

CBA ref 2018- THRM1



A web guide to
Thermae

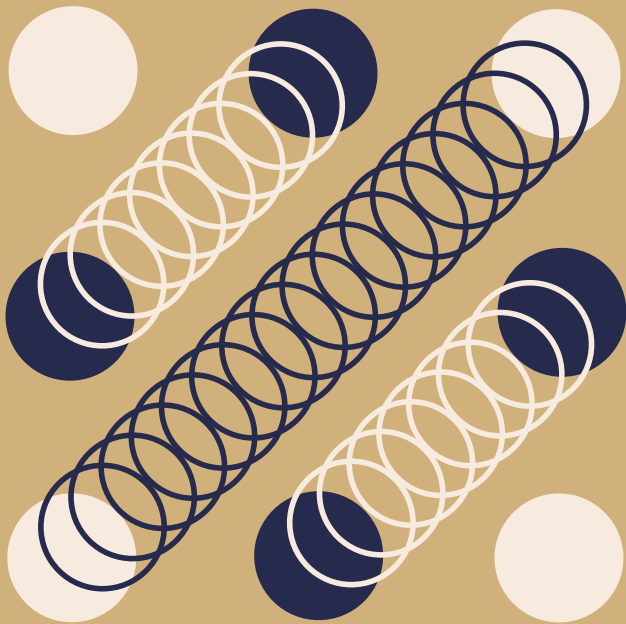


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9V DC Power req: 9VDC Center Negative ~180 mA

Overview

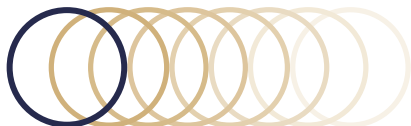
Thermae is analog delay taken to its extreme.

We should talk about technology briefly. It will be worth it.



Analog delays use bucket-brigade chips (BBDs) to achieve their effect. They create echoes by re-recording the same sound over and over, and the truth is they're pretty bad at it. That's their secret.

Each "copy" becomes a little more distorted, and loses a little bit more detail. It's perfect. They melt into the background, dissolving in the most natural sounding way.



With Thermae, we wanted to see how far we could take these chips. We put them under digital control, then started asking them to do the impossible:

To use delay times far beyond their capabilities.

To undergo shape-shifting modulation.

To make melodies.

All the things you normally associate with analog delay. *Just kidding.*

It can do normal analog delay too though.

We're going to go pretty deep in this manual, but don't feel like you need to go there with us. Thermae was designed to be fun and intuitive. Hands-on. We're just going to lay it all out there, and you decide what you need.

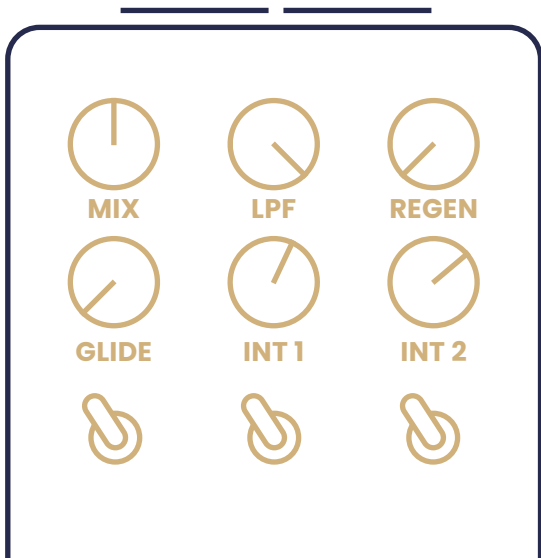
Let's see.

Getting Started

It would make sense to start from a basic delay, but we're not going to do that. You're probably here for all the weirder things Thermae can do, so let's get right into it.

These settings will give you a musical sequence.

As soon as you turn on the pedal the sequence will begin. Try playing one simple note and see what Thermae does with it.



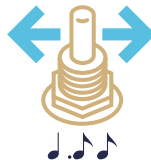
TAP/HOLD

To change the speed of the sequence, tap in a new tempo.



INT 1/2

To change the melody, adjust the INT 1 and INT 2 knobs.



To change the rhythm, adjust the note toggles.

Notice all the different textures and patterns you can cook up. We'll get into what's happening here on pg. 16.

But first, controls.

Controls – Knobs



Blend, filter, repeat.

A

MIX (RAMP)

Sets the balance between your clean and delayed signal. If ramping is engaged (pg. 44), the function of this knob will change. It now controls the speed of the movement.

