PHIL SPEISER

THE_INSTRUMENT 3

USER MANUAL

My sounds and my way of writing, in one instrument: a chord or a whole phrase under every key, a melody when you ask for one, and a deep synth underneath it all.

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What It Is

THE_INSTRUMENT 3 is how I write music, built into one instrument. I have been making records for more than twenty years, several of them top 10, with hundreds of millions of streams between them. Every sound, chord set, phrase and groove in the factory library is mine, and so is the workflow behind them.

It is two instruments that know about each other. On top, a composing layer that decides what your keys play: their own notes, the notes of your scale, a full chord, a phrase, or a melody it writes for you. Underneath, a deep synthesizer: up to six generators of eight types, a Sub and a Noise, two filters with 62 types, four envelopes, ten LFOs, eight macros, 64 modulation connections and an effects rack of 29 effects in three chains.

Most of the time you will not need the second half. Load a sound, set your key, choose **Chords**, and every white key plays a chord that fits. Choose **Phrases** and every white key plays a part that loops in time with your song. Choose **Generate** on COMPOSE and you get a melody in your key, written for the sound you loaded, ready to drag into your DAW as MIDI.

THE_INSTRUMENT 3 does the musical heavy lifting, and leaves you the decisions that make a track yours.

Your keys play music, not just notes

- **Chords** turns each white key into a chord of your key. A chord set is seven chords that belong together, and the arrows beside its name step through the library while you keep playing.
- **Phrases** turns each white key into a part: a bass line, a sequence, a figure. Hold a key and it loops in time with your song. Move to another key and the old notes ring out while the next phrase comes in.
- **Generate** writes a melody in your key for the sound you have loaded. Press again for another, rewrite only the bar that is wrong with the wand, and drag the result into your DAW.
- **The Progression strip** plays your chords over 1, 2, 4 or 8 bars, in time with your DAW. Play the chords in and press **Capture**, or pick one from the **Library**.

A synth with no compromises underneath

- **Eight generator types**: Oscillator, Wavetable with its own editor, Sample, Multisample, Granular, Spectral, Instrument (my sampled instruments) and Hyper, with up to 16 unison voices each.
- **Modulation that shows where it goes.** Every connection ends in a handle on the control. Put the handle where you want the value to land.
- **An effects rack with real pictures.** Every tile moves with the sound that passes through it and stands still in silence.
- **Sampled sounds that behave like instruments.** On Multisample and Instrument generators a glide hands over from one recording to the next, and a sustained recording without a loop of its own keeps sounding while you hold the key.

One instrument, not a bundle

A preset brings back the sound and the way it is meant to be played, together, and never touches the key and scale of your track. A macro you name on SYNTH turns up with that name on PLAY. The MIDI the instrument sends to your DAW is what it plays, not the keys you pressed.

Start Here - Your First Ten Minutes

If you only read one chapter, make it this one.

Get the library

The first time you open THE_INSTRUMENT 3, a card reads **SET UP YOUR CONTENT FOLDER**. Leave it on **USE THE DEFAULT LOCATION**, leave **INCLUDE THE FREE EXPANSIONS** ticked and press **CONTINUE**. You can play as soon as the factory library is in; the expansions follow in the background, even with the window closed.

Play a sound

You land on **Play**. Click a type in the top bar, **Bass**, **Keys** or **Pads** for example, and the name wheel on the left turns through that type only. Click a name above or below the big one to load it, or click the big name and walk with Up and Down. Play while you skim. Or type into **Describe a sound**, for example warm evolving pad, and the wheel turns through the presets that fit. Then turn the knobs on the right: the sound's macros.

Put your keys in a key

Click **Key** and pick the key and scale of your track. Then click **Scale** under **Keys play**. Every white key plays a note of your scale, every black key plays what the white key below it plays. There are no wrong notes left. Loading another preset never changes your key.

Play chords, then try another chord set

Click **Chords**. Every white key plays a whole chord, and the octave from C3 to B3 (C3 is middle C) plays the set as it was written. Click the **Chord set** block and walk down the list while you keep playing the same keys. Press Enter to keep one.

