MODEL 17 “LIL SMOKEY”



OWNER'S MANUAL

A drum-bus chain in one box: a tone control that walks from modern to a 1950s cutting chain, a 2" tape machine at 15 IPS, a tape slapback and a dark EMT 140 plate. Built to put a modern kit in the room of a classic jazz date.

TELEMETRY AUDIO

VERSION 1.5.0 · AU · VST3 · AAX

MODEL 17

CONTENTS

01	Welcome	What Lil Smokey is, and what it is for
02	The Sound of the Session	The records, rooms and machines behind it
03	Theory of Operation	Signal flow, tone, tape, slapback and plate
04	The Controls	Every knob and readout on the panel
05	Starting Points	Settings to begin from on common sources
06	Specifications & Installation	Formats, channels, latency, system requirements

“None of it was one effect. It was a cutting chain, a tape machine and a room, each doing a little, and the sound was how they stacked.”

CONVENTIONS

Control names appear in **bold**. Numbers in blue circles, such as 3, refer to the panel map in Chapter 04. Levels are in dBFS unless stated otherwise. Knob positions are given as the percentage the panel shows.

01

WELCOME

Lil Smokey is a drum-bus effect built from four stages that always run in the same order: tone, tape, slapback and plate. Each one does a little. Together they take a clean, modern kit and put it on a record from another decade.

Tone walks the kit from modern toward a 1950s cutting chain: the sub-bass goes, the mids that carry a snare and a ride come forward, and the top octave band-limits away. **Saturation** prints the result to a 2" tape machine running at 15 IPS, with the pre-emphasis, head bump and high-frequency compression that make tape sound like tape. The printed signal then feeds a **tape slapback** and a dark **EMT 140-style plate**, so the echo and the reverb hear the kit after it has been to the machine, the way they would have on the session.

Every stage is voiced against measurements of the engine itself, not by eye: frequency response, harmonic distortion, loudness, decay time by octave and echo timing. At zero the tone stage is mathematically identity, and the tape stage holds its own loudness as you push it, so every knob changes character rather than level.

WHAT IT'S FOR

The drum bus. The main use: put it across the whole kit and dial in as much decade as the song wants.

Overheads and room mics. Tape and plate on the cymbals and room give a close-miked kit a space to sit in.

A plate on a send. Plate Amount at 100 % is fully wet, so Lil Smokey works as a dark plate on an aux.

Loops and samples. A clean drum loop through Tone and Saturation sounds lifted from a record.

> ### AT A GLANCE
>
> Modern-to-vintage tone stage, identity at zero · 2" tape at 15 IPS with record pre-emphasis, head bump and gap loss · loudness-holding auto gain · tape slapback, 20–150 ms, two heads for width · dark Dattorro plate, 0.6–3.0 s · stacked concentric controls for amount and time · dry/wet mix · −24 to +12 dB output · zero latency · mono or stereo in, stereo out · six factory presets · resizable, high-resolution panel.

02

THE SOUND OF THE SESSION

A LIVING ROOM IN NEW JERSEY

Rudy Van Gelder trained as an optometrist and recorded music on the side, in a control room built into his parents' house in Hackensack, New Jersey. From the early 1950s Alfred Lion began bringing Blue Note sessions to him, and over the next two decades Van Gelder engineered a large share of the label's catalogue, along with records for Prestige, Impulse! and others. In 1959 he moved into a purpose-built studio in Englewood Cliffs, a tall room with a timber ceiling, and kept working there for the rest of his life.

The drums on those records have a sound people still chase. The low end is gone, because nothing in a 1950s cutting chain passed deep bass intact. The snare and the ride sit right in your face. The top is band-limited and soft. Everything was printed to tape, and there is a sense of room, real or added, behind the kit.

TAPE, ECHO AND PLATES

The tools of the era shaped that sound as much as the rooms. **Tape** compresses as it saturates, highs first, because the machine boosts the treble before recording it. **Tape slapback**, made by feeding a signal back off the playback head of a second machine, became the defining echo of mid-1950s records, most famously at Sun Studio in Memphis. And in 1957 the German firm EMT introduced the **EMT 140**, a large steel plate under tension with a driver and pickups, whose damper let an engineer set the decay. The plate was dense and dark, and for years it was the studio reverb.

WHY A CHAIN

None of this was one effect. It was a cutting chain, a tape machine and a room, each doing a little, and the character came from how they stacked: the echo and the reverb heard the kit after it had been to the machine. Lil Smokey builds that stack into one plugin, in that order, with each stage voiced so that its zero is neutral and its range covers everything from a hint to the full record.

