cableguys

FilterShaper XL

Manual

v1.0.4

Contents

Welcome to FilterShaper XL

With two versatile filters, endless modulation possibilities and a palpably authentic analogue sound, FilterShaper XL is the ultimate filter plugin for sound design and mixing. 20 filter types, in Clean and Warm variants, enable comprehensive frequency-shaping, while an enormous arsenal of LFOs and Envelope Followers imbue your filtering setups with programmed and dynamically responsive movement.

Zero-delay feedback DSP is used throughout, yielding an analogue-like response with even the wildest audio-rate modulations (easily possible with FilterShaper XL's LFOs, which go up to 5.24kHz). In addition, internal saturation and resonance compensation mean you can really push these filters to the limit – and beyond!

In designing FilterShaper XL's interface and workflow, we focused on making its powerful feature set intuitive and easy to get to grips with, but without compromising the complexity of the results you can achieve with it.

System Requirements

Windows
Windows 7, 8, 10 or 11
VST2, VST3 or AAX host sequencer
64-bit

Mac
Mac OS X 10.13 or later
Intel or Apple Silicon (Native/Rosetta) processor
VST2, VST3, AU or AAX host sequencer

Works with Ableton Live, Logic Pro, Pro Tools 12, Cubase, Bitwig Studio, FL Studio, REAPER, Studio One, and many other DAWs that support VST2, VST3, AU or AAX.

Installation & Licensing

Please refer to the online Cableguys Installation Instructions.

Quick-Start Guide

1. Fire up a filter (or two)

When you load FilterShaper XL, by default, Filter 1 is active and set to the 12dB Warm Low-Pass type, and FIlter 2 is inactive. You can leave them as they are or click **Filter 1**'s 'Warm LP 12dB' drop-down menu to select a different type, then perhaps activate **Filter 2** by clicking its name, and select a type for that one too. Now, with the track playing, dial in the **Cutoff** and **Resonance** of each filter to taste, and crank up the **Drive** and (for 'Warm' filters) **Resonance Drive** distortion to add a touch (or a lot!) of bite.

2. Modulate everything!

Every control with a 'cog' icon below it can be modulated. Select a target parameter from the tabs at the bottom of each Filter section or the Master section, or click a control directly to display the first of its two LFOs for editing in the bottom half of the interface.

3. Design your own LFOs

Every LFO features a categorized collection of preset waveforms, accessed via the tabs at the top of the LFO section, but you can draw your own from scratch (or edit the preset waves) in the intuitive Wave Editor. Click once in the display to add a hard Point, click a hard Point to turn it into a curve, or SHIFT-click a hard point to soften its angle. Drag the connecting lines to apply curves to them directly, and set the modulation depth using the **Amount** knob to the left.

4. Apply dynamic modulation

As well as their dual LFOs, every modulatable control can also be made to react dynamically to the input signal via a dedicated Envelope Follower to the right of the Wave Editor. The **Threshold** and **Amount** determine the input signal volume level at which modulation kicks in, and the strength of the modulation that's applied. Click the **<** button at the top of the Envelope Follower to reveal its full control panel.

5. Combine the two filters

FilterShaper XL's two filters can be arranged so that the input signal flows through them in series (Filter 1 into Filter 2) or parallel (into Filter 1 and Filter 2 at the same time), which opens up a huge range of textural and spatial possibilities. In **Serial** mode, the final output is whatever remains of the signal after passing through both filters; while in **Parallel** mode,

the signal is effectively duplicated, each copy is then filtered independently, then the outputs of both filters are mixed together at the final output. In Parallel mode, you can **Pan** the filters independently, for cool stereo effects.

6. Explore the presets
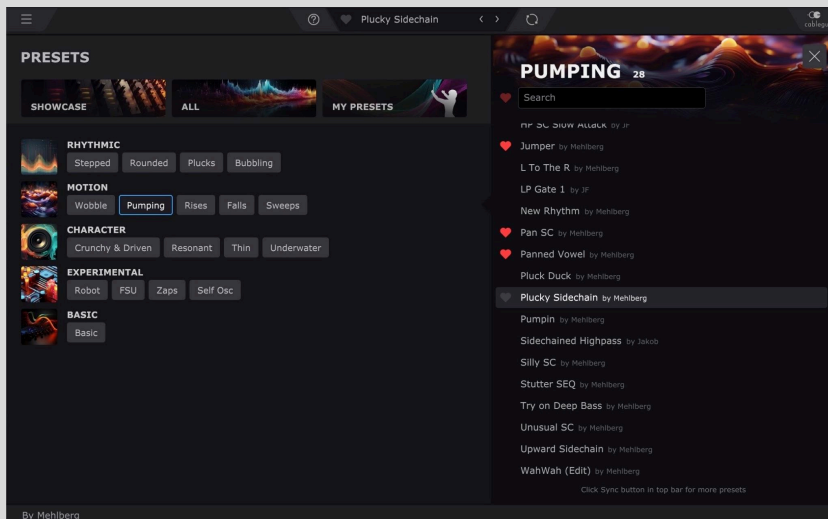
If all that seems like hard work, click the Preset Bar at the top of the interface to open the Preset Library, wherein you'll discover a wealth of creative filtering setups, organized in carefully curated Categories and Tags. Use the presets as they are, or as the basis for your own frequency-shaping creations.

Need more help?

Hover the mouse over any control to see a quick description in the lower Help bar. Click the '?' icon at the top of the plugin for detailed wave-editing help, and a link to the current version of this manual.

Additionally, the **Cableguys YouTube channel** contains many video how-to's, tips and tricks.

Preset Library

FilterShaper XL ships with a large library of professionally designed presets.

The current preset is shown in the center of the top bar. Step through presets based on your current Preset Filter setting using the **<** and **>** buttons to the right of the preset name.

Click the preset name to open and close the full Preset Browser.

Click the ☰ button to the far left to open the Main Menu, which contains various preset-related functions, amongst others.

Preset Browser

Find useful everyday setups and inspirational effects with FilterShaper XL's Preset Browser. You can also access the Legacy presets of the original FilterShaper 3.


The left hand side of the Preset Browser enables narrowing down of the presets displayed in the list on the right hand side via a series of Categories and Tags.
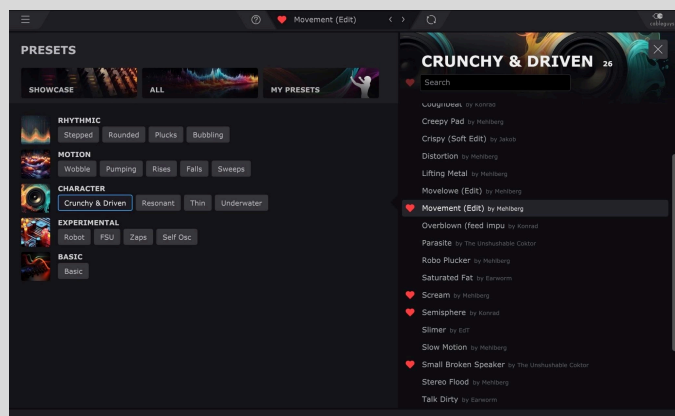
To close the Preset Browser, click the **X** at the top right corner.