B

LPF

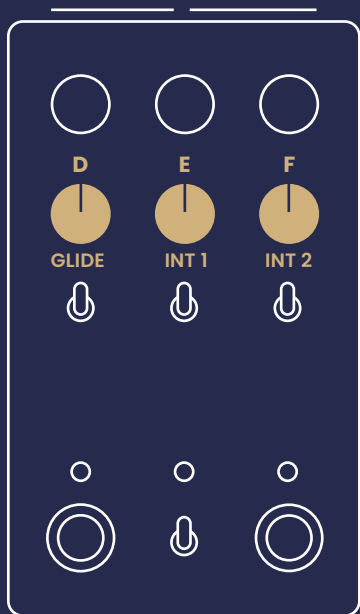
Resonant low-pass filter. Set all the way clockwise for brighter repeats that let the noise and artifacts pour through, or roll counter-clockwise to mellow out the highs. You will also notice a resonant bump right at the cutoff frequency, a bit of emphasis. This knob is highly interactive with the REGEN control, which can make the pedal self-oscillate or increase the number of repeats.

C

REGEN

Sets the number of echoes. The more regeneration, the more your signal will devolve into a beautiful, smeary, tape-saturated blur. If positioned carefully it can repeat seemingly forever, or turn up a touch more to descend into self-oscillating madness. The REGEN setting also has an important effect on the type of pitch shifting you get (pg. 28).

Controls - Knobs



Bend and shift.

D

GLIDE

Activates a portamento effect as you move from one step to the next. Set to minimum for immediate shifts, or turn up for increasingly long slides. At higher settings there may not be enough time for the pitch glide to complete its journey, resulting in a bendy soup that never quite reaches the intended destination before being redirected elsewhere.

E

INT 1 (SPEED)

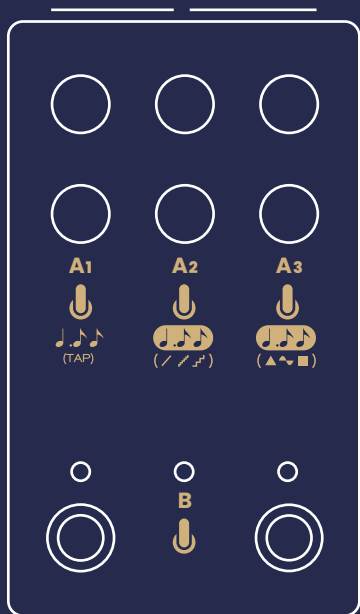
F

INT 2 (DEPTH)

Each of the **INTERVAL** knobs controls a different step in the sequence, and sets the amount of time shifting that will occur. Rotate counter-clockwise to slow the delay time and pitch shift downwards, rotate clockwise to increase the delay time and pitch shift upwards. Setting either knob to noon will cause the sequence to bypass that step (setting both to noon will turn *Thermae* into a classic analog delay).

If the **MODULATION** dip switch is on (pg. 40), the function of these knobs changes to set the **SPEED** and **DEPTH** of the movement.

Controls – Toggles



Save, subdivide, step.

A

STEP LENGTH / SUBDIVISION

These three toggles work together to set the rhythm of the sequence. Each one maps to a different step and controls how long Thermae will hold there.



Quarter note: The sequence will stay on this step for exactly one pulse of the tap tempo.



Dotted eighth note: Splits the difference between the  and  options. The dotted eighth setting is useful for adding some swing or crookedness to the rhythm.



Eighth note: The sequence will stay on this step for half of the tap tempo.

If both intervals are turned off (you are using Thermae like an analog delay), the left-most toggle will function like a simple tap tempo subdivision switch.

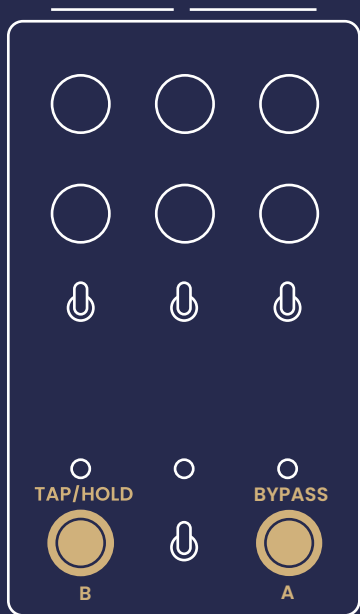
If the **MODULATION** dip switch is on, the toggles below INT 1 and INT 2 will control the behavior and shape of the movement (pg. 40).

B

PRESETS

The left and right positions each store a preset, while the middle position is live (current settings). To save to the right slot, hold the right footswitch for 3 seconds, then add the left footswitch for another 3 seconds. Do the same for the left slot, but start by holding down the left footswitch. The middle LED will blink to indicate success.

Controls – Footswitches



Engage, tap, oscillate.

A

BYPASS

Activates the pedal.

B

RUNAWAY OSCILLATION

Holding the left footswitch introduces a momentary blast of self-oscillation, as if the REGEN knob were completely clockwise.