Play a phrase

Click **Phrases**, then the **Phrase set** block, and pick a set. Hold one white key: a part loops, locked to your DAW. Walk through the white keys. That is a whole arrangement idea under one hand.

Make it move

Back in **Chords**, click **Motion** and try **Strum**, **Glide** and **Arp**. With Glide, play the next chord while the last one is still held and every note slides into place. **Rhythm** strikes every chord in a groove. Then raise **Pump** at the right end of the row: the sound ducks on the beat while your DAW plays.

Let it write a melody

Click **Compose**, choose the **Generate** tab and press **Generate**. A melody in your key appears and loops at once. Press again for another; the arrows step back. Drag across a part you do not like and click the wand: only that part is written again. Then drag **Drag MIDI** onto a track in your DAW.

Look underneath

Click **Synth**. Everything that makes the sound is on this one page. If there is no LFO chip on the source bar, click **+ Add** and pick one. Drag its six-dot grip onto **Cutoff** in the Filter card, then drag the handle at the end of the coloured range to where the sweep should land. That is all modulation takes here.

The Rack You're Replacing

What THE_INSTRUMENT 3 does	What you would otherwise open
The factory library and its free expansions	Preset packs for several synths, and an afternoon of auditioning
Sampled instruments	A separate sample player and its own library
Chords on one key	A chord plugin, routed into your synth by MIDI
The Progression strip	A chord-progression tool, a MIDI file and a loop brace
Phrases on one key	A MIDI loop pack, dragged in and transposed bar by bar
Chord Glide	Drawing pitch bends by hand for every voice
Strum, Rhythm and the step Arp	A MIDI effect for each, rebuilt per track
Generate on COMPOSE	A melody generator that knows nothing about your sound or key
Generate on PLAY	Scrolling through presets until one fits
Eight generator types	A wavetable synth, a sampler, a granular synth and a resynthesis plugin
The effects rack	A chain of separate effect plugins after the synth
Pump	A sidechain compressor and a kick routed into it
Preset import	Keeping your old synths installed just to play your sounds
Follow together	Setting the key by hand in every instance

The honest version of the pitch is not that it is cheaper. It is what happens between the rows.

The Magic Is Between the Features

Every tool in that right-hand column does its job alone, so the work between them is yours. **THE_INSTRUMENT 3 is one instrument, so every part knows what the others are doing.**

- **One preset is the whole idea.** It brings back the sound and everything on COMPOSE: chord set, phrases, groove, progression and the generated melody.
- **Your key stays yours.** Chords and phrases are moved into the key and scale already on the page as a preset loads.
- **The scale is set in one place.** Change it and the loaded chord set or phrase set follows. You never go looking for the minor version of a set.
- **Your tracks can share one key.** Instances set to **Follow together** share their key and scale.
- **Swap the sound under the part.** With **Sound only** on, loading a preset changes just the sound.
- **One clock for everything that moves.** Rhythm, strum patterns, Phrases, the Arp and the progression follow your DAW, so nothing drifts.
- **Generate knows the sound.** A bass line for a bass, a pad line for a pad, in the register that sound wants.
- **Macros carry their names, and your DAW reaches them.** The eight macros are what your DAW automates, and a macro can drive anything in the sound.
- **The Pump is part of the sound.** It is a GAIN SHAPER in the rack, saved with the preset and open to any shape.
- **The browser is the same everywhere.** Move the selection and you hear it, press Enter and you keep it, close and what you had comes back.
- **Your own content sits next to mine,** under **User** and **Imported**.
- **Your DAW records what it plays:** the chord, the arp, the phrase, the melody.

