

GREEN GOBLIN

EKSSPERIMENTAL SOUNDS STUDIO

GROTESQUE SAWTOOTH SYNTHESIZER

1. Introduction

Green Goblin is built around one sound, the BIG supersaw: up to 13 detuned saws per voice, a clean filter that can purr, scream and sing, an arpeggiator, chord generator, rhythm effects and the space a fat lead or pad needs.

But the Goblin has more tricks up its sleeve:

- **Run any sound through it.** Plug a drum loop, a vocal or another synth into the back panel and play it through Green Goblin's filter and effects, gated, pumped and echoed in time with the synth, and opened by the filter envelope while you hold keys.

- **Rhythms that lock together.** The arpeggiator, gate effect, pump, synced LFO and delay all run on the same clock, so the synth, the external sound and the effects move as one.

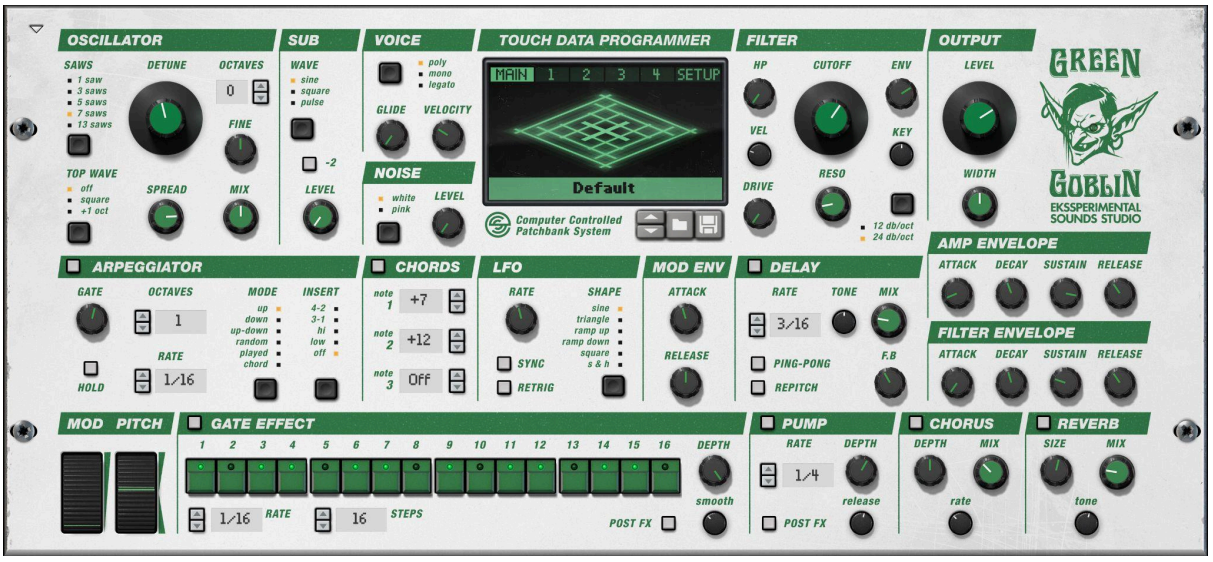
- **A pump that is also a compressor.** Let the pump duck to a kick on the sidechain input, or feed one sound into both EXT AUDIO IN and SC IN and it squeezes itself: instant pumping compression.

- **Drive that folds.** The first half of DRIVE is a warm overdrive. The second half blends in a sine wavefolder that folds the wave back on itself, for glassy, metallic and vocal tones.

- **Pre or post.** Put the drive before or after the filter, and the sub into the filter, past it, or past it into the effects. Small switches, very different sounds.

- **A square on top, a sub below.** The TOP WAVE square (with pulse width you can modulate) and a sine, square or pulse sub turn the stack into basses, organs and hollow leads too.

The **TOUCH DATA PROGRAMMER** display shows your sound as you play and holds a 16-slot modulation matrix and the SETUP page. And there are 100+ patches to start from.



2. Front panel

2.1 OSCILLATOR

SAWS chooses 1, 3, 5, 7 or 13 saws per voice. Seven is the classic supersaw; 13 adds a wider halo around it for walls of sound.

DETUNE spreads the saws in pitch: a gentle chorus at low settings, the classic trance lead around the middle, wild and wide at the top.