↓
HOLD

SEQUENCER MODE



B

TAP TEMPO

Tapping this switch sets the base tempo. Always honors the last two stomps.



SLOWDOWN MODE

Slow the speed of the sequence by half by holding both footswitches until the tap LED turns green. Hold both again to exit.

STEP MODE



B

STEP

Tapping this switch moves to the next step in the sequence.



TAP SHORTCUT

To change the tempo in STEP mode, hold both footswitches until the tap LED turns green. Now you can tap in a new tempo. Hold both again to exit.

Time Shifting 101

Thermae creates melodies by changing delay time.

It's a unique approach that changes the pitch, texture, and sense of space all at once.

Here's why it happens:



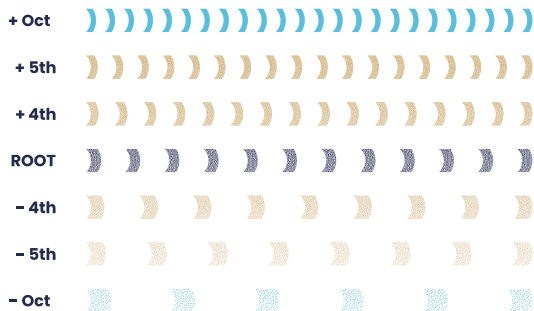
In order to create echoes, sound is recorded to a BBD chip.



When the delay time is changed, that sound is slowed down or sped up along with it.

Most analog delays work this way, but Thermae's secret is that it changes the delay time in precise amounts that end up producing harmonic, pitch shifting intervals.

These changes in playback speed have multiple simultaneous effects. If you're pitch shifting downwards, what you're really doing is slowing down the delay time. This means the repeats will also become more spaced out, and the quality of the echoes will be more gritty and noisy. Inversely, pitching upwards will produce more clear, tightly packed echoes.



It's like a sequence with built-in variance. Each step has its own character, delay time, and pitch, all changing at once.

Thanks time shifting!

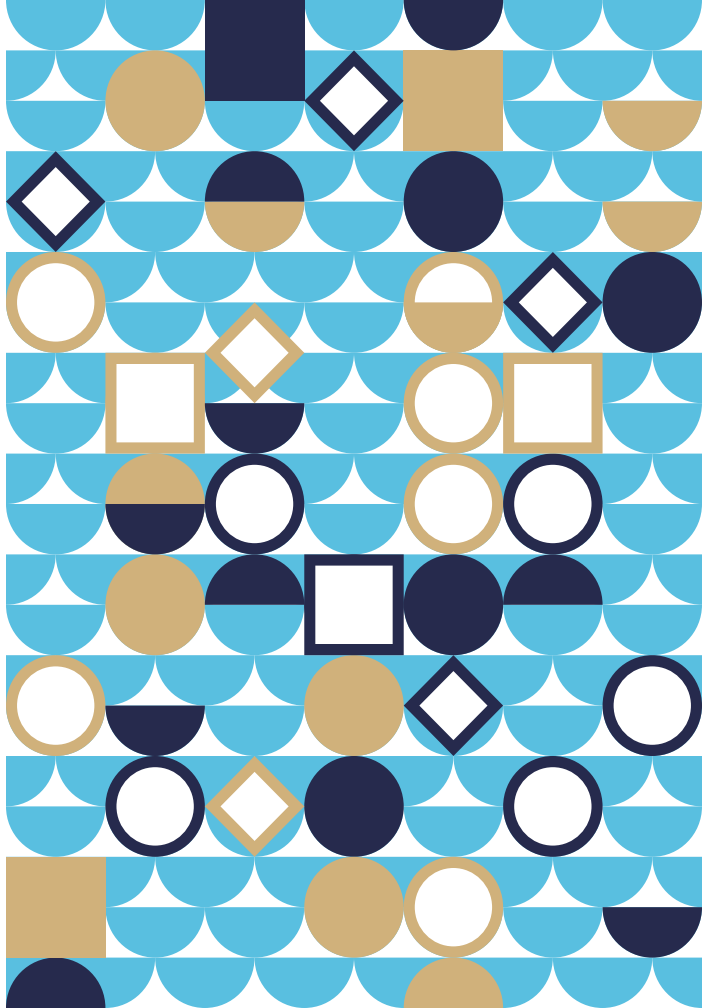
Sequencing

Thermae makes it possible to generate melodies quickly and intuitively, using only a few simple controls. No music theory required. We've given you lots of possibilities but limited the range so that any combination will sound pleasing.

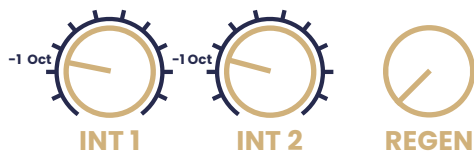
But because it's all based on time shifting, you might experience some things you weren't expecting.