Why You'll Love It

- **Glide that leads the voices.** Each note slides the shortest way into the next chord, and shared notes stay where they are.
- **A strum you can see.** A strum pattern is drawn as the hand on the strings. **Guitar mode** turns every chord into a real six-string shape.
- **An arp that keeps evolving.** Nine lanes, each with its own length up to 64 steps.
- **A sound when you do not want to browse. Generate** on PLAY hands you a finished preset with a name of its own.
- **No dead keys.** Black keys play what the white key below plays.
- **Drop any audio on a generator.** It becomes a sample, a grain source or a spectral source, copied into your library.
- **Modulation you can read.** Every connection is a sentence: this source takes this control to this value.
- **Draw any shape.** LFOs, envelopes, the GAIN SHAPER and the FILTER SWEEP share one drawing editor.
- **Find a sound by describing it.** Presets are ranked by how they actually sound.
- **Bring your sounds with you.** Presets from four other popular synths come into your library with a drop.
- **It switches sounds without a glitch.** A heavy sound is prepared in the background while the one you have keeps playing.
- **Tooltips in five languages, one undo history, a zoomable window, in-plugin documentation and an AI assistant.**

The Big Idea (read this once)

Three words explain the whole instrument.

THE SOUND - everything you hear: generators, filters, envelopes, modulation and effects. It lives on SYNTH; PLAY gives you its macros.

THE KEYS - what your keys do: **Free**, **Scale**, **Chords**, **Phrases** or **Generate**, how the notes move, and the key and scale. It lives on COMPOSE; the control row on PLAY is a remote for it.

THE LIBRARY - presets, chord sets, phrase sets, grooves, patterns, progressions, samples, wavetables and instruments, side by side in one browser.

A **preset** holds the first two words together. What it never holds is your key and scale, or the octave window of the on-screen keyboard. Those belong to your track.

The Interface at a Glance

One window: a strip of general tools across the top, then a page bar with three tabs, **Play**, **Compose** and **Synth**, and the page you chose. The window keeps one fixed layout; the zoom grip in the bottom-right corner scales all of it.

The top strip

From left to right: the tooltip line, the update banner when there is a newer version, the undo and redo arrows, and three switches: the robot icon (**AI Assistant**), the book icon (documentation) and the gear icon (**SETTINGS**). Click one to show its panel, again to hide it.

The page bar

The three page tabs on the left. On COMPOSE and SYNTH, the **Sound only** switch. At the right, the preset strip: previous arrow, the sound's name, next arrow, the download icon for the store of free packs, and the three dots menu. Your page is saved with your session.

You can drop a preset or a bank from another synth, or a folder of them, anywhere on the instrument: it is imported and the first one loads.

Undo and redo

One history for the whole instrument, 64 steps, one per gesture. Loading a preset is one step too. **Cmd/Ctrl+Z** undoes, **Cmd/Ctrl+Shift+Z** redoes.

Tooltips, documentation and the assistant

Hover any control and its explanation appears in the line at the top left, so help never covers your work. When the text is too long, click the small **i** to read it all. Tooltips come in English, German, French, Spanish and Italian; only the tooltips change language.

The book icon opens the documentation, the robot icon the **AI Assistant**: type your question and press Return. Both need an internet connection. The assistant receives a snapshot of what you are doing, so its answer fits your sound.

Settings

LANGUAGE and **SHOW TOOLTIPS** apply to every Phil Speiser plugin on your computer. **VERSION** and **REGISTERED TO** are for information. **RESET ZOOM** puts the window back to 100 %, and **TUTORIAL** opens the tutorials page.

Zoom

Drag the corner grip to scale the window from 50 % to 300 %. Click or right-click it for a list of sizes, double-click for 100 %. The zoom is remembered on your computer, not in your song.

Made with a newer version

A sound from a newer version of THE_INSTRUMENT 3 still loads. What this version does not know is left out, and a **Needs** pill in the page bar and a card titled **MADE WITH A NEWER VERSION** say what is missing. **Get the update** opens the update page. An unknown generator is silent, an unknown effect leaves its place empty, an unknown connection is off.

The on-screen keyboard

One keyboard for the instrument: in the keyboard body on PLAY, as a strip on COMPOSE, none on SYNTH.

