

Cognate Macro Synth

Modulation, Synths and Pitch

Category	Modulation, Synths and Pitch
Channels	Mono in / mono out
Version	1.1.0 (04/11/2026)

Overview

Cognate Macro Synth is a responsive, analog-sounding mono synth block for Anagram. Great for adding synth to bass or guitar, lead sounds or envelope filter effects.

Macro Synth is our homage to the Electro-Harmonix Bass Micro Synth. We modelled the key circuit elements: its sub-octave and octave-up voices, the square fuzz, the swept resonant filter, and the attack detector that fires the sweep on every note. Like the original it has no pitch detector. The voices lock straight to your strings, so slides, bends and ghost notes come through the instant you play them.

Then we added a set of synth **Wave Shapes** including saw, PWM, classic synth oscillator stacks and a super-saw, and three more filter **Types** (a Moog-style ladder, an MS-20 and a vowel formant), and a **Blend** control to keep your clean bass underneath.

Use cases

- **The classic Micro Synth sweep** Square Fuzz (Micro), the Micro filter, Start 8–9, Stop 2–3, Rate around 2, Resonance 5–7. The filter snaps open on every note and closes down.
- **Fat synth bass** Sub high, Oct and Input low, Wave Shape on Square Sub or Saw Sub, the Ladder filter with Start and Stop close together for a steady tone.
- **Rising sweeps** Any shape, with Stop set above Start, so the filter opens on each note instead of closing: a "wah" in place of a "yow".
- **Talking bass** The Vowel filter, Start 10 and Stop 5, Rate 3–4: every note says "yeah". Turn Resonance up and use the Saw Sub shape to make a great 'Pony' effect.
- **Swells and pads** Super Saw + Sub, Modulation 7 or more, Attack 5–8. Each phrase fades in, and legato notes carry on at full level.
- **Synth and real tone underneath** Blend at 50–70 % keeps your clean attack and low end in parallel with the synth.
- **Snarling lead up the neck** Twenty filter, Resonance 7–9, Saw with some Oct, a fast Rate.

Tips and Tricks

Before and After

Try adding blocks before or after Macro Synth in Anagram's chain. The Input slider passes your signal through to the filter, so it works great with other fuzz, overdrive, octave or pitch shifter blocks. Try chorus, phaser, delay or plate reverb after for an authentic studio vibe.

Sing your Heart Out

The Vowel filter combined with Start, Stop and Rate gives you a wide range of vocal-like sounds, like 'Yeah', 'Oww', 'Woah', or static sung vowels. Try the Sawtooth or Sawtooth Sub Wave Shape for a rich waveform to drive the filter.

Sustained Effort

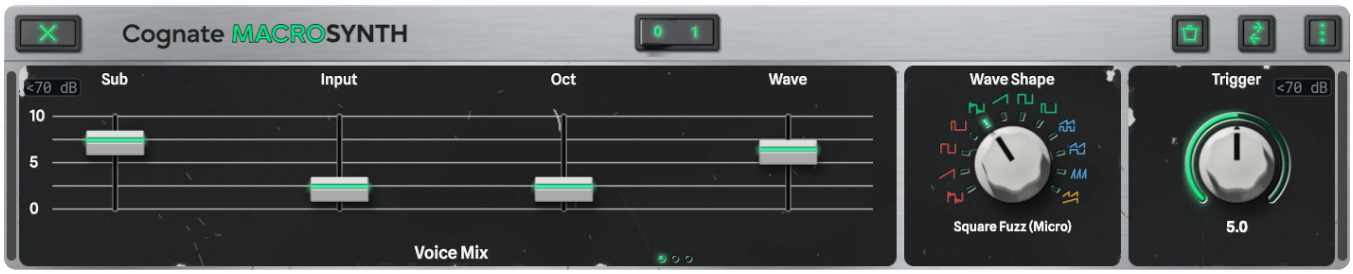
You don't have to turn Stop all the way to 0 for a filter sweep. If you leave it around 2 to 3, the filter will stay open enough to hold your note as long as your instrument does. It kind-of emulates the Sustain part of a full ADSR synth envelope.

Triggered

Trigger sets how the synth responds to your playing when opening the filter envelope. If you don't hear a sweep, turn trigger up. If the sweep is messy, constant or holds hard notes too long, turn it down.

