Hyperbar 3-Band Dynamics: Quick Start & Workflow Guide

Hyperbar (`ca.boraas.Hyperbar`) brings 3-band upward and downward OTT-style dynamics natively into the Reason Rack. Built in a 4U chassis with a two-tab calibration drawer (`Band Dynamics` and `Engine & Spatial`) and an active 1U folded strip, Hyperbar puts your everyday macro controls on the upper faceplate and tucks per-band ballistics, crossovers, stereo imaging, and delta auditioning into the lower bay.

This guide gets you up and running in five minutes with practical dial targets, a cheat sheet for the 11 root starter patches, sight-glass meter reading, quick listening demos, and rear-panel patching recipes.

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1. First Sound in 60 Seconds

1. **Insert**: Drag Hyperbar from the **Effects** tab in the Reason browser onto any audio track, instrument, or mixer bus.
2. **Audition the Default Patch**: Hyperbar loads with `Quick – Modern HyperOTT Slam` (100% `Squeeze` , 3.67 nominal `Speed` , 88.3 Hz and 2.5 kHz phase-coherent `Studio` Linkwitz-Riley crossovers, `Sub Mono` active, and 50% Mid/Side `Expanse`).
3. **Push `HEAT`** : Turn the `HEAT` knob in Bay 1 (left) clockwise to +3-+6 dB. Watch the cyan upward `LIFT` and amber downward `CRUSH` bars in the three band sight-glasses (`SUB` , `BODY` , `AIR`) expand as `HEAT` drives your audio deeper into the thresholds (with automatic post-compander trim so your output volume stays controlled).
4. **Dial `SQUEEZE` , `CONTOUR` & `BLEND`** :
   - Turn `SQUEEZE` in Bay 3 (right) between 0% and 200%. All primary gain, depth, and speed controls use non-linear S-curves that give you roughly twice the resolution in the 10-to-2 o'clock sweet spot for subtle moves around noon, while still reaching full range at the extremes (up to 200% negative-ratio overpressure on `Squeeze`).
   - Turn `CONTOUR` (`SMOOTH • OTT • PEAKY` , -100% to +100%) directly below `SQUEEZE` to tilt all three band attack/release contours together: left toward `Smooth` for thick, pinned sustain, or right toward `Peaky` to let drum and synth attacks crack through.
   - For mix buses or lead vocals, pull `BLEND` back to 30-50% for parallel upward density.
5. **Check the Output Meter & Clipper**: Watch the stereo `OUTPUT PEAK dBFS` meter on the far right. `0.0 dBFS` lights up to the top amber LED on the golden `0 dB` line, while anything above `0.0 dBFS` lights the 4 red overpressure LEDs. With `Limiter` set to `Soft` (default) or `Hard` , the meter clamps cleanly at `0 dB` ; flip `Limiter` to `Off` in the drawer to see how many red LEDs light up and gauge how hard you're hitting the clipper.
6. **Open the Calibration Drawer**: Click `BAND DYNAMICS` on the bottom rail to tweak per-band `CRUSH` , `DEADBAND` , `LIFT` , `CONTOUR` , and `GAIN` , or click `ENGINE & SPATIAL` to adjust crossover splits, character switches, `EXPANSE` / `HORIZON` , and `KEY/SC` or delta monitoring. Click the active tab (or `DRAWER CLOSED`) to close the drawer.

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2. The Core Macro Workflow

You can dial in 90% of Hyperbar's character from the upper faceplate using six macro dials and the three band threshold bias faders (`WEIGHT` , `BITE` , `SIZZLE`):

Control	Location & Range	Musical Role
SPEED	Bay 1 (0.73–18.4 , 3.67 noon)	Scales attack and release ballistics across all 3 bands from 0.20x (SLOW , smooth leveling) through OTT (3.67) to 5.0x (FAST , rhythmic pump).
HEAT	Bay 1 (−18 to +18 dB , 0 dB noon)	Drives audio into the upward and downward thresholds (with automatic −0.25 dB/dB post-compander trim). Turn up to push deeper into Crush ; turn down to let Lift dominate.
SQUEEZE	Bay 3 (0–200% , 100% noon)	Master upward and downward depth across all 3 bands (0–100% standard OTT scaling; 100–200% negative-ratio overpressure).
CONTOUR	Bay 3 (−100% to +100% , 0% noon)	Master ballistics tilt offsetting all 3 bands together: SMOOTH (−100% , dense sustain), OTT (0%), or PEAKY (+100% , transient snap).
BLEND	Bay 3 (0–100% , 100% default)	Parallel dry/wet mix (DRY to WET).
THRUST	Bay 3 (−18 to +18 dB , 0 dB noon)	Post-dynamics makeup gain feeding the output limiter stage.