- Click a key to play it; where you press sets how hard, softest at the top, hardest at the front edge. Drag across the keys for a glissando.
- A clicked key enters like a key from your MIDI keyboard, so in **Chords** it plays a chord.
- Every C is labelled, and middle C reads **C3**. The arrows in the end cheeks move it by an octave; an arrow lights when a note sounds beyond that end.
- Notes the instrument plays light in the sound's colour. Keys you play yourself light in a lighter shade.
- On PLAY a line under the white keys tells you what each one plays: the note in **Scale**, the chord in **Chords**, the degree I to VII in **Phrases**. On COMPOSE a rail of numerals I to VII lights the degree that plays.

PLAY - the page you play on

PLAY is where you pick a sound, turn its macros, choose what the keys play and make music. Nothing from the editors is here on purpose.

From top to bottom: the top bar, the sound with its name wheel and macros, the band where the notes fly, and the keyboard body with the control row on top.

The picture of the sound

The whole page is a picture of what you hear; nothing in it can be clicked. Two soft pools of light in the sound's colour get brighter with its level and drift while it plays. The band shows the notes the instrument plays, never the key itself: press one key in **Chords** and you see the whole chord. Each note is a row of fine dots flying from right to left; higher notes fly higher, longer rows sound longer, brighter ones were struck harder. With **Glide**, the rows bend into the next chord. In silence the band is empty.

Describe a sound

The field at the left of the top bar is the fastest way to a sound when you know what you want but not what it is called. Type a few words and the name wheel turns through the presets that fit, best match first, ranked by how they actually sound. The type row still narrows the matches.

When it reads **Enter - look up online**, your words hold something the instrument does not know. Press Enter to send your words and your preset names to my server for a look-up. Nothing is sent without that Enter, and the ranking always happens on your computer. After a match list, Enter loads the next match, Up and Down walk the names, and Escape clears your words.

The type row

All, then the types in your library: Bass, Pluck, Keys, Pads, Lead, 808, Synth, Strings, Guitar and any type a pack brings. Click one and the wheel turns through that type only. The choice is yours, not the sound's, and is remembered with your session.

THE_BRIDGE

THE_BRIDGE is my free app that turns a note you hum or sing into notes. While it runs, the top bar shows a **THE_BRIDGE** switch. Switch it on for the one instance that should follow your voice. A hummed note enters like a key: in **Chords** you get a chord. It is off by default and saved with your session.

Sound only, Generate and Browse

Sound only: while it is on, loading a preset changes just the sound, and everything on COMPOSE stays. Use it when the part is right and you are looking for the sound to play it. **Generate** opens the panel described in **GENERATE A SOUND**. **Browse** opens the sound browser: click to hear, double-click or Enter to keep.

The name wheel

The loaded sound's name stands large on the left, with a pill for its type above it and its neighbours in the list above and below.

Gesture	What it does
Click a neighbour	Loads that sound.
Click the name, then Up / Down	Loads the previous or the next sound.

The mouse wheel does nothing here, so you cannot change the sound by accident. With no words in the field, the wheel goes through every preset of the chosen type, A to Z, and goes round at the ends. With words, it goes through the matches, best first. Each turn is one undo step and follows **Sound only**.

The macros

On the right are the sound's macros: up to eight knobs, each a single move that changes several things at once. **Only macros that do something are shown,** so a sound with three useful moves shows three knobs. The knobs size to their number.

Each knob shows its name and its value from 0% to 100%. The name belongs to the sound and reads the same on SYNTH; my sounds use names such as BRIGHT, MOVE, DRIVE, SPACE, ATTACK, LENGTH, WIDTH and MIX.

Gesture	What it does
Drag up or down	Turns the knob.
Shift while dragging	Fine adjustment.
Double-click the knob	Back to 0%.
Double-click the name or value	Rename the macro, up to 24 characters.
Right-click	Type a value.

Your host automates **Macro 1** to **Macro 8** and **Volume**. When another source moves a macro, thin arcs around the knob show it.

The control row

The row on the keyboard body decides what your keys play. It is a remote for COMPOSE, with one shared state, and it only shows the blocks that apply.

Block	Shown when	What a click does
Key	Always	Opens the key and scale picker.
Keys play	Always	Choose **Free**, **Scale**, **Chords** or **Phrases**.
Octave	**Scale**, **Chords**, **Phrases**	**-** and **+** shift everything the white keys play, from -3 to +3.
Chord set / **Phrase set**	**Chords** / **Phrases**	Opens the browser for sets.