SPREAD sets how wide the saws are in stereo. **MIX** balances the centre saw (counter-clockwise: purer and more focused) against the detuned outer saws (clockwise: more shimmer).

TOP WAVE adds a square wave on top of the saws, at pitch or one octave up (**+1 oct**). With 1 saw, MIX works the same way: fully counter-clockwise plays only the saw, in the middle the square is mixed in under it, and turning clockwise fades the saw out until only the square is left. With TOP WAVE off, fully clockwise silences the saw, so only the sub and the noise are left (useful for a self-oscillating filter, see Tips).

OCTAVES transposes the sound by up to two octaves up or down, **FINE** tunes it by up to half a semitone.

2.2 SUB

A sub oscillator one octave below, or two with **-2**. Pick its **WAVE** (sine, square or pulse) and **LEVEL**. By default it plays only the lowest note of a chord and goes straight to the output, past the filter: tight and clean. On the SETUP page you can send it through the filter instead, or past the filter into the effects, or play it on every note.

2.3 NOISE

White or pink noise with **LEVEL**, for breath, air and risers. It goes through the drive and filter with the saws.

2.4 VOICE

poly plays up to 12 notes. **mono** plays one note at a time and restarts the envelopes on every key. **legato** plays one note at a time and moves between overlapping keys without restarting.

GLIDE sets the portamento time; in poly a new chord glides from the last one. **VELOCITY** sets how much your playing strength changes the volume.

2.5 FILTER

A clean low-pass filter (**12 dB/oct** or **24 dB/oct**) with **CUTOFF**, **RESO** and **ENV**, the filter envelope amount, up or down. **HP** is a high-pass to thin out the low end.

Turn **RESO** past about 92 % and the filter **self-oscillates**: it becomes a pure sine you can play from the keyboard (set **KEY** to 100 %), on its own or on top of the saws.

KEY lets the cutoff follow the keyboard; **VEL** lets harder playing open the filter.

DRIVE: the first half is a warm overdrive. From halfway up, a sine wavefolder blends in and folds the waveform back on itself, from slight fuzz and warmth to glassy and metallic on to vocal. It works on all the saws of a voice together, so they are baked into one sound. On the SETUP page, put the drive before the filter (driving into it) or after it (folding the filtered sound).

2.6 AMP ENVELOPE and FILTER ENVELOPE

Two classic envelopes with **ATTACK**, **DECAY**, **SUSTAIN** and **RELEASE**, from snappy plucks (half a millisecond) to slow ten-second swells.

2.7 OUTPUT

LEVEL is the master volume. **WIDTH** makes the whole sound narrower or wider (up to 200 %) without changing its loudness; the bass below the MONO frequency (SETUP) always stays centred.

2.8 ARPEGGIATOR

Turn it on and hold some keys.

- **MODE**: up, down, up-down, random, played (in the order you pressed the keys) and chord (all notes together, climbing through the octaves).
- **INSERT** adds a twist: 4-2 and 3-1 walk back and forth through the notes, hi and low keep returning to the top or bottom note.
- **RATE** sets the note value (1/1 to 1/64), **OCTAVES** the range (1 to 4), **GATE** the note length, and **HOLD** keeps it playing after you let go.

It follows the song tempo; with the transport stopped, it starts from your first key.

2.9 CHORDS

Each of **note 1-3** adds a note up to two octaves above or below the key you play: one finger, a whole chord. Chords feed the arpeggiator, so one key can play an arpeggiated chord. In mono and legato one key plays one chord, and in legato the chord changes without restarting. A note that two keys share plays only once. If your keys and their chords need more than the 12 voices, the chord notes give way first (octave notes before the others), so every key you play keeps sounding.

2.10 LFO

RATE in Hz, or as a note value with **SYNC** on. **SHAPE**: sine, triangle, ramp up, ramp down, square and s & h (random steps). **RETRIG** restarts the LFO when you start a new phrase. The LFO is shared by all voices and does nothing until you route it in the mod matrix.

2.11 MOD ENV

A simple envelope for each note: it rises over **ATTACK** while you hold the key and falls over **D/R** when you let go. Use it for slow detune or pitch rises, or to fade in a vibrato. Use it as a source in the mod matrix. **MODE**: ar (as above), ad (rises and falls once, however long you hold the key: good for pitch drops and plucks) or loop (rises and falls over and over while you hold the key, like a triangle or ramp LFO that restarts with every note). With **SYNC** on, ATTACK and D/R are note values. On Pitch and Cutoff it runs at audio rate, so very short times give snappy blips, and a fast loop gives FM-like tones.

