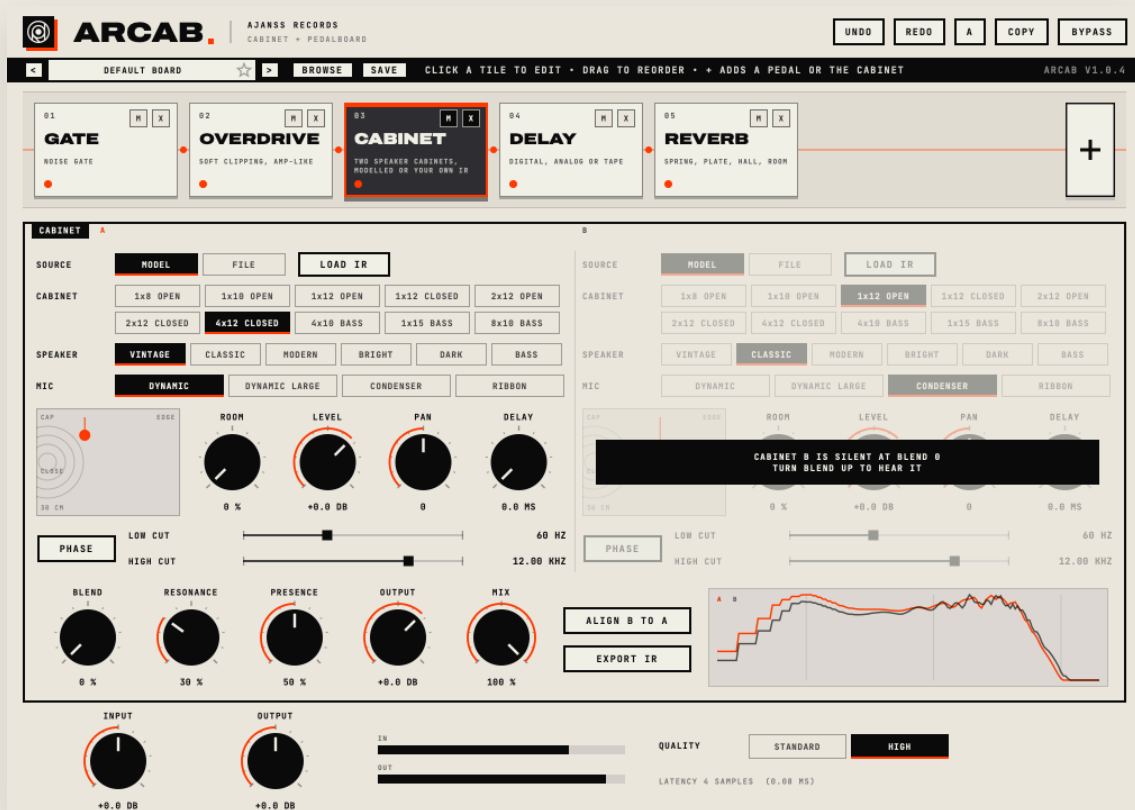


AJANSS RECORDS

ARCAB

TWO CABINETS, TWENTY-FIVE PEDALS, 485 PRESETS



VERSION

1.0.4

FORMATS

AU • VST3

PLATFORMS

macOS • WINDOWS

DOCUMENT

USER GUIDE

01 WHAT IT DOES

ARCAB is a speaker cabinet and a pedalboard in one plugin. Plug a guitar or bass straight into your interface, put ARCAB on the track, and build the rig on the board: a **cabinet** with two slots, a modelled speaker in each or an impulse response of your own, and **twenty-five pedals**, from tuner and gate through the drives and modulations to delay and reverb. Tiles sit in the order the signal runs; drag them to reorder, press M to bypass one, X to take it off, + to add another. The cabinet is a tile like any other, so a delay or a reverb can go after the speaker, where a mix engineer would put it, or before it.

