BLEVINS TONE CO.

CRUMBLE

BOUTIQUE OVERDRIVE AMPLIFIER · TANK SPRING REVERB · PEDALS · STUDIO · AU · VST3

User Manual



WELCOME

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SECTION 1

Introduction

Crumble is a guitar amplifier plug-in in the tradition of the great hand-built American boutique overdrive amps: a thick, creamy, singing lead tone that stays clear and articulate and responds to every change in your picking, and a clean channel with real depth and sparkle.

It's built to be played live. At the Normal quality setting the whole amp adds about 0.06 ms of delay, so you can monitor through it in your recording app the way you'd play through a real amp.

Inside Crumble

- A strobe tuner that mutes the output while you tune.
- A pedalboard with six slots in front of the amp. Any of twenty-one pedals can go in any slot, and you can drag pedals to change their order: boosts, overdrives, distortion, fuzz, compressors, a volume swell, an envelope filter, a graphic EQ, chorus, phaser, vibe, tremolo, a polyphonic octave, a delay and a tape echo.
- A complete preamp with two inputs (NORM and FET), Volume with a Bright switch, Deep and Rock/Jazz voicing, a Treble/Middle/Bass tone stack calculated from the real circuit, and the P.A.B. pre-amp boost.
- A switchable overdrive section with two extra cascaded tube stages, controlled by Level and Ratio.
- A tube-driven spring reverb ahead of the Master, with its own TANK page: physically modelled springs, four tanks, three decay times, an IN / OUT switch, and a choice of driver: the amp's own 12AT7, a 6K6 or 6V6, or a solid-state op-amp.
- A power amp with Master, Presence and natural power-supply sag.
- Dual Amp: add a second, completely independent amp, and pan and balance the two across the stereo field.
- A studio strip: a level meter, quality switch, input trim, noise gate, cabinet (or your own impulse response) with five mic types, mic position and distance, panning, a room reverb with its own low cut, output level and a Program EQ.
- An opto leveler, the SD-2 studio delay, the SV-1 studio reverb and BOZEMAN, a dual reverb with twelve types in each engine.
- Bypass switches on every module, a preset box with fifteen factory presets, and a resizable window.

New in version 1.12.0

- **Component-modelled drive pedals.** Lift, Minotaur, Midhump, Vermin and Sizzle are now built from the original pedals' schematics and solved part by part, and two new pedals join them: **Bobby**, a two-stage transparent overdrive, and **Fonkelope**, a transistor-ladder envelope filter. Twenty-one pedals in all. See *Pedal guide*.
- **14-day trial.** The free trial is now 14 days.

New in version 1.11

- **A new look.** Every module is a photographed panel, and the amp is a head sitting in the rack, with real knobs, switches, pilot lamp and cable.
- **TANK** has the same panel as every Blevins amp: an IN / OUT switch, KICK, and four DRIVER buttons. The 12AT7 is still the amp as built; OP-AMP is new.
- **MIDI Learn** on every control.

New in version 1.10

- **TANK page.** The spring reverb has its own module button and page. The tank is rebuilt around physically modelled springs: four tanks (long or short, two or three springs), three decay times, a choice of 12AT7, 6K6 or 6V6 driver, and a new DRIP knob. The rear panel is gone; everything it held is on TANK. Your sessions and presets keep their reverb level.
- **Mic types, MIC and DIST.** Each cabinet now has five close-mic types, a MIC position knob (from the dust cap to the edge of the cone; 3 is the sound Crumble always had) and a DIST knob for how far the mic sits from the grille.
- **ROOM CUT** on the studio strip: a low cut on the room sound only.
- **LEVEL** knobs in Dual Amp, to balance the two amps.
- **LOW ATTEN** on the Program EQ now cuts up to 17.5 dB, like the original hardware. Saved settings are converted so they sound the same.
- **Three new factory presets:** Dirt On Your Hands, rog 1 and v2, something.
- Lower CPU use than before.

New in versions 1.8 and 1.9

- **LEVEL meter** next to the INPUT knob: shows how hard your guitar is hitting the pedals and amp.
- **Crumble app:** a "Plug in and strum" screen finds your guitar's input the first time you open it, and the GUITAR IN menu at the top of the studio strip shows and changes it. Each interface input is listed on its own.
- **Preset box** at the right end of the module buttons: save and recall your own presets. They are shared with Logic.
- Fixed: popping and crackling in the Bayou overdrive pedal.

SECTION 2

Installing Crumble

Crumble comes in the Blevins Tone Co. installer, a standard Mac installer. It installs three versions, so it works in almost any recording app, or with no recording app at all:

- **Audio Unit (AU)** for Logic Pro, GarageBand, MainStage and other AU hosts.
- **VST3** for most other recording apps that load VST3 plug-ins.
- **The Crumble app**, a stand-alone Mac app in Applications › Blevins Tone Co.: plug in and play without a recording app.

What you need

- A Mac running macOS 11 or later (Apple silicon or Intel; it runs natively on both).
- A 64-bit AU or VST3 host.

Install

1	Quit your recording app.
2	Double-click **Install Blevins Tone Co.pkg** and follow the steps. Click **Customize** if you only want some of the plug-ins.
3	Open your recording app. If Crumble doesn't appear, ask the app to rescan its plug-ins.
4	**Logic Pro:** on a guitar track's Audio FX slot, choose **Audio Units › Blevins Tone Co. › Crumble**. **Other apps:** look in the VST3 list under Blevins Tone Co.

If something goes wrong

Problem	What to do
Crumble doesn't appear in Logic	In Logic, open Settings › Plug-in Manager, find Crumble, and click Reset & Rescan Selection.
Crumble doesn't appear in another app	Make sure the app is scanning /Library/Audio/Plug-Ins/VST3, then rescan its plug-ins.

UNINSTALLING

Open Applications › Blevins Tone Co. › Blevins Tone Co. Uninstaller and choose what to remove. Keep your licences if you might reinstall. Presets you've saved are always kept.

SECTION 3

Trial and activation

Crumble runs as a full, free 14-day trial on each computer: every feature works. When the trial ends, it goes quiet until you activate it with your licence from your Blevins Tone Co. purchase.

Start a trial or activate

- Open Crumble in your recording app (or open the Crumble app). The first time, the activation panel covers the window. Click **Activate online**.
- Your browser opens your Blevins Tone Co. account. Sign in, or create an account with your email. If you have bought Crumble, your licence activates; if not, your 14-day trial starts. Go back to your recording app: Crumble unlocks within a few seconds. There is no serial number to type.
- During the trial, a small Trial pill in the bottom-right corner shows the days left. Click Unlock on it to open the activation panel at any time.

Your licence and your computers

- Each licence works on up to 3 computers. Once activated, Crumble keeps working without an internet connection.
- To move it to another computer, deactivate it from the licence panel on the old one, or sign in to your account and remove the old computer; then activate on the new one.
- Bought a bundle? Each plug-in in it has its own licence in your account; activate each one the same way.
- Studio computer never online? Click **No internet? Activate offline** in the activation panel and follow the steps.
- To update, download the latest installer from your account and run it again. Your licence, settings and presets stay as they are.

