CLA-76

Vintage Compressor

User Guide

Introduction

Welcome

Thank you for choosing Waves! To get the most out of your new Waves CLA-76 plugin, please take a moment to read this user guide.

To install software and manage your licenses, you need to have a free Waves account. Sign up at www.waves.com. With a Waves account you can keep track of your products, renew your Waves Update Plan, participate in bonus programs, and keep up to date with other important information.

We suggest that you become familiar with the Waves Support pages: www.waves.com/support. There are technical articles about installation, troubleshooting, specifications, and more. Plus, you'll find company contact information and Waves Support news.

Product Overview

About the CLA-76

The CLA-76 is modeled after one of the most highly regarded solid state compressor/limiters in music history, which uniquely used Field Effect Transistors (FETs) as gain control devices. Some 8,000 units were originally manufactured and went through at least 13 revisions during their run. Waves modeled two of these revisions:

Revision B, also known as the Silverface Bluestripe. The unit we modeled is CLA's personal favorite.

Revision D-LN (Low Noise), also known as the Blackface. It is perhaps the most famous version of this classic compressor. The main differences between the two units are slightly different gain stages and time constants, as well as THD and noise levels. For the CLA-76 plug-ins, we modeled the original pre-amp noise.

About Chris Lord-Alge

Grammy® winner Chris Lord-Alge is the mixing engineer of choice for pop and rock royalty. His clients have included:

> Green Day | U2 | Dave Matthews Band | Daughtry | Pink | Leona Lewis | Avril Lavigne |My Chemical Romance | All American Rejects | Nickelback | Rob Thomas | Snow Patrol | Ray LaMontagne | Miley Cyrus | Jonas Bros. | Tim McGraw | Faith Hill | Tina Turner | Rod Stewart | Celine Dion | Santana | Steve Winwood | James Brown

Chris has energized the sound of popular music. His hard-hitting mixes have transformed the radio soundscape and introduced a new sonic vocabulary along the way. His massive hardware arsenal includes racks and racks of the most coveted compression units in music history.

Widely known among audio pros and listeners alike for his punchy sound and extreme compression techniques, Chris gave Waves engineers exclusive access to model his most prized processors and worked closely with Waves through every phase of development. Together with many of his personal presets, these precision models deliver the distinctive sound of CLA's favorite classic compressors.

About the Modeling

Many elements contribute to the unique sonic behavior of analog gear. Waves painstakingly modeled and incorporated the characteristics of the hardware into the CLA-76, in order to fully capture and replicate the sound and performance of the original equipment. The hardware was modeled at reference levels of –18 dBFS = +4 dBu, meaning that a signal of -18 dBFS from the DAW to the hardware unit will display a meter reading of 0 VU (+4 dBu).

Here are some of the most important elements of analog behavior:

Total Harmonic Distortion

Perhaps the most important analog behavior is Total Harmonic Distortion or THD, which is defined as the ratio of the sum of the powers of all harmonic components to the power of the fundamental frequency. THD is usually caused by amplification, and changes signal shape and content by adding odd and even harmonics of the fundamental frequencies, which can change the overall tonal balance. THD can also change peak output gain, usually by no more than +/- 0.2-0.3 dB.

Superfast Attack Time

The original hardware that inspired the CLA-76 is known for its superfast attack time of 50 microseconds, capable of dealing with the fastest transient material. Many compressors, when processing program material with sharp transients, cause clicks at fast attack and release settings. The CLA-76, however, is capable of responding to even the sharpest transients, cleanly and musically.

All Mode

Another feature that made the original hardware so popular was its explosive All-Ratio-Buttons-In mode. The CLA-76's All mode recreates the original's aggressive compression, which was caused by the changing bias of the FET component. This mode is especially effective on drums processed with parallel compression.

Hum

Waves modeled both 50Hz power current and 60Hz power current. If you listen closely, you will hear that there is a difference in hum level between 50Hz and 60Hz. Since hum is unique to each region and dependent upon local electrical conditions, you may find that the modeled hum is different than the hum already present in your studio and may not be suitable for your particular use.

Components

WaveShell technology enables us to split Waves processors into smaller plugins, which we call **components**. Having a choice of components for a particular processor gives you the flexibility to choose the configuration best suited to your material.

The CLA-76 has two component processors:

CLA-76 Stereo – Two-channel compressor, with one detector for both channel paths

CLA-76 Mono – One-channel compressor

Quick Start Guide

The CLA-76 is a straightforward classic mixer, so you won't find a lot of surprises with interface. If you're not familiar with such compresors, we suggest you begin with these steps:

- Use the Input control to set the amount of compression desired. Check the meter to see the amount of Gain Reduction. Input level is set in the DAW.

- Use the Attack and Release controls to adjust the time constants for the type of material you want to compress. *Important: Attack and Release settings range from slowest (1) to fastest (7).*

- Use the Output control to compensate for lost gain.

- Use the Mix cotrol to mix between the compressed and uncompressed signals. Trim adjusts the output of the plugin, after mix.