Categories

Along the top, the **Showcase** and **My Presets** buttons filter the list down to those presets selected by our in-house sound designers as a best-of-the-best

showcase – a great starting point for your FilterShaper XL setups – or your own saved user presets. Select the **All** filter to show the full library, including those presets created by you.
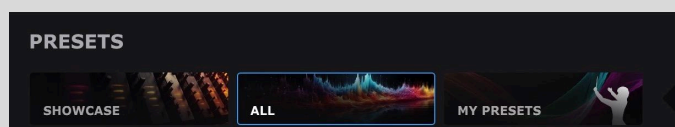
You can rename or delete your own presets by clicking the ••• button that appears to the right of the preset name when moused over.

Tags

Below the Categories, the **Rhythmic**, **Motion**, **Character**, **Experimental** and **Basic** sections each comprise a set of Tags for narrowing the preset list down to designated collections of sonic effects and treatments. Click a Tag to see only presets that adhere to its particular technical or stylistic qualification in the right-hand list, and click any Category to clear all Tags.
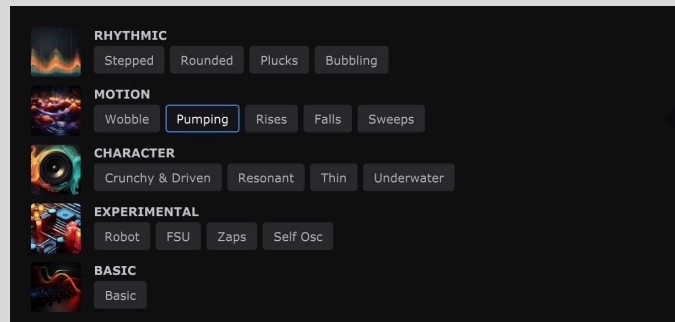
Preset list

The right-hand side of the Preset Library is home to the presets themselves, as filtered via the Categories and Tags. The title of the currently active Category or Tag, and the number of presets it contains, appears at the top of the list. To load a preset, double-click it.
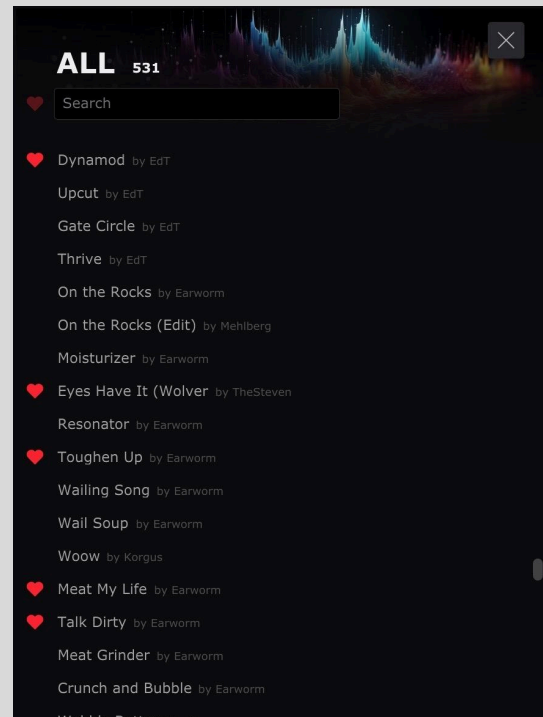
Favorite presets

Mousing over a preset reveals a gray heart icon – click this to designate that preset as a Favorite. To filter the preset list down to show only Favorites, click the heart icon at the left-hand end of the Search bar.

Searching presets

The Preset Library's Search function lets you narrow down the preset list based on text entered in the 'Search preset names' field.

You can further filter the results down to only qualifying presets also designated as Favorites by clicking the heart icon to the left.

Main Menu

- **Preset**
  - **Init:** Want to start from scratch? This resets FilterShaper XL to its default state.
  - **Save:** Store your preset within the local Cableguys library database.
  - **Load FXP**: Browse to and load a stored preset in FXP file format.
  - **Save FXP**: Save the current preset to your hard drive as an FXP file, for discrete storage and sharing.
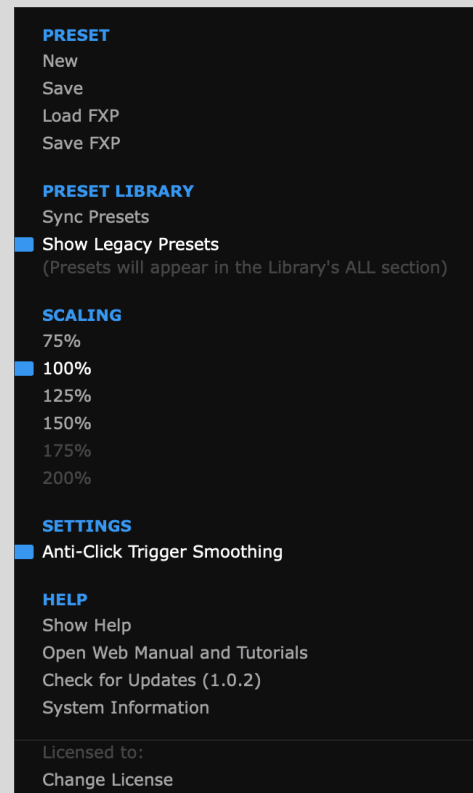
- **Preset Library**
  - **Sync Presets:** Get up to date with all the latest presets. Selecting this menu option (or clicking the **Sync** button in the top bar) will download all new Cableguys presets, and upload/update all of your presets for backup purposes.
  - **Show Legacy Presets**: Make the preset library of the original FilterShaper 3 plugin available in the **All** section of the Preset Library, prefixed with 'OLD'. You may need to Sync the Library once to import them.

- **Scaling**
  - **75-200%:** Scale the FilterShaper XL GUI up or down to suit your monitor resolution. Only Scaling percentages that won't exceed your display resolution are made available – the rest are grayed out.