Motion	**Free**, **Scale**, **Chords**	**Sustained**, **Strum**, **Glide**, **Rhythm** or **Arp**.
Pattern	**Rhythm**, **Strum** or **Arp**	Opens the groove, strum pattern or arp browser.
Pump	Always	See below.

Free plays your notes as on a normal keyboard. **Scale** locks the white keys to your scale. **Chords** gives a whole chord per key. **Phrases** a played phrase per key. COMPOSE has a fifth choice, **Generate**; while it is on, the set and motion blocks step aside. **How the Notes Move** explains each motion in full. When long names make the row tight, the names are cut first and **Keys play** folds into one chip with a picker.

Pump

Pump is the quick way to the sidechain pump of dance music: the sound ducks on the beat and comes back. It is a remote for a **Gain Shaper** on the Main chain of the sound's effects, so it is saved with the sound and you can open it on SYNTH to draw your own shape.

The slim slider sets how deep the sound ducks, from **Off** to 100%. Drag to set it, double-click for **Off**, click the word **Pump** to switch it on and off. Turning it up on a sound with no pump adds one, as long as the rack has a free place.

Click the rate under the slider for the picker: **How Often** is **1/2**, **1/4**, **1/8** or **1/16**, and **Shape** is **Pump**, **Hard Pump**, **Soft Pump** or **Long Pump**, plus any pump shapes from your packs.

The pump moves while your host plays and rests at full level while it is stopped. It runs on the host's beat; it does not listen to another track's kick.

GENERATE A SOUND

Generate, in PLAY's top bar, makes a new preset for you. I built it for the moment when you do not want to browse: say roughly what you want, and it hands you something finished. Every result is listened to by the instrument before it plays.

The panel

WHAT CHANGES decides how much of what is loaded stays:

Choice	What you get	What stays
Everything	A new sound and a new way of playing it.	Nothing.
Compose	A new way of playing: chords, rhythm or phrases.	The sound.
Sound	A new sound of the chosen type.	How it plays.
Space	New reverb, delay, chorus and similar effects.	The sound and how it plays.

TYPE - **Bass**, **Keys**, **Pad**, **Pluck**, **Lead**, **808**, **Synth**, **Strings**, **Guitar**. It starts on the loaded sound's type. For **Compose** and **Space** the takes are made for the loaded sound's type.

GENRE - pills you can switch on in any number, from **Dance**, **House** and **Pop** to **Lofi**, **Synthwave**, **Dark** and **Vintage**. None means no preference. With **Sound** they are strict, so a rare genre can leave few takes.

Press **Generate**. The listening strip lights up as the instrument listens, and the take lands. The button then reads **Generate again**. The carets and dots walk back through your takes, and the disk icon keeps the take as your own preset through the Save card.

What a take is

A take lands at once as the loaded sound. It is one undo step, and your key and scale stay as they were.

- **It gets a name of its own:** two words in capitals, one for its character and one for its type, never a factory name.
- **A line says what it is,** for example a new sound with a moving phrase.
- **It is ready to play,** at a sensible level and in the register its type belongs in.
- **It is not saved by itself.** It lives in the panel's row of takes until you close the plugin window. Click the disk icon to keep it.

Steering it

Generate again brings a take you have not had yet. Changing **WHAT CHANGES**, **TYPE** or **GENRE** starts afresh. The first take of a type takes the longest; after that they come quickly, and the instrument stays playable while it works. **Compose**, **Sound** and **Space** need a loaded sound.

When nothing comes, the note line says why. **Nothing new passed the listening test - try another genre or type** means press again or change your choice. **Heard every combination for this choice - change the type or the genre** means you have had every take there is. **Space** leaves a sound alone when its effects use the buses.

Sounds, Presets and the Browser

A sound in THE_INSTRUMENT 3 is never only a synth patch. It is the patch and the way it is meant to be played, saved together.

