MELLOTRON V

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YOUR EXPERIENCE · YOUR SOUND

Special Thanks

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Product version: 1.0

Revision date: 25 April 2019

Thank you for purchasing Arturia's Mellotron V!

This manual covers the features and operation of the Mellotron V.

Be sure to register your software as soon as possible! When you purchased Mellotron V you were sent a serial number and an unlock code by e-mail. These are required during the on-line 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 Mellotron V

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 CMI 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.

With the launching of a new version of the V (Vintage) Collection, Arturia consolidates its position as a leader in the field of modeled vintage instruments software.

The ARTURIA Mellotron V is one of the three new instrument emulations included in the current version of our acclaimed bundle, and benefits from fifteen years 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 one of the most famous and iconic keyboard instruments of the sixties and seventies, one which definitely marked and helped to define the sound of progressive rock, and is commonly regarded as the ancestor of the modern samplers, carefully reproducing the behavior of its electrical circuits and tape modeling. Not only have we faithfully modeled the sound and behavior of this unique musical instrument, we have added many features that were unimaginable in the days that unit first launched.

Mellotron V runs as a stand-alone virtual instrument, as well as a plug-in in all major formats inside your DAW. It has easy MIDI learn functionality for hands-on control of most parameters, and as a plug-in also allows parameter automation for greater creative control.

DISCLAIMER: All manufacturer and product names mentioned in this manual are trademarks of their respective owners, which are in no way associated or affiliated with Arturia. The trademarks of other manufacturers eventually mentioned were used solely to identify the products of those manufacturers whose features and sound were studied during Mellotron V development. All names of equipment inventors and manufacturers have been included for illustrative and educational purposes only and do not suggest any affiliation or endorsement of Mellotron V by any equipment inventor or manufacturer.

The Arturia team

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1. WELCOME TO THE MELLOTRON

1.1. What is the Mellotron?

The first instrument that could play orchestral sounds, and the ancestor of the modern sampler. That's the Mellotron. Many other "*trons*" followed, but the "*Mello*" remained one of the most iconic symbols of its era and forever tied to some of the biggest keyboard players in the History of Rock.

1.2. Some historical facts

Everything started many years ago, in the early fifties, when a guy named Harry Chamberlin had the idea of building a keyboard that could play magnetic tapes of real recordings controlled by the keys. The concept was apparently simple: He would record sustained notes of real acoustic instruments for soloing, as well as musical phrases and even complete band accompaniments. The main goal was to provide a keyboard instrument that would serve as a music-band-in-a-box, allowing families to have fun singing along and performing the music hits of the time.

The keyboard had a tape for each note, that would play for several seconds. The system mechanics are similar to how a magnetic tape player works. When a key is pressed, a mechanism pushes the tape onto the tape head and a roller begins to play the tape, causing it to output the recorded sound. As soon as the key is released, the roller lifts and another mechanism rewinds the tape back into its original position.

Of course, all this takes time and the mechanism was prone to mechanical problems. Nonetheless, the Chamberlin saw some success, due mainly to the quality and type of the sounds produced (at the time, the only other way to get a string orchestra or a woodwind band sound was to hire real musicians, which was untenable for most, so Chamberlin's recordings of real players provided a great alternative). Chamberlin also recorded complete bands, allowing complete accompaniments to be played back with a simple key.

But since he wasn't very successful in solving the technical problems presented by his machines, another company took over the manufacturing of redesigned musical instruments following that same basic idea. That company was created in the UK by the people who were supplying the tape heads to Chamberlin.

The company was called Mellotronics, and the first product, the Mellotron Mark 1, appeared in 1963. Although it was an improvement over the Chamberlin, it wasn't much more reliable than its predecessor. In 1964 it was followed by the Mellotron Mark 2, the first one that proved to be reliable enough to be usable.

This was a truly monster machine, with two keyboards, capable of 70 notes of polyphony, and with tapes available for many different sounds, including the famous flutes, violins and choirs, as well as full strings, guitars, brass, organs, pianos, etc.

After a smaller interim Model 300, in 1970 the Mellotron Model 400 (M400) appeared. Even smaller than the M300, more portable and cheaper, with a better tape mechanism and new removable tape frames with three sounds each that could be easily replaced, it contributed decisively to popularize the Mellotron, especially among members of the progressive rock bands, which relied much on keyboards and orchestral sounds for their music.

1.2.1. Whos' who of Mellotron users

Anyone who remembers The Beatles remembers the famous song *Strawberry Fields Forever*. The flutes intro in that song is one of the most famous passages featuring the Mellotron.

The Beatles adopted enthusiastically the Mellotron, especially Paul McCartney, which was the one who played it in *Strawberry Fields Forever* and used it several times after that, even after The Beatles demise (for example, to play the bagpipes in *Mull of Kyntire*).

Allegedly, it was Mike Pinder who introduced the instrument to John Lennon and Paul McCartney. Mike was working at Mellotronics before joining The Moody Blues.

But there were many others. Actually, naming the notable users of the Mellotron is almost a who's who of the rock scene of the sixties and seventies. The Beatles come first in our list (obviously). Their big rivals The Rolling Stones also used the Mellotron as well (played by Brian Jones).

Mike Pinder (The Moody Blues) also used it since 1967. After joining the band, the Mellotron was called to play a key role in their music since the very beginning. Anyone who hears the famous song *Nights in White Satin* from the first album of the band, *Days of Future Passed,* will immediately recognize the Mellotron sounds in it.

Many other progressive rock bands followed, to the point where the Mellotron itself became a defining feature of the prog-rock sound.

The Mellotron was often featured in the long pieces that defined the style, accompanying guitar or synthesizer solos, supplying backing beds and even used as a replacement for orchestral lines.

Tony Banks (Genesis) was another notable user, as was Rick Wakeman (Yes). King Crimson bought a Mellotron when they started, and although aware of the way The Moody Blues used it, they decided to go ahead, and also use it to fill the "orchestral" passages of their music. The Mello was used right away in their great first album *In the Court of Crimson King*, as well as its successor *In The Wake of Poseidon*. John Paul Jones (Led Zeppelin) also featured the Mellotron on some albums of the band.

Stuart "Woolly" Wolstenholme (Barclay James Harvest) was another keyboardist who used the Mellotron extensively. On stage, he even used multiple Mellotrons at the same time, to play the orchestral passages the band was known for (in the beginning, the band played with a real orchestra). The famous swiss keyboardist Patrick Moraz (Yes, The Moody Blues) also used the Mellotron, and its follower Novatron (Novatrons were rebranded Mellotrons).

Finally, we should mention Edgar Froese (Tangerine Dream). Both with the band as well as in his solo albums, Froese used the Mellotron extensively. The solo album *Epsilon in Malaysian Pale* was almost entirely a Mellotron album, and was sometimes mentioned as the best Mellotron album ever released. But he wasn't the only one. All band members used Mellotrons. The earlier TD albums (*Atem*, *Phaedra*, *Rubycon* and *Stratosfear*) are full of Mellotron sounds.

The Mellotron was also featured in the first two highly successful albums of Jean Michel Jarre, *Oxygene* and *Equinoxe*.

More recently, we can mention Orchestral Manouvres in the Dark, Oasis, Radiohead, Spock's Beard and Porcupine Tree.

1.3. Does a Mellotron make sense in this day and age?

The Mellotron had a distinctive sound. It still has. It is often spoken of as the first sampler (which it kinda was), although of course nowadays it can't compete with the modern samplers, strictly speaking.

However, almost all major samplers have libraries reproducing Mellotron sounds. This means that those sounds are still useful, and while they may not be the most faithful modern representations, people still love the character of the Mellotron flutes, violins, choirs, strings, and brass sounds.

They certainly don't convince anyone that they are the real things (as the best orchestral sample libraries can do, for example) but they have that "patina", that retro charm that we can't find nowadays anywhere else. They are "Mello" sounds. They have a personality on their own. So, it is natural to think that any sound that would be recorded on a tape and played through that mechanism would acquire that same personality.

We at Arturia set out to capture and provide this authentic, sought-after experience of the Mellotron, without all the headaches and hassles of maintaining the hardware instrument. On top of that, we even captured the sonic character of the instrument, allowing you to expand it with your own tapes.

Arturia's Mellotron V in Open Lid mode with the Advanced panel opened

The advantages of a software version of the Mellotron regarding its hardware counterpart are huge. For example:

- You will have a replica of one of the most iconic keyboard instruments of the past;
- You don't have to worry about the delicate and sometimes unreliable tape and rewind mechanisms, and tuning problems;
- If you play a long note, you don't have to wait for the tape to rewind before you can play that same note again;
- You don't have to worry about transport and maintenance;
- You can use as many Mellotrons as you wish;
- You have a great collection of the best original Mello tape sounds. If you want to change the sounds, new "tapes" are just a click away;
- You can use your own samples as "tapes" if you want (looped or non-looped). This way you will have an ever growing assortment of sounds. The samples will play through the emulated "tape mechanism", which will give them a vintage sound that can't be achieved anywhere else;
- You have an instrument modernized and complemented with a great assortment of effects and amplifiers;
- You have a macro envelope control, and you can use MIDI velocity to control the volume, after-touch to control the flutter effect, and the modulation wheel to control tape track mixing.

So, do you want a Mellotron or what?

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.
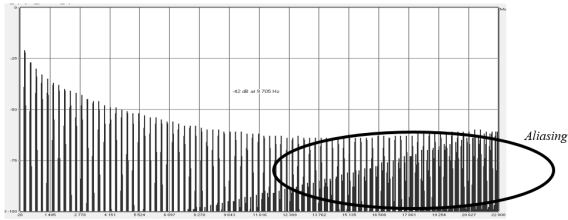
Linear Frequency spectrum of a well known software synthesizer

TAE®'s software algorithms result in spot-on emulation of analogue hardware. This is why the Mellotron V offers an unparalleled quality of sound, as do all of Arturia's virtual synthesizers and plug-ins.
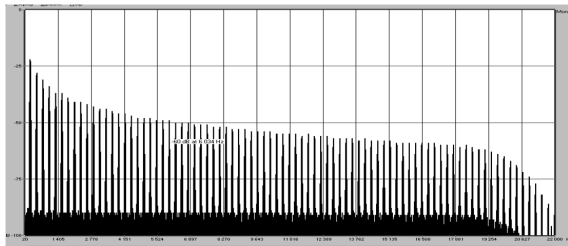
Linear frequency spectrum of an oscillator modeled with TAE®

TAE® combines major advances in the domain of synthesis:

Temporal representation of the "sawtooth" waveform of a hardware synthesizer
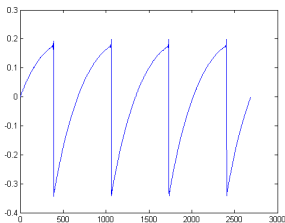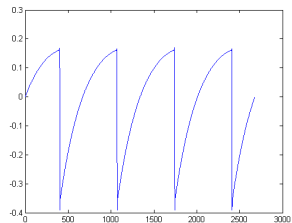
Temporal representation of a "sawtooth" waveform reproduced by TAE®

1.5. Arturia's Mellotron V

With Mellotron V, we have accurately modeled the sound and charm of the famous original instrument, while extending its functionality and providing modern features for music performers and producers.

Its primary role is to play the old Mellotron tapes, as faithfully as the original. We even kept the tape duration limit of eight seconds, to preserve the fidelity. And we have provided a big assortment of "tapes" coming from the original collections of the Mark I, Mark II, M300 and M400.

Of course, being an Arturia product, it wasn't enough to simply model the original hardware and call it done. As usual, we pushed the envelope further, so we added some tasteful new features that honor the original while making it more useful in a modern context.
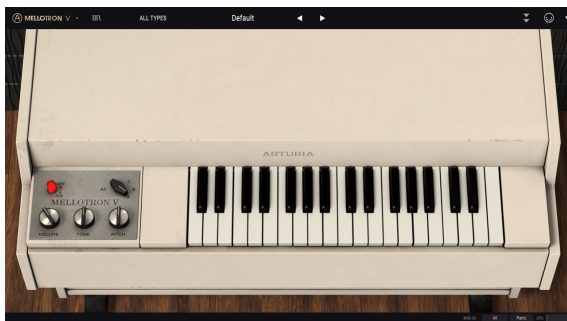
Arturia Mellotron V

For example, we added a great collection of "effect pedals" modeling vintage units contemporary to the Mellotron. We also added two modeled "amps": A famous guitar Twin Amp modeled amplifier, and an equally-famous modeled Rotary Speaker cabinet. Finally, we modernized the collection with a Room Simulator (convolution reverb).

We also added the ability to adjust many features of the Mellotron inner works, such as control over the flutter and tape saturation, the mechanics noise, the noise floor, and a macro envelope to modulate the overall contour of the sound.

Real-time MIDI controls, like MIDI velocity (to control the overall volume), after-touch (to control the flutter effect), and the mod wheel (to control the tape track mixing), were also included.

Finally, we also added some ground-breaking features: The possibility to expand the Mellotron V sounds through the use of your own samples, and the possibility to edit extensively the sounds, defining individual start and end points, loop points, envelopes, etc.

The dream of owning a Mellotron capable of playing your own "tapes" is about to come true. Now, it's time to play some flutes and violins. Let's go!