We're going to peel back the layers bit-by-bit and probably go deeper than most of you need. We'll warn you before we head for the bottom.

Plug in and follow along.



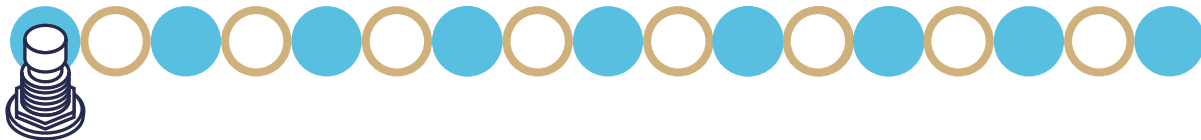
Sequencing - Tempo



The first thing to explore is tempo.

In the case of Thermae, the tempo of the sequence comes from the delay time. You set it with the tap tempo footswitch.

Try tapping in a couple different speeds and seeing what happens.



Notice how the character of the echoes changes as well as the speed – faster sequences are cleaner, while slower sequences are more degraded.

SLOWDOWN MODE

Thermae has a trick to give you some flexibility:



Hold down both footswitches for 3 seconds and Thermae's sequencer will start to run at half speed (indicated by the tap LED turning green).

This makes it possible to tap in a faster, cleaner delay time, but still sequence at a casual pace. It's also a great way to really listen to what the sequencer is doing and learn its ways.

SYNC UP

If you need precise timing, you might want to consider syncing Thermae to MIDI clock to get things just right and avoid tempo drift over time. See pg. 48 for more on MIDI and external control.

Sequencing - Steps

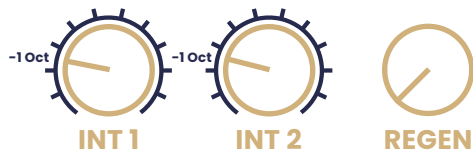
Thermae's sequencer is pretty straightforward.

It progresses from one step to the next, changing the delay time as it goes based on the settings of the INT 1 and INT 2 knobs.

But there is one helpful thing to know about:

The invisible interval.

Example time.



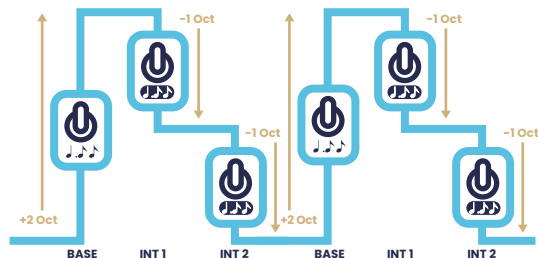
Tap in a nice slow tempo, play a note, and listen to what happens.

We used both of the intervals to shift downwards, but there was some upwards pitch shifting going on as well. This is because of that invisible interval: not pitch shifted.

We'll call this the "base step" going forward.

Once Thermae sequences through its two intervals, it always returns to the delay time set by tap tempo. This is the base step. The base step is always on, and just like INT 1 and INT 2 its duration is set by a note division switch.

If your intervals shift the pitch downwards, this means that returning to the base step will shift the pitch back up. In this way, all sequences will have some mix of both up and down shifting.

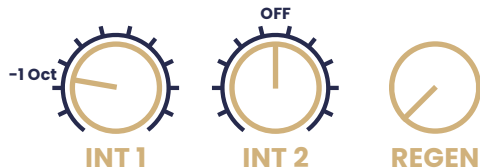


(Because each of the intervals descend 1 octave, Thermae must shift back up 2 octaves on the base step)

It also means that having both of Thermae's intervals on will result in a 3-step sequence.

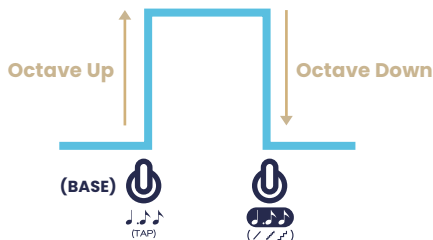
Making a Sequence

It can be helpful to start with a 2-step sequence.

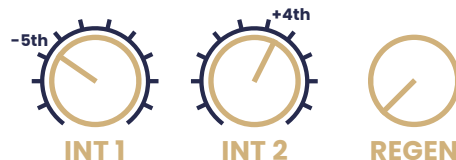


With the second interval turned off we are simply alternating between the base step, and interval 1. Nice and neat. 2-step sequences are ideal if you want to keep things symmetrical and straightforward.

Try out some interval settings and the feeling they produce, and notice how extreme shifts up or down will also create an extreme shift in the opposite direction as they return to the base step (pg. 20).

