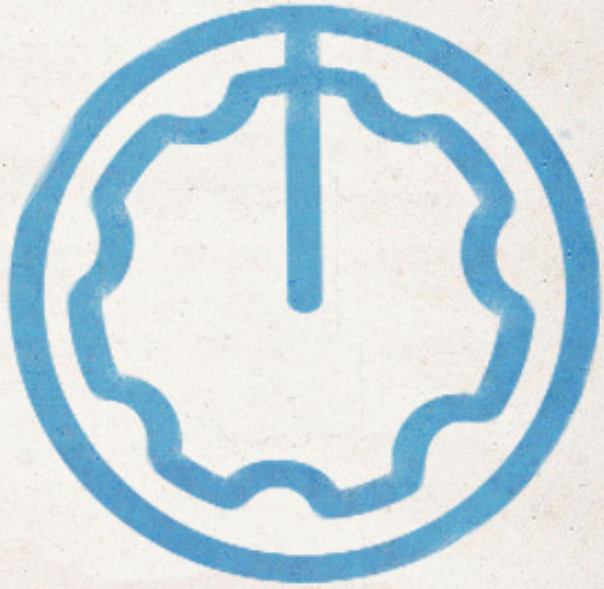
COBALT 2



LM9736
LM9804
DYNEQ
LXM96

INSTRUCTIONS FOR USE AND MAINTENANCE

Cobalt Overview

EN

Introduction

Thank you for purchasing Cobalt2. To get the most out of your new plugin suite, make sure that you read this user manual carefully.
Cobalt was an absolute novelty for Acustica, it was totally different in every respect to the other Acqua-plugin suites at the time it was released.
Through Stefano Dall'Ora (SoundDrops), who is an invaluable collaborator with Acusticaudio, and was been deeply involved in the production of this project, the Acustica team came in contact with Luca Martegani, also known as Xelius. Luca is the manufacturer of an amazing suite of hand-built audio hardware, characterized by great sound, quality, and value.
The equalizer and compressor are the elements of his suite that impressed us the most, so we decided to base our new product on them, and we called it Cobalt2.

The basic idea behind Cobalt

LUCA: There are so many things in audio that are of fundamental importance to the basic sound stage; the depth of the sound spaces, the way transients are handled etc, so my approach has been focused on the entire sound, not just about the tonal color.
The original devices are completely tube-based. Tubes are used in the input stage, then in all of the internal gain sections, up to the output stage.

Why this choice?

LUCA: In my own research, after countless listening sessions, I've come to the conclusion that the amazing sound of those vintage devices we used to love comes from the tube circuits.
Many years of study, research and experiments (started in the early 90s) finally led me to great results.

Cobalt2 - What's new?

We took Cobalt to a whole new level by completely resampling its EQ and preamp sections, for better performance and sound quality. Plus, we added two new features, for extra versatility.

Details:
1 - New M/S control in COBALT2 EQ (Stereo Equalizer).
2 - COBALT2 EQ and the EQ2 of COBALT2 Dynamic EQ now feature a -10/+10 dB gain excursion (PRESENCE band).
3 - All preamps have been resampled.
4 - 2 new preamps (MIC3-MIC4) added to the COBALT2 PRE module.
5 - Meters have been optimized
6 - Various graphic improvements

Cobalt2 is the name of the suite, it consists of four different plug-ins:
• COBALT2 (EQ)
• COBALT2 COMP
• COBALT2 PRE
• COBALT2 DYN EQ

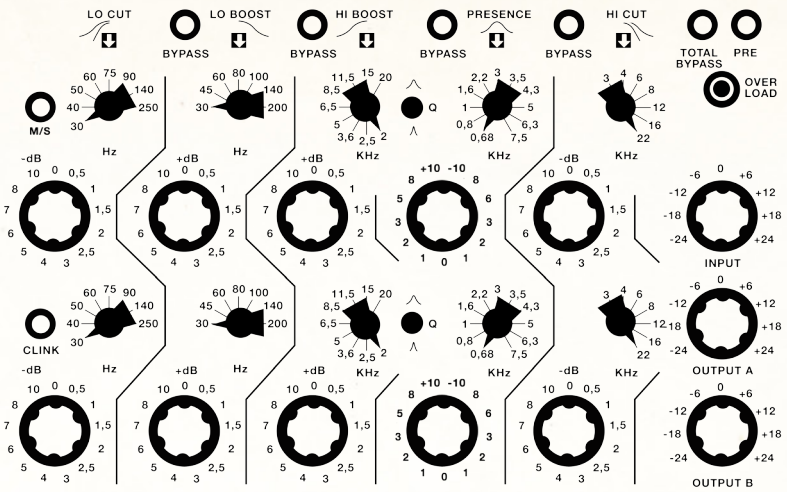
Cobalt2 (EQ)
It is derived from the classic Pultec design with some added custom features, such as the separation of bass frequencies, for example, you can choose the Cut frequency independently from the Boost frequency; then we have a High band Boost section with an extremely personal sound, because it's built only with inductances, instead of the more customary capacitors. Our emulation has preserved all these sound features and we are very proud of the result.

Cobalt2 Comp
It's an extremely versatile tube compressor. Thanks to our Acustica technology, we have been able to faithfully reproduce the original device.

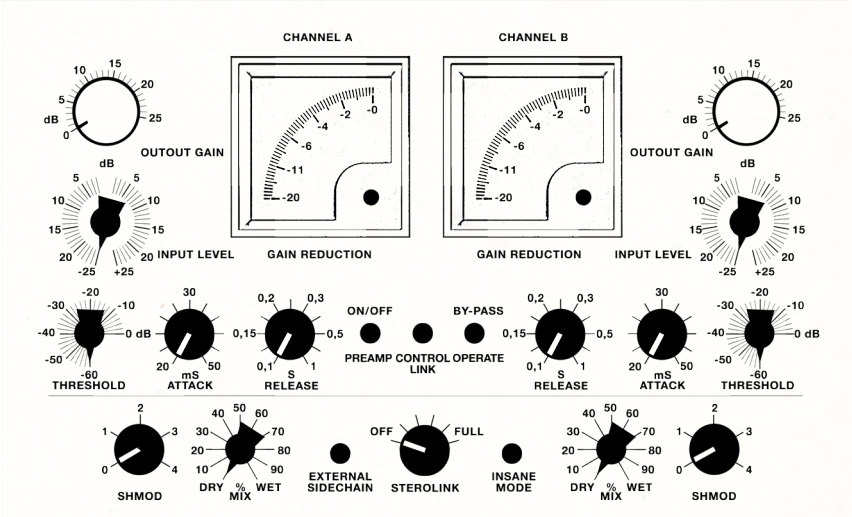
Cobalt2 Pre
Cobalt Pre includes 5 different tube preamps to add great warmth.
They precisely emulate the phase, frequency response and harmonic distortion of their corresponding circuits.
The best use of these colors can only be decided by the user on a case per case basis and the engineer's final judgment should always depend on his/her own ears and imagination.

Cobalt2 Dynamic Eq
The real novelty of this suite is showcased by the Cobalt 2 Dyn EQ (dynamic equalizer), the first of it's kind for us.
Just like with audio production, our idea was to create a sort of remix of the COBALT2 EQ and COBALT2 COMP.
The result of this is an incredible Dynamic EQ, the first of it's kind for us based on a sampling characterized by some new and important features.
These "endorsed" plug-ins are qualitatively unsurpassed projects that, in our opinion, deserve to be among the top products in the digital audio market.

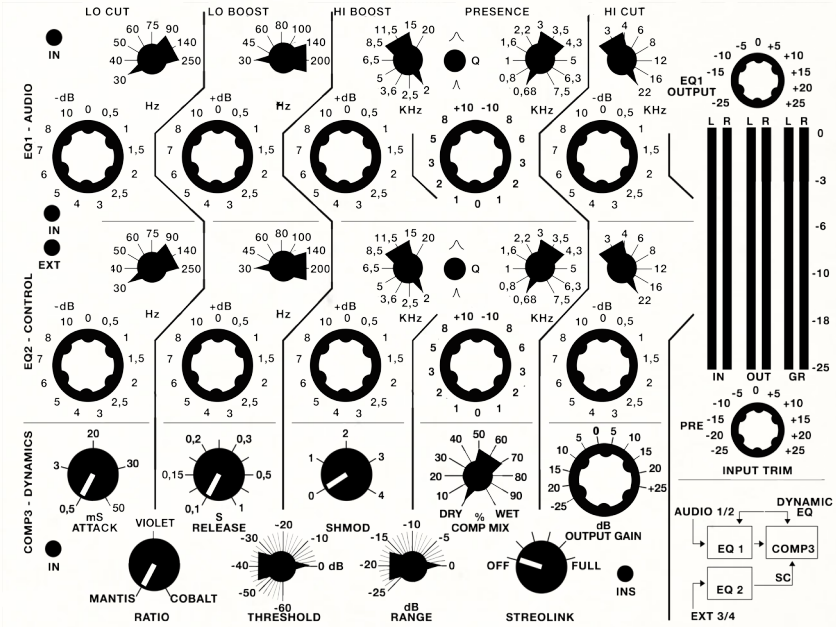
Cobal2 Equalizer



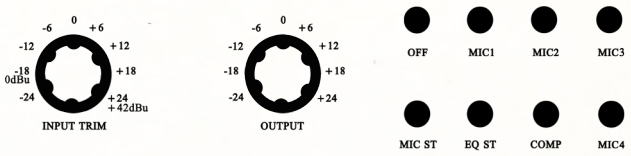
Cobal2 Compressor



Cobal2 Dynamic EQ



Cobal2 Preamp



Product download, installation and authorization

When you purchase a product from our webshop, the registration is automatic. Your newly purchased product can be downloaded via the Aquarius application, our dedicated application for macOS and Windows. For more information, please visit our website.

Make sure the Aquarius application is always updated to the latest version available. If you experience any issues during your product authorization, uninstall the product, and then re-install it using the latest version of Aquarius applicationfrom Acustica Audio website.

System Requirements

Modern computers are powerful enough to run many plugins at once. However, our technology requires more resources than algorithm-based software.

Please, consider optimizing your system to work with high CPU loads and low audio latency.

All technical specifications of Acustica Audio products provided are intended to be estimates or approximations.
Due to numerous variables, no guarantees of compatibility or performance can be made.
The end-user is solely responsible for, prior to purchase, ensuring that the end-user's devices are compatible and meet the system requirements for Acustica Audio products.

	PC Windows		Apple macOS	
	MINIMUM	RECOMMENDED	MINIMUM	RECOMMENDED
OPERATING SYSTEM	Windows 10 64 bits	Windows 10 64 bits	macOS 10.9 (1)	macOS 10.14 (1)
CPU	Intel i5 Broadwell 3.1 GHz (2)	Intel i9 Coffee Lake 3.5 GHz (2)	Intel i5 Broadwell 3.1 GHz (2)	Intel i9 Coffee Lake 3.5 GHz (2)
RAM	4 GB of RAM (3)	64 GB of RAM (3)	4 GB of RAM (3)	64 GB of RAM (3)
SSD	3000 MB (4)	3000 MB (4)	3000 MB (4)	3000 MB (4)
SCREEN RESOLUTION	FHD (1920x1080)	UHD (3840x2160)	FHD (1920x1080)	UHD (3840x2160)
PLUG-IN FORMAT	VST & AAX	VST & AAX	VST, AAX & AU	VST, AAX & AU
PLUG-IN ARCHITECTURE	64-bits		64-bits	
TRIAL / DEMO	30 Days (5)		30 Days (5)	
SUPPORTED DAW / NLE	Cubase 64-bits & Pro Tools 64-bits (6)		Cubase 64-bits & Pro Tools 64-bits & Logic Pro X 64-bits (6)	
AQUARIUS APPLICATION	YES & Mandatory		YES & Mandatory	
INTERNET CONNECTION	YES & Mandatory (7)		YES & Mandatory (7)	

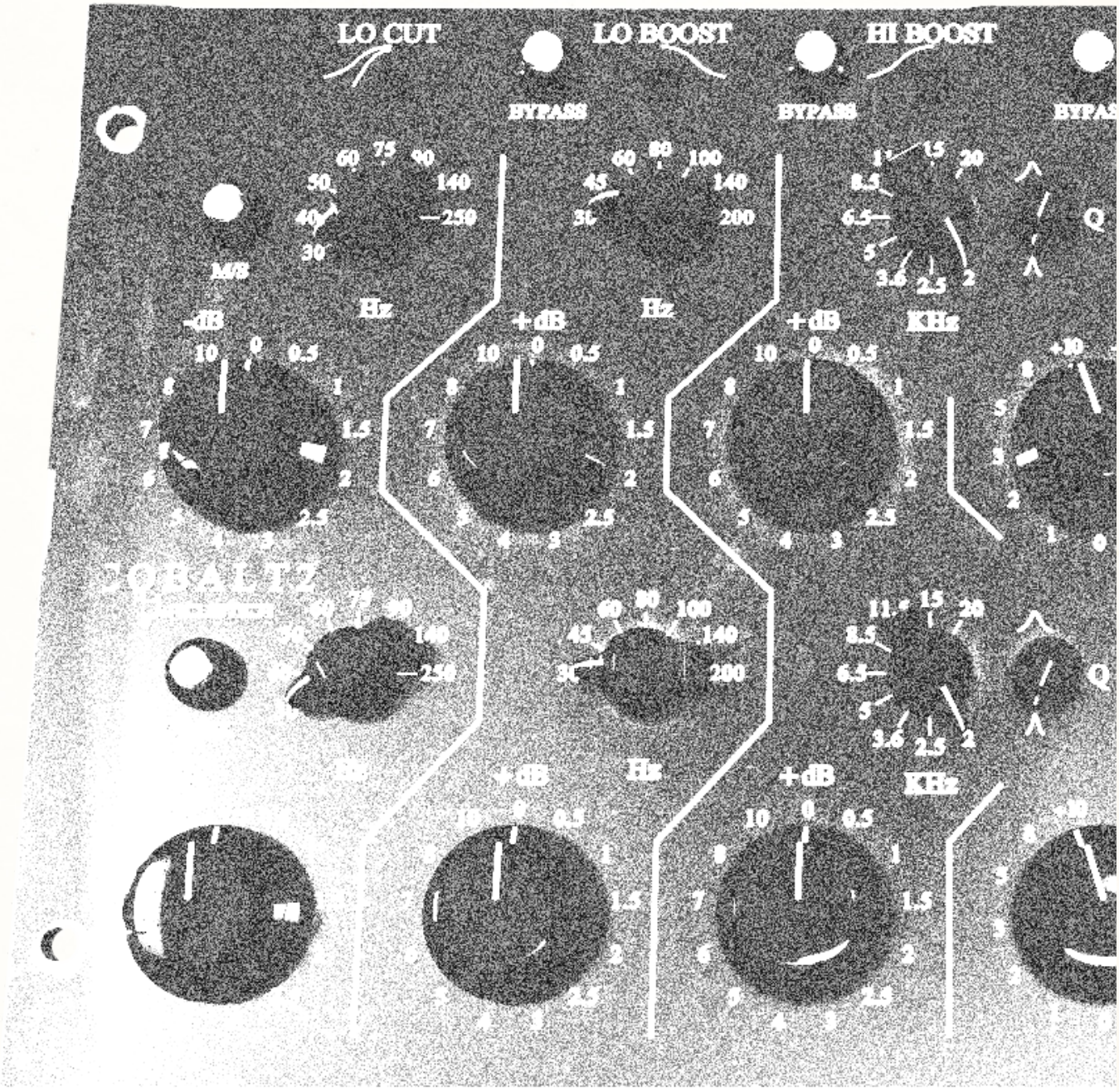
(1) Case sensitive file systems are not supported.
(2) AMD and ARM processors are not officially supported. Intel i7/i9 X and Xeon processors must use CORE 16.
The CPU speed is more important than the number of CPU cores.
(3) In order to run more plug-ins instances it is always necessary to increase the amount of RAM.
(4) Each format needs three times more space than what the product is in order to download and decompress the installation files.
(5) Trial settings cannot be transferred from the trial to the commercial version.
(6) For others DAWs or NLEs, try trial before buy
(7) TCP/UDP ports 8080 and 443 should be open. Reliable and fast internet connection is recommended