- **Settings**
  - **Use OpenGL Graphics (Windows only):** Enable this for improved UI performance. We recommend leaving it off, however, as it comes with a couple of caveats:
    - Due to a bug in some graphics drivers, using OpenGL may at some point result in graphical problems within the plugin's interface. If this happens and you cannot access the Main menu any more, please see our **FAQ page** to find out how to disable OpenGL for the plugin.
    - Ableton Live may freeze when its Spectrum device is enlarged while the FilterShaper XL interface is open.
  - **Anti-Click Trigger Smoothing**: On by default, this alleviates any clicks that could arise when retriggering LFOs with MIDI.
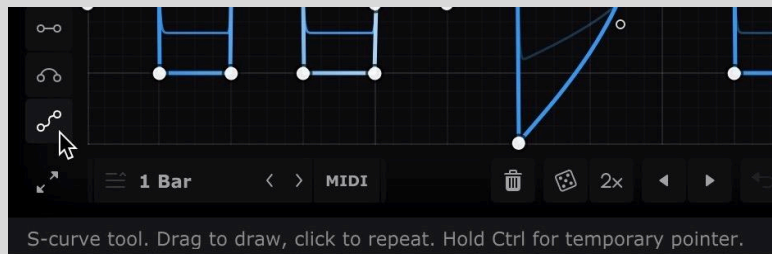
PRESET
New
Save
Load FXP
Save FXP

PRESET LIBRARY
Sync Presets
■ Show Legacy Presets
(Presets will appear in the Library's ALL section)

SCALING
75%
■ 100%
125%
150%
175%
200%

SETTINGS
■ Anti-Click Trigger Smoothing

HELP
Show Help
Open Web Manual and Tutorials
Check for Updates (1.0.2)
System Information

Licensed to:
Change License

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- **Help**
  - ○ **Show Help**: View a Quick Guide to FilterShaper XL's wave editing controls and more.
  - ○ **Open Web Manual and Tutorials:** Access this manual and tutorials.
  - ○ **Check for Updates:** Ensure your FilterShaper XL is up to date.
  - ○ **System Information**: Opens a detailed description of your system setup for information and support purposes. Click the **Copy** button to paste the System Information to your pasteboard.
  - ○ **Change License**: Switch your current FilterShaper XL license for a different one.

Help bar

At the bottom of the GUI, the Help bar serves as a quick reference guide directly within the plugin. The information it provides depends on what you place the mouse pointer over:

- **Controls**: A brief description of the control, including available settings where applicable.
- **Preset waveforms**: The name of the preset waveform.
- **LFO waveform point**: The position of the point on the graph in beats, hundredths of beats and milliseconds; and the value of the controlled parameter at that point.

Filter 1 and Filter 2

FilterShaper XL's two filters are identical in terms of their available types, parameters and modulation setup, and can be routed in series or parallel. To activate/deactivate each filter, click its name or power button.

Main Filter Parameters

Settings

- **Filter Type**
 Filters are arranged under the following main headers:

  - **Low-pass**: Allows only frequencies below the Cutoff to pass.
  - **High-pass**: Allows only frequencies above the Cutoff to pass.
  - **Band-pass**: Allows only the band of frequencies immediately around the Cutoff to pass.
  - **Notch**: Cuts only the frequencies immediately around the Cutoff.
  - **Peak**: Boosts only the frequencies immediately around the Cutoff.
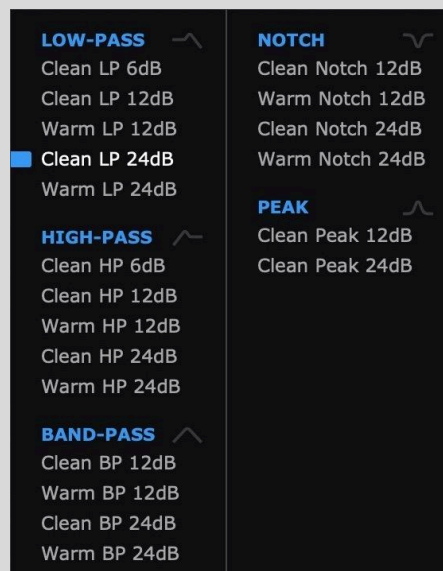
  Filters also come in the following "flavors":

  - **Clean:** Transparent filters for uncolored frequency shaping.
  - **Warm:** Analogue-style (Sallen-Key) filters that are fat and driven. Sallen-Key is a classic filter design found in several vintage and modern hardware analogue synths. Loading any Warm filter activates the **Drive** control with which the analogue-style saturation can be fine-tuned (see below).
  - **6/12/24dB**: Three roll-off slopes define the sharpness and precision of the filter. 6dB/octave is shallow and gentle; 12dB/octave is the standard for controlled but characterful filtering; 24dB/octave is steep and powerful.

- ⓜ **Cutoff:** Set the filter cutoff frequency, from 20.6Hz to 21.1kHz.

- ⓜ **Resonance:** Control the amount of filter resonance applied, emphasizing frequencies around the cutoff, or widening the cut in 'Notch' mode. With the **Drive** set to **Hard** mode (see below), the clockwise end of the knob's range is highlighted in gray (when **Safe** mode is engaged) or orange (when **Safe** mode is disengaged), indicating the area within which self-oscillation can occur.

  - **Safe:** With a 'Warm' filter type selected, the Safe button (🛡) appears under the Resonance knob, engaged so as to limit the resonance feedback. Disengaging Safe mode allows the resonance feedback to build up when the Resonance knob enters (or is modulated into) the orange highlighted area at the clockwise end of its travel, resulting in self-oscillation.

- ⓜ **Volume**: Set the output volume of the filter circuit, from 'Off' (silence) to '+6dB'. Note that the **Volume** control is only available in 'Parallel' **Routing** mode.

- ⓜ **Pan:** Position the output of the filter in the stereo panorama. Note that the **Pan** control is only available in 'Parallel' **Routing** mode.
- **Drive**: Overdrive the input signal, either before or after the filter, ultimately causing soft clipping distortion.
  - **Pre**: Place the distortion stage before the filter, so that raising the Drive distorts the signal prior to filtering.
  - **Post**: Place the distortion stage after the filter, so that raising the Drive amount overdrives the output from the filter.
- **Resonance Drive**: Apply saturation inside the resonance feedback circuit. Decrease for classic whistling tones. Increase for saturation and smoothed resonance peaks.
 - **Hard**: Switch the distortion to hard clipping mode for a more aggressive sound.
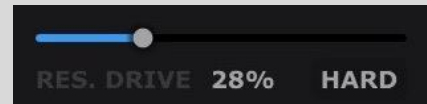
💡 TIP: When disengaging Safe mode with the Resonance control in the gray range (or being modulated into the gray range), high-frequency feedback (self-oscillation) will immediately occur – we'd recommend lowering your monitor speaker volume before doing this.

Routing and Mixing

The central panel houses controls for switching between serial or parallel signal flow through FilterShaper XL's two filters, as well as adjusting volume, panning and dry/wet mix at the Master output.