The cabinets are **modelled, not recorded**. Each one is built from the physics of a speaker in a box – resonance, cone breakup, the roll-off on top, the closed or open back, the microphone and where it stands – and the impulse response is synthesised in the plugin the moment you change a setting. No brand is imitated and no recording of any product is inside. Ten cabinets, six speaker voices, four microphones, a pad for the microphone position, a second slot to blend with – and your own impulse responses load into either slot at any sample rate.

What it promises it measures: bypassed or empty it is **bit identical** (difference 0.000), the cabinet adds **no latency**, the output is **the same at every buffer size**, and at QUALITY HIGH the drives run **oversampled**, their alias products 71 to 97 dB below the note. The numbers are on pages 5 and 10.

02 INSTALLING

macOS – run ARCAB Installer.pkg and follow the steps; choose the formats and whether to install for every user or only yourself. The package is signed and notarised by Apple, so it opens normally.

Windows – run ARCAB Installer.exe; the plugin goes to the shared VST3 folder. The installer is not codesigned yet, so SmartScreen may warn you: click More info, then Run anyway. Only needed once.

After installing – rescan the plugin list in your DAW; ARCAB appears under Ajanss Records > ARCAB. macOS 10.13 or newer, Intel or Apple Silicon; Windows 10 or newer, 64-bit. Audio Unit and VST3 on macOS, VST3 on Windows.

03 THE BOARD

Tiles in signal order

The strip under the header is the board. Each tile is one pedal or the cabinet, and the signal runs left to right through them, orange dots marking the path. The plugin opens with a working rig: **GATE, OVERDRIVE, CABINET, DELAY, REVERB**. Click a tile and its controls open in the panel below. Drag a tile left or right to reorder; the change is heard the moment you drop it.

M, X and +

M bypasses that tile – a 5 ms crossfade, no click, and the tile greys out with **BYPASSED** written on it. **X** takes the tile off the board. **+** at the right end opens the palette, grouped: drive, dynamics, filter, modulation, pitch, time, special, utility, and the cabinet on top. Boost, overdrive, distortion, fuzz, compressor, EQ and delay can be used twice, everything else once. When the board grows past the window it scrolls; **+** stays where it is.

The panel

A pedal's panel is its knobs in a row with the mode switches above them, exactly the controls that pedal has and nothing else. Hover any control and the black strip in the header tells you what it does. Knobs drag vertically (SHIFT for fine steps), turn with the wheel, and take a typed value on double-click.

Header

The **preset bar** in the black strip – previous, the name with its favorite star, next, **BROWSE** and **SAVE** – opens 485 factory presets and your own (page 4). **UNDO** and **REDO** take back any change, including adding, removing and reordering tiles. **A / B** holds two complete boards; **COPY** copies the current one to the other slot. **BYPASS** passes the input through with a 5 ms crossfade and then untouched, bit for bit, held back by exactly the latency the host was told. Below the panel: **INPUT** gain into the board (a hot input drives the pedals harder), **OUTPUT**, the input and output meters, **QUALITY** (page 12) and the latency the plugin reports to the host. **Saved with the session**: the board – tiles, order, bypasses – and every knob come back with the session and travel with a preset; a six-tile board with one bypass, a delay at 333 ms and a bass cabinet in slot B was measured to come back exactly.

04 PRESETS

The preset bar and the browser

In the black strip under the header: previous, the preset name, next, **BROWSE** and **SAVE**. The arrows step through the list visible in the browser – everything, one category, your favorites or a search. Clicking the name opens the browser. **485 factory presets** in fourteen categories. Each is a complete board – the pedals, their order and every setting – on the modelled cabinets, so it loads at once. The search finds names, categories and gear: SPRING, 4x12, RIBBON or MID HUMP. Hovering a preset writes its chain in the strip. Loading sets every control except QUALITY, a working preference, and is one step of UNDO.

Favorites and your own

The star beside a preset or at the end of its name, or F, marks a favorite; **FAVORITES** shows only those. **SAVE** stores the whole board as a user preset – pedals, order, settings and the paths of your own impulse responses – in **Documents / ARCAD Presets**, one .arcab each; copied to another computer they appear under **USER**. RENAME and DELETE work on user presets, and a star follows its preset.

