

SUP34

A modern British console channel strip whose compressor heats its own preamp: the harder it works, the richer the harmonics. Preamp drive, filters, compressor, gate / expander and a four-band EQ in two circuits.

A Lab plug-in. The Lab is where new GFX plug-ins are built in the open: they may change sound or controls between versions.



Overview

This Lab version adds HEAT: the compressor's gain reduction pushes the preamp's DRV stage harder and makes the level up after it, so a vocal or a snare gets thicker and brighter exactly when the compressor clamps down, and stays clean when it doesn't. The compressor's detector is now a three-way choice (PEAK, RMS and a new RMS SLOW), and an OS key runs the DRV / HEAT stage at 2x or 4x. With HEAT at 0 %, the detector on RMS and OS at 1x it sounds like the Stable SUP34.

SUP34 is in the spirit of a 1U "greatest hits" console channel. The sound is designed from scratch. It is laid out as two stacked panels: the top one is the input and the dynamics (PREAMP, FILTERS, COMPRESSOR, GATE / EXP), the bottom one the EQ, the routing and the output.

Linked stereo: one set of controls and one detector. The house output stage passes straight through (a channel strip: no clip).

Reach for it for

- Vocals, from a light polish to pushed and driven
- Kick, snare and toms, gated and compressed before the EQ
- Bass DI and guitars with harmonic drive
- Ducking or keying from another track (EXT SC)

Controls

The header

PRESETS	Opens the full preset list.
◀ / ▶	Step to the previous or next preset (wrapping round).
Preset display	Shows the preset name. Click it for the preset list too.
S / M / L	Panel size: small, medium or large.
OS	Oversampling for the DRV / HEAT stage: 1x (grey), 2x (amber) or 4x (red). Click to step through them. 2x and 4x keep the harmonics clean on bright material and add a little latency (31 / 37 samples, reported to REAPER).
?	The design credit, the GFX website and the address of this manual.

PREAMP

GAIN	-20 to +20 dB: clean and wide. Not level-compensated: it is the gain into the strip.
DRV	A variable harmonic drive stage after the gain, with its light (green, amber, red as it works harder). The hotter the level into it, the more it colours.
DRV knob	From 2ND (a lopsided, valve-like curve) to 3RD (a symmetric, harder, transistor-like edge).

Ø	Polarity, glided so it never clicks.
HEAT	<p>0 to 100 %, under the DRV knob. HEAT is not a second drive: it turns this same DRV stage up automatically, by as much as the compressor is turning the level down, and makes the level up after the stage, so the level stays put and only the harmonics grow. At 100 % it pushes 8 dB harder as the first 3 dB of gain reduction arrive, then 2 dB more for every further dB, up to 18 dB; with the DRV key in it is gentler (about 11 dB at most), so it adds to DRV without overcooking it. It is a tight drive: as HEAT pushes harder, the lows (below about 220 Hz) skip the drive and rejoin clean, the top is lifted into the drive and set back afterwards, and the bias tightens, so the harmonics come out of the mids and highs while the bass stays solid. Their character follows the DRV knob (2ND to 3RD). If the DRV key is off, HEAT brings the stage in as the gain reduction rises. The lamp beside the knob glows amber with the push, red past 9 dB. 0 % = no effect.</p>

FILTERS

HPF	16 to 350 Hz, 18 dB/oct. OFF at the bottom.
LPF	22 kHz down to 3 kHz, 12 dB/oct. OFF at the top.
SC	<p>The filters move out of the sound and into the dynamics' side chain: they shape what the compressor and gate hear, not what you hear (a high HPF stops the kick and bass pumping the compressor). Switching SC or EXT SC runs the new chain alongside the old one for 40 ms, then crossfades over 25 ms: no click.</p>

COMPRESSOR

IN	The compressor in or out.
THRESHOLD	-40 to 0 dBFS.
RATIO	1:1 to INF.
RELEASE	0.1 to 4 s.

FAST	The attack: 10 ms, or 1 ms with FAST lit.
EXT SC	The compressor and the gate listen to inputs 3 / 4 instead: send the key track to this track's channels 3 / 4.
DETECTOR	Click the display for the menu. PEAK: a peak detector and a hard knee, for catching transients. RMS (the default): a 10 ms average and a 10 dB soft knee. RMS SLOW: a 60 ms average with the same knee, a smoother, levelling hold for vocals, bass and piano. A change glides, so it never clicks.

GATE / EXP

IN	The gate in or out (out by default). Its light is green while it is open, red while it is closing down.
THRESHOLD	-60 to 0 dBFS. It opens at the threshold and closes 4 dB below it, so it doesn't chatter.
RANGE	0 to 40 dB: how far it turns the signal down. 0 has no effect.
RELEASE	0.1 to 4 s.
HOLD	0 to 4 s: how long it stays open after the signal drops.
FAST	The attack: 1 ms, or 0.1 ms with FAST lit.
EXP	A gentle 1:2 downward expander instead of a gate, down to RANGE.

EQ

EQ CIRCUIT: E / G	Two circuits. E: constant Q and plain shelves; its BELL keys turn the LF and HF shelves into bells. G (the default): the mids' Q tightens as they are boosted, the shelves dip slightly before they lift (and the other way round); its keys divide the LMF's frequency by 3 ($\div 3$) and multiply the HMF's by 3 ($\times 3$). The keys of the circuit not in use are dimmed.
EQ IN	The EQ in or out.

