
C660 Limiting Amplifier
Cupwise Audio Research
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clean main cl.shq
comp
vari comp
comp 76
attack release threshold knee lookahead high pass makeup mix
input output
power over
CUPWISE
All Valve, Vari-Mu
Compressor | Limiter

General Info

This compressor is modeled after a respected modern recreation of the classic 660. It delivers a smooth yet detailed sound, great for vocals, drums, or adding sheen and glue, even with little or no gain reduction. In the programs you have an adjustable knee, which goes from ultra soft and subtle (with the right threshold setting), to fairly hard. It comes in two versions:

- **Comp:** Has a switchable release control, only offering the same time settings as the original unit.
- **Vari Comp:** Fully variable release allows times between the hardware's, and an extended downward range with faster timings. The knee can go down to -1, giving no compression. Between -1 and 0 gives an even softer, subtler response than the softest sampled knee (setting of 0). It's the same compressor just with enhanced capabilities.

Both versions include an adjustable **attack** from 0.1–20 ms. Only 0.1 ms is true to the original hardware; other values are extra flexibility. For authentic behavior leave attack at its default setting.

The bonus **Comp 76** was sampled with the C660 set with a very soft knee, combined with a **76 Rev F providing a high ratio, hard knee. The 76's knee shifts downward as you adjust the knee control in these programs, producing more compression and a harder knee overall.

The **Comp**, **Vari Comp**, and **Comp 76** compressors include three modes:

- **Clean** – no harmonics.
- **Main** – includes two harmonic orders.
- **Clean SHQ** – no harmonics, high CPU, for final renders with a more accurate frequency response.

To complete the model when using **Clean** or **Clean SHQ**, load a matching **harmonics only** program afterward. These are covered later in the manual. Additionally, four **pass-through** programs are provided, functioning like Nebula-style preamps for adding the hardware's tone without compression.

There are skins for both Nebula 3 and 4, by Max. They are currently only available to members of his Patreon here, but will eventually be available for free to everyone, from this link at his Patreon.

Installation

There are two main steps to the installation-

1) Install the programs/vectors. Just copy the .n2p files to your Nebula 'Programs' folder, and the .n2v files to the 'Vectors' folder. **Before moving on to the skin install, check to see that the programs load properly in the default Nebula.** The compressor programs are in the 'COM' category, then either the 'CC4', 'CC5', 'CC8', or 'CC9' categories below that, depending on the sample rate(s) you've installed. 'CC5' is for the 48khz rate.
2) To install the skins, consult the skin installation manual (included with the skin package)! Skins only available from Max's Patreon. After installing the skins you will be loading these programs as a unique plug-in, not by using the default Nebula and its program finder/list to select them!

Clean, Main, and Clean SHQ

If you want a clean sound without harmonics, use **CLEAN** mode. For final renders, you can switch to **CL SHQ** for a slightly more authentic frequency response—mainly in the low end—at the cost of much longer render times. Staying in **CLEAN** mode still gives excellent results.

If you *do* want harmonics:

1. **Best quality:** Use **CLEAN** (or **CL SHQ** when rendering) followed by a **harms only** instance from the **Harms+Pre** module. This adds more harmonic orders and the most accurate tone.
2. **Simpler option:** Use **MAIN** mode, which includes two harmonic orders. It's less accurate than using a **harms only+CLEAN/CL SHQ combo**, but still sounds great.

Summary:

- **CLEAN / CL SHQ:** No harmonics. Use alone for transparency, or with a matching **harms only** instance for full accuracy.
- **CL SHQ:** High-CPU, render-only, slightly more accurate.
- **MAIN:** Includes harmonics, easy to use, good for both playback and rendering, though not the absolute highest fidelity.
- **Harms only** programs: Add harmonics only (no compression or tone shaping). Match them to your compressor type.
- **Pass-through** programs: Model hardware tone and harmonics with compression bypassed—use as subtle preamp color.

Comp User Interface/Controls

1) Program Matrix – Select between 'Comp' (switchable release), 'Vari Comp' (fully variable release), or the bonus 'Comp 76' programs. Also choose the processing mode: **CLEAN**, **MAIN**, or **CLEAN SHQ**.

2) Attack – Default setting (0.1 ms) is the only value sampled from the hardware. You can go up to 20 ms for added possibility beyond the original design. For authentic behavior, leave it alone.

3) Release – Different depending on the compressor type.

- **'Comp'** Uses only the original hardware's release settings.
- **'Vari Comp'** Fully variable, allowing in-between and faster timings.
- **'Comp 76'** Bonus model with a smaller range.

4) Threshold – Sets the level where compression begins.

5) Knee – In 'Comp' and 'Vari Comp', it transitions between the different knees sampled from the 660. At 0 you get the softest knee, and at 10 the hardest. You can think of it as like a ratio control. In 'Vari Comp' you can go down to -1 which is no compression, so between -1 and 0 you get a blend of that and the softest knee, giving even more subtle compression.

In 'Comp 76' this is essentially an inverted threshold control for the **76 that was sampled with the 660 for those programs. The 76 provides a hard knee that begins at a point after the 660's very soft knee, depending on where you set the control. Higher settings lower the 76's threshold, giving a harder combined knee overall.

6) Ahead – Applies some look ahead, up to 1.5ms. Can be used to catch all transients.

7) High pass – This sets the cutoff of a high pass filter in the internal sidechain.

8) Makeup – Use it to raise the level back up after compression.

9) Dry/Wet – You can mix between wet and dry signal here for parallel compression.

10) Gain Reduction Meter and Bypass Button

X) In and Out gain – These are simple input/output gain controls.

Harms Only/Passthroughs User Interface

1) Program Matrix – When adding harmonics to a **CLEAN** or **CL SHQ** compressor instance, select 'Comp' or 'Comp 76'. Use 'Comp' here, with the 'Comp' or 'Vari Comp' compressor modes. Use 'Comp 76' with the 'Comp 76' compressor.

For pass-through use, four versions (A–D) are available. D was sampled from a **76 combined with the 660, while A-C are variations of the 660 alone with different drive levels. The differences can be subtle—use your ears and choose what fits best. These programs are designed to be 'set and forget'. Add one to your track(s) and get some subtle tone.

2) Trim – Adjusts input level with automatic output compensation. For example, boosting input by +2 dB lowers output by –2 dB, keeping overall level the same. This changes harmonic intensity and tone without changing volume. Watch the peak hold meter to ensure your input never exceeds 0 dBFS.

3) Dist – Controls the harmonic level directly, like a mixer for generated harmonics. It's not a drive control, but rather a way to boost or reduce harmonic presence. Usually best left at default, but useful for fine-tuning brightness or "sheen."

4) Knee – This only exists in the two harmonics programs. Those programs were designed to be used after one of the 'CLEAN' or 'CL SHQ' compressors in the compressor module, so you should set the knee control here to match what you have it set to in the compressor.

5) Peak Hold Meter, Bypass button – The peak hold meter holds onto the loudest peak level for a short time, so you can see if you're going over 0dBFS when boosting Trim. You don't want to do that because the dynamic samples taken from the hardware do not go over 0dBFS. The overload indicator will light up if you go over 0. The bypass button (labeled "power") toggles the module on or off.

X) In and Out gain – These are simple input/output gain controls.

V4 – use this version number to keep track of updates. If the manual posted at my site has a higher version number than the one you have, your C660 probably isn't up to date.

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