IMPORTANT: It is highly recommended to make a complete backup before making changes to your computer systems.
IMPORTANT: Acustica Audio cannot be held responsible for any loss or damage arising directly or indirectly from any error or omission in this manual.

What is a “ZL” Plug-In

Acustica plugins come in two versions: ZL (zero latency) and a regular version. While the ZL version does not introduce any latency to your system, the standard version does.
This buffer varies in size for each plugin and helps reduce the CPU and system load of your computer significantly.

We recommend that you use a ZL instance when tracking. Basically, both plugin instances are identical, but the current Acqua engine can work either with or without an audio buffer. The idea behind a ZL instance is to give you the option to run an Acqua Effect with minimal latency, which is useful for tracking or direct monitoring.



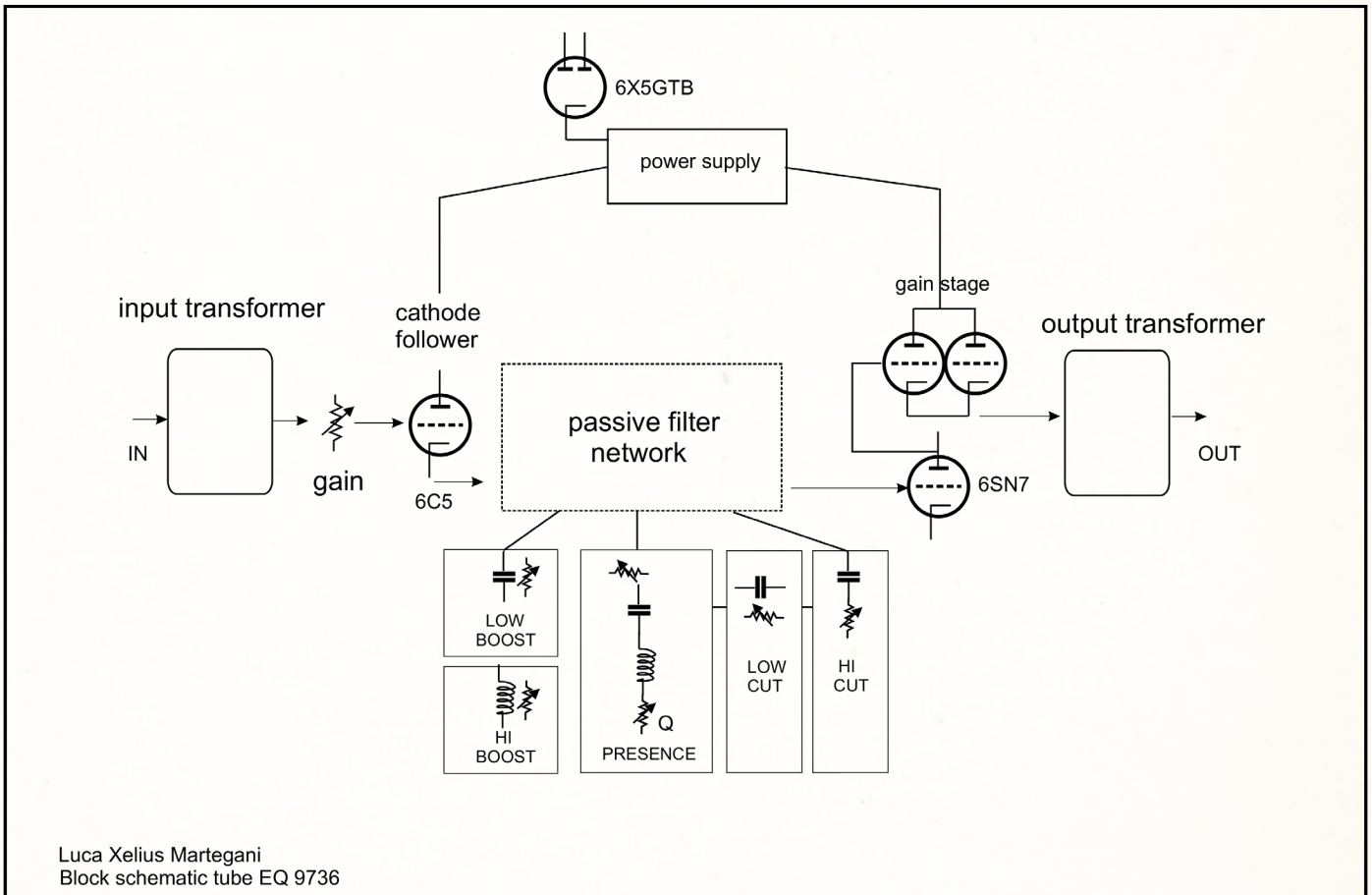
About the hardware

Luca “XELIUS” Martegani

Luca Martegani was born in Italy in 1966.
He studied piano and chemistry of plastic materials and macromolecules.
In 1988 he began to work as a recording studio assistant and keyboard programmer. Then he became interested in the basics of analog electronics and vacuum tube technology and began to study these subjects.
He designs and builds his own analog synthesizers, as well as various electronic devices effects, equalizers, hi end preamplifiers, power amplifiers, mic preamplifiers, compressors etc...
He works as a sound engineer in his own studio and as a free lance engineer in several recording and mastering studios in Italy.
He also composes different genres of electronic music, from electropop to dance, to experimental and contemporary.
During the last twenty years he has designed, built and continuously refined the two prototytpes that has been converted into the COBALT suite of plugins by the Acustica Audio team.

About the LM 9736 Equalizer

The basic concept behind the LM 9736 was to develop an “old-school” passive eq around a resistive divider, using resistors, inductors and capacitors.
This eq is built around a pure vacuum tube topology, including the high voltage power supply.
The original hardware is fully handmade, and all the components are wired point to point, except for the filter networks. All audio inductors are handwound.
All the components have been carefully selected, and MKP capacitors and carbon resistors are liberally employed throughout the circuitry.
The main scope of this project was to build an eq capable of processing big sound masses in a transparent way, keeping the soundstage untouched, preserving fast transients and without introducing “sound tails” or excess of coloration.



Luca Xelius Martegani
Block schematic tube EQ 9736

The input circuitry is designed around a Lundahl input transformer driving the gain potentiometer, which is coupled to the grid of a cathode follower.
The cathode follower is an ideal solution to drive the following filter network with a low output impedance. It is conceived around a 6C5 GT tube that can be exchanged for a less common 6L5 G if a smoother hi top is needed.
The filter network is basically a variation upon the classic Pultec style topology, with the added bonus of independent frequency selections of Low Cut and Boost sections. The Presence cell can reach almost 12 dB of gain, and its center frequency can be varied in 11 steps, from a warm and smooth 680 Hz bell up to a sharper 7,5 KHz one. A continuous Q control allows to narrow or widen the bell shape (see the curves).
The High Boost cell is the real gem of this unit. Designed around a custom multi-tapped inductor, with a very low parasitic capacitance and the lowest possible DC resistance, the cell is able to develop about 9 dB of pure musical brightness, from a very transparent "air" top around 20 KHz to a coherent smooth mid-high boost starting from just below 1 KHz.
As with several shelving curves that change their shape depending on the boost amount, it has been very difficult to estabilish a constant relationship between gain steps and frequency.
Each frequency step refers to a knee point located 3dB below the shelf line at maximum boost. The lower the boost, the lower is the starting point of the curve frequency-wise. (see curves).The Hi Cut is made from another very well sounding network, and it's able to effortlessly solve excessive brightness or harshness problems in its shelving mode.
Each cut control has a final CUT position, in which the shelf is transformed into a 6dB/oct HPF and LPF, respectively for gentle low and high cut.
As an operating example, a combination of a 3 KHz cut with a 20 KHz boost is able to produce a large, smooth dip in the mid-high zone. Because of the reciprocal interactions between the passive networks, please don't be surprised if you have to boost and cut relatively many dBs, in order to obtain only a gentle 3 dB dip.
Then the signal flows past the passive filters into the gain stage. Actually I've spent many years experimenting around this stage, finally choosing a hybrid SRRP/mu-follower stage based on a couple of asymmetrically loaded 6SN7 GT triodes. This stage is coupled with the output transformer through a large film capacitor. In my experience, this is the best way to balance quality, dynamics and musicality; now I can confidently say that this arrangement provides exactly the sound I've always looked for!
In my designs I've always almost obsessively wanted to minimize the noise from the AC supply leaking into the signal path: not a trivial task to undertake when dealing with vacuum tube circuits.
Thus I've opted for an external box containing the power supply transformers. Heaters and services have their own separate transformers, as well. Grounding is entirely star point wired, and there's no ground buss. Moreover star point wiring is used with the internal supplies, too, instead of the more common power supply rail arrangement. RF decoupling is placed as close as possible to each single cathode connection. The 5mm-thick aluminum chassis is earth grounded and all the internal shields are chassis grounded. The 0V audio ground is RF grounded in ground-lift position, and fully chassis grounded without lift. Audio signals are carried by OFC shielded cables. Audiograde relays act as single cell bypasses. A total bypass allows us to use tube stages and audio transformers as a "warming" chain stage, bypassing the whole filter network.

About the compressor LM 9804

This project started as a reproduction "exercise" of a classic Altec Lansing style feedback compressor. The whole circuit was then re-designed for experimental purposes, first around a 12AT7 tube as a gain control element, then a 12AU7 and finally the classic 6BZ7. The output stage was designed around a parallel push-pull of two 6SN7 GTs driving a custom built output transformer. The vacuum tube signal rectifier is a classic 6AL5 circuit which drives a passive attack/release network. The timing capacitor is charged/discharged in an unusual way because of its particular placement in the circuit. As with the LM 9736, the power supply has a power transformer external box with a multicore cable/connector to the main chassis. Two large "industrial" VU meters support the elegance of the smooth and slow character of this compressor. Its kind of dynamic behaviour might be defined as quasi-RMS. Peaks and transients pass through it practically untouched, until the attack knob is set at its fastest setting. Then the LM 9804 exhibits a few very different personalities depending on the timbre, the amplitude and time distance between transients (ie. a single shot or a burst). A notable amount of distortion (consisting of both odd and even harmonics) appears as the rectifier starts to work. The threshold control sets this point.
An accurate matching of tubes and trimming of their respective bias is mandatory to minimize a "thump" artifact at the beginning of the compression. I've introduced a further negative feedback loop in the circuit, to accomplish a more stable operation and a lower ratio compression.
Stereo Link is obtained by simply putting in common the control voltages of the two channels; in this case both threshold controls are active and interactive.
The original hardware is fully handbuilt and it is wired point-to-point.
This compressor shines in tracking sessions because of its elegant behaviour, expecially on sustained sounds such as vocals, guitars, bass, pads and strings.
On drums and fast electronic loops it exhibits an audible compression which can be very useful in some music styles, ranging from a pumping style compression to a brutal squashing.
As a hardware device, the LM 9804 is capable of max. 18/20 dB of gain reduction; this range has been considerably extended in its plug-in software version, and the same is true for the threshold range. The attack shape control (SHMOD) is another added bonus and it's a really quick and practical way to adapt the attack curve to the specific nature of any transient.

About the software

The Cobalt2 suite consists of four different plug-ins:
- COBALT2 (EQ)
- COBALT2 COMP
- COBALT2 PRE
- COBALT2 DYN EQ

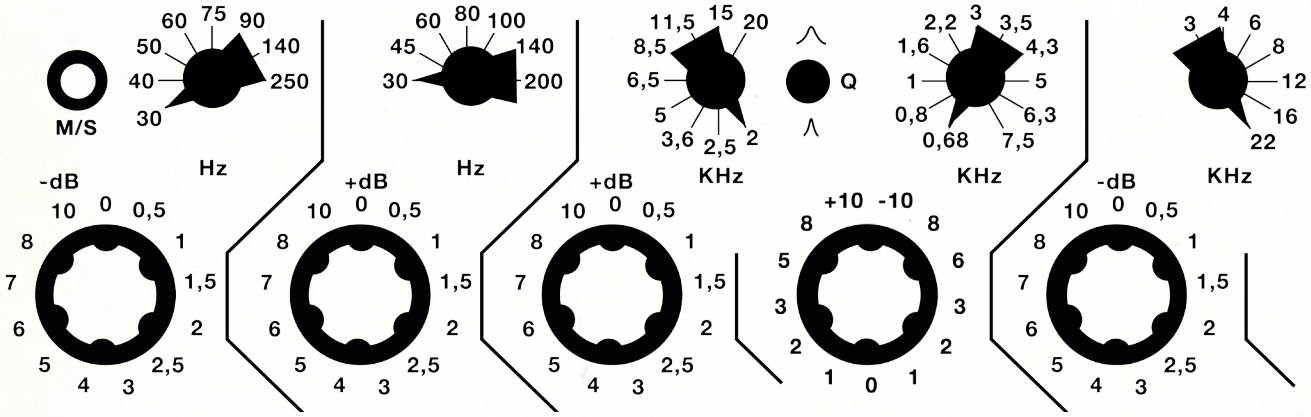
Cobalt2 LM 9736 Equalizer

This EQ isn't another simple clone. It is adds to our list of amazing endorsed plug-ins.
The original device is unique and innovative; currently it is not even mass produced.