LF	A shelf, 30 to 450 Hz.
LMF	A bell, 200 Hz to 2.5 kHz, Q 0.5 to 2.5.
HMF	A bell, 600 Hz to 7 kHz, Q 0.5 to 2.5.
HF	A shelf, 1.5 to 16 kHz.
GAIN	On every band: -15 to +15 dB.

Every change glides over 60 ms; switching a shelf to a bell fades the band out and back in, so there is no click.

OUTPUT

TRIM	-20 to +20 dB.
DRIFT	See DRIFT below (50% by default).
METER: IN / OUT	Which level the meter shows: the input or the output (OUT by default).

The meter shows the level, left and right, with the compressor's gain reduction beside it and as a figure below.

Knobs: drag up or down (Shift for fine moves) or use the mouse wheel; double-click to reset a knob to its default. A knob's value replaces its name while you touch it.

DRIFT

DRIFT is the DRV stage's bias, which wanders so its asymmetry breathes; the compressor VCA's control voltage, which wanders by a few tenths of a dB; and the HEAT stage's supply voltage, which breathes so the push moves by about 1 dB either way at 10 dB of push. 50% is the standard amount, 100% twice that, 0% steady.

Presets

A preset sets everything after GAIN: DRV, HEAT, the detector, polarity, the filters, the dynamics, the EQ and the routing. GAIN, OUTPUT, the meter, DRIFT and OS are left as they are. The list also has Reset all to defaults.

Init	The compressor at 3:1 from -20 dBFS; everything else flat or off; the G circuit.
Vocal Polish	HPF 80 Hz, 3:1 from -24 dBFS on RMS SLOW; E circuit: -2 dB at 150 Hz and 350 Hz, +2 dB at 3.5 kHz, +3 dB at 10 kHz.
Pushed Vocal	DRV towards 2nd, HPF 100 Hz, LPF 18 kHz, 4:1 FAST, HEAT 30 %; G circuit: a 3 dB dip at 400 Hz, +3 dB at 3 kHz, +4 dB at 12 kHz.
Kick	HPF 30 Hz, LPF 12 kHz, PEAK compression with HEAT 15 % and a fast gate; E circuit: +5 dB at 60 Hz as a bell, -6 dB at 350 Hz, +4 dB at 3.5 kHz.
Snare	DRV, HPF 80 Hz, 5:1 FAST PEAK with HEAT 35 % and a fast gate; G circuit: +3 dB at 180 Hz, -4 dB at 500 Hz, +4 dB at 2.5 kHz and 10 kHz.
Gated Toms	HPF 50 Hz, LPF 14 kHz, a 30 dB gate from -30 dBFS with 0.15 s hold; G circuit: +3 dB at 100 Hz, -6 dB at 450 Hz, +3 dB at 3.5 kHz.
Bass DI	DRV on 2nd, HPF 30 Hz, LPF 10 kHz, 4:1 on RMS SLOW with HEAT 25 %; G circuit: +3 dB at 80 Hz, -3 dB at 250 Hz, +3 dB at 1 kHz, -2 dB at 6 kHz.
Acoustic Guitar	HPF 80 Hz, a gentle 2.5:1 on RMS SLOW; E circuit: -2 dB at 200 Hz, -3 dB at 300 Hz, +2 dB at 5 kHz, +3 dB at 12 kHz.
Electric Guitar	DRV towards 3rd, HPF 90 Hz, LPF 9 kHz, HEAT 35 %; G circuit: +3 dB at 800 Hz, +2 dB at 2.5 kHz, a little off the lows and the top.
Drum Bus Punch	4:1 PEAK from -16 dBFS, fast release, HEAT 30 %, the filters in the side chain (SC); E circuit: +3 dB at 60 Hz, +2 dB at 4 kHz, +3 dB at 12 kHz.
Piano	HPF 40 Hz, a gentle 2:1 on RMS SLOW; G circuit: a little low end, -2 dB at 300 Hz, light lifts at 2.5 and 12 kHz.
Overheads	HPF 150 Hz, 2:1; E circuit: -2 dB at 500 Hz and 3 kHz, +3 dB at 12 kHz.

Reset all to defaults

(Last in the list.) Init, with GAIN, OUTPUT, the meter, DRIFT and OS back to their defaults.

Tips

- For HEAT, set the compressor first, then bring HEAT up while watching its lamp: a steady amber on the loud phrases is a rich, forward vocal; red is a deliberate push. Turn the DRV knob towards 2ND for warmth, 3RD for edge.
- HEAT with the DRV key off keeps the quiet parts completely clean: only the moments the compressor catches get coloured.
- Set GAIN for the DRV light you want (amber on the loud parts for colour), then pick a preset: presets don't touch GAIN.
- Use SC with a high HPF to stop the kick and bass pumping the compressor, without thinning the sound.
- The gate's HOLD keeps toms and snares open through their ring; RANGE of 10 to 15 dB sounds more natural than a full 40.
- EXT SC with the gate in EXP mode makes a gentle ducker: key a pad from the vocal.

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