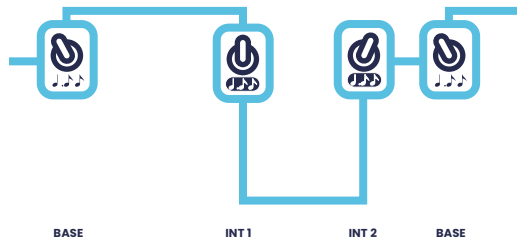


Okay, we've graduated to 3-steps.



This is where you'll find a lot of Thermae's nuance and intrigue. The odd sequence length naturally brings out a distinct feel.

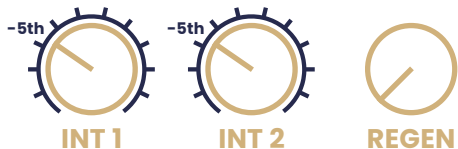
It's a fast way to end up somewhere new.



Now is a good time to really go wild with those step length toggles. Notice what a difference they make, even if the intervals in the sequence don't change.

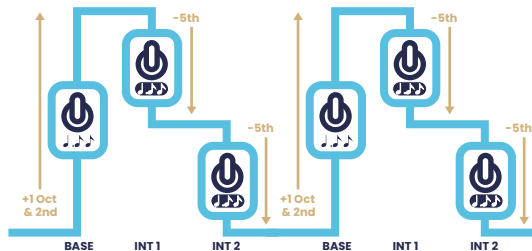
Sequencing - Stacking

Try out this setting:



Notice that both intervals have the same setting, but not the same sound. **This is because the second interval is relative to the first.**

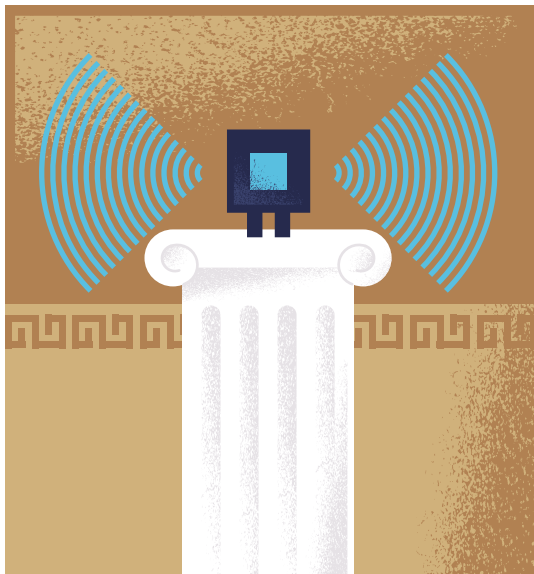
If the first interval has already taken us one fifth down, the second interval will take us another fifth down.



In this case, this means Thermae will have to go an octave and 2nd up to get back to the base step, an interval you couldn't get otherwise.

You can use this stacked interval effect to shift higher and lower than would otherwise be possible, and really explore the limits of Thermae's BBD chips.

Once Thermae returns to the base step we reset and start over again.



Intermission / Caution

Okay, time for that warning we mentioned earlier.

We're headed into the depths now.

The time shifting enigma.

Treat this section more like a reference than essential information.

A little mystery is nice sometimes, and your ears know what they like.

It's all music.

But if you want to know how Thermae really ticks, well, here we go.



Sequencing - Regenerating

You might have noticed we've been keeping **REGEN** all the way down in these examples, and there's a good reason. **If REGEN is turned up, it means the same note will be pitch shifted multiple times and go to some unexpected places.**

Try playing a single, sustained note in this setting:



Now try it again with **REGEN** turned up:



There's a lot more going on in that second setting, layers of different pitches and some dissonance.

The note is shifted up a 4th by the first interval, then fed back through the delay and shifted another 4th by the second. The higher the **REGEN** setting, the more times a single note will be shifted.



This regenerating effect also means you will get harmonies within the echo itself, as older notes will have shifted more than newer ones.

If achieving very tight and harmonious sequences is your goal it's best to turn **REGEN** down completely, but higher settings can be great for finding some more rich and complex sequences. Experiment!

Sequencing - Pitch

Okay, last one.

This is maybe the best encapsulation of how time shifting is different from traditional pitch shifting.

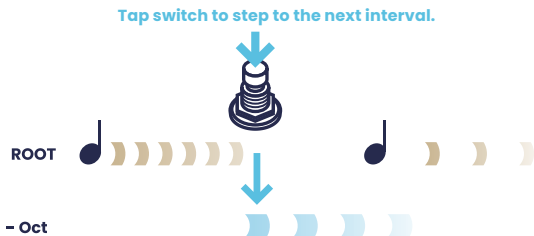
A great way to test this is to activate STEP mode (more on this soon, pg. 34).