2.12 GATE EFFECT

The classic trance chopper. Click the 16 step buttons to switch steps on and off, or drag to paint several. Shift-click a step to make it a half step (yellow): it plays only the first half of the

step, so neighbouring steps retrigger instead of joining into one long gate. Shift-drag paints half steps. **RATE** sets the step length, **STEPS** the pattern length (unused steps show in dim red), **DEPTH** how hard the off-steps cut and **smooth** how soft the edges are.

With **POST FX** on, the gate also chops the delay and reverb; with it off, the tails ring on through the gaps.

2.13 PUMP

The pump makes the sound breathe in time. **RATE** 1/4 gives the classic four-on-the-floor duck, **DEPTH** sets how deep it goes and **release** how fast the sound comes back.With **POST FX** on, it pumps the effects too.

Connect a sound to SC IN on the back panel, such as a kick, and the pump follows it instead of the tempo: each hit ducks the sound, which then comes back over RELEASE. RATE has no effect while SC IN is connected, and its display shows EXT. DEPTH sets how far the hits duck the sound; from 50 % up, loud hits duck it all the way to silence. The duck starts when the sidechain signal rises above about -30 dB and is at full depth from -12 dB. PUMP has to be on.

2.14 CHORUS

A lush stereo chorus with **rate**, **DEPTH** and **MIX**, from slow ensemble drift to fast shimmer.

2.15 DELAY

A tempo-synced delay. **RATE** sets the delay time as a note value, **F.B** the feedback (all the way up for endless repeats), **TONE** makes the repeats darker or brighter, and **MIX** sets the balance. **PING-PONG** bounces the echoes left and right; **REPITCH** makes time changes glide like tape.

2.16 REVERB

A big 90s hall. **SIZE** goes from a small room to a 20-second space, **tone** from dark to bright, and **MIX** sets the balance.

2.17 MOD and PITCH wheels

PITCH bends up to 24 semitones (the range is set on the SETUP page). **MOD** does whatever the mod matrix tells it to; in the initial patch it opens the filter.

3. The display

Click the tabs at the top: **MAIN**, **1** to **4** (the mod matrix) and **SETUP**.

3.1 MAIN

Your sound, drawn live. The saws are the <> lines of the “diamond”. **SPREAD** moves them apart, **MIX** sets their brightness and **DETUNE** makes them glow and sway. The **SUB** glows in the centre, the **TOP WAVE** shows as a frame, and when the filter self-oscillates, rings ripple out from the middle.

3.2 Pages 1-4: the modulation matrix

Sixteen rows, four per page. Each row sends a **SOURCE** to a **DEST** by the amount **AMT**. **SCL** (scale) lets a second source decide how much gets through: LFO › Pitch, scaled by the mod wheel, gives vibrato only when you push the wheel.

The Triggering destinations (All Env, Amp Env, Mod Env and Filter Env) restart those envelopes each time the routed value rises above 50 %. With Gate FX as the source and AMT above 50 %, every gate step starts a fresh envelope, for plucks in the rhythm; above 75 % the half steps retrigger too.

On Pitch, Cutoff, Ext Cutoff and Delay Rate the amount drags more slowly the closer it gets to 0, for precise small settings; hold Shift for finer steps.

3.3 SETUP

The settings you change less often. Click a setting to switch it (SUB TO opens a list), or drag its value up and down.

- **PHASE**: Free for a living, ever-changing sound, Reset for the same punchy attack on every note.
- **P.BEND**: the pitch-bend range.
- **STYLE**: Clean, or Retro (default) for the gritty sound of early digital synths.
- **EXT IN**: the external input goes straight to the effects (FX) or through the drive and filter first (VCF).
- **SUB**: the sub on the lowest note only (default), or on every note.
- **SUB TO**: the sub past the filter and effects (Dry - default), through both (VCF), or past the filter into the effects (FX).
- **DRIVE**: the drive before (default) or after the filter.
- **MONO**: keeps the bass below this frequency in mono.



