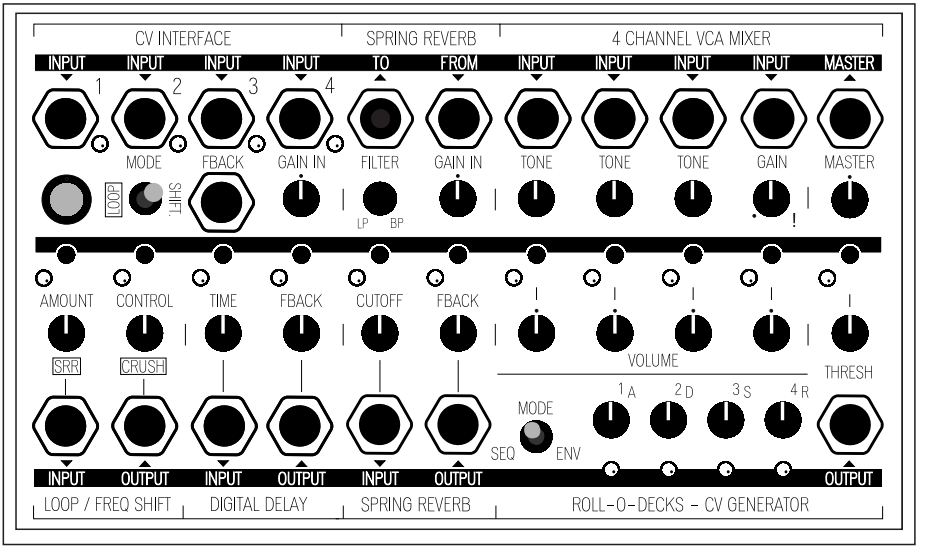
ANOTHER 50 WAYS TO USE THE FIELD KIT FX



USER MANUAL AND EXPERIMENT GUIDE

Made
with
love
in
Berlin

The KOMA Elektronik Team

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1. Introduction

Berlin, February 1st 2018

Thank you so much for purchasing the Field Kit FX!

A year after we launched the electro-acoustic workstation the Field Kit, we're happy to introduce you its younger sibling – The Field Kit FX. Instead of amplifying objects and experimenting with sounds from everyday life, the FX is a multi-effect device to modulate your sounds and apply various effects to them.

This manual serves as a guide demonstrating all the functions of the Field Kit FX, descriptions and specifications of each part of the device and which tools and instruments work best with it. You will also get many tips on how to use the device. The Glossary at the end of the manual explains some of the most important and commonly used terms, which are underlined throughout the book.

For the hackers amongst you, we added a chapter about the open source software, and there are also empty patch sheets to keep track of your patches.

If you have questions about warranty and what to do if your Field Kit FX is broken, please check the Warranty section towards the end of this book. If you have a question about your device, please contact us via support@koma-elektronik.com and we will help you get back on your way!

Thanks again for your support, in particular the Kickstarter backers, we could not have done this without you!

All the best from Berlin,

The KOMA Elektronik Team

2. User Manual

2.1 Getting Started

The FX is a great device to apply effects on various instruments and signals and works great with any of your electronic instruments, synthesizers and (Eurorack) modular systems.

To get started, you will first need to bring the Field Kit FX to life. Grab the included 9V PSU and plug the PSU into the DC connector on the back side of the Field Kit FX.

For the Eurorack version, carefully connect your Field Kit FX to the bus board of your Eurorack system with a ribbon cable, making sure -12V aligns with the red stripe and eventually mount the module on the rails of the case (for more detailed information with photos, skip to the 'Field Kit FX In A Eurorack System' chapter).

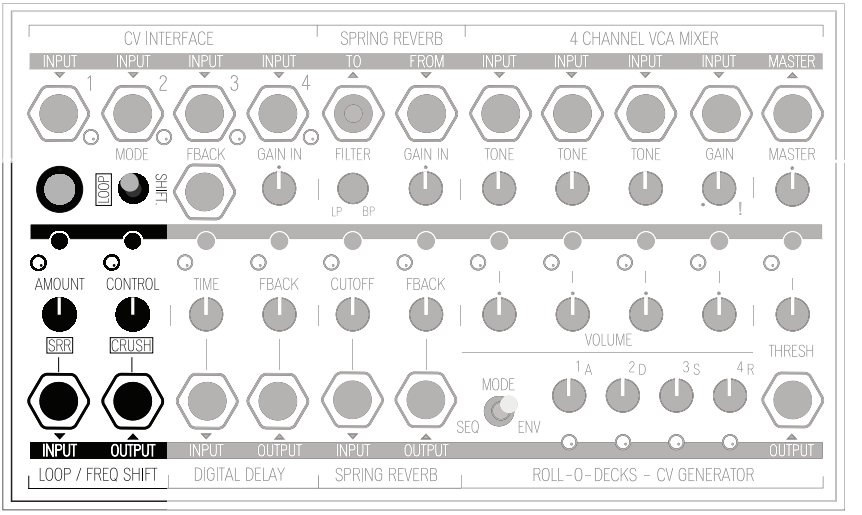
2.2 Function Overview

The Field Kit FX is an effect box which allows you to use several effects at the same time including reverb, delay, an envelope generator, frequency shifter, looper, a bitcrusher, a sample rate reducer and even a 4-step sequencer – all in one device! Its compact size makes the FX ideal for touring and traveling, but the device is as useful in the studio where you can explore its potential and experiment applying effects on various sounds, from acoustic instruments to synthesizers.

The Field Kit FX consists of seven different effect blocks of which many parameters can be controlled with the CV Interface and its nifty CV matrix.

All outputs are mono, except for the master output, which is dual mono ("fake stereo"). If you have a Field Kit, you can connect the two devices so they can instantly become friends! Use this manual to check all the specifications on your device and get inspired by the many possibilities the Field Kit FX has to offer!

2.2.1 The Looper



Under the inputs of the CV Interface, you can switch between two different effects: Looper or Frequency Shifter.

We love loopers, they are an effective and simple tool to create quick musical textures and more complicated rhythmical patterns. With the Field Kit FX Looper you can loop your music up to 3.5 seconds and create loops on top of each other (“overdubbing”). The hi-fi looper can be controlled by the RGB loop button under the CV Interface. Five different colours define its state:

Green = Armed

In this state, the loop is empty and the Looper is ready to accept the audio and record a loop. The incoming audio is routed to the output and that the looper acts as a passthrough for the Bitcrusher / SRR (see below).

Red = Recording

When you press and hold the button while it's green, it will start recording the audio. In this state, the looper input is re-routed to the output, so you can hear what you are recording.

Blue = Playback

After reaching the maximum loop time, the Looper will automatically go into playback mode, where the loop button flashes shortly at the end/start of the loop.

Purple = Overdub

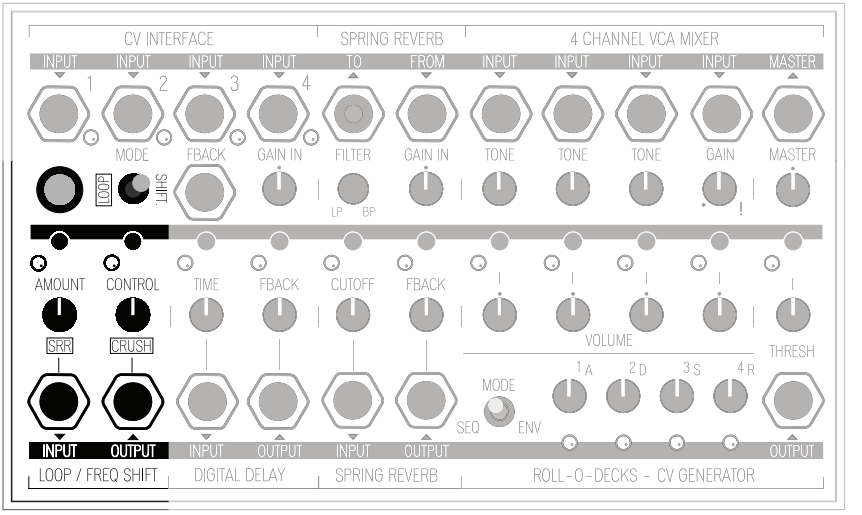
Because the incoming audio signal and the loop are mixed together inside of the FX, you can record a loop on top of something else. Just press and hold the LOOP button while playing back the loop. They will be mixed and saved together. This has no limits, so you can overdub as many times as you like! Note that the length of the first recorded loop sets the maximum length of the overdubbed section.

White = Delete

If you wish to erase the loop and stop the looper from playing, simply short press the loop button. It will shortly shine in white while the loop is being played for the last time as an indication of deleting the recorded loop. After deleting the loop, the looper returns back in the armed state (green light).

Inputs	▪ AC coupled input for different kinds of audio signals. ▪ CV Range: ± 5V
Control	LOOP Button.
Outputs	▪ AC coupled output

2.2.2 The Frequency Shifter



The Frequency Shifter allows you to shift the frequency instead of the pitch to achieve an interesting change in timbre and texture of the original sound. For instance, when you input a piano sound and shift the frequency up, you will end up with a piano which is very metallic sounding, perfect for those industrial techno expeditions!

Plug any instrument into the Input jack of the Looper/Frequency Shifter, flip the switch to the SHIFT mode and play with the two controls for this effect: AMOUNT and CONTROL.

If the AMOUNT Control is in the middle position, it means it's on "neutral": You get the original incoming signal and nothing is shifted. By turning the pot to the right, you raise the frequency shift amount by up to +1000Hz. By turning it to the left, you shift the signal down a maximum of -1000Hz.

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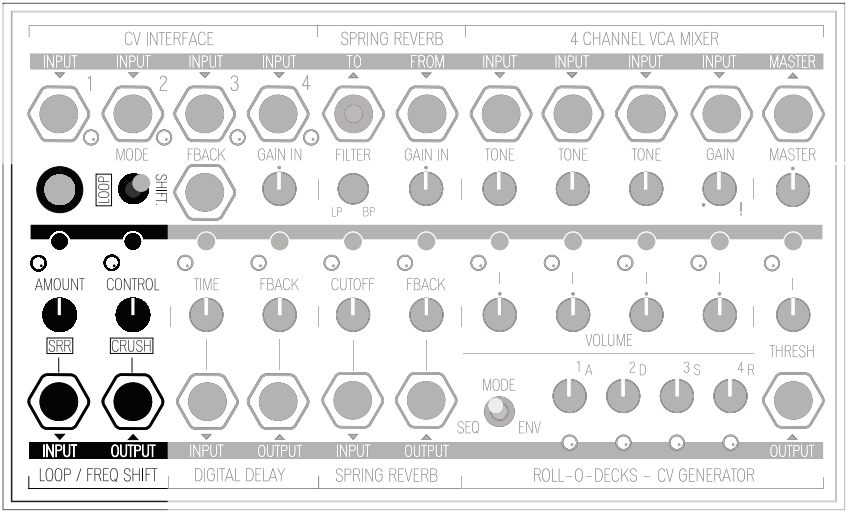
The CONTROL pot sets the sideband characteristics of the output signal, so you can tweak the harmonic structure to another dimension! With CONTROL turned fully clockwise, only the upper sideband of the frequency shifter will be heard. Set at the middle position, the output will be a double sideband signal. This allows the Frequency Shifter to enable ring modulation. Fully counterclockwise, the output of the effect only presents the lower sideband of the frequency shifter, meaning the harmonics are reversed compared to the input ones.

Inputs	▪ AC coupled input for different kinds of audio signals. ▪ Input Impdenance: 100kΩ (Eurorack standard)
Control	AMOUNT Sets the frequency amount by which the incoming audio will be shifted. CONTROL Sets the sideband characteristics of the output signal. ▪ CV Range: ± 5V
Outputs	▪ AC coupled output ▪ Output impedance: 1KΩ (Eurorack standard)

2.2.3 Bitcrusher / Sample Rate Reducer



Not only can you use the looper to record loops, it also offers ways to add spectral folding to sounds running through the effect and achieve truly unique sounds from outer space! The Sample Rate Reducer knob decreases the sample rate of the output audio. The higher the SRR amount is set to, the more aliasing artifacts will appear and thus change the timbre of the output audio.

The Crush Control pot reduces the number of bits per sample of the loop and doing so introduces quantization noise to the sound (bitcrushing). When the Bitcrusher is turned off, the audio signal is 12bit, which is reminiscent to the early samplers like the SP-1200. The higher the crush amount, the less bits are assigned. The bit crushing effect can heavily distort the output audio, bringing its sonic characteristics into harsh, noisy territories.

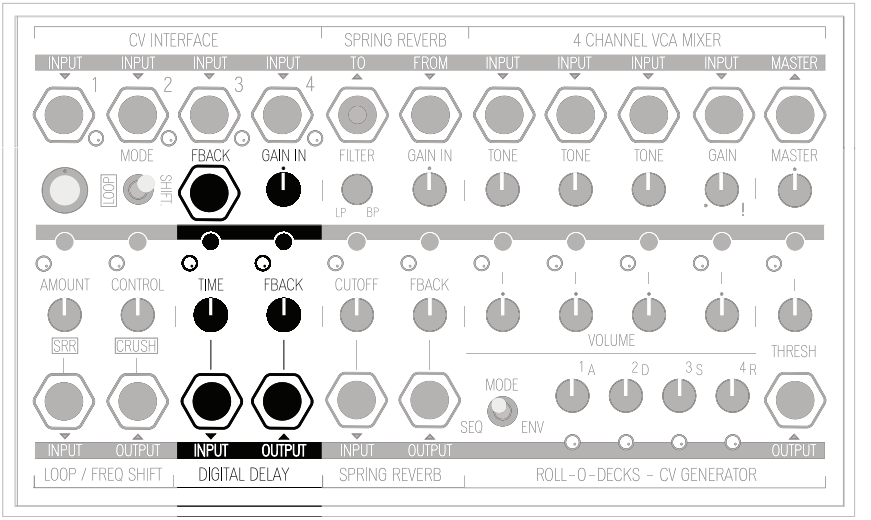
Both SRR and CRUSH can be automated by the CV interface. Also, both effects are applied to the audio output regardless of the looper's state. They do not become part of the recorded audio unless you also recorded the loop with these effects engaged. This allows you to use the looper of the Field Kit FX in an armed state as a real time bitcrusher and sample rate reducer.

DSP Input Gain Setting

You might have noticed that unlike the digital delay and the spring reverb, the DSP part of the Field Kit FX does not feature a Gain In knob. Since you want to be able to accomodate signals with different volumes there is a feature that lets you set the internal gain of the DSP circuit. The DSP circuit includes the Looper, the Frequency Shifter, the Sample Rate Reduction and the Bitcrusher.

Inputs	▪ AC coupled input for different kinds of audio signals. ▪ The signal is recorded at 12 bit resolution, 48KHz. ▪ Input impedance: 100kΩ (Eurorack standard)
Control	SRR ▪ Decreases the sampling rate of the output audio. CRUSH ▪ Sets the number of bits of the audio signal in the looper's memory. ▪ CV Range: ± 5V
Outputs	AC coupled output ▪ Output impedance: 1KΩ (Eurorack standard)

2.2.4 Digital Delay



The Digital Delay of the FX is based on the amazing PT2399 Delay chip and the configurations were tweaked to achieve a delay with a strong attitude and true KOMA character. The frequency response is optimized to suit the natural response of the PT2399 and the results can be heard! You can go for anything from slightly delayed sounds to creating Feedback loops and even harsh noise. Tweak that Feedback!

Just like with the Spring Reverb you can manually feed the signal into the delay path with the GAIN IN control. With TIME, you control the delay time. The FBACK knob routes the delayed signal back into the input of the delay block, increasing the number of echoes. This allows you to create anything from a single echo to infinite repeating mayhem.

Both TIME and FBACK can be controlled manually or with the CV Interface. The feedback path also has an insert point, labeled FBACK, allowing you to break the signal path and process the sounds further with external effects – just plug in the special stereo to mono in/out insert cable from our FX Expansion Pack and you're free to experiment!

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Inputs

Input

- AC coupled input for different kinds of audio signals.
- Input impedance: 100kΩ (Eurorack standard)

Control

GAIN IN

- Serves as a pre-gain for the signal connected to Digital Delay input.
- Range:
  Fully CCW - 0x gain / silence (-inf dB)
  12 o'clock - unity gain (0dB)
  Fully CW - 2x gain (+6dB)

TIME

- Controls the delay time.
- Range:
  Fully CCW - ~ 30ms
  Fully CW - ~ 5.5s

Longer delay times also gradually degrade the audio quality of the echoes and introduce additional sonic artifacts into the mix.

TIME CV

- Automated delay time control via external CV. The CV is mixed with the value set with the Time control.
- Range: -5V to +5V

FBACK

- Controls how the echoes decay over time
- Range:
  Fully CCW - a single echo
  Fully CW - self-oscillation

FBACK CV

- Automated control of feedback via external CV
- The CV is mixed with the value set by the Fback control.
- Range: -5V to +5V

FBACK (insert point)

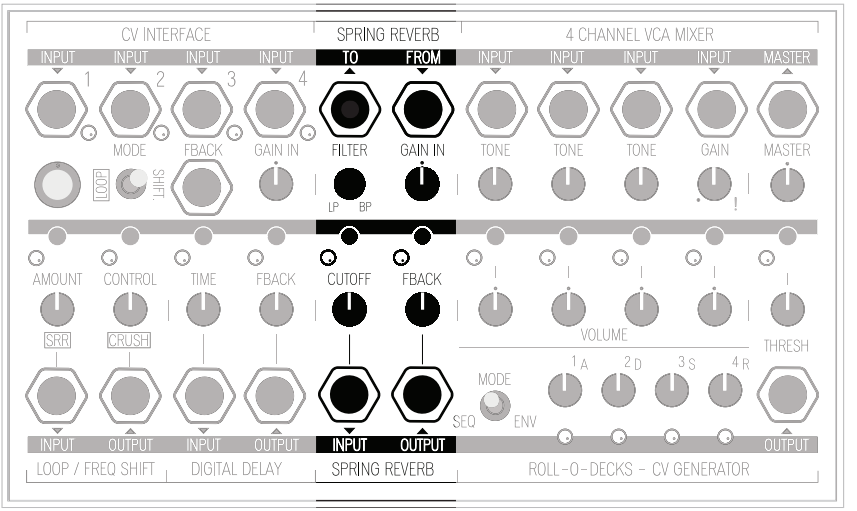
- Breaks the feedback path and allows processing of the echoes with external effects.
- Use a stereo to 2 x mono - insert cable to tap the signal
- Tip - from Digital Delay
- Ring - to Digital Delay

Outputs

Output

- AC coupled output containing only the wet, delayed signal.
- Output impedance: 1KΩ (Eurorack standard)

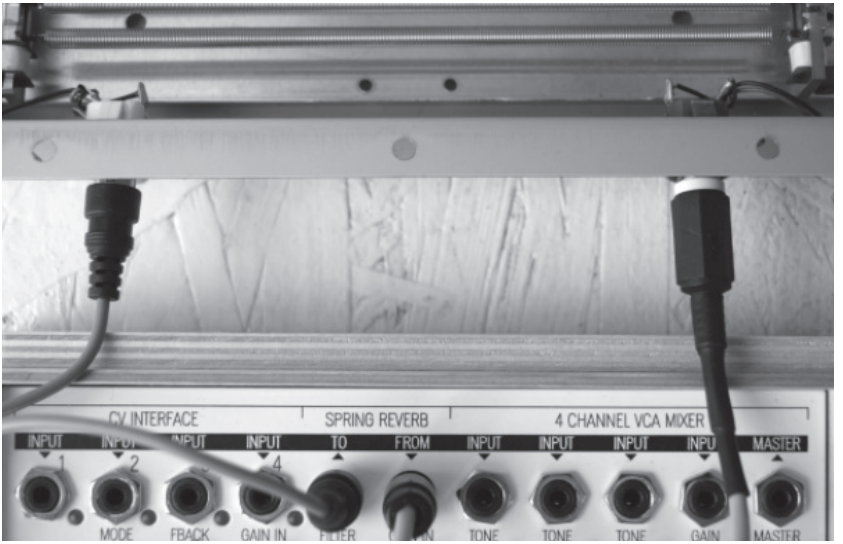
2.2.5 Spring Reverb



The Spring Reverb section is an attractive take on classic Spring Reverb circuitry: not only can you manually play around with the spring tank, but you can also control the harmonic structure by playing around with the on-board resonant low-pass and band-pass filters.

The Feedback section, which is based on an analog VCA, sends wet, reverberated, signal from the spring tank back to the input filter and again back to the spring, enabling you to create endless feedback loops and control the reverb time.

To get going, always make sure a reverb tank is plugged in between the TO and FROM.



The GAIN IN controls the amount of signal sent into the effect. Center position corresponds to unity gain. Next, use the CUTOFF control to set the cutoff frequency of the filter. Use the FILTER control switch to select either a low-pass (LP) or a band-pass (BP) response. After the signal has travelled through the spring tank, the wet, reverberated signal comes out the Output. Finally, the FBACK control lets you send the reverberated signal back into the input filter.

Both the CUTOFF and FBACK can be controlled via the CV Interface, giving your hands the freedom to nudge and stroke the spring with your fingers or play any instrument while the spring is doing its thing.

Please note: The Field Kit FX itself doesn't have a build-in spring reverb tank. You can use a whole scala of reverb tanks and connect them to the TO and FROM. We offer a high quality reverb tank in our FX Pack to get you going!

2.2.5.1 Spring Tanks

The reverberation effect in a spring reverb is created by transmitting audio-signals mechanically through a number of springs. The mechanical properties of the springs mangle the sound being transmitted creating an artificial but, as their popularity has proven, very pleasant reverberation effect.

Spring tanks come in a variety of electro-mechanical properties, defining the produced reverberation effect. When selecting a spring tank to use, a careful examination to these properties should be taken.

Spring Tank Properties

Commercially available spring tanks are most often specified following the Accutronics part-numbering scheme. The properties specified in this scheme are:

Tank type
Input impedance
Output impedance
Decay time
Input/output electrical coupling
Locking devices
Mounting type

Out of these properties, a 7-digit part-number is formed, for example 8BB2C1A. In the following sub-chapters, the aforementioned properties are given a brief look.

8BB2C1A

Tank Type		Input Impendance			Output Impendance		Decay Time		Input / Output Electrical Coupling		Locking Devices		Mounting Type	
			Type 1 / 4	Type 8 / 9	Type 1 / 4	Type 8 / 9								
1	small size 2 springs	A	8Ω	10Ω	500Ω	600Ω	1	Short	A	Input Grounded Output Grounded	1	No Lock	A	Horizontal Open Side Up
4	large size 4 springs	B	150Ω	190Ω	2250Ω	2575Ω	2	Med.	B	Input Grounded / Output Insulated			B	Horizontal Open Side Down
8	small size 3 springs	C	200Ω	240Ω	10000 Ω	12000 Ω	3	Long	C	Input Insulated / Output Grounded			C	Vertical Connectors Up
9	large size 6 springs	D	250Ω	310Ω					D	Input Insulated / Output Insulated			D	Vertical Connectors Down
		E	600Ω	800Ω					E	No Outer Channel			E	On End Input Up
		F	1475Ω	1925Ω									F	On End Output Up

Tank Type

Essentially determines the size of the tank and the number of springs used for reverberation. This is one of the most important parameters in defining the overall reverberation effect. The number of springs used for transmitting the sound changes the density of the perceived reverberation, with early spring tanks having only one or two springs, and the modern ones up to six. On multi-spring spring tanks, the springs are often chosen to complement each other's natural response, leading to more natural reverberation effect.

Input Impedance

Determines the impedance seen by the spring driver circuit. Practically defined by the spring driver circuitry used.

Output Impedance

Determines the impedance seen by the spring recovery circuit. Practically defined by the spring recovery circuitry used.

Decay Time

Decay time specifies, as its name suggests, how long it takes for the reverb tail to fade into inaudibility. Different decay times often suit different applications better than another.

Input / Output Electrical Coupling

Spring reverb driver / recovery circuits are designed following a number of common circuit topologies. In order for the chosen topology to work, the input and output coils inside the spring tank should be either insulated or grounded, depending on the used design.

Locking Devices

Determines whether the spring tank has a locking device in order to fix the springs in place during transport.