But you can be creative with Trigger. Try setting it just too low for normal playing, but enough to open on harder notes - now you have a two-stage dynamic filter.

Parameters





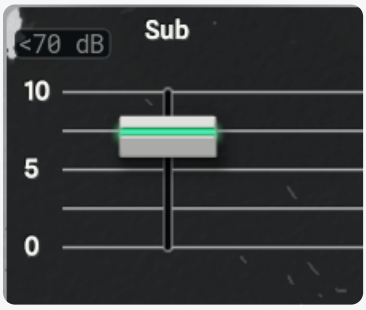




Bypass

Type: Toggle in the centre of the top bar

Turns Macro Synth off and passes your bass straight through, with a short crossfade so switching in and out doesn't click. The block stays in your preset, so you can bind Bypass to a footswitch and kick the synth in for a chorus or a drop.

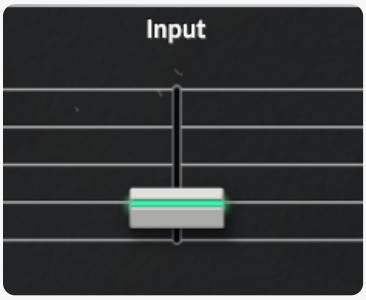


Sub

Range: 0 to 10 **Default:** 7

The level of the sub-octave voice, a square wave an octave below the note you play. It's made the way the pedal makes it, by dividing your string's own waveform rather than detecting its pitch. It's the foundation of most Macro Synth sounds: bring it up for weight under everything else. Like all four faders, it feeds the filter.

As on the original, the divider wants a clean, single note. Chords, heavy fret noise or a very weak signal can make it stumble, which is part of the character, but play cleanly for the tightest sub.

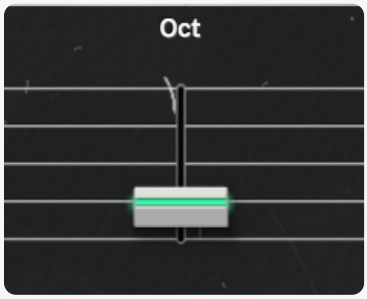


Input

Range: 0 to 10 **Default:** 2

The level of your own bass in the synth mix. This isn't a clean path. Like the pedal's Input slider, it sends your signal through the filter and the gate with the synth voices, so it takes the sweep and the squelch too. It puts your instrument's attack and harmonics back into the synth, which helps a part speak in the mix.

For your untouched bass alongside the synth, use **Blend** on page 3 instead.

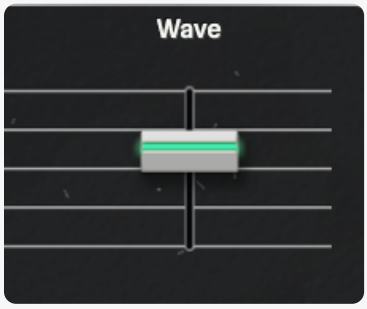


Oct

Range: 0 to 10 **Default:** 2

The level of the octave-up voice. As on the pedal, it's made by full-wave rectifying your signal, which doubles its frequency, so it's a bright, ringing tone with a hint of ring modulator rather than a clean pitch shift. It's most focused higher up the neck and on the neck pickup; on low notes it adds grit and buzz.

Set it a little below **Sub** for a big two-octave spread.



Wave

Range: 0 to 10 **Default:** 6

The level of the synth voice that **Wave Shape** selects: the square fuzz on the original pedal, or any of the other eleven shapes here. The shapes are level-matched, so you can switch between them without rebalancing this fader.



Wave Shape

Options: Square Fuzz Sub, Saw Sub, Square Sub, PWM Sub, Square Fuzz (Micro), Saw, Square, PWM, Saw + Square, Saw Pair + Sub, Saw Trio, Super Saw + Sub

Chooses the synth voice the **Wave** fader brings in. Going clockwise, the knob runs through four groups, each lit in its own colour: four shapes an octave down (red), the same four at the pitch you play (green), three oscillator stacks (blue), and Super Saw + Sub at the end (amber). Every shape follows your strings, and changing shape crossfades, so you can switch while you play.

The square shapes hold full level for as long as the note stays above the **Gate**, then stop, as the pedal's square does. The saw, PWM and stacked shapes follow your playing's dynamics.