- **Global Bypass**: Click the 'FilterShaper XL' title bar (or the power button) to bypass the plugin entirely.
- **Routing:** Select between 'Serial' or 'Parallel' signal flow through the two filters. In Serial mode, the input signal is processed by Filter 1, the output of which then passes through Filter 2. In Parallel mode, the input signal is processed by Filter 1 and Filter 2 at the same time, enabling the creation of hybrid response types.
- ⓜ **Pan:** Pan the plugin's master output.
- ⓜ **Volume**: Set the master output volume.
- **Mix**: Balance the dry (input) and wet (processed) signals at the master output. If set to 50%, for example, you'll get an equal mix of dry and wet signals, while 100% wet results in only the wet signal being audible.
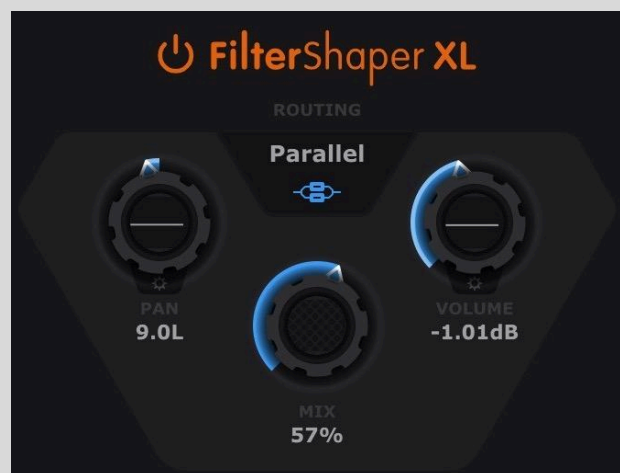
Oscilloscope

FilterShaper XL's LFO Wave Editor features a sample-accurate oscilloscope that displays the audio input signal as a waveform, and the modulation signal over time as a trace. By default, the Oscilloscope is set to **Auto** view mode, but you can select between Stereo, Combined and Magnitude modes in the **Wave/Oscilloscope menu** (right-click in the waveform editor).

Magnitude mode is especially useful when dialing in the Envelope Follower. For this reason, when the mouse pointer is over an Envelope Follower control, Magnitude mode is enabled temporarily.

Moving the mouse pointer over the Envelope Follower's **Threshold** slider or **Input** section will switch the Oscilloscope to temporarily show the Envelope Follower's input signal instead of the regular input, respecting Envelope Follower input filtering and sidechain routing.

Moving the mouse pointer over the **Threshold** slider reveals the Threshold level in the Oscilloscope as a horizontal white line for easy reference.

Modulation

FilterShaper XL is a modulation powerhouse, with independent LFOs and Envelope Followers assigned to the main filter parameters, as well as Master Volume and Pan. There are even dedicated LFOs for modulating every main LFO's Speed and Amount controls!

At the top level, each of the two filters' **Cutoff**, **Resonance**, **Volume** and **Pan** parameters can be modulated by either or both of two LFOs, and/or an Envelope Follower, enabling intricate polyrhythmic modulation patterns to be created by setting each LFO to a different loop length and/or triggering method.

After that, the master **Volume** and **Pan** each also have a pair of LFOs and an Envelope Follower assigned for yet more modulation at the final output.

And that's still not all! The modulation **Amount** and **Speed** of every single one of the 20 per-filter and master LFOs can be modulated by its own LFO and/or Envelope Follower; so not only can you freely design the shape of your parameter modulation, you can also take total control of how heavily it's applied over time. And yes, that's 60 LFOs and 50 Envelope Followers in total – but don't worry, you can use as many or as few of them as you like.

The combined action of all modulation sources on a parameter is visualized in two ways. First, the trace in the LFO Wave Editor graphs the value of the modulation signal over the length of the LFO cycle. At the same time, the main control knob for the modulated parameter provides even more direct visual feedback, with its gray animated collar showing the actual modulated value of the parameter at any given moment, as determined by its LFO and/or envelope follower, and the position of the knob itself.

LFOs

The Cutoff frequency, Resonance, Volume and Pan of each of FilterShaper XL's two filters, as well as the master Volume and Pan, are each hardwired to a *pair* of independent LFOs, the **Amount** and **Speed** of which are, in turn, also assigned their own LFOs. Clicking the **Cutoff**, **Resonance**, **Volume** or **Pan** tab below either of the main Filter control panels, or the Master **Volume** or **Pan** tabs – or the control itself – switches the Wave Editor to the first of that parameter's two LFOs. To switch between the two LFOs, click the **LFO 1** and **LFO 2** tabs at the top left of the Wave Editor.

To switch the Wave Editor to the Amount or Speed LFO for the currently selected Filter or Master LFO, click the cogwheel icon next to its **Amount** or **Speed** knob. The Amount/Speed LFO will appear in the top section of the GUI – dismiss it by clicking the cogwheel icon again or the 'X' at the top right corner of the LFO. Note that the Speed knob can only be modulated when the **LFO Mode** is set to **Hertz / ms**.

FilterShaper XL features a powerful system for designing and editing your own LFO waveforms in exquisite detail. Create smooth curves, peaks, cuts and slopes using soft or hard breakpoints to define gentle transitions or sharp bends in the wave. Or, use three Pens to freely draw, adjust and sequence steps, ramps, arcs and S-curves.

LFO waveforms are made up of freely adjustable "points" (aka nodes or breakpoints). There are three weights of point:

● Hard: Creates a tight angle. Extremely precise, but can cause clicks due to the instantaneous parameter change (when LFO Smooth is set to 0%).

● Medium: The angle is rounded off slightly – great for 'instant' jumps without clicking artifacts.

○ Soft: For smooth, flowing curves – create sweeping modulations, soft pulses and gradual changes.

Using these, any LFO shape can be created, from stepped staircases to gentle, pulsing curves, or any combination thereof.

Wave Presets

FilterShaper XL includes a palette of specially designed Wave Presets. These are simpler than Library Presets, loading only an LFO waveform without changing any other settings.

Wave Presets are divided into descriptively named categories, depending on the selected parameter – **Basic**, **Edge**, **Rhythm**, **Sweeps** and **Creative** for Cutoff, for example. Use them as is, or as starting points for your own designs.

LFO Tool Strip

The LFO Tool Strip contains tools used to create and edit waveforms in the Wave Editor. From top to bottom:

- **Pointer:** Click to create and edit points, and drag to select multiple points – see *How to edit points with the Pointer tool* below.
- **Snap to grid**: When active, newly added and dragged points are snapped to the background grid.
- **Select all points:** Click the button to select all points. See *Working with selections*, below, for a run-down of the operations and modifier keys that can be applied to multiple selected points. A diagonal line appears in the **Select all points** button whenever any points are selected, and this can be clicked to cancel the current selection.
- **Line Pen:** Draw, adjust and repeat lines – see *How to use Pens* below.
- **Arc Pen:** Draw, adjust and repeat curved arcs – see *How to use Pens* below.
- **S-Curve Pen:** Draw, adjust and repeat S-shaped curves – see *How to use Pens* below.
- **Expand Wave Editor**: Expand the Wave Editor to fill the entire FilterShaper XL interface, enabling more detailed editing.

