



ARC ADE M A C H I N E

analog synth / harmonizer

The ARCADE MACHINE is an analog, PLL-based synthesizer and harmonizer. It latches onto your input frequency and re-synthesizes it as a square wave, the volume of which is set via the 0 OCT knob. In addition to that fundamental note, there are five more notes derived from it, each having its own volume knob: 1 and 2 octaves down (-1 OCT and -2 OCT), 1 and 2 octaves up (+1 OCT and +2 OCT), and an interval of your choosing (INT). So you can think of the six knobs in the top row of the pedal as being a six-channel mixer, with a different note on each channel. The LEVEL knob is the master volume, allowing you to get your mix right with the top-row knobs and then just set LEVEL to get the output volume you're after.

It should be noted that when adjacent octaves are both in the mix (for example 0 OCT and +1 OCT, +1 OCT and +2 OCT, etc.), the timbre of the output can change due to the way the square waves combine. More specifically, it can result in a more 'nasally' sound, whereas either channel by itself will be more rounded or fuller.

You can choose which interval the pedal will generate via the rotary selector switch. All intervals in the 12-tone scale are available:

- m2 = minor 2nd
- M2 = major 2nd
- m3 = minor 3rd
- M3 = major 3rd
- P4 = perfect 4th
- 666 = tritone
- P5 = perfect 5th
- m6 = minor 6th
- M6 = major 6th
- m7 = minor 7th
- M7 = major 7th

Note: The first time (and only the first time) that the pedal is turned on after its power is plugged in, there may be a very short delay (<1sec) before the interval output is active.

INPUT CONSIDERATIONS

Like all PLL-based effects, the Arcade Machine is monophonic, meaning it only works with one note at a time on the input. That doesn't mean you can't experiment with some of the strange sonic artifacts that you get from polyphonic input though! Particularly power chords and other simple chords can still be interesting, even if slightly chaotic.

A big part of PLL-based effects is the way in which they 'track' the input, i.e. how well they follow your input to re-synthesize it cleanly. The tracking of the Arcade Machine is determined by the GATE knob position. This knob acts as a kind of threshold, setting the sensitivity of the effect to suit the level of the signal coming in. The trade-off is that too low of a GATE setting will result in the tracking circuit missing some notes, while too high of a setting will result in more erratic behavior (which can still be interesting in its own way, but not always desirable). Higher GATE settings will also result in longer sustains, while lower settings will be more, uh, gated. Start with this knob at 12:00, which will work fine in most cases, and then try adjusting it up and down to see the effect.

For guitar, the neck pickup will provide the cleanest tracking. With the bridge pickup, you'll tend to get glitches on the attacks of notes, where typically it'll start out an octave higher and then settle to an octave lower. If you're getting those kinds of unwanted effects, then lowering the GATE knob should eliminate it. You'll also find that more controlled playing will give more consistent results; it's a feel thing, and it makes sense once you get used to it.

When using multiple effects, the Arcade Machine should be placed at or near the beginning of the chain, for a couple reasons. One is for the tracking, which is designed with tracking an instrument in mind, not necessarily a fuzzed out guitar with modulation and reverb, though you can certainly experiment with that kind of stuff if you're interested in exploring the weirder things that the

pedal might do when it's not tracking well. Secondly, since the pedal re-synthesizes your input signal into a square wave, most of the character that you've added before it in the chain will be lost. It just figures out which note you played and creates a square wave at that frequency, so it won't regenerate whatever distortion, fuzz, etc. you've got coming in.

VIBRATO

The final section of controls, DEPTH and RATE, are for vibrato (pitch variation). DEPTH controls the intensity of the vibrato; when it's all the way down, there's none, and when it's all the way up it's very extreme. The effect gets extreme pretty quickly, so you'll probably want to stay in the first quarter-turn or so of the knob for more subtle vibrato.

The upper half of the DEPTH knob is almost a vibrato / tremolo hybrid, allowing you to get those kinds of frozen computer glitchy sounds. Or when used at slow rates and high GATE settings, you can let notes ring out and create a kind of beat with the vibrato.

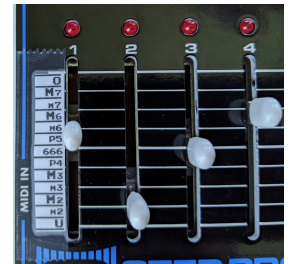
RATE controls the speed, which goes from very slow, about once every 2 seconds, up to about 20 times per second at max.

EXP INPUT

The EXP jack accepts either an expression pedal or a control voltage (CV) input, and when something is plugged in it takes over control of the interval selection knob. When the EXP jack is used, the interval range is extended to include the unison note at the bottom and the octave at the top. An expression pedal is somewhat limited in that it can only vary the intervals chromatically up and down, but CV means that a sequencer can be used to run through any sequence of intervals that you choose, with the intervals automatically following your playing. Which means you can program in anything from simple trills to arpeggios to full melodies (or non-melodies, depending on your taste). Turning up the GATE control to get longer sustains is probably a good idea if you're making use of longer sequences, to leave the note enough time to ring out so that the sequence can be heard.

The Electro-harmonix 8-Step Program is a good option, in that it's designed to work directly with pedals without requiring a special cable; a standard 1/4" stereo (TRS) cable can be used. Most other sequencers can be used too though, but may require a special cable; if you have a question about a specific unit, please contact us and we'll guide you through making it work.

If you are using the 8-Step Program, a small label is available for download at www.rpseffects.com/arcademachineinfo. It's to-scale, so printing it at 100% (with no zoom) will give you the right size. You can tape this label on the 8-Step to act as a guide for dialing in the intervals; without it, setting up your sequence can be tricky since 13 notes are comprised within the range of the slider. The label is scaled to the case of the 8-step's 'Depth' parameter being reduced from its default of 9 down to 8. When left at 9, the top note (M7) will be bigger than all the others, and the remaining divisions won't be even. Reducing it to 8 linearizes the slider and makes all of the note divisions equal.



LOOK MA, NO INPUT

As a bonus easter egg, with no input and the GATE knob turned up (all the way or at least almost), the pedal will self-oscillate, allowing you to use it as a kind of stand-alone synth. Or rather stand-alone noisemaker, since the sounds you get will be pretty wild. It can make for a pretty interesting sound generator for the more experimental users out there.