THE CRUMBLE APP

The stand-alone Crumble app comes with Crumble: the same licence covers it. If its activation panel appears, activate it the same way as the plug-in.

SECTION 4

Quick start

Getting a great sound takes about a minute:

1	**Plug in.** Connect your guitar to your audio interface's instrument (Hi-Z) input. Create an audio track for that input, turn on input monitoring, and add Crumble to the first effect slot.
2	**Check your level.** Strum hard and watch the LEVEL meter beside INPUT on the studio strip: aim for the green lamps. Use your interface's gain to get close, then INPUT to fine-tune.
3	**Tune up.** Press PEDALS and click the Strobe tuner's footswitch. Crumble goes silent while you tune. Click it again when you're done.
4	**Start from the defaults.** Press AMP. Crumble loads with the overdrive on and every knob at a musical middle setting, into the 2x12 Open 12L cabinet with a touch of room.
5	**Find your gain.** Use Level to set how much overdrive you want and Ratio to set how loud it is. Flip Overdrive off to hear the clean channel, and use Volume to set its edge.
6	**Shape it.** Adjust Treble, Middle and Bass. Try the Rock/Jazz and Deep switches; they change the character more than any knob.
7	**Place it.** Choose a cabinet on the studio strip, add some spring Reverb (press TANK to shape the springs), then use Room Mix to put the amp in a space.
8	**Polish it.** Press COMP, switch the opto leveler in and raise Peak Reduction until the meter shows 2–4 dB of gain reduction. Then try a little SD-2 delay (DELAY), SV-1 reverb (VERB) or BOZEMAN.

PLAYING LIVE

For the most immediate feel, set your recording app's buffer to 64 or 128 samples and leave the quality switch on NORMAL or HQ BOUNCE while you play.

SECTION 5

The window



The studio strip at the top, the module buttons, and the amp.

The studio strip is always at the top. Under it is a row of lighted push buttons: PEDALS · TANK · AMP · COMP · DELAY · VERB · BOZEMAN. Press one and that module appears below; the window resizes to fit it. The preset box sits at the right end of the row. Crumble remembers which module you had open, and the window size, with your project.

Bypass switches

Every module can be taken out of the chain while the sound keeps flowing through the rest. Bypassed panels are shaded so you can see at a glance what's out.

- **AMP BYPASS** (at the top of each amp) skips the whole amp, including its spring reverb. You hear the pedalboard going straight into the studio strip, so it's much quieter: that's your guitar's own level.
- **BYPASS** on the studio strip takes out the input trim, gate, cabinets, room and output.
- The spring reverb has an IN / OUT toggle on the TANK page. The opto leveler has an IN / OUT switch, the SD-2, SV-1 and BOZEMAN each have a toggle switch on their panel, and the Program EQ has IN.

Resizing

Drag the bottom-right corner to make Crumble any size you like. It keeps its proportions.

SECTION 6

The Crumble app

Crumble also comes as a stand-alone Mac app, so you can plug in and play without opening a recording app. It's the same amp, pedals and studio rack as the plug-in, in its own window, in Applications › Blevins Tone Co.

Playing through it

1	**Turn down first.** Turn your speakers down or put on headphones before you open the app.
2	**Plug in.** Connect your guitar to your audio interface's instrument (Hi-Z) input.
3	**Open Crumble.** The first time, macOS asks whether Crumble may use the microphone. Click OK: that's how macOS describes your interface's input. (If you said no, turn it on in System Settings › Privacy & Security › Microphone.)
4	**Plug in and strum.** The first time, a "Plug in and strum" screen lists your interface's inputs. Play your guitar: the input it's on lights up and is selected for you. Tick "Turn the sound on" if you're using headphones or monitors, then click Use.
5	**Choose a small buffer** (64 or 128 samples) under Options › Audio/MIDI Settings… so the amp feels immediate.
6	**Play.** Check the LEVEL meter as in Quick start and pick a factory preset to begin.

Choosing your guitar input

The GUITAR IN menu at the top of the studio strip shows which input the app listens to. It always uses one input, because the amp is mono. Choose **Find my input** in that menu to run the plug-in-and-strum setup again (for example with a different interface).

Good to know

- The app remembers your audio settings and your last sound when you quit.
- Options › Save current state… saves your sound as a file and Load a saved state… brings it back. The factory presets and your own are in the preset box, as in the plug-in.
- Tempo-synced delays and modulation follow 120 BPM in the app, since there's no song tempo to follow. Switch Sync off on a delay to set its time freely.
- To record what you play, use the plug-in in your recording app instead: the app is for practising, writing and jamming.

SECTION 7

Signal flow

Your guitar passes through Crumble in the same order as through a real amp, then into a speaker cabinet, a microphone and a room. Anything early in the chain changes how hard later stages are driven.

Stage	What happens
Guitar, Input, Gate	The studio strip's input trim and noise gate (the LEVEL meter shows the level here).
Tuner and pedals	The strobe tuner (mutes when on), then six pedal slots in any order.
Input jack, V1 and Volume	NORM or FET input, the first stage, Volume and Bright.
Deep and tone stack	The coupling network, Rock/Jazz and Treble, Middle, Bass (or P.A.B. around them).
Clean or overdrive	The clean recovery stage, or two extra cascaded overdrive stages (Level and Ratio).
Spring reverb (TANK)	Fed from the preamp and mixed back in before the Master.
Master and power amp	Presence, output-tube compression and power-supply sag.
Cabinet and mic	One of four cabinets with the mic type, position and distance, or your own IR.
Pan, level, room and studio rack	Pan and Dual Amp level, room (with its own low cut), opto leveler, SD-2, SV-1, BOZEMAN, Program EQ and Output.

- Volume and the input jack set how hard the second stage and the tone stack are hit.
- The tone stack comes before the overdrive. EQ changes what gets distorted, not just the final tone, so Middle and Bass have a big effect on how the overdrive feels. P.A.B. bypasses the tone stack.
- The spring reverb comes before the Master, so turning up the Master pushes the reverb into the power tubes too.
- With Dual Amp on, the pedalboard feeds both amps; each amp has its own reverb, cabinet, mic, pan and level.
- The cabinet, room, studio units and Program EQ come last. They shape what you hear but never change how the amp responds to your playing. The amp and pedals run at 4x oversampling, or 16x in HQ.

SECTION 8

Quality: Normal, HQ and HQ Bounce

The three QUALITY buttons at the top right of the studio strip choose how much Crumble oversamples the amp and pedals. Oversampling runs the distortion at a higher internal sample rate, so the harmonics it creates don't fold back as harsh, unrelated tones (aliasing). It matters most on high notes driven hard.

