

USER MANUAL

COMP TUBE-STA

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Special Thanks

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Thank you for purchasing Arturia's Comp Tube-STA!

This manual covers the features and operation of the Comp Tube-STA.

Be sure to register your software as soon as possible! When you purchased Comp Tube-STA you were sent a serial number and an unlock code by e-mail. These are required during the online registration process.

Special Messages

Specifications Subject to Change:

The information contained in this manual is believed to be correct at the time of printing. However, Arturia reserves the right to change or modify any of the specifications or features without notice or obligation.

IMPORTANT:

The software, when used in combination with an amplifier, headphones or speakers, may be able to produce sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high level or at a level that is uncomfortable.

If you encounter any hearing loss or ringing in the ears, you should consult an audiologist.

Introduction

Congratulations on your purchase of Arturia's Comp Tube-STA

Since the late 1990s, Arturia has received acclaim from players and reviewers alike for designing state-of-the-art software emulations of the venerable analog synthesizers from the 1960s to the 1980s. From the Modular V, back in 2004, to Origin, a modular system that was introduced in 2010, to the Matrix 12 V (2015), the Synclavier V (2016), and most recently the Buchla Easel V, the DX7 V and, last but not the least, Pigments, our first original software synthesizer, Arturia's passion for synthesizers and sonic purity has given demanding musicians the best software instruments for professional audio production.

Arturia also has a growing expertise in the audio field, and in 2017 launched the [AudioFuse](#), a pro studio quality audio interface that features two proprietary DiscretePRO® microphone preamplifiers and a set of top-notch AD/DA converters. This line was recently expanded with the launch of the [AudioFuse Studio](#) and the [AudioFuse 8Pre](#). The audio software was another field where Arturia already made its entrance, launching in 2018 the first Arturia effects bundle: 3 PreAmps You'll Actually Use, which included the [1973-Pre](#), the [TridA-Pre](#), and the [V76-Pre](#).

With the launching of a new effects bundle, Arturia consolidates its position as a leader in the audio software, as well as the audio hardware market.

The ARTURIA Comp Tube-STA is one of the three emulations included in the current bundle, and benefits of over a decade of experience in recreating the most iconic tools of the past.

ARTURIA has a passion for excellence and accuracy. This led us to conduct an extensive analysis of every aspect of the Retro Instruments STA-Level hardware and its electrical circuits. The Retro Instruments STA-Level is a modern version of the classic Gates STA-Level tube compressor that was commonly used in the USA broadcast industry in the fifties and sixties. Not only have we faithfully modeled the sound and behavior of this unique compressor, we have added many features that were unimaginable in the days the original Gates STA-Level was being manufactured.

Comp Tube-STA runs as a plug-in in all major formats inside your DAW.

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The Arturia team

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1. WELCOME

1.1. What is a compressor?

A compressor is an audio processing device that has been used by recording, mixing and broadcast engineers for many decades to reduce the dynamic range of signals. This device evens out ("compresses") the level differences between the loudest and quietest sections of a recording to avoid excessive peaks. By bringing down the loudest parts of a recording, compressors allow engineers to boost the entire processed signal without worrying about the loudest parts overloading a recording. The net result is a higher average loudness level in a recording.

There are many reasons to use a compressor. For example, it can be used to protect a recording (and our ears) from excessive peaks that can sound distorted and can potentially damage our speakers (or our hearing). Also, reducing the loudest parts of a recording can make for a far more pleasing listening experience. This is because listeners can turn up the music and hear the softer parts without fear of earache when the louder parts come. This is especially true in music with dynamic instruments that can produce sudden loud peaks like a drum kit or the human voice. Compressors can even be used creatively, to shape and contour sounds in pleasing ways. This flexibility is what makes compressors one of the most popular tools in a recording engineer's toolkit.



Main Compressor controls in STA Tube Compressor

1.2. What are the different types of compressors?

Historically, there have been several major categories of compressors, among them Tube, FET and VCA. Each of these has a different sonic signature due to the electronics used to create the compression effect. Arturia has chosen to emulate a top model from each of the above categories to make sure that users have all the sonic options at their fingertips.

Tube compressors are the oldest type of compressors. A tube compressor works by re-biasing the tube to control the gain reduction. This usually causes a warm smoothness and slight harmonic distortion.

Because of the way they work, tube compressors usually present a slower response both in the attack as in the release stage. They are also program dependent, meaning that they compress more when the signal increases. Finally, they exhibit a distinct coloration and saturation, which leads to their sound being described sometimes as “warm”, “smooth”, or “creamy”. This makes them particularly suitable to be used in master tracks, where they may act as a gluing factor on the final sound. This is because transients tend to be handled in a way generally classified as “musical”. Another very sought-after characteristic of this type of compressors is their capacity to handle generous amounts of gain reduction before unwanted artifacts appear in the audio.

1.3. Where are compressors commonly used?

Compressors are flexible studio tools and are used everyday to...

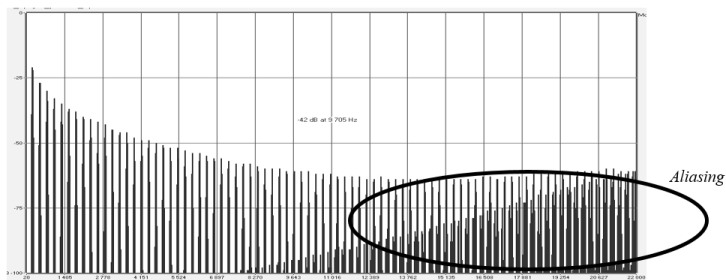
- Reduce overly dynamic audio sources to help them “sit” better in a mix.
- To raise the average loudness level of a recording so that the quiet parts are easier to hear.
- To “glue” a final stereo mix together and add cohesion to all the separate tracks.
- To sculpt the attack transients of percussive sounds to make them more (or less) “present” and “punchy”.
- To lengthen the release time of percussive acoustic instruments (like piano or guitar) making them sound bigger.
- To even out the varying intensity of the individual drum hits or guitar chords. When pushed to extreme settings on guitars, this creates the famous “wall-of-sound” effect heard in rock music.
- To “limit” a signal and ensure that it never exceeds a set loudness limit.