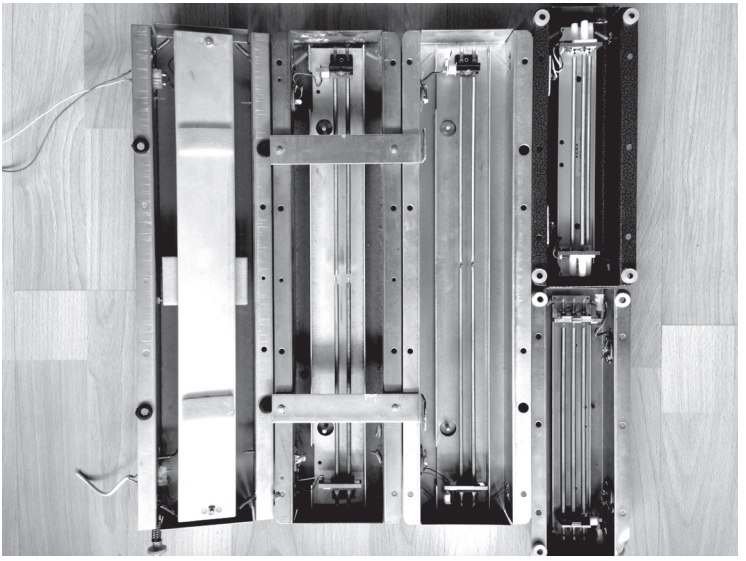
Mounting Type

Since the spring tanks are mechanical in their operation, they are also fabricated having a specific mounting direction in mind. Having the tank mounted any way other than the originally intended affects the characteristics of the perceived reverberation effect.

2.2.5.2 Choosing a Tank

The most important parameters to focus on, when selecting a spring tank to use together with the Spring Reverb in the Field Kit FX, are the input impedance, output impedance and the input/output coupling. The Spring Reverb circuitry inside the Field Kit is optimized to work best with spring tanks having 190Ω input impedance, 2,575 Ω output impedance, and configured as input floating / output grounded. This corresponds to a spring tank of a type 8BB_C__. A tank of the mentioned type is included in the Field Kit FX Expansion Pack.

When you want to use a different tank, make sure that its coupled as Input Insulated / Output Grounded (C). The input impedance is recommended to be 190 Ω, but also impedance around this region work (type 1/4/8/9 B/C/D). It's not recommended to use the type A input impedance (8Ω /10Ω). The output impedance is recommended to be 2575Ω, but also impedance above this region work (type 1/4/8/9 C). It's not recommended to use the type A output impedance (500Ω / 600Ω). For the rest of the parameters, experimentation is encouraged!



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Inputs

- AC coupled input for different kinds of audio signals.
- Input impedance: 100kΩ (Eurorack standard)

Control

GAIN IN
- Serves as a pre-gain for the signal connected to Spring Reverb.
- Range:
  Fully CCW - 0x gain / silence (-inf dB)
  12 o'clock - unity gain (0dB)
  Fully CW - 2x gain (+6dB)

CUTOFF
- Sets the cutoff frequency of the filter.
- Range:
  Fully CCW - ~ 10Hz
  Fully CW - ~ 10kHz

CUTOFF CV
- Automated cutoff frequency control via external CV. The CV is mixed with the value set with the Cutoff control.
- Range: -5V (-5 Octaves) to +5V (+5 Octaves). Approximately 1V/Oct.

FILTER
- Selects the desired filter response.
- Available responses: Low-Pass -12dB/Oct slope, Band-Pass -6dB/Oct slope

FBCK

- Sends the signal post-spring back to the (pre-spring) input filter.
- Range: Unity gain is reached with having the Feedback control ~ 3 o'clock around which the effect might start to self-oscillate depending on the dialed cutoff setting and the type of spring tank used.

FBACK CV

- Automated Feedback control via external CV. The CV is mixed with the value set with the Feedback control.
- Range: -5V (-6dB) to +5V (+6dB).

Outputs

Output

- AC coupled output containing only the wet, reverberated signal.
- Output impedance: 1KΩ (Eurorack standard)

Tank Connectors

- For correct operation, a spring tank needs to be connected in between the TO and FROM connectors

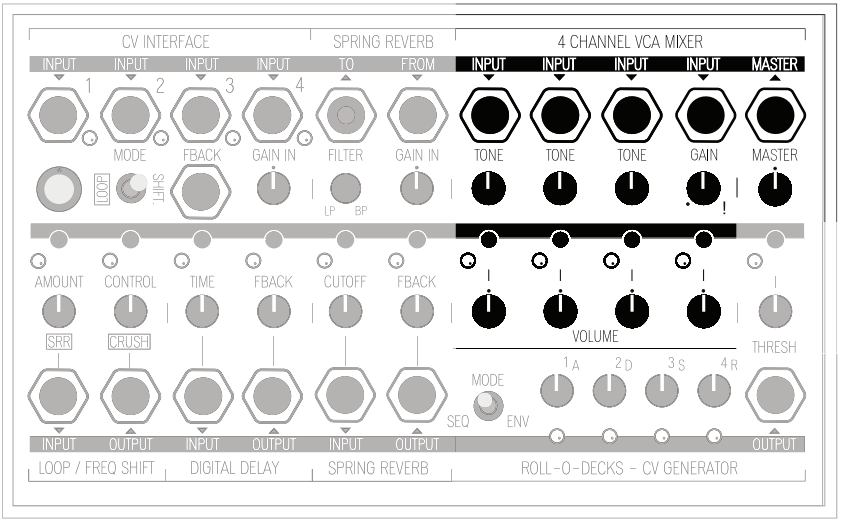
TO

- Send to spring tank

FROM

- Return from spring tank

2.2.6 4-Channel VCA Mixer



What's an effect device without a proper mixing section!? Use the 4-channel VCA Mixer to (CV-)blend the effects, as a (CV-able) dry/wet control or just to mix two killer YouTube videos together at your friend's birthday party!

Channel 1, 2 & 3

Channels 1, 2 and 3 are the "standard" channels. Each of them has an INPUT, a TONE control and a VOLUME control. The TONE control serves as an overall tonal control over the specific channel. It is set up as a tilt-EQ with a center frequency of around 600Hz. Turning the pot counterclockwise boosts the lows, 12 o'clock settings gives a flat frequency response, while turning the pot clockwise boosts the highs. The VOLUME control allows you to change the level of the corresponding channel. It can be controlled manually with the VOLUME knob, or automated through the CV interface.

To automate the volume, just select the desired CV input by pushing the button above the VOLUME knob. Through automation, various exciting effects can be achieved from CV'd dry/wet balance to gated reverb-tails, while also freeing your hands to interact with other effects.

Channel 4

Channel 4 is the so-called "turbo channel". It has an INPUT, a (pre-) GAIN control and a VOLUME control. The (pre-)GAIN helps you to use various high impendance sound sources inside the Field Kit FX, including magnetic field detectors, contact microphones etc. It is configured to work exponentially, giving more fine control over small amounts of gain. Having the pot fully counterclockwise corresponds to unity gain and turning the knob clockwise adds more gain into the signal. The Volume control works just like with channels 1, 2 & 3, including the CV control.

Master Section

The MASTER level sets the overall volume of the mixed signals, available via the Master Out connector. The Master Out is configured as dual mono.

Inputs	Input 1- 4 ▪ AC coupled inputs for different kinds of audio signals. ▪ Input Impedance Channels 1 – 3: 100KΩ ▪ (Eurorack standard) ▪ Input Impedance Channel 4: 1MΩ (suitable for contact mics, coil mics, other esoteric sources)

Control

TONE (Inputs 1 – 3)

- Serves as an overall tonal control over the specific channel.
- Range:
  CCW - boosts the low frequencies (<600Hz)
  12 o'clock – neutral response
  CW – boosts the highs (>600Hz)

GAIN (Input 4)

- Serves as a pre-gain for the signal connected to Channel 4.
- Range:
  Fully CCW - unity gain (0dB)
  12 o'clock – 2x gain (+6dB)
  Fully CW – boosts the highs (>600Hz)

VOLUME (Channel 1 – 4)

- Serves as a level control for the specific channel.
- Range:
  Fully CCW - 0x gain / silence (-inf dB)
  12 o'clock - unity gain (0dB)
  Fully CW - 2x gain (+6dB)

CV VOLUME (Channel 1 – 4)

- Automated Volume control for the specific channel. The CV is summed / mixed with the value set with the Volume control.
- CV Range: -5V (-6dB) - +5V (+6dB)

MASTER

- Overall level for the signals mixed together.
- Range:
  Fully CCW - 0x gain / silence (-inf dB)
  12 o'clock – unity gain (0dB)
  Fully CW – 2x gain (+6dB)

Outputs

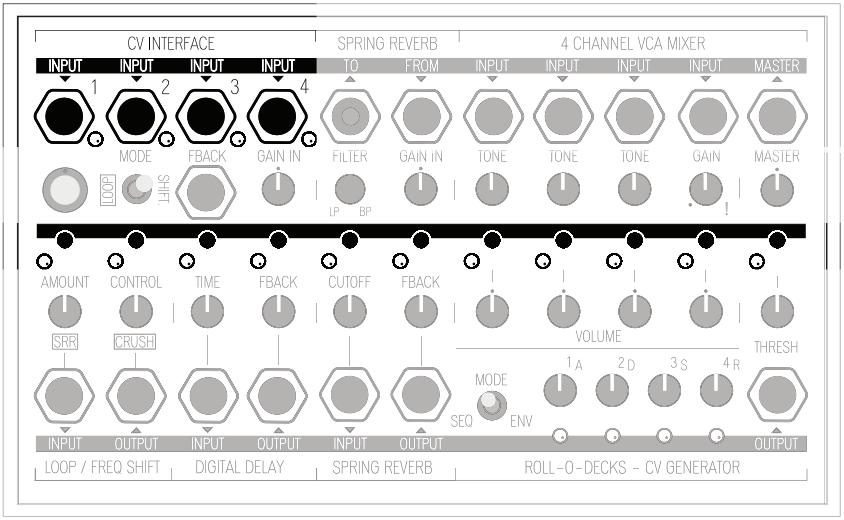
MASTER

- The Output from the VCA Mixer containing a mix of the input signals.
- Output Impedance (L&R): 1KΩ (Eurorack standard), dual mono

USER TIP: How to achieve a Dry/Wet control:

Connect your dry signal to one of the channels and the wet effect to another, channel and you can set your dry/wet balance with the two Volume controls.
Dry = uneffected signal, Wet = effected signal.

2.2.7 CV Interface



The CV Interface is designed to automate the control over most parameters of the Field Kit FX. Each of the 4 CV inputs can be routed to any of the 11 destinations to automate the corresponding parameter. The four CV inputs are colour-coded (Seapunk Blue, Chrisi Pink, Deep Dan and OG Orange) which makes it easy to match each of the 4 incoming channels with the desired destination on the FX such as Delay Time or Reverb Feedback.

To route a CV signal, first connect a desired signal to one of the CV Interface inputs. Each of the 11 destinations has an LED light and a little black push button above them. When you press the button, the CV Interface switches through the four CV Inputs routing the corresponding signal and the LED lights accordingly. The 1st input corresponds to ‘Blue’ colour, the 2nd to ‘Pink’, the 3rd to ‘Green’ and the 4th to ‘Orange’ colour. The 5th push disconnects the CV destination from the CV Interface, represented by an unlit LED. Like this, you have a clear overview of which control feature is automated by which CV channel!

Inputs

Input 1- 4

- 4 colour-coded CV inputs. Range: ± 5V (above/ below clipped).
- Input Impedance: 150kΩ

Control

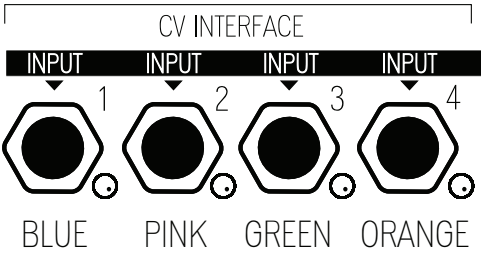
Push button 1-11

- 11 buttons to assign the 4 CV inputs into 11 destinations.

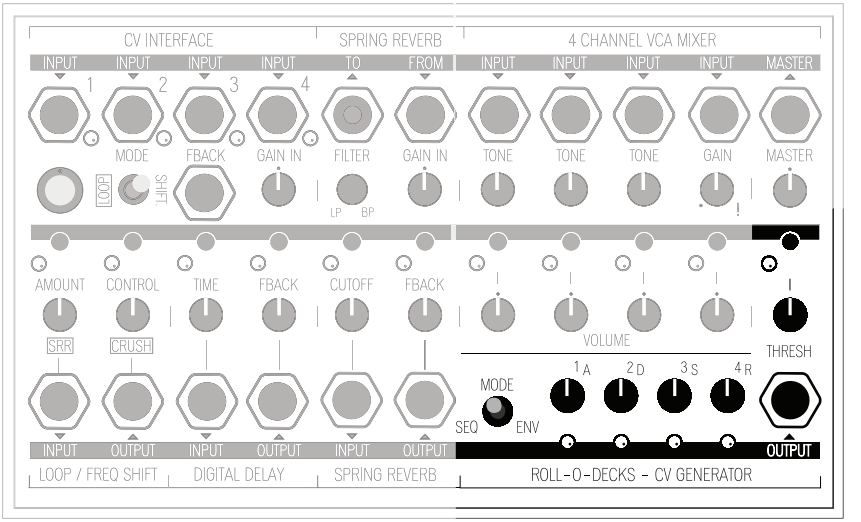
Outputs

11 CV Destinations

- Internal routing from the CV Interface inputs to 11 controllable parameters. The value of the routed CV signal is added together with the value dialed in with the potentiometer on the corresponding effects block.



2.2.8 Roll-O-Decks



The Roll-O-Decks is a multi-purpose CV generator that you can use to control the CV Inputs of your Field Kit FX, original Field Kit or any type of (modular) synthesizer. It consists out of two separate nifty tools: A 4-Step Mini Sequencer (SEQ) and an Envelope Generator (ENV). Both have 4 different parameters you can control.

Let's explore them in detail:

2.2.8.1 The 4-Step Mini Sequencer

In SEQ mode, the Roll-O-Decks becomes a 4-step sequencer. A sequencer is always a handy source to have around when playing with CV-controllable effects. Use the different voltages that come out of the Mini Sequencer to automate different effect features, like the feedback of the Delay or the Cutoff frequency of the Spring Reverb's filter. The level of each step can be set with the knobs labeled 1 – 4.

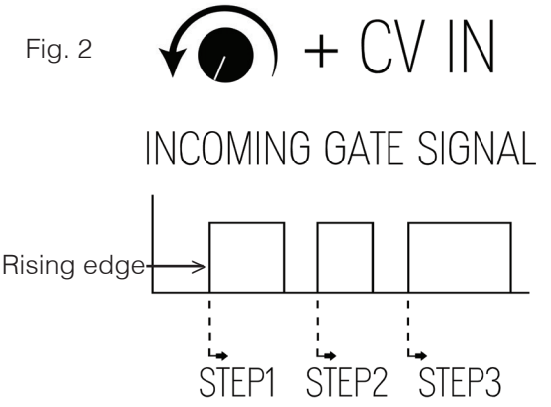
The Threshold knob (THRESH) with no CV applied works as a speed control of the sequence: turning right speeds up the tempo (fig. 1).

Fig. 1

When you route a CV signal from the CV Interface, you can control the sequence in two different ways:

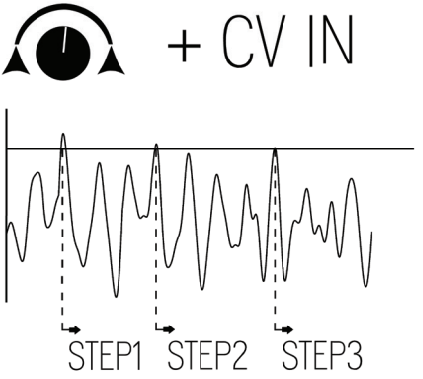
When the THRESH is in a fully counterclockwise position and you route a gate, trigger or clock signal into it via the CV Interface, the sequencer will move to the next step whenever there's a rising edge at the corresponding CV input. Clock or gate signals work best for achieving a periodic sequence (fig. 2).

Fig. 2



When the THRESH knob itself not fully counterclockwise (CCW), it will compare the incoming signal to the set threshold and whenever the signal rises above the threshold, the sequence will move onto the next step (Fig. 3).

Fig. 3



Inputs	▪ CV signal from the CV interface ▪ CV Range: + 5V
Control	Threshold Potentiometer ▪ No CV assigned: Dictates the tempo of the sequence ▪ CV assigned and THRESH fully CCW: The sequence proceeds to the next step whenever it receives an incoming clock or gate signal. ▪ CV assigned and THRESH not fully CCW: The sequence proceeds to the next step whenever the signal envelope crosses the threshold 4 Sequencer Potentiometers: Each pot sets the CV value of the related step
Outputs	▪ Output Range: +5V

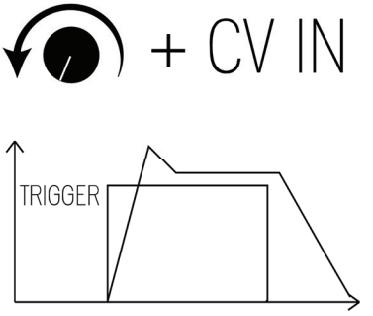
2.2.8.2 The Envelope Generator

With the Envelope Generator, you can trigger, create and control the four stages of the envelope: Attack (A), Decay (D), Sustain (S) and Release (R) and by doing so for instance determine the volume of a sound in time, from a short click to a sound fading in and out as you please. If no threshold is set (THRESH fully CCW) and there is no CV signal assigned, the envelope is retriggered every time there's an incoming gate signal (Fig. 4).

Fig. 4

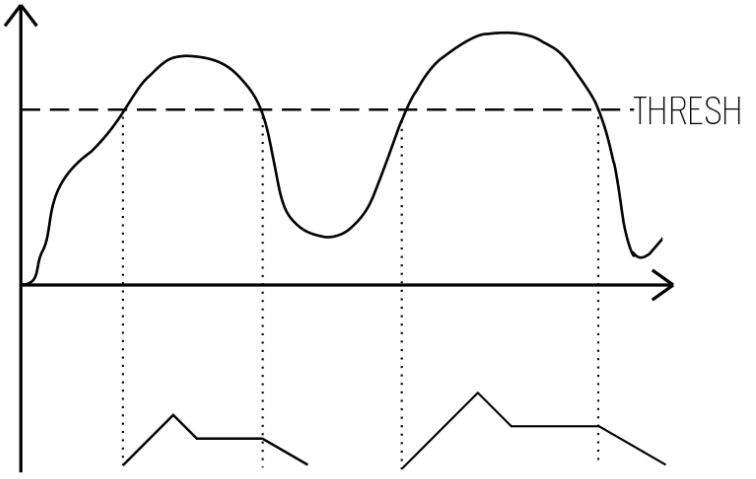
When a CV is assigned to THRESH pot which is fully counterclockwise similarly as in SEQ mode, you set the threshold for the trigger of the envelope with the THRESH pot Fig. 5).

Fig. 5



When you assign a CV signal and the THRESH pot itself is not set fully counterclockwise, the envelope will be retriggered whenever the value of the CV signal gets above the Threshold which you determine by by turning the THRESH potentiometer (Fig.6)

Fig. 6



Inputs	CV signal from the CV interface
Control	Threshold Potentiometer ▪ No CV in: Dictates the duration of the envelope ▪ CV in and THRESH fully CC: Retriggers the envelope whenever there's an incoming gate signal. ▪ CV in and THRESH not fully CC: Retriggers the envelope whenever tge CV gets over the threshold level set by the THRESH pot.
Outputs	Output Range: +5V

2. User Manual

USER TIP: The Roll-O-Decks does not output voltage in the negative range. If you'd like to automate an parameter such as Cutoff frequency of the Spring Reverb with a CV signal coming from the Roll-O-Decks, be aware that the frequency range will be between the maximum frequency level and the cutoff frequency set manually by the CUTOFF potentiometer, but will not go lower than that. In other words, set the Cutoff manually with the potentiometer to the desired lowest value and use the sequencer to reach values higher than that. The same workflow applies for setting the delay time etc.

Since this chapter is heavy on technical instructions and graphs, here's a picture of a happy goat.

Credit: Linda McGee, CC, https://www.flickr.com/photos/lambatofa/3562142673/, edited colour scale.

2.2.9 Field Kit FX In A Eurorack System

It's possible to use the Field Kit FX inside a Eurorack modular system. You only need a suitable front panel and take care of the correct power setting. Here, we are going to cover everything you need to know about using the Field Kit FX in a Eurorack system.

2.2.9.1 Power

When integrating your Field Kit FX into your production setup, you might at some point wonder about power consumption. The Field Kit FX offers two possibilites of powering it: Either by a 9V "wall wart" adapter or a Eurorack power cable inside a modular synthesizer. Depending on which way you chose, the power consumption differs slightly. In detail:

- 9V adapter: 640mA maximum. Center negative.
- Eurorack: 240mA @ +12V and 170mA @ -12V.

Remember that a higher current specification (mA or A) on a given power supply is never a problem but higher voltages (V) will damage the unit!

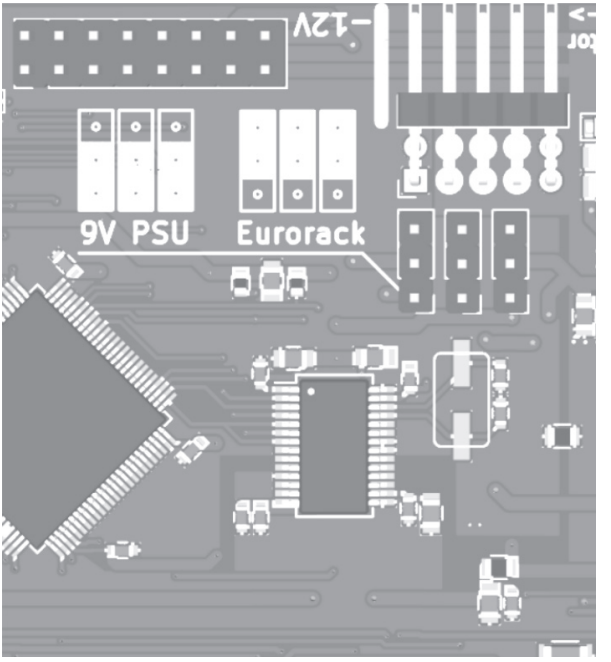
2.2.9.2 Panel and Connecting to Eurorack

To use the Field Kit FX inside a Eurorack modular system, you'll need a suitable Eurorack panel for it. You can get the official KOMA Elektronik front panel (sold separately) or fabricate/DIY your own using the design files provided on the KOMA Elektronik website.

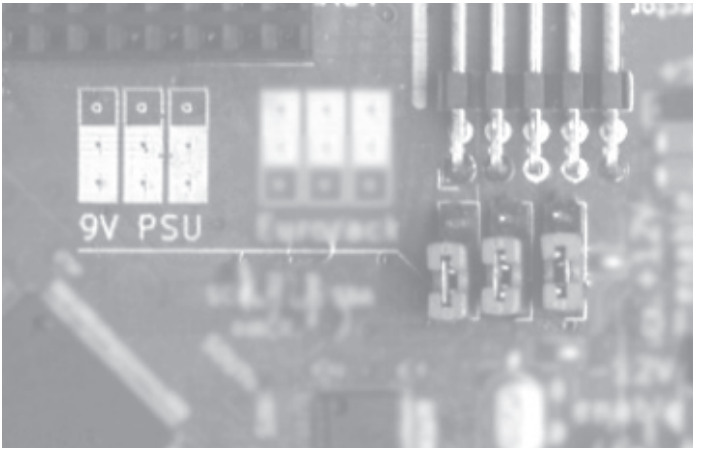
To prepare the Field Kit FX for use inside a Eurorack system, you first need to take it out from its standard enclosure. To do this, loosen all the nuts from the mini jack connectors. Next, carefully lift the front panel from its place to reveal the circuit board. Be careful not to scratch the front panel while removing it. Next, unscrew the four mounting screws on the corners of the circuit board to detach it from the enclosure. You can now lift the circuit board out of the enclosure.