Setting	What it does	When to use it
NORMAL	4x oversampling. About 0.06 ms of delay.	Playing live and tracking; lowest CPU
HQ	16x oversampling: about 24 dB less aliasing on hard-driven high notes. Roughly four times the CPU for the amp and pedals, and one sample more delay.	Mixing a part with lots of high, saturated lead lines
HQ BOUNCE	NORMAL while you play; HQ automatically when you bounce or export.	Best of both: light on CPU while you work, highest quality in the final file

HQ BOUNCE always reports the HQ delay to your recording app, so the bounced file lines up perfectly.

WHICH ONE SHOULD I USE?

Leave Crumble on HQ BOUNCE. You play through the lighter Normal setting, and every bounce or export is made at HQ without you having to remember. The setting is saved with your project.

SECTION 9

The pedalboard



The pedalboard: the strobe tuner and six pedal slots.

Six pedal slots sit between the tuner and the amp's input, wired left to right. Any pedal can go in any slot. Click a pedal's footswitch to switch it on; its LED lights. Drag a knob to turn it (its value pops up while you drag), and double-click to reset it.

The strobe tuner

The Strobe tuner is always first on the board. Click its footswitch to tune; the output is muted while it's on, so you can tune silently mid-song. The display shows the note and how many cents sharp or flat you are. The strobe stripes drift left when you're flat, right when you're sharp, and stand still (and turn green) when you're in tune. CAL sets the reference pitch from A = 430 to 450 Hz (default 440).

Choosing a pedal

Click the menu under a slot and pick a pedal. The menu is grouped into Drive, Dynamics, Filter and EQ, Modulation, Pitch and Delay, with a short description after each name. The new pedal starts at its own default settings, and the swap fades smoothly so there's no click. Choose Empty Slot to leave a slot open. You can use the same pedal more than once.

Moving pedals

Drag a pedal by its body (not a knob or the footswitch) to the left or right. The other pedals slide over to make room, and the pedal keeps all its settings in its new position. Order matters: a compressor before a drive evens out what the drive sees, Sweep before a drive sounds synthy, and Oktave tracks best first in line.

Tempo sync (Echoes and Spool)

Echoes and Spool each have a small SYNC button. With it on, Time steps through note values (from 1/32 triplet up to a whole note, including dotted and triplet values) and follows your project's tempo (120 BPM in the stand-alone app). The current time or note value is shown above the knob. Switch either delay off and its echoes ring out naturally.

SECTION 10

Pedal guide

Knob values are 0–10 like the real pedals.

COMPONENT-MODELLED PEDALS

Lift, Bobby, Minotaur, Midhump, Vermin, Sizzle and Fonkelope are built from the original pedals' schematics and parts lists and solved part by part: every resistor, capacitor, diode, transistor and op-amp. They clean up with your guitar's volume and react to your pick the way the real ones do. Sessions that used the earlier Lift, Minotaur, Midhump, Vermin or Sizzle open with these in their place; give them a listen, as they sound closer to the originals than before.

Drive

Pedal	Style	Controls	What it's for
Lift	Clean boost in the style of a tape-echo preamp, component-modelled	Boost, STOCK / UNITY / VINTAGE	Pushes the amp harder and adds a little sparkle. STOCK is the factory setting; UNITY turns it down to unity at minimum; VINTAGE also rolls off the extra treble.
Halo	Transparent overdrive, clean blended with the drive	Gain, Treble, Output	Low Gain gives a fat, clean boost; higher Gain blends in smooth, open overdrive.
Bobby	Two-stage transparent overdrive, component-modelled	Volume, Gain, Bass, Treble, ASYM / SYM / COMP	Open, amp-like drive that keeps your guitar's voice. Bass and Treble cut as you turn them up, as on the original. New.
Minotaur	Germanium-diode overdrive in the style of the gold boutique classic, component-modelled	Gain, Treble, Output	Warm, mid-forward drive with some clean always underneath.
Midhump	Mid-hump overdrive in the style of the green '80s classic, component-modelled	Drive, Tone, Level	In front of a driven amp: Drive low, Level high.
Bayou	Blues overdrive, in the style of the blue amp-in-a-box pedals	Level, Tone, Gain	Amp-like breakup that sags and breathes, and cleans up when you pick softly or roll back your guitar's volume.
Vermin	Op-amp distortion in the style of the black '80s classic, component-modelled	Dist, Filter, Volume	Gritty to thick, compressed distortion.
Sizzle	Two-transistor fuzz in the style of the round '60s fuzz, component-modelled	Fuzz, Volume, SILICON	Splattery to thick, saturated sustain. Germanium transistors, or silicon with SILICON on.

Dynamics, filter and EQ

Pedal	Style	Controls	What it's for
Squeeze	The COMP module's optical compressor as a pedal	Squeeze, Gain, Mix, LIMIT	Even out picking, add sustain. Mix below 10 blends in the dry signal (parallel compression).
Cluck	Squash compressor in the style of the red country classic	Output, Sens	The snappy pick attack, then the squish, then long sustain. Sens sets how hard it squashes.
Bloom	Auto volume swell	Sens, Attack (about 30 ms to 2 s), Mix	Fades each new note or chord in like a volume pedal. Sens sets how hard you pick to retrigger it.
Sweep	Envelope filter that opens as you dig in	Cutoff, Reso, Env, Drive, 4-POLE	Quack, auto-wah and synth tones. 4-POLE on is steep and vocal; off is gentler.
Fonkelope	Transistor-ladder lowpass envelope filter in the style of the classic synth-maker's pedal, component-modelled	Drive, Cutoff, Reso, Amount, Mix, 4-POLE, FAST / SMOOTH	Deep, rubbery envelope filtering. Set Drive so your playing lights the LEVEL light yellow. New.
Contour	10-band graphic EQ	Ten faders from 31 Hz to 16 kHz (±12 dB each), Level (±12 dB)	Shape the guitar before the amp: a mid boost to push a lead, a low cut to tighten a drive.

Modulation, pitch and delay

Pedal	Style	Controls	What it's for
Shimmy	Warm, analog-style chorus	Rate (0.08–6 Hz), Depth, Mix	Shimmering cleans and wide, watery leads.
Swirl	Four-stage phaser, orange one-knob style	Speed, SCRIPT	The swirling swoosh on cleans and funky rhythm parts. SCRIPT on is the early, smoother circuit; off is more pronounced.
Throb	Photocell vibe	Speed, Intens, Volume, VIBRATO	The lopsided, throbbing pulse of the lamp-and-photocell classics. VIBRATO on gives pure pitch wobble.
Wobble	Tremolo	Rate (0.5–12 Hz), Depth, Shape	Low Shape for a vintage amp-style pulse; high Shape for a stuttering, chopped effect.
Oktave	Polyphonic octave down	Direct, Oct 1, Oct 2	Adds one (Oct 1) and two (Oct 2) octaves below. Tracks chords and bends cleanly. Direct is your original signal.
Echoes	Delay with darkening repeats	Time (20–1200 ms), Repeats, Mix, Filter, SYNC	Slapback, rhythmic delays and long ambient trails. Filter is off fully left; turn it up to darken the repeats only.
Spool	Tape echo with wow and flutter	Time (40–1000 ms), Repeats, Mix, Wow, SYNC	Warm, smeared repeats. Wow sets the tape's age; Repeats near the top self-oscillates.