Tube-STA set to work as a master bus compressor

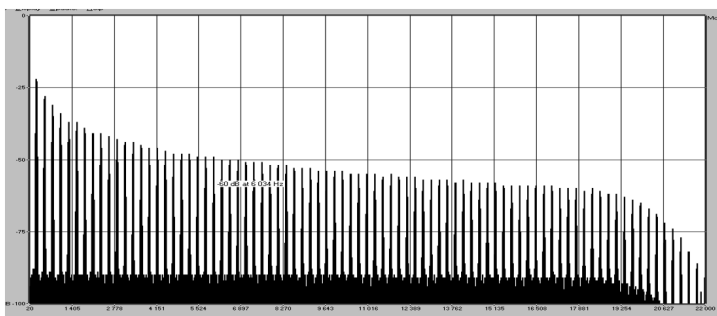
1.4. Arturia's secret ingredient: TAE®

TAE® (True Analog Emulation) is Arturia's outstanding technology dedicated to the digital reproduction of analogue circuits used in vintage synthesizers.



Linear Frequency spectrum of a well known software synthesizer

TAE®'s software algorithms result in spot-on emulation of analogue hardware. This is why Comp Tube-STA offers an unparalleled quality of sound, as do all of Arturia's virtual synthesizers and plug-ins.



Linear frequency spectrum of an oscillator modeled with TAE®

1.5. Arturia's Comp Tube-STA plug-in

Our goal was to accurately model the sound of a famous vintage tube-based compressor unit. This tube compressor ruled the radio sound in the fifties and the sixties. Its primary role was to limit automatically the dynamic of the audio prior to broadcasting it. It was this characteristic that allowed it to also be introduced in the studios during the sixties.

Of course, being an Arturia product, it was not enough to simply model the vintage hardware and call it done. We wanted to push the envelope, so we also added some tasteful new features that honor the original while making it more useful in a modern context.



Arturia Comp Tube-STA

In terms of controls, usually tube compressors have very few of them, since most of the things happening in there are dependent on the audio that feeds the device. In this unit, we have a controller for the Input Level, and controllers for the Mode and the Recovery Mode. These last ones are based on a more modern approach of that vintage model, and are there to modify the reaction time of the device. We may think of them as the tube compressor counterparts to the Attack and Release controls

On the center, dominating the plug-in control panel, we have a big level (VU meter) indicator. This can measure the Input level, the Output level, or the Gain Reduction level. On the right side of the Control Panel, we have the Output control, another prominent knob which pairs with the Input Control (the two are linked by default).

Finally, there is also a "Mix" knob that wasn't found on the original hardware. This is an Arturia addition that allows to set a blend between the compressed and uncompressed sound, and opens up a lot of creative sound-sweetening possibilities.

Besides the classic features and small improvements mentioned above, Arturia also included several more substantial features. These appear in a separate "Advanced" panel that opens below the main panel. Here, you will find things like Advanced Side-Chain Control, a single-band EQ for the side-chain signal with High-Pass and Low-Pass filters, and a button that enables listening the side-chain signal alone. We will cover all this in depth later in this guide.

Now, it's time to check how it sounds. Let's go!

2. ACTIVATION AND FIRST START

The Arturia Comp Tube-STA plug-in works on computers equipped with Windows 7 or later and macOS 10.10 or later. You can use the Comp Tube-STA plug-in as an Audio Unit, AAX, VST2 or VST3 plug-in (64-bit only).



2.1. Activate the Arturia Comp Tube-STA license

Once the software has been installed, the next step should be to activate your license, so that you can use it without limitations.

This is a simple process that involves a different software program: the Arturia Software Center.

2.1.1. The Arturia Software Center (ASC)

If you have not already installed the ASC, go to this web page: [Arturia Updates & Manuals](#).

Look for the Arturia Software Center at the top of the page, and then download the version of the installer that you need for your system (macOS or Windows).

Follow the installation instructions and then:

- Launch the Arturia Software Center (ASC)
- Log into your Arturia account
- Scroll down to the My Products section of the ASC
- Click the Activate button

That's all there is to it!

3. COMP TUBE-STA OVERVIEW

3.1. Working with plug-ins

Comp Tube-STA comes in VST2, VST3, AU and AAX plug-in formats for use in all major digital audio workstations (DAW) including Live, Logic, Cubase, Pro Tools and others. Unlike a hardware compressor, you can load as many instances of Comp Tube-STA as you find useful. Comp Tube-STA has two other big advantages over hardware:

- You can automate numerous parameters using your DAW's automation system;
- Your settings and current plug-in state will become recorded in your project, and you can pick up exactly where you left off the next time you open it.

3.2. When to use the Comp Tube-STA

Tube compressors take advantage of the characteristics of the vacuum tubes to achieve compression. In fact, a tube reacts to incoming audio in a very peculiar way. As the signal feeding the tubes increases, the actual voltage sent to the tubes decreases, and consequently causes a reduction of the overall level. The stronger the audio level, the more it reduces the gain. The tubes are the actual engine that drives compression. Since this evolves in a very progressive way, tube compressors achieve a very sweet compression curve.



The Main Tube-STA Compressor Controls

We don't have a control for the threshold, neither do we have a control for the compression ratio. These units don't use them. Everything is program dependent, meaning that the audio that's being fed to the unit will control all the aspects of compression.

These units have strong points and limitation. They are good at handling transients musically, because of their relatively slow reaction, but if we are seeking for a more "punchy" sound, it may be virtually impossible to achieve that. That's why having circuits that somehow allow to speed-up the reaction time of this type of compressors may be crucial.

Tube compressors are mostly famous for being able to handle incredible amounts of gain reduction without audible artifacts. And they benefit from the qualities usually associated with tubes: Slight but pleasing harmonic distortion and a warmth and smoothness that is characteristic of any tube driven audio equipment, and difficult to achieve with other compressor designs.