2. User Manual

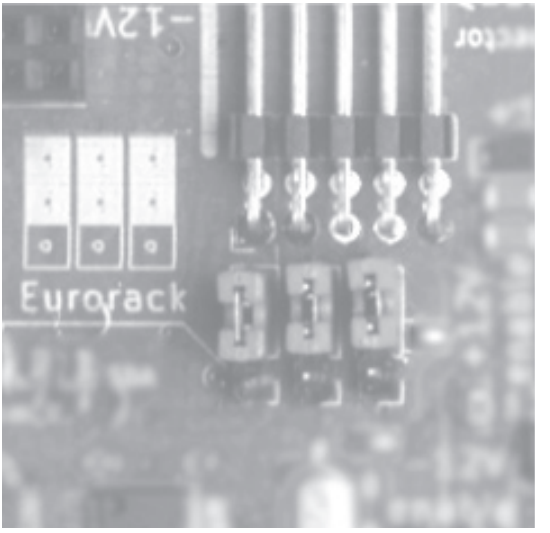
Once you hold the circuit board in your hands, you will notice that it is actually two PCB stuck together. The top board contains all the hardware like potentiometers, knobs and jack. The lower board contains all of the circuitry. For changing the power source, you have to separate the two boards. They are connected with 6 connectors. You can separate the two boards by gently pulling them apart. On the lower board you will find a little power configuration section in the top left corner:



There is a section with three 1x3-pin headers and three jumpers. The jumpers need to be set correctly in order to work with your power input. If you want to power your Field Kit FX via the 9VDC input in the back of the unit, ALL three jumpers must sit in the lower position:



If you are powering your Field Kit FX from a Eurorack ribbon cable, ALL three jumpers must sit in the top position:



When you are sure that everything is set correctly, connect the two boards again by sticking the pins of the upper board into the female pin headers on the lower board. Be careful that all pins are aligned and that no pin is visible from the outside or stuck next to the connector. When the two boards are sandwiched again, you can go ahead and either:

- Apply the Eurorack frontpanel and connect it to your modular system and power it on. Or you
- Screw the board sandwich back into the enclosure and re-mount the front panel with the hex nuts.

2.10 Open Source Software

We believe in the possibility for our users to open up our gear and tweak certain things themselves. This is one of the reasons why we made all the information regarding the original Field Kit available and also made it available as a DIY kit!

This time, due to technical complexity of the device, we decided it's better not to have the Field Kit FX available as a DIY unit, but instead we want to give everyone access to the source code of the DSP engine and the user interface itself.

The code is commented, so even if you are not an experienced programmer you can tweak certain settings and see the results! We encourage programmers to play around with the code and share it with other users.

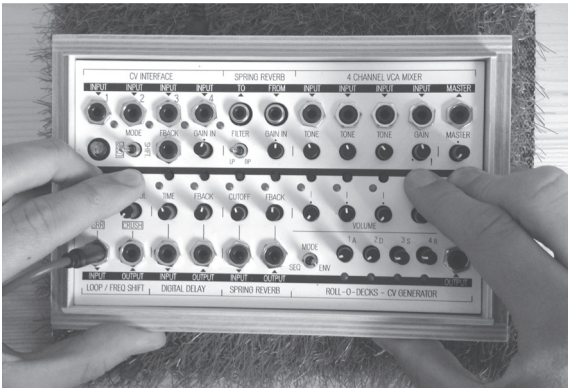
This is how you upload the updated code to this device: There is a USB port hidden behind the front panel that will allow reflashing the micro controller in the Field Kit FX. Just unscrew the front panel as described above, connect to a PC via USB and transfer new code to the device and you're good to go! For more information, visit our website koma-elektronik.com.

DSP Input Gain Setting

You might have noticed that unlike the digital delay and the spring reverb, the DSP part of the Field Kit FX does not feature a Gain In knob. Since you want to be able to accomodate signals with different volumes there is a feature that lets you set the internal gain of the DSP circuit. The DSP circuit includes the Looper, the Frequency Shifter, the Sample Rate Reduction and the Bitcrusher.

In order to set the input gain, you have to access a little hidden menu. Press the CV routing buttons of AMOUNT, CONTROL (DSP-Section) and INPUT 4, MASTER (Mixer-Section) at once for about 3 seconds. The Field Kit FX will switch to the Input Gain Setting Menu. The LED Bar, which is usually used to display the active CV-routing, will show the amplitude of the signal at the input of the Looper/Frequency Shifter. Just like with other level-meters, green leds represent acceptable signal levels while orange and red leds represent signals that are internally clipped. You can use the pot labeled AMOUNT/SRR to set the input gain of the digital section. The ideal signal level is reached when the last green led (INPUT 3, Mixer-Section) lights up.

To exit the Input Gain Setting Menu, hold the button combination mentioned before for 3 seconds and the Field Kit FX will switch back to it's normal state. The gain setting is automatically saved.



3. 50 Ways To Use The Field Kit FX

Let's have a look at the effects of the Field Kit FX and their characteristics. Whether you're looking for a retro-sounding reverb / delay effect or a futuristic, experimental sound, we've got you covered!

3.1 Effect Patches: The Delay

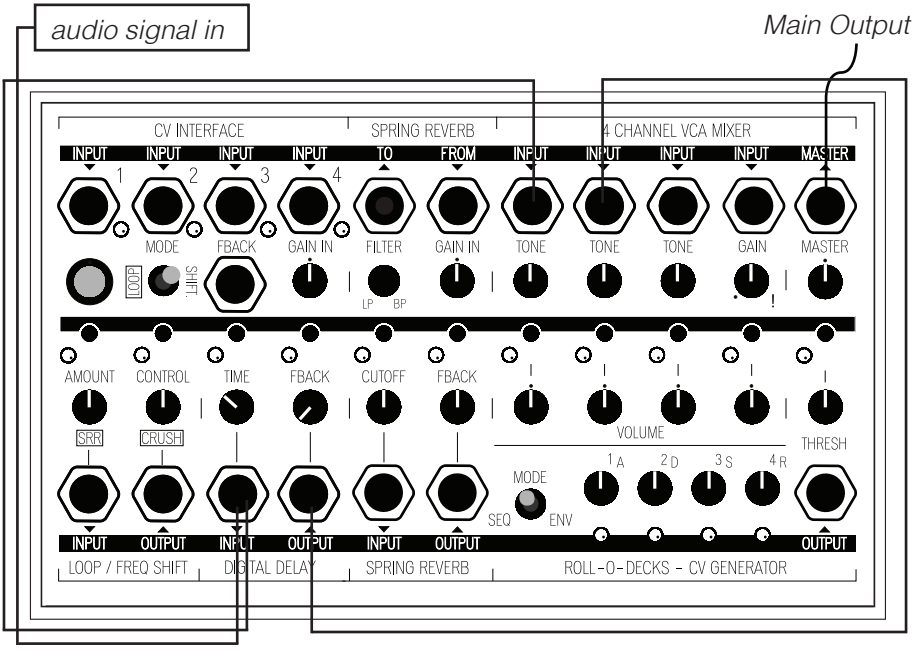
Our Delay is very versatile and can offer classic delay effects as well as various sonic tricks such as doubled voice and spacey echoes.

Patch 1 - Rockabilly

Classic 50s style slapback echo!

- *Audio Signal -> Digital Delay Input*
- *Digital Delay Input -> Channel 1 of the VCA Mixer*
- *Digital Delay Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set Delay TIME short to medium and FBACK all the way down.
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.

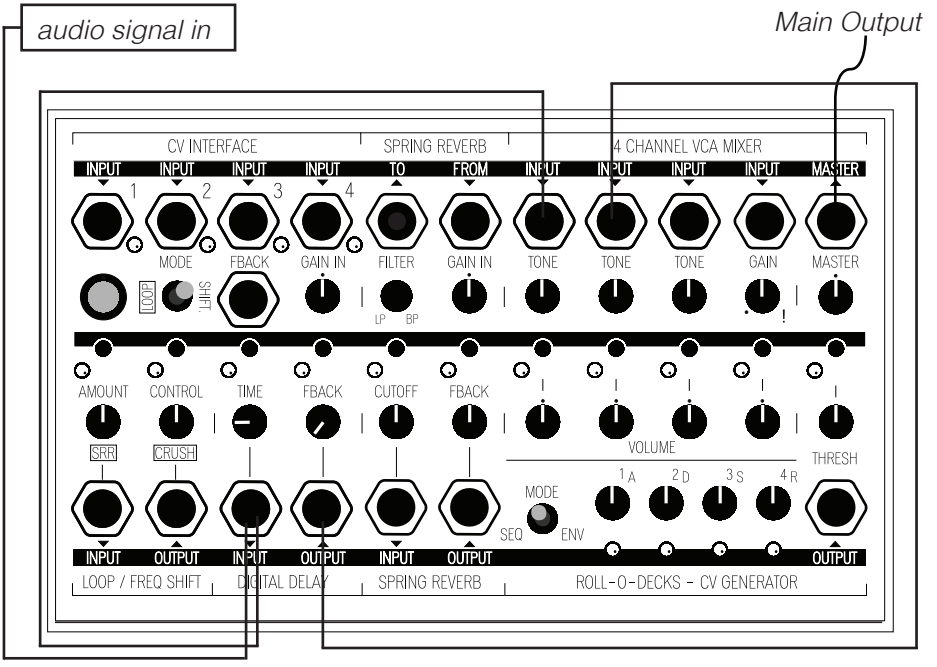


Patch 2 - Doubling Delay

Beef up your sound!

- *Audio Signal -> Digital Delay Input*
- *Digital Delay Input -> Channel 1 of the VCA Mixer*
- *Digital Delay Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the Delay's TIME to short and FBACK all the way to down.
> Mix you dry and wet signal together with the VCA Mixer to make an auditory illusion of a doubled voice.
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.

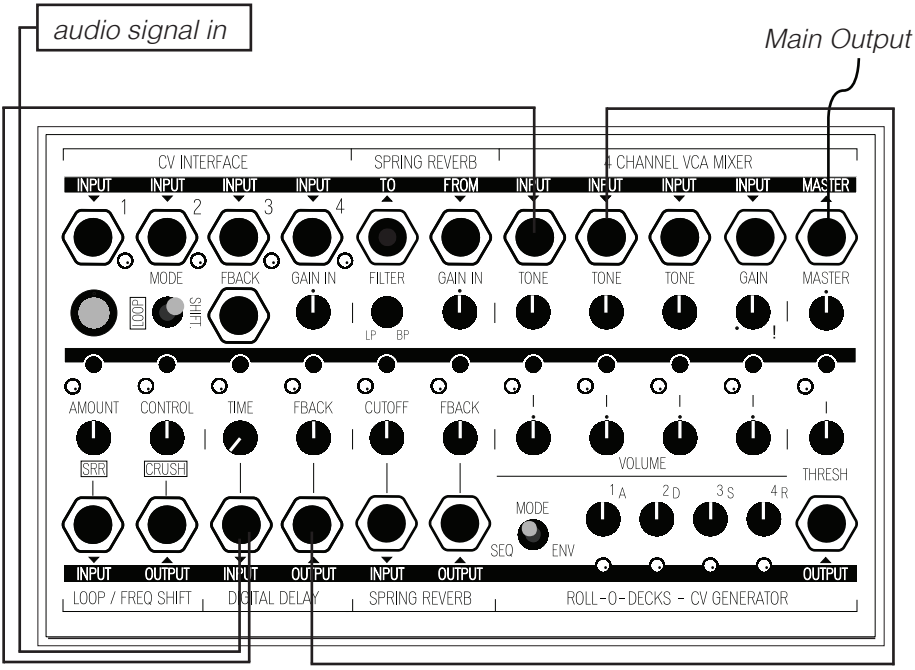


Patch 3 - Comb Filter / Flanger

Mold the spectrum with the Delay effect!

- *Audio Signal -> Digital Delay Input*
- *Digital Delay Input -> Channel 1 of the VCA Mixer*
- *Digital Delay Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set your Delay's TIME short, increase FBACK
> Mix the original and effected signal together and you'll end up with a comb filtering effect as the delayed signal sums with the original signal reinforcing and cancelling frequency components depending on the Delay's TIME.
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.
> Modulate the Delay time for a Flanger-type effect.



Patch 4 - Hallways of Eternity

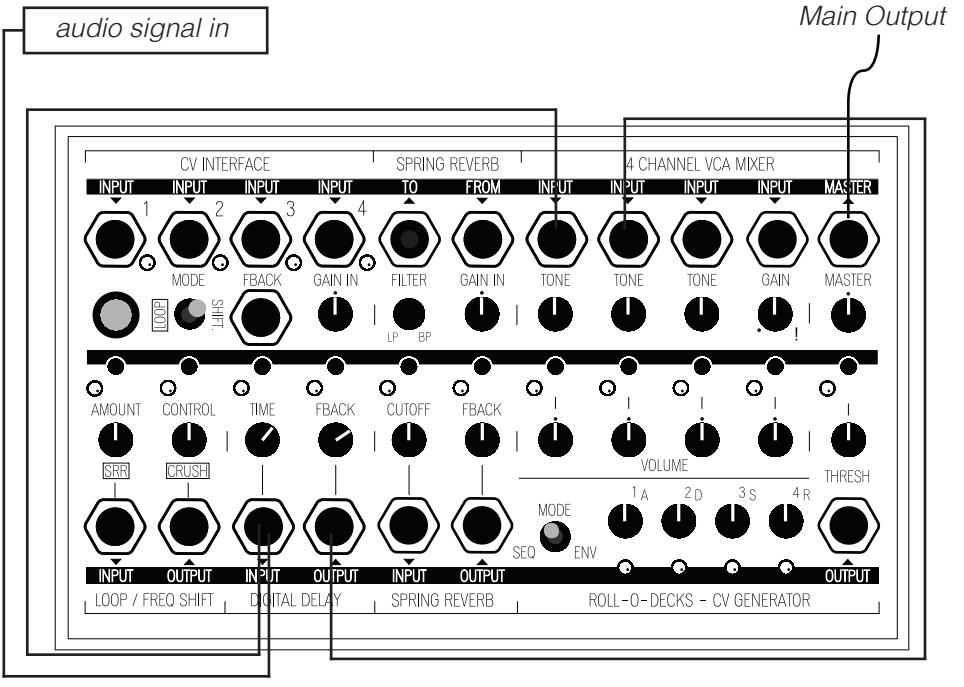
Dreamy repeating echoes!

- *Audio Signal -> Digital Delay Input*
- *Digital Delay Input -> Channel 1 of the VCA Mixer*
- *Digital Delay Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Raise the Delay's TIME over 12 o'clock and raise the amount of FBACK.

> Treat yourself and dive into a dreamy world of overlapping echoes!

> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.

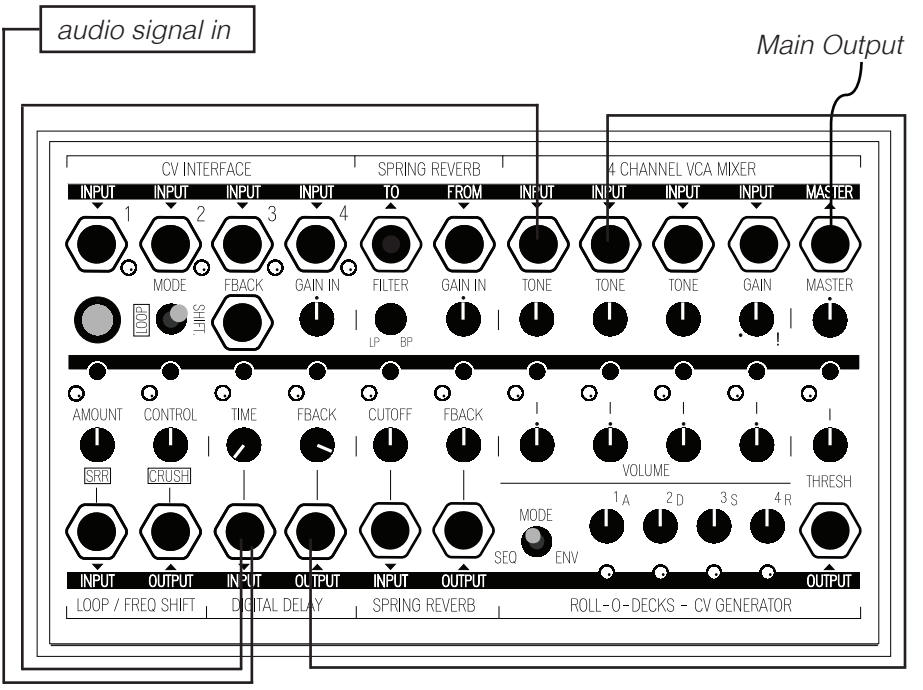


Patch 5 - Karplus-Strong / Extra Oscillator

Ride the waves of historical synthesis algorithms!

- *Audio Signal -> Digital Delay Input*
- *Digital Delay Input -> Channel 1 of the VCA Mixer*
- *Digital Delay Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Excite the Digital Delay with short bursts of sound
> Set your Delay's TIME short and crank up the FBACK
> The Digital Delay will now function as a Karplus-Strong type "string synthesis". Very pleasing!
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs (Mixing in the dry-signal will bring in more of the noisy transients!)
> Go one step further and feedback the Delay into itself by turning the FBACK knob over 3PM and use it as an extra metallic oscillator!



3. 50 Ways To Use The Field Kit FX

3.2 Effect Patches: The Spring Reverb

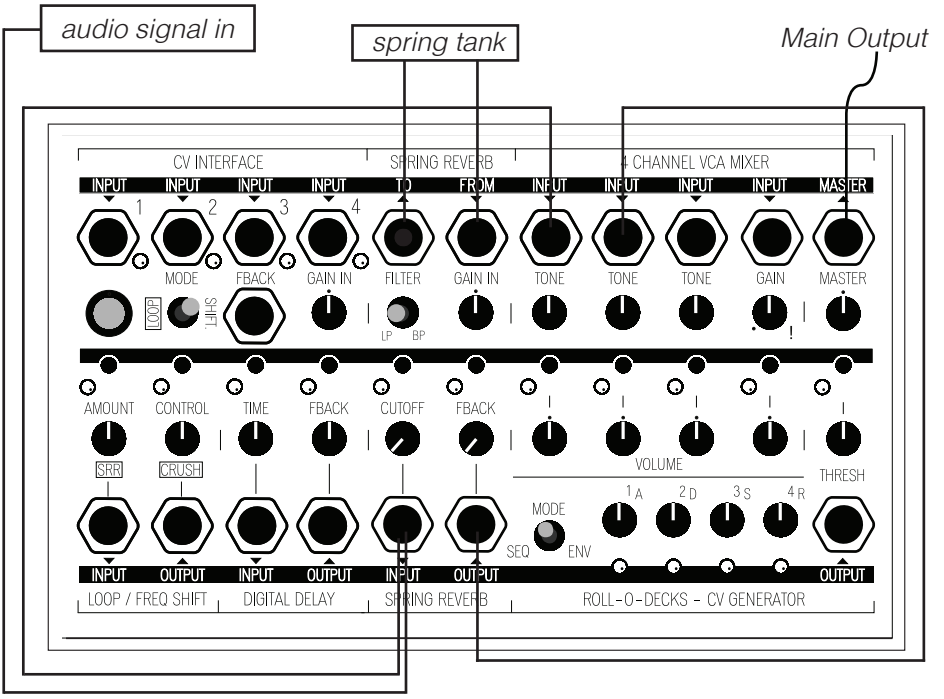
Use the Spring Reverb section and the spring tank to give some space and echoes to your sounds.

Patch 6 - Low-Wow

Dark reverb

- *Connect the spring tank*
- *Audio Signal -> Spring Reverb Input*
- *Spring Reverb Input -> Channel 1 of the VCA Mixer*
- *Spring Reverb Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the Filter into LP Mode
> Turn down the CUTOFF and FBACK.
> The filter will restrict the audio-band going into the reverb to low frequencies, thus creating a dark, reverberated sound.

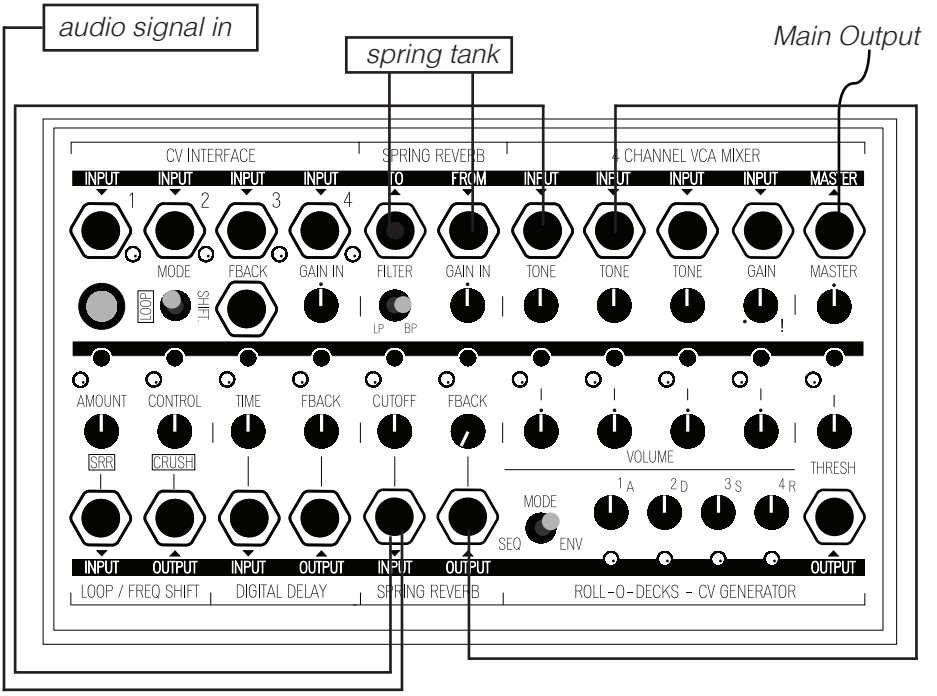


Patch 7 - Pro-ducer

Prevent the low-end muddying up your to-be mega hit!

- *Connect the spring tank*
- *Audio Signal -> Spring Reverb Input*
- *Spring Reverb Input -> Channel 1 of the VCA Mixer*
- *Spring Reverb Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the Filter into BP Mode
> Raise the CUTOFF around the mid-range and set the FBACK down.
> The filter will cut off the low frequencies thus preventing the bass crawling into the reverb tail!
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.



Patch 8 - Full Body

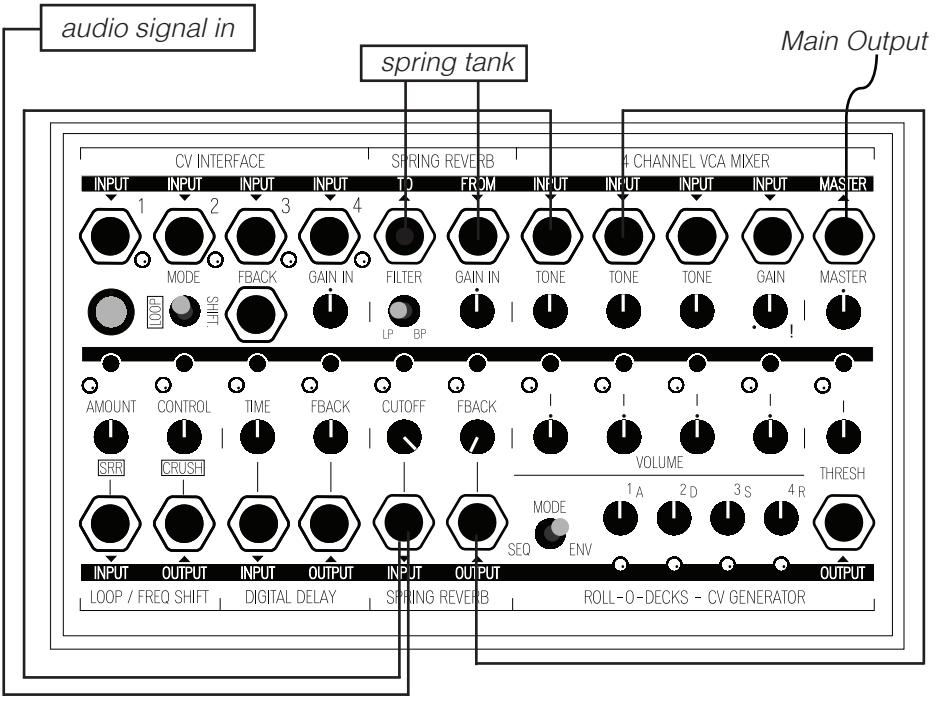
Full audio-band into the Spring Reverb

- *Connect the spring tank*
- *Audio Signal -> Spring Reverb Input*
- *Spring Reverb Input -> Channel 1 of the VCA Mixer*
- *Spring Reverb Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the Filter into LP Mode

> Turn the CUTOFF all the way clockwise to let the full audio-band hit the spring for full-bodied reverb

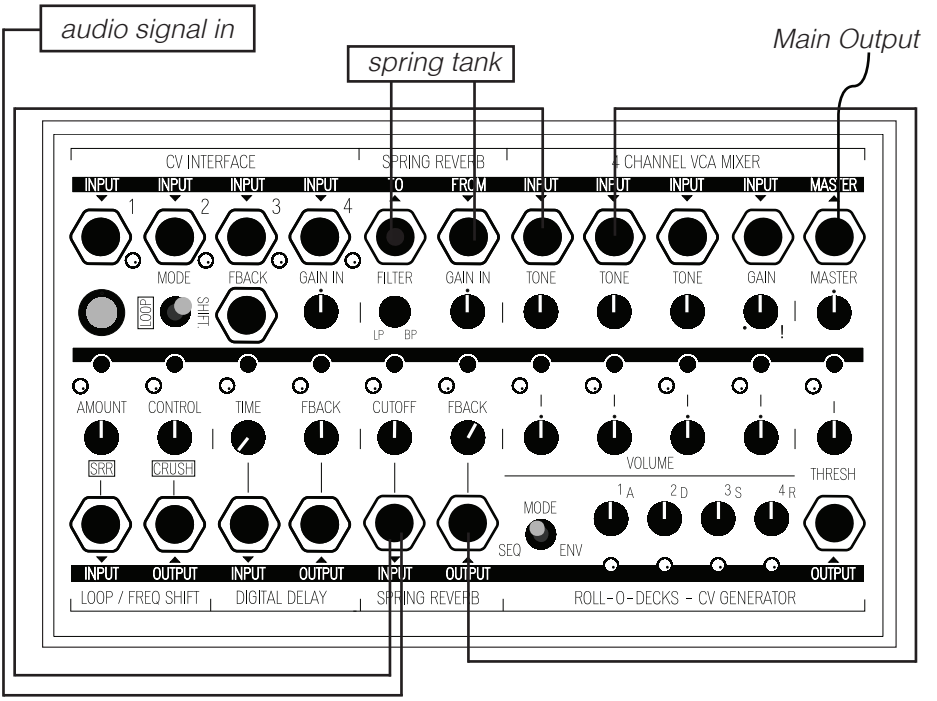
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.