SECTION 11

Pedalboard recipes

Sound	Settings
Clean boost into the lead channel	Lift on: Boost 4, BRIGHT on, in front of the amp's drive channel.
Tight, focused lead	Midhump on (MH808): Drive 2, Tone 5, Level 7, into the drive channel set moderately.
Stacked drives	Minotaur (Gain 3, Output 7) into Bayou (Gain 5, Level 5) into a clean amp turned up just short of breakup.
Country chicken-pickin'	Cluck (Output 6, Sens 6) into the clean channel, with a Spool slapback (Time 110 ms, Repeats 2, Mix 3).
Fuzz lead	Sizzle on: Fuzz 7, Tone 6, Volume 5, into the clean channel.
Seventies rhythm	Swirl on (SCRIPT on, Speed 3) into the amp at edge of breakup.
Throbbing blues-rock lead	Throb (Speed 4, Intens 6) after Vermin (Dist 6, Filter 4), into the clean channel.
Funky quack	Squeeze (Squeeze 6, Gain 4) into Sweep (Cutoff 2, Reso 7, Env 8, Drive 1, 4-POLE on). Clean channel.
Violin swells	Bloom (Sens 5, Attack 6, Mix 10) into Echoes (SYNC 1/4 dotted, Repeats 5, Mix 4); BOZEMAN Hall.
Huge octave riff	Oktave first on the board: Direct 7, Oct 1 7, Oct 2 3, into the drive channel.
Mid-push for solos	Contour: 500 Hz and 1K up 3, 31 and 62 Hz down 4, Level up 2. Switch it on for the solo.
Ambient swell	Echoes on: SYNC, 1/4 dotted, Repeats 6, Mix 4; SV-1 in, Shimmer, Decay 8 s, Mix 35%.
Surf tremolo	Wobble on: Rate 6 Hz, Depth 7, Shape 2; spring Reverb 5 on the amp, Drip up on the TANK page.

SECTION 12

The amp face



The amp.

Drag a knob up and down to turn it; its value pops up while you drag. Double-click a knob to return it to its default. Click a toggle to flip it.

Control	What it does
NORM / FET inputs	Click a jack to plug in. FET adds a clean JFET boost (about +6 dB, a little more sparkle) before the first tube.
Volume	First-stage volume: your main gain on the clean channel, and how hard the overdrive stages are hit.
Bright	Treble boost around the Volume control. Strongest at low Volume; fades out as Volume goes up.
Deep	Lets more low-mid body through to the tone stack. Thicker and warmer when on.
Rock / Jazz	Tone-stack voicing. Rock has a gentle mid scoop. Jazz is flatter and more open.
Treble, Middle, Bass	Passive tone stack. The controls interact like the real circuit: turning Middle down also makes Treble and Bass sound bigger.
P.A.B.	Pre-amp boost. Bypasses the tone stack completely for a flatter, hotter signal (Treble, Middle and Bass stop working while it's on).

Control	What it does
Overdrive	Switches between the clean channel (off) and the overdrive channel (on).
Level	Drive into the two overdrive stages. Low settings are tighter and more upper-mid; higher settings get fuller, thicker and more compressed.
Ratio	Output level of the overdrive section. Use it to balance the lead against the clean channel.
Reverb	Spring reverb level: the same control as REVERB on the TANK page.
Master	Power-amp level. Higher settings bring in output-tube compression and sag.
Presence	Upper treble and bite from the power amp's feedback loop.
Standby / Play	Standby mutes the amp and dims the power lamp; Play is normal operation.
AMP BYPASS, DUAL AMP	Bypass the amp, or add a second amp.

SECTION 13

The switches in depth

Bright

A small capacitor across the Volume control lets treble skip past it. When Volume is low, most of your signal is turned down but the treble isn't, so the sound gets much brighter. As Volume goes up, the difference disappears, and at full Volume Bright does almost nothing. Use it to add sparkle to a quiet clean sound, and leave it off when the Volume is high or the overdrive is on.

Deep

With Deep off, the coupling network ahead of the tone stack trims some low-mids (about 6 dB below roughly 400 Hz). Turning Deep on lets that body through. On a clean sound it adds warmth; into the overdrive it makes the distortion thicker and heavier. With humbuckers, try it off; with single coils, try it on.

Rock / Jazz

Changes a resistor in the tone stack. Rock gives a mild mid scoop, which sounds fuller and rounder. Jazz keeps the response almost flat, so it sounds more open, more even and more "hi-fi." It's the bigger tonal switch of the two, so try both on every sound.

P.A.B.

Bypasses the tone stack entirely. A passive tone stack always loses level, so taking it out of the circuit makes the signal both flatter and hotter, which pushes the overdrive harder. Treble, Middle and Bass have no effect while P.A.B. is on.

Overdrive

Selects which path reaches the power amp: the clean recovery stage (off) or the two extra cascaded overdrive stages (on). Switching is smooth, so you can automate it to move from rhythm to lead mid-song.

NORM / FET input

Not a switch on the panel, but it works like one: click the jack you want to use. The FET input is a clean solid-state booster ahead of the first tube. It's great for single coils, or for an extra push into the overdrive without changing your other settings.

SECTION 14

The overdrive section

The overdrive channel adds two tube stages in series after the tone stack. Two knobs control it, and they do very different jobs:

Knob	Controls	Think of it as
Level	How hard the two overdrive stages are driven, and how full they sound	Gain: how much distortion
Ratio	How loud the overdrive channel is afterwards	Channel volume: how loud the lead is

How Level changes the character

At low Level settings, the overdrive stages cut some low end so the distortion stays tight, focused and upper-mid forward, good for rhythm parts and edge-of-breakup tones. As you turn Level up, more low-mids come through and the distortion becomes thicker, smoother and more compressed: the long, singing sustain these amps are known for.

Gain comes from several places

- **Volume:** the front-end level.
- **FET input and P.A.B.:** both add level before the overdrive.
- **Middle, Bass and Deep:** more low-mids into the overdrive means a thicker, heavier distortion.
- **Level:** the overdrive's own drive.
- **The pedals:** drive and boost pedals (Lift, Halo, Minotaur, Midhump, Bayou, Vermin, Sizzle) push the input harder.

THE CLASSIC APPROACH

Keep Level moderate (4–6) and let your guitar's volume knob do the work. These amps clean up beautifully when you roll back the guitar's volume, and Crumble does too: one setting can cover rhythm and lead.

BALANCING CLEAN AND LEAD

Set your clean sound first with Overdrive off. Then switch Overdrive on and use Ratio, not Master, to match or exceed the clean level. Master changes both channels.