- **Square Fuzz Sub:** the pedal's square fuzz, an octave down.
- **Saw Sub:** a sawtooth an octave down. Brighter and buzzier than the square: the classic synth-bass growl.
- **Square Sub:** a clean square an octave down. Hollow, round, organ-like weight.
- **PWM Sub:** a pulse an octave down whose width moves slowly, for a thicker, animated sub. **Modulation** sets how far it moves.
- **Square Fuzz (Micro):** the original pedal's square. Your signal is squared off into a full-level fuzz that carries your string's own edge. The default, and the sound of the Micro Synth.
- **Saw:** a sawtooth at pitch, for brassy, cutting lines.
- **Square:** a clean square at pitch. Steadier and rounder than Square Fuzz.
- **PWM:** a pulse at pitch whose width sweeps slowly. Vocal and chorus-like; **Modulation** sets the depth.
- **Saw + Square:** a saw and a square at pitch, slightly detuned, as on the ARP Odyssey's two oscillators. Fuller than either on its own, with a slow, gentle beat. **Modulation** sets the detune amount.
- **Saw Pair + Sub:** two detuned saws over a square an octave down: the classic Minimoog bass. The sub holds the low end steady while the saws beat against each other above it. **Modulation** sets the detune amount.
- **Saw Trio:** three saws at pitch, detuned unevenly so their beats never line up. A thick, restless unison for big leads and wide synth-bass lines. **Modulation** sets the detune amount.
- **Super Saw + Sub:** four detuned saws over a saw an octave down, their spread drifting slowly. Wide and lush, for pads and big Reese-like unison parts. **Modulation** sets the spread.



Trigger

Range: 0 to 10 **Default:** 5

Sets how readily a new note fires the filter sweep. Like the pedal's, the detector listens for how *fast* your level rises, not how loud you play: a soft note retriggers as readily as a hard one, while a slow swell or a ringing sustain never does.

Turn it up and smaller attacks restart the sweep: lighter plucks, hammer-ons, ghost notes. Turn it down and only firm, separated notes do, so a legato line rides one sweep. At 0 the sweep never fires and the filter sits at **Stop**, a fixed filter you set by hand.

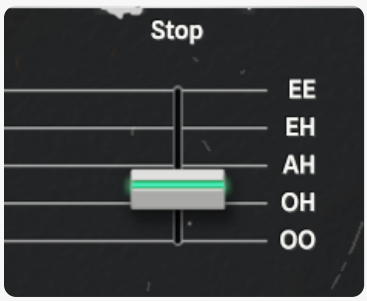


Start

Range: 0 to 10 **Default:** 8

Where the filter jumps to when a note fires the sweep. Each new attack snaps the filter to Start in a few milliseconds, and from there it glides to **Stop** at the speed **Rate** sets. 0 is about 40 Hz, 5 about 1 kHz, and 10 is wide open.

Set Start above Stop for the classic Micro Synth sound: the filter opens bright on the pick and closes down. Set it below Stop and the sweep rises instead. With the Vowel filter, Start picks a vowel rather than a frequency (see **Type**).



Stop

Range: 0 to 10 **Default:** 3.3

Where the sweep comes to rest. After each attack the filter glides from **Start** to Stop and settles there until the next note fires it, so Stop is the colour of your sustain. Low settings close it down to a dark, round thump; higher ones leave it bright.

Set Start and Stop to the same value for a fixed filter that doesn't move.



Resonance

Range: 0 to 10 **Default:** 6

The peak at the filter's cutoff, which makes the sweep sing, squelch and talk. Low settings give a smooth, rounded sweep; higher ones make the movement vocal and obvious. Each filter **Type** answers in its own way:

- **Micro** and **Ladder** get sharper and more whistling as you turn it up, and the Ladder breaks into self-oscillation at the very top.
- **Twenty** grows a gritty, distorted edge as the MS-20's diodes bite, and holds back from howling until about 9.
- **Vowel** narrows the formants, so the vowels become more pronounced.

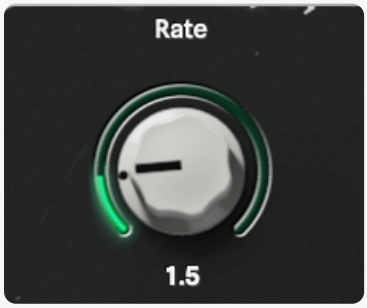


Type

Options: Micro, Ladder, Twenty, Vowel

Chooses the filter the whole mix runs through. **Start**, **Stop**, **Rate** and **Resonance** drive all four, and switching crossfades, so you can change type without a click.

