

Owning the Room:

Using the PJB X2C on stage and in tight spaces

LIVE ROUTING: SHAPE THE SIGNAL AT THE INSTRUMENT, BEFORE THE ROOM GETS A VOTE.

What the room actually hears: disciplined lows, defined highs.

LIVE ROUTING: TAKE CONTROL OF YOUR TONE PATH

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    graph LR
      BASS[BASS] --> X2C[X2C  
dual-band compression  
at the instrument]
      X2C -- MAIN --> DI[DI / FOH]
      X2C -- "YOUR MONITOR" --> STAGE[STAGE CAB]
      X2C -- "OPTIONAL:  
BI-AMP (17/19)" --> SENDS[HI / LO SENDS]
      DI --> AUDIENCE[THE AUDIENCE]
  
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DUAL-BAND COMPRESSION
Tame the lows, polish the highs. Two bands. Total control.

TIGHTEN YOUR TONE
Fast attack. Musical release. Punch that sits in the mix.

CONTROL EVERY FREQUENCY
Dial in your crossover and balance low and high precisely.

STAGE OR STUDIO PERFECTION
From intimate rooms to massive stages—your tone stays true.

BIG SOUND. SMALL FOOTPRINT.
Powerful processing. Pedalboard friendly. Built for the gig.

Using the PJB X2C on stage and in tight spaces

Phil Jones

A mixing engineer spends a career fighting one problem: the sound reaching the ears is not the sound that left the instrument. The gigging bassist fights exactly the same problem from the other side of the room — and the smaller and more cramped the venue, the bigger the lie. This paper is about using the X2C to take back control of the part of your sound the room most wants to ruin: the low end.

1. The honest truth about the bass you hear on stage

Set your tone at home and it sounds perfect from your chair. Carry the same rig into a club, drop it in the corner where it fits, and the low end is suddenly all wrong — weak and thin in some rooms, but far more often booming and wallowing out of all control. It no longer resembles the sound you worked so hard to dial in.

This is the live twin of the studio translation problem. A mix that sounds right in the control room falls apart in the car or on the club PA because the monitoring was not telling the truth. On stage your “monitor” is your cabinet and the room around it, and that pairing lies to you at every gig — a different lie each time, because the room changes underneath you. The job, then, is not to chase a fixed tone but to control the one variable you can carry with you: how disciplined your low end is by the time it leaves the instrument. That is what the X2C is for.

2. Why the room changes your bass — and why small rooms change it most

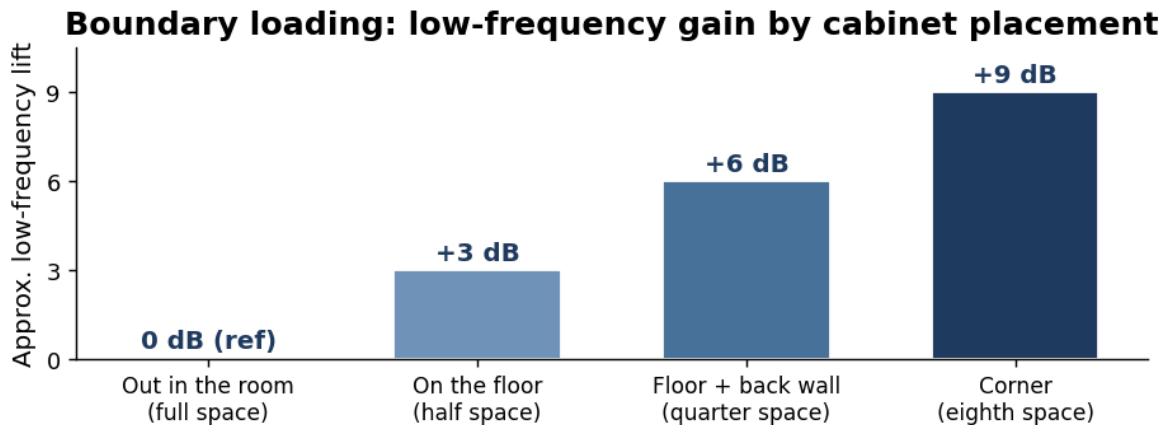
Two separate mechanisms are at work, and it pays to keep them apart.

The cabinet. Every loudspeaker enclosure is, acoustically, a high-pass filter. The air sealed behind the cone acts as a spring, pushing back as the cone tries to move, and that effect grows stronger the lower you go and the smaller the trapped volume. Below a certain frequency the output simply falls away. This sets the floor of what your rig can physically produce, and no setting on any pedal moves it. It is fixed physics.

The room — and where you put the cab. This is the opposite problem, and live it is by far the bigger one. A cabinet radiating into free space is one thing; stand it on the floor and you have loaded it into half-space; back it up to a wall and you are at quarter-space; wedge it into a corner — which is precisely what happens in a cramped venue — and you approach eighth-space. Each adjacent boundary adds low-frequency gain, and the gains stack.

Approximate low-frequency reinforcement from boundary loading:

Cabinet placement	Acoustic loading	Approx. LF lift
Out in the room, off the boundaries	Full space	Reference (0 dB)
On the floor	Half space (1 boundary)	~ +3 dB
Floor against a back wall	Quarter space (2 boundaries)	~ +6 dB
Jammed into a corner	Eighth space (3 boundaries)	~ +9 dB and lumpy



Each adjacent boundary adds low-frequency gain — and the gains stack. The lift is approximate and lumpy, not flat.

Figure 1. Boundary loading is cumulative — and never flat. Figures are approximate and frequency-dependent.

That boundary gain is never flat. It is lumpy, frequency-dependent, and tangled up with the room's own standing waves. Small rooms have widely spaced, strongly excited modes: a handful of notes boom and ring on long after you have stopped playing, while others vanish into a dead spot. You cannot EQ your way out of this cleanly, because it changes with every room and even with where you stand in it. The practical upshot is blunt: in a tight space your low end arrives uninvited, uneven, and too loud, and it rings on past the note. The fundamental — the very thing you worked hardest on at home — is the first casualty.