Blue Note, Prestige, Impulse!, Sun and EMT are trademarks of their respective owners, named here only to describe the history of the sound. Telemetry Audio is not affiliated with, endorsed by or sponsored by any of them or by the estate of Rudy Van Gelder.

03

THEORY OF OPERATION

SIGNAL FLOW

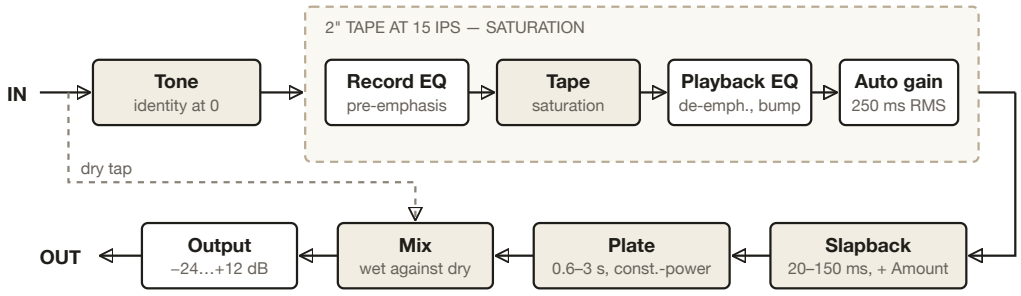


Figure 1. Signal flow. Shaded blocks carry the character. The slapback adds its repeats to the printed signal, and the plate hears the result, so the echoes sit in the same room as the kit. Mix blends the whole wet chain against the untouched input.

Nothing in the chain adds latency, so Lil Smokey reports zero samples and the dry path needs no compensation. A mono input is processed as a stereo pair: the slapback heads and the plate's pickups open it out into stereo from a single source.

THE TONE STAGE

At 0 % the tone stage is *identity*, not merely close to it. Every peak and shelf sits at 0 dB, where the filters pass the signal unchanged, and the high-pass and low-pass, which have no neutral setting, are blended toward a straight wire. The worst-case deviation at the modern end is float rounding.

Turning it up walks toward how those records read. The sub-bass goes, since nothing in that era's chain passed 40 Hz intact. The mids come forward, about 4.6 dB at 1.8 kHz by 66 %, which is what puts a snare and a ride in your face. A little body at 350 Hz keeps the forward mids from reading thin, and the top octave band-limits away. A makeup trim, set against pink noise, keeps the broadband level within 0.8 dB across the whole sweep, so the knob reads as tone, not volume.

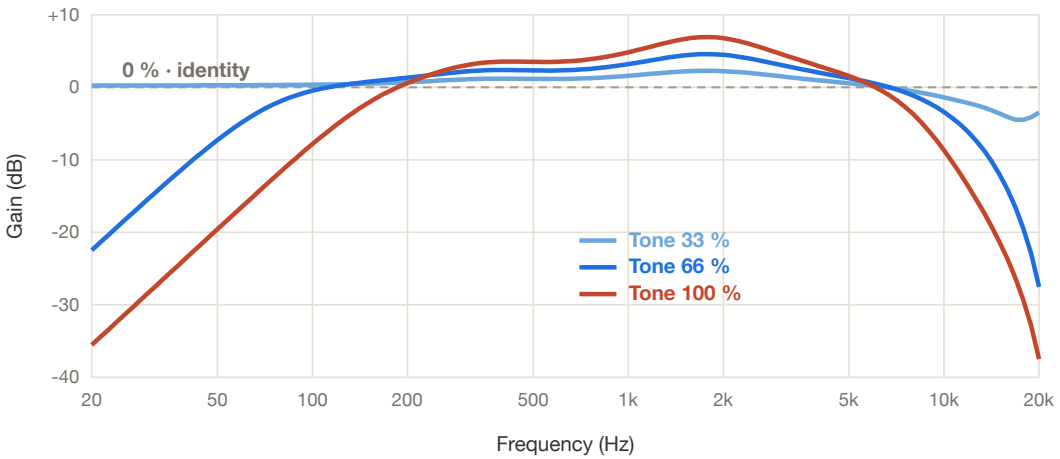


Figure 2. Frequency response of the tone stage at 0, 33, 66 and 100 %, computed by running the engine's own filters. 0 % is a flat line. 66 % is a fully committed vintage setting; the range above it is extra.

THE TAPE MACHINE

Saturation is not a distortion amount. It is the record level relative to the machine's alignment tone, and everything else follows from that one number. The record path boosts the highs before the nonlinearity and the playback path cuts them back after, so cymbals and stick attacks reach saturation before the body of the kit does. That is the most recognisable thing about tape, and a waveshaper alone cannot produce it. A **head bump** at 55 Hz grows as you print harder, **gap loss** closes the top down with level, and a slight asymmetry adds second harmonic alongside the third.