CLEAN	38 presets – GLASS SPRING, VELVET TREMOLO, SPARKLE DOTTED, ICE FLANGE
CRUNCH	37 presets – EDGE, BRASS ROOM, GRAVEL ECHO, HOT CLEAN TREMOLO
BLUES	35 presets – SMOKE, SLOW BURN HALL, TEXAS ROTARY, HARP SLAP
ROCK	37 presets – ANTHEM, CLASSIC ROCK ECHO, STONER LONG ECHO, GLAM FLANGE
HARD ROCK	35 presets – HAMMER, FURNACE DOTTED, BOULDER, DOUBLE STACK
METAL	35 presets – THRASH, DOOM HALL, BLACK METAL, BREAKDOWN WIDE
LEAD	31 presets – SOLO HALL, SINGING WIDE, SOARING LONG ECHO, CRYING ECHO
FUNK	37 presets – QUACK, AUTO WAH SLAP, DISCO PHASE, RUBBER FLANGE
JAZZ	30 presets – ARCHTOP, SMOKY CLUB HALL, BALLAD CHORUS, BOSSA VIBE
COUNTRY	36 presets – TWANG SLAP, CHICKEN PICKIN, BAKERSFIELD TREMOLO, PEDAL STEEL HALL
AMBIENT	30 presets – CATHEDRAL SWELL, NEBULA DRIFT, GLACIER HALO, SHOEGAZE BLOOM
FUZZ	36 presets – WOOL, OCTAVE FUZZ, RAZOR PHASE, VINTAGE FUZZ ECHO
BASS	28 presets – SLAP BASS, DUB BASS ECHO, SUB, UPRIGHT
EXPERIMENTAL	40 presets – ROBOT, TELEPHONE, UNDERWATER HALL, SIREN

04 PRESETS, CONTINUED

Level-matched

Every factory preset was played through the same real DI riff and its OUTPUT set so they all sit at one loudness: **-19.0 dBFS RMS**, the level the twelve boards of 1.0.3 were matched to. Where that would push a peak over -1 dBFS – a tremolo, a wide clean dynamic – the peak sets the level instead: 52 presets. Stepping through the bank does not jump in level; the test suite plays all 473 new presets again after every change to the sound engine and finds each within 0.3 dB of that level or at its peak limit.

No two alike

The test suite plays every preset through the same riff and two seconds of silence and describes what comes out with fifteen measurements: the balance of eight frequency bands, how peaky the sound is, the tail after the last note, stereo width, how much the tone moves, tremolo, how long the sound takes to die away and the spacing of its echoes. Then it finds each preset's nearest neighbour. On that scale a difference of about 2 dB in one band and nothing else measures 0.050: every one of the **485 presets** is at least **0.050** from all the others, and half are **0.088** or more. Thirty generated boards that came closer were left out of the bank.

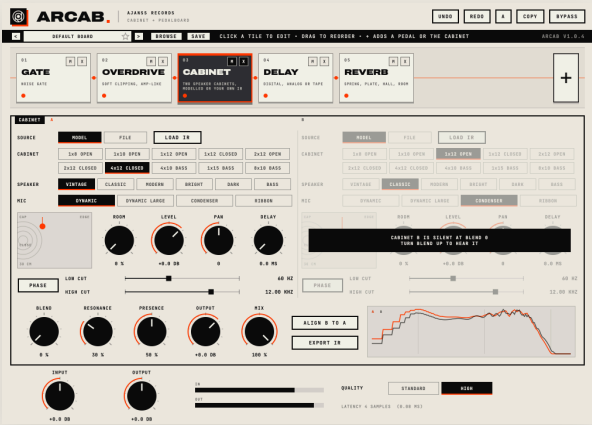
Four new overdrive voices

MID HUMP, MID HUMP BRIGHT, ASYMMETRIC and ASYMMETRIC FAT follow the classic mid-hump circuit: the drive stage sees only what passes a 720 Hz high pass, clips it with diodes and adds it to your clean signal, so the lows stay tight and the note stays defined under the grit. BRIGHT has the livelier output stage; ASYMMETRIC puts two diodes on one side and gains even harmonics; ASYMMETRIC FAT opens the drive stage from 300 Hz for more body.