2. ACTIVATION AND FIRST START

2.1. System Requirements

The Arturia Mellotron V plug-in works on computers equipped with :

Win 7+ 10.10+

You can use the Mellotron V as an AAX, Audio Unit, VST2 or VST3 plug-in (64-bit only).

2.2. Activate the Arturia Mellotron V 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.

2.2.1. 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!

2.3. Initial Setup

The first time you launch Mellotron V in standalone mode, you'll be asked to define the Audio settings (and MIDI settings) for the instrument. These settings can be accessed at any time, by clicking the Arturia menu at the top left, then click Audio Settings. We will cover all the options of the Arturia menu later in this manual [p.21].

2.3.1. Audio and MIDI Settings: Windows

This is where you define what kind of audio interface will be used to play the instrument, as well as the MIDI controller. It works in a very similar way in both macOS and Windows, although the names for the devices available to you will depend on the operating system and hardware you are using.
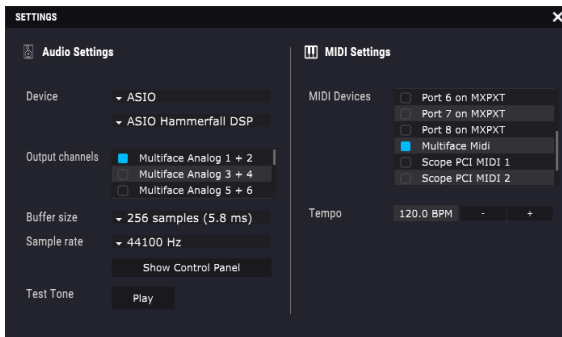
Let's look at the options one by one, starting from the top:

- **Device** lets you choose which audio driver you want to use to route sound out of the instrument. You may choose your computer's own audio driver (Windows Audio), DirectSound (which is also an internal Windows driver), or an ASIO driver (which is the one that will offer you the best performance). The name of your hardware appears in this field, and may vary according with the option made.

- **Output Channels** lets you select which of the available outputs will be used to route audio out. Some audio interfaces offer more than the regular stereo out, but if you don't have one of these, only one pair will appear as an option. If you have a multi-output audio interface, you can select any specific pair of outputs.

- The **Buffer Size** menu lets you select the size of the audio buffer your computer uses to calculate sound. The smaller the buffer, the faster it will play a note after pressing a key. A larger buffer means a lower CPU load as the computer has more time to process the audio, but can result in too much time taken to play the note after the key is pressed. A fast, modern computer should easily be able to operate at a buffer size of 256 or even 128 samples without creating pops or clicks in the sound. Usually, a buffer of 256 samples is more than acceptable. If you are getting clicks, try raising the buffer a little.

- The **Sample Rate** menu is where you define how many times per second the digital audio will be sampled before being converted into analog (audible) sound. Higher sample rates mean more definition, but demand more CPU power. The options available will depend on the audio interface hardware you are using. Modern computers' own hardware may operate at high sample rates, up to 96 kHz. The latest external audio interfaces may go even higher, even the simpler ones. Usually, there's no need to use such high sample rates. A value of 44.1 kHz or 48 kHz is perfectly fine (audio CDs work at 44.1 kHz).

- The **Show Control Panel** button will jump to the system control panel for whatever audio device is selected. Beware that some audio hardware may not have a Control Panel, or that Control Panel is a generic OS one.

- **Play Test Tone** helps you to troubleshoot audio issues by confirming whether sound can be heard through the correct device.

- **MIDI Devices** is where you will see your connected MIDI devices. All MIDI devices available should be seen in the list. Click the check box of the MIDI device (or port, if you happen to have a multi-port MIDI device) you want to use to trigger the instrument. In standalone mode, Mellotron V listens for all MIDI channels so there's no need to specify a channel. You can specify more than one MIDI device at once.

- **Tempo** defines the internal tempo used by the Mellotron V to play time sync elements when in standalone mode, like synchronized effects. When used as a plug-in, the instrument will always synchronize to the host tempo.

2.3.2. Audio and MIDI Settings: MacOS
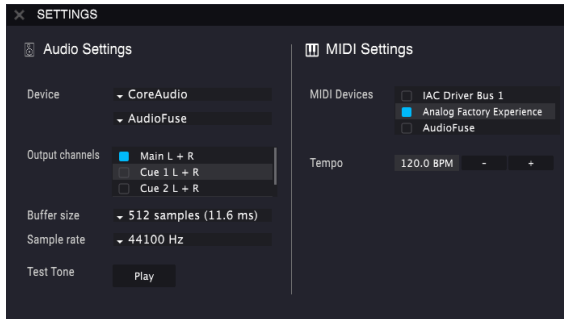
In macOS the process is very similar. The only important difference is that macOS uses CoreAudio to handle audio. Other than that, everything works the same way as described for Windows.

2.3.3. Mellotron V as a plug-in

Mellotron V 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 the hardware, you can load as many instances as you find useful. The Mellotron V also has some other big advantages over hardware:

- The instrument will now synchronize to your DAW's host tempo/bpm rate, when tempo is a factor;
- You can automate numerous parameters using your DAW's automation system;
- You can use more than one instance of Mellotron V in a DAW project. In standalone mode you can only use one, though;
- You can route Mellotron V's audio outputs freely inside your DAW using the DAW's own audio routing system, for mixing and further processing;
- Any additional audio effects your DAW has available may be used to process the sound, including delay, chorus, filters, etc.;
- Your settings and current instrument state will become recorded in your project, and you can pick up exactly where you left off the next time you open it.

3. MELLOTRON V OVERVIEW

3.1. What can we do with Mellotron V?

3.1.1. The original Mellotron limitations

The original Mellotron M400 (the one which this emulation is based on), although very popular, had several limitations.

The sound was produced through the replay of magnetic tapes lasting around eight seconds. The mechanics of the instrument had evolved since the first models, and now reside in "removable tape frames" each featuring three-track tapes (three sounds in the same tape), which could be replaced in just a few minutes to install a new set of sounds. Still, each note produced by the instrument was based on a complete and somehow delicate tape player mechanism, triggered by the keyboard.

The mechanism included the tape playback head, a pinch roller that descends over a constantly spinning capstan, and a pressure pad the pushes the tape down to make contact with the playback head. Add to this the mechanism that takes care of rewinding the tape once the key is released. Tuning was not very precise either. And the mechanism was prone to problems.

The Mellotron could only play 35 notes, and if/when the tape reached the end (eight seconds), the sound would stop, and the tape would have to be rewound back into the the start position. Only then could that note be played again.

The Mellotron M400 could select between three sound tracks, but since it had all the three tracks in the same tape, it could also mix between two adjacent tracks, by slightly changing the position of the playback head, which gave it an extra versatility.

Despite the problems, the instrument became quite popular, because it was capable of playing some fantastic sounds (the flutes, the violins and the choirs, especially, marked their presence in countless records), and there were no alternatives for playing orchestral sounds on stage, except hiring a real orchestra.

3.1.2. The Mellotron V main features

With the Mellotron V, you will be able to use replicas of many original tapes, coming from the Mark I, Mark II, the M300 and the M400 collections.

Although we have limited the sound duration of each key to eight seconds, as was in the original instrument, you have the option to define a loop so that you can sustain the sound longer than that.

The Mellotron V has a special "sample editing window" where you can define sample start point, sample end point, and loop points, as well as some other special sample parameters. Those that already experienced the sample management and editing window in the CMI V or the Synclavier V will feel immediately comfortable and at home in this window.

Another characteristic of the original Mellotron was that the instrument didn't transpose. The sound of each note was produced by replaying its own tape. This means that, if we had a vibrato in a sound, that vibrato would play with more or less the same velocity throughout the entire keyboard (depending on how it was recorded, since each note was a different recording). Also, if there were rhythms or special effects recorded, each recording would always sound at the original pitch.

Digital samplers usually repitch the audio by reading the original samples at different speeds (resampling). This causes a speed-up or speed-down of the internal rhythm and transposition of the partials of the sounds, which sometimes may sound very unpleasant.

Since user samples can also be used with the Mellotron V, you will be glad to hear that the instrument may reproduce them as if each note was played by its own tape. Internal rhythms, like vibrato, or even rhythmic phrases are preserved throughout the keyboard. All notes will play in sync. This is due to a special "stretch" mode, which is On by default.

Also, contrary to the original Mello, you can use more than one sound in each track. The limit is 2 original tapes (factory samples). But if you use your own samples, you can go up to 8 user samples per track. This means that you can, for example, assemble a small drum kit, or even some small drum tracks, with "phrases" like intro, verse, fill, ending, etc.

With the high quality "stretch mode" engaged you can play the samples transposed but preserving their inner rhythmic pulse, which means this will be perfect for rhythmic samples. And of course, all samples played through the Mellotron V will take advantage of the emulated tape mechanism to achieve that vintage sound.

Since the original Mellotron gave the choice of three tracks per tape, that three tape tracks feature was also respected, as well as the possibility of mixing between A/B and B/C.

However, in Mellotron V you will also have the possibility of mixing between two tracks dynamically, by controlling the mixing through MIDI or using the modulation wheel, for example, and you will also have an extra "**All**" option, where all three tracks may be played simultaneously.

3.2. Getting hands-on with the Mellotron V

3.2.1. Basics

To get an idea of Mellotron V's capabilities, we suggest you try the following:

- Open the Mellotron V in standalone mode;
- If you haven't yet, define the Audio and MIDI settings to be able to work with the instrument. For more information about the Audio and MIDI Settings, please read the entry [p.10] in Chapter 2 of this manual;
- Load the "Default" preset;
- Play some notes with your MIDI keyboard. If everything was set up properly, you should hear a flute sound playing;
- Now click the Library icon to open the Library window;

> ♪: The Library icon resembles three books aligned vertically in a bookshelf, with a fourth book inclined. This is where you manage your preset collection, organizing, commenting, deleting, creating playlists, etc. For more information about this very important window, please read the Preset Browser [p.30] chapter in this manual.

- In the Library window, click the Ambient tag in Styles (if you can't see the tags, click the arrow at the left of the "Styles" title);
- You will now see a much shorter list than you did initially. This is because we filtered the view, to just show presets that were tagged as "Ambient";
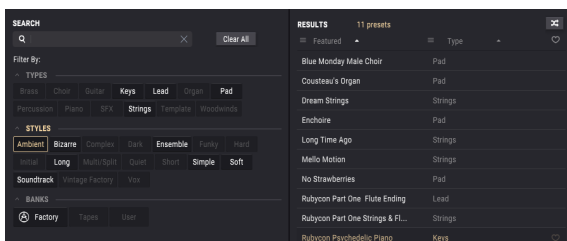
Mellotron V Library window, with the "Ambient" Style tag selected, and the "Rubycon Psychedelic Piano" ready to be loaded

- Select the preset "*Rubycon Psychedelic Piano*". This is a preset that recreates a sound prominently used in the album *Rubycon*, by the German band *Tangerine Dream*. Play some notes. We think you'll like what you'll hear.

3.2.2. Using the "tapes"

Now that you have experienced the basics, let's continue and go a little deeper:

- Load the "Default" preset again;
- If Mellotron V is not in Open Lid mode, click the double arrow button in the Upper Panel to put it in that mode;

> ♪: Open Lid Mode is the advanced mode of the Mellotron V. Besides giving access to advanced parameters, it also gives access to many important editing pages, that will be needed if you want to assemble your own sounds and/or use your own samples.

- Double click the "*Mk2 Flute*" name. The "Load Sample" dialog box will open. Locate the "*M400 Boys Choir*" and double click its name. That sound is now where the Flute was;
- Drag the sound to the right, to place it one octave above;
- Now double-click the "*Mk2 3Violins*" that is loaded in Track B. Again, the "Load Sample" dialog box opens. This time, you will locate and double-click the "*M400 8 Voice*" to load it. This sound will be left in the original Mellotron range;
- Time to replace the sound in Track C. To do that, double-click the "*M400 Cello*". When the dialog box opens, locate in the list and double-click the "*M400 Male Choir*" sound. This will replace the previous sound in Track C;
- Now, drag the region to the left to place it one octave below;
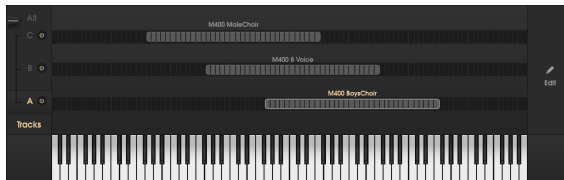
The Tracks page with the three choir factory sounds loaded and mapped, as described above

- Finally, click the **All** in the Track Selector on the left. This will make all three sounds play. If you now play some notes on the keyboard, you will hear a thick choir sound. If you want, you can now save your new preset. To do that, click the Arturia button in the Upper Toolbar, and choose the option "Save Preset As", giving it a new name. If you want, you can also define some tags.

3.2.3. Using your own sounds

Now that you have learned how to create your own sounds using the factory "tapes" that come with the Mellotron V, it's time to keep going, now using your own sounds:

• Let's get back to the Default preset, and load it once again;
• This time, we want to start with empty tracks so, we will delete the sounds pre-loaded in all the three tracks. To do that, right-click over each one of the names. The regions will be deleted, and the Tracks page will now be empty;

> ♪: To delete a region, right-click over its name.