What a preset is

A preset holds the complete sound (generators, filters, envelopes, LFOs, modulation, macros with their names, effects and volume), everything on COMPOSE plus the generated melody, and how the pages looked when it was saved. Factory presets point at content in the library instead of carrying a copy.

What a preset never changes: your key and scale (its chords and phrases are moved to yours), the octave window of the on-screen keyboard, your favourites, the browser's filters and the **Sound only** switch.

Loading without a glitch

Big sounds take a moment to prepare. THE_INSTRUMENT 3 builds them in the background while your current sound keeps playing, then switches the whole patch at once. The name chip already shows the new name, with a teal sweep along its bottom edge. Pick another in the meantime and the newer pick wins.

The preset strip

The strip sits in the header on every page.

Part	What it does
Left / right arrow	Previous or next preset, wrapping at both ends. One undo step each.
Name chip	The loaded preset with its type's colour dot. **edited** follows the name once you change the sound. A click opens the browser.
Download icon	Opens the store for expansions.
Three dots	The menu. A right-click on the strip opens it too.

The arrows walk the whole library in its own order; the browser's search and filters never affect them. Short messages appear on the chip, such as **Saved**, **Needs** and a pack's name when a pack is missing, or **1 Sample Not Found**. For as long as that sound is loaded, the first row of the menu keeps the warning.

The preset menu

Item	What it does
Init patch	Loads the empty patch.
Save	Writes over your own loaded preset. Greyed on factory presets: use **Save as...**.

Save as...	Opens the browser with the Save card.
Show in browser...	Opens the preset browser.
Import presets (.SerumPreset, .fxp, .fxb, .h2p, .spf, .spf2)...	Brings presets from other synths into your library.
Expansions...	Opens the store.
Content folder...	Chooses where your content folder is.
Set as startup preset (every new instance)	Every new instance starts on the patch as it is now.
Clear startup preset	Goes back to starting on the empty patch.

Tip: make your favourite starting point, a bare saw or a template with your macros, the startup preset. A session your DAW restores is never touched by it.

Sound only

Sometimes the part is right and the sound is wrong. While **Sound only** is on, every load changes just the sound, and everything on COMPOSE stays as you have it. It is one switch in three places: the browser's search row, PLAY's top bar, and the header on COMPOSE and SYNTH. It is remembered with your project. To load one preset this way without touching the switch, use the **Sound only** pill on the row under the pointer, or **Load sound only** in its right-click menu. With Sound only on, an imported preset's arpeggiator does not come along.

One browser for every kind of content

Presets, chord sets, phrase sets, grooves, strum patterns, arp patterns, progressions, samples, wavetables, instruments and multisamples all open in the same browser and follow the same rules. Learn it once. Some have extras: the preset browser has a play button per row and search by sound; grooves and strum patterns draw a small picture per row; progressions show their chord steps; the Samples and Wavetables browsers let you add your own folders.

The browser opens as a sheet inside the plugin window, with the search ready and the loaded item in the middle of the list. A click on the dimmed window behind it does nothing, so it can never throw away what you are auditioning. **Esc** first clears the search, then closes. **Closing without keeping puts back exactly what was loaded when the browser opened.**

The browser, top to bottom

- **Search row** - the search field, the **Source** picker, the favourites star, **Sound only** (Presets), **Clear filters** while a filter is set, and a folder icon (Samples and Wavetables).
- **Type bar** - **All**, then one chip per type.
- **Style row** - every style word as a chip.
- **The list** - one line per item.
- **Foot** - the item count, a keyboard hint and the save button.

There is no scale filter anywhere: everything you load follows the scale of your page.

Filters

- **Type** - one at a time; **All** drops it.
- **Styles** - pick as many as you like; an item must carry every one.
- **Favourites** - the star shows only what you starred.
- **Source** - **All sources**, **Factory**, each expansion by name, **User** (what you saved), **Imported**, and each folder you added. **Remove folder** takes a folder off the list and leaves your files alone.
- **Clear filters** - clears the search and every filter.

When nothing is left, the list says what is hiding it, with a **Clear filters** button right there. Search and filters are remembered until you quit your DAW.