Patch 9 - Longer Reverb Tail

- *Connect the spring tank*
- *Audio Signal -> Spring Reverb Input*
- *Spring Reverb Input -> Channel 1 of the VCA Mixer*
- *Spring Reverb Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

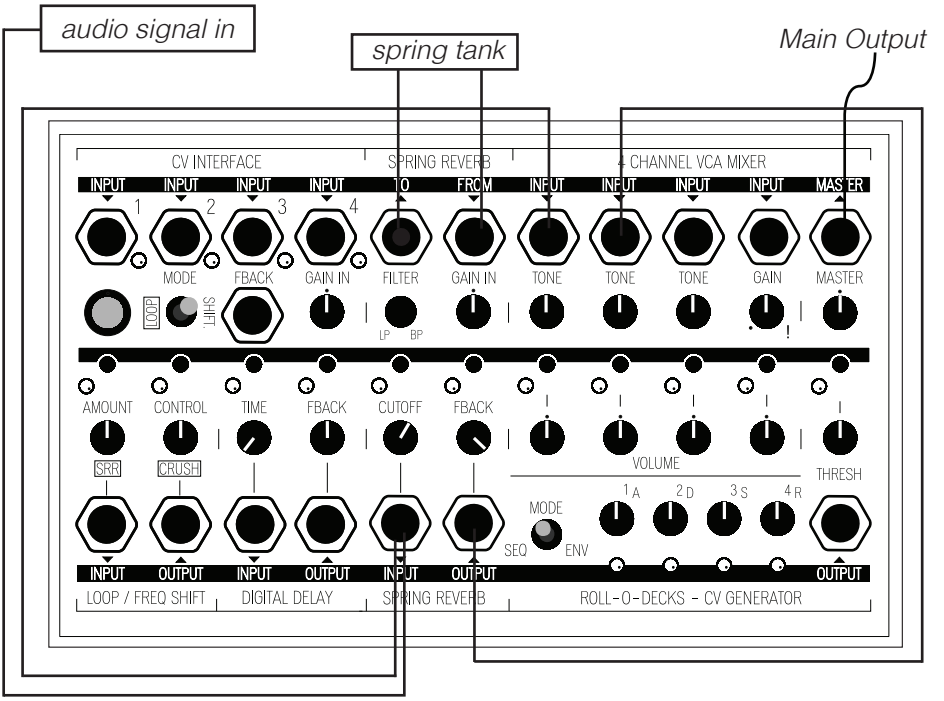
> Set the Filter into either LP or BP Mode
> Crank up the FBACK over 12 o'clock to lenghten the reverb tail by feeding back a portion of the reverb tail into the input. Set the CUT-OFF to your liking.
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOL-UMEs.



Patch 10 - Feedback

- *Connect the spring tank*
- *Audio Signal -> Spring Reverb Input*
- *Spring Reverb Input -> Channel 1 of the VCA Mixer*
- *Spring Reverb Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the Filter into either LP or BP Mode
> Crank up the FBACK past 3PM to drive the Spring Reverb into self-oscillation. Set the CUTOFF to your liking. Watch out, this thing can become loud!
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.



3.3 Effect Patches: The Looper

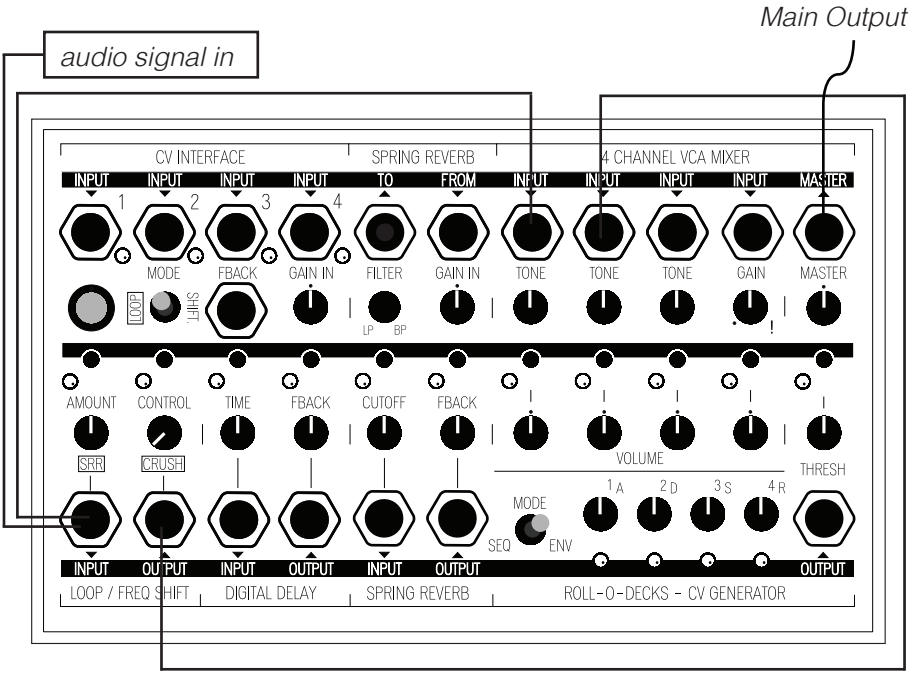
Use the Field Kit FX as a standard looping device or for special aliasing and crushing effects!

Patch 11 - IT Boom

Achieve the sounds of late 80s early 90s digital samplers.

- *Audio Signal -> Looper Input*
- *Looper Input -> Channel 1 of the VCA Mixer*
- *Looper Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the LOOP/SHIFT switch to LOOP position
> Set the SRR around 12 o'clock to achieve the sounds of late 80s early 90s digital samplers.
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.



Patch 12 - Aliasing

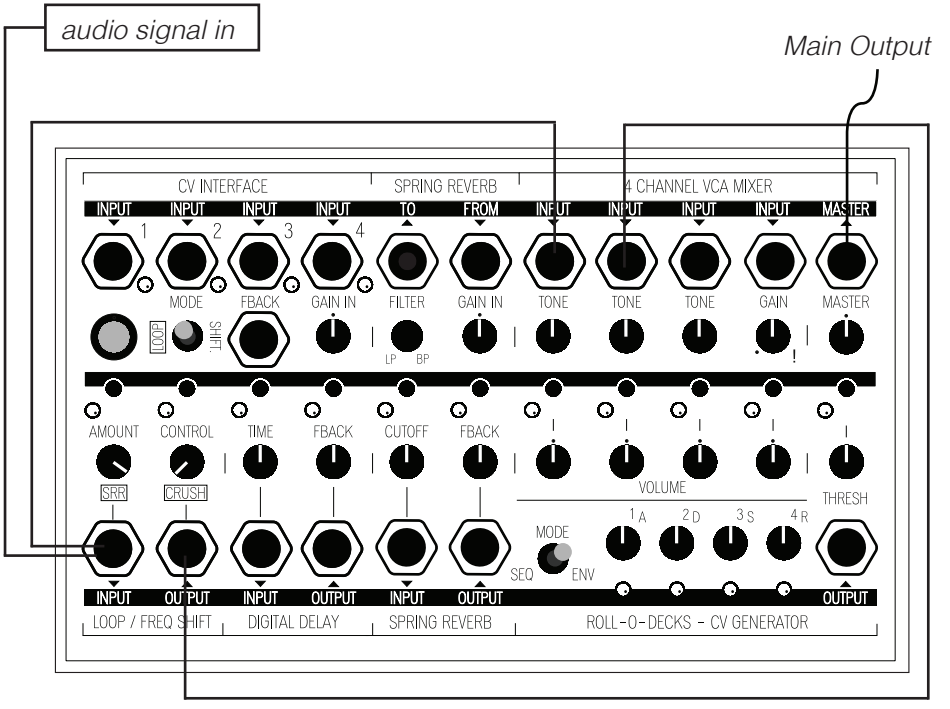
Spectral mold through aliasing

- *Audio Signal -> Looper Input*
- *Looper Input -> Channel 1 of the VCA Mixer*
- *Looper Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the LOOP/SHIFT switch to LOOP position

> Set the SRR over 3PM to complete break the transients of your input sound and let the aliased higher frequencies mold the sound into a completely new sonic terriotory!

> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.

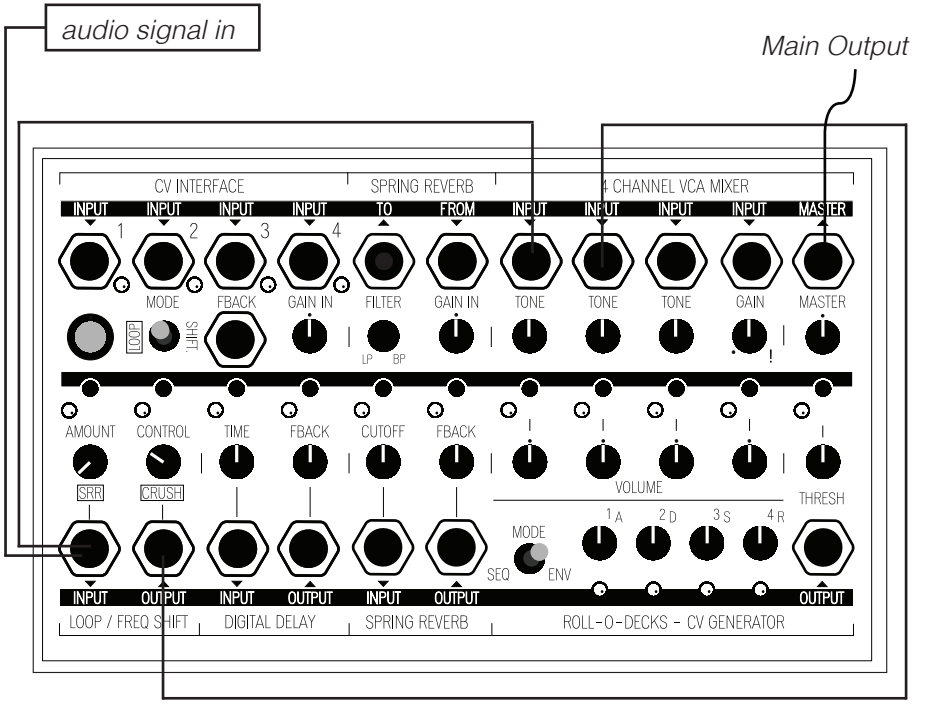


Patch 13 - Mild Crush

Enhance the highs with bit-crushing!

- *Audio Signal -> Looper Input*
- *Looper Input -> Channel 1 of the VCA Mixer*
- *Looper Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the LOOP/SHIFT switch to LOOP position
> Set the CRUSH around 12 o'clock to enhance the high frequencies by mild bit-crushing.
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.



Patch 14 - Spirit Crusher

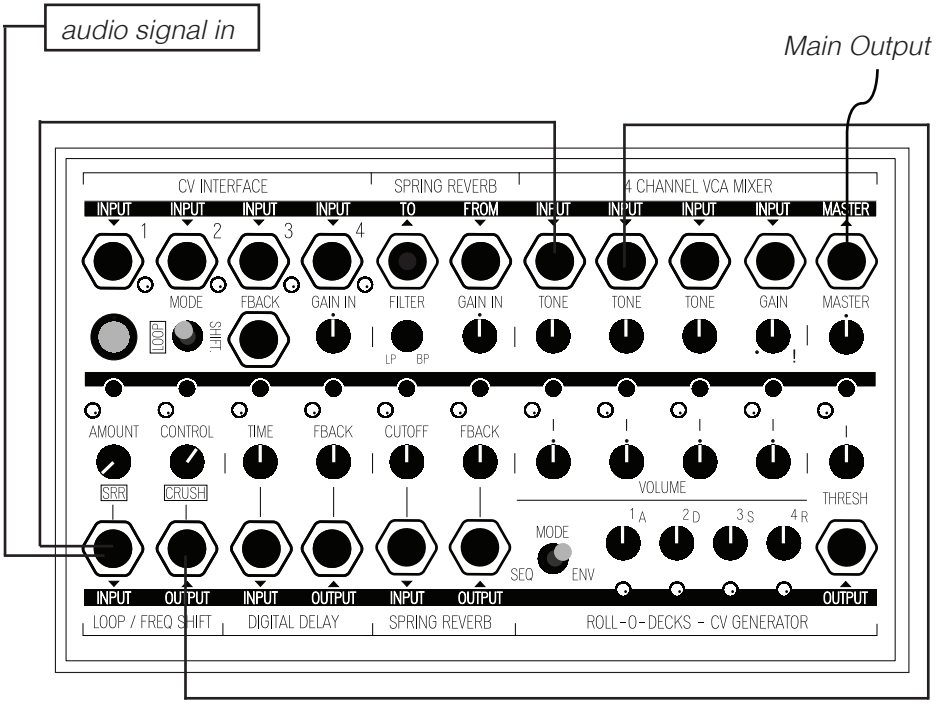
Lo-Fi bit-crushing madness

- *Audio Signal -> Looper Input*
- *Looper Input -> Channel 1 of the VCA Mixer*
- *Looper Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the LOOP/SHIFT switch to LOOP position

> Set the CRUSH over 12 o'clock to destroy your input sound and go competely lo-fi!

> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.

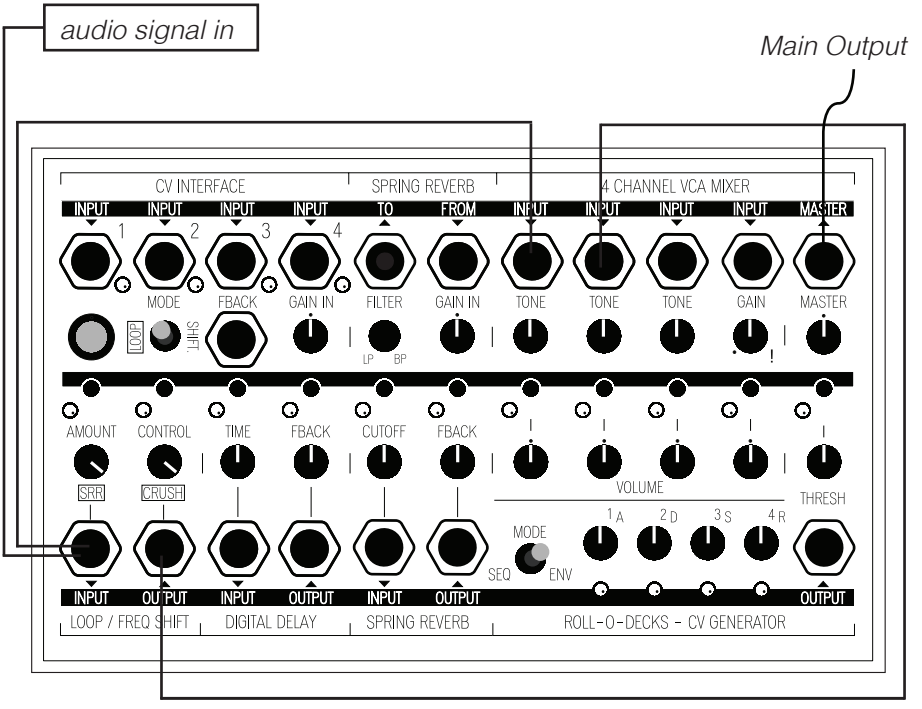


Patch 15 - Spare Me

Sonic destruction through extreme SRR and bit-crushing

- *Audio Signal -> Looper Input*
- *Looper Input -> Channel 1 of the VCA Mixer*
- *Looper Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the LOOP/SHIFT switch to LOOP position
> Crank up both SSR and CRUSH and... Well, you know what's gonna happen (hint: KRRRRRRRRSSSSSSSHHHHHHHHHHH!!!)
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.



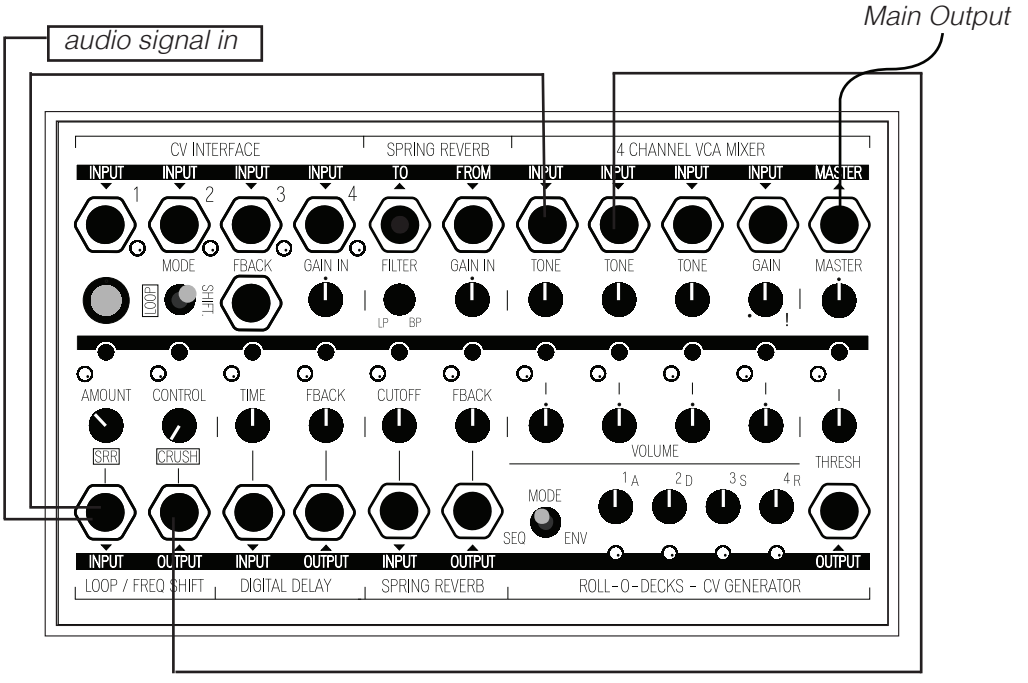
3.4 Effect Patches: Frequency Shifter

The Frequency Shifter can add harmonics to your music in an unconventional way or even create a new melody line. Explore the world beyond the mirror!

Patch 16 - Shift Sound Down

- *Audio Signal -> Frequency Shifter Input*
- *Frequency Shifter Input -> Channel 1 of the VCA Mixer*
- *Frequency Shifter Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

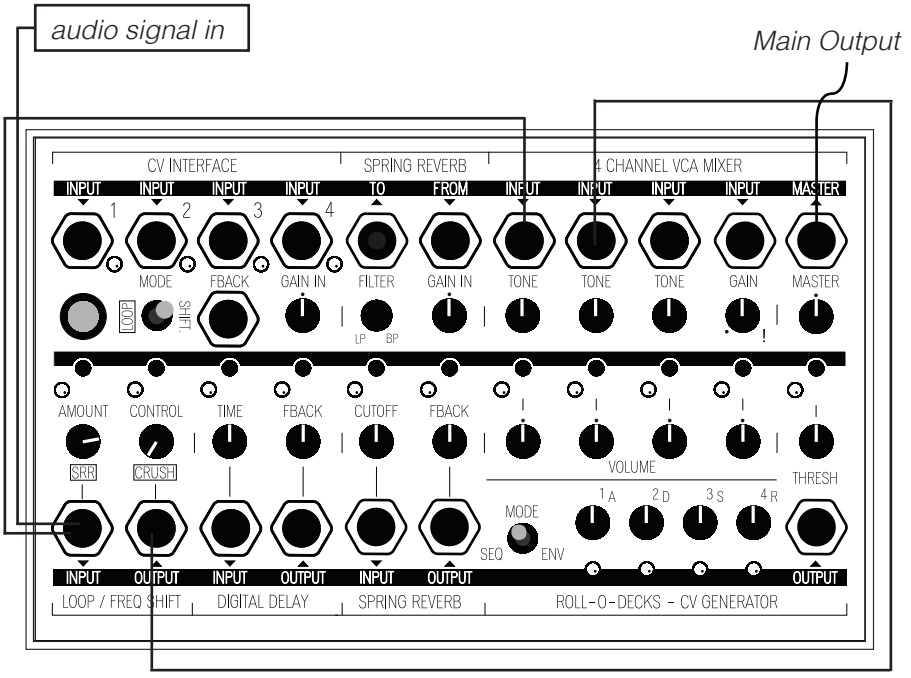
> Set the LOOP/SHIFT switch to SHIFT position
> Turn the AMOUNT pot CCW from 12 o'clock and set CONTROL all the way CCW to shift the frequencies down without creating additional harmonics.
> Control the dry/wet-balance with VCA Mixer CH. 1 and 2 VOLUMEs.



Patch 17 - Shift Sound Up

- *Audio Signal -> Frequency Shifter Input*
- *Frequency Shifter Input -> Channel 1 of the VCA Mixer*
- *Frequency Shifter Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the LOOP/SHIFT switch to SHIFT position
> Turn the AMOUNT pot CW from 12 o'clock and set CONTROL all the way CCW to shift the frequencies up without creating additional harmonics.
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.

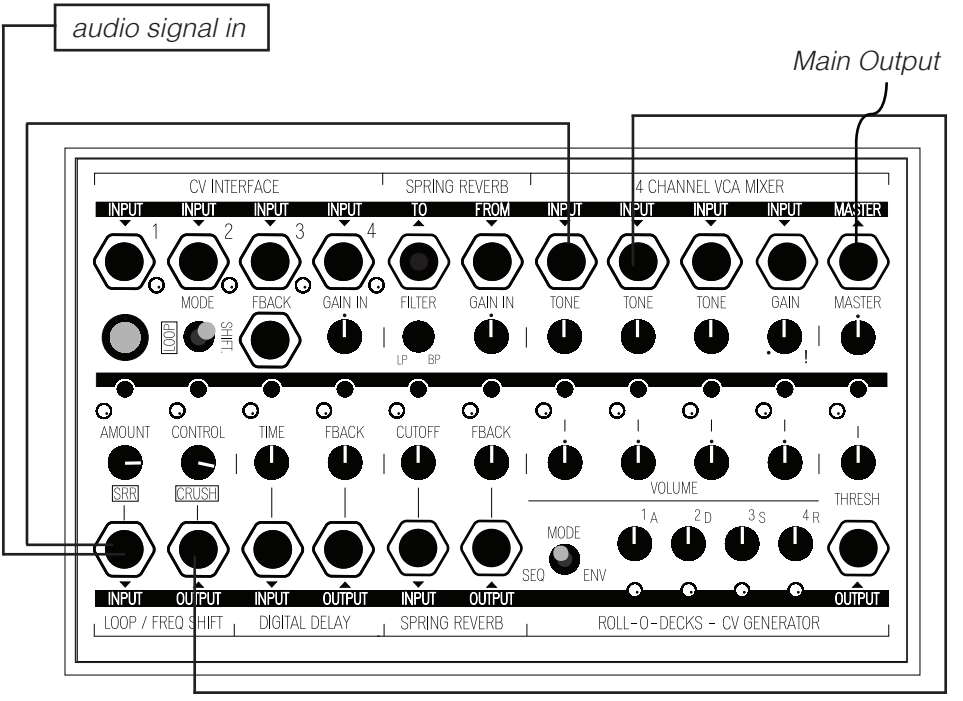


Patch 18 - Spectral Mold

Shift your audio content while molding the spectrum with the Frequency Shifter.

