

## Gulf Coast Synthesis Model 8 | Field Manual | v2.3 beta

Model 8 is a standalone recording environment and mechanical tape simulation. This manual details the complete feature set, routing architecture, and physics engine.

### Quickstart: Your First Recording

1. **Route Your Input:** Click the **SRC** button at the top of a channel strip to select a hardware input or a loaded virtual instrument.
2. **Arm the Track:** Click the **R** (Record) button on the channel strip. It will blink red to indicate the track is armed and ready.
3. **Set Monitor Mode:** Use the **T/IN** button to toggle between monitoring the live input (**IN** / Blue) or playback directly off the tape head (**T** / Orange).
4. **Enable Punch-In Mode (Crucial for Overdubbing):** Model 8 simulates the physical distance between the Record and Repro heads, which creates a natural monitoring delay. If you are overdubbing to existing tracks, engage the **PUNCH** button on the main deck. This temporarily forces the head gap to 0ms, ensuring delay-free tracking.
5. **Record:** Click the Master Record Arm button (the red circle in the transport section) and press Play to begin printing audio.

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## 1. The Console & Routing Architecture

- **Input Routing (SRC):** Route audio from hardware inputs, Aux returns, hosted virtual instruments, or perform internal bounces by routing the output of one track directly into another.
- **Trim & Gain Staging:** The top knob is a pre-tape Trim, allowing you to drive the signal harder into the tape without changing your mix fader.
- **Console EQ:** Each channel features a 3-band EQ: High Shelf (10kHz), Sweepable Mid Peak (250Hz - 5kHz), and Low Shelf (100Hz).
- **Print EQ:** Toggle the **PRINT EQ** button to destructively record your EQ adjustments directly to the magnetic tape. When disabled, the EQ acts as a post-tape playback monitor.
- **Channel Controls:** Aux 1 & Aux 2 sends (post-fader), Pan, Phase Invert (Ø), Solo (Yellow), and Mute (Beige).
- **Fader Resets:** Double-click any fader or knob in the software to instantly reset it to its default value (Unity/0dB).
- **VCA Groups:** Right-click a track meter to assign the track to one of 8 color-coded groups. Mute, Solo, Record Arm, and Fader movements will automatically link. *Tip: Hold*

*Command/Ctrl while dragging a grouped fader to slip its relative volume without moving the rest of the group.*

- **Scribble Strips:** Click the blank space below a fader to type a track name.
- **Clear Audio:** Right-click a track meter and select "Erase Track" to permanently wipe its audio.

## 2. Tape Physics & Wear Mechanics

- **Tape Formats (1" to Cassette):** Click the format badge (e.g., *1" MASTER*) to cycle through formats. This fundamentally alters the frequency response, head-bump resonance, tape hiss floor, and motor inertia.
- **Varispeed:** Controls motor speed. Hold Command/Ctrl while dragging the knob to snap to exact musical intervals (e.g., -1 Octave, Perfect 5th).
- **Time (Head Gap):** Adjusts the physical delay between the Record and Repro heads (0ms to 1000ms).
- **Drive & Saturation:** Pushes the signal into the magnetic oxide. Model 8 uses a dynamic curve that reacts to the chosen tape format.
- **Wow & Flutter:** Wow introduces slow, low-frequency motor drift. Flutter introduces high-frequency capstan jitter and scrape flutter.
- **Age & Stickiness:** Age simulates oxide shedding and high-frequency loss. *Stickiness* simulates sticky tape stiction, causing unpredictable micro-snags and pitch warbles.
- **S.O.S. (Sound-On-Sound):** Disables the erase head. This allows you to overdub on top of existing audio infinitely without erasing previous takes, creating degrading tape loops.
- **WEAR (Auto-Wear):** Engages continuous tape degradation. Turn the associated *Amount* knob to dictate how quickly the tape takes physical damage while the transport is rolling.
- **Physical Interaction:** Click and drag horizontally on the reels to manually scrub the audio. Grab the left tension arm with your mouse to physically bend the pitch.

## 3. Inserts & Master FX

- **Track Inserts (INS):** Click **INS** on a channel to open its post-tape effect rack. Each track supports up to 4 inserts. You can drag and drop effect slots to reorder the signal chain.
- **Master FX:** Click **MASTER FX** on the console to access the master bus rack (processed pre-fader).
- **Aux Returns:** Two global auxiliary effect sends. Click the empty slot to load an effect.
- **Built-In Native FX:**
  - **Analog Reverb:** Select between Spring, Plate, Hall, and Dream algorithms.

- **Tape Echo:** Features Age degradation, BPM sync, and input drive.
- **Opto Comp (LA-2A):** Classic optical compression/limiting with an animated VU meter.
- **FET-76:** Ultra-fast limiting. Set the ratio to "ALL" for all-buttons-in mode.
- **Parametric EQ:** A 5-band interactive display. Drag nodes to change frequency and gain. Use your mouse scroll wheel over a node to adjust the Q-factor.
- **Multi-Modulator:** Phaser, Flanger, Chorus, ADT (Artificial Double Tracking), Distortion, Vibrato, and Tremolo.