CLA-76 Controls

Input controls input level attenuation, and thus, the amount of compression.

Range: -Inf to 0 (in 0.1dB steps)

Default: -30

Output controls output level attenuation.

Range: -Inf to 0 (in 0.1 dB steps)

Default: -18

Please note: The scale is not linear and has been adjusted to conform to the exact scaling of the modeled unit. Thus, there may be more compression than expected at certain steps, as with analog gear.

Auto Makeup balances Input and Gain controls automatically to deliver stable Output levels when Input gain changes.

CLA-76 has a fixed compression ratio, so compression is governed by the Input setting. Increased Input gain will result in more compression, but also more Ouput gain. In the original CLA-76, the balance between Input and Output gain is adjusted by moving back and forth between these two controls until you achieve the desired compression/gain effect. **Auto-Makeup** coordinates these two controls.

Enable Auto-Make. As you increase the Input value, the Output will adjust to provide relatively stable overall levels. Lower the Input ane the opposite is true.

Considerations when using Auto-Makeup:

- The Input knob can influence the Output knob, but not the other way around. This allows you to achieve an ideal balance between Input and Output, and then apply a final tweak to the Output gain.

- The motion of the Output knob is not linear with respect to the Input knob. When the Input setting is low, the signal is below the threshold, and it is not being reduced. Hence, no makeup gain is needed. Once you raise Input enough to engage the compressor, the Gain knob will begin to move. When the Iinput level is very high, added Input level will not affect the Output, since the compressor is saturated.

- To readjust the offset between the two controls, turn off Auto Makeup, change the relative values, and turn Auto Makeup back on.
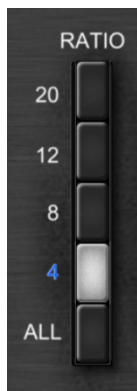
Attack controls the compression attack time.

> Range: 1 (slowest - 1 millisecond) to 7 (fastest - less then 50 microseconds) in 0.0x steps; Default: 3

Release controls the compression release time.

> Range**:** 1 (slowest - 1 second) to 7 (fastest - 50 milliseconds) in 0.0x steps; Default: 4

Ratio controls the amount of gain reduction for signal above the threshold

> Range: 4:1, 8:1, 12:1, 20:1, All

> Default: 4:1

Like many compressors, the higher the ratio, the higher the threshold. For example, at a ratio of 20:1, the threshold point is -12 dBFS, meaning that every peak that passes -12 dBFS will be compressed at a 20:1 ratio. When ratio is set to 4:1, the threshold drops to -18 dBFS, meaning that every peak which passes -18 dBFS will be compressed at a ratio of 4:1. This, therefore, results in "more" compression, despite the lower ratio.

*Please note: The **All** setting recreates the original hardware's explosive "All-Ratio-Buttons-In" mode. This mode results in very aggressive compression with a decent amount of distortion. It's worth checking out!*
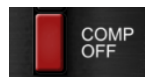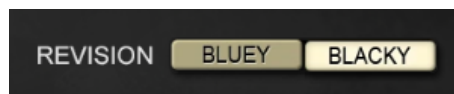
Comp Off bypasses the compression function, emulating the signal hitting the FET gain reduction element and causing the "pleasing" distortion caused by the hardware's pre-amp.

Range**:** Comp On, Comp Off;

Default**:** Comp On

Revision selects the type of modeled compressor. Range**:** Bluey, Blacky; Default**:** Blacky

Analog controls analog characteristics caused by noise floor and hum, based on the power supplies of the original units.

Range**:** Off, 50Hz, 60Hz; Default**:** 60Hz

Meter toggles between Input, Gain Reduction, and Output metering on the VU meter.

Range: In, GR, Out

Default**:** GR

Above the meter is a LED that indicates over-level in the selected display format. Click on the LED to clear the over.
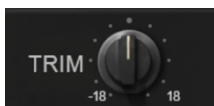
Mix controls the balance between the compressed and the uncompressed signal.

Range: 0% to 100% (0.1% increments)

Default: 100%

Trim sets the output level of the plugin.

Range: -18 to +18 dB (in 0.1 dB steps)

Initial Value: 0; Reset Value: 0

The WaveSystem Toolbar

Use the bar at the top of the plugin to save and load presets, compare settings, undo and redo steps, and resize the plugin. To learn more, click the icon at the upper-right corner of the window and open the **WaveSystem Guide.**

Appendix – CLA-76 Controls

Control	Range	Default
Input	0 to -inf (0. 1 steps)	-30
Output	0 to0 -inf (0. 1 steps)	-18
Attack	1–7 (0.0x steps)	3
Release	1–7 (0.0x steps)	4
Ratio	20:1, 12:1, 8:1, 4:1, All	4:1
Revision	Blacky, Bluey	Blacky
Analog	Off, 50Hz, 60Hz	Default: 60Hz, Reset: Off
Meter	GR, IN, OUT	GR
Mix	0 to 100%	100%
Trim	-18 dB to +18 dB	0