LFO Control Strip
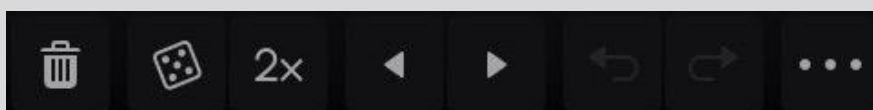
The LFO Control Strip enables various further functions to be applied to the waveform. From left to right:

- **Delete Points:** Remove all points, or the selected points.
- **Randomize wave points**: All points are set to random positions and weights. No points are removed or added, but points snap to the background grid if the Snapped Pointer is selected. **SHIFT**-click to move points vertically only, preserving the rhythm.
- **2x:** 'Double-time' the selection or the entire waveform. **SHIFT**-click to 'triple-time'.
- **Move wave/selection left/right**: Shift the selection or entire wave one grid space left or right. Hold **SHIFT** for precise adjustment (1/16th of a grid space).
- **Undo/redo**: Step back and forth through your edits.
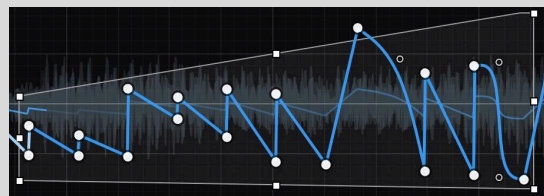- •••: Open the Wave/Oscilloscope menu – see below.

How to edit points with the Pointer tool

- **Create line**: Click once anywhere
- **Create curve**: Drag on the line
- **Toggle line/curve**: Click breakpoint
- **Move breakpoint**: Drag
- **Delete breakpoint**: Double-click
- **Soften angle**: Shift-click breakpoint
- **Add soft point**: Ctrl-click anywhere
- **Selection**: Drag in empty space
- **Temporary snap**: Hold Shift

Right-clicking a point opens a menu via which you can switch it between Soft, Medium and Hard weights, and delete it.

Working with selections

Select multiple points by dragging the Pointer. You can then move and scale the points by dragging the box or the handles around its edges. Hold **Alt** to lock to vertical movement only, or **Alt-Ctrl** for horizontal lock. Hold **Alt** while stretching to scale about the center. Hold **Ctrl** while stretching a side handle to skew the selection, and hold **Alt-Ctrl** to skew about the center.

💡 TIP: Click the '?' icon in the top bar to access a quick wave-editing guide right inside FilterShaper XL.

How to use Pens

FilterShaper XL's three Pens enable lines, arcs and S-curves to be created, manipulated and repeated in the waveform. They all work in the same way, with a simple, intuitive workflow.

- **Click once** to add a line, arc or S-curve at the location shown by the white visual preview.

- **Click again** without moving the mouse to add the same shape again, right after the first. Repeat as required!
- **Click-drag** to change the length and height of the Pen shape. Note that if you drag far enough left, the shape will be flipped around (and clicking to repeat will move from right to left!). The Pen will retain its shape until edited again.
- **Hold SHIFT** to switch temporarily to the Pointer tool, to edit the waveform or work with selections.
- Pens always snap to the grid.

Wave/Oscilloscope Menu

Right-click any empty area in the Wave Editor, or click the ••• button in the Wave Editor Tool Strip to open this menu.

- **Wave**
  - **Select all points**: Creates a selection around all points in the Wave – the same as Shift-clicking the Selection tool button.
  - **Move points to grid**: Snaps selected points (or all points if none are selected) to the grid.
  - **Flip horizontal**: Reverse the wave/selection in time.
  - **Flip vertical**: Invert the wave/selection.
  - **Show triplet grid**: Change the snap grid to triplet time – useful for shuffle/swing rhythms.
  - **Copy/paste wave**: Transfer waves between other instances of FilterShaper XL (regardless of host DAWs and plugin formats), and even other Cableguys plugins (versions of ShaperBox and MidiShaper released after April 2024). Holding the **Shift** key while selecting **Paste wave** will scale the pasted wave to the range covered by the LFO's existing wave on the Y axis (height) – useful for trying different waves while maintaining a consistent 'depth' of processing.
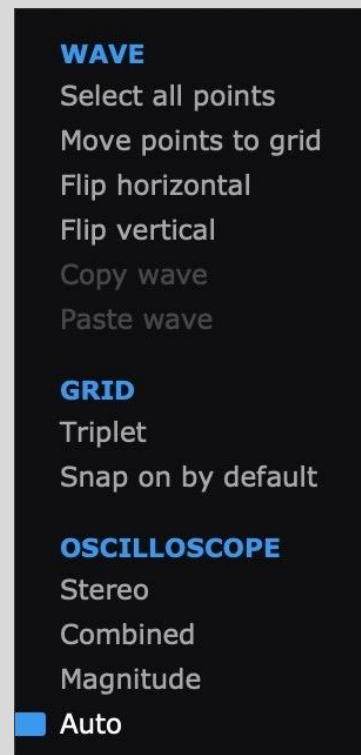
- **Oscilloscope**
  - **Stereo**: Shows the left and right channels separately.
  - **Combined**: Shows the summed left and right signals as a regular single waveform.
  - **Magnitude**: The 'half waveform' view, showing the highest amplitude at any given moment out of the left and right channels. Useful for setting up the Envelope Follower.
  - **Auto (default)**: Selects the **Combined** Oscilloscope view for all parameters apart from Pan, which automatically flips to **Split** mode.

💡 TIP: With all points selected, you can adjust the intensity of the waveform by stretching it vertically, or speed it up/slow it down by stretching it over time (for example, to turn a half-bar pattern into a full-bar one). Hold **ALT** while stretching to scale about the center.

LFO Settings

This section gives you control over when the waveform starts over, and the length of the LFO cycle. You can set it free-running, synced to the tempo of your DAW, or even to the frequency (pitch) of a MIDI note you're playing, to create everything from long, evolving sweeps to freaky ring modulation-style effects.

LFO Mode, Length and MIDI Trigger are set independently per LFO, and the **Amount** and **Speed** controls can each be modulated by their own dedicated LFOs.