3.3. Advanced Mode

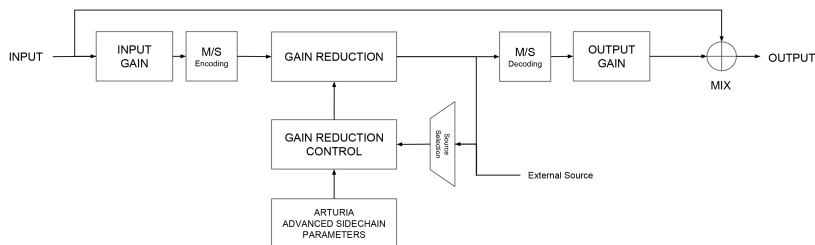
Comp Tube-STA has some advanced features that can be revealed by clicking the Advanced Mode button (the double arrow in the Upper Toolbar). This opens a second panel directly below the main panel where you will find things like Advanced Side Chain Control, Time Warp, a single band Equalizer (with additional High and Low-Pass Filters), a Compression Range control, and a Listen button. None of these features were available on the original hardware but we have included them here as we feel they are very useful for modern music makers.

Please note that, when the Advanced Mode parameters have been changed (have values different than the default ones) and that panel is closed, the double arrow button has a point next to it, indicating there are parameters edited in that panel.

We will take a detailed look at all of these things in the [Control Panel chapter \[p.13\]](#).

3.4. Understanding the Comp Tube-STA Signal Flow

The Comp Tube-STA is what's called a "feedback compressor". This means that the detection signal comes already from the Gain Reduction circuit. The signal flow is a little more complex than what could be expected, due to the Advanced Mode features, especially those related to the Advanced Side-Chain Control. This allows for several special detection modes, some of them taking advantage of Mid/Side signal encoding.



As the signal enters the plug-in, it is immediately split in two paths:

1. The "main" signal path. The signal on this path is compressed and processed.
2. The "bypass" path. The signal on this path is sent without any processing to a mixer just before the Tube-STA's output. The "Mix" knob on the front panel lets you blend this unprocessed signal with the compressed signal.

If you are using Comp Tube-STA on a stereo track, the first stop on the main signal path is the optional M/S encoder. M/S stands for "Mid/Side" and is a way of processing audio where only the "Mid" channel (the center of the stereo image) or "side" channel (the edges of the stereo field) is processed. This is described in detail [later \[p.23\]](#) in the manual. Note that the Detection Mode control knob is only available on stereo signals and is bypassed when using a mono version of the plug-in.

i M/S requires a stereo signal to work. If Tube-STA is instantiated on a mono track, M/S encoding and decoding stages are bypassed and the Detection Mode control knob is hidden in the advanced panel.

After this stage, the signal is routed on to the emulated tube-based gain reduction circuitry. This is the heart of the circuit and this is where the actual compression takes place.

If you are working with a stereo signal, the next stage is the M/S decoding block.

After passing through the Gain Reduction circuit, the signal is split into two more paths:

1. The main path goes on to the M/S decoding block. This is where your signal is converted back into a regular stereo signal.
2. The second path (known as the "feedback" path) is sent back through a Source Selector switch to the Gain Reduction Control circuitry. The Source Selector also receives the external side-chain signal.

The Gain Reduction Control module receives the detection signal (selected from the internal feedback or the external side-chain signal) and also signals from the Advanced Side-Chain Parameters, in order to determine how the Gain Reduction circuit will work on the main signal path.

After the M/S decoding block, the main signal (processed audio) proceeds to the Output Gain block. Make-up gain is applied to compensate for any reduction in volume that may have happened at the Gain Reduction stage.

Finally, the main signal reaches the Mix stage, where it can be mixed with the original (bypassed) audio, before sending everything to the plug-in output.

This is the complete signal flow of the Comp Tube-STA. It may seem a bit overwhelming, but spend some time with it and we're sure you'll gain a deep understanding of how the compressor works.

3.5. Getting hands-on with Comp Tube-STA

3.5.1. Compression Basics

To get an idea of Comp Tube-STA's capabilities, we suggest you try the following:

- Load a stereo clip into an audio track in your DAW (drum or vocal tracks are ideal for this);
- Load an instance of Comp Tube-STA as an insert in that track. Open the Comp Tube-STA window;
- Ensure the Default preset is loaded. This will mean that all settings are positioned to provide a neutral sound;
- Begin playback. The clip should sound exactly as it was recorded. You can verify this by clicking the Bypass button in the lower Toolbar and comparing what you hear (they should sound the same);
- Now let's try some processing, just to check the main features of the Comp Tube-STA. First of all, raise the Input. You'll notice that the Output will turn to the opposite side. This is because they are linked;
- Turn the Output knob to the right. This will cause the final gain to raise, without affecting the Input. Link mode allow you to try different compression amounts, without fear blowing your speakers. Tube compressors are highly tolerant, and this way you can later define the optimum final gain level, after setting up the compression;
- Observe what happens on the VU meter: The needle started to move backwards. This means that compression is being applied to the peaks of your audio. You may check the amount of Gain Reduction quickly by turning the Power switch Off and On. When it is Off, compression circuit is bypassed, and you'll hear the original uncompressed audio;
- Now check Mode. By default it is positioned in Single, which achieves longer attack and release times (still dependent on the audio that feeds the circuit). Double is closer to the way the original unit (a very old vintage model) worked. Triple will make attack and release faster;



Comp Tube-STA used in a drum track

- Once you decide which mode to use, it's time to adjust the Recovery Time. You'll never reach really fast releases, but by turning the control to the left you can have faster recovering times nevertheless;
- Now that you achieved a good compressed sound, it's time to use the Output, to compensate for the volume loss due to compression. Always compare with the original audio, by turning Off and On the Power switch.

3.5.2. More advanced compression methods

Now that you have a feeling for the Comp Tube-STA basics, let's continue on and go a little deeper.