3. Two kinds of deep bass, and which one survives a bad room

There are two distinct ways to make a bass note feel deep, and they behave completely differently once the room gets involved.

Weight. Depth built from the fundamental itself — lots of energy down low. It is physical, you feel it in your chest, and it is glorious when the rig and the room can support it. But it lives entirely at the mercy of the room. In a small, boomy, corner-loaded space, fundamental-led weight is the first thing to turn to mud: the room exaggerates it, the modes ring on it, and it masks everything happening above it.

Definition. Depth built from the harmonics above the fundamental. Here is the psychoacoustic key, and it is well established: the ear and brain reconstruct the pitch of a low note from its harmonic series even when the fundamental itself is weak or missing entirely. It is why a bass line stays perfectly recognisable — still audibly playing low notes — through a phone speaker, a small monitor wedge, or a cheap PA top that cannot reproduce the fundamental at all. The harmonics carry the identity of the note; the fundamental only carries its weight.

Two ways to make a note feel deep

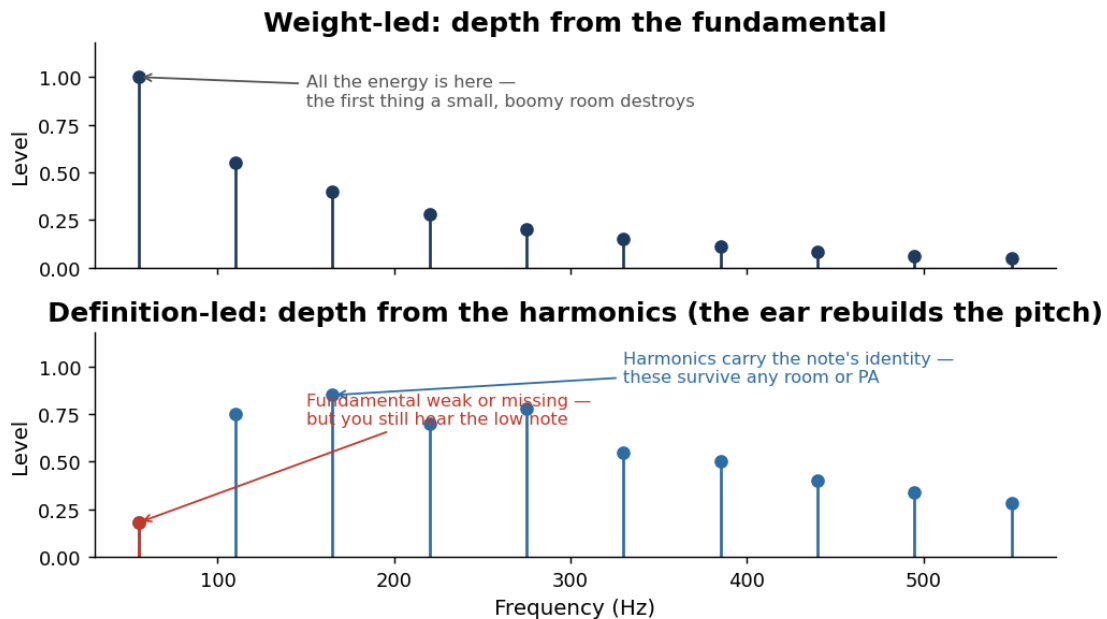
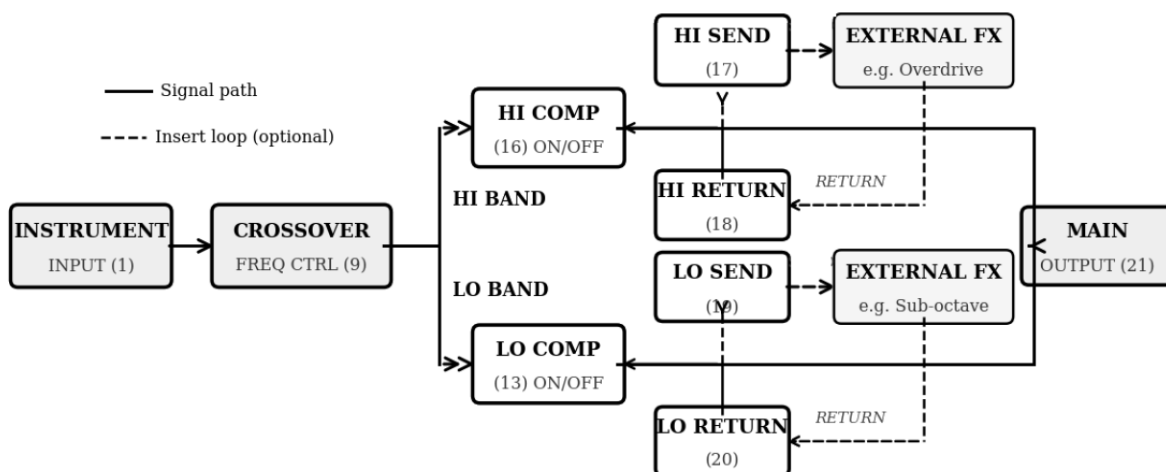


Figure 2. Weight lives in the fundamental the room destroys; definition lives in the harmonics that survive any room or PA.

For live work the lesson is direct: the harder the room, the more you lean on definition and the less you trust raw weight. You keep just enough fundamental for body, and you let the harmonics tell the audience how low you are playing. The X2C exists to let you make precisely that trade — independently, and in real time.

4. How the X2C splits the problem

The X2C's architecture maps directly onto this split. Its variable crossover divides your signal into two bands, and that division is almost exactly the division between the part of your sound the room abuses and the part the room cannot touch.