• Now, double-click the middle C cell in Track A. The "Load Sample" dialog box will open once more. Click the **Browse** button in the upper right. This will open a new dialog box, this time the usual OS dialog box that opens every time you need to load a file from within an application. Navigate to the drive and directory where you have your own samples, and double click one to load it. If the sound lasts for more than 8 seconds, only the first 8 seconds will load;

The Mellotron V with Tracks B and C empty, and a user sample just loaded in Track A (Middle C). Notice that the region only spans seven semitones

• You will now have a small region, with just seven semitones: The C, where the sound plays at the original pitch, and three semitones above and below it. We will need to enlarge this region to be able to play more notes;
• Place the mouse over the left part of the region. The mouse pointer will change to a line segment with an arrow on each side. Drag it to the left up the lower C. The original pitch is now located at G;
• Now place the mouse over the right part of the region, a drag it up to the C one octave above. Notice that the original pitch is now back to the middle C, and we have a region that spans two octaves now - one above and one below;

- Play some notes. You will hear different pitches, but the sound duration will remain the same, no matter if you play notes above or below. This is because Mellotron V plays the samples by default in **Stretch** mode. This mode uses more CPU, so, if you are using many instances of Mellotron V, you may need to disable the Stretch mode in some of them. You may check that by clicking the Edit button on the right, which will open the sample editing page;
- There are many more edits that you can perform in this page, like defining new start and ending points, loop points, transposing the sound, adding or reducing the gain, or even defining an envelope. Feel free to experiment.

3.2.4. Using the effects

Now let's add some effects to our sound:

- Click the FX button in the Upper Toolbar;
- The effects page will open below the Mellotron keyboard. You will have just two effects loaded: An equalizer in "fx 4", and the room simulator that is always there;
- Let's replace the equalizer with a Delay. Delays are great to add dimension to the sound. If you click the "Equalizer" title, you will be presented with a dialog box to choose the effect you want to replace it with. We have three delays to choose from: Delay, Analog Delay and Tape Echo. Let's choose Tape Echo, just to check how it sounds. Now play something on the keyboard. You'll notice that the echo is really deep and present;

Mellotron V FX page, with Chorus inserted in fx 3 slot, and Tape Echo inserted in fx 4 slot. Chorus Dry/Wet control is being edited

- But it's probably too much. Let's replace it with the Analog Delay, for the time being;
- Now, click anywhere in the "fx 3" slot. You'll be presented again with the dialog box. This time, choose a Chorus effect. Chorus adds an "ensemble" effect to the sound, as if the sound source was multiplied by several. Now try the controls, until you find a sound that pleases you. If you want a control to get back to its default position, just double click over it.

> ♪: Almost all effects have a Dry/Wet control which allows to balance the mix between processed and unprocessed sound. Also, if you want to Bypass an effect, just click the "switch" on the upper right, to turn that slot Off.

And that's it. We traveled through many of the main features of the Mellotron V. You are now ready to use the instrument, and create some great sounds with it. But you may want to add some MIDI control...

3.2.5. Automating the Mellotron V with MIDI

So, let's prepare the Mellotron V to be used with a MIDI controller, or automated through your DAW:

- You may leave the instrument exactly where we were just now. Click the MIDI socket icon in the Upper Toolbar;
- Now, many of the controls in the Mellotron V become purple, which means they are ready to "learn" MIDI automation controls. You'll also notice that some controls are red, instead of purple. That means those controls are already assigned. The Volume, and the Track Selector are two controls that come pre-assigned;

> ♪: Volume control comes already assigned to the MIDI Controller #0, while the Track Selector control comes already assigned to the MIDI Controller #1. This last one is usually sent by the Modulation Wheel of the MIDI keyboards.

- Click the Dry/Wet knob of one of the effects (this way you will be able to control that effect amount dynamically). Let's do that with the Rom Simulator Dry/Wet control. A pop-up window like the one in the following picture will appear.

Mellotron V ready to "MIDI learning" (several controls are purple). Notice the pop-up window above the Dry/Wet control of the Room Simulator. That control is set to learn, as soon as a MIDI control is moved. Notice also that the Volume control and Track Selector control are red - it means they are already assigned

- Now move the control knob/fader you want to use to control that parameter. If the connections are well established, you should see the parameter assigned to the Dry/Wet control. If your controller is able to, and the control you selected is of the right type, you should select "Is Relative", to make sure that when you touch that parameter the control will not jump suddenly. For more information about this feature, refer to the section Relative Control option [p.27] in the USER INTERFACE chapter.
- You may assign as many parameters as you want. You may even assign several software parameters the same hardware controller, although this will mean that they will all assume the same value once you move that controller;

This hands-on tutorial is now finished. You may keep reading this manual, or you may go on playing the Mellotron V.

4. USER INTERFACE

The Graphical User Interface of the Mellotron V follows the Arturia paradigm that has been used in all the most recent virtual instruments (since V Collection 5). It has a main window, that shows different control panels and editing pages, according to the buttons pressed in the Upper Toolbar.

That main window is complemented with an Upper Toolbar and a Lower Toolbar.

The Upper Toolbar, besides the mentioned buttons, also contains the Preset Selection displaying the name of the current selected preset, preset selection filters and navigation arrows, and the very important Arturia Menu on the left. It also has buttons to access MIDI Assign and the MIDI Controller Configuration at the right-hand part.

The Lower Toolbar displays the parameter names in the left-hand part. It also has a CPU consumption meter on the right, as well as a Panic button and MIDI Channel selector button.

The parameter values appear in small floating window "cells" next to the parameter control. The values update in real-time when we move the controls.

> ♪: To know a parameter current value, position the mouse over the corresponding control for about one second, and a small window appears next to it revealing the value.

4.1. Useful Computer Keyboard Shortcuts

There are several ways to adjust parameters using the mouse and keyboard when using the Mellotron V.

Usually, to change values in the instrument 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 resets it to the default value.

4.2. The virtual keyboards

The Mellotron V has a small virtual keyboard in the main instrument panel. This keyboard is a mock-up of the original M400 keyboard, with just 35 keys, spanning from G1 to F4. This was the range of the original Mellotron M400. The Mellotron V can play a much larger range though.

Besides this, there is a second virtual keyboard positioned at the bottom of the window when the Advanced panel is open (Open Lid mode). This one spans 96 notes, from C to B, and is mainly intended to help with the mapping of sounds (either the original "tapes" included with the instrument or your own samples), providing a visual and audible reference.

4.3. 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 filters.

The Mellotron V Upper Toolbar

In the middle, we have the preset Name Field prominently placed, with arrows to navigate through the different presets stored in the library.

Then, we have the right part of the toolbar, which presents several buttons: an FX button, a double arrow button which opens the Advanced Mode (Open Lid) panel, the MIDI Assign button and the MIDI Controller Config button.

The Advanced Mode panel is the main editing panel of the Mellotron V, and features important add-on features that greatly expand the functionality found on the original units. We will have all these features analyzed in detail in the chapter dedicated to it [p.38].

The FX button in the Upper Toolbar will only be visible when the Advanced Mode control panel is open. This is because that panel is a subset of the Advanced Mode. Again, we will have detailed explanations on the panel and all the effects available in its own chapter [p.24].

Finally, we have the MIDI button on the right. This is where we configure the different MIDI controllers to properly work with the plug-in.

4.3.1. Arturia Menu

The first seven of the many important options we can access through the Upper Toolbar can be found by clicking on the Arturia Mellotron V button at the top left-hand corner of the instrument window. Since these options are also common to all other current Arturia products, they may be already familiar to you:

4.3.1.1. Save Preset

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.

4.3.1.2. Save Preset 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.

4.3.1.3. 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 **.mtlx** format. You can also import playlists. Playlists are files of type **.alplaylist** that contain collections of presets grouped for different purposes, like performances or projects.

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.

4.3.1.4. 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. If you used your own samples, they will be exported together with the presets, to ensure that they will play as they are supposed to when imported back into Mellotron V.
- **Export Playlists**: This option will export all playlists created in Mellotron V. Playlists are collections of presets grouped into different groups for different purposes, such as a set list for a particular performance or a batch of presets related to a particular studio project.

4.3.1.5. New Preset

This option opens up the Default preset template, to allow the creation of a new preset from the initial settings provided by that template.

4.3.1.6. Resize Window options

The Mellotron V window can be resized from 50% 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.

You can also Zoom In and Zoom Out using the keyboard shortcuts *"Ctrl"* (*Cmd* in macOS) plus *"Num +"* (for zoom in), and *"Ctrl"* (*Cmd* in macOS) plus *"Num -"* (for zoom out).

4.3.1.7. Audio and MIDI Settings

This is where we define how the instrument will be controlled in standalone mode, and what hardware will be used. We already covered this in detail in the Audio and MIDI Settings entry [p.10] in Chapter 2. The Audio Settings panel opens automatically the first time the Mellotron V is launched as a standalone.

4.3.2. Preset Library Browser and Manager

The Preset Library [p.30] browser and management window can be opened by clicking the library symbol on the toolbar (the button at the right of the Arturia/Mellotron V button). You may think of it as the picture of three books vertically aligned in a bookshelf, with a fourth book slightly inclined.

This feature is covered in more detail in the next chapter [p.30].

The preset selection filter, the name field and left / right arrows in the toolbar all assist with preset selection.

4.3.3. Preset Selection Filter

The filter allows a faster selection, by filtering the options displayed in the Preset Selection window. Any filtered search performed in the Preset Library window will have the results displayed in the first option of this menu, in the FILTER menu option.

Bellow that, we have the ALL TYPES option, which means no filtering (all presets in the Library will be displayed here).

You can also filter the selection by any of the types defined in the Library (Choir, Strings, etc.). These Types appear listed after the line below the ALL TYPES option.

4.3.4. Preset Selection

Selecting a preset is performed by clicking the preset name field in the Upper Toolbar. That action will open a list displaying all available presets. 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.

The list changes according to the selected search filter. If you want all presets listed, and you have created some filtering, you will have to open the Preset Library window and click "Clear All". The field at left of the Preset Name will change the name to ALL TYPES.

Alternatively, you may click one of the presets in the Types listed below, which will automatically clear the previous search criteria.

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 listed under the selected search criteria.

4.3.5. Effects (FX) Button

The FX button is only visible when the Mellotron V has the Advanced control panel opened (Open Lid mode). For more information about the Effects, please read the dedicated Mellotron Effects chapter [p.55].

4.3.6. Advanced (Double Arrow) Button

This button opens the Advanced control panel (Open Lid mode). This is the control panel which houses the advanced editing options and extra features added by Arturia to expand the functionality found on the original units. This extra control panel contains several very important pages.

The features associated with the Advanced control panel will be covered in detail in the dedicated Mellotron V Control Panel chapter entry [p.40].

4.3.7. MIDI Learn assignment

The MIDI plug icon at the far-right side of the toolbar places the plug-in in MIDI learn mode. MIDI-assignable parameters will be shown in purple, which means you can map physical controls to those destinations inside the instrument. A typical example might be to map a real expression pedal to the Output control, or knobs, faders and buttons on your controller to the different virtual knobs and switches of the plug-in.

MIDI Learn assignment mode in the Mellotron V

In the image above some of the parameter controls are red. That means they have already been assigned to an external MIDI control. They can be reassigned, though.

> 🎵: Remember that you can also assign the Preset Forward and Backward arrows to an external control.

4.3.7.1. Assign / Unassign controls

If you click on a purple area, you'll put that control into learning mode. Move a physical dial, fader, or button and the target goes red, indicating that a link has been made between the hardware control and the software parameter. There's a pop-up window that displays which two things are being linked and an Unassign button that will disconnect the two.

4.3.7.2. Min / Max value sliders

There are also minimum and maximum value sliders that you can use to restrict the parameter change range to something other than 0%-100%. For example, you might want the Output Volume knobs to be controllable via hardware from 30% to 90%. If you make this setting (Min set to 0.30 and Max set to 0.90) your physical dial will be unable to alter the volume lower than 30% or higher than 90%, no matter how far you turn it. This is very useful to prevent you from accidentally making the sound too quiet or too loud when controlling it in real time.

In the case of switches which only have two positions (On or Off, for example), those would normally be assigned to buttons on your controller. But it is possible to toggle those with a fader or other control if you like.

4.3.7.3. Relative Control option

The final option in this window is a button labeled "Is Relative". It is optimized for use with a specific type of control: one which sends only a few values to indicate the direction and speed at which a dial is turning, as opposed to sending a full range of values in a linear fashion (0-127, for example).

To be specific, a "relative" dial will send values 61-63 when turned in a negative direction and values 65-67 when turned in a positive direction. The turn speed determines the parameter response. Refer to the documentation of your hardware controller to see if it has this capability. If so, be sure to switch this parameter on when setting up its MIDI assignments.

When configured this way, movements of the physical control (usually a dial) will change the software parameter by starting at its current setting, rather than being an "absolute" control and snapping it to some other value as soon as you start to move it.

This can be a great feature when controlling things like volume, filter, or effect controls since you won't usually want them to jump noticeably from their current setting when they are modified.