- Click the double downward facing arrows to open the "Advanced" mode;
- Now, let's try the Advanced Side-Chain Control. We will not use an external signal, but will simply try out the different Detection Mode settings. By default, the control is positioned in the *Linked* position, but you may try other positions, while the track is playing. Notice how the sound changes, sometimes drastically, especially when you choose the different Mid/Side positions. This effect can produce some fantastic results when used on stereo tracks;



Remember that the Detection Mode control knob is only visible when working in stereo. If you are not seeing that option, it is because you are working on a mono signal.

- Now click the Listen button and apply some EQ to the analysis signal using the controls in the Band Equalizer section. Don't be afraid of extreme settings here! For example, if the original audio has a strong bass component, the bass energy can have a major influence on the compressor as it works. By attenuating some of the bass, you may end up with a better compressed sound;
- When you are done adjusting the Side-Chain EQ, switch off the Listen button and try switching EQ on and off as the track plays. You should notice that the EQ may have a big influence in the way compression work, even though it is only being applied to the detection path of the signal.

4. COMP TUBE-STA CONTROL PANEL

The Comp Tube-STA plug-in can be used in Mono or Stereo channels.

The Mono configuration is automatically loaded when we use the plug-in with mono tracks. When inserted in stereo tracks, the Stereo configuration is automatically loaded as well.

4.1. Channel Configuration (Mono/Stereo)

The plug-in has different configurations for Mono and Stereo versions. The differences between the two versions consist in the presence of certain additional features in the stereo version, which are located in the Advanced Mode Control Panel. These are related with the Advanced Side-Chain Control section. When inserted in mono channels, the plug-in only shows the Source controls in that section (Mode Selection control knob is removed).

The Advanced Side-Chain Control section is where we control how the plug-in performs detection to trigger compression. In Mono mode we can simply select the Source, choosing between Internal and External, while in Stereo mode we have also a selector that changes how detection is performed and how it affects compression.



Comp Tube-STA inserted in a mono track. Notice the absence of the Detection Mode selection control

We will look deeper into this when we reach the [Advanced Side-Chain Control \[p.21\]](#) entry.

4.2. Main Control Panel

The Comp Tube-STA Graphical User Interface offers just a few controls, since tube-based compressors had very few controls too. Those are located in the Main Control Panel, which is the one that opens by default when we launch the plug-in.

Besides these, Arturia included several advanced features, not present in the original unit, and some even unimaginable when it was launched. These new features are located in a second panel, the Advanced Mode Control Panel, that opens when we click the double arrow button (the Advanced Mode button) in the Upper Toolbar.

As was the case with the first effects bundle, this Arturia plug-in bundle also has an Upper Toolbar and a Lower Toolbar. The Lower Toolbar is very important for the use of the Compressors, as it displays the parameter name and current value when we point the mouse to a parameter control, allows to calibrate the VU Meter, allows to put the plug-in in Bypass (we also have a bypass control in the Main Control Panel but it works in a different way), and measures CPU consumption.

Of course, the Upper Toolbar is very important as well, since it is where we access the main menus, perform several important tasks, like load and save presets and banks of presets, and where we can select a preset and see the name of the current preset in use. The toolbars and their features are covered in detail in the the [User Interface chapter \[p.26\]](#).

We will now have a look at all the controls available, explaining what they do, what are their ranges, and how to interpret the numbers.



Comp Tube-STA Main Control Panel

Beware that each time we click a control (knob or button), the Lower Toolbar displays the parameter name and the current parameter value. This changes every time we move that control, updating the parameter value in real time. These values aren't always of the same type.

We may also have tips displayed (if the light bulb in the Upper Toolbar is lit). In this case, the Lower Toolbar also displays a short description of each parameter next to its value, and there is an area highlighted in the VU Meter that suggests the ideal range of gain reduction the original preset should be used on to achieve the best results.

Now, let's take a look at each control in Main Control Panel:

4.2.1. Link Switch

The Link switch connects Output control to the Input control. It is a toggle switch, which is On by default. The control is labeled with a picture of a chain.

When Link is On, each time we move the Input control, the Output control moves in the opposite direction. Since the compressor is program dependent, we may be tempted to drive the signal really hot. This way we can drive Input (and compression) like crazy without risking overloading the audio chain.

We can always move the Output independently, since the link only works from the Input to the Output, and not the other way. Therefore, after we find the ideal Input level to achieve the desired compression, we can then check for the right Output gain without changing the Input.

If we turn Off this control, both Input and Output can be changed independently of each other.

4.2.2. Input

This is the main control of the unit. It has the form of a big knob. It controls simultaneously the input gain and the compression amount (since both things are connected). The more gain is applied, the higher the compression ratio achieved.

Input range goes from 0 dB up to +48 dB. By default, it is positioned at 0 dB.

This is the parameter which defines how much compression (level reduction) is applied to the audio. As we have been saying, there is no threshold (basically, compressor starts as soon as we raise the input) and compression ratio varies progressively according to the kind of audio input.

We can easily monitor the amount of compression (gain reduction) applied to the audio by looking at the VU Meter. Don't fear having the needle travel way low into the negative range.



Comp Tube-STA Input

We can drive audio really hot with this controller, and still get no audible audio artifacts. However, a good idea may be to define the Input level so that the needle stays around +1 or +2 dB at the average peak level, and then define the Output level so that it matches more or less the same level.

If we now take a look at the Gain Reduction (turn the Meter selector to that position) we may see that the needle is pointing almost at the extreme left. Yet audio doesn't present any audible artifacts.



⚙️ Input simultaneously controls the input gain and the compressor ratio. There is no threshold. Compression ratio is progressive. We have to compensate gain reduction with the Output control.

Usually, it is better to start with the Input and Output linked, while raising the Input, watching the VU Meter while we do this. When we reach an ideal Input level, we then change the VU Meter to the Output position, and raise the Output level to match the original Input. Then we may go from there to adjust to an optimal Output level, if necessary.