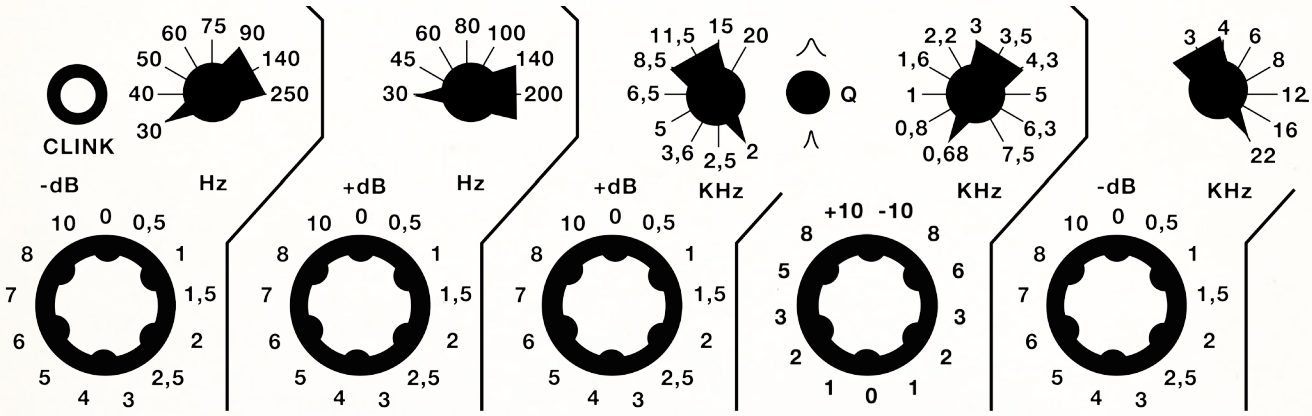
Cobalt2 is a dual-channel, five-band equalizer. It is completely tube-based: vacuum tubes are used in the input stage, then in all of the internal gain sections, up to the output stage.
It has been designed as an evolution of a classic Pultec Equalizer, and it is the result of many years of of study, research and experiments started in the early 90's.

Cobalt2 Eq is characterized by a series of custom features: first we have two distinct low band cells, so that you can choose the cut frequency independently from the boost frequency.
Then we have a High Band boost section with an extremely personal sound, since it's built only with inductances, instead of the more customary capacitors. It is mostly unusual to find such a purely inductive circuit in a high frequency cell: as you will hear, this Eq is able to impart a unique sonic signature with a characteristic personality.
Then we have a very classic "Presence" band, with several frequency steps, from medium to medium high, and a continuous bandwidth control.
Finally there's a High Cut band, a shelf with a very moderate slope that in the extreme position becomes a 6 dB/octave Low-Pass filter.

Equalizer Channel A



Equalizer Channel B



Selecting Bands

There are five bands for processing available on the Cobalt Equalizer;

- LO CUT
- LO BOOST
- HI BOOST
- PRESENCE
- HI CUT

To activate a specific band, press the activation band button (⬇), and make certain that the BYPASS led isn't illuminated, or you will not hear the changes that you are making to the EQ.
These buttons switch the 5 filter bands on (button lights up and bypass led lights off) or off (button light off and bypass led lights up).

LO CUT and LO BOOST bands depend on each other, so if you press the activation button of the first band automatically you also activate second band.

Control Section

Cobalt2 includes a control section characterized by the following parameters:

TOTAL BYPASS
Press this button to power up the unit.

PRE
Press this button to activate a PREAMP stage offering typical vacuum tube + transformer harmonic distortion.

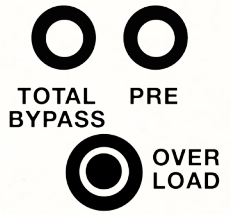
OVERLOAD
This led warns about possible internal peak clipping.

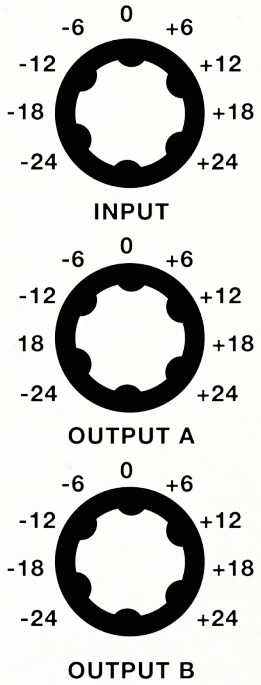
INPUT
This sets the input level from -24dB to +24dB

OUTPUT GAIN A
This gain control sets the OUTPUT LEVEL of the Left channel of the plug-in. Its range goes from -24dB to +24dB.

OUTPUT GAIN B
This gain control sets the OUTPUT LEVEL of the Right channel of the plug-in. Its range goes from -24dB to +24dB.

C-LINK
This switch links the controls of left and right channels.





Eq Section

Cobalt2 is a dual-channel tube Equalizer.
-Each channel provides five frequency bands. Each band can be independently activated or excluded. The global frequency range stretches from 30 Hz to 22 KHz.

The amplitude setting ranges from -10 dB up to +10 dB.
- the LO and HI BOOST sections are shelf filters;
- the LO and HI CUT sections are shelf filters, as well; in their final CUT position they both become respectively 6dB/oct. HP and LP filters;
- the PRESENCE section is a bell band, whose bandwith can be adjusted by the “Q” knob.

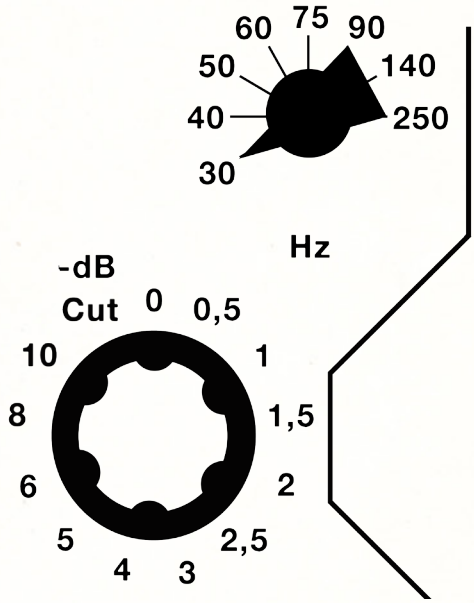
Details

LO CUT

Frequency: this knob selects the frequency of the cell in 8 steps, from 30 Hz to 250 Hz.

Gain: this knob sets the gain of the band in 12 steps from -0.5 dB to -10 dB.

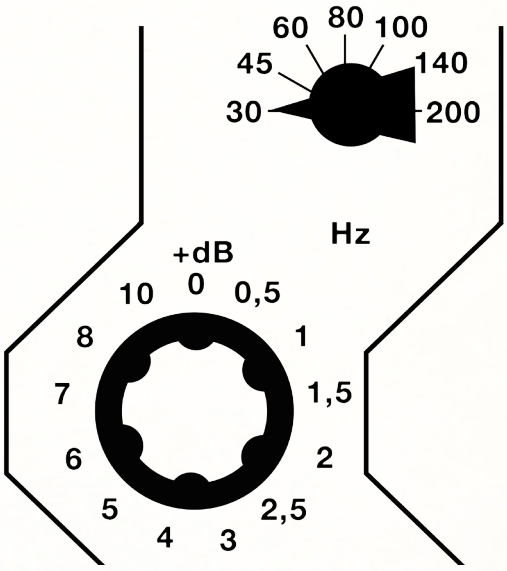
This shelf filter is characterized by a very moderate slope; in the final 13th position (CUT) it becomes a 6dB/octave HP filter.



LO BOOST

Frequency: this knob selects the frequency of the cell in 7 steps, from 30 Hz to 200 Hz.

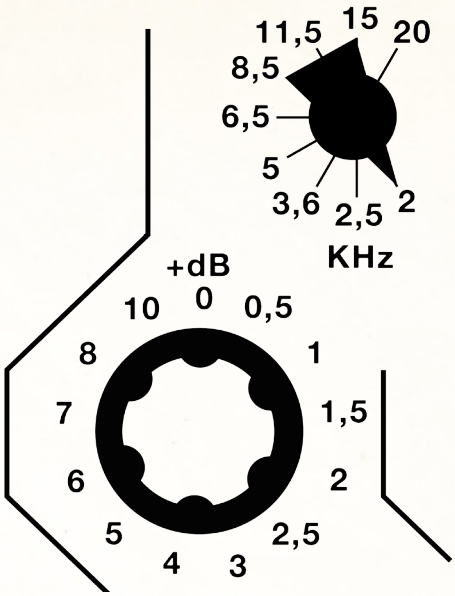
Gain: this knob sets the gain of this shelf band in 12 steps, from +0.5 dB to +10 dB.



HI BOOST

Frequency: this knob selects the frequency of the cell in 9 steps, from 2 KHz to 20 KHz.

Gain: this stepped knob sets the gain of the band in 12 steps from 0.5 dB to 10 dB.

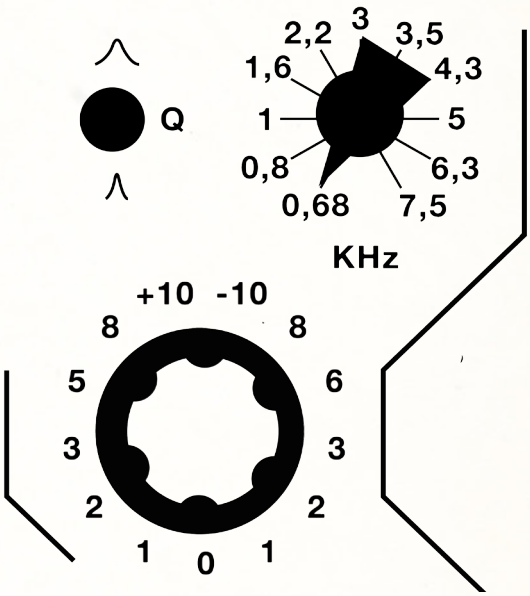


PRESENCE

Frequency: this knob selects the frequency of the cell in 11 steps, from 0.68 KHz to 7.5 KHz.

Gain: this stepped knob sets the gain of the band in 12 steps from -10 dB to 10 dB.

Q: this knob sets the width of the band at the selected frequency, from wide (up) to narrow (down).

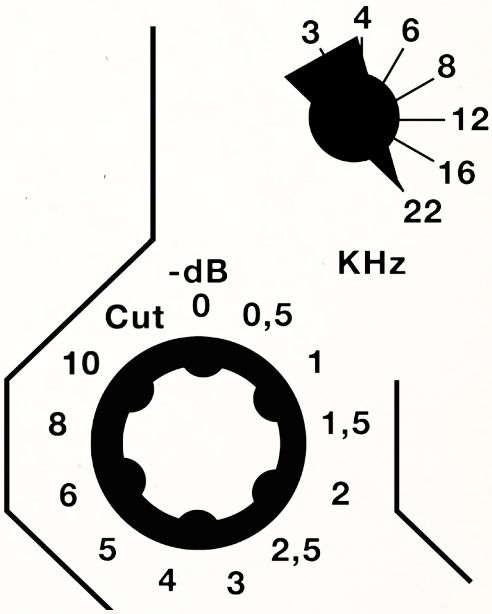


HI CUT

Frequency: this knob selects the frequency of the cell in 8 steps, from 3 KHz to 22 KHz.

Gain: this knob sets the gain of the band in 12 steps from -0.5 dB to -10 dB.

This shelf filter is characterized by a very moderate slope; in the final 13th position (CUT) it becomes a 6dB/octave HP filter.

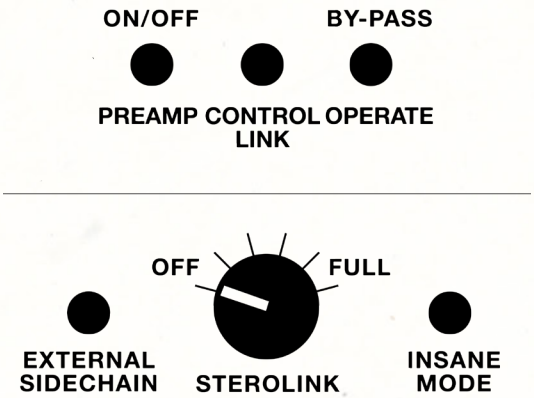


Cobalt2 LM 9804 Compressor

Cobalt2 Comp is a stereo/dual channel vacuum tube compressor (actually two independent but stereo-linkable compressors). It adds to our list of amazing endorsed plug-ins. It's a truly faithful emulation of the LM9804 compressor built by Luca Martegani.

The idea behind this project was to improve upon a classic vacuum tube compressor design, believed by many experts to be one of the best sounding dynamic processors ever built.
The Cobalt2 Comp is able to impart a unique sonic signature with a characteristic personality.

Control Section



The Cobalt2 Comp includes a control section characterized by the following parameters:

BYPASS-OPERATE
This button allows to activate/bypass both compressors (L-R); it toggles between the active (OPERATE, lamp ON) and bypassed (BYPASS , lamp OFF) state;

ON/OFF PRE
Press this button to activate the emulated tube PREAMP of the plug-in.

INPUT TRIM
A one-knob internal gain structure control linking the input and output gain stages with an inverse law. This control sets the input level from -25dB to +25dB, and it is used to adjust the plugin's internal level.
Note: when the preamp stage is bypassed (OFF), the 'Input Trim' mode has no effect. It is possible to increase the harmonic saturation with this Input trim knob.

OUTPUT GAIN
This sets the output gain compensation, in order to match the level of the compressed signal with the original. Its range goes from 0 dB to +25dB.