Measured:

LEVEL	At the default settings each is as loud as CLASSIC on a real DI riff: 0.00 dB apart.
MID HUMP	At the same level, a 1 kHz note is clipped 20.0 dB harder than a 100 Hz note (MID HUMP BRIGHT 23.0 dB); ASYMMETRIC FAT only 3.7 dB – its lows are driven too.
HARMONICS	220 Hz at DRIVE 60: MID HUMP carries no second harmonic (-188 dB); ASYMMETRIC has it 23.4 dB under the note.
CLEAN SIGNAL	DRIVE 0, a quiet note: distortion 101 to 136 dB under the note – the clean signal passes as it is.
TONE	From 0 to 100 the top above 2 kHz opens 8.4 to 9.9 dB; BRIGHT sits 4.4 dB higher above 3 kHz than MID HUMP.

05 THE CABINET



SOURCE	MODEL builds the cabinet here from the settings below; FILE plays your own impulse response. LOAD IR opens a WAV, AIFF or FLAC at any sample rate (stereo is summed) and switches the slot to FILE. FILE with no file loaded keeps the model playing and says NO FILE next to the tile button.
CABINET	Ten boxes, named by what they are, from 1x8 OPEN to 4x12 CLOSED and three bass cabinets. A closed back pushes the lows; a small open box cuts them. Measured at 50-90 Hz: the 4x12 closed sits 3.5 dB above the 1x12 open.
SPEAKER	Six voices: VINTAGE, CLASSIC, MODERN, BRIGHT, DARK, BASS – where the cone breaks up and where the top rolls off. At 4-6 kHz BRIGHT and DARK are 14.3 dB apart.
MIC	DYNAMIC is the studio standard with its proximity lift and 5 kHz peak; DYNAMIC LARGE is flatter; CONDENSER is open on top; RIBBON is soft on top and full below.
MIC PAD	Drag the dot: left is the cap, right the edge of the cone; up is close, down is 30 cm away. Off the cap the top softens – measured at 3-6 kHz, cap to edge: 11.9 dB. Further away the proximity lift fades and a floor reflection comes in.
ROOM • LEVEL • PAN • DELAY	ROOM adds a short room tail around the cabinet. LEVEL, PAN and DELAY (0-10 ms) place the slot; DELAY is what ALIGN fills in.
LOW CUT • HIGH CUT • PHASE	12 dB per octave at each end of the slot, and a polarity flip.
BLEND	A to B. At 0 only cabinet A plays; at 100 only B – the silent slot is dimmed and says so. B opens with a different cabinet, speaker and microphone than A, so there is a second colour to blend the moment you turn it.
ALIGN B TO A	Measures the delay between the two impulse responses by cross-correlation, writes it into the DELAY of the slot that is ahead, and flips B's polarity if needed. Measured: a 37-sample offset found exactly.
RESONANCE • PRESENCE	RESONANCE is the speaker's impedance curve as an amplifier sees it: a bump at the resonance and a lift on top. PRESENCE is a shelf at 4.5 kHz; 50 is flat.
OUTPUT • MIX	The cabinet's level, and dry to cabinet. At MIX 0 the tile is bit identical to its input.
EXPORT IR • THE CURVE	EXPORT IR saves the blend of both slots – models, files, levels, pans, delays and cuts included – as a 24-bit stereo WAV at the session rate. The curve is the amplitude response of both slots, A in orange, B in grey, drawn from the impulse responses actually loaded.