4.2.3. Mode (Compression Mode)

Compression Mode is a controller that works in conjunction with Recovery Time. Both are meant to control the way the unit reacts to incoming audio, modifying response times. This controller only appeared in a later hardware replica, which was the one modeled by Arturia. It didn't exist in the original unit.

It is a switch control, with three positions, each one reconfiguring the attack and release responses of the compressor. The control works by changing them both (the reaction time and the recovery time).

First option (and the one selected by default) is Single Mode. This mode expands program dependent audio transients for a very slow response, allowing faster attack transients to bypass compression, for the maximum transient punch.

Double Mode is a compromise. It is also the configuration that comes closer to the program dependent response achieved in the original tube-based compressor.

Triple Mode combines faster attack and release, although the release is still quite slow. This combination of faster attack and yet still slow release times gives the unit a behavior closer to another famous tube compressor, the legendary Fairchild.



*Comp Tube-STA
Compression Mode
Control*

By default, the selected position is Single, the slower one. It is strongly advised that you try extensively all options, especially in conjunction with the Recovery Time control, to achieve the best results.

4.2.4. Recovery Time

Recovery Time changes the time the unit takes to get back to a neutral state (where audio passes without changes). Even at the fastest position, it keeps reacting somehow slowly. At the slowest position, recovery can take a really long time.



Recovery Time control

By default, the Release time is positioned at the middle position (4 seconds). Faster position is 2 seconds, while the Slower position goes up to 8 seconds. This is fairly slow.

These values may be affected by the Compression Mode control

4.2.5. VU Meter

The VU Meter is very important to give us visual references. It doesn't replace our ears, but certainly gives them some help. In the original, the meter already have several modes.

In the Compressor collection, Arturia improved the Meters by allowing the user to choose to monitor the Input Level, the Output Level or the Gain Change (Reduction) Level. By default, they are set to Gain Change. Besides this, we also have the possibility to calibrate the VU Meter sensitivity using the tool in the Lower Toolbar. We have three options: -18 dB, -14 dB, and -8 dB. By default, the selected sensitivity is -18 dB. This means that Meter will display 0 VU when it is fed with a peak level of -18 dBFS.

When in Gain Change Mode (the default mode) the Meter is calibrated so it shows 0 dB as rest position (no Gain Reduction). This reproduces the behavior of the hardware unit.



Comp Tube-STA Meter, showing the Gain Change. Notice the letter L in the lower Left corner

Since the VU Meter only measures one channel, Left channel is selected by default (indicated by the L letter in the lower left corner of the Meter). If we change the Detection Mode to one of the Mid/Side modes, the measured channel changes automatically to Middle (the letter in the lower left corner changes to an M).

If we click over that letter, we can change the selected channel to Right channel (if Detection Mode is in one of the Left/Right modes), or to Side channel (if Detection Mode is in one of the Mid/Side modes).



VU Meter channel selector. In the Lower Toolbar we can see the calibration set to -18 dB

Another handy functionality built in the VU Meter by Arturia is a clipping warning indicator. Every time audio reaches clipping, the VU Meter flashes with a red background.

The VU Meter mode selector is positioned at the right of the meter, below the Power switch. Sensitivity may be calibrated in the Lower Toolbar.

4.2.6. Power (Switch)

This switch, when turned Off, makes the audio bypass the compression circuit. We can still monitor it visually through the VU Meter, though. This is useful to quickly turn Off compression while listening to audio, this way comparing audibly and visually both signals.



The Power Switch

It differs from the button in the Lower Toolbar in the way that one turns Off the plug-in completely (the GUI changes color, becoming darker). The Power switch only bypasses the compression circuit, but the plug-in remains active. By default, the switch is On (compression is active).

4.2.7. Output

This is where we compensate for the gain loss due to compression. Because, by nature, compressors reduce the overall volume level, we need to raise the final output volume, in order to compensate for that reduction.

Range goes from 0 to +48 dB (same range as Input). By default, the Output Gain is set to +48 dB, to compensate Input being placed at 0 dB.



The Output control knob

Output is, by default, linked to Input. This means that it will turn left (down) as soon as we turn up the Input. This is handy to prevent excessive gain. Even linked, we can always move the Output knob individually. Linking only works from Input to Output, not the other way. If it is still linked, after we move Output alone, it will keep moving together with Input, next time we move that control, but now starting from the new position.

If it reaches one of the extreme positions (maximum or minimum) while we are moving Input, it will stay there, and will restart moving when we will move Input in the opposite direction.

Clicking the Link button will release Output.

4.2.8. Mix

A technique often used in production is what's called Parallel Compression. This is useful to allow compression of the audio signal while also preserving intact all the transient characteristics of the audio. The basic concept is having a way to preserve the original audio, while also processing it through compression. For this, we need to have a channel that "passes the audio through", while on another channel we have the audio sent to the compression path.

This is what can be achieved with the Mix parameter, an add-on introduced by Arturia in all the plug-ins of the Compressor Bundle.

The Mix knob is set by default to Comp, which means the processed signal only. We can turn it all the way down to Dry (fully uncompressed, original audio) or anything in between. Values are displayed in percentage, where 100% is fully processed signal, and 0% is fully unprocessed audio.



4.3. Advanced Mode Control Panel

The Advanced Mode Control Panel is accessed by clicking the Advanced Mode (double arrow) button in the Upper Toolbar. This extra Control Panel is common to all three Compressors, and with very similar features. These are very important add-ons, that bring a lot of extra power and flexibility to the Compressors.



Comp Tube-STA Advanced Mode Control Panel

4.3.1. Advanced Side-Chain Control

Side-Chain is the signal used to control the compression applied to the audio. It can be that very same audio (most of the time it's what happens), but it can also be an external signal, coming from another track.

This external signal is what is usually meant when we commonly talk about side-chain. This may be used to achieve control of separated instruments (for example balancing the mix between the kick drum and the bass), or to achieve (another) special effect called 'pumping'.