4. Back panel

SEQUENCER: play Green Goblin from a sequencer (GATE IN and CV IN), or let it play other devices: GATE OUT and CV OUT send the notes after the chords and the arpeggiator. M.W CV IN and P.B CV IN take over the wheels.

EXT AUDIO IN: any sound in, through the gate effect, pump and effects. With SETUP › EXT IN on VCF it also goes through the drive and filter, which the filter envelope opens while you hold keys.

SC IN (PUMP): makes the pump follow another sound, like a kick.

AUDIO OUTPUT: left and right.

CV IN: control OSC DETUNE, OSC MIX and FILTER CUTOFF, plus CV 1-4 for the mod matrix.

MODULATION CV OUT: the LFO, MOD ENV, PUMP and GATE FX, to move other devices in time with Green Goblin.

MATRIX CV OUT: CV 1-4, carrying anything you route to them in the mod matrix.

5. Patches and playing

Green Goblin comes with 100+ patches: leads, pads, keys, chords, basses, arpeggios, gate and pump rhythms, effects and percussion. In Reason's browser they are tagged by category and sound, so you can filter them. Many respond to the mod wheel and aftertouch, so play with them.

The sustain pedal works, also with the arpeggiator. Green Goblin follows Reason's master tuning, and the note LED flashes for every note it receives.

6. Tips

- **Classic trance lead:** 7 saws, DETUNE around 60 %, a little delay (3/16) and reverb.
- **Huge pad:** 13 saws, DETUNE 50 %, SPREAD 100 %, chorus on, slow attack and long release.
- **Pluck:** PHASE Reset, short filter decay, ENV up, low sustain, ping-pong delay.
- **Pumping chords:** CHORDS +4 and +7 (major) or +3 and +7 (minor), PUMP 1/4.
- **Gated stabs:** GATE EFFECT on, with POST FX on to chop the reverb too.
- **Drum loop through the goblin:** connect a loop to EXT AUDIO IN and set EXT IN to VCF. Hold a chord and the filter envelope opens the loop while the gate effect chops it in time.
- **Self-squeezing compressor:** split a sound into EXT AUDIO IN and SC IN, turn PUMP on and set DEPTH to taste.
- **Folded bells and growls:** DRIVE past halfway; try the drive before and after the filter, and move Drive with an envelope or the LFO in the mod matrix.
- **Filter as an instrument:** 1 saw, TOP WAVE off, MIX fully clockwise, RESO 100 %, KEY 100 %.
- **Square bass or lead:** 1 saw, TOP WAVE square, MIX clockwise, and the LFO to Top PW for pulse-width movement.

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7. Specifications’

- 12 voices; up to 13 saws, a square TOP WAVE, a sub and noise per voice.
- 12/24 dB self-oscillating low-pass, high-pass, and a drive with a sine wavefolder.
- 16-slot modulation matrix, LFO, mod envelope and two ADSR envelopes.
- Arpeggiator, chord memory, gate effect, pump, chorus, delay and reverb.
- Back panel: stereo external and sidechain inputs, 11 CV inputs, 10 CV outputs.
- 100+ patches.
- Requires: Reason 10.1.