Search and search by sound

Just start typing: letters go into the search wherever you are. **Cmd+F** (**Ctrl+F** on Windows) jumps to the field. **Enter** keeps the first row. In most browsers the search matches names, types, tags and the detail text.

In the preset browser the field reads **Name or describe a sound...**, and it means it. Type warm evolving pad, or like ANALOGIC but darker, and the list is ranked by how well each preset fits. The search reads how each preset sounds, its type, tags, name and description, in several languages. Each row then says why it came up, for example slow attack or deep. Your own and imported presets are listened to in the background, so they rank like the factory ones.

When your words hold something it does not know, the hint offers to read them online: press Enter and your words and the preset names in this browser are sent to my server. Nothing is sent until you press Enter, and the ranking always happens on your computer.

Rows and gestures

A row shows a play button (Presets and Samples), the name, detail text or a picture, the type, style tags, a source badge when sources are mixed, a **Needs** mark when it asks for a later version, and a star.

Gesture	Result
Click, or Up / Down	Selects and auditions it, loaded for real. Not an undo step.
Double-click, or **Enter**	Keeps it. One undo step.
Esc or close without keeping	What you had comes back.
Click the star	Adds or removes the favourite.
Click the play button	Presets: plays a preview. Samples: plays the file.
Right-click	The row's menu.

Tip: start one preview, then walk down with the arrow key. Each row previews in turn, and a whole session in the browser costs at most one undo step.

The right-click menu offers **Preview**, **Load sound only**, **Add to Favourites**, and on your own items **Rename...**, **Edit details...** or **Edit tags...**, **Show in Finder** (**Show in Explorer** on Windows) and **Move to Trash**. Factory and expansion content cannot be renamed or removed.

Preview: let a preset play itself

The play button on a preset row loads it and plays it the way it was made to be heard, for up to 8 seconds. What it plays is the preset's own choice: **Compose** (C3 held, and Compose plays the preset's phrase, progression, rhythm or arp), **Chord**, or **One note**, with an octave from -2 to +2 so a bass is heard as a bass.

Your own library

Everything you save or import shows up beside the factory content, under **User** and **Imported**. It lives in the content folder PHIL SPEISER CONTENT, by default in your Music folder on macOS and your Documents folder on Windows. Inside, THE_INSTRUMENT 3 CONTENT holds Packs (the factory library and expansions) and User (everything that is yours).

When you save, every file the patch uses from outside the library, such as a sample from your desktop, is copied next to the preset, so it still works after you tidy up. Pack content is never copied.

Favourites are kept per kind of content and shared by every instance and project on your computer.

In the Samples and Wavetables browsers you can add your own folders without copying anything: click the folder icon or choose **Add a folder...** in **Source**. Your files stay where they are.

Saving

- **Save** in the preset menu writes over your own loaded preset.
- **Save as...**, the floppy-disk button in the browser, or the disk icon on a Generate take opens the Save card.

Chord sets and phrase sets use the same card. Grooves, strum patterns, arp patterns and progressions ask for a name only. A name you already use asks once: the first press turns **Save** into **Overwrite** (**Replace** on the Save card), the second writes over it.

The Save card

A name gets a preset onto your disk. The rest is what lets you find it again in six months.

Row	What it does
Name	Up to 48 characters, filled with the loaded preset's name.
TYPE	One type, so it sits in the right place.
Style	Any number of style words, plus **Add your own**.
Description	How it sounds, in your words. The search by sound reads it.

Preview Plays	**Compose**, **Chord** or **One note**. A click plays it at once.
Octave	-2 to +2 for the preview.

Everything comes filled in from the preset you started from, so if you only changed a few knobs, type a name and you are done. **Enter** saves, **Esc** closes. Saving a factory preset under its own name makes your own preset beside the factory one. After saving, your preset is the loaded one and the browser shows it under **User**.

To change how one of your presets, chord sets or phrase sets is filed without saving it again, right-click it and choose **Edit details...**: the same card without the name.