> ♪: Pitch Bend, Mod Wheel and Aftertouch are reserved MIDI controllers that cannot be assigned to other controls.

4.3.8. MIDI controller configuration

There's a small arrow at the far right-hand side of the toolbar (after the MIDI icon) that deals with MIDI controller configurations. This allows you to manage the different sets of MIDI maps you may have set up for controlling the instrument's parameters from MIDI hardware. You can copy the current MIDI assignment setup or delete it, import a configuration file or export the currently active one.

This is a quick way to set up different hardware MIDI keyboards or controllers with Mellotron V without having to build all the assignments from scratch each time you swap hardware.

Mellotron V with the MIDI controller configuration opened

Note the check mark on the bottom of the menu: that indicates that the configuration with that name is the one currently active. Empty means that there's no configuration loaded.

4.4. The Lower Toolbar

When you are changing a parameter, you will see a readout showing the name of that parameter in the left-hand side of the lower toolbar. You may also see a brief explanation, or tip.

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:

4.4.1. MIDI Channel Setting

This is where you choose the MIDI channel Mellotron V responds to. By default, the instrument responds in All channels. Clicking this field will open a list where you can select a MIDI channel from 1-16. This may be important if you are using the instrument in standalone mode alongside other software instruments, and want it to respond only when the MIDI controller plays on that particular channel .

When using Mellotron V as a plug-in, the MIDI channel setting will be ignored and the instrument will only respond to MIDI on the track where it is instantiated.

4.4.2. Panic Button

The Panic button sends messages (like the "All Notes Off" and "All Controllers Off" MIDI messages) to the instrument, to stop any stuck sound.

4.4.3. 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.

4.4.4. Maximize

The Maximize button works when you are using a zoom set that is more than what your screen size can handle. In that case, that button appears at the right-hand part of the Lower Toolbar.

What it does is take the best advantage of the available screen space to display the Mellotron V GUI elements. Usually, with this you will be able to access the Arturia menu and choose a zoom set that fits your screen.

5. PRESET BROWSER AND MANAGEMENT TOOLS

The Preset Browser window, or Library window, is where you may search for presets, load them, organize them, manage your different preset banks, rename presets, insert comments, delete, exchange presets between Banks, etc.

To access this window, click the Library button in the Upper Toolbar (the button that resembles three books vertically aligned in a bookshelf, with a fourth one slightly inclined).

5.1. Searching Presets

The search screen has a number of sections. By clicking on the Search filed at the top left, you can quickly enter any search word to filter the preset list by patch name. The Results column is updated to show the results of your search. Press the Clear All button in the Search field to clear the search.
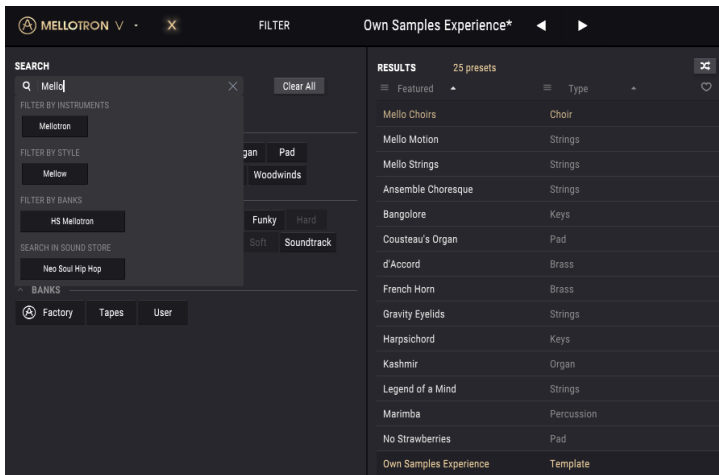
5.2. Using tags as filters

You can also search using different tags. So for example by clicking on the Keys option in the Types field you can show only presets that match that tag. If you select more than one Type (holding Cmd in macOS or Ctrl in Windows), and clicking the desired Types, you can perform a broader search, in case you are not sure in which tag the preset you are looking for is included.

The order the results are displayed can be inverted by clicking the arrow buttons to the right of the column titles (Featured, Type, etc.).
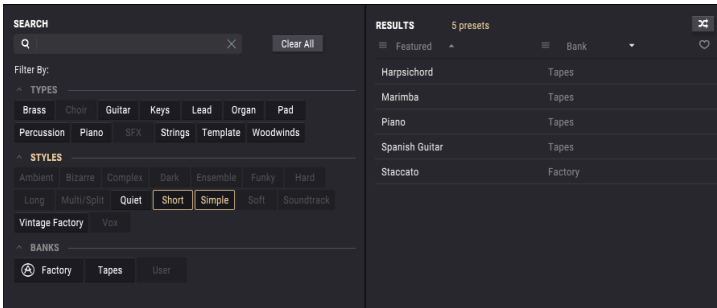
> ♪: The tag fields (Types, Styles, etc.) can be shown or hidden by using the small arrow buttons on the left side of their title fields.

You can also use multiple search fields to perform narrower searches. So by entering a text search and also specifying the Type and Styles options you will see only the presets that match those exact criteria. Deselect any tag in any area to remove that criteria and widen the search without having to go back and start again.

Notice that, when you select more than one tag, and the filter narrows the choices in other categories (like Banks and Types), the choices that don't have any preset that fits in the selected tags will become gray (unavailable).

5.3. Search Results window

Click the options menu button in the first Results column to specify whether you want to view the presets by **Featured** or by **Name**. Click the sort arrow to reverse the alphabetical order.

Similarly, click the options menu button in the second Results column to order its display results by **Type**, **Designer**, or **Bank** tags. Click the sort arrow to reverse the alphabetical order.
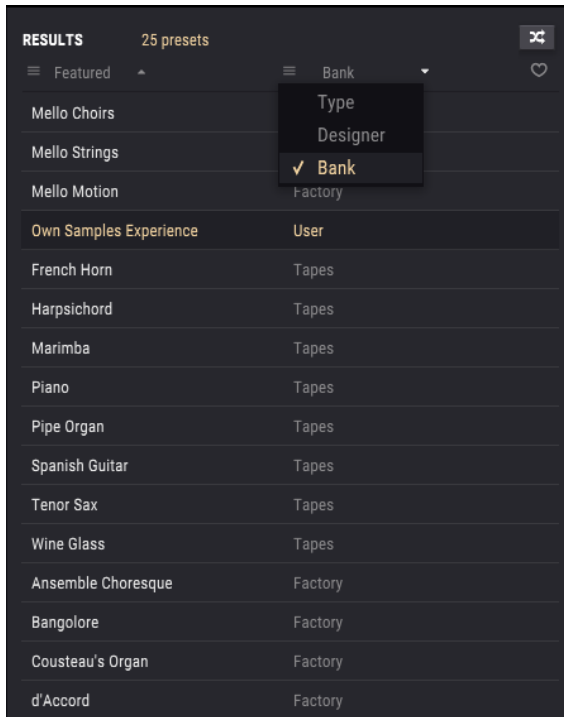
As you explore and create presets you can mark them as Favorites by clicking the heart next to their names. And then later you can click on the heart icon at the top right, and put all of your favorites at the top of the Results list.

Use as many of the sorting and filtering features as you need and you will find the exact sound you want every time.

5.4. Tag category windows

Tags are different attributes or classifications given to presets, in order to make it easier for you to find a sound that better matches what you are looking for.

Mellotron V features three tag categories: Types, Styles and Banks. You can give a preset more than one tag in the Style category, but only one in the Type category. The Bank category is automatically written according to the Bank the preset is saved on.
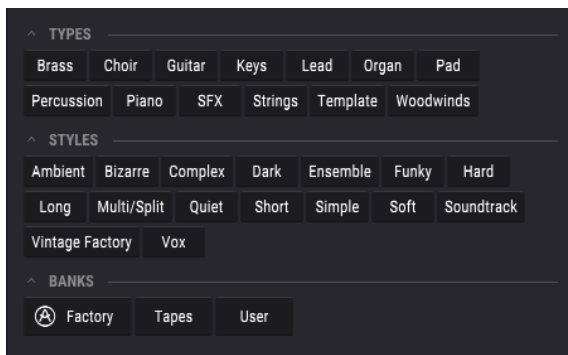
You cannot edit the factory presets, therefore, you cannot change the tags for those presets. But you can freely edit and give different tags to the presets you create yourself.

5.5. The Preset Info section

The right side of the browser window shows specific information about each preset. The information for User presets may be changed here: Name, Type, Favorite, etc.

To make the desired changes you can type in the name fields, select/deselect Types, or use one of the pull-down menus to change the Bank or Type. You can even add new Styles by clicking the + sign at the end of that list. Click Save when you are done.
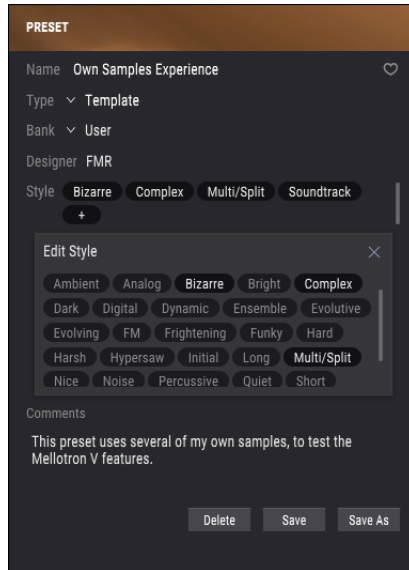
5.5.1. Edit information for multiple presets

If you'd like to move several presets to a different bank while preparing for a performance, or enter a single comment for several presets at the same time, it's easy to do. Simply hold the Control key (Command key for macOS) and click the names of the presets you want to change in the Results list. Then enter the comments, change the Bank or Type, etc., and click Save.

> ♪: If you want to alter the information for a Factory preset you must first use the Save As command to re-save it as a User preset. After this the Info section will gain Edit and Delete buttons at the bottom of the window.

5.6. Preset selection: other methods

The pull-down menu at the left of the Preset Name field in the Upper Toolbar provides a different way to select presets. The first option in this menu is called Filter, and it will display the presets that fit the search terms you used in the Search field. So if you searched for the word "*Mello*" in the main search area, the results of that search would be shown here.

The same way, if you selected the Type "Template", or the style "Initial" as search criteria, only the presets that fit that Type or Style would be shown here.

Selecting the All Types option in the pull-down menu will bypass the Search criteria and show the entire list of presets.

The Types below the line also ignore the Search criteria and display the presets based on their Type: *Brass*, *Choir*, *Strings*, and so on.

Clicking on the Preset Name name field in the center of the Upper Toolbar will show you a list of all available presets. The list will also take into account any selections you have made in the Search field. So if you have pre-selected a Type such as "Choir", this shortcut menu will only show you the presets that match that tag.

The left and right arrows in the toolbar cycle up and down through the preset list: either the full list, or the filtered list that resulted from the use of one or more search terms.

5.7. Playlists

In the lower left corner of the Preset Browser window is a feature titled Playlists. This is used to collect presets into different groups for different purposes, such as a set list for a particular performance or a batch of presets related to a particular studio project.

5.7.1. Add a playlist

To create a playlist, click anywhere inside the field at the bottom:

Give the playlist a name and it will appear in the Playlists menu. You can rename the playlist at any time; just click the pencil icon at the end of its row.

5.7.2. Add a preset

You can use all of the options in the Search window to locate the presets you want to have in your playlist. Once you have found the right preset, click and drag it onto the playlist name.

To view the contents of a playlist, click on the playlist name.

5.7.3. Re-order the presets

Presets may be reorganized within a playlist. For example, to move a preset from slot 1 to slot 3, drag and drop the preset to the desired location.

This will cause the other presets to be shifted in the list to accommodate the new location of the preset being moved.

5.7.4. Remove a preset

To delete a preset from a playlist, click the x at the end of the preset row.

5.7.5. Delete a playlist

To delete an entire playlist, click the x at the end of the playlist row. This will only delete the playlist; it will not delete any of the presets inside the playlist.

6. MELLOTRON V CONTROL PANEL

The Mellotron V instrument default window mimics the aspect of the original M400. Therefore, we only have a creamy-white instrument body with a small keyboard, a tape track selector and three knobs.

Besides this deceptively simple main panel, we have a much more feature-rich advanced panel, with special windows for instrument control, sample editing and management, effects, etc.

We will look deeper into these when we reach the Advanced Control Panel [p.40] entry.

6.1. Main Control Panel

The Mellotron V main control panel has just a few controls. Just like the original keyboard, it features the On/Off button, the Tape Track selector button, and the Volume, Tone and Pitch knobs.
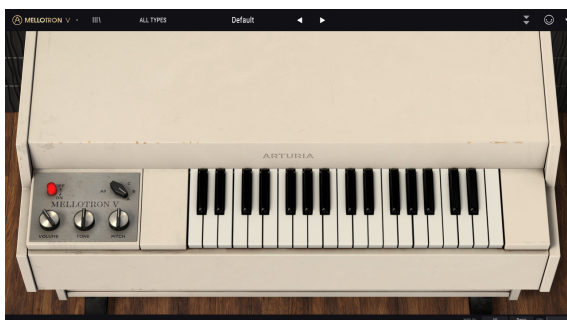
Mellotron V Main Control Panel

> ♪: The original M400 allowed the user to select one Tape Track among the three available, or a mix between two adjacent tracks. The Mellotron V allows to mix (variable mix) between two adjacent Tape Tracks (A/B or B/C) as well as play "All" three tape tracks simultaneously. Track mixing can be automated through MIDI.