SECTION 15

Reverb, Master, Presence and Standby

Reverb

A tube-driven spring tank, fed from the preamp and mixed back in before the Master, so higher Master settings drive the reverb into the power tubes along with your dry sound. The front-panel Reverb knob sets how much you hear: 1–3 gives subtle depth, and 5 and above gives an obvious spring sound. The tank itself is set on the TANK page.

Master

Sets the level into the power amp. Low settings keep the power amp clean and tight. As you turn it up, the output tubes start to compress and the power supply "sags" on hard picking, which softens the attack and makes notes bloom. Use the Output knob on the studio strip, not Master, to set the level going into your recording app.

Presence

Adds or removes upper treble (around 4 kHz and above) from the power amp. Lower settings are rounder and warmer; higher settings add bite and help a lead cut through a band. Presence affects both channels.

Standby / Play

Standby mutes the amp without bypassing the plug-in, just like the standby switch on a tube amp. The power lamp dims and the faceplate darkens slightly.

SECTION 16

The TANK page: spring reverb



Press TANK: the reverb tank.

The amp's spring reverb, on its own page. A 12AT7 driver tube, its two halves in parallel, drives the spring tank through a transformer; a recovery stage brings the springs' tiny signal back up and mixes it in before the Master. The springs themselves are modelled as physical objects, so they ring, splash and drip like real ones, and every tank and decay time has its own sound.

Control	What it does
Dwell	How hard the springs are driven. Low is a soft halo; high is a dense, splashy, saturated reverb. Near the top the driver itself breaks up.
Mix	How much reverb: the same control as the amp's own REVERB knob. 0 is off.
Tone	Brightness of the reverb (not the dry signal). Lower settings sit the reverb further behind the guitar.
Drip	How strongly each pick attack sets the springs chirping. 3.5 is the tank as it is; lower smooths attacks into the wash, higher makes every attack drip, and from about 7 up it goes beyond what a real tank does.
Spring type	LONG 2 (the classic 16" tank, two springs: the longest, splashiest decay), LONG 3 (denser and smoother, less boingy), SHORT 2 (a 9" tank: tighter, quicker echoes) and SHORT 3 (compact and dense).
Decay	SHORT (about 1.6 s), MEDIUM (about 2.4 s) or LONG (about 3.4 s).

Control	What it does
Driver	OP-AMP: a solid-state driver pushing current through the tank's coil. Clean and even, then hard-edged when Dwell runs it out of headroom. 6K6: the original outboard units' tube. Stays cleaner and smoother as you turn up Dwell. 6V6: as in the later reissues, a little hotter and more aggressive. 12AT7: both halves in parallel, as in many amps' built-in reverbs. Less power into the springs; it breaks up sooner and softer. **The amp as built.**
KICK	Bumps the tank, as if you'd knocked the amp: the springs crash.
IN / OUT	The toggle at the left; the amber lamp lights while the reverb is in. OUT takes the reverb out without moving your REVERB setting.

SAME PANEL ON EVERY AMP

Every Blevins amp's TANK page is the same unit, with the same four DRIVER buttons. Each amp starts on its own driver. Switching drivers fades the reverb out and back in, and every driver is level-matched to the amp's own at moderate Dwell, so you can compare them fairly.

SESSIONS FROM BEFORE 1.10

The spring reverb was rebuilt around the new springs in version 1.10, and the old rear-panel controls (Dwell, Decay, Tension, Tone, Splash) became the TANK page. Sessions and presets made before then are converted when they open: the reverb sits at the same level in the mix as before, with the closest decay time and Drip.

SECTION 17

Dual Amp



Two amps, each with its own reverb, cabinet, mic, pan and level.

Press DUAL AMP on the amp to add a complete second amp. It appears stacked under the first, labelled AMP 2. Both amps are fed by the pedalboard and are completely independent: every knob and switch, the spring reverb (on the TANK page, under the first), standby and bypass.

- On the studio strip, the single cabinet selector splits into CABINET 1 and CABINET 2, each with its own MIC, DIST, mic type, PAN and LEVEL.
- LEVEL (-24 to +6 dB) balances the two amps without changing how either one is driven.
- When both amps are on, each is turned down 3 dB so switching the second amp in doesn't make a big jump in level.
- With a single amp and Pan at centre, Crumble sounds exactly as it always has.
- Dual Amp uses about twice the processing of one amp.

TRY THIS

Amp 1 clean (Overdrive off, Jazz) panned left into the 1x12 Open; Amp 2 with Overdrive on, Rock, panned right into the 2x12 Open 65W. Play one part and hear it spread across the speakers.

SECTION 18

The studio strip

Control	Range	What it does
QUALITY	Normal, HQ, HQ Bounce	How much the amp and pedals are oversampled. See Quality: Normal, HQ and HQ Bounce.
LEVEL meter		How hard your guitar hits the pedals and amp. Play your hardest and aim for the green lamps; if the top lamp lights with INPUT down, turn your interface's gain down.
Input	-12 to +12 dB	Trims your guitar level before the amp. Raise it for quiet pickups, lower it for hot active pickups.
Gate	Off, -90 to -30 dB	Noise gate before the amp. Turn it up until hum and hiss disappear between notes, then back off slightly so sustain isn't cut short.
Cabinet	4 cabinets + User IR	Chooses the speaker cabinet. Turn the selector or click a name. With Dual Amp on there is one per amp.
Mic	Cap to edge	Where the close mic points: at the dust cap (brighter, more direct) or out toward the edge of the cone (darker, smoother). 3 is the sound Crumble always had.
Dist	0.5" to 24"	How far the mic sits from the grille (see Cabinets, mics and your own impulse responses).
Mic type	DYN 1, DYN 2, DYN 3, RIBBON, LD COND	The menu under MIC and DIST: which microphone is on the cabinet.
Pan	Left to right	Where each amp sits in the stereo field.
Level	-24 to +6 dB	Dual Amp only: each amp's level.
Room Size	0–100%	Size of the room reverb, from a small booth to a large live room. Larger rooms also decay longer.
Room Mix	0–100%	How much room sound is blended in. 10–20% places the amp naturally; higher settings give an obvious ambient sound.
Room Cut	Off, 21–600 Hz	A low cut on the room sound only; the close-miked amp isn't touched. Clears boom and mud out of the room.
Output	-24 to +12 dB	Final level into your recording app. Use this to match the bypassed level or to leave headroom.
BYPASS	on / off	Takes the input trim, gate, cabinets, room and output out of the chain.
EQ	open / close	Opens the Program EQ panel along the bottom of the strip.

SECTION 19

Cabinets, mics and your own impulse responses

Each cabinet is modelled after the speaker and cabinet types most often paired with this style of amp. Open-back cabinets include the sound reflecting off the wall behind the cabinet, which gives them an airy, three-dimensional quality. The closed-back cabinet is tighter and punchier.