- *Audio Signal -> Frequency Shifter Input*
- *Frequency Shifter Input -> Channel 1 of the VCA Mixer*
- *Frequency Shifter Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*

> Set the LOOP/SHIFT-switch to SHIFT position
> Turn the AMOUNT pot away from 12 o'clock and turn up CONTROL from its CCW position to create additional harmonics and mold the spectral content of the shifted signal.
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.

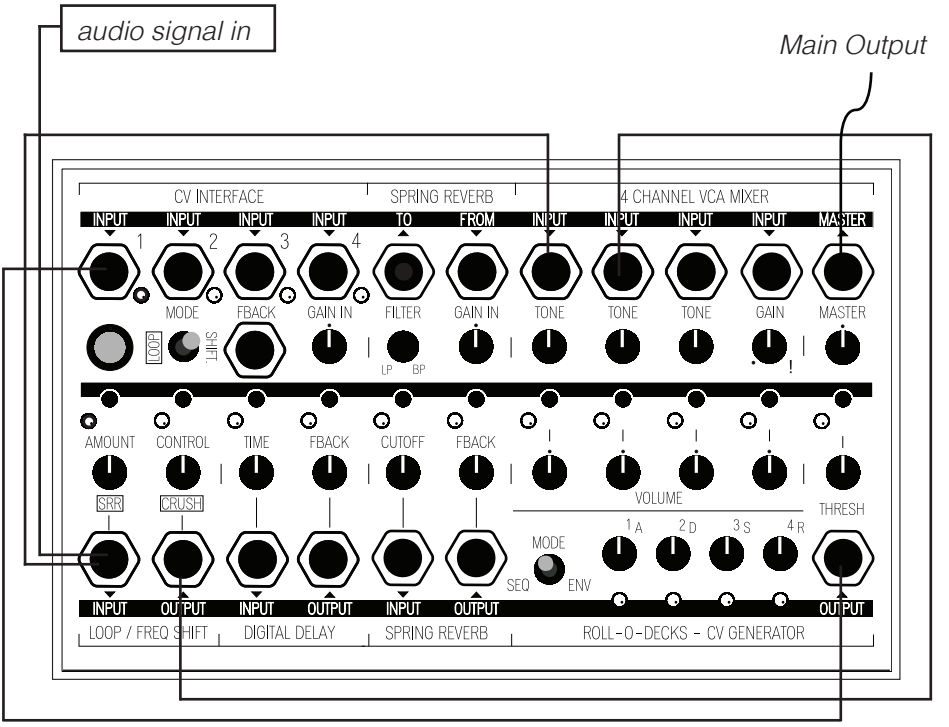


Patch 19 - Melody Line

Create melody-lines with the shifted audio.

- *Audio Signal -> Frequency Shifter Input*
- *Frequency Shifter Input -> Channel 1 of the VCA Mixer*
- *Frequency Shifter Output -> Channel 2 of the VCA Mixer*
- *Master Out -> Main Output*
- *Roll-O-Decks Output -> Channel 1 CV Interface*

> Set the LOOP/SHIFT switch to SHIFT position
> Roll-O-Decks SEQ-mode
> Modulate the shift AMOUNT with sequenced voltages from the Roll-O-Decks to make a melody line with the frequency shifted audio.
> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.



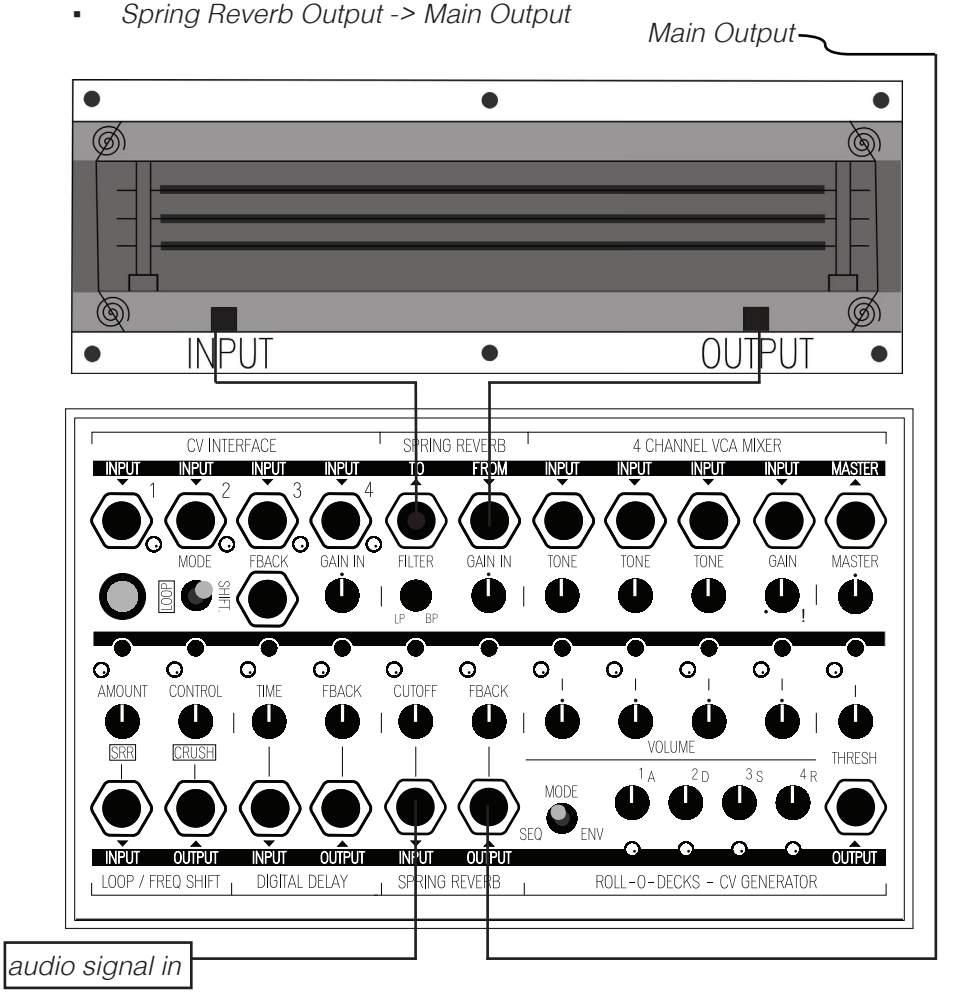
3. 50 Ways To Use The Field Kit FX

3.5 Basic Patches

Sometimes, less is more. And even a basic patch, a tiny microphone or turning the right knob can make a lot of noise!

Patch 20 - Basic Spring Reverb Configuration

- *Audio signal -> Spring Reverb Input*
- *Spring Reverb TO -> Spring tank IN*
- *Spring tank OUT -> Spring Reverb FROM*
- *Spring Reverb Output -> Main Output*

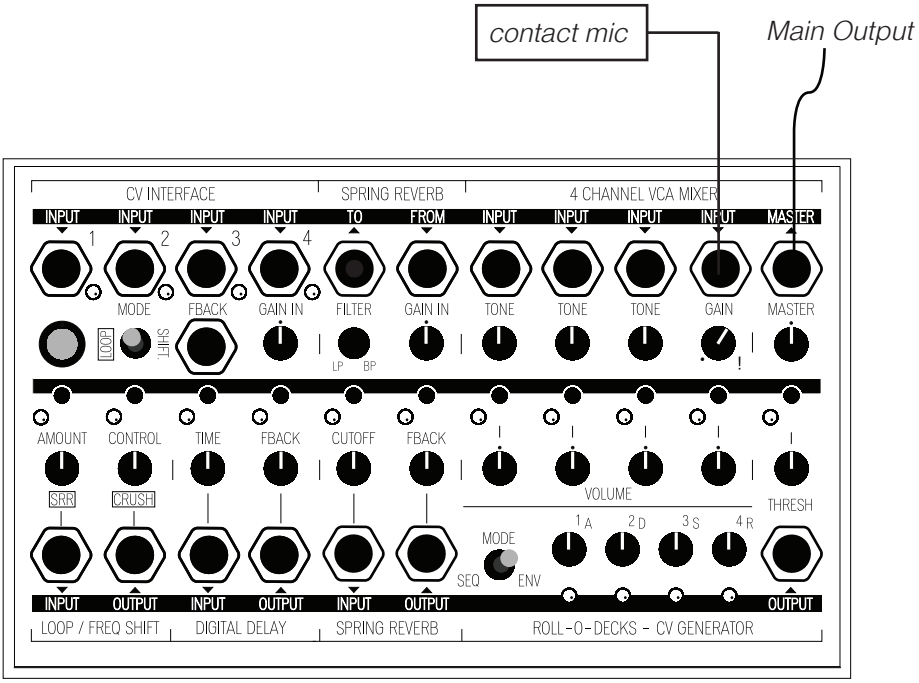


Patch 21 - Using a Contact Microphone

The Channel 4 of the VCA Mixer (Turbo channel) packs a lot of gain so you can amplify delicate sounds!

- *Contact Microphone -> Turbo Channel (VCA Mixer Channel 4)*
- *Master Out -> Main Output*

> Set the amount of amplification with the GAIN knob.



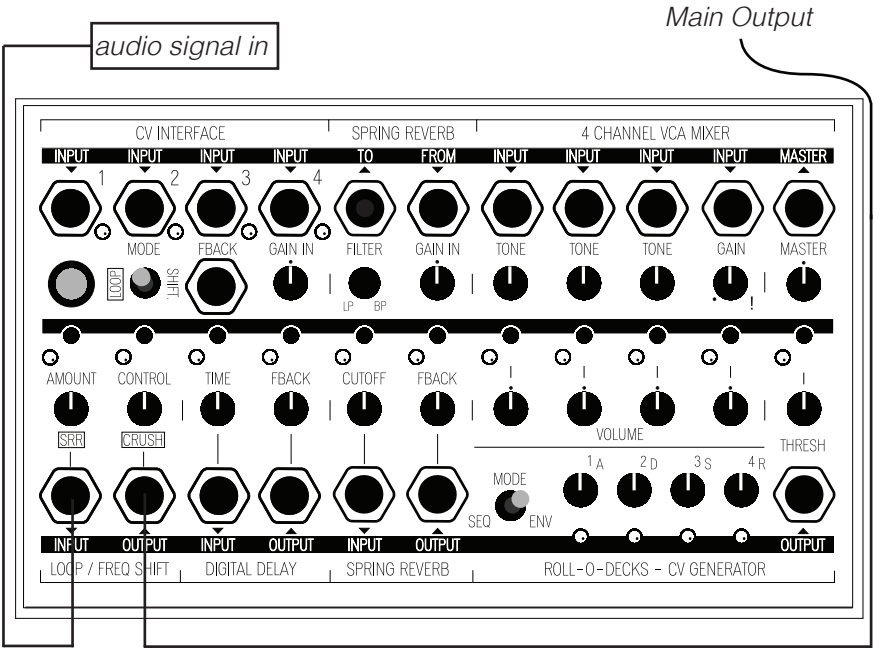
Patch 22 - Looper Patch

Here's how you create loops with the Looper!

- *Audio Signal -> Looper Input*
- *Looper Output -> Main Output*

> Set the LOOP/SHIFT switch to LOOP position

> Pressing the LOOP button will create loops allowing you to overlay sounds, create complex melodies, record instruments one by one, etc.

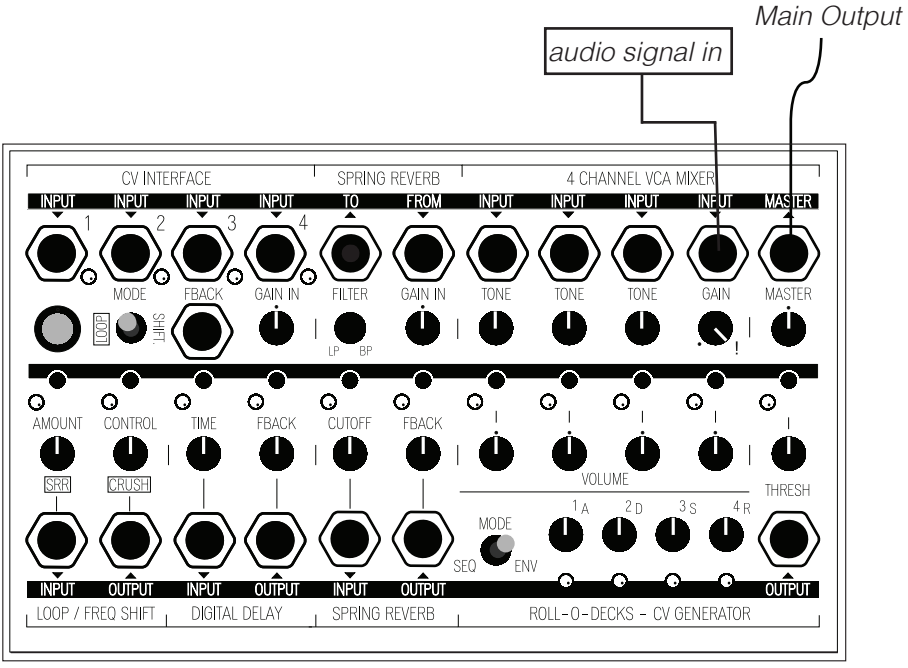


Patch 23 - DisThor

Use the VCA Mixer Channel 4 as a distortion effect!

- *Audio Signal -> VCA Mixer Channel 4 (Turbo Channel)*
- *Master Out -> Main Output*

> Crank up the GAIN to overdrive the VCA Mixer and use Channel 4 as a distortion pedal!

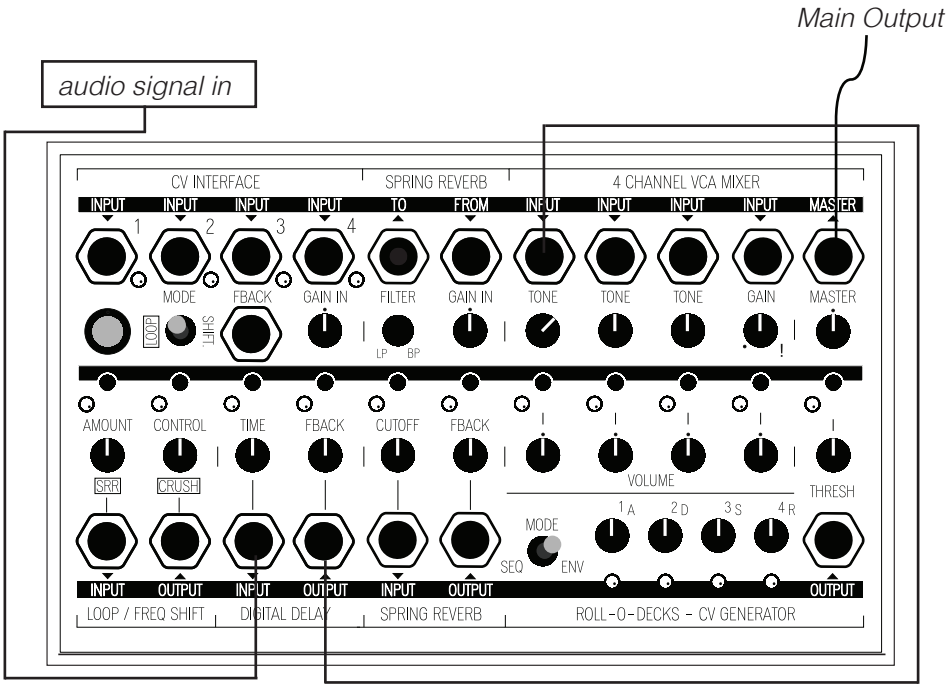


Patch 24 - Tone Control Delay

Use the TONE-control to tilt the spectrum of the delay effect!

- *Audio Signal -> Digital Delay Input*
- *Digital Delay Output -> VCA Mixer Channel 1*
- *Master Out -> Main Output*

> The TONE control of VCA Mixer Channel 1 gives you the possibility to control the spectrum of the delay-tail.

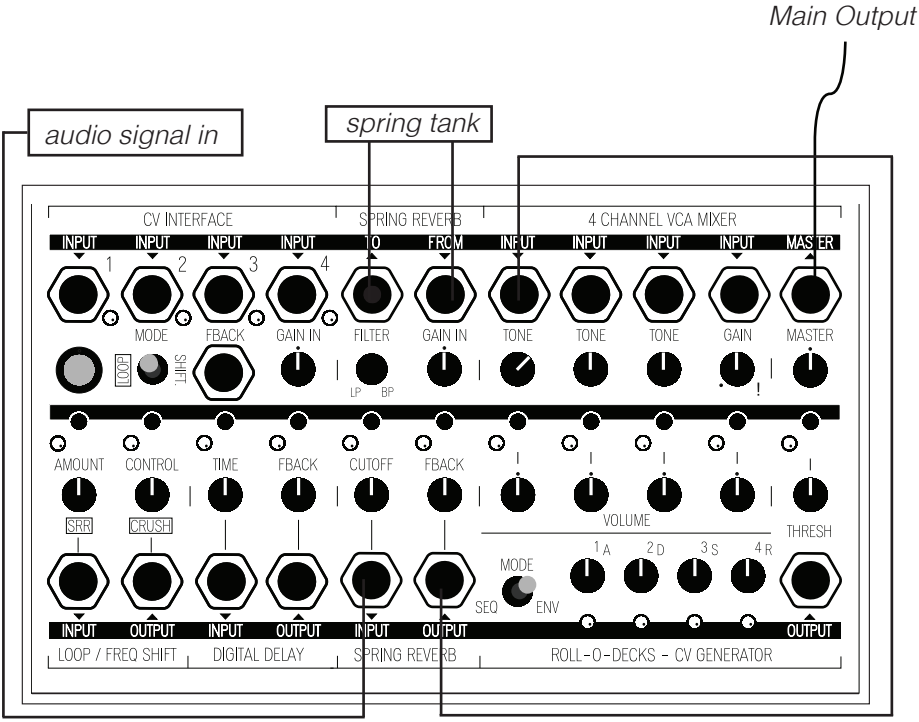


Patch 25 - Tone Control Reverb

Use the TONE-control to tilt the spectrum of the reverb effect!

- *Connect the spring tank*
- *Audio Signal -> the Spring Reverb Input*
- *Spring Reverb Output -> VCA Mixer Channel 1*
- *Master Out -> Main Output*

> The TONE control of VCA Mixer Channel 1 gives you the possibility to control the spectrum of the reverb-tail.

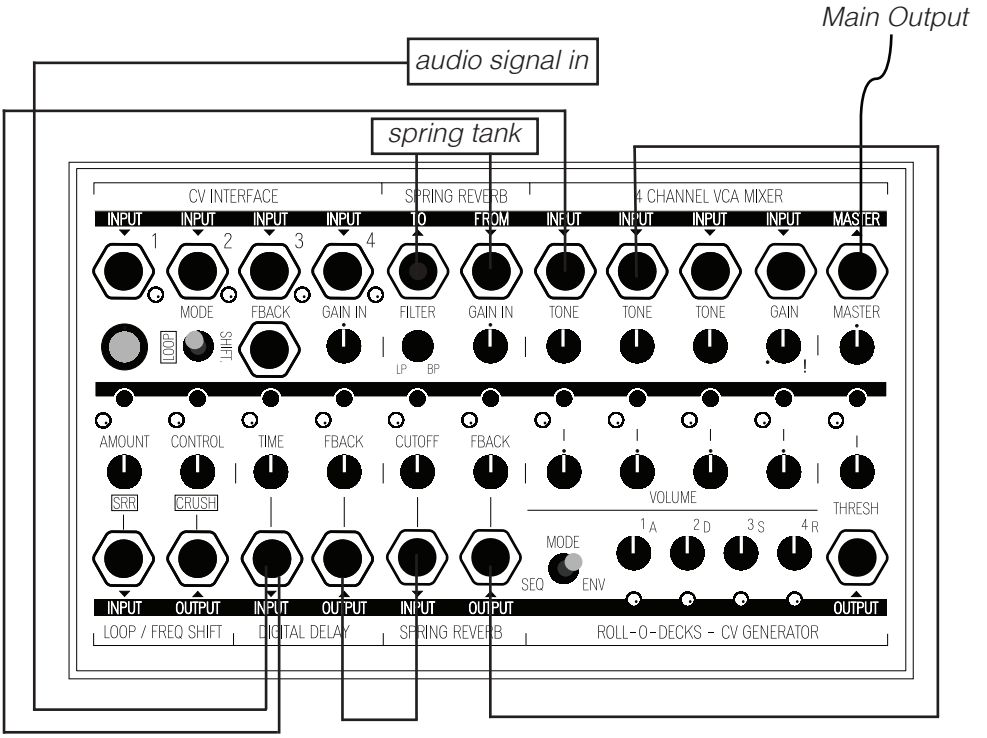


Patch 26 - The Dark Forest

Add reverb to your delays with this patch.

- *Connect the spring tank*
- *Audio Signal -> Digital Delay Input*
- *Digital Delay Input -> VCA Mixer Channel 1*
- *Digital Delay Output -> Spring Reverb Input*
- *Spring Reverb Output -> VCA Mixer Channel 2*
- *Master Out -> Main Output*

> The delayed sounds are now routed into the spring reverb for add-

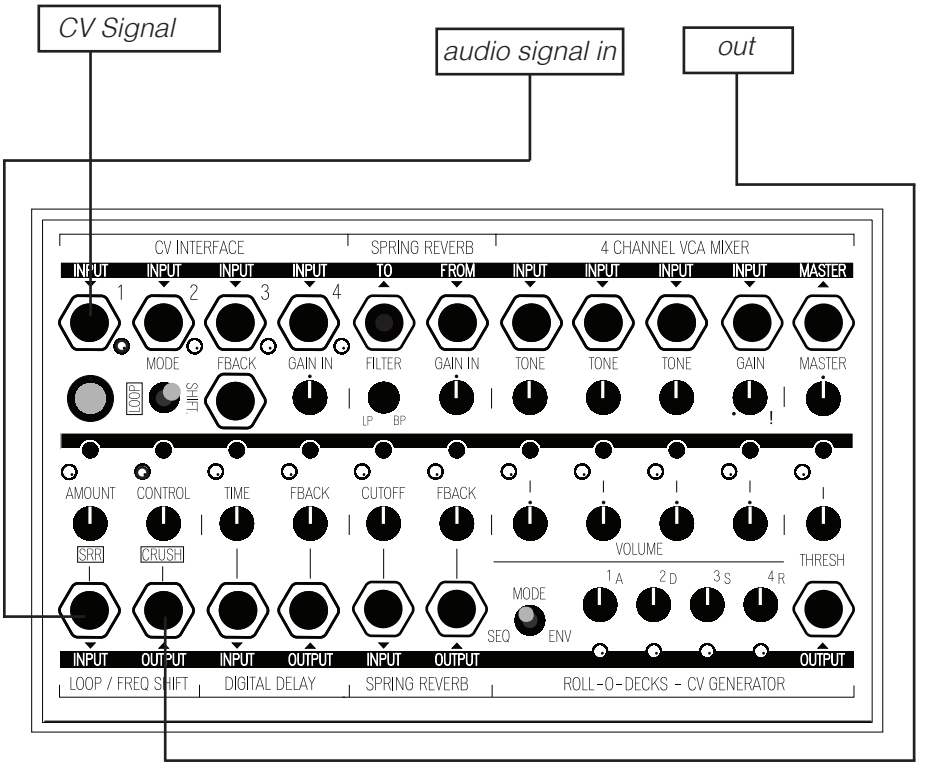


Patch 27 - Basic Effects Automation

Use the CV Interface to automate the effect parameters with external CV.

- *CV Source -> CV Interface Channel 1*

> Route the CV Source to your desired destination using the CV Interface (In the example patch, Frequency Shifter CONTROL).



3. 50 Ways To Use The Field Kit FX

3.6 Plug It In

Use as many effects and channels as possible – preferably together!

Patch 28 - All In – Parallel Effects

Set your effects to work in parallel!