Here's how the LFO controls work:

- **LFO Mode**
  - **Bars/Beats**: The LFO syncs to the host DAW's clock, looping at the **Triplet**, **Straight** or **Dotted** note value or number of bars selected from the menu. Step through the menus using the **<** and **>** buttons to the right.
  - **Hertz / ms**: The LFO rate is set in Hertz (cycles per second). When Hertz mode is selected, the **Speed** knob to the left of the Wave Editor becomes active. Note that in Hertz mode, the LFO is 'synced' to project position once when you hit play – this gives consistent-sounding playback from any given position.
  - **Pitch**: The LFO speed will be set to the frequency of the MIDI note you play. Try it for bizarre ring modulation-style effects! When Pitch is selected, the Trigger mode switches automatically to **MIDI**.

| TRIPLET	STRAIGHT	DOTTED	FREE
	1/128		Hertz / ms
	1/64		Pitch
	1/32		
1/16T	1/16	1/16d	
1/8T	1/8	1/8d	
1/4T	1/4	1/4d	
1/2T	1/2	3/4	
	1 Bar	1.5 Bars	
	2 Bars	3 Bars	
	4 Bars		
	8 Bars		
	16 Bars		
	32 Bars		

- **Smooth:** Progressively soften any hard angles in the LFO waveform. Use this to reduce click/pop artifacts resulting from sudden value changes, or for creative effect.

- **MIDI Trigger Mode**
  - **Off**: The default mode. The LFO locks to your project's tempo and play position, and the LFO Length is set in musical units (bars and beats) or Hertz / ms – see **LFO Speed** above.

- ○ **On**: Every incoming MIDI note triggers/restarts the LFO. The LED in the **MIDI** button illuminates whenever a note is received. Open the **MIDI Setup** panel with the small 'cogwheel' button to the right.

- **Looping**
  - ○ **On**: The LFO loops continuously, but resets to the start when a MIDI note is received.
  - ○ **Off (1-Shot)**: The LFO does not loop, but will play once when a MIDI note is received, then remain at the final value of the waveform, as set by the End Marker.

- **Speed (0.02Hz–5.24kHz)**: In Hertz mode, set the free-running LFO rate.

- **Amount (-100%–100%)**: Set the depth of modulation applied by the LFO. Negative values 'invert' the waveform, so that upward modulation becomes downward modulation.

- **End Marker**: When **MIDI** triggering is active and **Loop** is off, you can adjust where the LFO waveform 'stops' by dragging the **End** marker left and right in the waveform display. The parameter effectively freezes when it reaches the End marker, remaining at that value until it's triggered again.
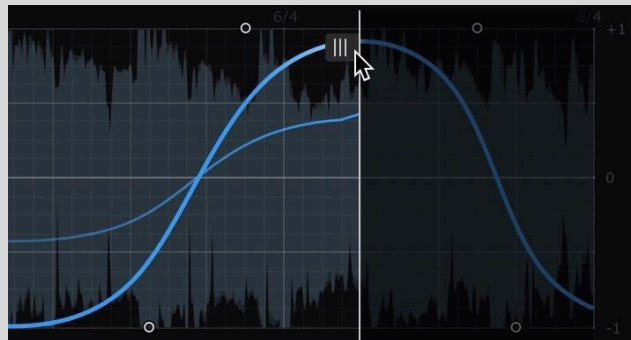
💡 TIP: Note that Ableton Live has a serious bug concerning timing that can affect all position-synced plugins (ie, not just Cableguys plugins). For more info, see our FAQ page for a workaround.

MIDI Trigger Options

For instructions on setting your DAW up to send MIDI to FilterShaper XL, visit our FAQ page.

Open FilterShaper XL's MIDI Trigger Options screen by clicking the small 'cog' button that appears when **MIDI Trigger** and/or LFO **Pitch** mode are active.
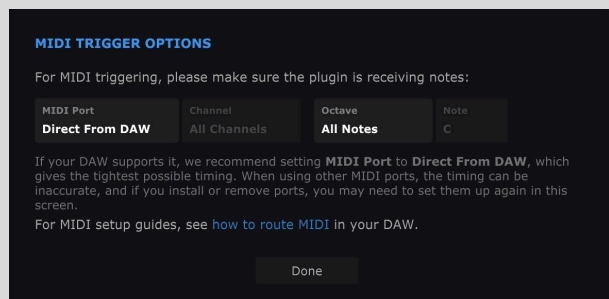
- **MIDI Port**
  - ○ **Direct From DAW**: This is the best option if supported by your DAW, as it gives the tightest possible timing.

- ○ **MIDI Devices**: If your DAW doesn't support the **Direct From DAW** option, assign a MIDI input port from those available to your system. The timing may not be as tight, though, and you'll need to return to this screen if ports are added or removed.
- ○ **Channels:** Select All Channels, or any individual MIDI channel from 1-16 for input.
- ○ **Octave**: Specify a single octave of notes for MIDI triggering. Notes in all other octaves will be ignored.
- ○ **Note**: Specify a single note within the selected **Octave** for triggering. All other notes will be ignored.

Envelope Follower

So far, we have only looked at FilterShaper XL's LFOs. LFOs work by imposing a *fixed* modulation shape onto the audio, regardless of what the audio is actually doing. Envelope Followers are different: they follow the amplitude envelope (the peaks and troughs of the waveform) of the audio to create a *dynamic* modulation curve from the audio itself.

If that's a little hard to understand, check out the graph above. The gray spikes are drum hits in a loop, and the white trace is the envelope follower's reaction to those hits. In this example, Filter 1 opens (ie, raises the **Cutoff** frequency) every time there is a loud drum hit, then closes gradually afterwards.

Every FilterShaper XL parameter with an LFO (or pair of LFOs) also has an Envelope Follower – so that's **Filter 1** and **2**'s **Cutoff**, **Resonance**, **Volume** and **Pan**, the **Master Volume** and **Pan**, and all LFO **Rate** and **Amount** modulation LFOs. Each Envelope Follower's control panel sits to the right of its associated LFO Wave Editor, collapsed down to just its **Power** button, and **Threshold** and **Amount** controls by default, and expanded to the full Edit Panel by clicking the arrow button next to the Power button.

To better understand the Envelope Follower – or just Envelope – let's see how the controls in the Edit Panel affect its response.

Envelope Controls

Attack

Attack determines how quickly the Envelope rises to meet peaks in the audio. A fast attack gives a practically instant rise, shown as a vertical line on the trace. A slow attack gives a gradual slope that lags a little behind the audio peak.
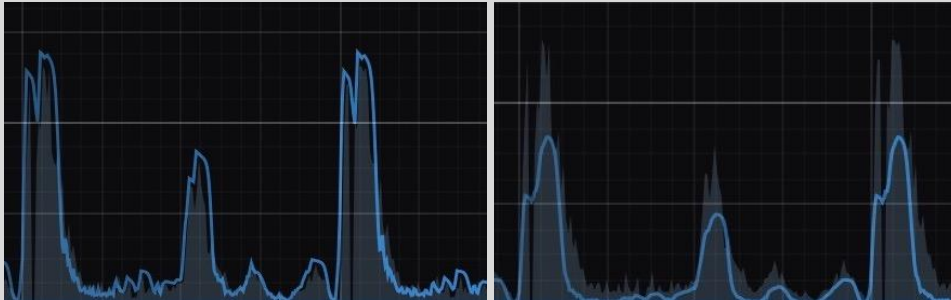
Fast attack   **Slow attack**

Hold

Once the Envelope has completed its attack phase and reached the peak level, you can make it stay at this level for a while, giving a flat horizontal line on the trace. Setting Hold to 0ms will disable this feature.