For this, we need to be able to feed an external signal into the signal path (usually another mix track), to be used as source by the detection path, and this way be able to trigger compression.

The original hardware only allowed the internal signal to be used as side-chain (detection). However, in Comp Tube-STA, we have both Internal and External sources. This is controlled in a section of the Advanced Mode Control Panel called Advanced Side-Chain Control.

4.3.1.1. Source

This is the first part, where we select what source will be used to feed the Threshold and trigger the Compression circuit. As default, Internal is selected. This is the usual way, where it's the signal to be compressed that is going to be analyzed and will trigger Compression.

External is the second option. In this option, an external signal is fed into the detection circuit. This is the usual external Side-Chain signal. When this button is pressed, the external signal is the one used for detection.

The source selector is a toggle switch. Each time we click it changes position. As it is in the Internal position by default, clicking it will change source to External. Clicking again will change source back to Internal.

Since compression ratio is controlled by Input when source is Internal, we need another Input level control when we are using an external signal. And we have it.

It is located below the Source switch, and is labeled SC Gain. By default, this is positioned at 0 dB, which means that the external signal will feed compression at its original power. We can change it in a range that goes from -24 dB up to +24 dB, as it happens with the main Input control.

4.3.1.2. Detection Mode

The Detection Mode selection control appears only when the plug-in is inserted in a stereo track/bus. When inserted in mono tracks, Comp Tube-STA doesn't show these controls (since they cannot operate with mono signals).

This is where things start to really become "advanced" in the Advanced Side-Chain section. When we described the [Signal Flow \[p.9\]](#) of the unit, we mentioned that the first operation performed in the main signal is encoding the audio signal in Mid/Side mode. This would seem strange, considering that none of the standard controls in the Comp Tube-STA was ready to use a M/S signal.

Well, here lies the reason for that Mid/Side encoding, and where we can take advantage of it. [Mid/Side mode \[p.23\]](#) is a special audio encoding mode where the Mid channel is the center of a stereo image, while the Side channel represents the edges of that same image.

In this advanced Detection Mode we have three options for Stereo (Left/Right) mode, and two other options for Mid/Side mode - now you can see why this is really "advanced". For Stereo (Left/Right) we have Linked, Dual, and Reversed options. For Mid/Side, we have Side Only, and Mid Only options.



Comp Tube-STA Advanced Side-Chain Control Section (as it appears in stereo tracks)

The default option is Linked (Left/Right mode). This works with the Stereo Left/Right signal, and detection is performed using the max level between both channels, applying the same compression to both channels. This is the standard way and how a compressor should be used when dealing with stereo signals.

Next option is Dual. In this option, the Stereo signal is treated as dual mono channels. Detection is performed independently in Left and Right channels and compression is applied accordingly to each channel also. This may be good to balance the volume between the two channels, when they are very different, but may affect perceived channel separation.

Reversed. Again, both channels are treated independently (dual mono) for detection and compression. However, this time compression is applied to the channel opposite to the one where detection is performed. Therefore, Left channel detection will trigger Right channel compression and vice-versa. Again, this may be useful to balance the mix between two channels which are very different, but this time allowing panned elements to "answer" to each other.

Mid/Side mode has two options. Mid Only is the first one. Detection and compression will be performed only on the Mid Channel. This may be useful to increase the width and presence of sided elements, like the room ambiance of drum overhead tracks (because the side elements will be left alone).

Side Only is the second option. In this one, only the Side Channel is used for detection and compression. This will have the opposite effect of the previous option, increasing the presence of the centered elements of the mix (making it more mono compatible).



ⓘ: Advanced Detection Mode needs two channels. Therefore, this control is absent (it doesn't exist) when the plug-in is instantiated in Mono tracks.

4.3.1.3. Mid/Side Mode

Mid/Side mode is a highly effective way of making adjustments to the spacialization of a mix or master. This is done by analyzing phase coherence between left and right channels and letting the processor work only on the "middle" or "edges" of a stereo field, instead of the entire f field.

In Mid/Side, the Mid channel is the center of the stereo image, while the Side channel is the edges of that same image.

When we make adjustments in the Mid channel, this is perceived in the centered image of the stereo spectrum (we can think of it as the mono compatible image). For example, a boost in the Mid channel will make the sound more "mono" (both channels will sound more equal).

On the other hand, when we make adjustments in the Side channel, this will have an impact on the width of the stereo image, and a boost in this channel will be perceived as a more spacious (wider) stereo sound.

4.3.2. Side-Chain Equalizer

Modern compressors offer the possibility to sculpt the sound by manipulating some frequencies (boost/cut high frequencies, for example) prior to detection. This way, we can avoid some compression artifacts these frequencies could cause.

To do this, we need to route the sound through an EQ before it enters the detection circuit. This is why the EQ is positioned first in the detection path, right after the sound splits between main signal and detection signal.

The EQ included in these compressors is a very simple EQ (semi-parametric), with a single band featuring adjustable Gain and Frequency, complemented with a Low-Pass Filter and a High-Pass Filter. This is exactly what's needed for the intended role.



The Comp Tube-STA Equalizer turned On

The High Pass Filter has a fixed slope of -12dB/Octave, and a selectable continuous frequency ranging from 20 Hz to 1.2 kHz. By default it is Off (the knob has an extra position at the far left that turns the filter Off).

The Low Pass Filter has also a fixed slope of -12dB/Octave, and a selectable continuous frequency ranging from 3 kHz to 20 kHz; By default it is also Off (the knob has an extra position at the far right that turns the filter Off).

The EQ band has two controls: one for the Frequency and another for the Gain (frequency range is fixed). Frequency control goes from 30 Hz to 16 kHz, and defaults to around 700 Hz. Gain goes from -12 dB to +12 dB, and defaults to 0. The bandwidth is variable, and dependent on the gain applied - the more gain is applied, the narrower will become the bandwidth.