Play some notes, then press the tap switch to step to the next interval. Notice how all the older notes are pitch shifted, but any new notes you play are not.

Only the notes played *before* Thermae moves to a new step are shifted.

Once those older notes fade away, you just have a normal analog delay (with a new delay time). This creates a unique sensation where older notes will be like modified harmonies - sped up or slowed down - while newer notes will echo just as you played them until Thermae moves to the next step.



That's it. All of Thermae's secrets are now yours.

There are some sequencing ideas on the next spread to start putting all this to use.

Sequencing Ideas



FRIENDLY 5THS

INT1 -5th INT1 OFF REGEN

This might be Thermae's most mellow and agreeable setting for sequencing. The fifth tends to fit in nicely with whatever you're playing, and the jumps in pitch aren't too extreme. Nice fifths, good fifths.



SLANTED SEQUENCE



A guaranteed way to get an interesting sequence is to use a different length for each step. Because the sequence itself will be so complex, you might want to start by feeding it with a simple input source, like some sparse, steady chords. Let Thermae do the work.



CALL & RESPONSE

INT1 -1Oct INT1 -1oct REGEN

This setting alternates between pitch shifting and atmospheric noise. You'll first be greeted by textural abstractions of what you played as the sequence descends, followed by a sped-up refrain. Play a phrase, wait for Thermae to respond, repeat.



BIRDFEEDER

INT1 -1Oct INT1 +1Oct REGEN

This is a playful and easy-to-use three-step sequence. Turn up REGEN for an ascending chorus of tweets and chirps. Complex, yet versatile and harmonious.

Step Mode

STEP mode allows you to hit pause and explore Thermae at your own pace.

You can think of it as manual sequencing. **The intervals still work just like they would with the sequencer running, but you decide when you move to the next step.** You advance by tapping the left footswitch.

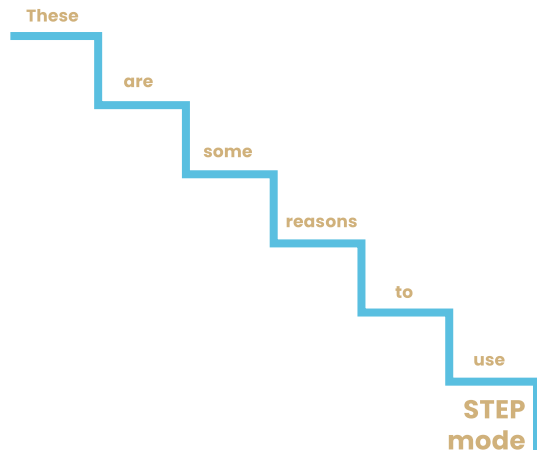
One use of STEP mode is to treat it like an analog delay with some special abilities:



- Push and pull the BBD chips to otherwise impossible delay times and stay there as long as you like.
- Use each step like a sub-preset with its own distinct but related delay time.
- Tap through the steps when the occasion calls for momentary flourishes of time shifting.

Another reason to use STEP mode is to separate the sequence speed from the delay time. You could tap in short, quick echoes, but slowly advance the sequence in time with a kick drum, for example.

STEP mode is also useful for ensuring your sequences won't drift in a band context and makes it possible to play songs with odd, ever-changing time signatures.



Step Mode Ideas



DECIMATOR

INT 1  -2 Oct INT 2  -2 Oct

This setting is what you get when you shift two octaves down on the first interval, then two octaves down again on the next: A churning mass of analog degradation and noise. Remember that this can be used sparingly. Leave Thermae at the base step for normal analog delay, but tap down into the degradation to end a song, for example.



RUNNING WATER

INT 1  +1 Oct INT 2  +1 Oct LPF 

By getting the BBD chips running at a faster delay time than makes sense, you can squeeze out a number of sound effects. Sometimes they sound like birds or computers, other times like a soothing stream. You may need to tweak the interval settings based on the speed of your tap tempo, but the key is shifting upwards. Also be mindful that lower LPF settings will filter these sounds out.



HACKERTRONICS

INT 1  -1 Oct INT 2  -1 Oct REGEN 

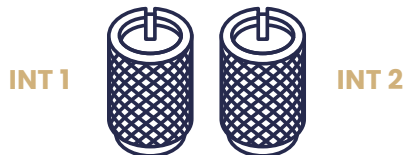
Find the spot right before Thermae oscillates and enjoy a unique form of looping delay. If you get it just right, your notes will never fade or oscillate, just distort gently into the background. The interesting part is setting the intervals to shift downwards, allowing you to slow and extend the loop when you're ready, eventually descending into some angular, stretched-out computer looping.