06 THE PEDALS

TUNER	Chromatic. Note name, cents bar and frequency, held for half a second between plucks; MUTE silences the output while you tune. Measured: 329.63 Hz read as 329.63 Hz; a real low E from a DI read 4 cents off.
GATE	THRESHOLD with 3 dB of hysteresis, RELEASE, RANGE. Measured: -70 dBFS held down by 80 dB, -20 dBFS passed at 0.0 dB.
COMPRESSOR	SUSTAIN is a lower threshold with automatic make-up; ATTACK, RELEASE, RATIO, LEVEL and a BLEND for parallel compression. Measured at 4 : 1, +20 dB in gave +5.0 dB out.
BOOST	Up to 24 dB into whatever comes next. CLEAN is flat, TREBLE cuts the lows first, MID pushes 800 Hz.
OVERDRIVE	Soft clipping. DRIVE, TONE, LEVEL and seven voices: SMOOTH, CLASSIC, BRIGHT, and four circuits that clip only what passes a 720 Hz high pass and add your clean signal back – MID HUMP, MID HUMP BRIGHT, ASYMMETRIC, ASYMMETRIC FAT (page 5).
DISTORTION	Harder clipping. TIGHT cuts the lows before the clip, OPEN keeps them, SCOOP drops the mids.
FUZZ	FUZZ, TONE, LEVEL and BIAS – off centre the clip for sputter and gating. SMOOTH, WOOLLY or SQUARE.
PREAMP	Three gain stages in a row with BASS, MID, TREBLE, PRESENCE and LEVEL; CLEAN, CRUNCH or LEAD channel.
EQ	LOW shelf at 100 Hz, MID peak at a MID FREQUENCY of your choice, HIGH shelf at 3 kHz, LEVEL.
WAH	POSITION from heel to toe (automate it), Q, and an AUTO mode with its own RATE. Measured: 338 Hz at the heel, 2209 Hz at the toe.
ENVELOPE	A filter that follows your picking: SENSITIVITY (set it so a hard pick just opens the filter), Q, RANGE, DECAY; UP opens with the attack, DOWN closes. Measured: a quiet-to-loud burst moved the peak from 416 Hz to 744 Hz.
CHORUS	RATE, DEPTH, MIX, TONE; one, two or three detuned voices.
FLANGER	RATE, DEPTH, FEEDBACK (negative inverts), MANUAL, MIX.

06 THE PEDALS, CONTINUED

PHASER	RATE, DEPTH, FEEDBACK, MIX; 2, 4, 6, 8 or 12 stages.
VIBE	Four-stage phase vibrato with an asymmetric sweep; CHORUS mixes the dry signal back in, VIBRATO does not.
TREMOLO	RATE and DEPTH; sine, triangle, square or harmonic shape; SYNC locks the pulse to the beat, so every playback and every bounce pulses in the same place. Measured: 4 Hz set, 3.98 Hz found.
VIBRATO	Pitch wobble in cents, with a RISE that fades the depth in.
OCTAVER	SUB, SUB 2, UP and DRY. Measured: 220 Hz in, 110.1 Hz sub out.
PITCH	SEMITONES and CENTS, MIX for a harmony. Splices are found by correlation, so a held note does not warble: measured at +7 semitones, 440 Hz became 659.2 Hz (0 cents off) with 0.4 dB of level ripple. Latency 1256 samples at 48 kHz, reported to the host.
DELAY	TIME or SYNC to the beat, FEEDBACK, MIX, TONE, MODULATION; DIGITAL, ANALOG or TAPE; PING PONG; TRAILS lets the repeats ring out when the tile is switched off. Measured: 250 ms landed exactly 12,000 samples late; 1/8 at 120 BPM the same.
REVERB	SPRING, PLATE, HALL or ROOM; DECAY, TONE, PRE DELAY, MIX; TRAILS as on the delay. A new type fades the old tail out in 10 ms instead of cutting it. Measured: DECAY at 1 s fell 31.1 dB in the first half second.
ROTARY	Spinning horn and drum with SLOW and FAST speeds, ACCELERATION for the ramp, BALANCE, MIX.
RING MODULATOR	FREQUENCY of the carrier and MIX. Metallic sidebands.
BITCRUSH	BITS and RATE – fewer bits, more grit; lower rate, more aliasing, on purpose. MIX.
VOLUME	LEVEL for swells (automate it) and MINIMUM, the level at heel down.