The entire EQ section can be turned On or Off by clicking the switch above the main controls. When turned On, the small red "LED" light next to the switch will be lighted. By default, it is Off.

i If you set the EQ to frequencies in the region between 4 kHz and 8 kHz, you can make the unit act like a de-esser.

4.3.3. Listen

This button enables listening to the Side-Chain signal. It is a good way to listen to the effect induced when we apply some EQ to the detection signal, and to determine how compression will be applied when some frequencies are boosted or cut due to equalization of the detection signal.



*Comp Tube-STA Listen
switch*

5. USER INTERFACE

The Comp Tube-STA User Interface has a Main Control Panel, an Advanced Mode Control Panel and toolbars in the top and bottom of the window.

It is still a very simple User Interface. That will always be the main focus of every Arturia product: to unleash your creativity while remaining easy to use.

We already look at the control panels. Now, it's time to look at the toolbars.

5.1. The Upper Toolbar

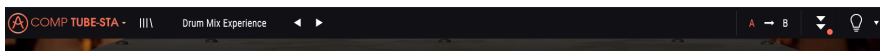
The plug-in GUI (Graphical User Interface) has the usual Arturia toolbar that runs across the top edge, with the Arturia logo / plug-in name on the left (the colored part), followed by the Library button and the Preset name, with arrows to navigate through the different presets stored in the library.

Then, we have the right part of the toolbar, which presents a very important new feature - an A/B button.

After this, we have the button that gives access to the Advanced Mode control panel (a double arrow). This double arrow button is added with a point next to it every time the Advanced Mode is in action (when there are parameters set to values different than the default ones) and that panel is not visible.

The Advanced Mode panel is common to all three compressors, and features important add-on features that greatly expand the functionality found on the original units.

Next, we have another very important button, one that was introduced in Pigments. It's the Sound Design Tips button. It has the form of a light bulb, and when selected displays tips built in the presets by their creators to help the user manipulate the different parameters.



The Upper Toolbar

As we saw, this upper toolbar, which is common to all current Arturia plug-ins, gives access to many important functions.

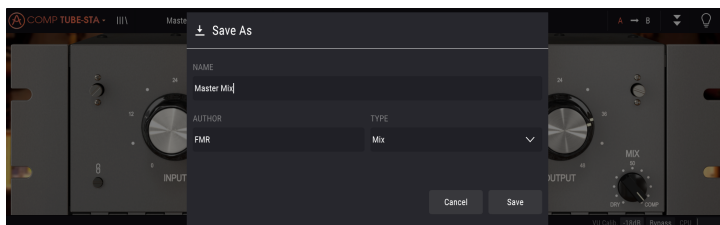
These options can be found by clicking on the Arturia Comp Tube-STA button at the top left-hand corner of the plug-in window. Since these options are also common to all current Arturia current plug-ins, they may be already familiar to you:

5.1.1. Save

This option will overwrite the active preset with any changes you have made, so if you want to keep the source preset also, use the Save As option instead. See the next section for information about this.

5.1.2. Save As...

If you select this option, you are presented with a window where you can enter information about the preset. In addition to naming it, you can enter the Author name, and select a Type. You can even create your own Type, by entering custom names in the respective place. This information can be read by the preset browser and is useful for searching the preset later.



5.1.3. Import...

This command lets you import a preset file, which can be either a single preset or an entire bank of presets. Both types are stored in **.stax** format.

After selecting this option the default path to these files will appear in the window, but you can navigate to whichever folder you are using to store presets.

5.1.4. Export Menu

You can export presets in two ways: as a single preset, and as a bank.

- **Export Preset:** Exporting a single preset is handy when you want to share a preset with someone else. The default path to these files will appear in the "save" window, but you can create a folder at another location if you like. The saved preset can be reloaded with the import preset menu option.
- **Export Bank:** This option can be used to export an entire bank of sounds from the instrument, which is useful for backing up or sharing presets.

5.1.5. Resize Window options

The Comp Tube-STA window can be resized from 60% to 200% of its original size without any visual artifacts. On a smaller screen such as a laptop, you might want to reduce the interface size, so it doesn't dominate the display. On a larger screen or a second monitor, you can increase the size to get a better view of the controls. The controls work the same at any zoom level, but they can be harder to see at the smaller magnification values, or when using high resolution monitors (like HD monitors or higher). The higher the resolution, the bigger the size that should be used.

5.1.6. Preset Selection

The [Preset browser \[p.32\]](#) can be opened by clicking the library symbol on the toolbar. The filter, name field and left / right arrows in the toolbar all assist with preset selection.

Selecting a preset is performed by clicking the preset name field in the Upper Toolbar. That action will open a list with all the presets available. The currently selected preset is marked with a v. Then, you just need to place the mouse over the name of the preset you want to select (that preset name will be highlighted), and click it.

Alternatively, you may use the Preset Forward and Backward arrows (the arrows at the right of the preset name field) to navigate through all the presets.



5.2. A/B Button

The A/B button is a new feature introduced with the current version of Arturia plug-ins. This button allows to compare between two distinct snapshots of the current preset, like for example the currently edited version, with all the changes you made, and the stored version. The snapshot in use is the highlighted one. This is great to perform some changes in a preset, and check if those really match what you want and are an improvement when compared to the original settings.

All presets may have a snapshot A and a snapshot B (these can be a completely different settings configuration, a variation of the main preset, an edited preset or just the current state of the plug-in). You can copy the settings of the A snapshot into B and vice-versa. When a preset is loaded, the settings are the same for both A and B snapshot. Therefore, if you start editing the preset when in snapshot A, snapshot B will preserve the original settings until you save the changes. This way both the original preset and the edited version can always be recalled for comparison.

 If you want to copy the settings on A to B or vice-versa, select the snapshot you want to copy from (the source) and click over the arrow. This will make the settings of that snapshot to be copied over the other snapshot. Notice that the arrow is always pointing from the currently selected snapshot to the other one: **Source -> Destination**.