BONUS

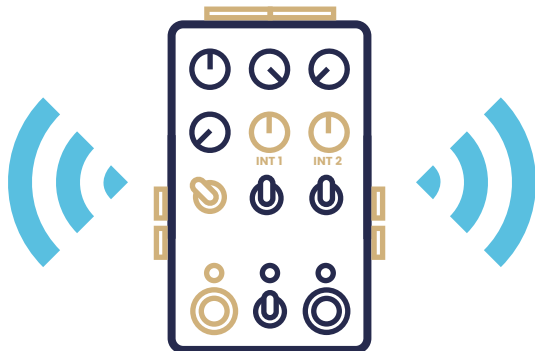
Crank the **GLIDE knob** to create a melting effect as you transition between steps. This works especially well with settings such as Decimator and Hackertronics.

Analog Delay

To use Thermae as a classic analog delay, simply set both of the INT knobs to the off position.



Use tap tempo to set the delay time and the left-most toggle to control the subdivision.



This can be a great setting to store in a preset, so you can quickly access a nice, simple analog delay at any time.

You might also want to engage the **MODULATION** dip switch to turn the unused INT knobs and their toggles into modulation controls. Add some motion to those echoes.

Let's learn about this. →



Modulation

Thermae is home to nine different varieties of pitch modulation, including some unique shape-shifting waveforms.

To access these controls, engage the **MODULATION** dip switch.



SPEED sets the rate of the modulation, **DEPTH** sets its intensity.

The right toggle controls the shape of the wave.



The middle toggle injects some randomness to that shape.



The first half of the waveform will always match up with your selected shape, it's the second half where things can get wiggly.

With the middle (randomness) toggle set to the left, you will get the exact movement you expect.



Set to the middle, you will get twitchy glitches in the waveform, like fluttering tape.



Set to the right, you will get slower, more abrupt shifts to the waveform, a unique scrambling effect.

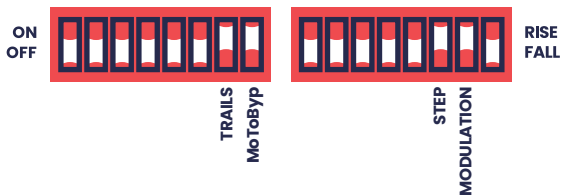


The randomized settings can be great for more true and organic movement, like a piece of malfunctioning hardware.

The active modulation settings will be stored when you turn the **MODULATION** dip switch off again.

Customize

There are four dip switches on top of Thermae that allow you to access alternate behaviors and modes. **The dip switch settings are saved with your presets.**



TRAILS

Turn this on for echoes that naturally fade out after the pedal is bypassed, for smoother transitions. This also has the side effect of switching over to buffered bypass. In the off position Thermae will be true bypass and echoes will disappear instantly when the pedal is turned off.



With TRAILS engaged, Thermae will self-oscillate even if the pedal is bypassed. Be mindful of keeping that REGEN knob down.

MOTOBYP

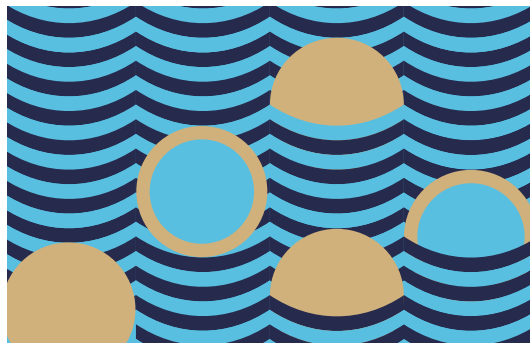
Short for *Momentary To Bypass*: Thermae will only activate when you manually press down on the bypass switch. Release, and it instantly shuts off. Useful for bursts of activity.

STEP

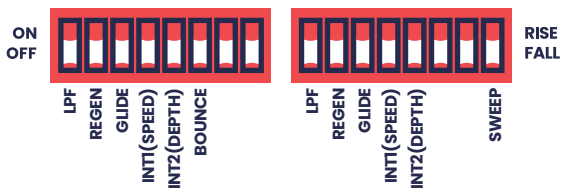
Pauses Thermae's internal sequencer, allowing you to move between the steps manually by pressing the left footswitch (pg. 34).

MODULATION

Changes the function of the two INT knobs and their corresponding toggles to control pitch modulation (pg. 40).



Ramping



Ramping gives you the ability to automate Thermae's knobs, either as a one-time movement (ramp) or continuous motion (bounce).

It's easier to get started with bounce, so let's do that. We're essentially going to modulate a knob.



1. Engage bounce.

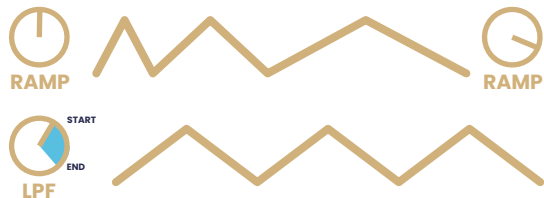
2. Choose which knob(s) you wish to control.