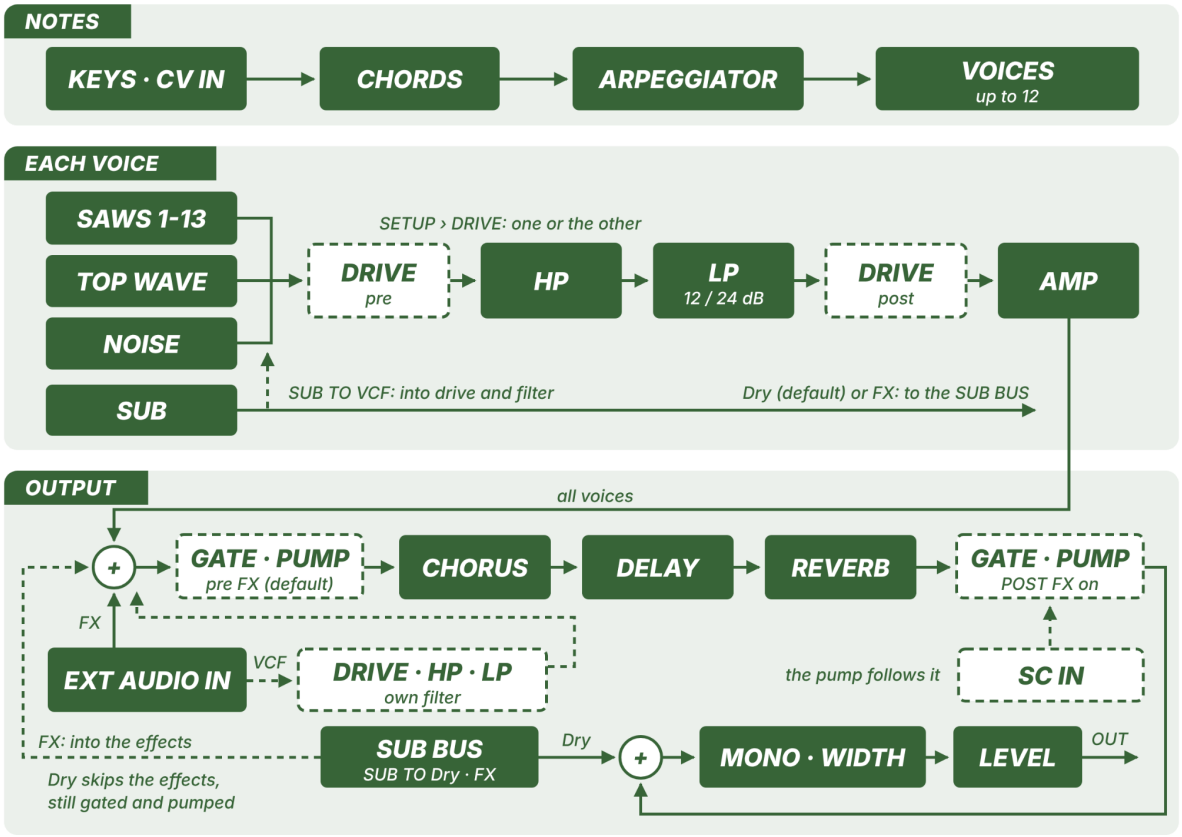
Appendix — MIDI CC map

CC	Parameter
7	Master Volume
8	Noise Level
10	Arp Insert
12	Saws
13	Detune
14	Mix Focus
15	Stereo Spread
16	Phase
17	Octave
18	Fine Tune
19	Character
20	Sub Wave
21	Sub Level
22	Sub Octave
23	Sub Lowest Note Only
24	Voice Mode
25	Glide
26	Velocity to Amp
27	HP Filter Freq
28	Filter Env Amount
29	Key Tracking
30	Velocity to Filter
31	Filter Slope
52	Chord On
53	Gate Effect On
54	Gate Position

CC	Parameter
55	LFO Rate
56	LFO Shape
57	LFO Sync
58	Mod Env Attack
59	Mod Env Decay/Release
60	Noise Colour
61	Gate Steps
62	LFO Key Retrigger
63	LFO Sync Rate
71	Resonance
72	Amp Release
73	Amp Attack
74	Cutoff
75	Amp Decay
76	Amp Sustain
77	Filter Drive
78	Delay Repitch
79	Top Wave
81	Delay Tone
82	Delay Mix
83	Delay Ping-Pong
84	Reverb On
85	Arp On
86	Arp Mode
87	Arp Rate
88	Arp Octaves
89	Arp Gate

CC	Parameter
90	Arp Hold
91	Reverb Size
92	Reverb Tone
93	Reverb Mix
94	Mono Bass
95	Stereo Width
102	Filter Attack
103	Filter Decay
104	Filter Sustain
105	Filter Release
106	Gate Depth
107	Gate Smooth
108	Pump On
109	Pump Rate
110	Pump Depth
111	Pump Release
112	Pump Position
113	Chorus On
114	Chorus Rate
115	Chorus Depth
116	Chorus Mix
117	Delay On
118	Delay Time
119	Delay Feedback

Appendix — Signal flow



Thank you!

Ekssperimental Sounds Studio is a one man project driven by the passion for experimental electronic sounds, new and old synthesizers and music gear. As a Reason user since 2001 it truly is a dream come true to finally be able to create my own synthesizers and effects for the Reason rack.

Thanks to all of you who buy my products I can continue to learn and develop more fun and inspiring devices for our beloved rack.

I hope you will enjoy Green Goblin!

Cheers,
Erik Söderberg 2026
ekss.se