SATURATION	PEAK	2ND	3RD	4TH	5TH
0 %	−6.1 dB	—	−50 dB	—	−98 dB
33 %	−6.2 dB	−42 dB	−28 dB	−64 dB	−55 dB
66 %	−7.1 dB	−37 dB	−15 dB	−44 dB	−27 dB
100 %	−7.1 dB	−40 dB	−14 dB	−46 dB	−24 dB

Harmonics of a 1 kHz tone at −6 dBFS, relative to the fundamental.

The third harmonic dominates with the second always below it, which is the tape signature. Past 66 % the harmonics plateau, because a hot tone is by then close to a square wave, and the extra range shows up as compression and spectral collapse instead: at the top of the knob, 10 kHz falls 26 dB between a quiet signal and a hot one while 100 Hz falls 12 dB.

AUTO GAIN

The knob holds its own loudness. A fixed trim cannot do that, because the stage compresses and the level it costs depends on how hard the material hits it. Lil Smokey matches the RMS of the stage's output to its input with two envelopes sharing a 250 ms time constant. Between drum hits they decay together and their ratio barely moves, so the correction does not pump the way a compressor's sidechain would. On a drum loop, loudness holds within 0.55 dB across a 21 dB span of input levels at every knob position. The

dynamics still change, which is the point: crest factor falls from 13.8 dB at 0 % to 7.0 dB at 66 %. The trim is applied after the nonlinearity and never feeds back into it, so the harmonics in the table above are the same with auto gain on or off.

THE SLAPBACK

A short tape echo with 0.25 feedback. Wow and flutter modulate the playback position, and head bump and gap loss on each pass make every repeat darker and smaller than the last. The record path compresses softly, as tape does. Two playback heads a few percent apart, never more than 6 ms, read as width rather than as a second echo. Moving **Time** glides the delay over about 90 ms, so the pitch bends the way it does when a machine's capstan speed changes.

TIME	REPEAT 1	REPEAT 2	L/R HEAD GAP
20 ms	20.0 ms	40.1 ms	1.3 ms
62 ms	62.0 ms	124.3 ms	4.3 ms
150 ms	150.2 ms	300.7 ms	5.5 ms

Each repeat lands about 24 dB below the one before, so a third is already beneath the noise: a slap, not a delay line.

THE PLATE

The plate follows the Dattorro topology: a four-stage input diffuser feeding a figure-of-eight tank, with the stereo pair taken from two sets of taps on that tank. That is one driver and two pickups, like the real plate. The delay lengths are rescaled to the session's sample rate, so the decay and the stereo image hold at any rate. **Decay** solves the tank's loop gain for the requested reverberation time.

The voicing is the plate as heard on those records: not the plate alone, but the plate through a tube console and onto tape. The send is band-limited at 12 dB/octave from 3 kHz, so cymbal and snare-wire hash never reaches the tank, and the tank damps twice on every pass, so the tail darkens as it goes. The low end is rolled off below about 70 Hz, where a plate barely moves, and an 8 ms predelay keeps drum transients defined. Left and right are effectively uncorrelated, which is where the width comes from.

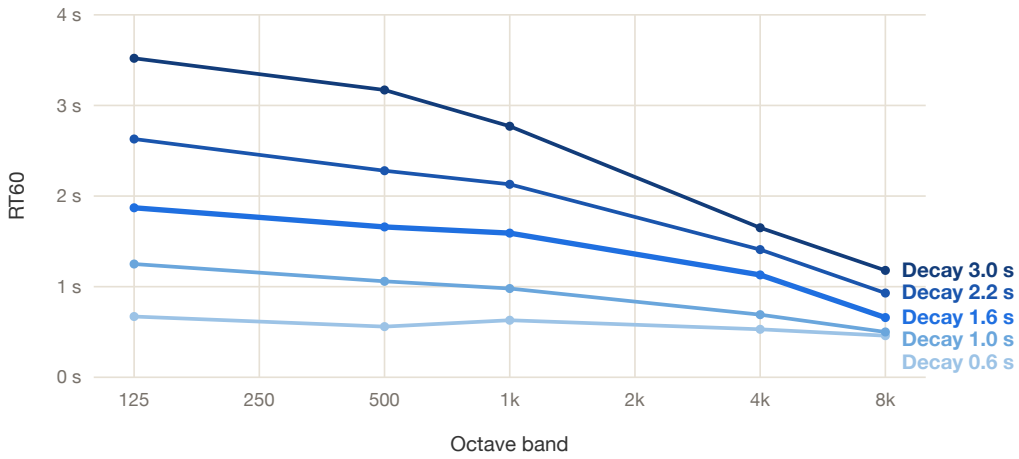


Figure 3. Measured decay time (RT60) by octave band at five **Decay** settings; 1.6 s is the default. The knob tracks the mean of the 500 Hz and 1 kHz bands within 2 %. 4 kHz rings out in 55–70 % of that time and 8 kHz in about 40 %, so the tail is always darker than the hit.