3. The 11 Root Quick Starters: Cheat Sheet

Hyperbar ships with 11 starter presets in the root patch directory (plus 28 categorized presets across 7 folders, all tagged with Reason 13+ Browser .rsmeta metadata). Use this table to grab an immediate starting point:

Quick Patch Name	Best Source Material	Primary Sonic Character	Recommended BLEND
Quick – Modern HyperOTT Slam	Synths, Buses, Full Mix	Default flagship: 88.3 / 2495 Hz Studio crossovers, M/S domain, 50% Expanse , +1.5 dB Horizon , Sub Mono On	50-100%
Quick – Record Transfer (Classic OTT)	Synths, Dubstep Bass, FX	Tribute to the classic freeware OTT plugin: 88.3 / 2495 Hz, Scoop phase notch, Gritty sub, Wild floor, L/R domain	50-100%
Quick – Competent City (Original OTT)	Synth Leads, Plucks, Breaks	Tribute to the original DAW stock OTT preset: 88.3 / 2495 Hz, Studio flat phase, Clean sub, Smooth floor	50-100%
Quick – Vocal Glassy Air	Lead & Backing Vocals	24% Squeeze , fast 10.11 Speed , 200% High Lift (+1.8 dB Sizzle bias) for breathy air and controlled sibilance	35-100%
Quick – Bass & 808 Sub Lock	808s, Sub-Bass, Synth Bass	24% Squeeze , 161.2 Hz Sub Split , Clean anti-ripple detector, Sub Mono On for steady low-end weight	70-100%
Quick – Ambient Reverb Cloud	Plucks, Guitars, Reverb Sends	Slow 1.46 Speed , 76% Squeeze , Wild floor to sustain decaying reverb tails into pads	40-100%
Quick – Snare & Clap Shaper	Snares, Claps, Drum Hits	Fast 14.61 Speed , 84% Squeeze , Scoop mode, Mid/High Contour tilted toward Peaky (0.75) for hard transient crack	40-80%

Quick Patch Name	Best Source Material	Primary Sonic Character	Recommended `BLEND`
`Quick – Drum Bus Punch & Room`	Drum Bus, Breakbeats	30% `Squeeze`, 2.54 `Speed`, `Studio` mode, `Sub Mono` On, Mid/High `Contour` tilted toward `Peaky` (0.75) for punch + room lift	50-100%
`Quick – Dynamic HF Air Exciter`	Dull Mixes, Overheads, Vocals	4062 Hz `Air Split`, Low/Mid depths at 0%, High `Lift` 200% / `Crush` 160% for self-de-essing top-end sheen	50-100%
`Quick – EDM OTT Master Wall`	Resampling, Neuro Bass, Leads	+1.8 dB `Heat`, 7.32 `Speed`, 100% `Squeeze`, `Scoop / Gritty / Wild`, `Sub Mono` On for heavy OTT wall	60-100%
`Quick – Mix Bus Density Lift`	Mix Bus, Stereo Master	10% `Squeeze`, 1.60 `Speed`, `Studio / Clean / Smooth`, `Hard` limiter for subtle low-level loudness lift	50-100%

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4. The Calibration Drawer (`Band Dynamics` & `Engine & Spatial`)

Click the tabs along the bottom rail (`DRAWER CLOSED`, `BAND DYNAMICS`, `ENGINE & SPATIAL`) to switch the lower 4U bay between two calibration views. Your open tab is saved with your Reason song so browsing presets never collapses your view.

Tab 1: `BAND DYNAMICS` (Per-Band Precision)

Each band (`LOW DYNAMICS` for Sub, `MID DYNAMICS` for Body, `HIGH DYNAMICS` for Air) sits directly below its upper sight-glass meter, with **`SOLO`** and **`MUTE`** buttons plus five rotary trims:

- **`CRUSH` (0-200%)**: Downward compression depth above the upper threshold.
- **`DEADBAND` (0-48 dB)**: Width of the 1:1 unity-gain window between the upward and downward thresholds (7.0 dB Sub, 11.6 dB Body, 5.3 dB Air defaults).
- **`LIFT` (0-200%)**: Upward compression depth below the lower threshold (up to +36 dB boost).
- **`CONTOUR` (`SMOOTH/PEAKY`)**: Skews the band's attack-to-release ratio across a 9x span (0.33x-3.0x) around calibrated OTT time constants. Turn toward **`Smooth`** for faster attack and longer release, or toward **`Peaky`** for slower attack and faster release so transients punch through cleanly.
- **`GAIN` (-18 to +18 dB)**: Post-dynamics band makeup gain before the bands are summed.