Cabinet	In the style of	Sound	Try it for
1x12 Open	Oval open-back 1x12 with a heavy-magnet 12-inch speaker	Wide, airy, smooth top end	Clean jazz and fusion, low-volume intimacy
2x12 Open 12L (default)	Open-back 2x12 with heavy-magnet 12-inch speakers	Full, even, big low-mids, very smooth highs	The all-round classic; singing leads
2x12 Open 65W	Open-back 2x12 with British-voiced 65-watt speakers	Midrange bark and presence	Blues, crunch, leads that need to cut
4x12 Closed	Closed-back 4x12 with heavy-magnet speakers	Tight, thumpy, focused low end	Heavier overdrive, rock rhythm
User IR	Your own impulse response	Whatever you load	Your favourite cabinet captures

The close mic

Mic type	In the style of	Sound
DYN 1	The all-round close dynamic	The sound Crumble always had: balanced and direct.
DYN 2	The classic small-grille stage dynamic	Lean lows, a forward presence peak around 5–6 kHz, falling off past 9 kHz.
DYN 3	The large-diaphragm broadcast dynamic	Fuller low mids, a broad presence lift around 4–5 kHz, a smoother top that reaches higher.
RIBBON	A figure-8 studio ribbon	Big close-up bass, warm mids, a soft top that rolls off gently from about 5 kHz.
LD COND	The large-diaphragm studio condenser	Flat and open, a gentle lift around 8–10 kHz, the most top end.

Each type is level-matched at 1 kHz, so switching mics changes the tone, not the volume. MIC moves the mic from the dust cap (brightest, most direct) toward the edge of the cone (darker, smoother).

Mic distance (DIST)

At 1 inch (the default) the mic is where Crumble was voiced. Pull it back and you lose the close-up bass a directional mic picks up near the cone: at 6 inches the lows around 80–100 Hz drop about 3 dB, at 12 inches about 8–9 dB. On the open-back cabinets the sound from the back of the speakers also comes round the box and thins the lows a little more as you move away; the 4x12 Closed has no rear wave. The ribbon, a figure-8, changes the most. The level is matched at 1 kHz, as an engineer would trim the preamp after moving the mic.

Loading an impulse response

1	Turn the cabinet selector to USER IR. A LOAD IR… button appears.
2	Click it and choose a WAV or AIFF cabinet impulse response (up to 1 second long).
3	The file name appears on the panel. Click the clear button next to it to unload the file.

- Impulse responses are level-matched to the built-in cabinets and add no delay.
- The impulse response is saved inside your project and presets, so it travels with them even if the original file moves.
- With no file loaded, USER IR passes the raw amp sound with no cabinet, for your own loader after Crumble.
- MIC, DIST and the mic type are hidden with USER IR: your impulse response has its own mic.

SECTION 20

The Program EQ



Click EQ on the studio strip to open the Program EQ.

A broad, musical equaliser in the style of the classic passive tube program equalisers, near the very end of the chain (after BOZEMAN, before Output). Click EQ on the studio strip to open it and IN to switch it on. It's out by default, and every knob at 0 leaves the sound untouched.

Section	Control	Range (default)	What it does
Low frequency	Low Freq	20, 30, 60, 100 Hz (30)	Chooses the low frequency for both Boost and Atten.
	Boost	0–10 (0)	A broad shelf boost of the lows, up to about 13.5 dB.
	Atten	0–10 (0)	A cut just above the boost frequency, up to about 17.5 dB, as on the original hardware.
High frequency boost	High Freq	3, 4, 5, 8, 10, 12, 16 kHz (10 kHz)	Centre of the high boost.
	Boost	0–10 (0)	How much the highs are lifted.
	Bandwidth	0–10 (5)	Width of the boost: low is a narrow peak, high is broad and airy.
High atten	Atten Sel	5, 10, 20 kHz (10 kHz)	Frequency of the high shelf cut.
	Atten	0–10 (0)	How much the top is shelved down.

THE CLASSIC LOW-END TRICK

Turn up Boost and Atten together at 60 or 100 Hz. The boost lifts the deep lows while the cut just above it clears out mud, for a big but tight bottom end.

- Airy top: High Freq 12 kHz, Boost 3, Bandwidth 7, Atten Sel 20 kHz, Atten 2.
- Tame fizz: Atten Sel 5 or 10 kHz, Atten 2–4.

LOW ATTEN reached 10 dB before version 1.10. Sessions and presets saved before then have their knob moved so the cut stays exactly the same.

SECTION 21

The opto leveler



Press COMP: the opto leveler.

A leveling amplifier in the style of the vintage optical tube compressors. Press COMP to see it. It's out by default.

Control	What it does
IN / OUT	The toggle at the left switches the leveler in.
METER	The toggle beside the meter: GR shows gain reduction; OUT shows output level.
Peak Reduction	How much compression.
Gain	Make-up gain through the tube output stage (-12 to +24 dB).
LIMIT / COMP	The toggle beside Gain. Comp is gentle, roughly 3:1. Limit is firmer, about 12:1.
HF Emphasis	Makes the leveler react more to treble, taming bright pick attack.
Mix	Blends compressed and uncompressed sound (parallel compression).

About 10 ms attack, a quick first release, then a slow, program-dependent tail: the more it works, the longer it takes to let go.

SECTION 22

The SD-2 studio delay



Press DELAY: the SD-2.

A stereo delay in a rack unit, after the opto leveler. Press DELAY to see it.

Control	What it does
IN / OUT	The toggle at the left switches the SD-2 in.
Style	Digital, Tape, Analog or Diffuse.
Routing	Stereo, Ping-Pong or Dual.
Time L / Time R	1 ms to 2 s each, or note values with SYNC.
Feedback	Number of repeats, up to near-infinite.
Low Cut / High Cut	Filters inside the feedback loop.
Mod Rate / Mod Depth	Gentle pitch movement on the repeats.
Drive	Saturates the repeats.
Duck	Turns the repeats down while you play.
Width / Mix	Stereo width, and dry/delay blend.

SECTION 23

The SV-1 studio reverb



Press VERB: the SV-1.

A stereo studio reverb for big, lush spaces, after the SD-2. Press VERB to see it. It starts switched out.

Control	What it does
Pre-Delay, Size, Decay	Gap before the reverb, size of the space (0.2–20 s decay).
Diffusion, Damping	Density, and how fast the highs die away.
Low Cut, High Cut	Keep the reverb out of the low end; warm the top.
Mod Rate, Mod Depth	Gentle movement inside the tail.
Width, Mix	Stereo width; dry/reverb balance.
IN / OUT	The toggle at the left switches the SV-1 in.
Algorithm	Hall, Plate, Chamber or Shimmer (an octave-up halo, its tail capped at about 7 s).

SECTION 24

BOZEMAN dual reverb



Engine A on top, engine B below.

Two complete reverb engines, A and B, each able to run any of twelve types: Room, Hall, Plate, Spring, Swell, Bloom, Cloud, Chorale, Shimmer, Magneto, Nonlinear and Reflections. It sits after the SV-1 and before the Program EQ, and it's off when you first open Crumble.