Insert loops are optional. Signal passes through if Send/Return sockets are unused.

Figure 3. X2C signal path: the crossover splits the signal, each band is compressed independently, and the two recombine at the Main Output.

The LO band carries the fundamental and the sub energy — the part that booms, rings, and gets loaded up by corners and walls. This is the part that needs disciplining.

The HI band carries the harmonics, the attack, and the note’s definition — the part that survives any room and any PA, and the part that tells the audience what note you are playing. This is the part to protect and, when needed, push.

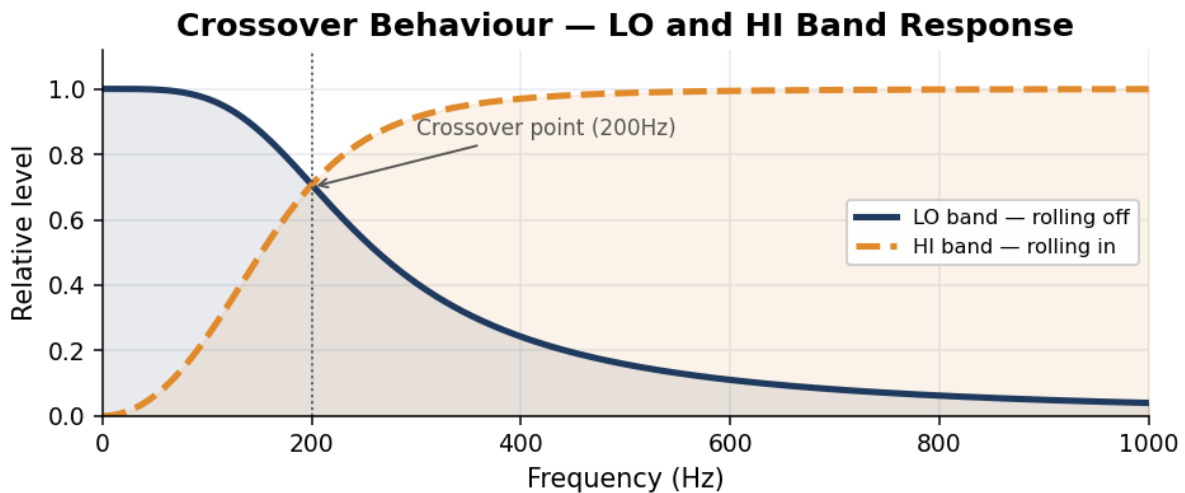


Figure 4. The variable crossover (100–500 Hz) sets where ‘the part the room abuses’ ends and ‘the part it can’t touch’ begins.

Because each band has its own independent compressor, you can clamp the dangerous low end hard while leaving the definition alive and dynamic. No single-band compressor — pedal or rack — can do that. In a forgiving room it is a luxury; in a difficult one it is the thing that saves your sound.

7. Dual-Band Operation

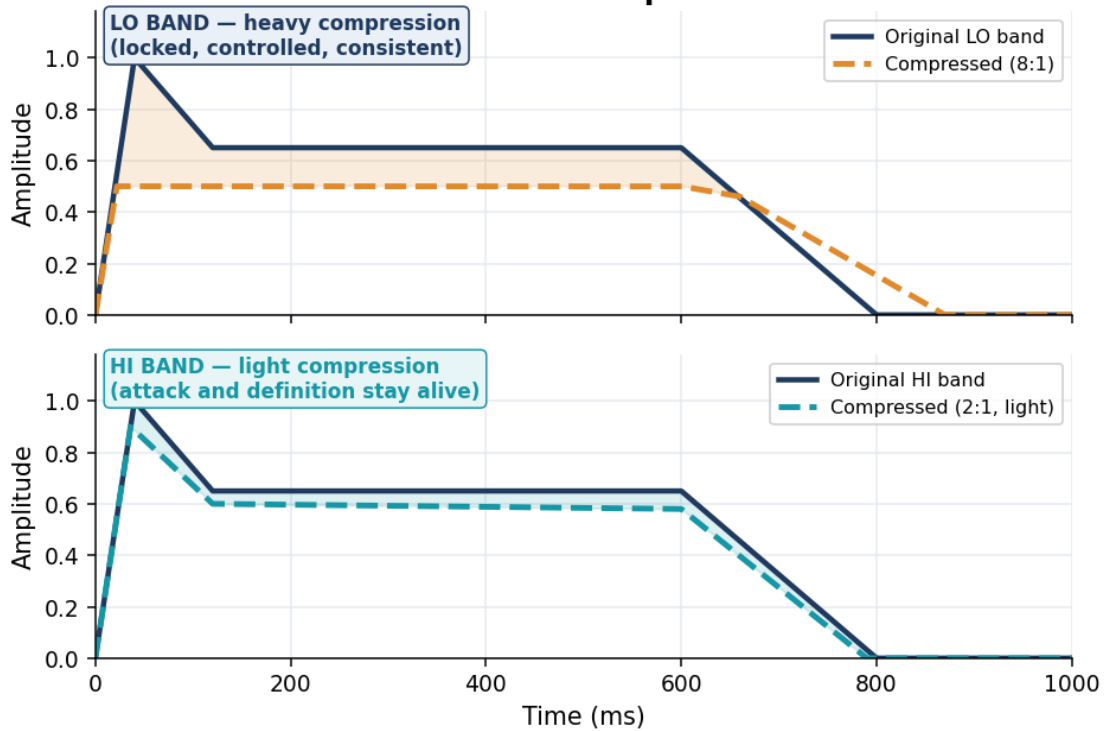


Figure 5. The core live move: lock the LO band down hard, keep the HI band light and alive. A solid bottom and a responsive top at once.

5. Setting the X2C for a live room — band by band



Figure 6. X2C control panel. The numbered references below follow the panel layout in the owner's manual.