CONTROL-LINK
This switch links the controls of left and right channels.

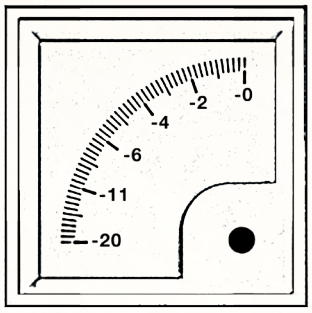
STEREO-LINK
This knob allows to determine the stereophonic behaviour of the two compressors.
Starting from the left (OFF position) the control signal is stereo and the compressors operate independently, without any interaction between them. Turning the knob to the right forces the compressors to progressively mix their control signals, until they react exactly in the same way to any input signal (FULL position).

EXTERNAL SIDECHAIN
This button engages the external side-chain** of the compressor.
In audio production, sidechaining refers to the use of the dynamic content of one track to control the processing of an effect inserted on another track.
Sidechaining applications are numerous, but their discussion is beyond the scope of this manual. Many references can be easily found on the Web.

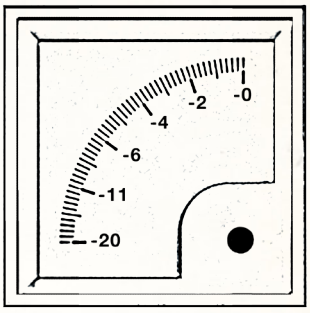
INSANE MODE
It engages the INSANE mode of the compressor. This mode has been implemented to increase the accuracy and speed of the compressor. The price you pay for this high quality mode is a slightly heavier load for the CPU.

Details

GAIN REDUCTION METER
This measures the gain reduction applied by compressor. The meter indicates ‘dB in the absence of an input signal or any gain reduction. If the signal exceeds the compression threshold or limit level, the amount of gain reduction is shown.



GAIN REDUCTION



GAIN REDUCTION

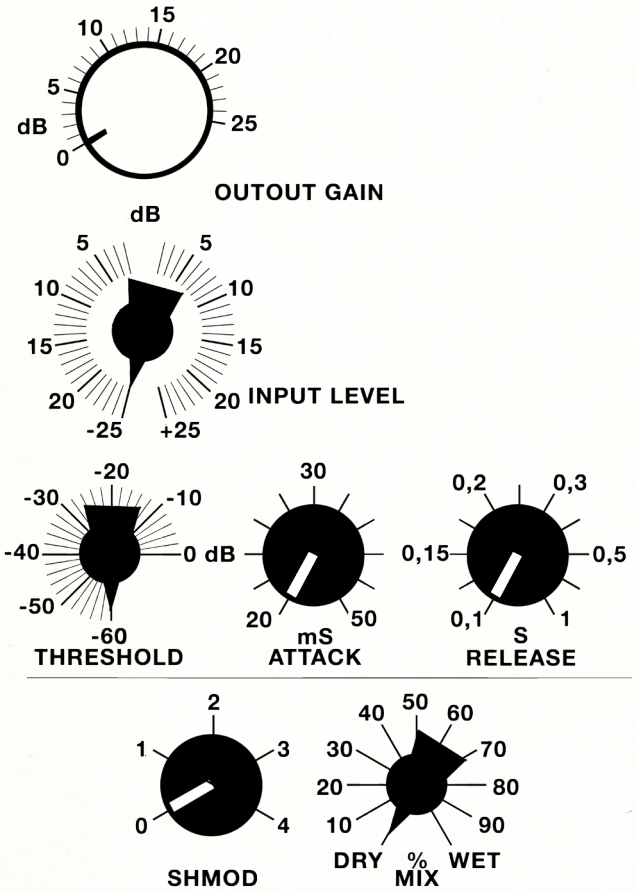
ATTACK
Sets the compressor’s attack time, ranging from 20 mS (fast) to 50 mS (slow);

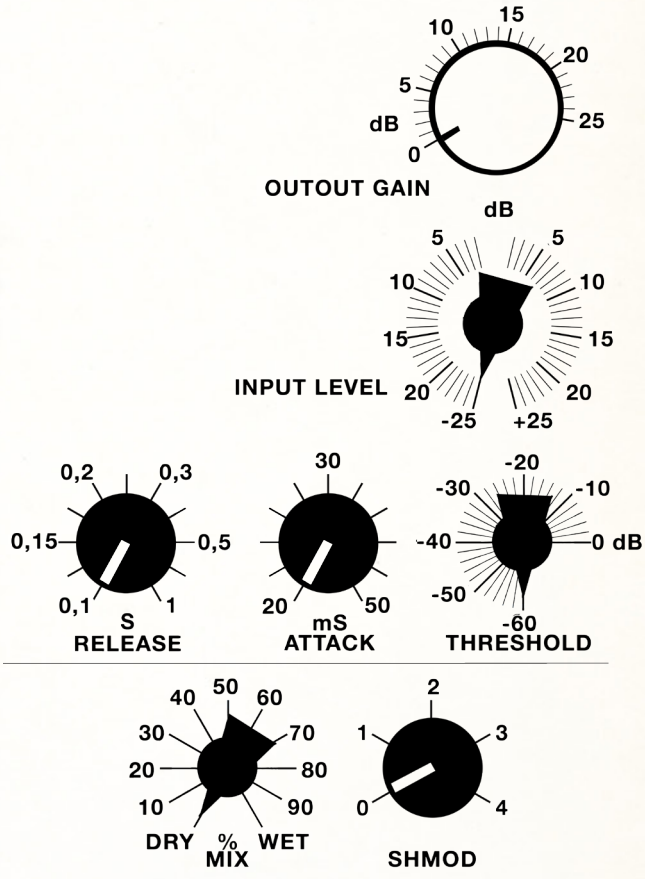
RELEASE
Sets the compressor’s release time, ranging from 0.1 S (fast) to 1 S (slow);

SHMODE
Controls the shape of the compressor’s attack curve. It allows you tof ine-tune the attack behaviour, in order to adapt it to any audio source, ranging from 0 to 4.

THRESHOLD
Sets the threshold of the compressor, ranging from -60 dB to 0 dB;

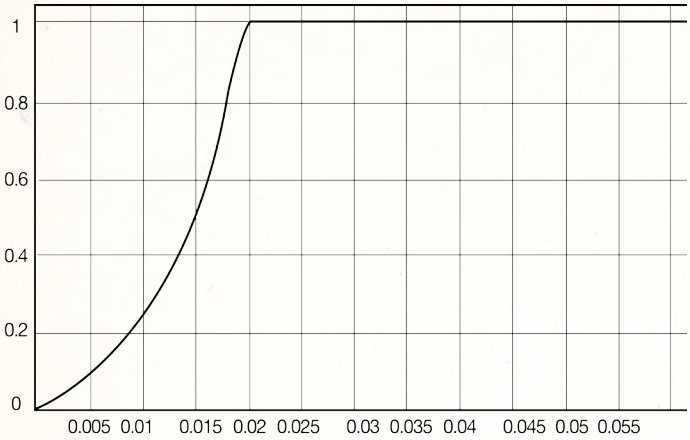
MIX
This control determines the mix proportion between the original (dry) and ‘effected’ (wet) signals. The DRY/WET control is a very powerful and simple-to-use feature that isn’t included in the original devices. This function is logically placed in the control section, because it significantly changes the operational mode of the module, allowing parallel or sidechain compression.



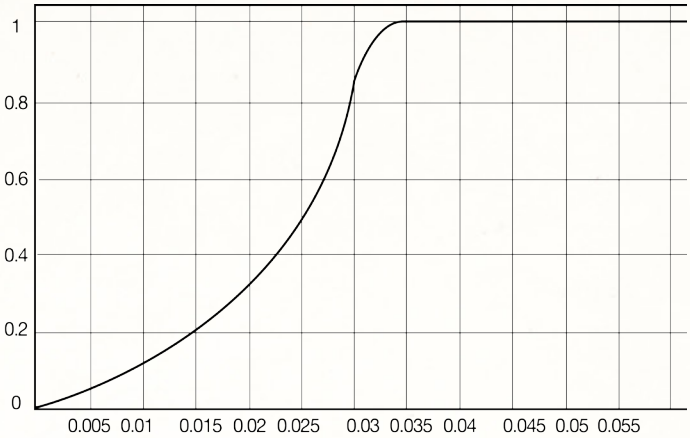


ATTACK TIMES

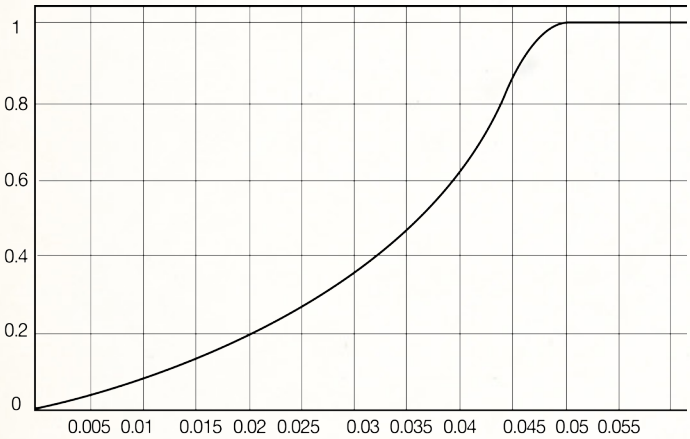
20 mS Attack curve



30 mS Attack curve

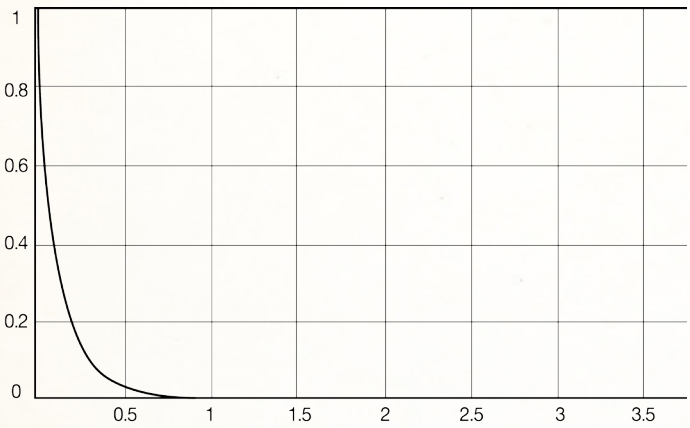


50 mS Attack curve

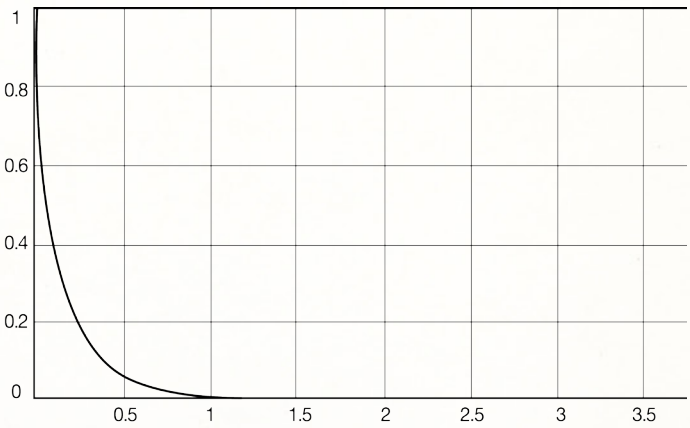


RELEASE TIMES

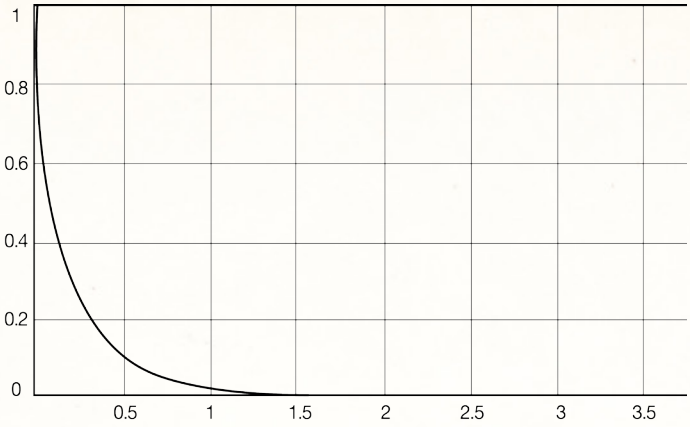
0,1 S Release curve



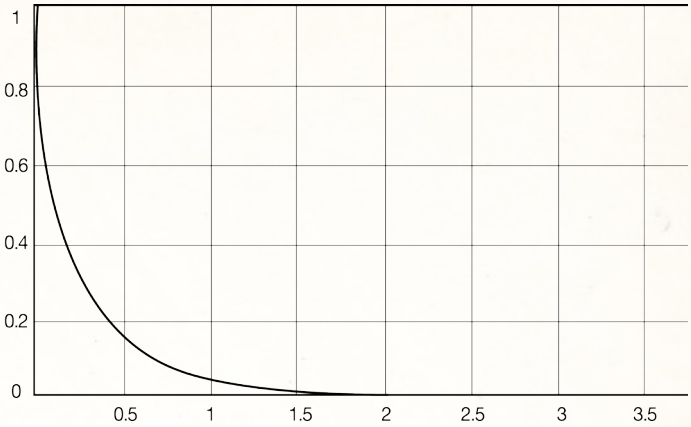
0,15 S Release curve



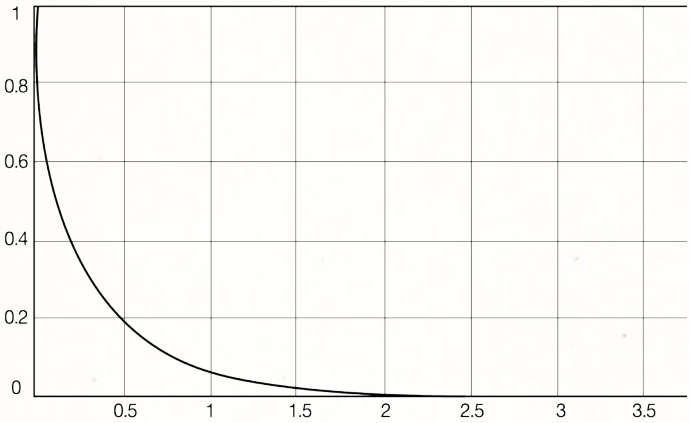
0,2 S Release curve



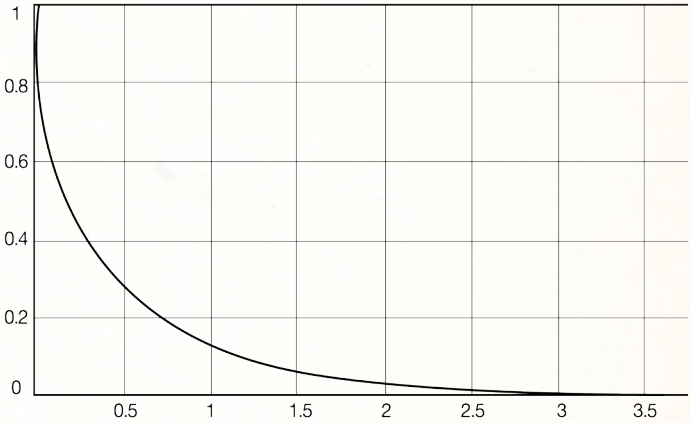
0,3 S Release curve



0,5 S Release curve



1 S Release curve



Cobalt2 Dynamic Equalizer

The Cobalt2 Dyn EQ (dynamic equalizer) was the first of its kind for Acustica Audio. It's a really useful and versatile tool, for many audio engineers it can be a great problem solver and we believe it is a flagship product of ours.
Thanks to contribution of Giancarlo and Stefano Dall'Ora (SoundDrops), who is an invaluable collaborator with Acusticaudio, and has been deeply involved in the production of this project, we created a new qualitatively unsurpassed plug-in.
Just like with audio production, our idea was to create a sort of remix of the COBALT2 EQ and COBALT2 COMP.