Control	What it does
ON	Switches BOZEMAN in. Switch it off and the tail rings out naturally.
ROUTING	Parallel: A and B each hear the guitar, and you hear both. Series: A feeds B, and you hear B only, so the width of the sound is B's: Reflections, Spring and Magneto are narrower than the others.
HOLD	Infinite keeps the tail going and building; Freeze holds it and stops listening.
TEMPO SYNC	Pre-Delay (and Magneto's echo time) follows your project's tempo.
MIX / B ON	Dry/BOZEMAN balance; switches engine B on.
Each engine	Decay, Pre-Delay, Tone, Mod, two type knobs, Level and Pan.

SECTION 25

BOZEMAN engines and types

Each engine has the same controls. Click the type display to choose from a menu, or step with the arrows; changing type crossfades so it never clicks.

Control	Range (default)	What it does
Decay	0–100% (50%)	Length of the tail; the time shown depends on the type (0.3–20 s for Hall).
Pre-Delay	0–1000 ms (A 20, B 40)	Gap before the reverb starts. On Magneto it sets the echo time.
Tone	Dark – FLAT – bright	Overall colour of the reverb; centre is flat.
Mod	0–100% (30%)	Movement inside the tail, for lushness and chorus.
Two type knobs	0–100%	Names change with the type (see below).
Level	-24 to +6 dB (0)	Level of this engine.
Pan	Left to right (centre)	Where this engine's reverb sits.

Type	Type knobs	Character
Room	Size, Early	A natural room, booth to live room; Early sets the early reflections.
Hall	Size, Low End	A big, smooth hall; Low End sets how long the lows ring.
Plate	Size, Low End	A dense, bright studio plate.
Spring	Tension, Dwell	A three-spring tank, from tight and bright to loose and boingy.
Swell	Rise, Mode	Fades in behind every note. Mode REVERSE swells the dry note too (Mix 100% for backwards swells).
Bloom	Length, Feedback	The tail keeps growing after each note, and re-blooms with Feedback.
Cloud	Size, Diffuse	A huge, soft, endless ambient wash.
Chorale	Vowel, Reso	A hall with a gliding, choir-like vowel; play harder and it opens up.
Shimmer	Voices, Amount	Pitch-shifted voices climb in the tail; Voices picks one of eight intervals (+Oct, +5th, -Oct and more).
Magneto	Heads, Repeats	Tape-loop echo with one to four heads and wow, diffused into a reverb.
Nonlinear	Shape, Diffuse	Gated and reverse effects: Reverse, Swoosh, Ramp or Gate; Decay is the length.
Reflections	Position, Distance	Places your guitar in a room: left to right, near to far.

SECTION 26

MIDI Learn

Any control on Crumble can follow a knob, fader, switch or expression pedal on a MIDI controller: amp knobs, pedal footswitches, the tuner, studio strip, rack units and BOZEMAN.

Map a control

1	Connect your MIDI controller (USB or Bluetooth). In the Crumble app, tick it under Options › Audio/MIDI Settings.
2	Right-click the control (or Control-click) and choose **MIDI Learn**. An amber frame pulses around it and a LEARNING bar appears at the top of the window.
3	Move the knob, switch or pedal on your controller. Done. Click the LEARNING bar to stop without mapping anything.

Buttons that pick one of several choices, like DECAY on the TANK page or the SD-2's styles, step through their choices as you move the controller.

The right-click menu

Item	What it does
MIDI Learn / MIDI Learn again	Starts learning, or replaces the controller with a new one.
Moved by CC…	Shows which controller and MIDI channel move it.
Reverse it	Controller up turns the control down.
Pedal range	Shows the part of the control's travel the controller sweeps. Turn the control to where the pedal's heel should land and choose **Set pedal low point here**; turn it to the toe position and choose **Set pedal high point here**. **Reset range** returns to the full sweep.
Forget MIDI	Removes the mapping (and its range).
Forget all MIDI mappings	Clears every mapping on this instance.
MIDI controller input	In a recording app: which MIDI controller Crumble listens to, or all of them.

- Each instance of Crumble keeps its own mappings in your project, so two amps can answer two controllers. A new instance starts with the mappings you made last.
- Presets never carry or change your mappings.
- In a recording app, Crumble listens to your controller directly, so it works on an ordinary audio track. Your recording app's own controller mapping (in Logic, Learn Assignment, Command-L) works too; use one or the other for each control, not both.

FOOTSWITCHES THAT TOGGLE

Set a footswitch to send a controller value of 127 for on and 0 for off, and map it to a pedal's footswitch. If your switch only ever sends 127, each press flips the pedal.

SECTION 27

Factory presets and starting points

Open the preset box at the right end of the module buttons (or your recording app's preset menu). Crumble Default returns every control to its starting position. Each factory preset sets every control on the amp, pedals, reverb tank and studio units, so nothing carries over from what you had before. Save your own sounds from the same box; they're shared with Logic's preset menu.

Preset	The sound
Crumble Default	The overdrive channel with every knob at a musical middle setting, into the 2x12 Open 12L with a touch of room.
Steak & Potatoes	The meat-and-potatoes clean: clean channel in Jazz, scooped mids, a little spring reverb, and the opto leveler smoothing it all out. Pedals off.
Americana Anna	Steak & Potatoes with the Midhump pedal on for grit and Echoes set to a short slapback.
Use Your Volume Knob	The overdrive channel set right at the edge, so your guitar's volume knob takes you from clean to singing lead. Rock voicing, dry amp, short room.
Wong Way	A tight, punchy clean in Rock voicing with a small room and a bit more leveling. Great for funky rhythm parts.
Ford Focus	A bright, open clean in Jazz voicing with scooped mids, extra presence and a roomy, splashy spring.
Dueling Drooling	Dual Amp, hard-panned. Left: a bright Jazz clean with lots of spring, Master on 10, into the 2x12 Open 12L. Right: the FET input into the overdrive channel (Rock), into the 2x12 Open 65W. The opto leveler blends in at 50%, and the SD-2 adds a synced Diffuse delay under both.
Jazz Box Clean	Bright, Deep and Jazz on, a warm, round clean into the 1x12 Open with a little leveling.
Singing Lead	FET input into the overdrive channel with Deep and Jazz, mids up, and a wide SD-2 tape delay that ducks while you play.
Funk Quack	Squeeze into Sweep (4-pole) on the pedalboard, into a crisp Rock-voiced clean.
Country Chicken Pickin'	Cluck compression and a Spool slapback (about 110 ms) into a bright Jazz clean and the 2x12 Open 65W.
Ambient Swells	Bloom fades every note in, Echoes repeats it, and BOZEMAN's Hall and Shimmer wash it out.
Octave Riff	Oktave first on the board into Vermin, into the overdrive channel and the 4x12 Closed.
Dirt On Your Hands	The overdrive channel straight, with every knob at 5 (Level and Ratio too), Rock voicing, no reverb and no room: the raw amp, dry.
rog 1	Roger's clean: the clean channel in Jazz with scooped mids (Middle 1.8), Master up, a little spring, the opto leveler in and a medium room.
v2, something	A clean Rock-voiced channel pushed by the Lift boost, with a generous splash of spring and the opto leveler in. Dry room.