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## 4. Virtual Instruments

- **Hosting:** Model 8 supports 3rd-party VST3 and AU plugins. Load them into the Instrument Rack, then route their outputs to tape tracks via the console SRC menus.
- **Presets:** Click the green glowing LCD screen on any built-in instrument to save, load, or delete user presets.
- **Built-In Instruments:**
  - **GCS A-1 Mono Synth:** Classic analog bass and lead synthesizer with glide.
  - **GCS Voxtone Rhythm:** 10-part analog drum machine. Includes 15 built-in patterns and a programmable matrix. *Tip: Click the LCD screen under any drum channel to load your own custom WAV/AIFF samples.*
  - **GCS A-10 Poly Synth:** Polyphonic analog emulation with hard sync and poly-mod.
  - **GCS Glissandio:** A continuous-pitch ribbon synthesizer. Use the **TOUCH** button to trigger notes automatically when clicking the ribbon.
  - **GCS Stage Keyboard:** Physical modeling of Rhodes, Wurlitzer, Tack Piano, FM Piano, Tonewheel, and Transistor organs.

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## 5. Tape Visualizer & Physical Editing

- **Waveform View:** Toggle the **WAVE** button to overlay the audio waveform onto the tape path. Right-click anywhere on the tape visualizer to select which track's waveform is displayed.
- **Defect Brushes:** Click the Brush tool text to cycle through defect types:
  - *Dropout:* Oxide loss (volume drops).
  - *Crinkle:* Tape damage (harsh noise).
  - *Drag:* Tension pulls (pitch drops).
  - *Flutter:* Localized high-frequency jitter.

- Draw directly on the tape strip to paint physical damage onto specific sections of the audio.
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- **Clear Defects (CLR)**: Instantly wipes all drawn physical damage from the reel.
- **Looping**: Toggle the **LOOP** button to cycle playback. Drag the green (In) and magenta (Out) flags on the visualizer to set boundaries, or use the **IN** and **OUT** buttons to punch boundaries on the fly.

## 6. Automation & MIDI

- **Track Automation (AUTO)**: Click the **AUTO** button on any channel or Aux return to configure fader automation.
  - **Read**: Faders follow recorded automation data.
  - **Touch**: Faders write data only while actively clicked; they snap back to the recorded data when released.
  - **Latch**: Faders write data when clicked, and stay at their last value when released.
  - **Write**: Continuously overwrites data. (Auto-downgrades to Latch when the transport is stopped to prevent accidental overwrites).
  - *Clear*: Right-click the track meter and select "Clear Automation".
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- **MIDI Learn**: Click the **MIDI LEARN** button, click any parameter on the console or an instrument, and move a hardware controller to bind it. Click MIDI LEARN again to exit. Right-click the MIDI LEARN button to clear all active mappings.
- **Musical Typing**: Press Command/Ctrl+K (or access via the View menu) to open the Musical Keyboard. Toggle **Global QWERTY** to allow playing instruments with your computer keyboard even when tweaking plugins or faders.

## 7. Transport, Sync, & System Settings

- **Metronome**: Toggle **CLICK** to engage the dedicated click track. Access Metronome Settings via the top menu to change BPM, Time Signature, and subdivisions.
- **Settings (SETUP)**:
  - **Driver Error Offset**: Compensate for your audio interface's inherent latency. Connect a physical cable from Output 1 to Input 1 and click "Run Auto-Calibration" to measure and correct this perfectly.
  - **Sync Lock**: Engages a phase-locked loop for zero tempo drift when syncing against external DAWs.

- **Direct Monitor:** Mutes software monitoring specifically for hardware inputs to prevent double-monitoring echoes.
- **Disable Auto-Disarm:** Prevents tracks from un-arming automatically when the transport stops.
- **Momentary Transport:** Requires you to hold down REW or FFWD to wind the tape, stopping immediately when released.
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- **UI Themes:** Switch between Vintage (skeuomorphic) and Minimal (flat) UIs via the View menu. Minimal UI colors are fully customizable.
- **Low CPU Mode:** Disables UI animations and the physics visualizer to ensure stable audio performance on older hardware.

## 8. Import & Export

- **Import Audio:** Drag and drop WAV, MP3, or AIFF files directly onto the app. A dialog will prompt you to target a specific track, choose mono/stereo splitting, and apply analog input drive. You can select multiple files at once for batch importing.
- **Mixdown:** Click **MIXDOWN** to bounce your session.
  - **Offline:** Renders the mix faster than real-time.
  - **Live Mix:** Records the output in real-time while you manually manipulate faders, dub echoes, and tape physics.
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- **Bounce to Tape:** Located in the Mixdown menu. This allows you to automatically sum your entire mix and print it directly to an unused track on the current reel (e.g., bouncing tracks 1-6 down to a stereo pair on tracks 7 & 8).