Crossover (9) — set it to the room first. Start at 200 Hz. In a boomy, corner-loaded small room the trouble usually sits in the upper bass and lower mids as much as the deep sub, so keeping the split at 200 Hz — or nudging it higher — puts more of the energy that is exciting the room under LO control. In a thin, dead, or large open room where the low end is not being reinforced, drop the crossover lower, toward 100–150 Hz, so the LO band breathes and you are only disciplining genuine sub. Tune this by ear at soundcheck, and walk the room if you can.

LO band — discipline. This is your room insurance. Engage LO ON (13). Run a higher ratio (start at 4:1 and push toward limiting if the room is bad) and lower the Threshold (3) until the LO meter (8) shows firm, regular gain reduction on your harder notes. The LO band's long time constants are deliberate — Attack out to 1000 ms, Release out to 2.5 seconds — because low frequencies are slow and you do not want choppy, pumping bass. Release is the critical control: too long and the modal ring-on is never caught; too short and the bass turns gristly. Set it so gain reduction has recovered by the time the next note lands, but no faster. The job is to stop the low end blooming past the note and feeding the room.

HI band — keep it alive. Engage HI ON (16) and compress this band lightly: a gentler ratio, a higher threshold, just enough to even out the attack. The HI band's fast time constants (Attack from 20 ms, Release from 30 ms) let you tighten the snap and click without strangling them. This is the band carrying your definition — protect its life, and in a hard room keep it forward.

LOW / HI MIX (10) — your fastest 'fix the room' control. Boomy small room: pull the balance toward HI — less weight, more definition, exactly the trade described in Section 3. Big open stage with a real PA behind you: bring the LO back up, because the room can take the weight and you will want it.

Parallel (11) — keep the feel. Heavy LO clamping can make the instrument feel like you are playing through a cushion. Blend the dry signal back in (start around 50%, useful range 30–70%) to restore the natural transient, so the bass stays responsive under your hands while staying controlled at the output.

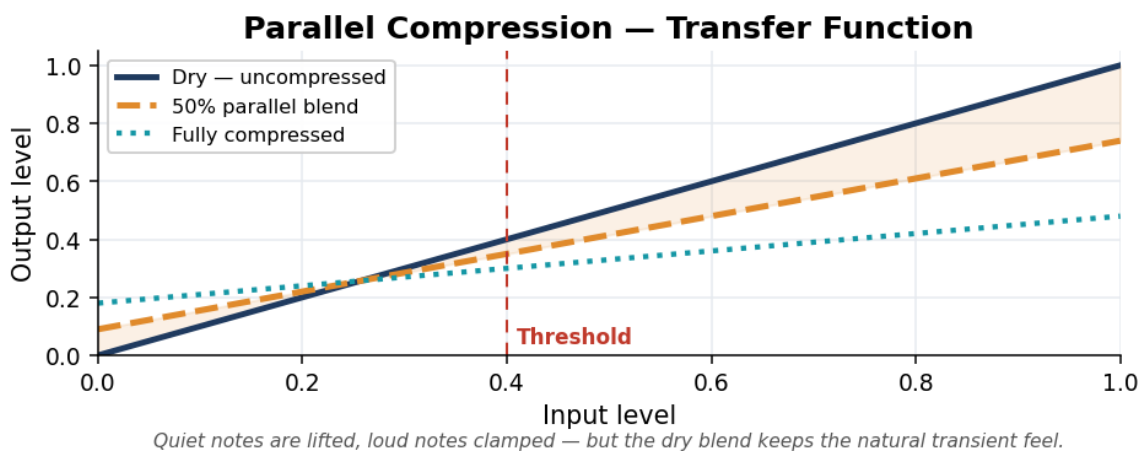


Figure 7. Parallel blend: quiet notes lifted, loud notes clamped — but the dry signal keeps the natural attack the room needs to hear.

Level (12) — match in and out so that engaging the X2C changes your control, not your stage volume.

6. Tune the crossover to the room

The crossover is not a set-and-forget control live — it is the single fastest way to aim the X2C at a specific room's problem. Every room concentrates its boom in a particular region, usually somewhere between roughly 70 and 250 Hz, depending on its size and your position in it. Move the split so that the trouble falls under LO control.

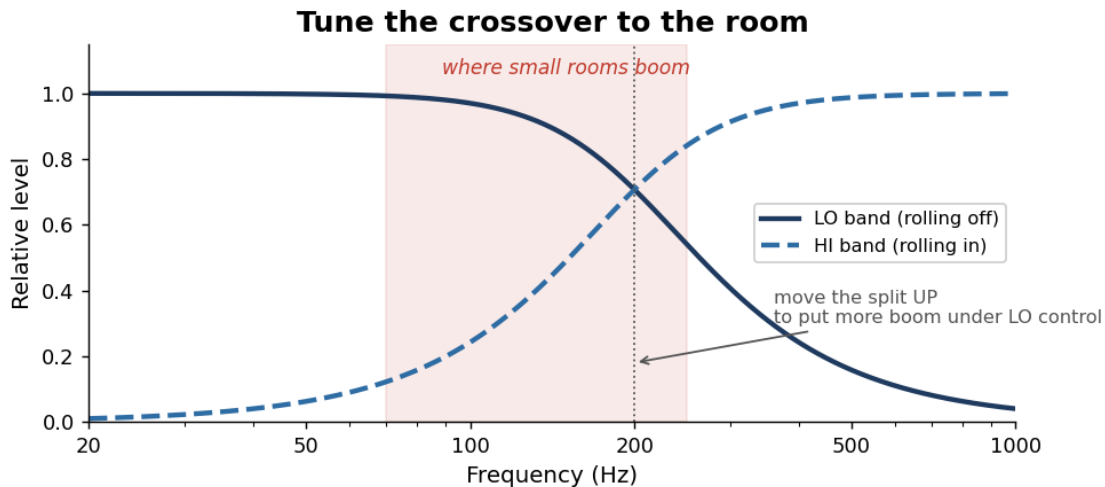


Figure 8. Push the split up to drag more of the boom region under the disciplined LO band; drop it down in dead rooms to let the bottom breathe.