Hold disabled (0ms)   **Short hold**   **Long hold**

Hold can be used to:

- Avoid distortion caused by very short attack and release times.
- Get musical, rhythmic results. Try setting hold to around 250ms at 120bpm to 'delay' the release by half a beat – good for creating off-beat bounce.

Release

What goes up must come down, and after the attack/hold phase, it's time for the Envelope to fall back to its resting point. The Release determines how long the descent takes. It looks something like this:

| Fast release | Slow release | Very slow release |

...Note how the fast release 'rides' individual cycles of the waveform.

Enable Adaptive Release with the small 'A' button next to the Release slider. This uses a dual-stage release envelope, so that quick transient events get a faster release time, thus reducing pumping artifacts.

| Adaptive Release OFF | With Adaptive Release ON |
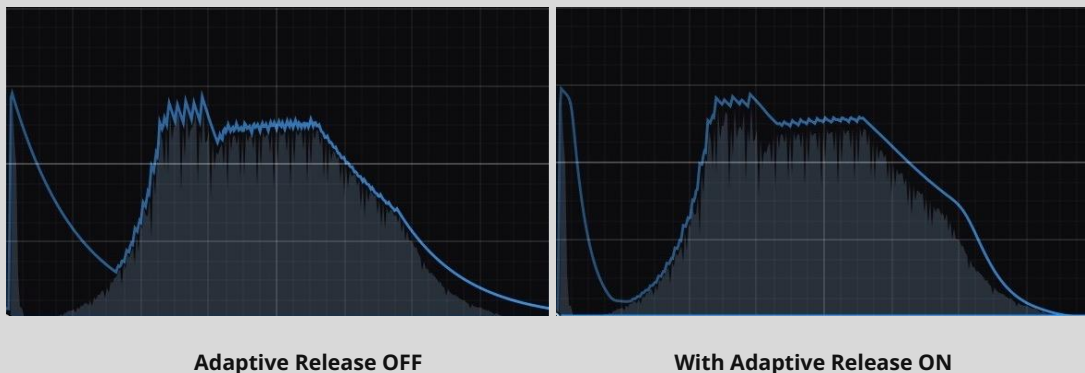
Threshold

FilterShaper XL's Envelope Follower is extremely sensitive, and will accurately follow even the smallest details of your track. Sometimes, though, you only want the Envelope to react to the loudest, boldest sounds – for example, the kick and snare in a drum loop, but not the hi-hats. This is where the Threshold control comes in. It allows you to exclude quiet sounds from being tracked by the Envelope Follower.

Set the Threshold, and the Envelope will 'ignore' all sounds below this level (you may also know this as a gate). To have the entire input 'followed', set the Threshold to the minimum value of -Inf dB.

| Gate disabled (-inf. dB) | Gate at 50% |

Amount

Perhaps the simplest control in the Envelope Follower, this sets the strength of modulation produced by the Envelope Follower, up to 200% (and beyond with the Depth control, explained below). Note that in Add mode (explained later), it can also be set negatively. For example, to make a low-pass filter 'open' with each kick drum hit, you would use a positive Amount to raise the cutoff with every hit. To make the filter 'close' with every hit, you would use a negative Amount instead.

Depth

Sometimes you need even stronger modulation than the default **Amount** range of +/-200% can supply. For example, when Attack is increased, the envelope may not rise up as far when reacting to transients. Or when using sidechain filtering (explained later), the input signal may be reduced in level due to frequencies being removed, so the envelope is also lower in level.

The Depth buttons are there to help in such cases. Choose between **x2**, **x4** and **x8** options, representing +/-200%, +/-400%, and +/-800% Amount ranges.

Using the LFOs and Envelope together

While the Envelope and LFOs can seem like two separate 'effects' in use, the modulation shapes they create are always added together before being used to control a single parameter such as filter Cutoff.

The Modulation Trace drawn on the graph reflects this, and although it may seem like this is showing you the Envelope's response, that's not quite accurate – it is the *combined* modulation applied by both LFOs and the envelope.
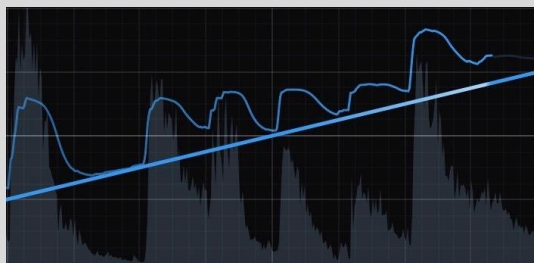
Essentially, you can think of the LFOs as applying an offset to the Envelope's vertical position (or vice versa). Here are a few examples of how the LFOs and Envelope will stack up when added – the Envelope is using the exact same settings in all examples, and only a single LFO is applied in the interest of clarity.
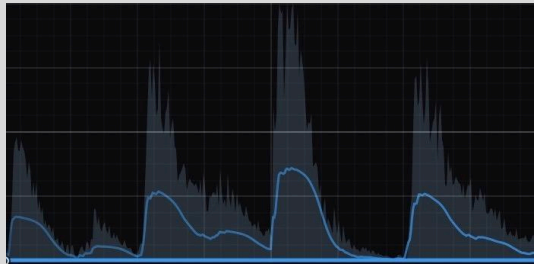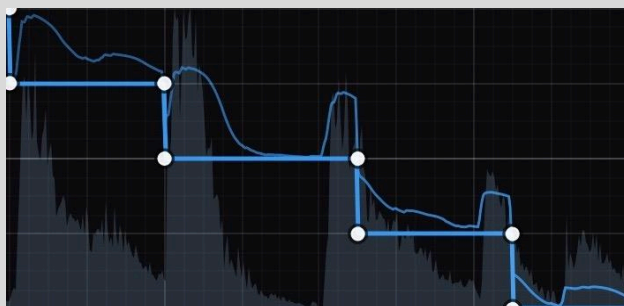

LFO at 0% position
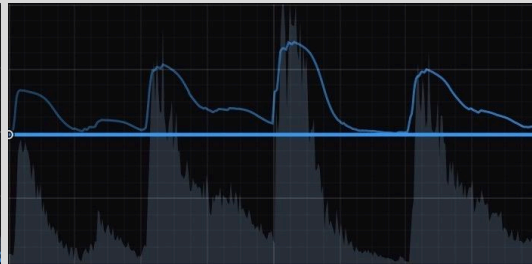
LFO at 50% position

**Rising LFO ramp**

LFO sine wave

LFO steps

💡 TIP: If the total modulation amount (LFOs + Envelope) exceeds the top of the graph, it will have nowhere left to go. You can see this in the examples above: where the LFO reaches the maximum position, the envelope trace is flattened out. Therefore, it is possible to create a setup that gives no modulation, if the LFO is in the 100% position all of the time. The same advice applies with negative Amounts and the bottom of the graph.