BUILT FOR THE SESSION

Amount, **Mix** and **Output** are smoothed sample by sample, so automating them never zippers, and the slapback's time glides rather than jumps. The slapback's tape keeps running while its amount is at zero, so the repeats are already there when you bring it back in. The plate reports a 4-second tail to the host, so offline bounces and freezes keep the whole decay. The panel resizes from 900 to 3000 pixels wide, drawn from high-resolution artwork that stays sharp on Retina displays, and remembers its size with the session.

04

THE CONTROLS



Default settings: Tone 0 % · Saturation 35 % · Slapback Amount 30 %, Time 62 ms · Plate Amount 25 %, Decay 1.60 s · Mix 100 % · Output 0.0 dB. The panel above shows a session setting, not the defaults.

Every knob shows its value beneath it. Drag up or right to turn a knob up, down or left to turn it down. The two stacked controls hold two parameters each: grab the silver **rim** for the amount and the black **middle** for the time, and the readout beneath shows both, amount in black and time in blue.

CHARACTER

1 TONE

0–100 %

From modern to a 1950s cutting chain. At 0 % the stage is mathematically identity and the signal passes untouched. Turning it up takes away the sub-bass, brings the mids forward and band-limits the top. 66 % is a fully committed vintage setting; above it the knob goes further than any real chain would.

Tip — Start around 33 % on a modern kit: the snare comes forward before anything sounds old.

2 SATURATION

0–100 %

How hard the kit is printed to the 2" machine. Highs saturate first, the low end gains a head bump, and the top closes down as the level rises. Auto gain holds the loudness steady, so this is never a volume control. Like Tone, 66 % is a fully committed setting and the range above it adds compression and density rather than more harmonics.

SLAPBACK

3 AMOUNT

0–100 % · outer ring · host name: Slap Amount

How much tape echo is added back to the printed kit. The echo runs constantly, so bringing the amount up never cuts in late.

4 TIME

20–150 ms · inner knob · host name: Slap Time

The delay of the first repeat. 20 ms is a doubling-tight slap that thickens the kit; 150 ms is the longest that still reads as a snap rather than a separate echo. The knob is skewed so most of its travel covers the short end, where small moves matter most. Changing the time glides the pitch like a capstan changing speed.

Tip — Time the slap to fall between the hits: around 60–90 ms at most tempos.

PLATE

5 AMOUNT

0–100 % · outer ring · host name: Plate Amount

A constant-power blend of the plate against the signal feeding it. 100 % is fully wet, for use on a send. The knob is skewed so the plate fades in over the first half of its travel: a quarter turn is about −20 dB against the dry kit, and the default of 25 % sits at twelve o'clock.

6 DECAY

0.6–3.0 s · inner knob · host name: Plate Time

The plate's reverberation time in the midrange. 0.6 s is a tight room off the plate; 3 s is as long as a kit takes before the tail washes into the next bar. Highs always decay faster than the mids, so longer settings stay dark.

OUTPUT

7 MIX

0–100 %

Blends the whole processed chain against the untouched input. The chain adds no latency, so any blend is phase-coherent. At 0 % the output is the dry input.

Tip — For parallel processing, push Saturation and Tone further than you would in series and bring them in with Mix.

8 OUTPUT

–24 to +12 dB

Final gain, applied after the mix to wet and dry alike.

05

STARTING POINTS

These are places to begin, not presets to obey. Start from the defaults, change only what is listed, then match levels with Output before you judge the result.

> **FACTORY PRESETS**
>
> Each recipe below is also a factory preset of the same name, with every control set to the middle of the range given here. Choose one from your host's preset menu: in Logic, the preset menu in the plugin window's header; in VST3 hosts such as Cubase and Reaper, the program list. **Default** restores the factory settings. Pro Tools keeps its own preset files, so the presets do not appear there.

THE SESSION KIT

CONTROL	SETTING	CONTROL	SETTING
Tone	55–66 %	**Saturation**	50–66 %
Slapback	15–25 % · 60–80 ms	**Plate**	25–35 % · 1.2–1.8 s

The full chain at a committed setting: no sub-bass, the snare and ride forward, a printed edge and a short, dark room behind the kit.