Another interesting and very handy feature of the A/B button is the possibility to have two presets loaded simultaneously, and compare between them. When you load a preset having this button for example in position A, the preset loads in position A (position B assumes the same settings). However, if you change to position B and load another preset, this will not overwrite the settings in position A, which will keep the previous loaded settings. You can then change between position A and position B and compare both presets.

When you save a preset only the settings for the currently selected snapshot are stored. Therefore, if you save the preset with the B snapshot selected, the settings of the B snapshot are the ones saved. If you save the preset with the A snapshot selected, the settings of that snapshot are the ones stored in the preset.

The same way, when you edit settings for the currently loaded instance of the plug-in, and you save the project in your DAW, next time you load that project, both A and B snapshots will have the same settings, reflecting the saved state of the plug-in.

 If you want to save both snapshots of a preset, you will need to save two presets. To do this, select snapshot A, and in the Arturia sub-menu choose "Save As..." and save the Preset, giving it a name. Then select snapshot B and do the same thing, giving it a different name.

5.3. Advanced Mode (Double Arrow) Button

This button opens the Advanced Mode control panel. This is where are located the controls for the extra features added by Arturia to expand the possibilities found on the original units. This extra control panel is common to all three compressors.

When the Advanced Mode panel is opened, the arrows point up. When the panel is closed, the arrows point down.

When there are parameters active in the Advanced Mode panel (edited or set to values different than the default ones), and that panel is not visible (is closed), the double arrow button (pointing down) has a dot next to it, to call user's attention to those parameters. To check them, click the button to open the Advanced Mode control panel.

You have a detailed explanation of all the features in this Advanced Mode in the [Control Panel chapter \[p.13\]](#).

5.4. Sound Design Tips

Pigments was Arturia's first plug-in to offer this feature, and we dare to say it will revolutionize the way users look at presets.

The Sound Design Tips feature identifies parameters the preset creator defined as the most relevant while developing the selected preset, and which are the best for the user to edit. When On, a brief explanation of each parameter (tip) will also be displayed in the left-hand side of the lower toolbar.



Select any Factory preset and position the cursor over the light bulb in the upper toolbar, right after the Advanced Mode button. This is the Sound Design Tips button. It will darken the User Interface, leaving lighted the selected parameters.

Each Factory preset has defined a preferred parameter, and the corresponding Meter range. The preferred parameter is the one that should be set first when adjusting the selected preset for optimum results. The Meter range is an indicator of the kind of gain reduction the preset was programmed for.

If you click the little arrow at the right of the button, you will access a menu that has an "(Advanced) Edit Tips" option. Selecting that option will allow you to mark your own preferred controllers. Each marked controller will show a small "light bulb" when that option is selected, and a "cogwheel" appears next to the Sound Tips button.

5.5. The Lower Toolbar

When you are changing a parameter, you will see a readout showing the value or state of whatever control you are modifying at the left-hand side of the lower toolbar. It will also display the current value of a parameter when you place the mouse pointer over that parameter control in the control panel. This is handy, because you don't need to touch the parameter control to read the current value.

Finally, when the Sound Design Tips button is On, you will see an additional brief explanation about the selected parameter.



The Lower Toolbar

At the right-hand side of the lower toolbar are several small windows and buttons. These are very important features, so let's take a closer look at them:

5.5.1. VU Calib.

The Comp Tube-STA has one VU meter right in the middle of the control panel. By clicking the value at the right of the "VU Calib." label, you can access a menu where you can calibrate its response. By default, it is calibrated for -18dBu but you can change this to -14dBu or -8dBu.

5.5.2. Bypass

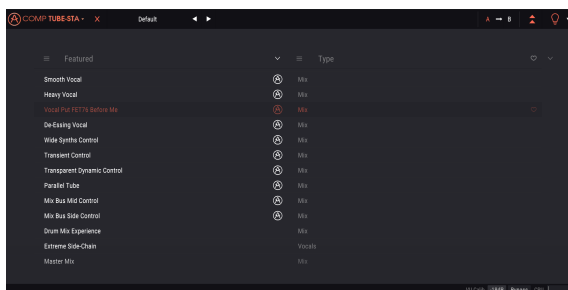
This one is obvious. Activating the bypass option will completely disable Comp Tube-STA plug-in.

5.5.3. CPU meter

The CPU meter is used to monitor how much of your computer's CPU is being used by the plug-in. If you stress your computer too much, the global performance of your system and the audio may suffer.

5.6. The Preset browser

The preset browser enables you to search, load and manage preset configurations in Comp Tube-STA. Although this looks and is based on the usual Arturia Preset Browser, it is simpler, and even easier to work with. You access the preset browser by clicking on the library symbol next to the Arturia logo/plugin name on the left.



When you click on the library symbol, you will see a screen with all the Presets you have saved. You can sort the list by several different criteria, to make it easier to find the right preset. There are two columns. The first one lists the Presets by Name or by 'Featured'. Featured are presets that were classified as important by Arturia. The second one lists the Presets by Type, Designer, or Bank.

There is only one attribute visible, which is the one you select by clicking the column title. By default, Type is the attribute selected. When you select the Designer attribute, the list changes, and that attribute appears in the second column, in the place where the Type field was before.

If you want to delete a preset, you may do that by selecting it, and then, by clicking in the name field, choose the option "Delete current" that's in the bottom of the list.



Preparing to delete a Preset from the Comp Tube-STA library

5.7. Some Final Words

Some final words to mention something very important. Usually, to change values in the plug-in controls, we click on the corresponding control and drag the mouse up or down. If the controls are switches, we simply click them to toggle On or Off. If we want finer editing values, we can use Ctrl+Drag (Cmd+Drag on macOS). Alternatively, we can mouse Right-Click and Drag. Using this key combination, the values change in a slower way, which allow us to get more precise values easily.

Double-clicking a control changes it automatically to the default value. This also works with Alt+Click (Opt+Click on macOS).

And that's it. We just finished describing all the controls you have at your disposal to process sound in your DAW using the Comp Tube-STA plug-in. We hope you'll enjoy your new plug-in and the results you get when using it, as much as we enjoyed making it.

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