We can play a mix of two adjacent tracks, with variable mixing volumes between 1% / 99% and 99% / 1%. Mixing is possible solely between two adjacent tape tracks (A/B and B/C), like it happened in the original. Besides these possibilities, Mellotron V also allows to play all three Tape Tracks at once, all at full volume (no variable mixing).

Mixing can be automated through MIDI, which greatly contributes to the expressiveness of the instrument.

6.1.1. On/Off Button

In the original, this button would turn the instrument On or Off. In Mellotron V the button is just a cosmetic detail. It doesn't perform any function.

6.1.2. Track Selector

Allows selection of one of the three Tape Tracks available. It can also be positioned in intermediate positions, allowing for variable mixing between Tape Tracks A/B and B/C.

There is an extra position, not available in the original, where all three Tape Tracks play at once. This is achieved by placing the Track Selector in the **All** position.

The Track Selector control is doubled in the Advanced panel (Open Lid). It can also be automated through MIDI. By default, the Modulation Wheel is assigned to control this parameter.

To access the "All" position, you need to either drag the mouse until the selector "switches" to that position or, in Open Lid mode, click **All** with the mouse. It can't be accessed through MIDI control.

6.1.3. Volume

This knob controls the overall volume of the instrument. It goes from -60 dB up to +24 dB. By default, it is placed at -12 dB.

6.1.4. Tone

Tone controls the overall brightness of the instrument. It does that through a very simple low-pass filter. By default, the filter is positioned at half-value (0.500), but it can go from 0.00 (max cutoff) up to 1.00 (max filter opening).

Opening and closing the filter may have varying results, depending on the contents of the used samples. Usually, brightness doesn't increase much. Cutoff will have a slightly more pronounced effect.

6.1.5. Pitch

Pitch controls the overall tuning of the instrument. The original Mellotron tuning was very unstable, which demanded this control. The Mellotron V doesn't suffer from those problems, but nevertheless, Arturia wanted to remain faithful to the emulated instrument.

With this control, the Mellotron V can be pitched up or down a whole tone (two semitones). The control is continuous, and accepts any value between -2.00 and +2.00. By default it is positioned at 0.00.

This control performs a global detuning, and is completely independent of the MIDI Pitch Wheel control. Although the Pitch control can only pitch the sound up or down a whole tone, the Pitch Wheel can dynamically pitch the sound up or down any interval from one semitone up to one octave (12 semitones).

6.1.6. The Mellotron Keyboard

The Mellotron V has a small virtual keyboard in the main instrument panel. This keyboard is a mock-up of the original M400 keyboard, with just 35 keys, spanning from G1 (G on the second octave below middle C octave) to F4 (F on the octave above middle C octave). This was the range of the original Mellotron M400.

6.2. Advanced Control Panel (Open Lid Mode)

The Advanced control panel is accessed by clicking the Open Lid (double arrow) button in the Upper Toolbar. This extra control panel gives access to many very important windows and add-ons that bring a lot of extra power and flexibility to the Mellotron V.

Let's take a look at the extra controls that we can access when we are in Open Lid mode:

Mellotron V Advanced control panel

6.2.1. Amplitude Envelope (Macro)

This amplitude envelope is macro, which means it affects all the instrument tape track slots, and associated parameters. Therefore, it adds to the individually set tape (or sample) envelopes. If the added values go over the max value range of a defined segment, the final value will be that max value. The same applies to the min amount. Final values cannot go over the maximum and minimum defined values for each segment.

It is a regular ADSR envelope, and the values are relative, since it adds or subtracts to the already set sample envelopes.

6.2.1.1. Attack

Default value is 0 (no changes in the sample envelope). Range goes from -1.00 to 1.00. Negative values subtract from the original segment values (makes them shorter), while positive values add to the original segment values (makes them longer).

6.2.1.2. Decay

Default value is 0 (no changes in the sample envelope). Range goes from -1.00 to 1.00. Negative values subtract from the original segment values (makes them shorter), while positive values add to the original segment values (makes them longer).

6.2.1.3. Sustain

Default value is 0 (no changes in the sample envelope). Range goes from -1.00 to 1.00. Negative values subtract from the original segment values (makes them shorter), while positive values add to the original segment values (makes them longer).

6.2.1.4. Release

Default value is 0 (no changes in the sample envelope). Range goes from -1.00 to 1.00. Negative values subtract from the original segment values (makes them shorter), while positive values add to the original segment values (makes them longer).

6.2.2. Flutter

Flutter is a fluctuation effect in the pitch induced by slight variations in the magnetic tape speed while paying back the sound. At extreme settings, the effect will resemble that of a random LFO applied to the pitch.

6.2.3. Tape Saturation

Saturation induced by magnetic tape is a well known and highly appreciated characteristic. It even led to the appearing of plug-ins dedicated to recreate this saturation digitally.

The Mellotron, being based on magnetic tape playback, obviously featured that characteristic too, and no emulation would be complete without the recreation of that effect. The control works from 0.00 (no saturation) to 1.00 (full saturation). By default, this parameter is at 0.00 (no saturation).

6.2.4. Mechanics

Since the Mellotron was based on tape playback triggered mechanically, we could sometimes hear clicks and other noises coming from those mechanisms (like key noises, for example). To add an extra degree of realism, we have this parameter, which will recreate those noises.

By default, the parameter is positioned at 0.00 (no noises), but can be raised all the way up to 1.00.

6.2.5. Noise Floor

The aim of the Noise Floor is to simulate the actual noise heard from the audio output of the real Mellotron. This noise is produced by the instrument all the time, and can be heard through the output. In the Mellotron V, we give the user the option to get this constant noise or not. The heard noise is actually a recording of the noise produced by a real Mellotron.

This control gives the user the possibility to have a controlled amount of "noisiness", but with an integrated noise gate, so that it simulates the result of recording the real instrument, then removing the unwanted noise using a gate, or through manual editing.

The recommended amount of noise for playing the factory tapes with added realism is around 0.3. We recommend a value between 0 and 0.3 for the best results.

This parameter also defaults to 0.00, and can be raised up to 1.00.

6.2.6. Vel > Volume

Volume controlled by velocity. Nowadays, this is something we take for granted in all instruments, even in hardware. But at the time the Mellotron was originally built, velocity was a concept unknown to electric musical instruments.

We have added this extra feature so that the instrument can be played more expressively. Again, default is 0.00 (no velocity sensitivity) and the parameter can be raised to 1.00.

6.2.7. AT > Flutter

If velocity was esoteric by the time the Mellotron appeared, after-touch was even more so. Well, actually, the Mellotron was able to perform a kind of after-touch, since it would alter the sound if the keys were pressed harder (the tape would be pressed harder against the player head, which would modify the final sound).

Anyway, we found that after-touch is a perfect way to dynamically control fluttering. Flutter effect was described a little earlier. While Flutter can also be mapped to a MIDI knob or slider, the AT > Flutter parameter offers a way to control it directly from the keys.

This is another parameter that is turned off (has a value of 0.00) by default, and can be raised up to 1.00

6.2.8. Tape Track Page

When we are in Open Lid Mode (advanced control panel), we can see the sounds mapped on each of the three tape tracks in this page. The slider on the left (which doubles the control placed in the main panel) allows you to select which track will play, including variable mixing between two adjacent tracks. To have all three tracks playing simultaneously, we need to click over **All**. While in **All** mode, we can switch Off any of the three tracks by clicking the On/Off button at the right side of the track letter.

Clicking over one of the track lines opens the tape/sample loading dialog. Each track can handle up to eight sounds, between factory samples (tapes) or own samples. Configurations can go like this:

- Factory Samples (Tapes): Up to two sounds;
- User Samples: Up to eight sounds;
- Mixed: Max two factory samples and six user samples.

To unload a sound, right-click over one region slot. That sound is unloaded.

To replace a sound, double-click over the region slot, and select a new sound to load (either one of your own samples or a factory sample) using the dialog box.

At the right-hand side of this window, we have an Edit button, which opens the sample editing page.

This is the most important editing page of the instrument, the one where you may assemble new presets, edit samples and sample parameters, and come up with your own sounds. We will cover it and all the associated features in .
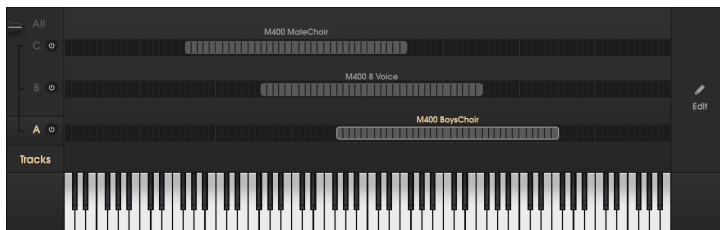
6.2.9. Virtual Keyboard

This second virtual keyboard, which is positioned at the bottom of the window when the Advanced panel is open (Open Lid mode), has a much larger extension than the Mellotron keyboard that appears in the main panel. This is because the Mellotron V has a much bigger play range than the original Mellotron, and allows to map more than one sound per track.

The keyboard spans 96 notes, from C to B, and is mainly intended to help with the mapping of sounds (either the original "tapes" included with the instrument or your own samples), providing a visual and audible reference. You can still click it to play notes, which will help the mentioned audible reference, while the range will provide the visual reference for the mapping regions right above it.

7. TAPES AND SAMPLES MANAGEMENT

The tapes and sample management page is located in the lower part of the GUI when in Open Lid mode.

This is the most important page for those that want to edit presets or create their own, and also to edit the samples, even the ones from the original tapes (in case you want to create loop points, for example).

For those that already used the CMI V or the Synclavier V, many controls will already be familiar.

7.1. Tracks Page

This page resembles the mapping pages in soft samplers. We have a line for each track (remember that we have three tape tracks), divided in 96 small "cells", each one representing one chromatic semitone.

Each track can hold up to eight sounds (original tapes or your own samples). You can even mix factory tapes with your own samples. The possible configurations go like this:

- Max. 2 factory samples (tapes);
- Max. 8 user samples;
- Max. 2 factory samples + 6 user samples combined.

This Tape Tracks page has a much wider range than the original Mellotron. However, the original "tapes" that ship with the Mellotron V will span just the 35 note range that the original instrument was capable of.

The default preset will show three "tapes" loaded in the original Mellotron range (from the G two octaves below middle C octave up to F one octave above middle C octave), like this:
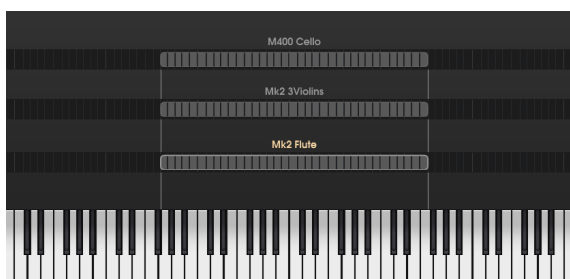
The original pitch of these tapes cannot be changed, to prevent them to sound out of tune, but they can be placed in a region lower or higher than the original. However, that region will always have to start in a G, and end in a F, this way respecting the original tuning, and the original global range, and they will play the exact same sounds.

This means that, if we place a tape one octave higher, any key we play on the keyboard will produce a sound one octave lower, while if we place a tape one octave lower, any key we play on the keyboard will play a sound one octave higher.

In the following picture, we show a preset created with three choir tapes, one placed one octave lower, and one placed one octave higher. Notice that the ranges remained from G to F:
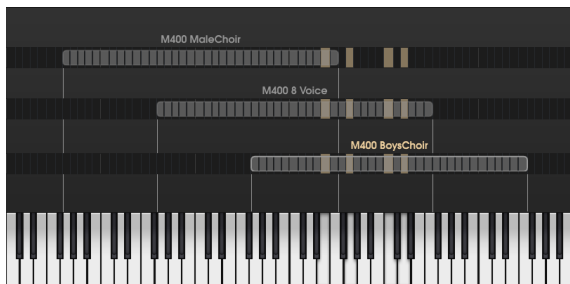
In the image above, the tape in track A is placed one octave above the normal Mellotron range, while the tape in track C is placed one octave below. The tape on track B is placed in the normal range. This way, if we choose to play all three tapes at the same time, we will have a thicker choir sound, with the lower voices sounding in the lower region, and the higher voices sounding in the higher region.

This is something that could not be achieved on a true Mellotron.

7.1.1. Mapping Tapes and Samples

Mapping sounds is very easy and intuitive. Place the mouse over a tape track (it may be over one empty note cell, or an empty space above it). Notice that the mouse pointer changes to a hand with a pointing finger.