The result of this is an incredible Dynamic EQ, the first of it's kind for us based on a sampling characterized by some new and important features. In our opinion this "endorsed" Acqua plug-in included in the Cobalt2 suite is qualitatively unsurpassed, and deserves to be among the top products in the digital audio market.

COBALT2 DYN EQ is equipped by 4 sections:
- EQ1
- EQ 2 (sidechain EQ) ->Upgraded!
- COMPRESSOR
- DYNEQ

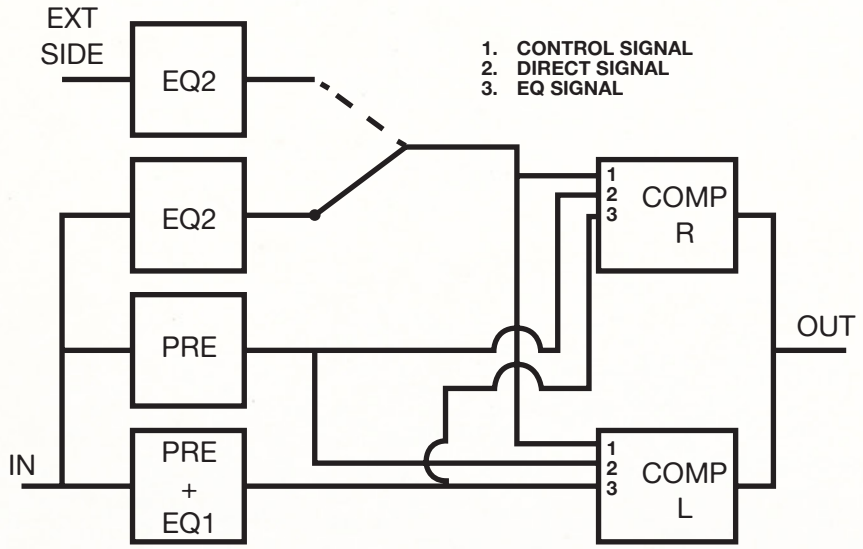
Introduction

MAIN IDEA

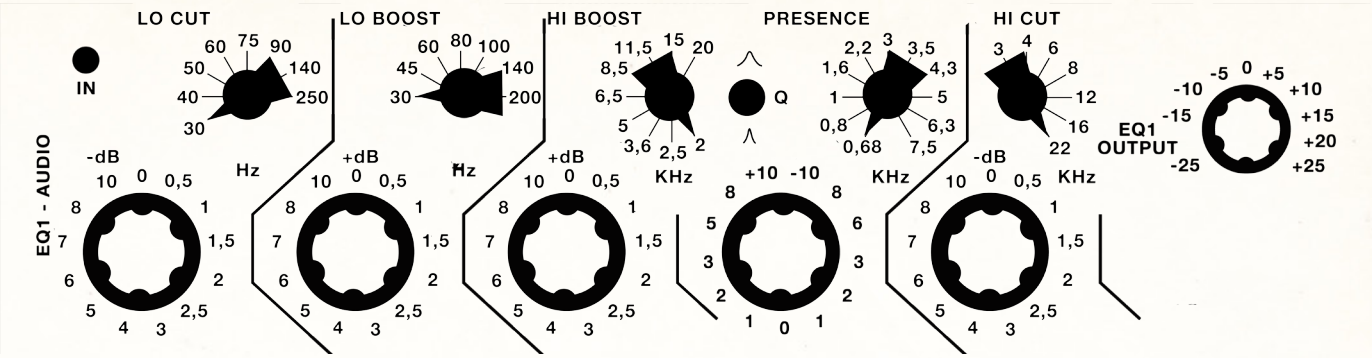
The main idea behind Compressors (Dynamic processor) is the dynamic manipulation of the overall level of the audio material.
Equalizers change the spectral character of the audio signal, statically.
Multiband processors, such our COBALT2 DYN EQ, can do both. They can be used like a filter that isn't limited to being set to a specific gain level, but it is able to change its gain settings dynamically using a control signal.
In the audio market there are usually complex tools that can be potentially destructive if not used properly. So we decided to create a complete, powerful Dynamic EQ without compromise but easy to use for engineers in mixing, sound-design and also for mastering.
Dynamic EQ represents a new generation of tools providing a marriage between dynamics processing and EQ.

MAIN FEATURES

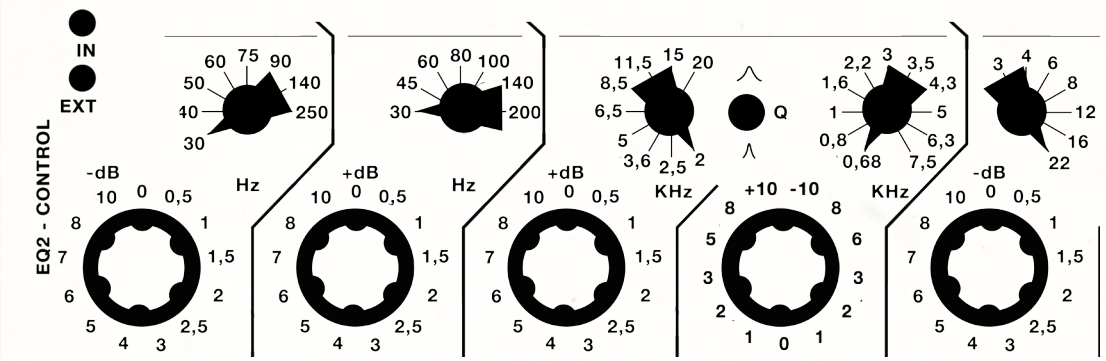
What are the main features/controls inside COBALT2 DYN EQ not present in the standalone versions?
• First at all, thanks to the contribution of Stefano we added a negative dynamic gain of the PRESENCE band (only for EQ1 module) not present in COBALT2 (EQ) so we can guarantee a complete range of values.
• We added 2 Attack times to the compressor section.
• In this plugin there are 3 different ratios available from low to high compression to guarantee different and specific amounts of attenuation to be applied to the signal:
- Mantis (can be considered moderate compression ratio, it is sampled by Stefano's pwm compressor)
- Violet (the medium compression ratio of our VIOLET compressor included in the N4 CPCL library)
- Cobalt (The original ratio of Luca's hardware).



EQ1 - Main Equalizer



EQ2 - Sidechain Equalizer



• EXT (external sidechain)
This button enables the external sidechain.
Each compressor may use an external signal, instead of the main input, to control the amount of dynamic equalization or audio compression.
The different routing configurations allow you to choose between the internal (channels n.1 & 2), or the external side chain input (channels n.3 & 4).
We use the term “internal sidechain” to specify that the compressor is fed internally (meaning it has internal routing) when the input signal is at the same time the control signal.
The “external sidechain” derives the control signal from another source (entering the plugin, but not necessarily the compressor, as it can be equalized before the dynamic section). This control signal then goes through the sidechain channel and sets the amount of the gain reduction.
This behavior (of the external sidechain) differs depending on the format and host used. Please read the manual of your DAW to verify if it supports this feature.

• Range knob:
The range knob lets you easily adjust the Range parameter for a band by setting the desired level so it limits the maximum amount of applied gain change. Moreover, the Range knob chooses between downward compression or expansion.
Range control is therefore strictly dependent on the Threshold parameter.
The latter sets the threshold level for compression and when the signal exceed the Range setting value the Dynamic EQ is triggered.
In other words as audio exceeds the threshold, boosts and cuts are reduced, thus compressing the dynamic range of the affected frequencies the output gain is usable like an expander.

Control section

INPUT-OUTPUT METERS
Measures the input and output levels of the plugin

IN (EQ1):
EQ1 (main inputs 1-2 channels)

IN (EQ2):
EQ2 is in internal sidechain mode (1-2 channels),

EXT button :
EQ2 feed the control signal from another source-> external side chain input (channel 3 & 4).

COMP button:
COMP input is the signal processed by EQ1,

COMP control signal is the signal processed by EQ2 (in EXTERNAL SIDECHAIN, INTERNAL sidechain can be activated/de-activated using EXT button)

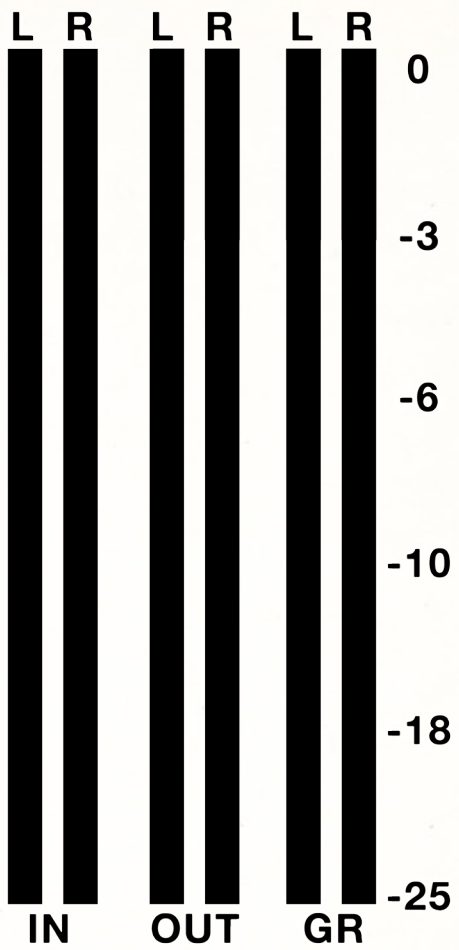
The input trim also influences the compressed signal

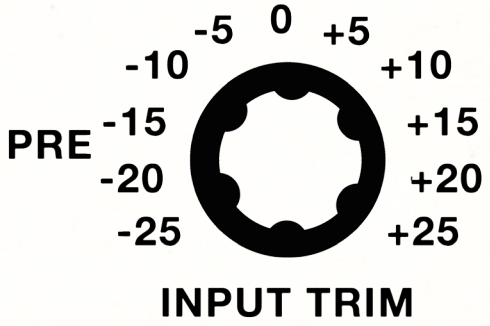
Dyn EQ:
the signal is dynamically processed using the EQ and COMP settings starting from a direct (flat) input signal,

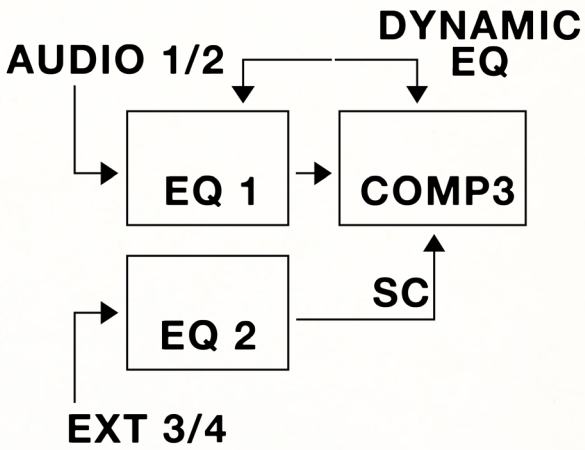
GAIN REDUCTION METERS
They measure (L-R) the reduction level applied by the compressor. The meter indicates '0' in the absence of any input signal or any gain reduction. If the signal exceeds the compression threshold or limit level, the amount of gain reduction is shown.

INPUT-OUTPUT METERS
They measure the input and output levels of the plugin.

INPUT TRIM
A one-knob internal gain structure control linking the input and output gain stages with an inverse law. This control sets the input level from -25dB to +25dB, and it is used to adjust the plugin's internal level. Note: when the preamp stage is bypassed (OFF), the 'Input Trim' mode has no effect. It is possible to increase the harmonic saturation with this Input trim knob.







Details

Cobalt2 Dyn Eq is equipped with the same controls as COBALT2 and COBALT2 COMP but as explained in the previous chapter we added other controls, listed below.

IN
these buttons allows you to activate each specific module of the plugin(EQ1, EQ2, COMP3).

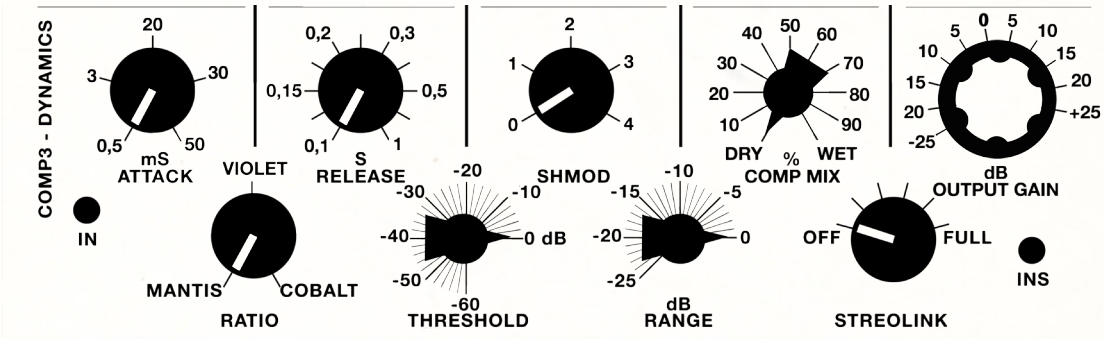
DYNAMIC EQ
it enables the Dynamic Eq.