In a boomy, corner-loaded room, raise the crossover so more of the lower-mid energy that is exciting the room sits in the tightly-compressed LO band. In a dry or larger room, lower it so the LO band only governs genuine sub and the rest of your tone stays open. A useful soundcheck habit: play a sustained note that rings the room, then sweep the crossover until the ring-on is sitting inside the LO band's control rather than escaping above it.

7. Rock bass: making the X2C do the EQ's job

It is worth looking at how a studio engineer EQs a rock bass, because it tells you exactly where the important content sits — and the X2C lets you control that content by architecture instead of by EQ. In a well-known rock-bass EQ guide, Music Guy Mixing high-passes around 40 Hz to clear inaudible rubbish, places a kick-triggered dynamic cut near 70 Hz so the bass and kick stop fighting, then deliberately boosts body and gritty overtones at 150, 300, 600 and 1200 Hz, uses 2 kHz for clarity, lifts 4–6 kHz for string-transient bite, and low-passes around 10 kHz.

Where rock-bass body and grit live — and which X2C band carries it

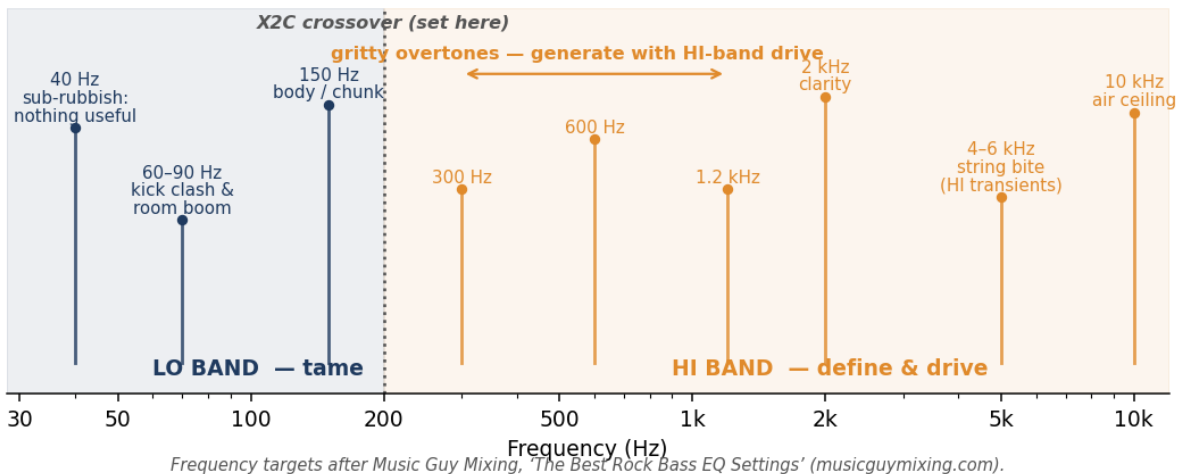


Figure 9. Rock-bass content mapped onto the two X2C bands. Frequency targets after Music Guy Mixing, 'The Best Rock Bass EQ Settings'.

Lay those targets against the X2C's crossover and the strategy writes itself. The 70 Hz kick-clash and the room boom live in the LO band — you do not sidechain to a kick on stage, but the LO compressor tames exactly that region so the bass stops swamping the bottom. The body at 150 Hz can sit either side of the split depending on how much weight the room can take. And the grit — the overtones at 300, 600 and 1200 Hz that define a rock bass tone — lives squarely in the HI band, which is why you generate it not with an EQ boost but by setting the crossover so those overtones fall in the HI band and then driving that band (Section 8). The 4–6 kHz string bite is simply the HI band's preserved transient. In short: where the mix engineer reaches for an EQ, the live player reaches for the crossover, the HI/LO balance, and a touch of HI-band drive — and gets the same result on a stage where no two rooms EQ the same.

8. Manufacturing definition: HI-band drive via the FX insert

The most powerful live trick the X2C offers is the ability to generate definition on demand, in the band where it can do no harm.

Drop an overdrive or a light distortion into the HI insert (Send 17 / Return 18). The drive sees only the upper harmonics and midrange; the LO fundamental bypasses it entirely and recombines clean at the Main Output. In effect you have manufactured extra harmonics on the part of the signal that carries note identity — which is exactly how you make a bass line cut through a small PA or a hostile room without adding a single decibel of the low weight that is already causing trouble. It is the live, instrument-level equivalent of the studio engineer's parallel-distortion trick, and because the lows never touch the distortion you get all of the cut with none of the mud.

This also exploits the missing-fundamental effect on purpose. Richer harmonics make the ear hear the low note more strongly even when the fundamental is restrained, so in a tight room where you are deliberately holding the fundamental back, a touch of HI-band drive hands the audience back — psychoacoustically — the depth you have physically removed.

Keep the LO band clean. A gentle valve-style saturation in the LO insert (19/20) can add a little even-harmonic warmth if the room is thin, but resist anything aggressive down there. And think hard before putting a sub-octave pedal in the LO band live: it tracks far more reliably on the band-limited LO signal than on a full-range one — a genuine X2C advantage — but a synthesised sub-octave in a small, corner-loaded, modal room is usually the last thing that room needs. Save it for the big stages.

9. The real audience is on the other end of the DI

Here is the strategic point that ties everything together. In most live situations the sound the audience actually hears is the front-of-house PA, fed from your DI — not your stage cabinet. Your cab, in its corner, in that room, is mostly your own monitor. That is liberating: it means the signal you send to FOH can be shaped to be room-robust regardless of how bad your immediate stage position sounds.