Now double click. This will open the following dialog box:
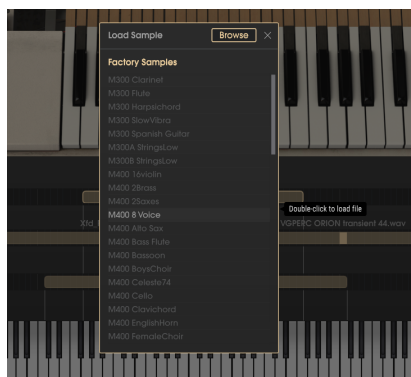
7.1.2. Sample Browser

This is the dialog box where we select sounds to load. The scrolling list in the lower part contains all the original "tapes" that ship with the Mellotron V. You can scroll the list up and down until you find the sound you want.

The list is ordered alphabetically, but the names start with M3OO (which means sounds from the M3OO library), M4OO (which means sounds from the M4OO library), Mk1 (which means sounds from the Mark 1) or Mk2 (which means sounds from the Mark 2). Therefore, you will have the sounds ordered by the name of the original instrument first.

Once you find the factory sample you want, double click over its name to load it.

If you want to use your own samples instead, click the **Browse** button located at the top right of the window. This will open the regular OS file dialog box, allowing you to navigate through all the folders and hard-drives in your system to locate the samples you want to load.

Mellotron V will accept samples in mono or stereo, in WAV or AIFF linear formats, and also FLAC. FLAC is a lossless compressed format that allows to store the files with a smaller size, but still preserving all the playing fidelity of the originals. Sample duration is limited to 8 seconds. Samples with a duration that exceeds the limit will load just the first 8 seconds.

When you load one of your own samples, the region will have a different color. Instead of the gray color of the "tapes", you will have a green region with a bright border, and with a bright cell in the middle. That bright cell marks the root note - the note where the Mellotron V will play the sample at the original pitch.

7.1.3. Regions

By default, each user sample loads in a region that spans seven semitones (the original, three semitones above and three semitones below). But you can change it, extending the range up to four octaves (49 notes, to be precise). The minimum range a region can span is of three semitones.
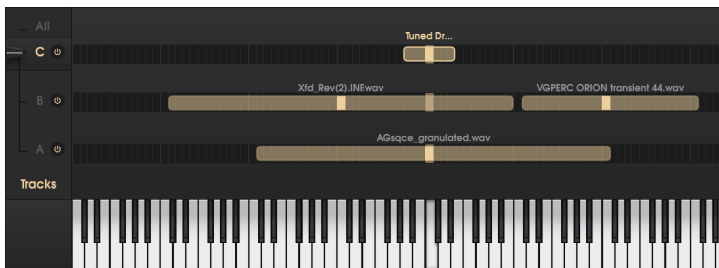
Mellotron V Tracks page with several user samples loaded. Notice the region in Track A, enlarged up to the maximum range allowed, Track C with a sample just loaded (the range spans just seven semitones), and Track B with two samples loaded.

To extend a region, place the mouse pointer at the boundary (left or right) of the region. The pointer changes to a line segment with an arrow on each side. Now click and drag the mouse. If you have the mouse placed at the left-hand boundary of the region and drag left, the region will enlarge into the lower range zone. If you have the mouse placed at the right-hand boundary and drag right, the region will be enlarged into the higher range zone.

If you want to shorten a previously enlarged region, you just have to perform the opposite action - drag the mouse positioned at the right-hand boundary to the left, and/or drag the mouse positioned at the left-hand boundary to the right.

When the region reaches the 49-note limit, it will not enlarge more.

Each Tape Track can hold up to eight sounds. Regions cannot be layered (each Track can only play one sound), which means that you will have to shorten the existing regions to make place for new ones, if you want to load them in that Track.

7.1.4. Edit/Exit button

The **Edit** button is located at the right of the Tracks page. This is the button that gives access to the Sample Editing page. When that page is opened, the button changes to **Exit**. When we press the **Exit** button, it closes the Sample Editing page, and the Mellotron V gets back to the Tracks page.
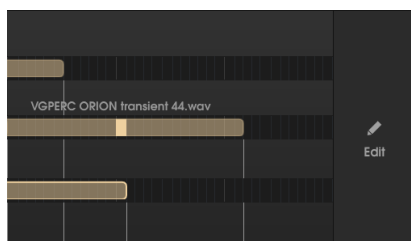
7.2. Sample Editing Page

The Sample Editing page is where you can make more detailed edits to the sounds, like pan, transposition, define sample start and end points, and loop points.

7.2.1. Track Selector Button

When the Sample Editing page is opened, the Track Selector buttons and selector fader are still present. As a matter of fact, they play an important role:

The Track Selector button allows to select the track that contains the sample we want to edit. When we click the button, the correspondent line with the 96 semitone cells show up in the bottom of the page (right above the mapping keyboard), showing the regions contained in that track.

We then click over the region which sample we want to edit. The region becomes highlighted, and that sample opens in the waveform window of the page. If only one region is present, that region will be selected by default.

Beware though that the Mellotron V still plays the Track that's selected by the fader. If you want to hear the edits you're making, ensure that the fader is set to the corresponding track.
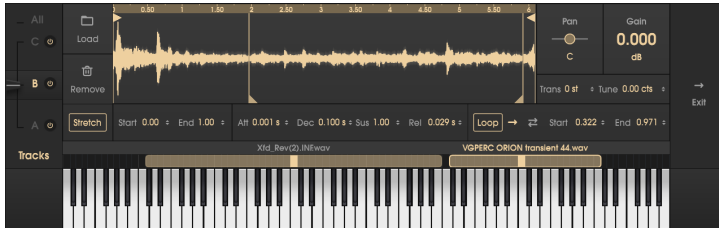
Sample Editing page. Notice the two regions loaded in Track B, which is the selected track. The waveform window displays the sample associated with the highlighted region

7.2.2. Load Button

The Load button in this page works in a similar way to the loading function in the Tape Tracks page. It works in different ways, depending on what we are working on:

1. If the selected Track has no sounds loaded, and the chosen sound is one of the factory samples (original Mellotron tape recordings), the sound loads in the default Mellotron region.
2. If the selected Track has no sounds loaded, and the chosen sound is a user sample, it creates a new region with the root note in the middle C and a range of three semitones, and loads the sample in that region.
3. If the selected Track already has a region with a sound, it loads the new sound (user sample or factory sample) in the highlighted region. The new sample takes the place of the previous one in the region that's being edited. Any edits (start point, end point, loop points, envelope, etc.) performed in the region will remain, and will be applied to the newly loaded sample.
4. If the new sound that's being loaded is a factory sample (Tape), since these have a pre-determined range and tuning, the existing region is resized and repositioned. If there are other regions that would be overlapped, they will be moved upwards.

The dialog box is the same that we already saw when we mentioned the load function.

7.2.3. Remove Button

The Remove button will remove the region being edited. The Sample Editing page closes.

7.2.4. Waveform Window

The waveform window allows to perform some very important edits to the samples. Some of these are reflected in the editing fields below, but the handlers present in this window will make things easier.

We can zoom-in and zoom-out the waveform display by placing the mouse in the top line of the window (where is displayed the timeline). When the mouse pointer changes to a hand, we can then click-and-drag the mouse up and down. Dragging down will zoom in the waveform. Dragging up will zoom out.

Double clicking over the timeline will restore the original viewing (full zoom out).

The waveform window has four handlers (a vertical segment with an arrow at one point). The handlers with the arrow in the upper part of the segment adjust the start and end sample points, while the segments with the arrows in the lower part adjust the loop start and loop end points.

7.2.4.1. Sample Start Handler

By default, this handler is positioned at the extreme left of the sample (beginning of the sample). Dragging this handler will start playing the sample at the point the handler is located, instead of the beginning of the sample.

This may be helpful for fine-tuning the start point if the sample has a noisy start, for example, or to get rid of a percussive attack if we want to use just the body of the sample for a sustained preset sound.

Moving this will make changes to the Start field below and vice-versa (each editing control mirrors the other).

7.2.4.2. Sample End Handler

Similar to the above, but this time the change is applied to the end of the sample. By default, the handler is placed at the extreme right of the sample (sample end).

Like what happens with the Sample Start Handler, moving this handler will also make changes in the End field below and vice-versa.
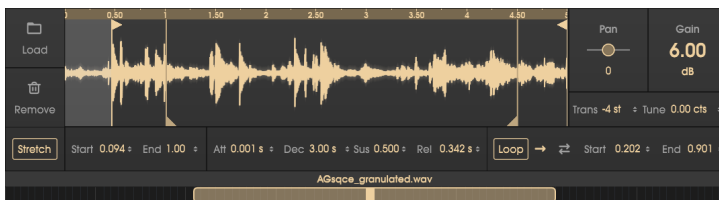
Waveform Editing window. Notice the Sample Start handler positioned at 0.094, the Loop Start handler positioned at 0.202, and the Loop End handler positioned at 0.901. The values are displayed in the respective fields below

7.2.4.3. Loop Start Handler

This handler defines the beginning of the loop, which will be played when the Loop field has a value other than Off. It works in conjunction with the Loop End Handler, and together they define which part of the sample will be looped.

Like what happens with the previous handlers, this one also mirrors the respective field below (Start), and changes performed in one will be reflected in the other.

7.2.4.4. Loop End Handler

The same way the Loop Start Handler defines the point where the looped region begins, this handler defines the point where the looped region ends.

Once more, this handler mirrors the End field, and changes performed in one will be reflected in the other.

7.2.5. Pan

Pan changes the position of the sound in the stereo field. By default it is positioned at **C** (center), which will have no effect in the sound. Mono sounds will sound at center, and stereo sounds will have their natural stereo image.

We can position this in any position all the way to the Left (5OL) or to the Right (5OR). Mono sounds will shift their position accordingly to the Pan position, while stereo sounds will shift (balance) their stereo image.

> ♪: Some effects (like the Rotary Speaker) force Mono, which may defeat this control. If you are moving the Pan control and hear no results, check the FX page to see if the Rotary Speaker is On. and turn it Off. If it isn't and you still experience no results with the Pan parameter, Bypass the FX chain entirely.

7.2.6. Gain

Changes the gain of the sample. Useful when the samples are too quiet or too loud. Range goes from -6O dB up to +24 dB. Default is O (no gain changes).

7.2.7. Trans (Transpose)

This parameter transposes the root note of the sample up to 24 semitones above or below. By default, it is at O (no transposition). The parameter will only work with user samples. Factory samples cannot be transposed.

This may be useful in several situations, besides correcting the pitch of a sample. For example, since the range of each sample is limited to four octaves, using this feature allows to use the same sample in a broader range (by creating another region with the same sampler, and transposing that region up or down).

> ♪: Extreme transpositions may degrade the quality of sample playback.

7.2.8. Tune

Another useful parameter. It allows to fine tune a sample. Tuning may be raised or lowered up to 100 cents (one semitone).

7.2.9. Stretch

This is a very important parameter, and another one that only works with user samples.

The original Mellotron played one tape for each note. This means that no sound was ever transposed. The included original tape sounds preserve this behavior (each note is recorded separately).

However the same doesn't happen when we use our own samples. Samplers usually repitch the original samples by reading them at different speeds. The faster they read them, the higher the pitch will be. The slower they read them the lower the pitch will be.

This presents some problems, like changes in the inner rhythms and pulses of the sounds, transposing formant regions (which alter significantly the spectrum of the sound), etc. It also alters the duration of the sound. When the sound is read faster, it lasts shorter. When the sound is read slower it lasts longer.

Mellotron V can play samples this way too, but the default way is through a high-quality "*stretch*" algorithm. This algorithm plays the samples in a way so that, although they are repitched according to the played note, the duration is not affected. So, the inner rhythms are preserved. If we would play a rhythmic sequence in the original Mellotron, we could play a note in the lower end of the range and another four octaves above, in the higher end, and the two would remain perfectly in sync.

That's what Stretch does. It allows to use your own samples as if they were tape frames from the original Mellotron.

Default for Stretch is On, but it can be turned Off, in which case the Mellotron V sample playback will behave like any regular sampler (slowing down in lower regions and speeding up in higher regions).

> ♪: Beware that the Stretch function is CPU intensive. If you experience too much CPU taxing or CPU overload when using your own samples with Stretch On, try turning it Off.

7.2.10. Start (Sample Playback Start Point)

Works the same way as the Sample Start Handler [p.49]. Any editing performed in this field will be reflected by that handler.

7.2.11. End (Sample Playback End Point)

Works the same way as the Sample End Handler [p.49]. Any editing performed in this field will be reflected by that handler.

7.2.12. Sample Envelope

Although the Mellotron V has a macro envelope, each sound region can have its own envelope, which will work in addition to that macro envelope. For more information about the Macro Envelope please read the respective entry [p.40].

Individual envelopes values may be added or subtracted by the Macro Envelope values.

> ♪: An envelope can be a powerful tool to change a sample playback behavior, and the sample sound nature.

7.2.12.1. Att (Attack)

The Attack segment defines how long it takes the sound to reach maximum volume. Faster attack times may give the sound a percussive nature, while slower attack times will give the sound a pad or ambient nature.

The Attack time in this field may go up to 30 seconds (30.0 s), and may be as short as 0.001 second (1 millisecond). By default it assumes 0.001 s, which means the natural attack of the sound is preserved.

> ♪: Since we are working with samples, the envelope values have to be understood in that context. If a sample has a slow attack on its own, defining a fast attack with this parameter will not have any effect. The natural sample envelope contour has to be taken into account also.