Starting-point settings

Places to start, not final answers: adjust Volume or Level and the tone controls to suit your guitar.

Sound	Knobs	Switches
Warm jazz clean (neck humbucker, fingers or a light pick)	Vol 4, Treb 4, Mid 6, Bass 4, Reverb 3, Master 4, Pres 3	NORM, Bright on, Deep on, Jazz, Overdrive off; 1x12 Open; Room 15%
Sparkling edge-of-breakup (single coils; dig in to make it bark)	Vol 7, Treb 6, Mid 5, Bass 4, Reverb 2, Master 6, Pres 6	NORM, Rock, Overdrive off; 2x12 Open 65W; Room 12%
Blues crunch (bridge pickup; roll the guitar volume back to 7 for rhythm)	Vol 5, Treb 6, Mid 6, Bass 4, Level 3.5, Ratio 5, Reverb 2, Master 5, Pres 5	NORM, Rock, Overdrive on; 2x12 Open 65W; Room 15%
Singing sustained lead (neck humbucker; long notes, light vibrato)	Vol 5, Treb 5, Mid 7, Bass 4, Level 6.5, Ratio 5.5, Reverb 2.5, Master 5, Pres 4	FET, Deep on, Jazz, Overdrive on; 2x12 Open 12L; Room 18%
Thick fusion lead (P.A.B. bypasses the tone knobs and pushes the overdrive)	Vol 6, Level 5, Ratio 4.5, Reverb 2, Master 5, Pres 3.5	NORM, Rock, P.A.B. on, Overdrive on; 2x12 Open 12L; Room 20%
Tight rock rhythm (bridge humbucker, palm mutes)	Vol 5, Treb 6, Mid 5, Bass 3, Level 7, Ratio 5, Reverb 0, Master 6, Pres 6	NORM, Rock, Overdrive on; 4x12 Closed; Room 8%

SECTION 28

Tips and troubleshooting

If you hear…	Try this
No sound in the Crumble app	Check the GUITAR IN menu (or choose Find my input) and Options › Audio/MIDI Settings: the right interface, and Mute audio input unticked. If macOS blocked the input, allow Crumble in System Settings › Privacy & Security › Microphone.
Too much distortion, or it sounds fizzy	Lower Level, or lower Volume. Turn off FET, P.A.B. and Deep. Lower Treble or Presence. Check the LEVEL meter's top lamp isn't lighting. Try HQ.
Not enough distortion	Raise Level, then Volume. Use the FET input or P.A.B. Raise Input on the studio strip if your pickups are quiet (watch the LEVEL meter).
Muddy or boomy	Turn Deep off, lower Bass, and try Rock instead of Jazz. Switch from the 4x12 Closed to an open-back cabinet, pull DIST back a few inches, or raise ROOM CUT.
Thin or harsh	Turn Deep on, lower Presence and Treble, raise Middle. Try the 2x12 Open 12L cabinet, move MIC toward the edge, or try the RIBBON.
The lead is quieter or louder than the clean	Adjust Ratio (overdrive channel level), not Master.
Hum and hiss between notes	Turn up the Gate until the noise stops, then back off a little.
Output is too hot	Lower Output on the studio strip, not Master, so the amp's feel doesn't change.
No sound at all	Check that the tuner is off, the amp isn't in Standby, an input jack is plugged in, Master and Output aren't all the way down, and input monitoring is on. With USER IR selected, check the file loaded.
Very quiet sound	Check that AMP BYPASS is off: with the amp bypassed you hear only your guitar's own level.
The spring reverb crashes	On the TANK page, lower Drip, then Tone. Lowering Dwell also helps.
The opto leveler pumps	Lower Peak Reduction, switch to Comp, or lower Mix.
The delay or reverb sounds muddy	Lower Repeats or Mix on Echoes, raise Low Cut on the SD-2 and SV-1, or lower Low End on BOZEMAN's Hall and Plate.
BOZEMAN keeps building up	Hold is on Infinite or Freeze: set it to Off.
A delay between picking and hearing	Lower your recording app's buffer size, and play on NORMAL or HQ BOUNCE.
Crackles	Raise the buffer one step, switch from HQ to HQ BOUNCE, or freeze other tracks. Dual Amp uses about twice the processing of one amp.

SECTION 29

Specifications

Item	Value
Formats	AU and VST3 effect, and a stand-alone app; universal binary (Apple silicon and Intel)
Channels	Mono or stereo in (summed to mono, like a guitar amp); stereo out
Processing	4x oversampling (16x in HQ) with minimum-phase, low-latency filters through the pedals and amp stages
Latency	About 3 samples (0.06 ms at 48 kHz) at Normal; one sample more at HQ and HQ Bounce
Tuner	Strobe tuner, mutes while on; reference A = 430–450 Hz
Pedals	Six slots, drag to reorder; twenty-one pedals: clean boost, two transparent overdrives, mid-hump overdrive, blues overdrive, distortion, fuzz, two compressors, volume swell, envelope filter, 10-band graphic EQ, chorus, phaser, vibe, tremolo, polyphonic octave, delay and tape echo (both with tempo sync)
Preamp	Two triode stages, Deep coupling network, three-band passive tone stack (Rock/Jazz), clean recovery stage
Overdrive	Two additional cascaded triode stages with Level and Ratio
Reverb	Tube-driven spring reverb, pre-Master, on its own TANK page: physically modelled springs, four tanks (long or short, two or three springs), three decay times, 12AT7, 6K6 or 6V6 driver; Dwell, Reverb, Tone, Drip; room reverb with low cut on the studio strip
Power amp	Push-pull output stage with Presence and supply sag
Dual Amp	Second fully independent amp with its own reverb, cabinet, mic, pan and level
Cabinets	1x12 Open, 2x12 Open 12L, 2x12 Open 65W, 4x12 Closed, with five mic types, mic position and distance; User IR (WAV/AIFF up to 1 s, saved with the project); no added latency
Program EQ	Passive-style low boost and atten (20/30/60/100 Hz, atten up to 17.5 dB), high boost (3–16 kHz) with bandwidth, high atten (5/10/20 kHz)
Opto leveler	Electro-optical model with program-dependent two-stage release, Comp/Limit, HF emphasis, tube make-up and parallel Mix
SD-2 delay	Stereo; Digital, Tape, Analog, Diffuse; Stereo, Ping-Pong, Dual; 1 ms–2 s per side; tempo sync
SV-1 reverb	16-line modulated feedback delay network; Hall, Plate, Chamber, Shimmer; decay 0.2–20 s
BOZEMAN	Two engines, parallel or series; twelve types each; Infinite and Freeze; tempo sync
Presets	Crumble Default plus fifteen factory presets in the preset box; your own, shared with Logic
Requirements	macOS 11 or later; a 64-bit AU or VST3 host

SECTION 30

Legal

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Support and updates: blevinstoneco.com · info@blevinsguitarcompany.com