MODERN BUS GLUE

CONTROL	SETTING	CONTROL	SETTING
Tone	0–15 %	**Saturation**	25–40 %
Slapback	0 %	**Plate**	10–15 % · 0.8–1.0 s

Mostly tape. The auto gain keeps the level steady while the transients round off and the kit pulls together, and a little short plate gives it a place to sit.

PARALLEL TAPE CRUSH

CONTROL	SETTING	CONTROL	SETTING
Tone	40–60 %	**Saturation**	85–100 %
Slapback / Plate	0 %	**Mix**	25–40 %

Print the kit as hard as the machine goes, then tuck it under the dry kit. The crushed copy brings up the room and sustain while the dry kit keeps the attack.

ROCKABILLY SNARE

CONTROL	SETTING	CONTROL	SETTING
Slapback	50–70 % · 90–130 ms	**Saturation**	45–60 %
Tone	30–45 %	**Plate**	10 % · 0.8 s

A loud, single slap behind the snare and the vocal-era tape edge. Time it so the repeat lands clear of the next hit.

DARK PLATE ON A SEND

CONTROL	SETTING	CONTROL	SETTING
Plate	100 % · 1.6–2.4 s	**Mix**	100 %
Tone	0–33 %	**Saturation**	0–35 %

On an aux, Plate Amount at 100 % returns only the plate. Tone and Saturation still shape what feeds it, so a little of each darkens and thickens the send.

06

SPECIFICATIONS & INSTALLATION

SPECIFICATION	VALUE
Plug-in formats	Audio Unit, VST3, AAX (Pro Tools)
Platform	macOS 10.13 or later; universal binary, native on Apple Silicon and Intel
Channel configurations	Mono in / stereo out; stereo in / stereo out
Sample rates	Any host rate; filters are designed and plate delays rescaled at the session rate
Latency	0 samples
Reported tail	4 s
Factory presets	6: Default and the five Starting Points (AU and VST3)
Tone	Identity at 0 %; up to ≈ –28 dB at 30 Hz, +6.9 dB at 1.8 kHz, –24 dB at 16 kHz at 100 %; broadband level within 0.8 dB on pink noise
Tape	2" at 15 IPS; record pre-emphasis and playback de-emphasis; head bump at 55 Hz; gap loss with level
Auto gain	RMS-matched, 250 ms; within 0.55 dB across a 21 dB input span
Slapback	20–150 ms; feedback 0.25; wow and flutter; two heads, up to 6 ms apart; ≈ 90 ms time glide
Plate	Dattorro topology; RT60 0.6–3.0 s; send band-limited 12 dB/oct from 3 kHz; low cut ≈ 70 Hz; 8 ms predelay
Output	–24 to +12 dB, after the mix
Interface	Resizable 900–3000 px wide, fixed proportions; size saved with the session

INSTALLATION

Open **Model-17-1.5.0.dmg**, run **Model 17 1.5.0.pkg** and choose the formats you want. Each one installs system-wide, so macOS asks for your password:

FORMAT	LOCATION	HOSTS
Audio Unit	`/Library/Audio/Plug-Ins/Components`	Logic Pro, GarageBand, other AU hosts
VST3	`/Library/Audio/Plug-Ins/VST3`	Ableton Live, Cubase, Reaper, other VST3 hosts
AAX	`/Library/Application Support/Avid/Audio/Plug-Ins`	Pro Tools

The installer and the disk image are signed and notarized by Apple, and the AAX is PACE-signed for retail Pro Tools. The bundles are named **Model 17**; hosts list the plugin as **Lil Smokey** by Telemetry Audio. Logic scans Audio Units on launch. In Live, open **Settings** › **Plug-Ins** and click **Rescan**. Pro Tools picks up the AAX the next time it launches.

> **GAIN STAGING**
>
> Tone and Saturation hold their own level, so the most common change in loudness comes from the effects: the slapback and the plate add energy as you turn them up. Set the effects by ear, then use **Output** to match the bypassed level before comparing.

© 2026 Telemetry Audio. Lil Smokey and Model 17 are products of Telemetry Audio. Blue Note, Prestige, Impulse!, Sun and EMT are trademarks of their respective owners. Audio Unit and macOS are trademarks of Apple Inc. VST is a trademark of Steinberg Media Technologies GmbH. AAX and Pro Tools are trademarks of Avid Technology, Inc. All other trademarks belong to their owners and are used for identification only. Specifications describe version 1.5.0 and may change.