PRE
this button activates the preamp of the plug-in (the same preamplifier circuit emulation of the COBALT2 (EQ) standalone version.

RATIO
this control allows you to choose from 3 different ratios.

ATTACK
Sets the compressor's attack time, ranging from 0.5 mS (fast) to 50 mS (slow).

EXT
This button enables the external sidechain of the plug-in.



How to use it

This is not a restrictive explanation on how to use our Dynamic Eq, it's simply our approach and we suggest you to follow this way to get the best sound out of your track. Below is a short description in 3 steps:

1) EQUALIZE YOUR TRACK

Cobalt2 dyn eq is equipped by 2 Eqs, EQ1 mono tube equalizer and EQ2 mono tube equalizer(usable ONLY in internal or external sidechain mode).
EXT button enables external sidechain (channels 3-4) of EQ2
EQ 1 OUTPUT is an output gain and can be considered as a master volume control used in the third step.

2) COMPRESS YOUR TRACK AND EVENTUALLY USE THE SIDECHAIN

Compress your track using the dynamic processor module of Dyn Eq in internal sidechain mode (activating the IN button of EQ2 module) or external sidechain mode (activating the IN button of EQ2 and pushing the EXT button). The input trim also influences the compressed signal.

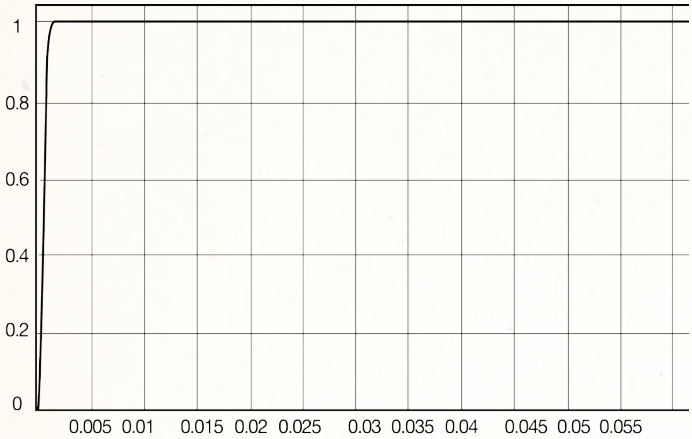
3) PRESS THE DYN EQ BUTTON

When you are satisfied of your sound, press DYN EQ button located in the Control section.

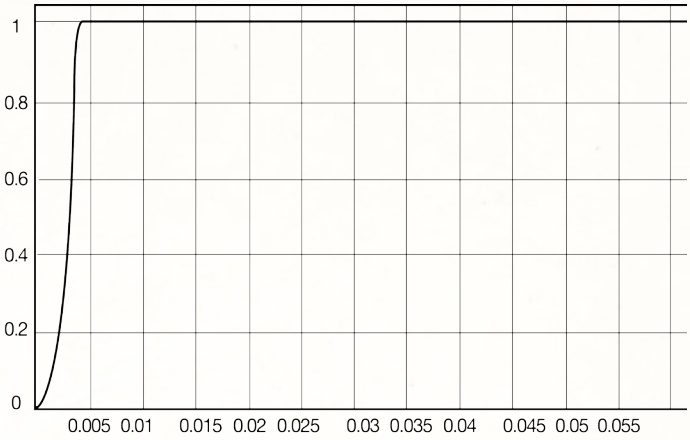
What does it do?
Starting from a flat signal (processed by the preamps if you activated it in the previous step) when you compress the signal to the maximum and exceed the RANGE control value you obtain the maximum of the equalization curve. As previously explained "RANGE" lets you easily adjust the Range parameter by setting the desired level so it limits the maximum amount of applied gain change Threshold sets the threshold level for compression and when the signal exceeds the Range value the Dynamic EQ is triggered.

ATTACK TIMES

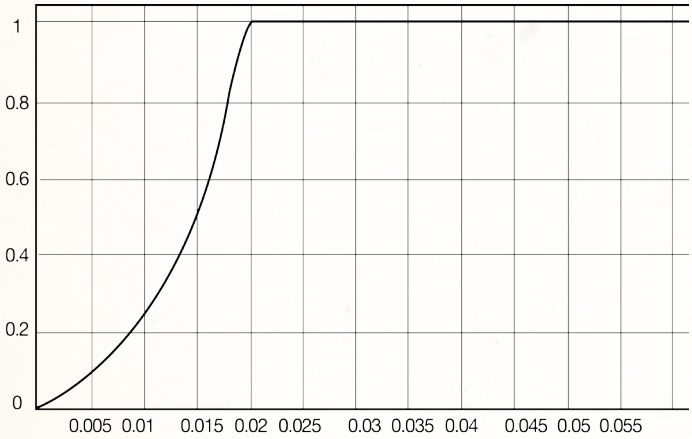
0.5 mS Attack curve



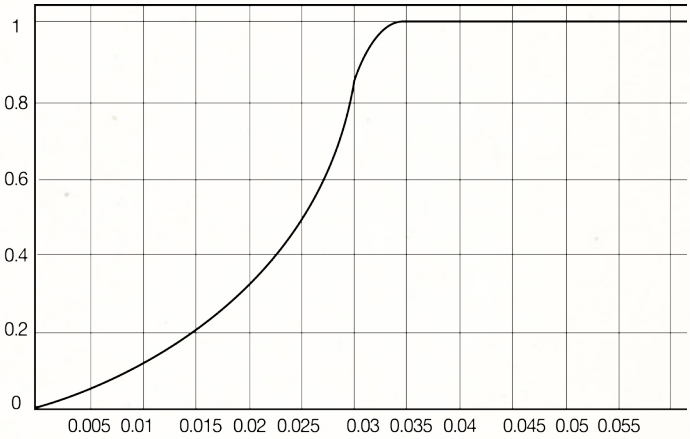
3 mS Attack curve



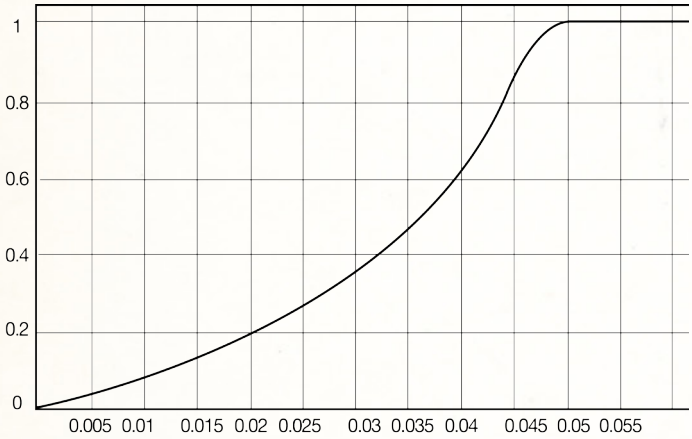
20 mS Attack curve



30 mS Attack curve

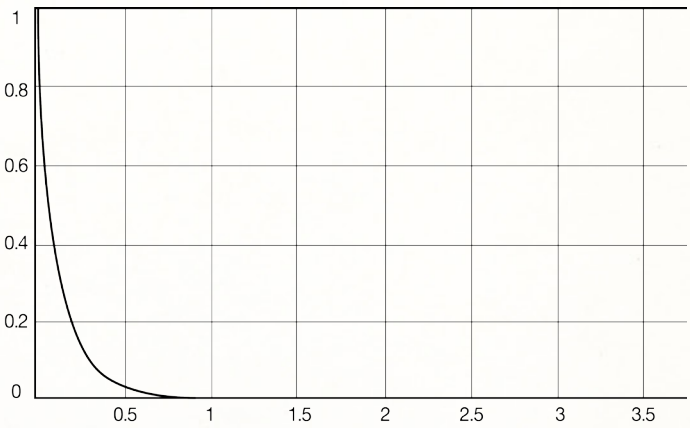


50 mS Attack curve

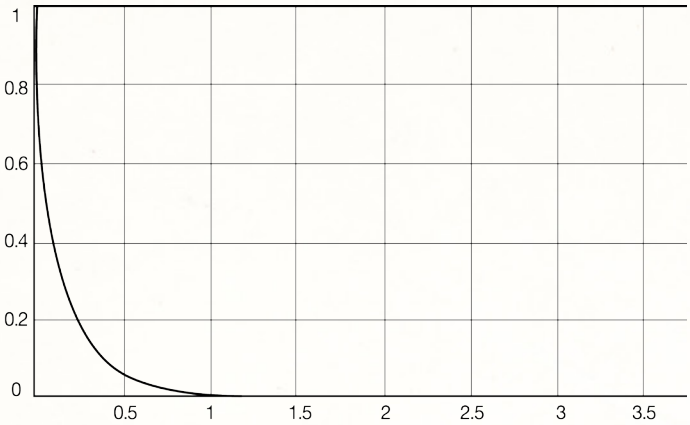


RELEASE TIMES

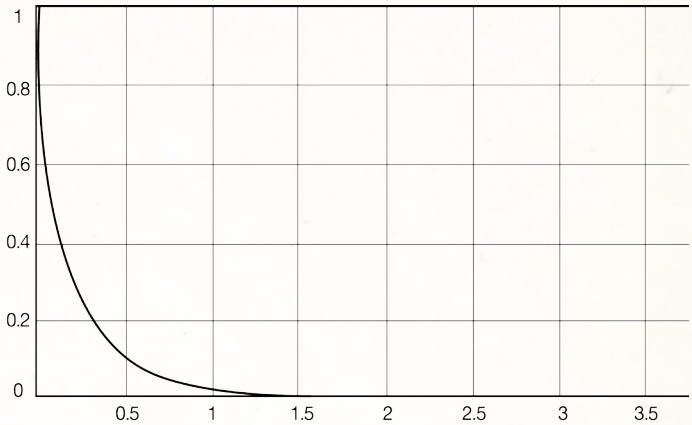
0,1 S Release curve



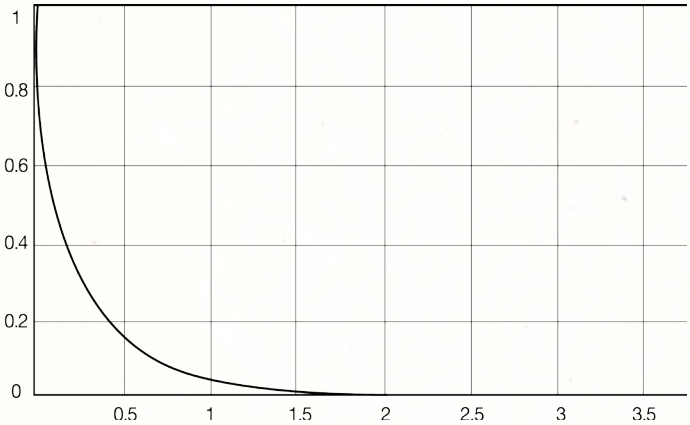
0,15 S Release curve



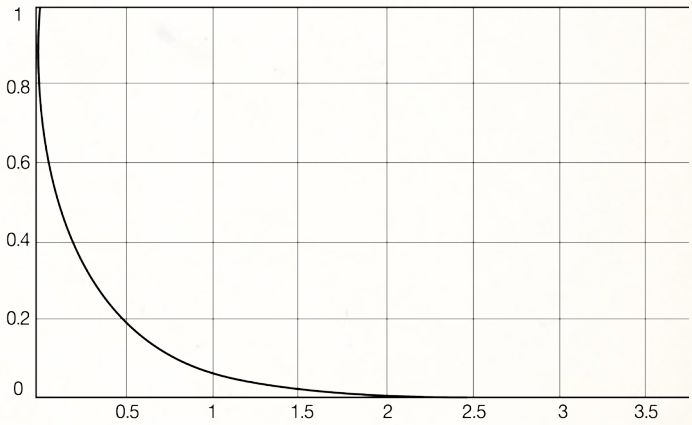
0,2 S Release curve



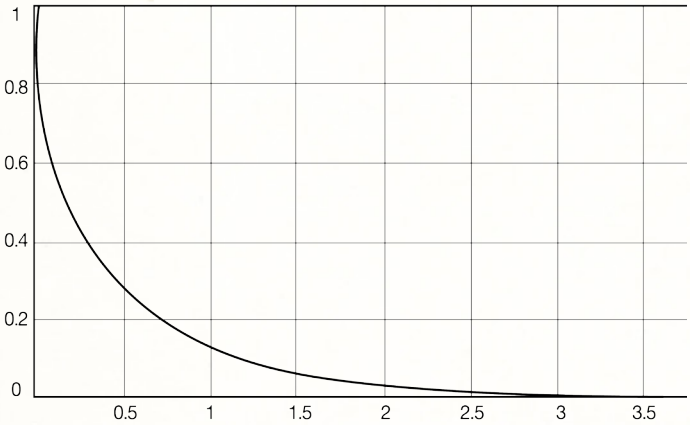
0,3 S Release curve



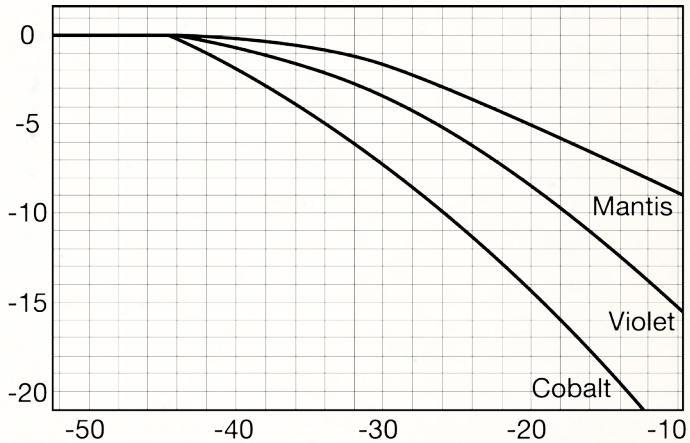
0,5 S Release curve



1 S Release curve



RATIO GRAPH

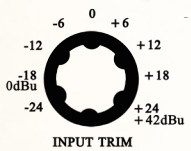


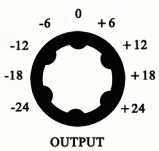
Cobalt2 LXM96 Preamp

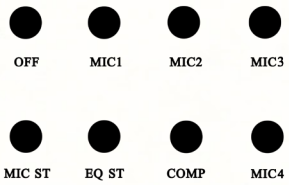
COBALT2 PRE is another plug-in included in the COBALT 2 suite. It emulates five great vacuum tube preamps.
The phase and frequency response and the harmonic distortion of the original devices are perfectly reproduced.
COBALT2 PRE includes 4 preamplifiers derived directly from the devices built by Luca Martegani (the LM9736 eq the LM9804 compressor), and three additional vacuum tube microphone preamps, again built by Luca, one of which is a stereo version made by combining two of the mono preamps.
As it often happens while working on Acustica projects, during Cobalt's development we unexpectedly stumbled upon two great vacuum tube preamplifiers designed and built by Luca, so we decided to sample and include them in this fantastic project.
This careful selection of preamps aim to provide you with an array of flexible options in order to build a virtual console emulation.
The best use of these sound coloring processors can only be decided by the user on a case per case basis, and the engineer's final judgment should always depend on his/her own ears and imagination.
These amazing preamps are able to add great warmth to your music.
Without a doubt, this plugin offers several great choices, and it delivers a special quality that enhances any performance calling for that distinctive vacuum tube sound.