- **Micro:** the pedal's own filter, modelled from its circuit. A resonant low-pass with a smooth, vocal peak, for the authentic Micro Synth sweep.
- **Ladder:** a Moog-style ladder. Punchier and fatter in the low end, with a deep, round resonance. The default, and a great all-rounder for synth bass.
- **Twenty:** modelled on the Korg MS-20. A high-pass that tightens the bottom, into a driven low-pass whose resonance snarls. For aggressive, buzzy lines and squelch with teeth.
- **Vowel:** a formant filter that makes the sweep talk. **Start** and **Stop** pick vowels instead of frequencies, running through eight from 0 to 10: "oo", "oh", "aw", "ah", "cat", "eh", "bit", "ee". Each note sweeps from one to the other, curving through the vowels in between the way speech does. The five main vowels are marked on the scale beside **Stop**.



Rate

Range: 0 to 10 **Default:** 1.6

How fast the filter sweeps from **Start** to **Stop**; turning it up makes the sweep slower. As on the original, the sweep moves a steady number of octaves per second, so Rate sets the time per octave, not the length of the whole sweep: a wide sweep takes longer than a narrow one at the same setting.

Keep it low for a quick, percussive blip on every note, or turn it up for a slow, vocal glide that keeps moving through a held note.



Attack

Range: 0 to 10 **Default:** 0

Fades the synth in on a new note instead of starting it at full level: an instant attack at 0, a slow swell of a few seconds at 10. Use a little to soften the pick, more for violin-style swells and pads.

The swell starts again only after a silence. Separated notes each swell in, but notes you play legato carry on at full level, as on the pedal. **Gate** sets what counts as silence.



Blend

Range: 0 to 100 % **Default:** 100 %

Mixes your clean, untouched bass back in alongside the synth. At 100 % you hear only the synth, and at 0 % only your dry bass. In between, your real low end and attack sit under the synth, which keeps a part solid when the tracking gets wild or the filter closes right down.

This is a separate path from the **Input** fader, which sends your bass through the filter with the synth.



Level

Range: -40 to 12 dB **Default:** 0 dB

The output level while Macro Synth is on, the clean signal from **Blend** included. Match it to your bypassed tone, so kicking the synth in on a footswitch doesn't jump out of the mix or drop out of it.



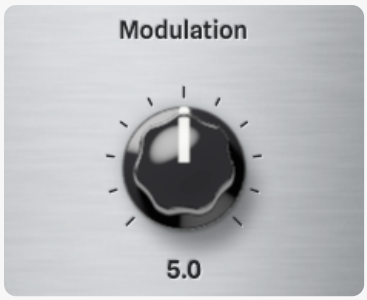
Gate

Range: 0 to 10 **Default:** 5

Gate and **Modulation** sit on the back panel at the end of page 3. They're set-and-forget controls, like the trim pots inside the original.

Gate sets the threshold below which the synth goes quiet: the squelch built into the pedal. Notes above it play. When a note decays below it, the output shuts off cleanly instead of trailing into glitches as the tracking loses the string. It also sets how long the square shapes sustain, since they hold full level until the note falls below the gate. It's also the silence that restarts the **Attack** swell.

Turn it up for tight, staccato notes and silence between them; turn it down to let notes ring longer and to catch lighter playing. Each step moves the threshold by 4 dB, and 5 matches the original pedal.



Modulation

Range: 0 to 10 **Default:** 5

Sets how much the moving shapes move. It works on six **Wave Shapes** and does nothing on the others:

- **PWM** and **PWM Sub:** how far the pulse width sweeps. At 5 it swings widely, for a lush, chorus-like movement. Turn it down and the movement shrinks until, at 0, it settles on a steady, narrow pulse; turn it up for a deeper sweep.
- **Saw + Square**, **Saw Pair + Sub** and **Saw Trio:** the detune between the stacked oscillators. At 0 they play in perfect unison with no beating, 5 is the detune as tuned, and 10 doubles it for a faster, wider beat.
- **Super Saw + Sub:** the detune spread of the saw stack. At 0 the saws line up in unison for a modern, wavetable style, 5 is the spread as tuned, and 10 doubles it for a wider wall of sound.