Input

Normally, the Envelope Follower listens and reacts to all frequencies in the input signal (or in the current band, as defined in the upper-left Bands section).
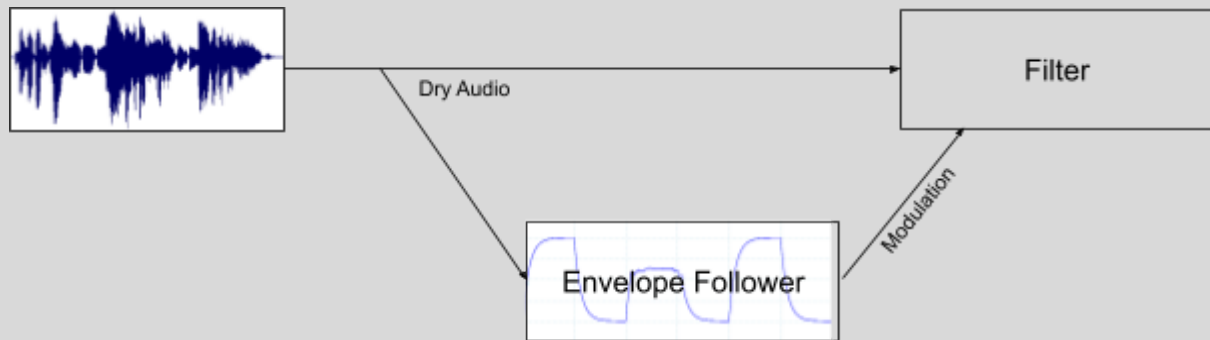

We can see that the Dry Audio signal is split in two, with one copy sent to the filter for processing, and an identical copy sent to the Envelope Follower's input.

But it doesn't have to be this way: the Envelope Band Filter (EBF) allows you to select which frequencies the Envelope hears (Note: this does not filter the audio you hear). Like this:
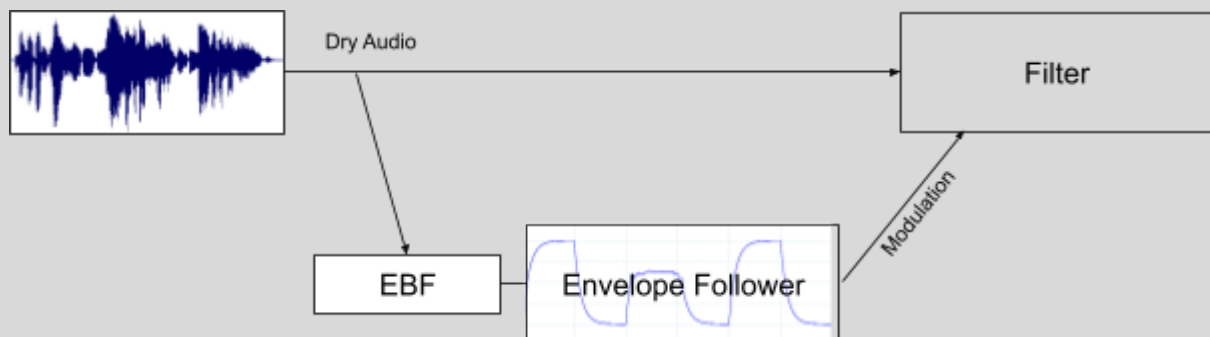
You can even route in external signals from other tracks in your project (called external sidechain routing), like this:
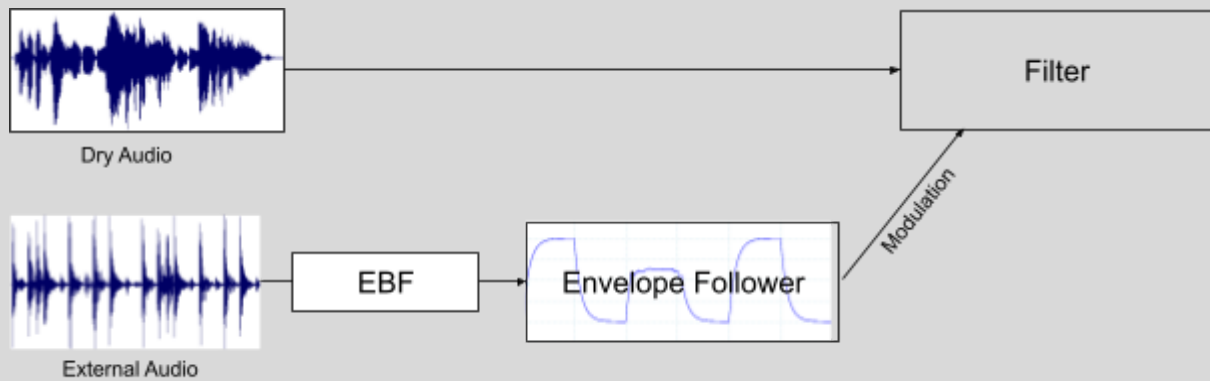
Envelope Band Filter and Sidechain

- **High/Low Envelope Filters**: This double-ended slider sets the range of frequencies this Envelope Follower will hear and respond to.

- **Sidechain**: Enable this and the Envelope Follower listens to an external sidechain signal, which could be any track in your DAW. For this to work, you must use your DAW to route the sidechain signal into FilterShaper XL's secondary inputs (ie, inputs 3 and 4). Please see the **ShaperBox 3 FAQ** for information on this.
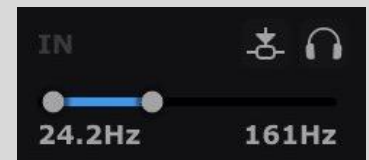
  Using external sidechain routing, you can, for example, filter the bassline on one track whenever the kick drum on another track plays.

  Note that you can use the Envelope Follower's Filter section and Sidechain at the same time to achieve advanced and creative routings.

- **Solo Sidechain**: Lets you hear exactly what the Envelope Follower is hearing – especially useful when using the Envelope Band Filter or Sidechain options. The filtered signal is routed directly to FilterShaper XL's output, bypassing all other Shapers, so that you can monitor it in isolation.