Live routing: shape the signal at the instrument, before the room gets a vote

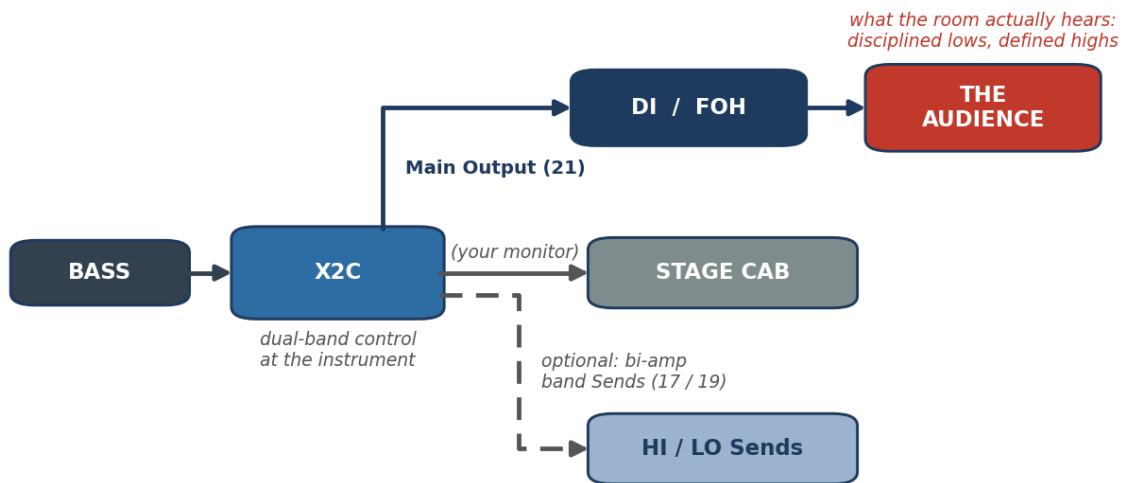


Figure 10. Shape the signal at the instrument, before the room gets a vote. The X2C-fed DI is what the audience hears; the stage cab is your monitor.

Feed FOH from the X2C — the Main Output (21) for a combined signal, or the band Sends (17 / 19) if the engineer wants to treat or bi-amp your bands separately. What the engineer receives is already disciplined: controlled, tight lows that will not run away in the system’s subs, and harmonically defined highs that translate on any rig. You have done the hard part at the instrument, where you understand your own sound better than any engineer meeting you at five o’clock soundcheck ever could. Let the stage cab be the stage cab; let the X2C-shaped DI be what the room hears.

10. Discipline: tight reads as big, loud reads as mud

The single most common mistake in a bass-heavy room is trying to help the low end by adding more of it. Do not. PA subs are almost always hyped already, small rooms boom on their own,

and corner loading is piling on low gain you never asked for. Add your own weight on top of all that and the whole thing collapses into boom within seconds.

The counter-intuitive truth — the same one studio engineers learn the hard way — is that a tight, slightly restrained low end reads to the audience as bigger and deeper than a loud, loose one. Lock the LO band down, let definition carry the perceived depth, and the bass sounds enormous precisely because it is controlled. Keep reaching for more sub and it will sound smaller the louder it gets.

11. Note ends matter as much as note starts

In a ringing room, tight low end is as much about when the note stops as when it starts. A mode that has been excited will ring on no matter what you play next; if your own notes are also blooming and sustaining into one another, the bottom turns to porridge. Two things keep it tight: your right-hand muting and phrasing — actively stopping notes — and the LO band Release, set so gain reduction recovers cleanly between notes rather than holding the sustain up into the next one. Your hands and the X2C, working together, keep the room from ringing through your whole performance.

12. A worked soundcheck: five minutes to tame a bad room

You have arrived, the cab is in the only corner it fits, and the low end is booming. Here is an order of operations that gets you under control fast.

1. **Set a baseline.** Start neutral. Crossover at 200 Hz, both bands ON, Ratio 4:1, Parallel ~50%, MIX centred. Set Level so the pedal in and out matches.
2. **Hear the room.** Find the boom. Play a slow walk across the bottom strings and listen for the note that jumps out and rings on — that is the room's mode. Sustain it.
3. **Aim the crossover.** While that note rings, sweep the Crossover up until the ring-on falls inside the LO band's control. In a bad corner that is often 200–250 Hz.
4. **Clamp the lows.** Lower the LO Threshold until the LO meter (8) shows firm gain reduction on that boom note, then set LO Release so the reduction recovers between notes but not so fast it pumps. Push the ratio higher if it still escapes.
5. **Restore definition.** Pull LOW/HI MIX toward HI until the bass is clearly audible as pitch, not just weight. If it still disappears on the PA top, add a touch of HI-band drive.
6. **Put the life back.** Raise Parallel toward dry until the instrument feels alive under your hands again, then re-check Level. Send the X2C to FOH and treat the stage cab as your monitor.

13. Troubleshooting

Symptom	Likely cause	X2C move
Low end booms and washes out in the room	Corner loading + room modes + too much weight	Raise crossover to 200–250 Hz; heavier LO ratio, lower LO threshold; MIX toward HI

Symptom	Likely cause	X2C move
Bass vanishes on the small PA — can't hear the pitch	Relying on a fundamental the system can't reproduce	Push HI band forward; add HI-band drive; MIX toward HI
Bass feels lifeless, squashed, 'playing through a cushion'	Too much compression, transient lost	Raise Parallel toward dry; slower HI attack to let the peak through
Notes ring and smear into each other	LO release too long + modal ring-on	Shorten LO Release; mute more with the right hand
Sustained notes pump or breathe	LO release too fast	Lengthen LO Release until the pumping stops
Octave or synth pedal mistracks	Full-range signal confusing the pitch detector	Insert it in the LO band loop (19/20) — band-limited, clean tracking
Adding dirt makes the low end thin or disappear	Distortion on the full range generating odd harmonics on the fundamental	Move the drive to the HI insert only (17/18); LO stays clean

14. Starting points

Three rooms, three starting points. These are not destinations — dial them in, then tune the crossover and the LO release to the room in front of you.