Tab 2: `ENGINE & SPATIAL` (Crossovers, Character, Spatial & Monitoring)

1. **Bay 1 (`CROSSOVER & SUB ANCHOR`)**:
   - **`SUB SPLIT` (60-1200 Hz, default 88.3 Hz)**: Low/Mid Linkwitz-Riley crossover. Turning fully counter-clockwise (< 61 Hz) engages a **true sub-bypass** (`Bypass`) so `BODY` extends down to DC for 2-band processing.
   - **`AIR SPLIT` (800-12000 Hz, default 2.5 kHz)**: Mid/High Linkwitz-Riley crossover.
   - **`SUB STEREO` / `SUB MONO`**: Pushbutton that folds Low-band audio and detector energy to mono before compression.
2. **Bay 2 (`CHARACTER & ENGINE ARCHITECTURE`)**:

Switch	Lower / Middle Position	Upper Position / Default
`X-OVER`	`STUDIO` (Default, 0.000 dB flat sum)	`SCOOP` (Classic phase-comb notch)
`SUB DET`	`CLEAN` (Default, 12 ms anti-ripple)	`GRITTY` (Instantaneous peak tracking)
`FLOOR`	`TIGHT` (-55..-67 dBFS) / `SMOOTH` (Default, -62..-80)	`WILD` (-75..-95 dBFS room tail lift)
`LIMITER`	`OFF` / `SOFT` (Default, -3.52 dBFS knee)	`HARD` (0.0 dBFS brickwall ceiling)
`DOMAIN`	`M/S` (Default Mid/Side)	`L/R` (Left/Right stereo)

1. **Bay 3 (`SPATIAL SUITE`)**:
   - **`EXPANSE` (0-100%)**: Blends from a stereo-linked detector (0%) to independent dual-channel detectors (100%), dynamically widening room reverb and stereo chorus between center hits.
   - **`HORIZON` (-12 to +12 dB)**: High-shelf width tilt (> 2.2 kHz) applied to the stereo `Side` channel (active in both `M/S` and `L/R` modes, with Low-band boost clamped ≤ 0 dB to keep sub-bass phase-solid).
2. **Bay 4 (`AUDITION & MONITOR`)**:
   - **`SOURCE` (`KEY/SC | PROGRAM`)**: Audition the post-`Heat` detector signal (`KEY/SC` , internal or external sidechain) vs. the processed `PROGRAM` output.
   - **`CHANNEL` (`SIDE | MID | NORMAL`)**: Solo the stereo `MID` sum or `SIDE` difference channel.
   - **`MONITOR` (`LIFT+CRUSH | CRUSH | LIFT | NORMAL`)**: Delta monitoring to hear only what upward lift, downward crush, or both are adding to or removing from your signal.

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5. Reading the Sight-Glass Meters

Each of the three frequency bands (`SUB` , `BODY` , `AIR`) in Bay 2 pairs a three-track **Sight-Glass Meter** (`IN` , `DYN` , `OUT` from +6 to -60 dB) with a vertical threshold bias fader (`WEIGHT` , `BITE` , `SIZZLE`). Default thresholds are pink-noise-calibrated so all three bands react evenly on typical mixes:

- **`IN` Track (Left)**: Real-time pre-dynamics band input levels (`L/R` or `M/S`).
- **`DYN` Track (Center)**:
  - **Amber `CRUSH` Bars (Descending from top)**: Active downward gain reduction clamping loud peaks (0 dB down to -24 dB, or -48 dB at 200%).
  - **Cyan `LIFT` Bars (Ascending from bottom)**: Active upward boost pulling quiet details up (0 dB up to +36 dB).
- **`OUT` Track (Right)**: Post-band output level showing where the compressed band sits inside the deadband window.

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6. Three Quick Listening Demos

Demo 1: The "OTT Room Resuscitator" (Drums + Reverb Tail Extraction)

- **Signal Path**: `[Beat Map] ⟶ [Kong Drum Designer] ⟶ [RV7000 MkII Reverb] ⟶ [Hyperbar]`
- **Setup**:
  - Load a dry acoustic or house kit in Kong followed by RV7000 MkII (`Hall` , 2.0 s decay, 20% wet).

- In Hyperbar, load `Quick – Ambient Reverb Cloud` or set `SQUEEZE` to 75%, `HEAT` to +3 dB, and `SIZZLE` to +4 dB.
- Sweep `SPEED` from **0.92 (`SLOW`)** to **14.6 (`FAST`)**: at fast settings, room reflections pump rhythmically between snare hits; at slow settings, reverb tails hang as a smooth pad.
- Open `ENGINE & SPATIAL` and flip `FLOOR` between `SMOOTH` (pauses drop cleanly to silence) and `WILD` (room decay is pulled up by up to +36 dB between hits).