Details

OFF
Pressing this button to bypass the unit.







MIC3

The first of two EXTRA preamps added to this second version of Cobalt. It is a tube based microphone preamp able to add rich-sounding harmonics that make the signal warmer without it becoming dull.

MIC4

The second EXTRA preamp of this suite, is another tube based microphone preamp useful for gentle colouring or more obvious distortion, depending how hard you push the Input Gain control.

MIC1

Press this button to activate the MIC1 PREAMP.
This tube preamp emulation is characterized by a pronounced time domain distortion.
It's the perfect choice for imparting an analog feel to vocal tracks.

MIC2

Press this button to activate the MIC2 PREAMP.
This tube preamp also included in Luca's original device. it was added to give you another choice in your equipement. It faithfully emulates the original tube behavior and sound of the original circuit.

MIC ST

Press this button to activate the MIC ST PREAMP.
A stereo preamp obtained by combining MIC1 and MIC2 preamps.
This incredibly flexible emulation can add warmth and depth to sound in a variety of applications.

EQ ST

Press this button to activate the EQ PREAMP.
Characterized by a relatively high harmonic distortion, this preamp includes the colour of the original equalizer modelled in the Cobalt2 (EQ).

COMP

Press this button to activate the COMP PREAMP.
This tube preamp emulation is perfect for adding warmth to your audio track.
This preamp includes the colour of the original compressor modelled in the Cobalt2 COMP.

INPUT TRIM

It sets the input level from -24dB to +24dB (from 0 to 10), and is used to control the signal level inside the Eq, the output level is than automatically compensated by the same amount of gain.

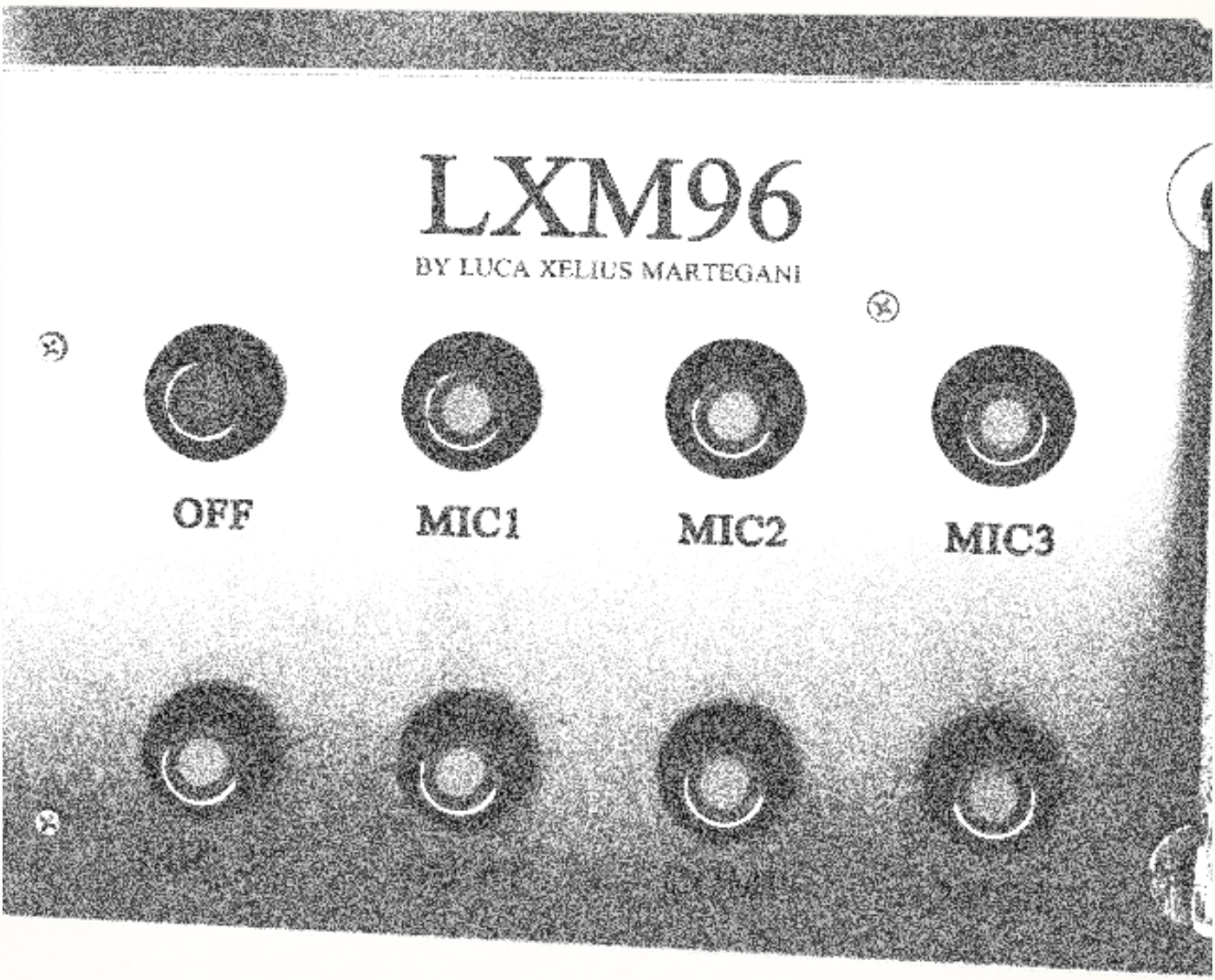
At first execution of the plug-in, set the input to ensure that you feed an appropriate level from the first stage of your signal path to the final one.

We recommend that you calibrate your input levels to: -18dBFS = 0dBu.

We suggest not to overload the input trim knob of your music. This way you will avoid any unwanted distortion or unpredictable behavior due to excessive input levels.

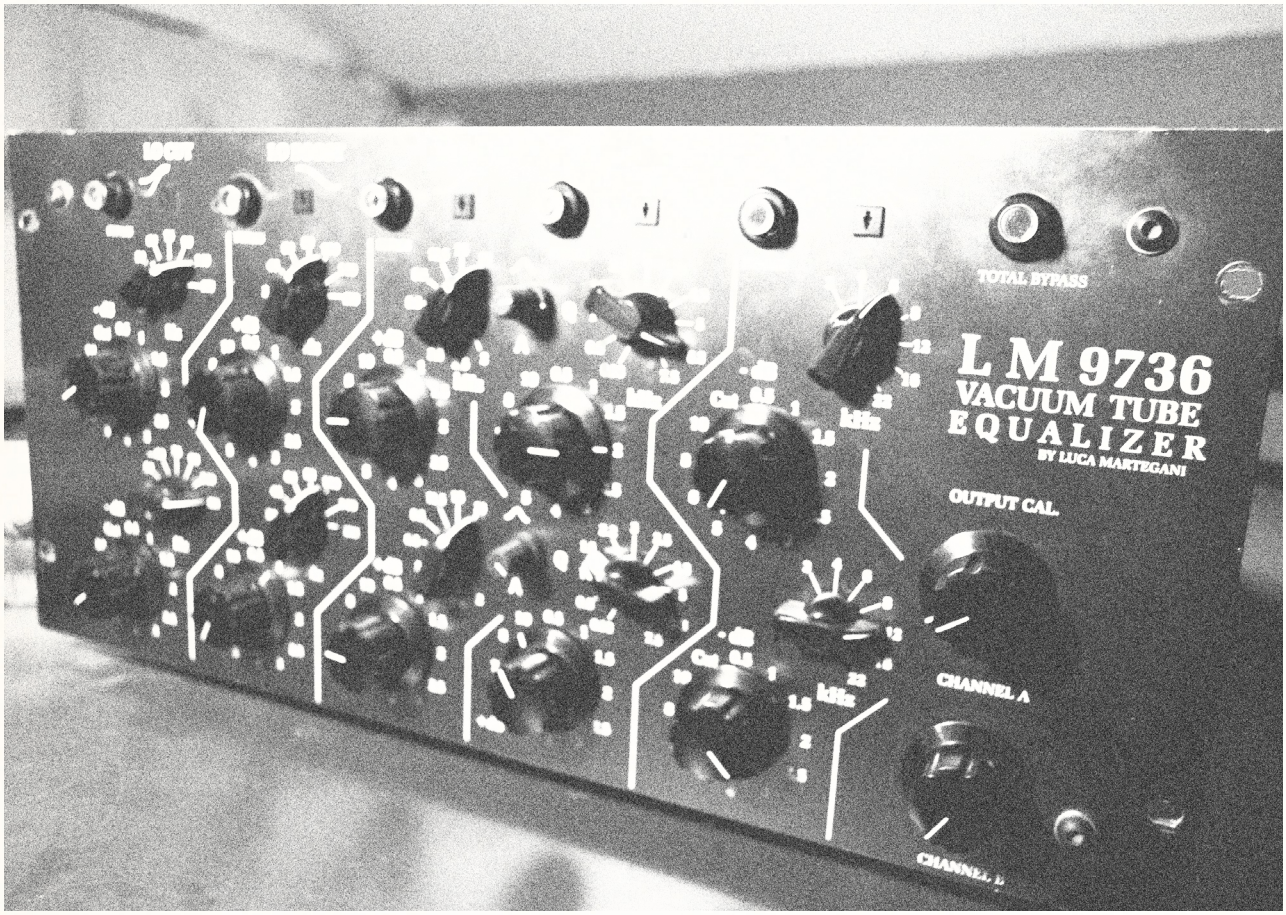
OUTPUT

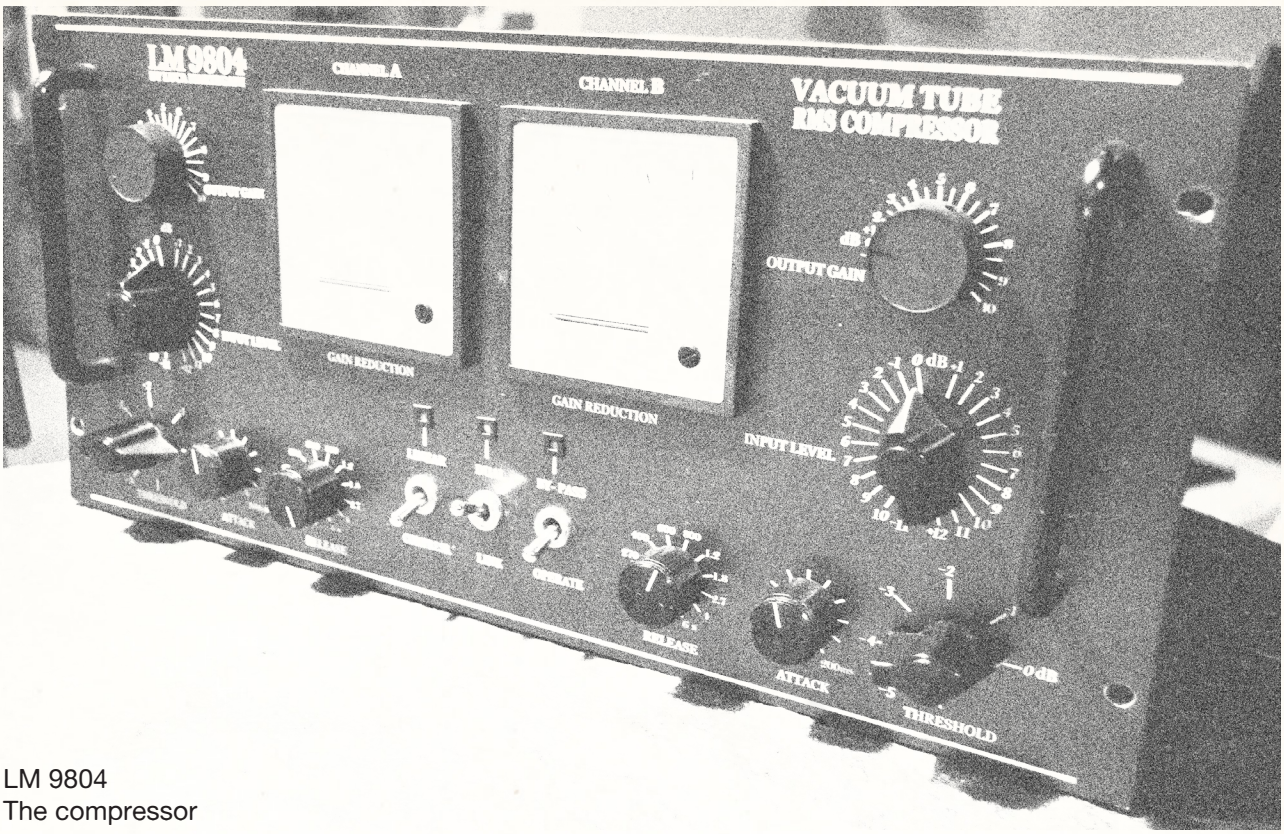
Gain control sets the OUTPUT LEVEL of the channel of the plug-in. You have a -24dB/+24dB.