3. Choose the sweep.



4. Set the speed.

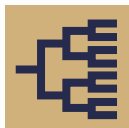


Done. Now you have a modulated filter on your echoes. The position of the knob you're controlling is important, because it either sets the maximum or minimum point of the range (depending on the SWEEP setting).

Ramp is the same idea, but the movement only happens once when you turn the pedal on. Your chosen knob(s) rise or fall to your chosen position, then stay there. Useful for creating a wave of motion and activity when you first turn on Thermae.

Check out our Dip Switches 101 resource for a step-by-step on ramping.

Ramping - Ideas



GENERATIVE SEQUENCING

INT 1 -5th BOUNCE, INT 1

This setting creates the sensation of an evolving sequence that keeps things fresh, but familiar. The key is bouncing one of the INT knobs to introduce some variation on that step. The ramping speed is important here: slow speeds will be the most effective, while faster speeds will lead to interruptions and more chaotic results.



ROLLING CLOUDS

LPF MAX BOUNCE, LPF

Bouncing Thermae's filter is a nice way to add an additional layer of motion to any setting. For a real-time modulated filter effect, crank the mix (before engaging the dip switches), set REGEN to min, and tap in a really fast tempo.



TEETERING

REGEN 12:00 BOUNCE, REGEN

The idea here is to dip into self-oscillation, but use ramping to pull things back before they spiral out of control. The result is an echo that slowly pulses in intensity, threatening to blow-up but always backing off just in time. Be careful not to use too slow of a ramping speed here, or your self-oscillation nightmares will come true.



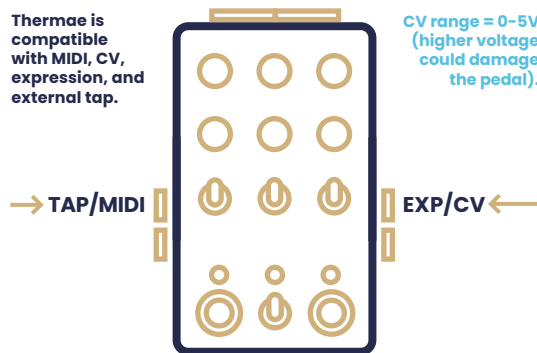
SLIP & SLIDE

GLIDE 9:30 BOUNCE, GLIDE

Bouncing GLIDE is useful for adding some subtle variation to a sequence. Some steps will slide and bend, others will transition crisply.

External Control

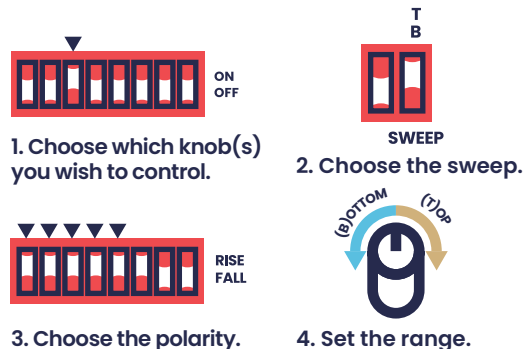
Thermae is compatible with MIDI, CV, expression, and external tap.



CV and expression can be used to control Thermae's knobs.

MIDI lets you go deeper and control everything, including tempo sync.

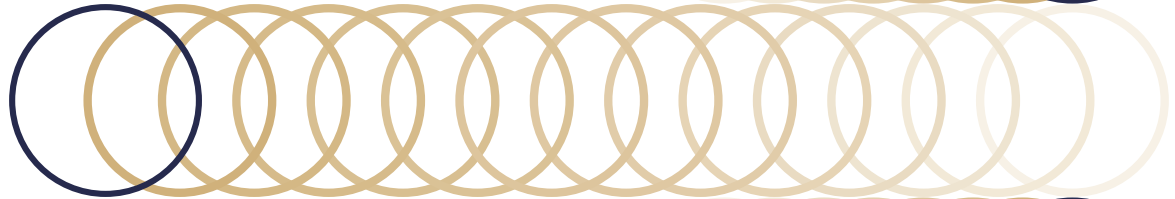
CV and expression are set up the same way as ramping using the dip switches on the top of the pedal. The pedal will simply detect a CV or expression signal when you plug it in, and hand over control.



MIDI requires a Chase Bliss Midibox to convert the signal to a 1/4" TRS jack. For details on getting MIDI going with Thermae, check out the MIDI manual.

The MIDI jack can also be used to send Thermae tap-tempo from an external source.

Thank you and good luck!



This has been the Thermae manual.
Dry off, get some rest.

If anything is confusing or weird,
you can find us here:
help@chasebliss.com

We're happy to help.

Enjoy.