	Small boomy room / DI to FOH	Medium club, modest PA	Large stage, full PA
Crossover (9)	200 Hz, up to 250	150–200 Hz	100–150 Hz
LO band	Heavy. 6:1–10:1, low threshold, medium release (recover between notes)	Moderate-heavy. 4:1–6:1	Moderate. 4:1, longer release fine
HI band	Light. ~2:1, high threshold, quick attack	Light. 2:1–3:1	Light. ~2:1
LOW / HI MIX (10)	Toward HI	Centre, slight HI lean	Centre or slight LO lean
Parallel (11)	~50%	40–50%	50–60%
FX insert	Light HI-band overdrive for cut; LO clean	Optional HI drive to taste	HI drive to taste; LO sub-octave viable here
Strategy	Send X2C to FOH; cab is your monitor; resist adding sub	Tune crossover to the room at check	Let the fundamental breathe; bi-amp via band Sends if wanted

The room will always have an opinion about your bass. The X2C is how you get the final word.

Appendix A — Reading the compression charts

These are the X2C's own envelope charts. Each shows a single bass note over time: the solid line is the natural signal, the dashed line is the compressed output, and the shaded area is the amount of compression being applied. Read them left to right like music — the left edge is the pluck, the right edge is silence. What matters live is the shape of the dashed line: does that sound like what the room needs?

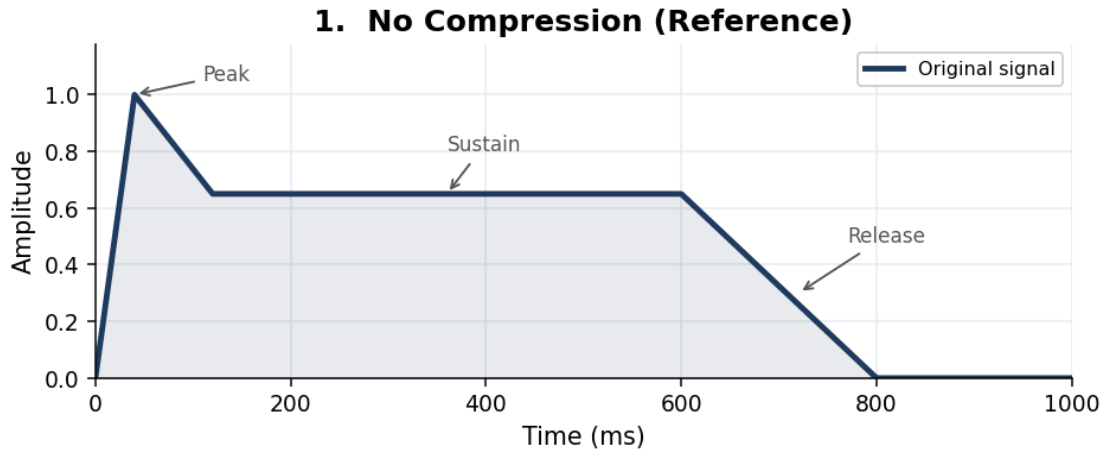
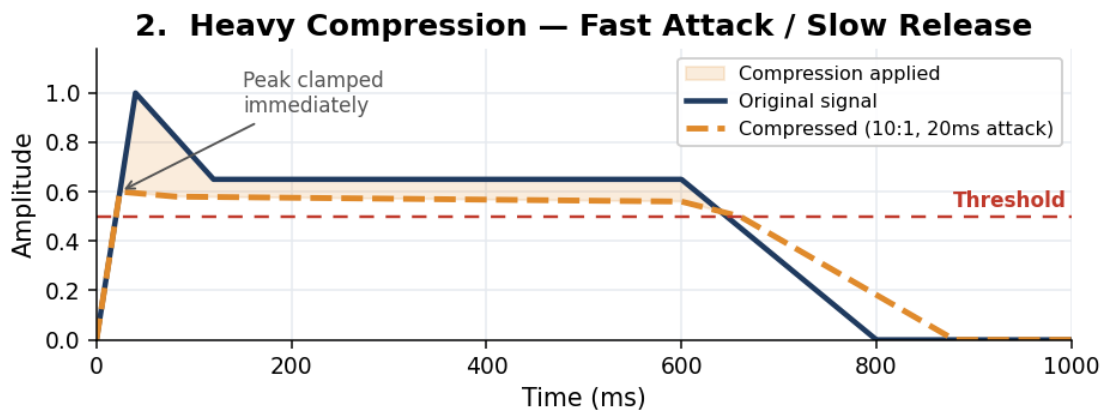


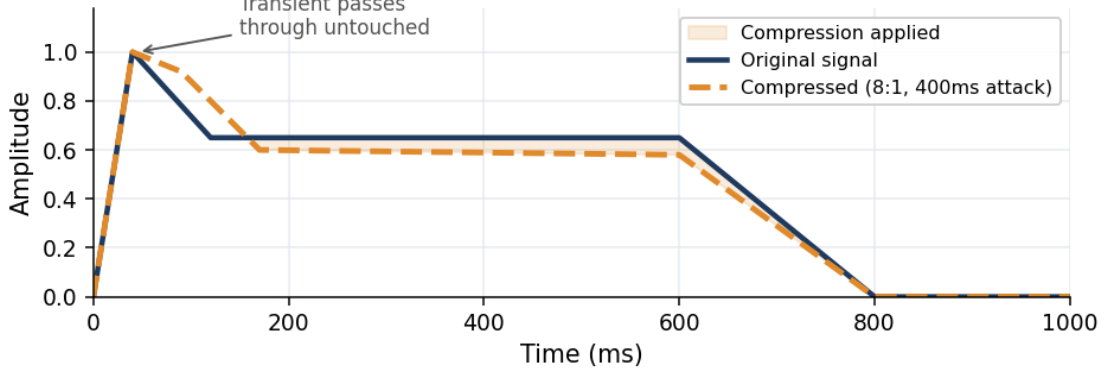
Figure A1. No compression — your reference. Sharp attack, a sustain plateau, then the release.