Luca Martegani
The hardware creator

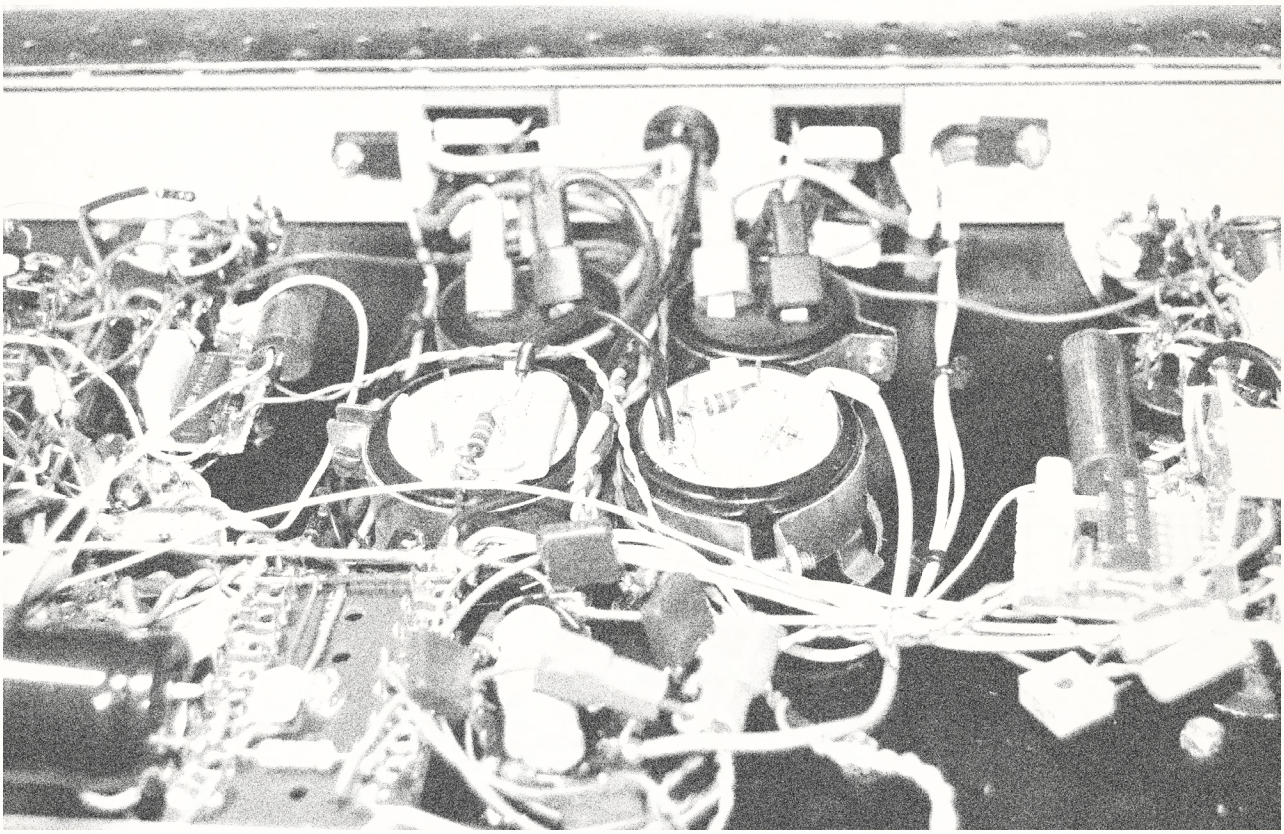
LM 9736
The two-channels equalizer

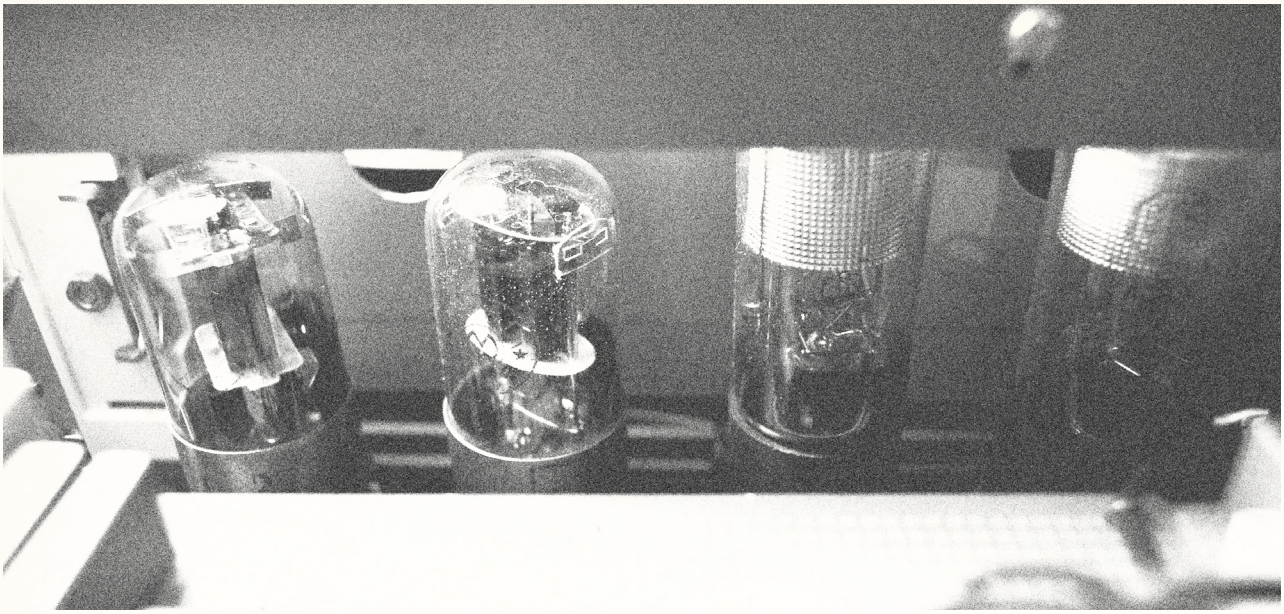




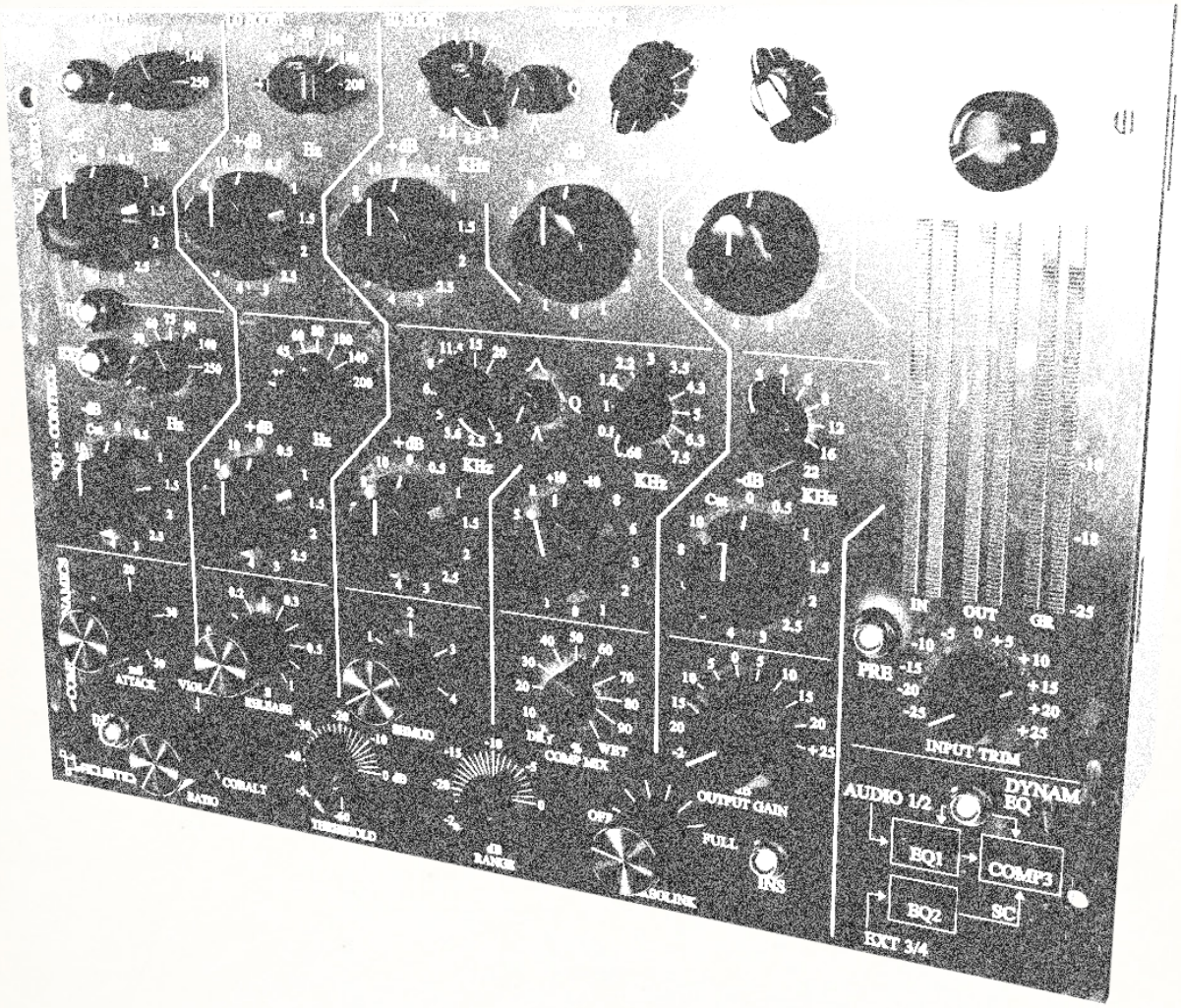
LM 9804
The compressor

The internal circuit of the equalizer



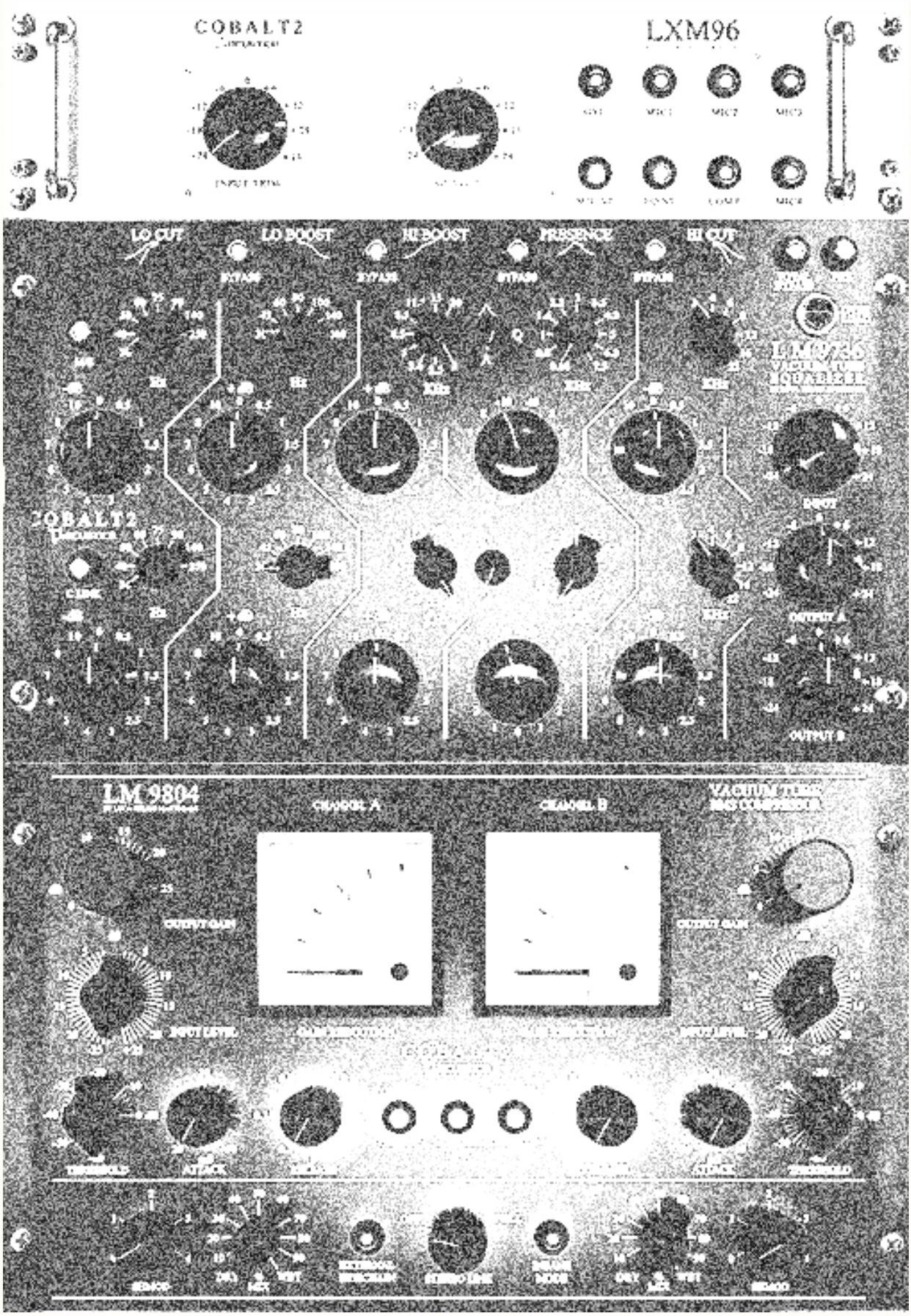


The internal tubes of the equalizer



Cobalt Dynamic Equalizer
Remixed from the two hardware units

Cobalt preamps, equalizer and compressor



Help-desk and technical support service

If you need help from us, please go directly to the support section on our official website. Before opening a new help-desk case, consider checking the solutions on our knowledge base in the website support area. Normally, most of your questions have already been answered and are available online to anyone.

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