7.2.12.2. Dec (Decay)

The Decay segment defines the time it takes for the sound, after reaching the maximum volume, to fall into the defined Sustain volume. Like it happens with all the other envelope segments, this has to take into account the natural sample envelope (volume) contour.

Also, if the Sustain level is placed at the maximum value (1.00) this value will not have any effect on the audio.

Decay time may be as short as 0.001 s and as long as 30.0 s. By default, it assumes 0.100 seconds.

7.2.12.3. Sus (Sustain)

This is a volume value. It defines the volume at which the sample will play when the sustain point is reached, after the envelope finishes the Attack and Decay segments.

By default, the Sustain is at the maximum volume (1.00), which means that the Envelope Sustain will have no influence in the sound.

If the Sustain point is placed at 0.00, when the envelope reaches the Sustain it will produce no sound. This, coupled with fast Attack and Decay times, can turn almost any sound into a percussive sound.

Range goes from 0.00 (no sound) up to 1.00 (full sound).

7.2.12.4. Rel (Release)

The Release segment defines the time it takes for the instrument to reach silence after the key is released. If we are working with percussive sounds, with a fast decay to zero, and no sustain, this segment will have no impact.

But if we are dealing with long sustained sounds, defining a longer Release time may be good to avoid "clicks" caused by sudden cutoff of the sound after releasing the key.

Release time may be as short as 0.010 s and as long as 30.0 s. By default, it assumes 0.020 seconds.

7.2.13. Loop (Sample Loop)

The original Mellotron tapes didn't loop. They played for around 8 seconds, and after that the sound would shut off, and the key had to be released in order for the rewind mechanism to pull the tape back to the starting point.

However, in Mellotron V we can overcome that limitation. This is done by defining loop points, and defining a loop playback mode. By default, this parameter is Off, which means the Mellotron V will behave like the original (when the sample reaches the end, it stops playing).
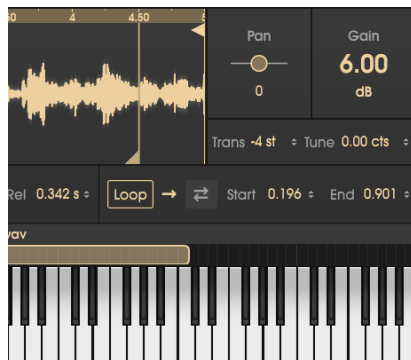
If we choose *Forward* (clicking the arrow pointing to the right), the instrument will play the sample from the Start point up to the loop End point, and then will jump to the loop Start point and continue looping this way until the key is released.

If we choose *Back and Forth* (clicking the two arrows, one pointing to the right, and the other pointing to the left), the instrument will play the sample from the Start point up to the loop End point, and then will play the sample backwards up to the loop Start point, then will play forward up to the loop End point again, and will repeat this cycle until the key is released.

The Mellotron V will define automatically a slight crossfade of the loop points to avoid clicks.

7.2.13.1. Start (Loop Start Point)

Works the same way as the Loop Start Handler [p.50]. Any editing performed in this field will be reflected by that handler.

7.2.13.2. End (Loop End Point)

Works the same way as the Loop End Handler [p.50]. Any editing performed in this field will be reflected by that handler.

8. MELLOTRON V EFFECTS

The original Mellotron was usually played through some external amplifiers, and further processed through several external effects.

Being an Arturia instrument, we didn't want it to go out alone, therefore, an assortment of high-quality effects and also a couple of amplifiers were added, to further polish the original sound.

These were even complemented with a modern convolution-based Room Simulator, to help creating the desired ambience for the sound.

All these are controlled in the special effects panel that opens when in Open Lid mode, by pressing the FX button in the Upper Toolbar.

Each effects unit, as well as the amplifiers and the Room Simulator, have their own little preset browser, to store and retrieve individual presets.

8.1. FX Page

8.1.1. In

The effects work as an auxiliary chain. This knob adjusts the volume of the signal sent into the chain. Be careful when using the In Gain knob after you've created an effects chain containing compressors and limiters, as this may affect the dynamics of the sound.

8.1.2. Out

This is the knob that controls how much of the processed signal goes out to the main output of the instrument.
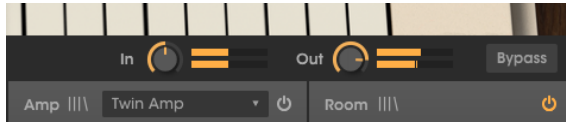
8.1.3. Bypass

This button disables the effects, amp and room so that you are only hearing the unprocessed sound from the instrument. This can be useful if you intend to process the sound with other types of amplification or effects in your DAW.

8.1.4. Processing Chain Slots

Each slot (we have four slots for effect "pedals", a fifth for the amplifier and a sixth dedicated to the Room Simulator) has its own On/Off button. When that button is On, the slot is active.

When the button is Off, the corresponding slot is bypassed. This is a quick way to check the kind of result we get in each slot, by turning it Off and On again, while the entire chain is active.

You can exchange effects between slots, to change their order. To do this, click over an effect, and drag-and-drop it over the slot where you want to change it to. The effect in that slot will change place with the one you are dragging in. If you drag the effect over an empty slot, it will simply be placed in that slot, and the previous slot will become empty.

8.1.5. Processor Preset Library

Each time a slot is filled with a processor (being it an effect, an amp or the fixed Room Simulator), you will have, next to the processor name, a small Library icon (similar to the Library icon that is present in the Upper Toolbar).

When that icon is pressed it shows a menu listing the presets available for that specific processor. You can also save changes to the current preset, or choose "Save As" to save the settings under a new name. This looks and works like the main **Save** and **Save A**s options in the Arturia menu.
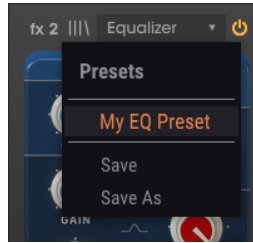
8.2. Pedal Effects

The Mellotron V FX window has four "pedal" effects slots. Each slot can be filled with the effect of your choice, selected among a collection of twelve included with the instrument.

To load (or replace) an effect, click the title field of the slot you want to load the effect into (if empty, it will display *None*). You can also click over the empty slot (which have a + sign in the middle of it). The following list will open:
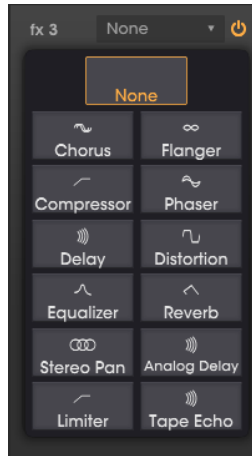
These are high-quality effects that span all the usual options available by the time the Mellotron was in use: Chorus, Flanger, Phaser, Compressor, EQ, Limiter, Distortion, Delay, Analog Delay, Tape Echo, Reverb, and Stereo Pan.

Each "pedal" effect presents its own GUI, all inspired by the classic effect pedals that were used at the time, especially by electric guitar players (but also keyboard players). All effects come with their own collection of presets.

8.2.1. Chorus

Chorus works by taking an audio signal and mixing it with one or more delayed and pitch-modulated copies of itself, making the sounds harmonically richer and adding a sense of movement and space.

This effect can be observed in live vocal choirs where multiple singers perform the same melodic line which, due to small differences in each performer's timing and pitch, creates a thicker, moving sound.

Controls	Description
LFO Freq	Controls the frequency of the LFO that will modulate the delayed signal to produce the effect.
Depth	Sets the depth of the modulation applied by the LFO.
Feedback	Adds feedback to the chorus, to achieve a harsher or ringing tone.
Delay	Controls the amount of delays applied to the signal. The more delay, the deeper the chorus effect.
Voices	Sets the number of "voices" (delay lines) the effect will use, with a different starting phase for each voice, to achieve a higher chorus density.
Stereo	Will switch the Chorus output between mono and stereo.
Shape	Shape of the LFO wave that will modulate the delayed signal.
Dry/Wet	Controls the balance between processed and unprocessed sound.

8.2.2. Flanger

The Flanger works by mixing identical copies of the input signal, with one signal delayed by a small and gradually changing amount of time. While the Chorus works with longer delay times, the Flanger uses much shorter delay times which produces a characteristic undulating swept comb filter effect.

Controls	Description
LFO Freq	Controls the frequency of the LFO that will modulate the delayed signal to produce the effect.
Depth	Sets the depth of the modulation applied by the LFO.
Feedback	Adds feedback to the flanger signal, to achieve a harsher or ringing tone.
Stereo	Will switch the Flanger output between mono and stereo.
Phase Invert	Inverts the phase of the flanger signal to create effect variations through phase cancellations.
LP Filter	Filters the frequencies above the cutoff point, to avoid a sound too harsh.
HP Filter	Filters the frequencies below the cutoff point to avoid too much bass in the sound.
Dry/Wet	Controls the balance between processed and unprocessed sound.

8.2.3. Phaser

Phasing is the psychedelic sweeping effect that was popular in the 1960s and 70s and adds a sense of movement and swirling to the sound. It works by creating a copy of the input signal, feeding it through a series of all pass filters which create peaks and valleys in the frequency spectrum, then mixing it back with the original signal. As the all pass filters are modulated, frequencies that are out of phase cancel each other, producing the phaser's characteristic "whoosh" sweeping effect.

Controls	Description
Freq	Sets the harmonic center of the phase modulation effect
Poles	Determines the steepness (number of poles) of the all-pass filters that will process the modulation signal.
Feedback	Controls the amount of phase resonance by adding feedback to the signal.
Stereo	Controls the stereo spread of the signal. At the lowest value, the signal will be mono.
Rate	Controls the speed of the LFO that will modulate the phasing effect.
Amount	Controls the amount of modulation applied by the LFO.
Sync	This switch synchronizes the modulation speed through MIDI.
Dry/Wet	Controls the balance between processed and unprocessed sound.

8.2.4. Compressor

A compressor reduces the volume of the audio signal above a defined threshold which has the effect of smoothing out volume differences between loud and quiet sections. By making the louder sections quieter, this allows you to apply additional gain to the signal to make the quieter sections louder. The compressor is a very useful tool for creating a more balanced sound that sits well in a mix.

Controls	Description
Threshold	Sets the level above which compression will happens.
Ratio	Sets the amount of compression. Higher values mean more compression/gain reduction.
Attack	Sets the time it takes for the compressor to reach the maximum compression once Threshold is reached.
Release	Sets the time it takes for the compression to return to zero once the audio volume falls below the Threshold.
Out Gain	Manual volume gain (make up) amplification to compensate for the reduction due to compression.
Make Up	A switch that turns On/Off automatic gain (make up) compensation.
Dry/Wet	Controls the balance between processed and unprocessed sound.

8.2.5. Delay

Delay adds dimension and spaciousness to the signal, by creating echoes that can be spread over the stereo image. When using longer delay times, this can also add a rhythmic quality to the sound, especially when working with sounds that have a more pronounced attack.

Controls	Description
Time	Controls the time the delayed line will sound after the original signal. May be synced.
Feedback	Adjusts how many times the delayed line will repeat (more feedback, more delay lines).
Stereo	Controls the stereo spread of the signal. At the lowest value, the signal will be mono.
Sync	Synchronizes the delay time through MIDI with the host (expressed in musical values).
Ping Pong	Stereo mode. In ping-pong mode, delay lines will alternate between left and right in the stereo field.
LP Filter	Filters the frequencies above the cutoff point, to avoid a sound too harsh.
HP Filter	Filters the frequencies below the cutoff point to avoid too much bass in the sound.
Dry/Wet	Controls the balance between processed and unprocessed sound.

8.2.6. Distortion

This pedal offers 4 different types of distortion, ranging from subtle drive, crunch and grit to extreme distortion, fuzz and bitcrushing.

Use the left and right arrows to select one of the 4 distortion types. Each type will have its own associated controls below.

Bitcrusher: This effect distorts the sound by reducing the number of bits used to define the waveform. The less bits used, the more the signal is distorted. Downsampling is another way to induce distortion. As the sample rate is reduced, aliasing is introduced to the sound, creating "ghost partials" in the spectrum.

Controls	Description
Bit Depth	Induces distortion by reducing the number of bits used to represent the waveform.
Downsampling	Induces distortion by reducing the number of samples per second the waveform is measured.
Dry/Wet	Controls the balance between processed and unprocessed sound.

Overdrive: The Overdrive effect is well known from guitar players, and adds a kind of "fuzziness" to the sound. This effect is modeled after a "solid-state" circuit.

Controls	Description
Drive	Controls the distortion intensity.
Out Gain	Controls the volume of the processed signal output.
Tone	Controls the brightness of the resulting signal.
Dry/Wet	Controls the balance between processed and unprocessed sound.

Wavefolder: This is a type of distortion effect where the signal is amplified until it clips, then the peaks above the clip point are folded downward. Usually, this type of distortion enriches the spectrum with high-frequency content and can produce complex frequencies out of simple waveforms.

Controls	Description
Drive	Controls the distortion intensity.
Out Gain	Controls the volume of the processed signal output.
Type	Controls the shape of the wavefolding. Hard produces more distortion.
Dry/Wet	Controls the balance between processed and unprocessed sound.