Demo 2: The "808 Sub-Sculptor" (Sub Mono, Clean vs. Gritty & True 0 Hz Bypass)

- **Signal Path**: `[Bassline Generator] ⟶ [Monotone Bass Synthesizer] ⟶ [Hyperbar]`
- **Setup**:
  - Set Monotone to a long-decay C1 808 sub bass with 3% noise mixed in for top-end texture.
  - Open `ENGINE & SPATIAL` in Hyperbar and toggle `SUB DET` : `CLEAN` keeps deep C1 sub notes smooth and weight-locked without waveform ripple; `GRITTY` tracks individual wave cycles for aggressive odd-harmonic growl.
  - Click `SUB MONO` On to lock everything below `SUB SPLIT` to dead-center mono.
  - Sweep `SUB SPLIT` from 400 Hz all the way counter-clockwise below 61 Hz (`Off`) to hear the transition into true 0 Hz 2-band mode.

Demo 3: Delta Audition & `CONTOUR` Shaping on Synths or Drums

- **Setup**:
  - Run a drum loop or synth chord progression through Hyperbar with `Quick – Modern HyperOTT Slam`.
  - Open `ENGINE & SPATIAL` and switch `MONITOR` in Bay 4 from `NORMAL` to `LIFT` (hear only the upward-extracted low-level detail) and `CRUSH` (hear only the clamped transient spikes).
  - Switch back to `NORMAL` and sweep the main-panel `CONTOUR` dial from `SMOOTH` (-100%, thick, sustained wall of sound) to `PEAKY` (+100%, slower attack and faster release that lets drum and pluck attacks crack through cleanly).

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7. Three Modular Patching Recipes

Recipe 1: Sub-Split Distortion (Using `REM OUT` / Remainder Out)

- **Goal**: Keep your sub-bass 100% clean and mono while sending Body + Air frequencies through external distortion (*Scream 4* or *Pulveriser*) without needing a Spider Audio Splitter.
- **Cabling**:
  - Patch your bass synth into Hyperbar's `MAIN IN (L/R)`.
  - Patch Hyperbar's `SUB OUT (L/R)` directly to Mixer Channel 1 (clean mono sub).
  - Patch Hyperbar's `REM OUT (L/R)` into *Scream 4*, and route *Scream 4* to Mixer Channel 2. Because `SUB OUT` is patched, `REM OUT` automatically carries only **Body + Air**.

Recipe 2: Frequency-Selective Sidechain Ducking (With `KEY/SC` Audition)

- **Goal**: Duck only the Sub band of a bassline or pad when the kick hits, leaving Body and Air frequencies untouched.
- **Cabling**:

- Patch your kick drum into Hyperbar's rear **`SC IN (L/R)`** (and use **`SC THRU`** to pass the kick to the rest of your rack).
- Open **`ENGINE & SPATIAL`** and click **`KEY/SC`** in Bay 4 to hear the sidechain detector signal and tune **`SUB SPLIT`** (88.3-180 Hz) around the kick fundamental. Switch back to **`PROGRAM`**.
- Open **`BAND DYNAMICS`**, set Sub **`LIFT`** to 0%, and turn up Sub **`CRUSH`** so each kick cleanly ducks only the sub band.

Recipe 3: 6x4 CV Telemetry Matrix Modulation

- **Goal**: Drive an external synth filter or effect from Hyperbar's band-specific upward lift or Mid/Side energy.
- **Cabling**:
  - Flip to the rear panel and locate the **`6x4 CV DYNAMICS MATRIX`** (`ENV`, `CRSH`, `LIFT`, `TRIG` across `SUB`, `BODY`, `AIR`, `MID`, `SIDE`, `ALL`).
  - Patch **`BODY LIFT`** into an external filter cutoff CV input so the filter blooms open as midrange notes decay, or patch **`SIDE ENV`** / **`MID ENV`** to modulate reverb decay from stereo width or center energy.

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8. Pro Tips & Shortcuts

1. **Snap to Default**: `Cmd/Ctrl + Click` (or `Alt/Option + Click`) any knob or fader to snap it to its calibrated factory default (`0.0 dB` on `HEAT`, `WEIGHT`, `BITE`, `SIZZLE`, `THRUST`, `GAIN`, `HORIZON`; `3.67` on `SPEED`; `100%` on `SQUEEZE`; `0%` / `0.50 OTT` on Master `CONTOUR` and per-band `CONTOUR`).
2. **Stationary 1U / 4U Header**: The top header bar (`BYP / ON / OFF`, `HYPERBAR` emblem, and Patch Browser) stays at identical coordinates when folding or unfolding the device, while the 1U strip gives you direct access to `SPEED` and `HEAT` on the left, 3-band mini sight-glasses in the center, and `SQUEEZE`, `BLEND`, `CONTOUR`, `THRUST`, and stereo `OUT` metering on the right.

Related Documentation

- Edward Boraas Web Portal: Hyperbar Quick Start