noise; BOX is the exception and responds instantly, so prefer smooth BOX automation over sudden jumps.

Window size

Drag the corner at the bottom right to resize Luxgrit. The whole interface scales with its shape locked, from half size (470 by 240 pixels) up to three times the original (2820 by 1440 pixels). Each new Luxgrit window opens at its standard size of 940 by 480 pixels.

Saving settings

Luxgrit has no built in preset browser. Your settings, including MIDI assignments, are saved inside your project. To reuse a sound, use your host's own plugin preset or channel strip saving. Theme and window size are not part of the saved settings.

Update notices

Luxgrit checks online for a newer version after you open its window. When one is available, a thin strip announcing it appears below the knobs. Click the strip to download the new installer in your browser, or click the **x** at its right edge to dismiss it; a dismissed version is never announced again.

08 Starting Points

These settings are places to begin, not rules. Load them, then let your ears and the source decide. Controls not listed stay at their defaults.

WARM DRUM BUS



DRIVE	BIAS	TILT	BOX	OUTPUT
12.0 dB	30.0 %	-20.0 %	40.0 %	-12.0 dB

Thickens a drum bus and rounds off its top end, with the box color adding age. OUTPUT at -12.0 dB brings the level back to roughly where it started, because BIAS adds a lot of level. Raise DRIVE for more bite, or BIAS for more weight, and adjust OUTPUT to match. Peaks can still pass 0 dBFS at this setting, so watch your meter.

PARALLEL CRUSH



DRIVE	CRUSH	MIX
24.0 dB	60.0 %	35.0 %

A heavily driven, crushed copy tucked under the untouched drums. The transients stay sharp while the room and sustain swell. Move MIX to set how much pump comes through.

PUNISHED LOOP



PUNISH	DRIVE	TILT	CRUSH	MIX	OUTPUT
On	6.0 dB (24 dB with PUNISH)	15.0 %	35.0 %	70.0 %	-3.0 dB

Aggressive, bright and squashed, with a little of the original kept underneath. Great for intros, breakdowns and hook loops.

09 Troubleshooting

SYMPTOM	WHAT TO DO
No sound through Luxgrit	In VST3 and AU hosts, Luxgrit mutes its output without an active license or trial. Click LICENSE and activate. Your settings are kept.
Turning up DRIVE or INPUT does not make it louder	With BIAS at zero, that is the automatic level matching at work, so you hear the character change rather than a volume jump. With BIAS up, more DRIVE also adds level. Use OUTPUT to change level.
The sound gets louder with BIAS or CRUSH	Expected: BIAS adds a lot of level, often 10 dB or more with DRIVE engaged, and CRUSH adds make up gain. Lower OUTPUT to compensate.
Clipping after Luxgrit	OUTPUT is the last stage and nothing limits after it, and with BIAS up the peaks can sit well above 0 dBFS. Lower OUTPUT until your channel meter is safe.
MIDI controller does nothing	Make sure your host sends MIDI to Luxgrit's track or plugin. If you just moved the knob with the mouse, move the controller through the knob's current position to take it back.
Cannot type a value	Some hosts keep keyboard focus. Drag the knob instead, holding Cmd (Ctrl on Windows) for fine moves.
Many MIDI CC parameters in a VST3 host	These helper parameters carry controller data for MIDI learn. They are normal and can be ignored.
Timing against other tracks	Luxgrit reports its 65 sample latency to your host. Keep your host's delay compensation switched on.

10 Specifications

GENERAL	
Version	1.0.2
Type	Audio effect (saturation)
Formats, macOS	VST3, AU, AAX
Formats, Windows	VST3
Channels	Mono or stereo, matching in and out
Sample rates	Any host rate
Latency	65 samples at every rate
Oversampling	8x on the saturation curve
MIDI	Control change learn on 8 knobs, 7 and 14 bit, any channel
Window	940 by 480, resizable 50% to 300%
Themes	Gold, dark

PARAMETER	RANGE	DEFAULT
Input	-24 to 24 dB	0 dB
Drive	0 to 36 dB	0 dB
Bias	0 to 100 %	0 %
Tilt	-100 to 100 %	0 %
Crush	0 to 100 %	0 %
Box	0 to 100 %	0 %
Mix	0 to 100 %	100 %
Output	-24 to 24 dB	0 dB
Punish	Off or on	Off

All knob parameters move in steps of 0.1. All nine parameters can be automated by the host.



DARK THEME

LUXGRIT

Luxgrit is made by Langston Masingale Industries x Cosmic Audio Lab.

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