Waveshaper: This distortion effect is the result of mapping the input audio to the output audio by applying a math shaping function. The result may be anything between overdriven signal to pure noise. In this case, it approaches the distortion guitar pedals.

Controls	Description
Drive	Controls the distortion intensity.
Out Gain	Controls the volume of the processed signal output.
Dry/Wet	Controls the balance between processed and unprocessed sound.

8.2.7. Equalizer

An equalizer is a bank of filters where each filter works in a specific band of the frequency spectrum, boosting or cutting those frequencies to change the overall spectrum balance. It can be used for subtle tone adjustments, or for accentuating certain bands to allow them to cut through the mix.

The Equalizer has three bands - a shelf in the low region (Low Shelf), a bell in the middle (Peak), and a shelf in the high region (High Shelf).

Each band features a gain control and a frequency control.

The mid band also features a Q (bandwidth) control, which allows you to specify the width of the cut or boost to mid frequencies. Small values can be used for a more surgical cut or boost, while larger values affect more frequencies around the center frequency.

Controls	Description
LowShelf Gain	Controls the gain/attenuation (between -15 dB and 15 dB) of the LowShelf band.
LowShelf Frequency	Controls the shelf frequency of the Low Shelf band (between 50 Hz and 500 Hz).
Peak Gain	Controls the gain/attenuation (between -15 dB and 15 dB) of the Peak band.
Peak Frequency	Controls the peak frequency of the Peak band (between 40 Hz and 20 kHz).
Peak Q	Controls the Q (bandwidth) of the Peak band (between 0.001 and 15.0).
HighShelf Gain	Controls the gain/attenuation (between -15 dB and 15 dB) of the High Shelf band.
HighShelf Frequency	Controls the shelf frequency of the High Shelf band (between 1 kHz and 10 kHz).
Scale	Controls the depth of the equalization effect.

8.2.8. Reverb

Reverberation is the sum of the cross reflections of the audio signal by the different surfaces of the room or space where the sound source is. It may also be called ambience. The number of reflections and how they spread and decay defines the type of room (or space) and its size.

This is an algorithmic reverb, unlike the Room module at the end of the effects chain which is convolution-based. However, this one can be placed anywhere in the signal chain, so that other effects can be applied to the sound after it has been processed by the reverb.

Controls	Description
Pre Delay	Controls the time between the original signal and the first echos (early reflection).
Size	Controls the size of the room or space (basically, the reverb "body"). The bigger the size, the more reverb that's added.
Decay	Controls the length of the reverb effect (how much time it will last). Should be articulated with the Damping parameter for a more realistic effect.
Damping	In a room, this parameter defines the absorption coefficient of the reflection surfaces. The higher the damping the faster the high frequencies will decay.
M/S	Adjusts the stereo wideness of the effect, from mono to an increasingly wide stereo image. Takes advantage of Mid/Side processing.
LP Filter	Filters the frequencies above the cutoff point, to avoid a sound too harsh.
HP Filter	Filters the frequencies below the cutoff point to avoid too much bass in the sound.
Dry/Wet	Controls the balance between processed and unprocessed sound.

8.2.9. Stereo Pan

The Stereo Pan pedal can be used to add stereo motion to the sound. It uses an LFO (low frequency oscillator) to bounce the sound between the left and right channel to create a sense of movement.

Controls	Description
Rate	Controls the speed of the LFO. Can be synced through MIDI.
Shape	Controls the LFO waveform. We can select among Sine, Triangle, Saw, Ramp, and Square.
Sync	This switch turns On synchronization of the LFO through MIDI. When On, the LFO Rate is expressed in musical values.
LP Mono	When this switch is On, the low frequencies are not modulated by the effect (become mono).
Dry/ Wet	Controls the balance between processed and unprocessed sound.

8.2.10. Analog Delay

Analog Delay is another type of delay pedal with a slightly different sound. The principle is the same - the input audio is recorded and played back after a small amount of time. A feedback circuit then introduces more copies of the delayed audio back into the original signal.

This particular delay pedal is great for more dubby sounds with lots of feedback. Since this delay is modeled after analog hardware, it will introduce more coloration than the other Delay pedal.

Controls	Description
Time	Controls the time the delayed line will sound after the original signal. May be synced.
Feedback	Adjusts how many times the delayed line will repeat (more feedback, more delay lines).
Sync	This switch turns On synchronization of the delay time through MIDI with the host. When On, the delay time is expressed in musical values.
Feedback Tone	Controls the tone (brightness) of the resulting feedback delays.
Rate	Controls the rate of the LFO modulation source. When Sync is on, the rate is synced through MIDI with the host, and expressed in musical values.
Depth	Controls the amount of modulation.
Dry/Wet	Controls the balance between processed and unprocessed sound.

8.2.11. Limiter

A limiter is a type of compressor that serves a very specific purpose. It essentially works as a volume "ceiling" to prevent the signal from going above a certain volume. This is especially useful when working with sounds with a wide dynamic range and many effects that could potentially cause the signal to clip and result in clicks and pops.

Controls	Description
Input Gain	Controls the amount of gain added to the input signal. The VU Meter will give a visual reference of the current volume.
Release	Controls the time it takes the audio to recover from limiting.
Output Level	Controls the output gain, after limiting.
Dry/Wet	Controls the balance between processed and unprocessed sound.

8.2.12. Tape Echo

The Tape Echo pedal is a recreation of a famous tape echo unit from the 70s and 80s, which worked by recording snippets of the input audio onto magnetic tape, then playing them back with a delay. Due to the nature of magnetic tape, this imparts a natural tape saturation effect to the delays.

Controls	Description
Bass	Controls the volume of low-frequencies (tone-control).
Treble	Controls the volume of high-frequencies (tone-control).
Time	Controls the time it takes for the delay line (this time "echo" line) to be played back.
Sync	This switch turns On synchronization of the echo time through MIDI with the host. When On, the delay time is expressed in musical values.
Intensity	Basically controls the number of echoes that are produced, therefore, the intensity of the effect.
Input	Controls the volume of the signal input in the unit for processing.
Echo	Controls the volume of the processed sound that comes out of the unit.
Dry/Wet	Controls the balance between processed and unprocessed sound.

♪: Remember that you can change the order of the effects by drag-and drop them between the slots. The dragged effect will change place with the one that was in that slot.

8.3. Amps

Besides the effects "pedals" the Mellotron V includes two amplifiers. In the old days, Mellotrons, like the other electric keyboards, would many times be played through amplifiers, like guitar amplifiers or even Leslie cabinets.

For added realism, we added a modeled guitar amplifier and also a modeled Leslie cabinet.

8.3.1. Twin Amp

This amplifier is modeled after a famous guitar amp, and is complete with a modeled microphone placement with two positions. All the controls featured on the hardware amplifier are present in this modeled unit, including the Tremolo effect.

The Mellotron V Twin Amp has the following parameters: On/Off Axis (microphone placement), Bright (tone control), Drive, Reverb, Bass (bass band EQ), Mid (meddle band EQ), Treble (high band EQ), Tremolo Speed and Tremolo Intensity.

| Controls	Description
On Axis	Controls the modeled microphone placement. When On Axis is lit, the microphone is pointing straight at the amp. When it is off, the microphone is pointing at an angle. The on-axis tends to emphasize the fundamental frequencies, while the off-axis setting de-emphasizes them.
Bright	This button provides a quick way to brighten the sound, by boosting hi-frequency content. It is only active at low volumes.
Drive	Controls an additional pre-amp stage that adds distortion to the sound.
Reverb	A modeled spring reverb that allows to add an authentic touch of analog "roominess" to the sound.
Bass	Controls the bass frequencies boost/cut.
Mid	Controls the middle frequencies boost/cut.
Treble	Controls the high frequencies boost/cut.
Tremolo Speed	Tremolo is the modulation of the amplitude of an audio signal, usually performed through an LFO. Speed controls the frequency of the LFO, which will define the speed of the tremolo effect.
Tremolo Intensity	This knob controls the intensity of the tremolo effect.

8.3.2. Rotary Speaker

The rotary speaker cabinets were invented by Donald Leslie in 1940. They became inseparable add-ons to the Hammond organ, to the point of being almost impossible to see one without the other. The Leslie expressiveness was given by means of the rotating horn and drum speakers inside the cabinet, that could rotate at variable speeds, usually controllable by the player, to produce the characteristic swirling chorus effect that greatly contributed to the fame of the Hammond organs.

A vacuum tube amplifier capable of being overdriven up to distortion adds an extra expressiveness dimension.

The Leslie 122 cabinet was the most popular, and was designed specifically for the Hammond. It is a dual speed cabinet. Later, Leslie created the Leslie 147, intended to be a "universal" cabinet to be used by any organ. It was also dual speed.

Other instruments also took advantage of the expressiveness of the rotary speaker cabinets. The Mellotron was one of those instruments that sometimes were used with these cabinets, so we added an emulation to the Mellotron V to help recreating that sound.

The Mellotron V **Rotary Speaker** amplifier has many controls, divided by two panels. In the Main panel we have: Fast (accelerates the rotation effect), Brake (stops the rotation, forcing a mono signal), Stereo, Balance, Drive, Dry/Wet.
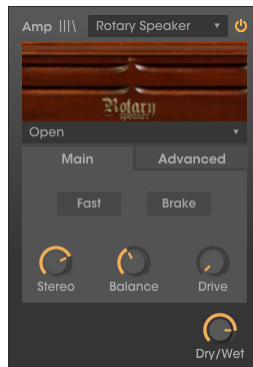
In the Advanced panel we have: Horn (Slow, Fast, Accel), Drum (Slow, Fast, Accel). These controls allow for greater control of the rotary speaker effect, and they are MIDI controllable and automatable.
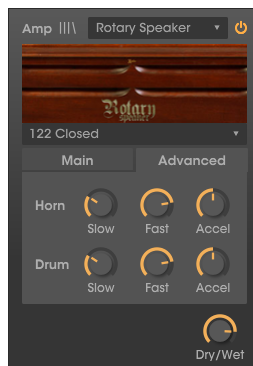
We also have a choice of several cabinet models, some modeling famous Leslie units: Closed, Open, 122 Closed, 122 Open, 147 Open.
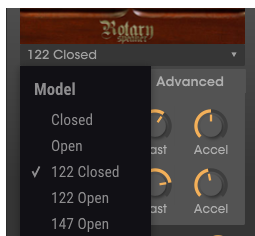

Controls	Description
Fast	Speeds-up the rotary speaker effect when On. When Off the speed is set to Slow.
Brake	Stops the rotary speaker effect when On.
Stereo	Adjusts the stereo wideness of the effect, from mono to an increasingly wide stereo image.
Balance	Controls the balance between high and low frequencies (the horn speaker and the drum speaker).
Drive	Controls the additional amplifier stage that adds distortion to the sound.
Horn Slow	Sets the horn speaker speed to slow.
Horn Fast	Sets the horn speaker speed to fast.
Horn Accel	Varies the speed of the horn. Good to be controlled by MIDI.
Drum Slow	Sets the drum speaker speed to slow. The drum is the bass speaker.
Drum Fast	Sets the drum speaker speed to fast.
Drum Accel	Varies the speed of the drum. Good to be controlled by MIDI.
Dry/Wet	Controls the balance between processed and unprocessed sound.

8.4. Room Simulator (Convolution Reverb)

The last effect in the panel is a fixed one. It is a room simulator based on convolution. Convolution is a math operation on two functions to produce a third function. In audio, we have the first function (the main audio signal) processed by another function (called impulse audio). This impulse is a reference audio signal recorded in an acoustic room or space (or through a hardware processor), this way capturing the audio signature of that room, space or hardware processor.

That signature (impulse) will then be convolved with another audio signal, this way imprinting the captured signature in the audio that's being processed. This technique have been used extensively in audio in the last decades. Room simulation is one of the fields where convolution excels.
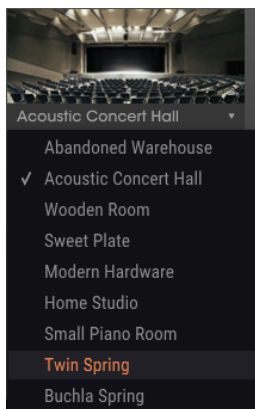
Since the impulses are crucial to get a good convolution effect, we have a good choice, spanning acoustic rooms, plate reverbs, spring reverbs, and even modern hardware.

The Mellotron V **Room Simulator** has just a few controls, since there isn't much to control in a processor of this type: Room, Dec. Start, Duration, Dry/Wet.
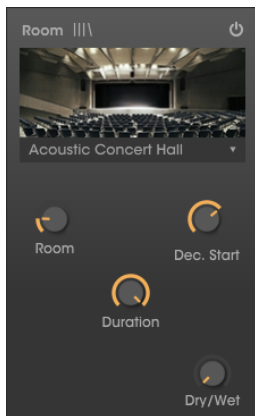
Controls	Description
Room	Controls the size of the simulated space.
Dec. Start	Controls the decay of the reflections (in a room it's the absorption of the walls)
Duration	Controls the duration of the reverb tails.
Dry/Wet	Controls the balance between processed and unprocessed sound.

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