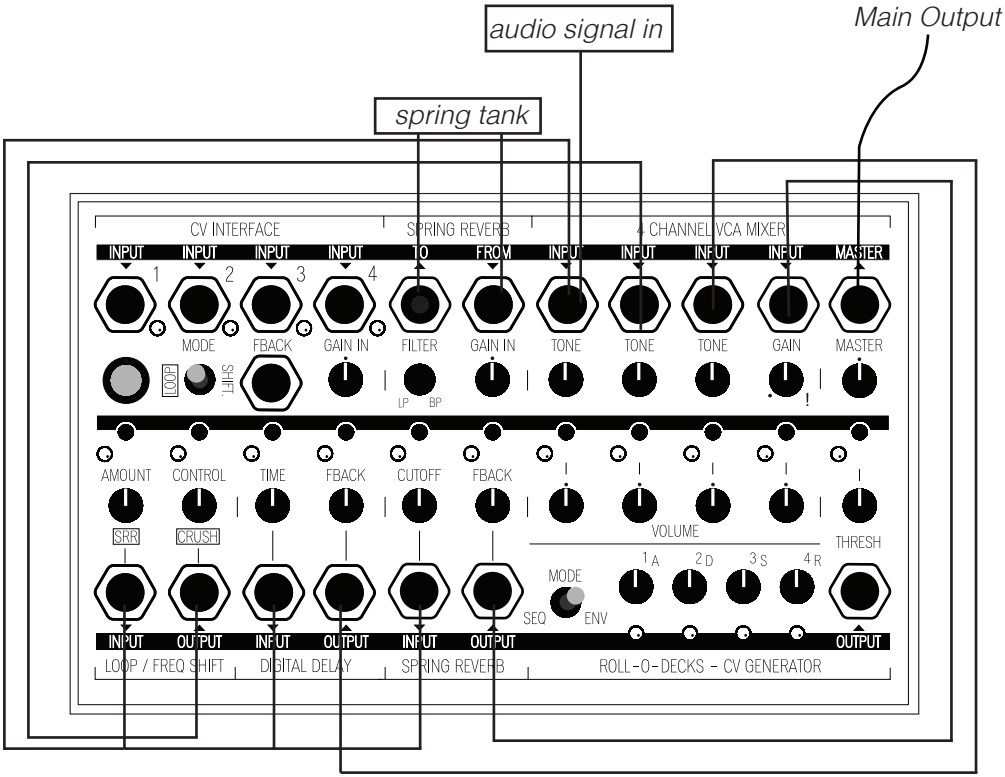
- *Connect the spring tank*
- *Audio Signal -> VCA Mixer Channel 1*
- *VCA Mixer Channel 1 -> Looper, Digital Delay and Spring Reverb*

(hint: use stackable cables, multiples, splitter cables, etc.)

- *Effect Outputs -> VCA Mixer Channels 2, 3 and 4*
- *Master Out -> Main Output*

> VCA Mixer Channels 2, 3 and 4 now contain the effected signals while Channel 1 is the dry Signal.

> Control the dry/wet-balance with VCA Mixer Channel 1, 2, 3 and 4



Patch 29 - Effects in Chains

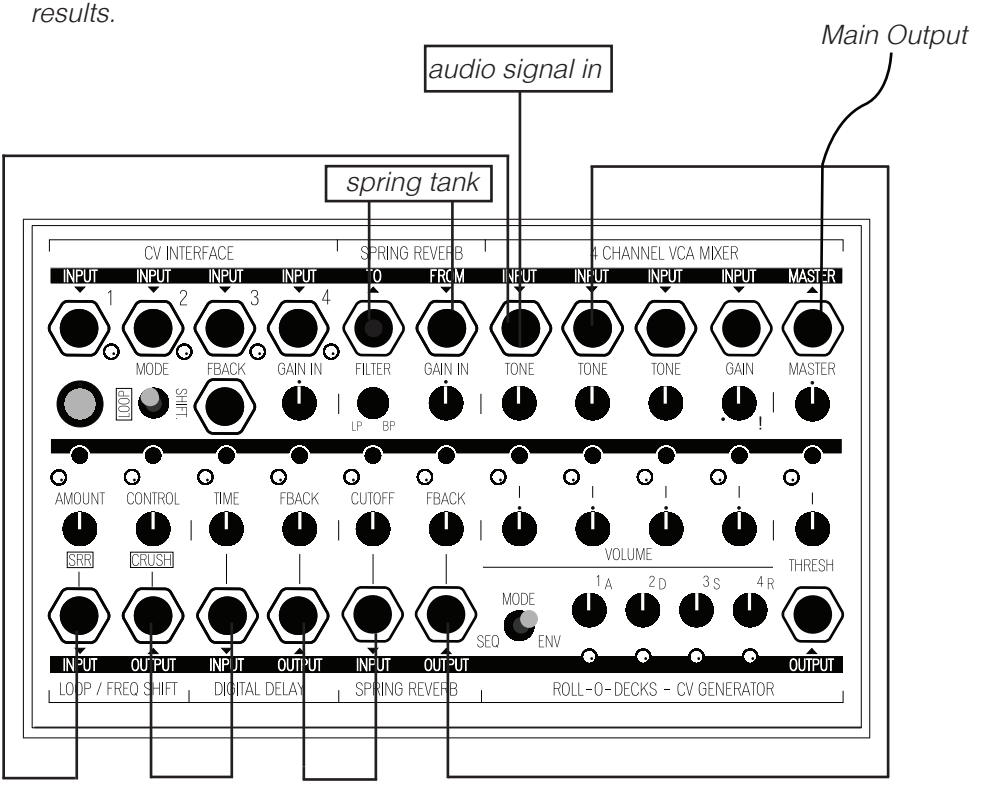
Mix all effects together in one series chain!

- *Connect the spring tank*
- *Audio Signal -> VCA Mixer Channel 1*
- *VCA Mixer Channel 1 -> Looper Input*
- *Looper Output -> Digital Delay Input*
- *Digital Delay Output -> Spring Reverb Input*
- *Spring Reverb Output -> VCA Mixer Channel 2*
- *Master Out -> Main Output*

> VCA Mixer Channel 2 now contains all of the effects mixed together while Channel 1 is the dry Signal.

> Control the dry/wet-balance with VCA Mixer Channel 1 and 2 VOLUMEs.

> Try out a different order for the effects chain for different sonic results.

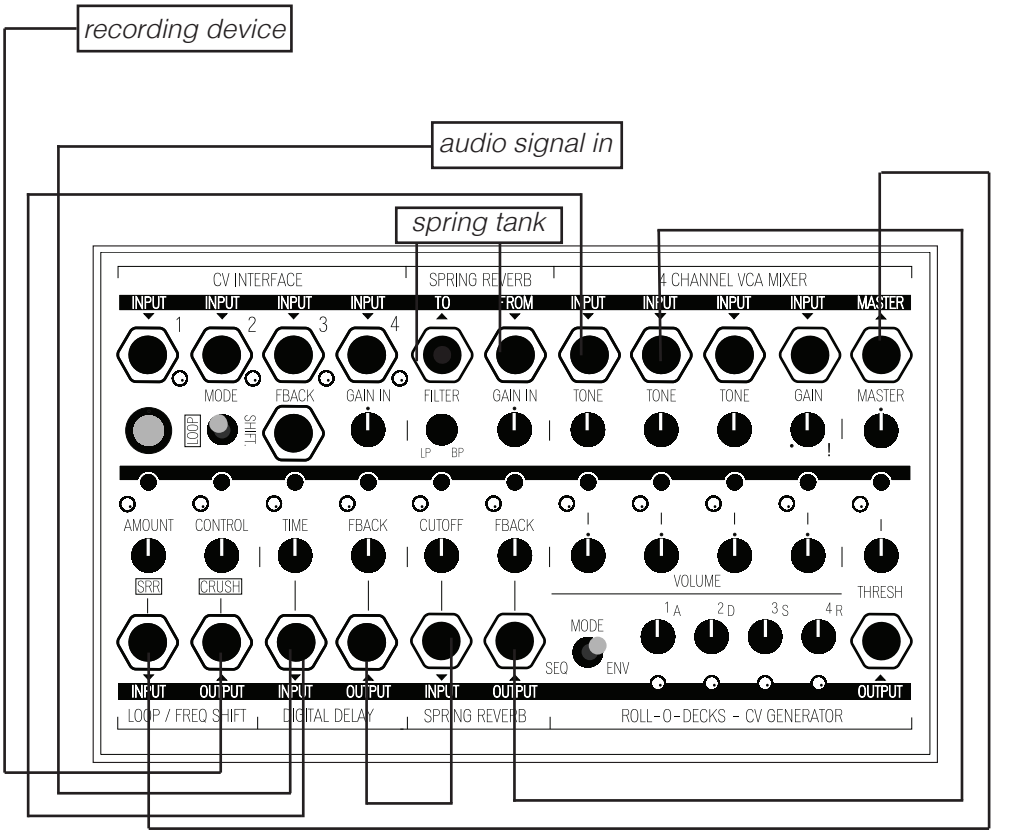


Patch 30 - The Sound Designer

Become a sound designer with the FX!

- *Start with patch number 26 (The Dark Forest)*
- *Master Output -> Looper Input*
- *Looper Output -> Multi-Track Recording Device*

> Fool around with different sound sources and effects settings, make overlapping loops out of them and record the outcome to your multi-track recording device! Prepare for phone-calls from talent scouts.



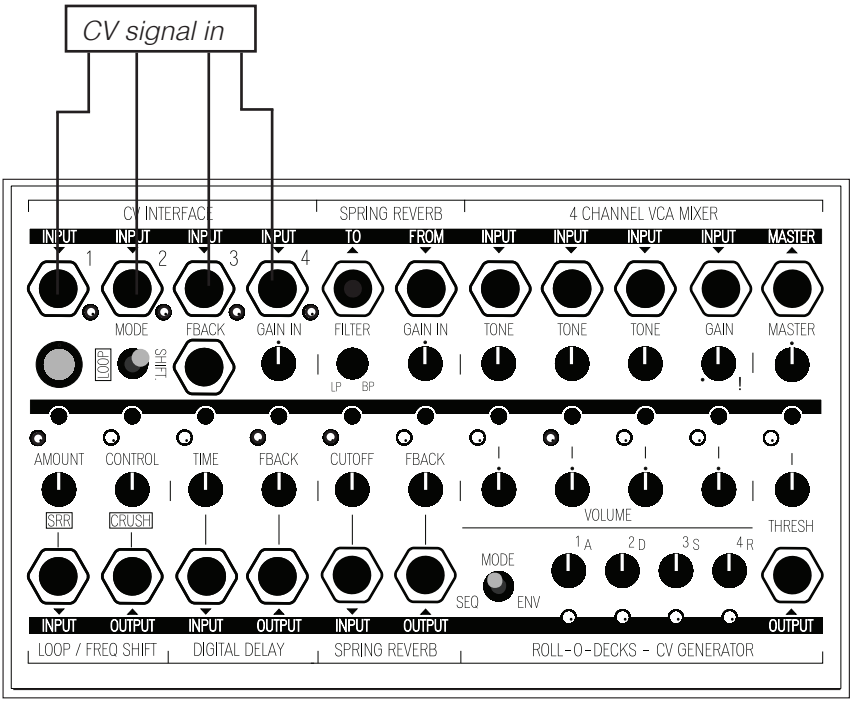
Patch 31 - The Control Freak

Use 4 different CV sources together with the CV Interface

- *CV Source 1 -> CV Interface Channel 1*
- *CV Source 2 -> CV Interface Channel 2*
- *CV Source 3 -> CV Interface Channel 3*
- *CV Source 4 -> CV Interface Channel 4*

> Route the 4 different CV sources to your desired destinations using the CV Interface.

> In the example patch, the CV signals are assigned to Frequency Shifter AMOUNT, Digital Delay FBACK, the Spring Reverb CUTOFF and VCA Mixer Channel 2 VOLUME.



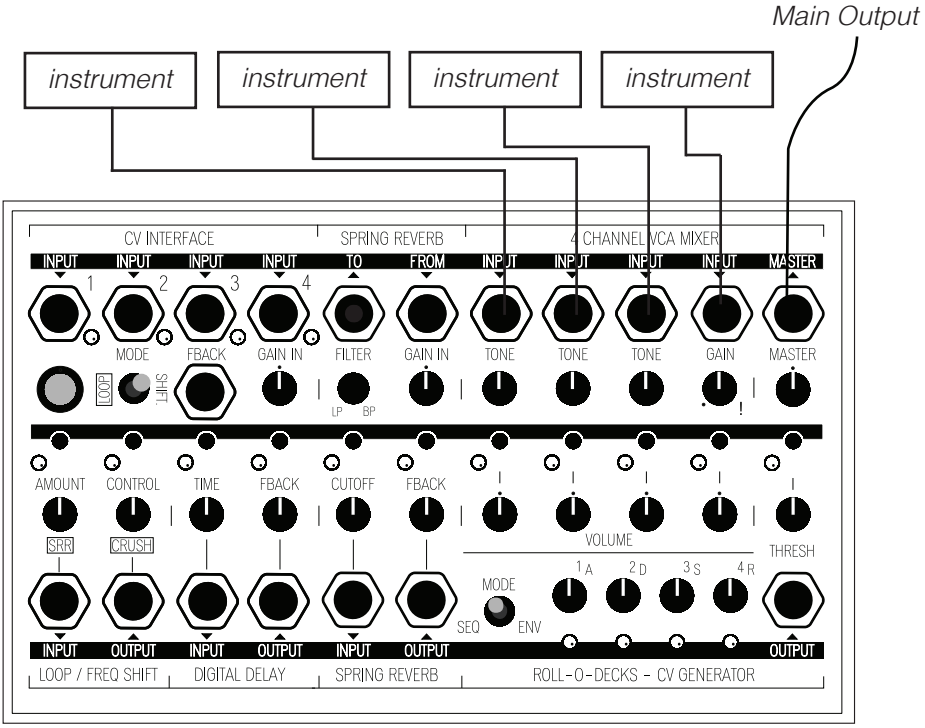
Patch 32 - The Mini Mixer

Do a mixdown of your own live setup with the VCA mixer!

- *Sound Source 1 (ex. Drum Machine) -> VCA Mixer Channel 1*
- *Sound Source 2 (ex. Synthesizer) -> VCA Mixer Channel 2*
- *Sound Source 3 (ex. Sampler) -> VCA Mixer Channel 3*
- *Sound Source 4 (ex. Microphone) -> VCA Mixer Channel 4*
- *Master Out -> Main Output*

> Control the levels of the different sound sources with VCA Mixer VOLUMEs.

> Go even further by automating the Volume-levels with external CV routed through the CV Interface.



3.7 CV Patches

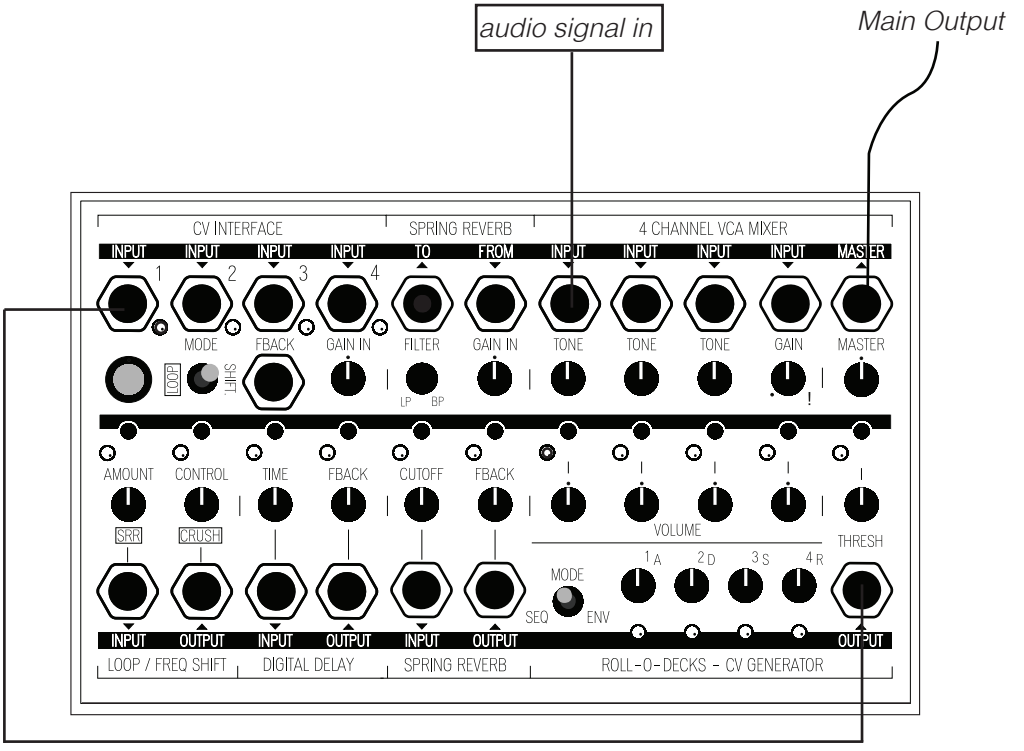
By assigning CV signals to various effects via the CV Interface, you can automate effect parameters, clock effects, modulate amplitudes and even create oscillators!

Patch 33 - Basic VCA

Cofigure the VCA Mixer to work as a basic VCA!

- *Audio Signal -> VCA Mixer Channel 1*
- *Roll-O-Decks Output -> CV Interface Channel 1*
- *Master Out -> Main Output*

> Roll-O-Decks either SEQ or ENV mode
> Automate the Volume of VCA Mixer Channel 1 using the Roll-O-Decks.



Patch 34 - Amplitude Modulation Input into Delay

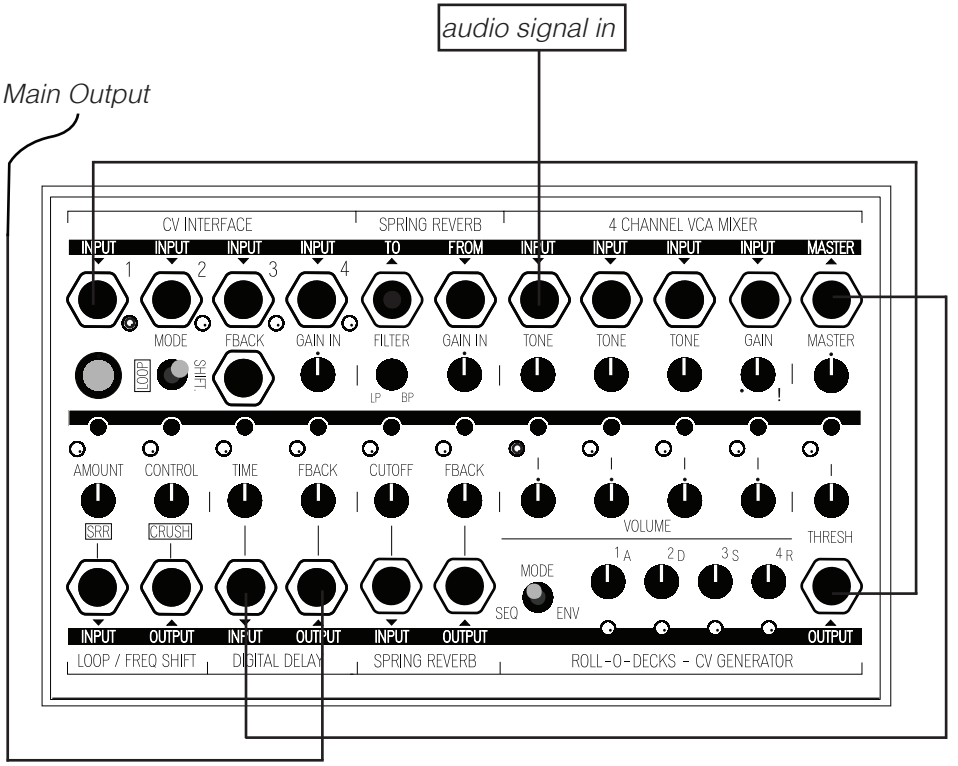
An amplitude modulated signal into the Digital Delay.

- *Audio Signal -> VCA Mixer Channel 1*
- *Roll-O-Decks Output -> CV Interface Channel 1*
- *Master -> Digital Delay Input*
- *Digital Delay Output -> Main Output*

> Roll-O-Decks either SEQ or ENV mode

> Automate the Volume of VCA Mixer Channel 1 using the Roll-O-Decks

> The audio content going into the Digital Delay is now amplitude modulated.



Patch 35 - Amplitude Modulation into Spring Reverb

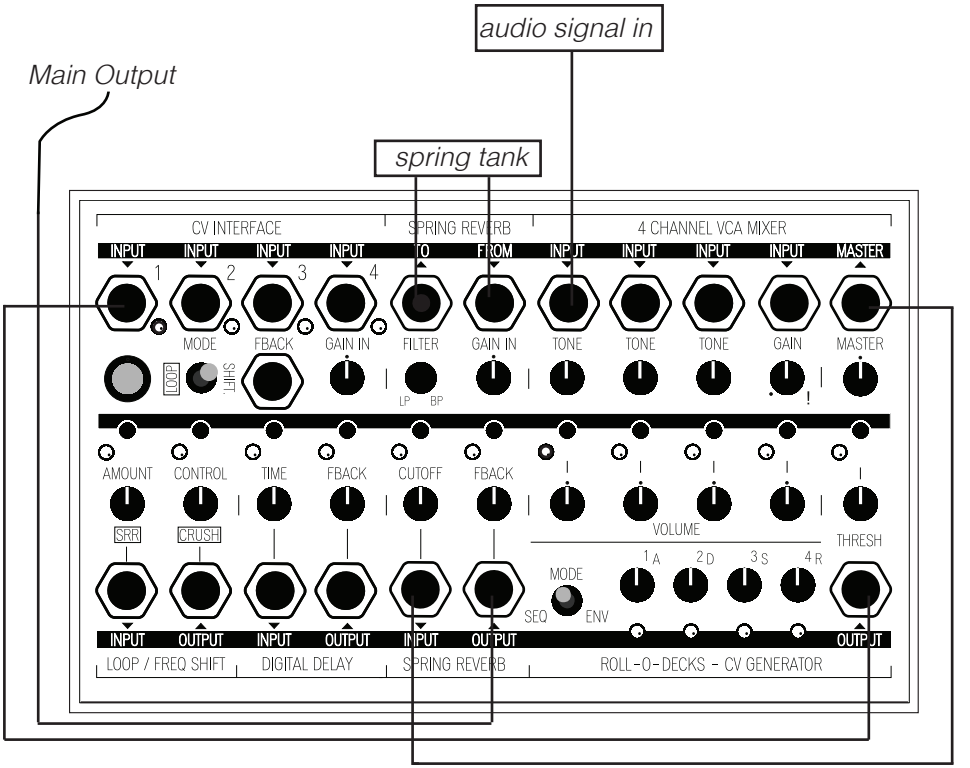
An amplitude modulated signal into the Spring Reverb.

- *Audio Signal -> VCA Mixer Channel 1*
- *Roll-O-Decks Output -> CV Interface Channel 1*
- *Master -> Spring Reverb Input*
- *Spring Reverb Output -> Main Output*

> Roll-O-Decks either SEQ or ENV mode

> Automate the Volume of VCA Mixer Channel 1 using the Roll-O-Decks

> The audio content going into the Spring Reverb is now amplitude modulated.