Fast attack grabs the transient; slow release holds the gain reduction — the envelope turns rectangular.

Figure A2. Fast attack clamps the transient and a slow release holds the gain down — the controlled, rectangular LO-band sound.

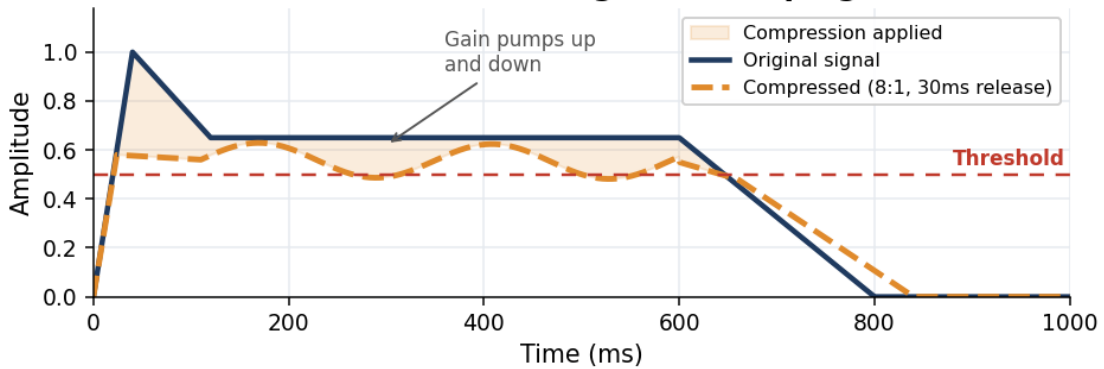
3. Slow Attack — Transient / Punch Preserved



The peak hits naturally before compression engages — the most musical setting for live bass.

Figure A3. A slow attack lets the transient through before compression engages — punch preserved, the most musical setting for bass.

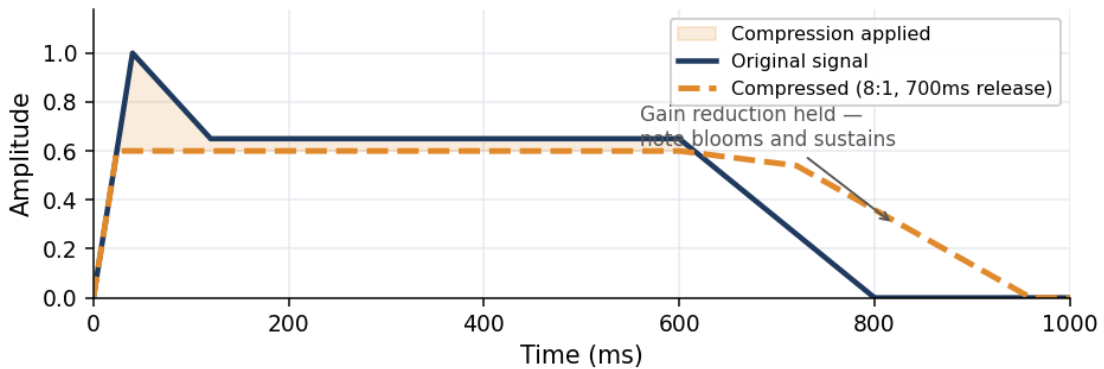
4. Fast Release — Energetic / Pumping Effect



Used on purpose this breathes and grooves; used by accident it sounds like an artefact.

Figure A4. A very fast release pumps the gain up and down. A groove on purpose, an artefact by accident.

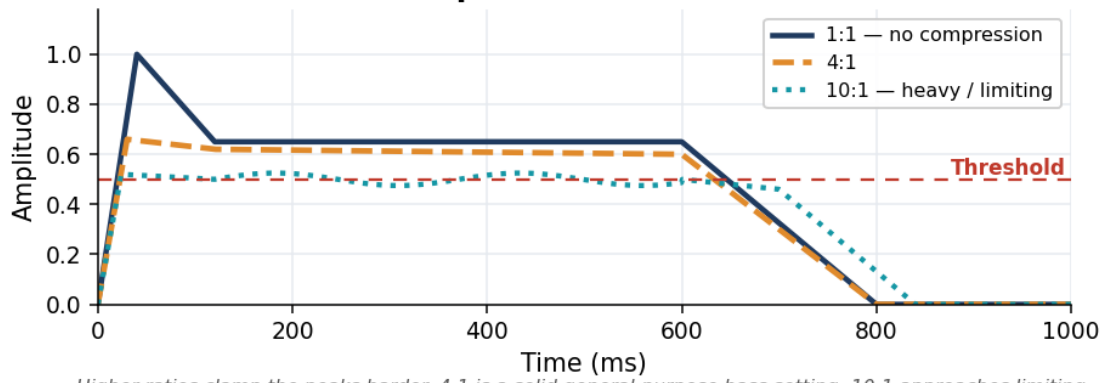
5. Slow Release — Smooth, Extended Sustain



The polished studio sound: stable, controlled, even. Ideal for the LO band in most rooms.

Figure A5. A slow release holds the reduction and the note blooms and sustains evenly — ideal on the LO band in most rooms.

6. Ratio Comparison — 1:1 vs 4:1 vs 10:1



Higher ratios clamp the peaks harder. 4:1 is a solid general-purpose bass setting; 10:1 approaches limiting.

Figure A6. Ratio sets how hard the peaks are clamped. 4:1 is a solid general-purpose bass setting; 10:1 approaches limiting.