07 PARAMETERS

CONTROL	RANGE	DEFAULT	WHAT IT DOES
INPUT	-24 ... +24 dB	0 dB	Gain into the board; hotter drives the pedals harder.
OUTPUT	-24 ... +24 dB	0 dB	Final level after the board.
BYPASS	on / off	off	Passes the input through untouched, bit for bit.
QUALITY	STANDARD / HIGH	HIGH	HIGH runs the drives oversampled. Page 10.
CABINET A / B SOURCE	MODEL / FILE	MODEL	Built here, or your own impulse response.
CABINET	10 boxes	4x12 / 1x12	Box size and back. A is a 4x12 closed, B a 1x12 open.
SPEAKER	6 voices	VINTAGE / CLASSIC	Where the cone breaks up and where the top rolls off.
MIC	4 types	DYNAMIC / CONDENSER	The microphone in front of the speaker.
POSITION	0 ... 100 %	30 / 55 %	0 is the cap, 100 the edge; off the cap the top softens.
DISTANCE	0 ... 30 cm	5 / 10 cm	Further away: less proximity lift, a floor reflection.
ROOM	0 ... 100 %	0 %	A short room tail around the cabinet.
LEVEL	-24 ... +12 dB	0 dB	This slot's level.
PAN	-100 ... +100	0	Left to right.
DELAY	0 ... 10 ms	0 ms	Nudge in time. ALIGN writes it for you.
LOW CUT	20 ... 500 Hz	60 Hz	12 dB per octave below.
HIGH CUT	2 ... 20 kHz	12 kHz	12 dB per octave above.
PHASE	on / off	off	Inverts the slot.
BLEND	0 ... 100 %	0 %	A to B.
RESONANCE	0 ... 100 %	30 %	A bump at 100 Hz and a lift above 3.5 kHz.
PRESENCE	0 ... 100 %	50 %	Shelf at 4.5 kHz, ± 4 dB; 50 is flat.
CABINET OUTPUT	-24 ... +12 dB	0 dB	The cabinet tile's level.
MIX	0 ... 100 %	100 %	Dry to cabinet. At 0, bit identical to its input.

08 MEASURED

Every number below comes from the plugin's own test suite, run on the shipped build at 48 kHz. They are not targets; they are what came out.

BIT IDENTICAL	Empty board, cabinet at MIX 0, a bypassed tile, and the header BYPASS: difference to the input 0.000, sample for sample (BYPASS after the reported latency).
LATENCY	Cabinet 0 samples. At STANDARD every pedal 0, except PITCH (1256 samples at 48 kHz) and VIBRATO (288). HIGH adds 4 samples per boost, overdrive and preamp and 6 per distortion and fuzz, exact below 1 kHz. All reported to the host.
ANY BUFFER SIZE	Output at 32, 64, 128, 256 and 1024 samples and with a buffer that changes size every block: difference to the 512-sample reference 0.000 – on a board of all thirty-three tiles.
ANTI-ALIASING	Loudest alias product against a 1234.5 Hz tone, STANDARD / HIGH: distortion -51.7 / -97.2 dB, fuzz -51.0 / -78.2, overdrive -69.3 / -95.0, preamp lead -78.0 / -91.0. At 2637 Hz distortion -45.3 / -74.6.
CABINET MODELS	4x12 closed against 1x12 open at 50-90 Hz: +3.5 dB. BRIGHT against DARK at 4-6 kHz: 14.3 dB. Microphone at the cap against the edge at 3-6 kHz: 11.9 dB.
YOUR OWN IR	A 96 kHz file loaded into a 44.1 kHz session: what it holds above 22 kHz folds back 105.7 dB below the tone (0.8 dB before 1.03).
TAIL	Reported to the host from the board, so a bounce is never cut: a 10 s reverb reports 10.01 s, no delay or reverb 0 s.
ALIGN	An offset of 37 samples between the slots found exactly: 0.770 ms written against 0.771 expected.
DELAY	250 ms: the echo landed 12,000 samples after the hit, off by 0. 1/8 at 120 BPM: the same 12,000.
TREMOLO	Set to 4 Hz, the envelope measured 3.98 Hz. SYNC, playback started 0.37 of a beat apart: the peaks land 0.0 ms apart.
COMPRESSOR	4 : 1 ratio: +20 dB over the threshold came out as +5.0 dB.
GATE	-70 dBFS held down by 80 dB; -20 dBFS passed at 0.0 dB.
WAH	Heel 338 Hz, toe 2209 Hz.
OCTAVER	220 Hz in, 110.1 Hz out.
PITCH	+7 semitones on 440 Hz: 659.2 Hz, 0 cents off; level ripple on a held tone 0.40 dB.
REVERB	DECAY 1 s: 31.1 dB down after half a second.
TUNER	329.63 Hz read as 329.63 Hz.
HOSTILE HOSTS	A block of NaN from the host is scrubbed and the board recovers; a stopped transport changes nothing and a zero tempo keeps the last good one; two instances do not disturb each other.
PROCESSOR	One core, STANDARD / HIGH: default board 1.6 / 1.8 %; all thirty-three tiles 3.4 / 7.9 % (Apple Silicon, 48 kHz, 128 samples).