Patch 36 - Gating the Delay

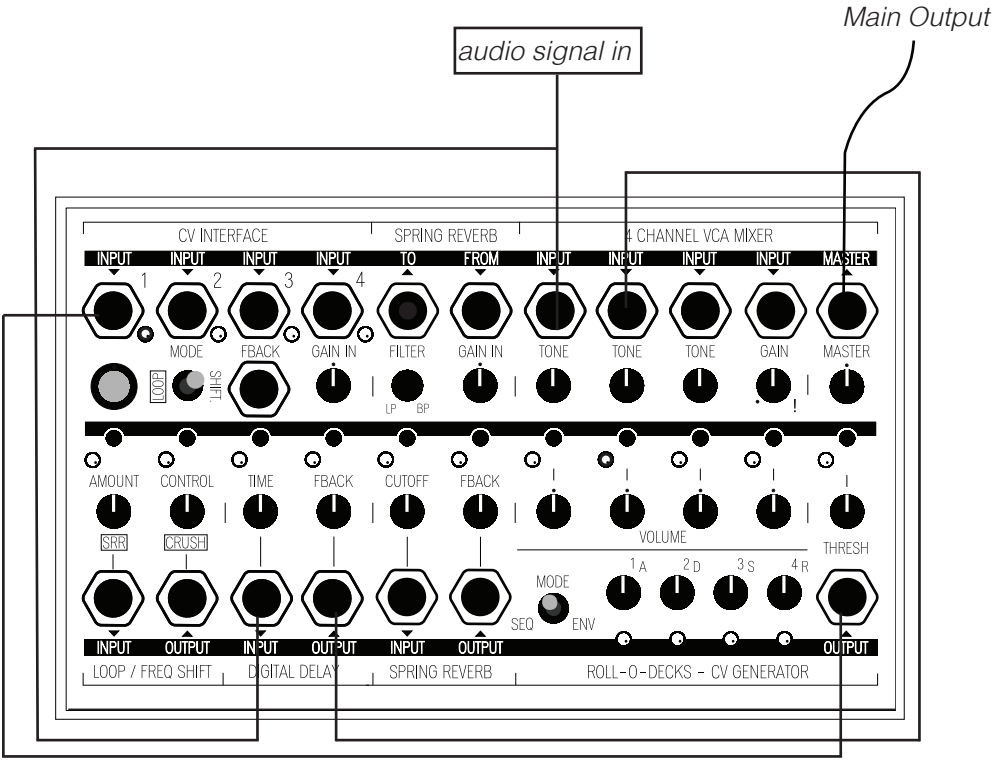
Amplitude modulating the delay-tail.

- *Audio Signal -> VCA Mixer Channel 1, Digital Delay Input*
- *Digital Delay Output -> VCA Mixer Channel 2*
- *Roll-O-Decks Output -> CV Interface Channel 1*
- *Master Out -> Main Output*

> Roll-O-Decks either SEQ or ENV mode

> Automate the Volume of VCA Mixer Channel 2 using the Roll-O-Decks

> The delay-tail is now amplitude modulated, allowing for gating effects etc.



Patch 37 - Gating the Spring Reverb

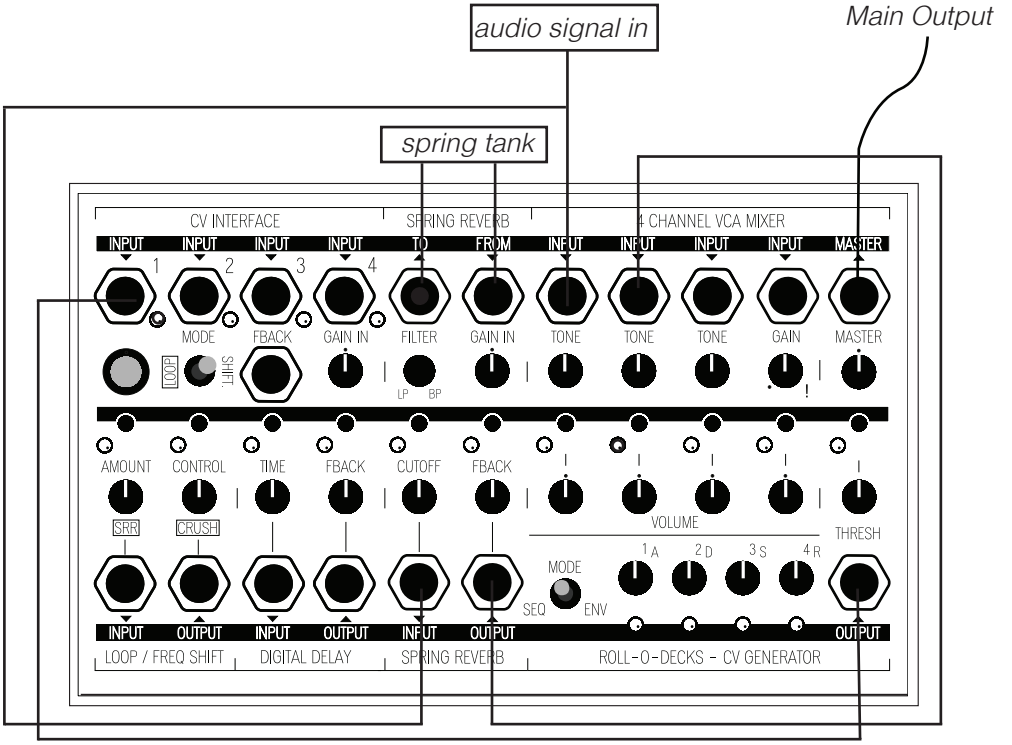
Amplitude modulating the reverb-tail.

- *Audio Signal -> VCA Mixer Channel 1, Spring Reverb Input*
- *Spring Reverb Output -> VCA Mixer Channel 2*
- *Roll-O-Decks Output -> CV Interface Channel 1*
- *Master Out -> Main Output*

> Roll-O-Decks either SEQ or ENV mode

> Automate the Volume of VCA Mixer Channel 2 using the Roll-O-Decks

> The reverb-tail is now amplitude modulated, allowing for gating effects etc.



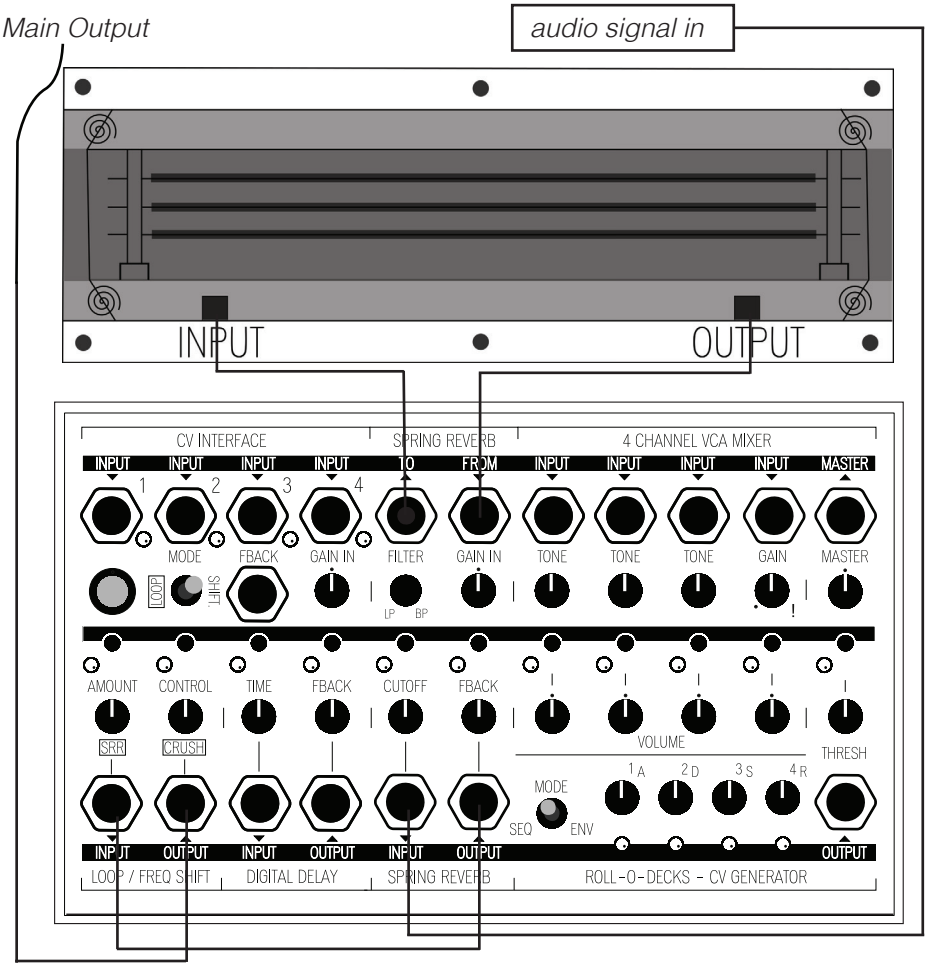
Patch 38 - Shift the Spectrum of the Reverb

Use the Frequency Shifter to shift the reverb-tail.

- *Connect the spring tank*
- *Audio signal -> Spring Reverb Input*
- *Spring Reverb Output -> Looper / Frequency Shifter Input*
- *Looper / Frequency Shifter Output -> Main Output*

> Set the LOOP/SHIFT switch to SHIFT position

> Shift the reverb-tail using the Frequency Shifter AMOUNT control

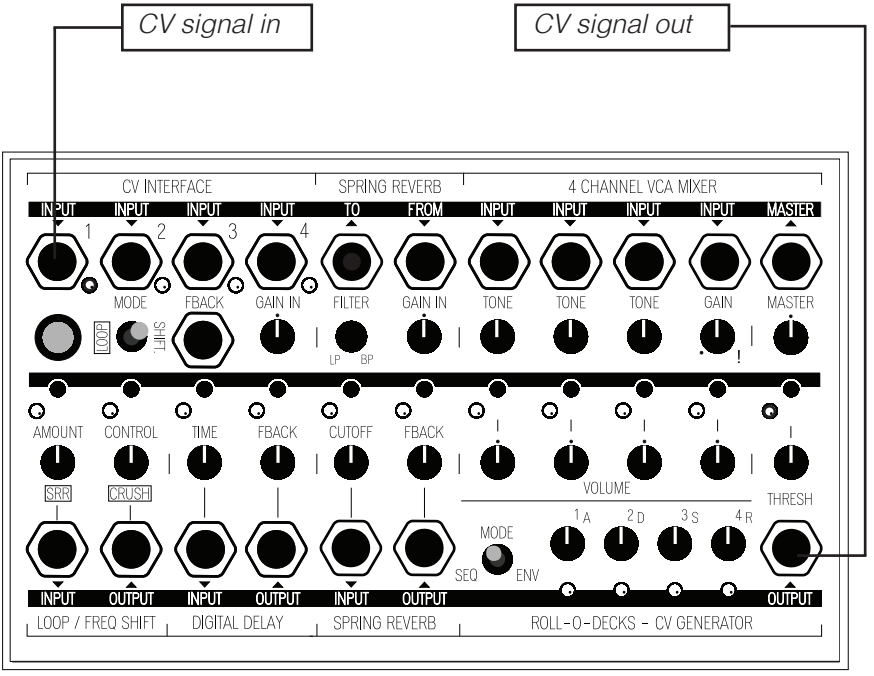


Patch 39 - Clogged Sequencer

Use external CV to clock the Roll-O-Decks in SEQ-mode.

- *CV Source -> CV Interface Channel 1*
- *Roll-O-Decks Output -> Voltage Sequence*

> Roll-O-Decks SEQ mode
> Assign the CV Interface Channel 1 to THRESH
> Depending on the THRESH setting, the sequencer will advance steps based on the external CV signal, making interesting rhythmic patterns.

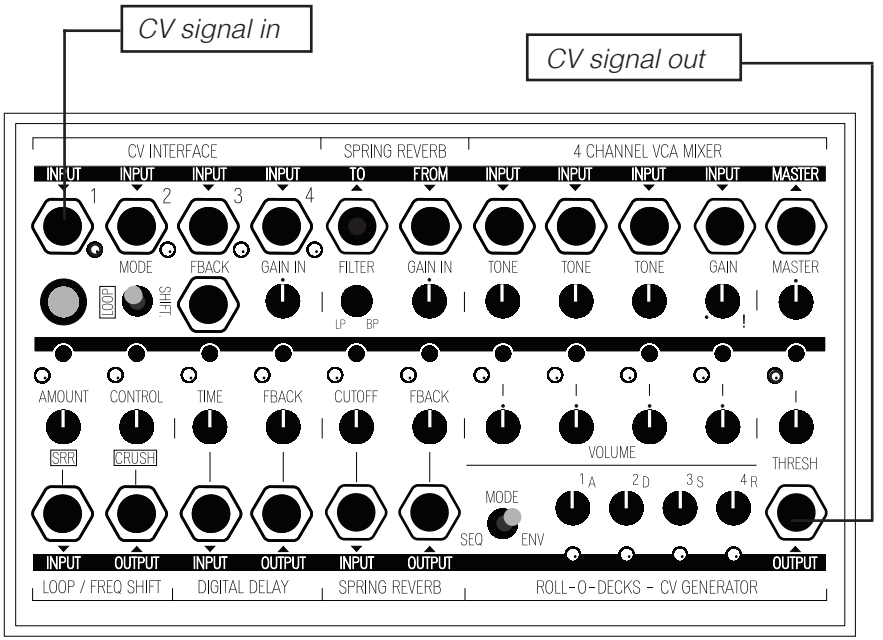


Patch 40 - Clogged Envelope

Use external CV to clock the Roll-O-Decks in ENV-mode.

- *CV Source -> CV Interface Channel 1*
- *Roll-O-Decks Output -> Envelope Output*

> Roll-O-Decks ENV-mode
> Assign the CV Interface Channel 1 to THRESH
> Depending on the THRESH-setting, the envelope will trigger based on the external CV signal, making interesting rhythmic variations.

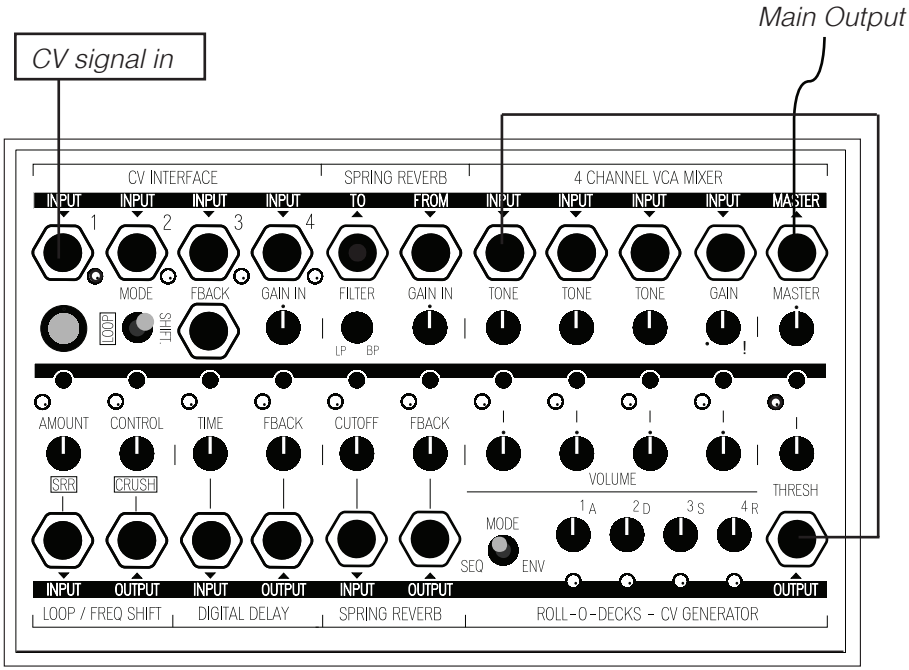


Patch 41 - The Wavetable Oscillator

Make the Roll-O-Decks behave as a wavetable-oscillator

- *CV Source (audio rate) -> CV Interface Channel 1*
- *Roll-O-Decks Output -> VCA Mixer Channel 1*
- *Master Output -> Main Output*

> Roll-O-Decks SEQ-mode
> Assign the CV Interface Channel 1 to THRESH
> The external CV will make the Roll-O-Decks advance steps in audio-rate, thus turning into a wavetable oscillator. Turning the Roll-O-Decks pots 1,2,3 & 4 shapes the waveform.
> Tweak the waveform further using the TONE control of the VCA Mixer.



3. 50 Ways To Use The Field Kit FX

3.8 Feedback Patches

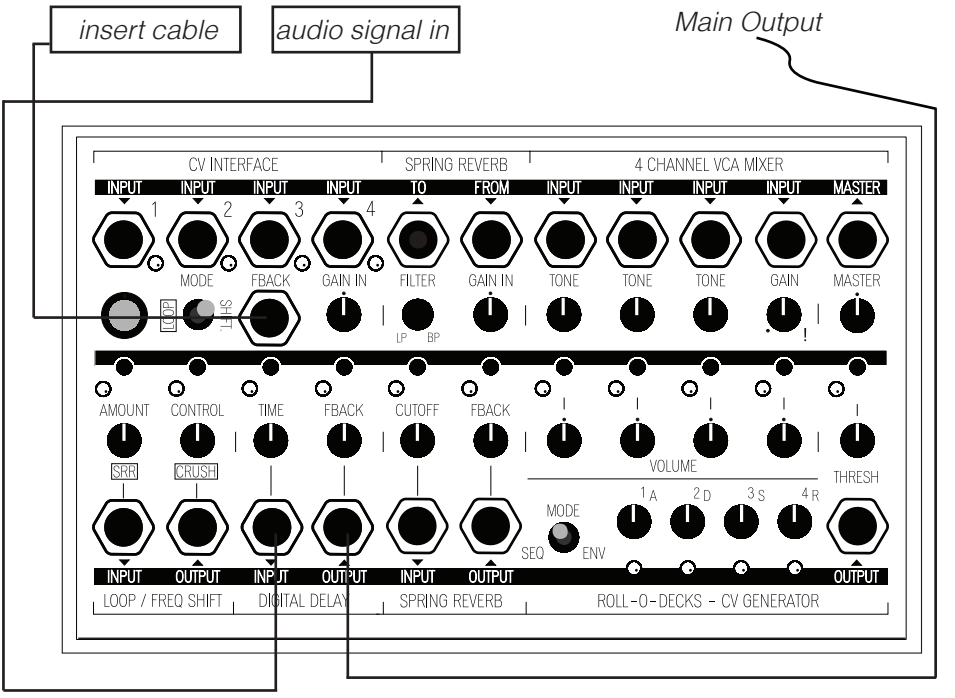
Use the Feedback with Delay and Reverb to achieve truly otherworldly sounds.

Patch 42 - Break the Digital Delay feedback

Break the Feedback-path for further processing!

- *Audio Signal -> Digital Delay Input*
- *Insert Cable -> FBACK*
- *Digital Delay Output -> Main Output*

> By plugging an insert-cable into the FBACK-jack, the feedback-path of the Digital Delay is broken, allowing for more effect-blocks to be inserted into the feedback-chain. Check patch 43 for inspiration.



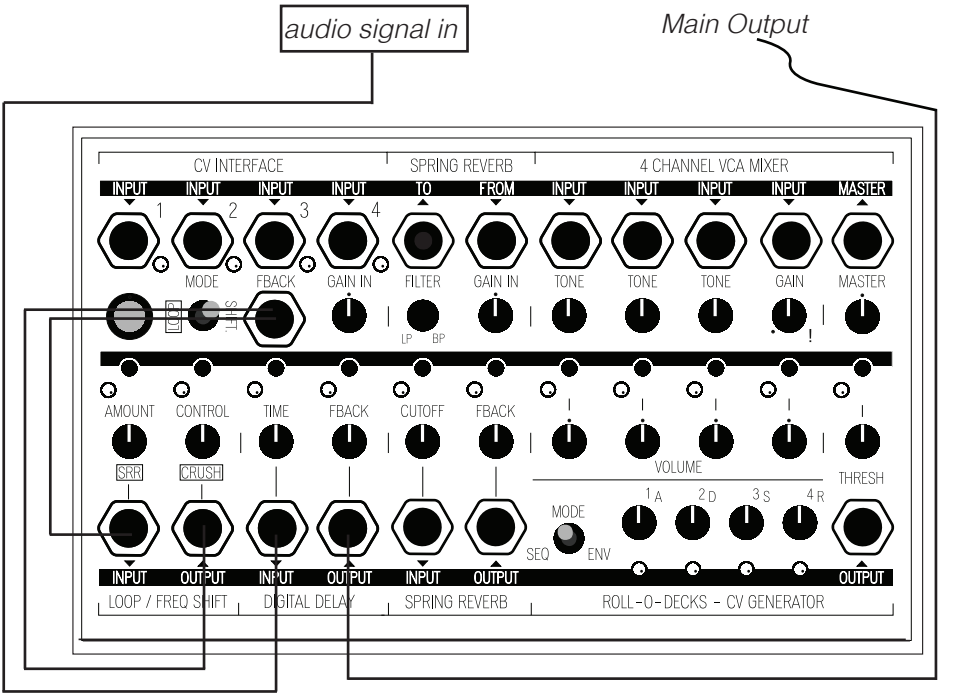
Patch 43 - Shifted Delay

Frequency shift every repeat by a set amount with this patch!

- *Start with Patch 42*
- *FBACK(tip) -> Frequency Shifter Input*
- *Frequency Shifter Ouptut -> FBACK(ring)*

> Set the LOOP/SHIFT switch to SHIFT position

> Shift the repeats with Frequency Shifter AMOUNT control, mold the spectrum with CONTROL.



Patch 44 - The Metallizer

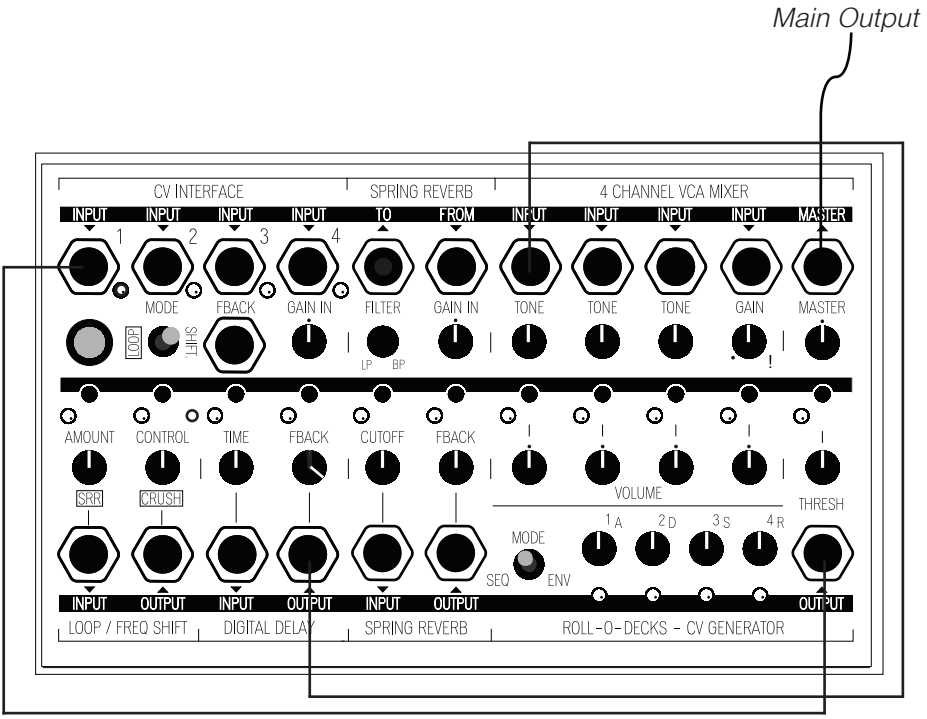
Turn the Digital Delay into the metallic primitive oscillator

- *Digital Delay Output -> VCA Mixer Channel 1*
- *Roll-O-Decks Output -> CV Interface Channel 1*
- *Master Out -> Main Output*

> Roll-O-Decks SEQ mode

> Turn the Delay's FBACK fully CW so it's self-oscillating

> Automate the Digital Delay TIME using the Roll-O-Decks



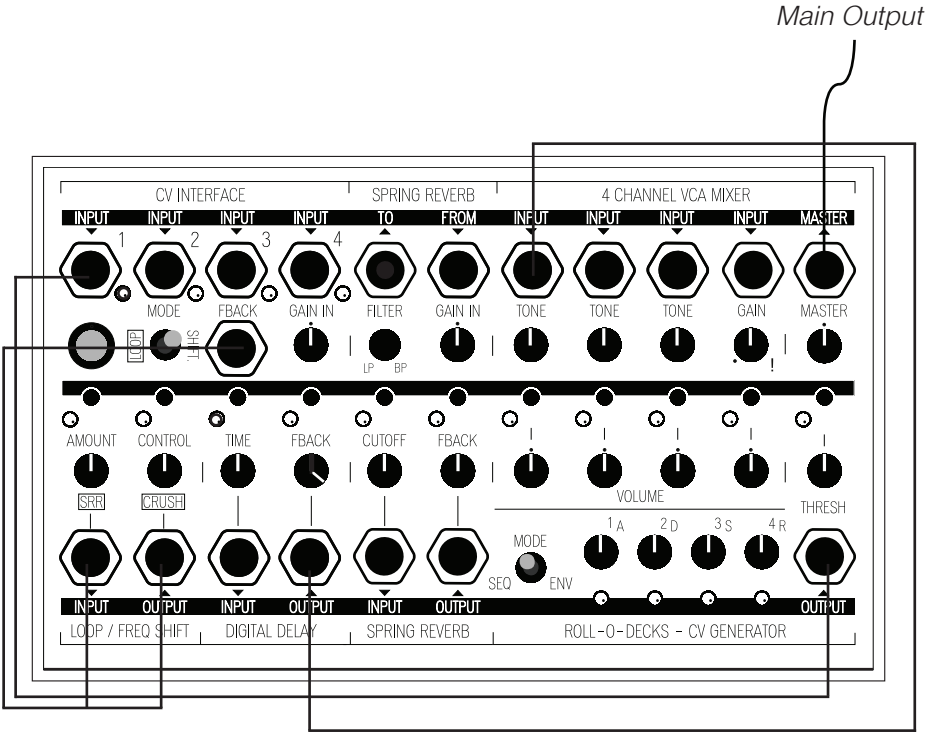
Patch 45 - The Extended Metallizer

Extend the sonic possibilities of the Metallizer by using the Frequency Shifter

- *Start with Patch 44*
- *FBACK(tip) -> Frequency Shifter Input*
- *Frequency Shifter Ouptut -> FBACK(ring)*

> Set the LOOP/SHIFT switch to SHIFT position

> Adjusting the AMOUNT and CONTROL pots of the Frequency Shifter changes the tonality of our primite Oscillator!