09 STARTING POINTS

Start from a preset

Press BROWSE, pick a category and step through it with the arrow keys – CRUNCH or ROCK for rhythm, LEAD for a solo, CLEAN, JAZZ or AMBIENT for the pretty parts. Or type what you want to hear: MID HUMP, SPRING, RIBBON, 4x12. Each preset is a full board; everything on it is yours to change, UNDO takes you back, and SAVE keeps your version.

A rhythm sound

Keep the default board. Turn OVERDRIVE's DRIVE to taste, leave the cabinet on the 4x12 closed with the DYNAMIC microphone near the cap, and set DELAY's SYNC to 1/8 DOTTED. If it is harsh, drag the microphone towards the edge; if it is boomy, raise the cabinet's LOW CUT.

Two microphones on one cabinet

In the cabinet, set slot B to the same cabinet and speaker as A but a different microphone – a RIBBON at the edge, say – then turn BLEND to 40 and press ALIGN B TO A. That is the classic two-microphone recording, aligned to the sample.

Your own impulse responses

Press LOAD IR in a slot, pick the WAV, and the slot switches to FILE. Any sample rate works; the file is resampled to the session. EXPORT IR saves your blend of both slots as one WAV.

Order matters — sometimes

The cabinet, delay and reverb are linear, so swapping them among themselves changes nothing you can hear; put them wherever reads best. Moving a delay or reverb **before a drive** is a different sound: every repeat, every bit of tail, hits the clipping stage. Wah and vibe before the drive, compressor first, gate first of all.

09 STARTING POINTS, CONTINUED

When it sounds wrong

Check the input meter first: a DI recorded at -18 dBFS wants INPUT up by 6 to 10 dB before the drives do their job. Then check the cabinet MIX is at 100 and that a tile you expect to hear is not greyed out. For the lowest latency when you play live through the computer, set QUALITY to STANDARD.

10 QUALITY AND TRAILS

QUALITY

HIGH, the default, runs distortion and fuzz at four times the sample rate and boost, overdrive and the preamp at twice, so a bent note high on the neck stays clean instead of growing a second, unrelated tone under the distortion. It costs processor time (the full board goes from 3.4 % to 7.9 % of one core) and 4 to 6 samples of latency per drive, reported to the host. **STANDARD** runs everything at the session rate with zero latency. Switching crossfades in 5 ms while you play. Sessions saved with ARCAD 1.0.2 or earlier open at STANDARD, so they behave as they did; loading a preset keeps your choice.

TRAILS

On DELAY and REVERB. On, switching the tile off stops new signal going in and lets the repeats or the tail ring out; off, the tile goes quiet in 5 ms. New boards open with TRAILS on; sessions from 1.0.2 or earlier open with it off.

11 SUPPORT

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