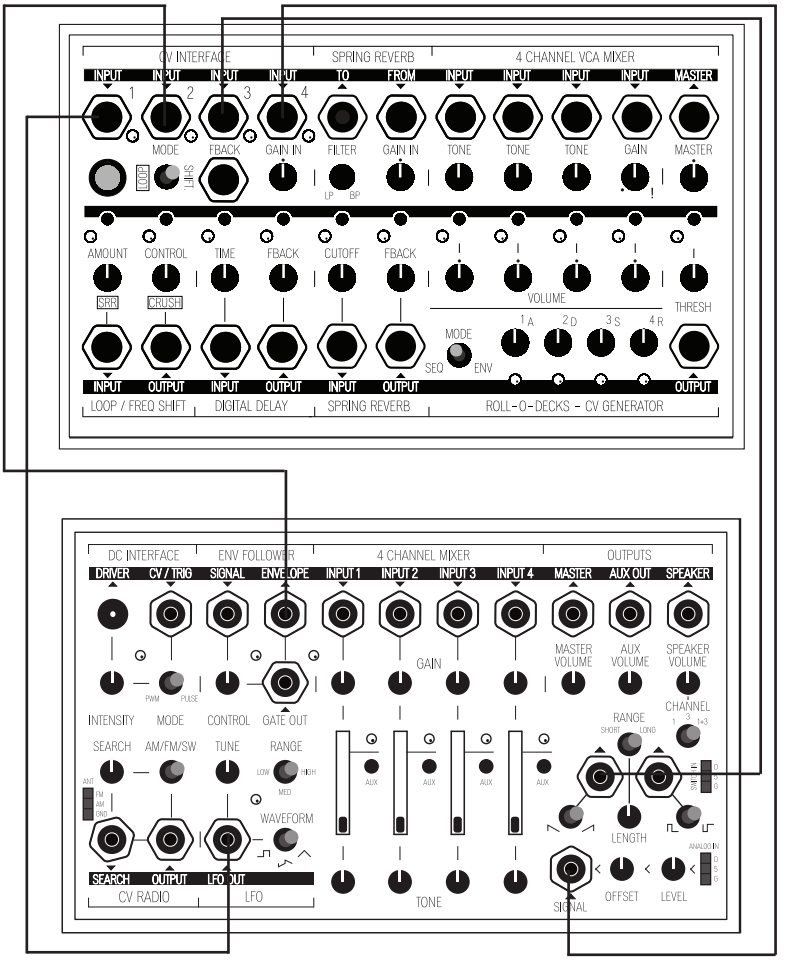
3. 50 Ways To Use The Field Kit FX

3.8 Field Kit FX with the Field Kit

Patch 46 – System Integrity

- *Connect a combination of the 4 CV sources from the Field Kit into the Field Kit FX - for example:*
- *Field Kit LFO -> CV Interface Channel 1*
- *Field Kit Envelope Follower -> CV Interface Channel 2*
- *Field Kit Digital Signal Interface Ramp Out -> CV Interface Channel 3*
- *Field Kit Analog Signal Interface Out -> CV Interface Channel 4*

> Go nuts with using the Field Kit as your main control source for the Field Kit FX



3. 50 Ways To Use The Field Kit FX

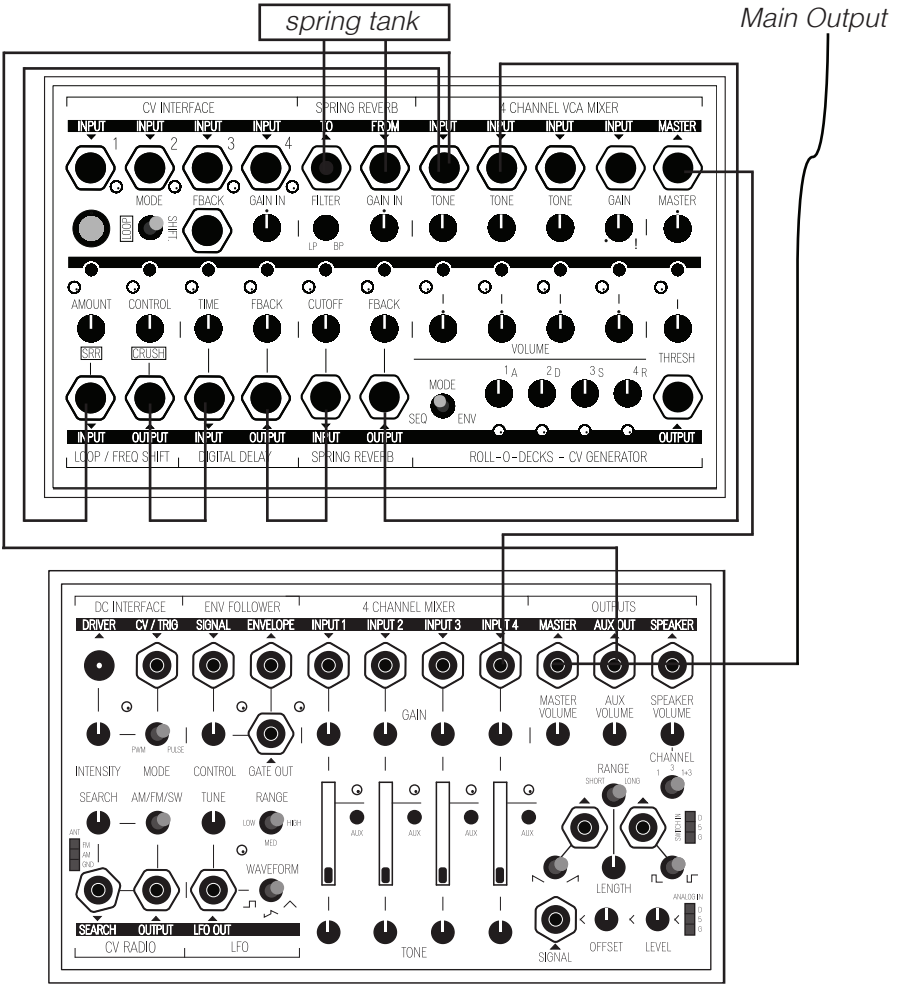
Patch 47 – AUX Send / Return

Use the Field Kit FX as your AUX Send / Return device for the Field Kit

- *Field Kit AUX Send -> Field Kit FX VCA Mixer Channel 1*
- *(Parallel Effects) Follow Patch 28*
- *(Series Effects) Follow Patch 29 (Depicted below)*
- *Field Kit FX Master Out -> Field Kit Mixer Channel 4*
- *Field Kit Master Out -> Main Output*

> Control the mixdown of the effects using the VCA Mixer

> Send the mixdown of effects back into the Field Kit using the Field Kit FX Master Out

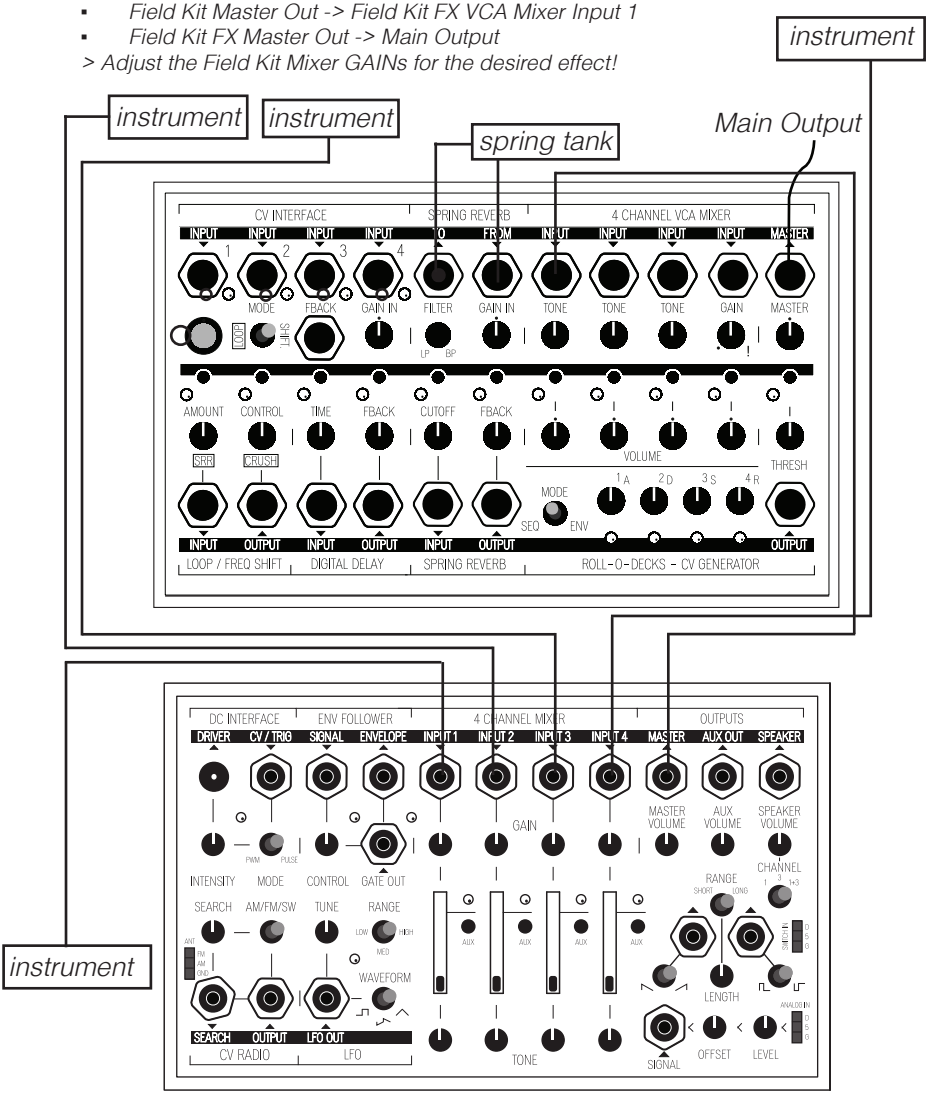


Patch 48 – Extra Pre-Amps

Use the Field Kit as your 4-channel pre-amp stage for the Field Kit FX!

- *Signal Source 1 -> Field Kit Mixer Channel 1*
- *Signal Source 2 -> Field Kit Mixer Channel 2*
- *Signal Source 3 -> Field Kit Mixer Channel 3*
- *Signal Source 4 -> Field Kit Mixer Channel 4*
- *Field Kit Master Out -> Field Kit FX VCA Mixer Input 1*
- *Field Kit FX Master Out -> Main Output*

> Adjust the Field Kit Mixer GAINs for the desired effect!



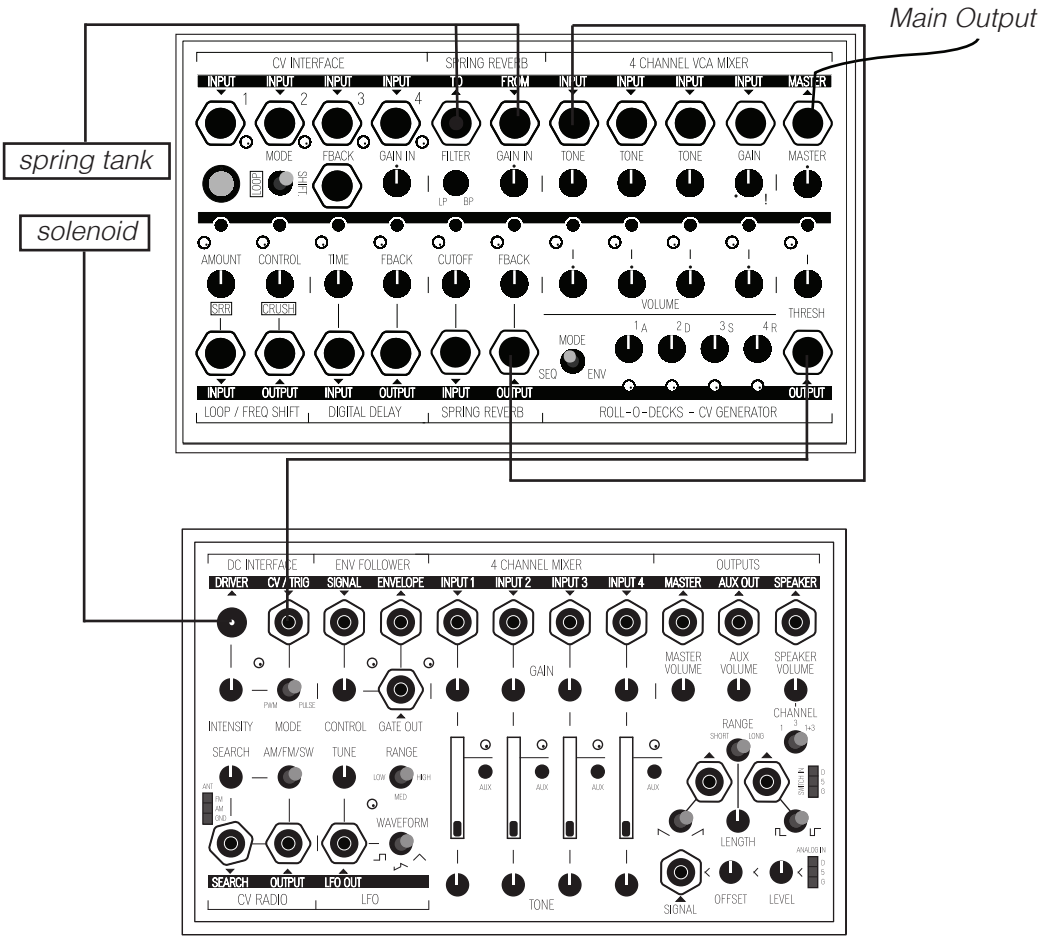
3. 50 Ways To Use The Field Kit FX

Patch 49 – The Neubauten

Use the Field Kit DC Interface to drive a Solenoid hitting the Field Kit FX Spring Tank for some instant Industrial!

- *Roll-O-Decks Output -> Field Kit DC Interface CV/TRIG-Input*
- *Solenoid -> DC Interface Driver*
- *Spring Reverb Output -> Channel 1 VCA Mixer Input*
- *Field Kit FX Master Out -> Main Output*

> Roll-O-Decks SEQ mode
> Field Kit DC Interface in Pulse mode
> Adjust the Roll-O-Decks sequencer to make a rhythm pattern that activates the solenoid
> Tweak the strength of the impulse using the Field Kit Intensity control.

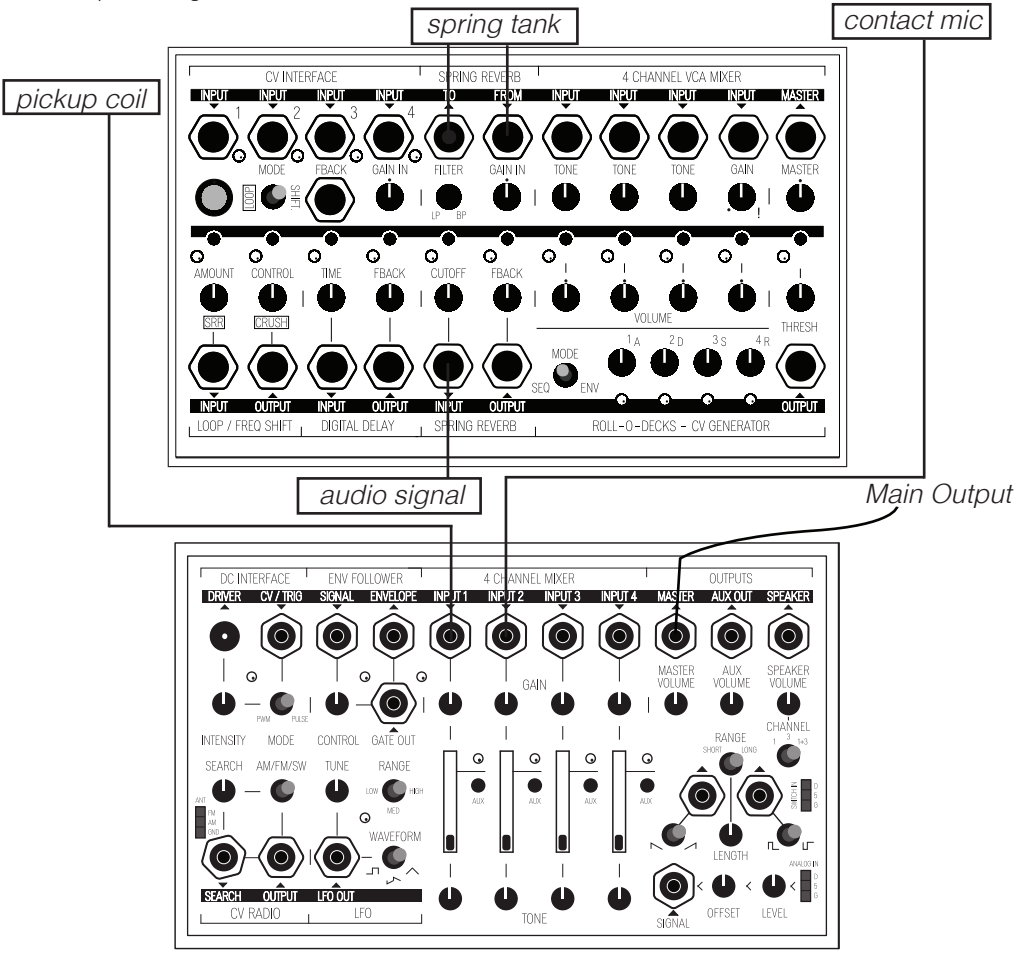


Patch 50 - Experimentalists Anonymous

- *Audio Signal -> Spring Reverb Input*
- *Coil Microphone -> Field Kit Mixer Channel 1*
- *Contact Microphone -> Field Kit Mixer Channel 2*
- *Field Kit Master Out -> Main Output*

> Send audio through the FKFX Spring Reverb and catch the signal from the spring tank before it goes back into the Field Kit FX using an electromagnetic pickup coil and a contact microphone! The spring tank send- and return-coils are good sources for electromagnetic waves to be picked up by the coil while the mechanical vibration can be picked up from the actual springs.

> Experiment with different GAIN-, CUTOFF- and FBACK-settings and microphone positioning!



4. Frequently Asked Questions

Does the Field Kit FX work on a 9V battery?

- The Field Kit FX is designed to work with a 9V power source, capable of delivering at least 600mA. Most 9V batteries are not capable of giving out such high amounts of currents, so plain 9V batteries are not recommended. Instead, have a look at the KOMA Elekronik Strom Mobile, designed specifically for this purpose.

What are the dimensions of the Field Kit FX?

- The outer dimensions of the Field Kit in its wooden box with the lid on are 20,0 x 13,0 x 5,2 cm (≈ 7,9" x 5,1" x 2,0"). The available Eurorack panel is 36HP wide.

Are the inputs mono or do they accept a stereo signal?

- All of the inputs on the Field Kit FX are monophonic, so if a stereo source is connected, the right channel is lost.

Is the Master Out stereo or mono?

- The Master Out is dual mono, meaning the monophonic output is available from both left and right channels.

Can the inputs/outputs receive/send line level and modular level?

- Yes. The inputs and outputs work fine with both line and modular level signals. All of the volume controls also provide gain to ease the use of sound sources with varying nominal levels.

5. Warranty

KOMA Elektronik warrants its products to be free of defects in materials / workmanship and conforming to specifications at the time of shipment for a period of two years from the date of purchase. During the warranty period any defective products will be repaired or replaced at KOMA Elektronik's option on a return-to-factory basis. This warranty covers defects that KOMA Elektronik determines are no fault of the user.

Returning your product

PLEASE DO NOT SHIP US SOMETHING UNSOLICITED.
ONLY SHIP AFTER RECEIVING A RMA NUMBER!

You must obtain prior approval in the form of an RMA (Return Material Authorization) number from KOMA Elektronik before returning any product.

Get in touch with us at support@koma-elektronik.com to request the RMA number. All products must be packed carefully and shipped with the KOMA Elektronik supplied power adapter. Sorry, the warranty will not be honored if the product is not properly packed.

6. Imprint

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KOMA Elektronik GmbH is a subsidiary company of KOMA Elektronik B.V.

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Registered Office: Berlin, Germany
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8. Glossary

Amplitude

- Amplitude is a property of a signal which determines its magnitude or change over time – in laymen's terms: The amplitude of an audio signal is its loudness.

Bitcrushing

- Bitcrushing is a form of digital distortion effect achieved through reducing the number of bits used to describe an analog signal. The fewer bits, the less information and therefor more effect. The resulting tonal effects can vary tremendously depending on the sound sources used.

Cutoff Frequency

- The Cutoff frequency of a filter describes the frequency at which the system starts to attenuate the signal. For example, if you have the CF of a Highpasss Filter set to 1kHz, it will attenuate all signals below 1kHz, while there will be no difference to the signal for frequencies above 1kHz.

CV Signal

- A CV or control voltage signal is a signal used for controlling analogue synthesizers. Even though there are signals specifically designed to be used as control voltages, any form of a varying-voltage adheres as a CV source, given it lies inside the operational conditions of the target system. See also: Gate, Trigger.

DSP

- DSP stands for Digital Signal Processing, a form of algorithmic processing of signals in the digital domain.

8. Glossary

Dual Mono

- Dual Mono is a name for an artificial stereo configuration achieved by means of copying the contents of a mono signal into both Left and Right channels.

Gain

- Synonymous to amplification. Applying gain to a signal raises its amplitude or power (loudness). See also: Amplitude.

Gate

- A gate signal is a rectangular control signal used together with CV / control voltage signals to control analogue synthesizers. See also: CV Signal, Trigger.

Low-Pass/Band-Pass/Hi-Pass Filter

- Low-pass, band-pass and hi-pass filters are the most common types of filters. The low-pass filter lets low frequencies through and attenuates high frequencies determined by its cutoff frequency. The hi-pass filter lets high frequencies through while attenuating low frequencies. A band-pass filter lets a range of frequencies around its cutoff frequency (called center frequency in this case) through, while attenuating frequencies both over and below this range.

Impedance

- Impedance describes the AC resistance of a circuit. In the audio world, correct impedance of inputs and outputs is necessary to avoid loss and degradation of a signal during transmission.

Ring Modulation

- Ring modulation is a classic analogue synthesis technique where new harmonics are produced by multiplying a signal with another.

8. Glossary

Sample Rate Reduction

- Sample rate reduction is a digital signal processing technique
- which reduces the rate (frequency) at which samples are stored. Sample rate reduction affects the signals spectral characteristic and can be used as an audio effect.

Sideband

- Sidebands are spectral components present in an audio signal above and below the carrier / center frequency.

Spectral Folding

- Spectral folding, also known as aliasing, is the result of a sampling frequency too low to correctly sample a given signal. Those errors are usually audible as “inharmonic”, noise-like frequency components in the reconstructed signal.

Tilt-EQ

- A tilt equalizer is a form of equalizer used for emphasizing one end of the frequency spectrum of a signal while attenuating the other.

Trigger

- A Trigger is a rectangular control signal with a fast transient change from its initial state to it’s active state and a fast return back to its initial state. Unlike the gate signal, the trigger doesn’t stay on its active state for longer periods of time but immediately returns to its initial value.

Unity Gain

- Unity gain means that the level of audio passing through the effect is the same before and after the effect. It means an amplification of exactly 1.0, so if your incoming and outgoing signal have the same amplitude or loudness, you achieved unity gain.

9. Patch Sheets