Bringing Your Sounds With You

You have spent years in other synths, and the sounds you made there are part of how you work. THE_INSTRUMENT 3 reads presets from four of them and rebuilds each one as a preset of its own, with its own generators, filters and effects. Once imported, a sound no longer needs the synth it came from.

What it reads and how to bring it in

It reads .SerumPreset and .fxp presets, .h2p presets, .fxb banks and .fxp presets, and .spf2 and the older .spf files. An .fxp from any other plug-in is not importable, and .sbf bank files are not read.

Drop them on the window. Drop preset files, a bank or a whole folder anywhere on the plugin window, on any page. Folders are searched all the way down. A folder of audio dropped on a generator still goes to the generator.

Use the menu. Choose **Import presets (.SerumPreset, .fxp, .fxb, .h2p, .spf, .spf2)...** in the preset menu and pick files, folders, or several of both.

The import runs in the background and you keep playing. No internet connection is used. The name chip counts along with **Importing...** and then shows the result for a moment: **Imported** (with a count when there are several), **Imported - Parts Missing**, **Import Failed** or **Nothing To Import**.

A drop always loads the first imported preset when it is done. The menu does so only when you picked exactly one file or one folder. The load is one undo step.

The import report

When anything failed or came in with a part missing, a card titled **Import report** opens under the name chip. It sums up what came in, then lists each problem with the preset's name and a reason. **NOT IMPORTED** means the file could not be read, holds no sounds, could not be saved into your library or could not be converted. **MISSING** names the part of the sound that could not be brought, most often audio that is on no disk.

Where imports land

Imported presets go into your User folder, under presets/Imported, in a folder per synth. A folder you dropped keeps its own name and structure. In the browser they have the **Source Imported**, the **Type Synth**, and tags with the synth's name and **Imported**, plus a category such as Bass, Lead, Pad, Pluck, Keys or Sequence where the original names one.

They are your own items: **Rename...**, **Edit details...**, **Show in Finder** or **Show in Explorer**, **Move to Trash**. Importing a preset again under the same name replaces the earlier one and keeps its star. A moment after the import, you can find them with the search by sound like any other preset.

Tip: after a big import, open **Edit details...** on the ones you love and give them a proper type and a description, so the filters and the search find them.

Samples and the arpeggiator

A preset that uses samples, multisamples, impulses or noise files has them looked up in the original synth's library on your computer and inside the preset, and copies what it finds into your User folder. From then on it works without the original installed. Wavetables travel inside the preset. The other formats are settings only.

An arpeggiator converts too, from the formats that carry one. Such a preset arrives with Compose switched on, passing your keys to the Arp with the original's rate, note order, octaves, gate, swing and step pattern where it has one. A clip that plays its notes together becomes a chord on your key. Every preset whose arp does not come across arrives with Compose off. Because the arp lives in Compose, loading an imported preset with **Sound only** on leaves it behind.

What converts, and its limits

Every import is rebuilt with THE_INSTRUMENT 3's own generators, filters, envelopes, LFOs, modulation, macros and effects: oscillators become generators of the same kind, filters keep their series or parallel routing, envelopes, LFOs and modulation connections come along, and the effects are placed in the rack.

A conversion is a rebuild, not a recording, and a few things have edges. Attacks are limited to 5 seconds, decays and releases to 30 seconds (shorter for some formats), glides to 2 or 8 seconds. Effects and modulation that are switched off in the original are left out. A synced rate with no matching division here runs free at the rate it would have at 120 BPM. Microtuning and a few rare filter and voice settings are not carried, and some drawn LFO forms play as a sine. When an arp rate does not exist here, the nearest one plays.

Content: the Library, Expansions and Your Own Folders

Everything THE_INSTRUMENT 3 plays that is not a setting is content: presets, instruments, chord sets, phrases, grooves, wavetables, effect presets. This chapter is about where it lives, how it gets onto your computer, and what happens when something is missing.

Packs

Content comes in packs, one file each, in the Packs folder of your content folder. The factory library is one pack, listed in the browsers under the source **Factory**. Every expansion is another pack, listed under its own name, and can add any kind of content. A new pack shows up without reopening anything.

The factory library holds more than 130 presets, more than 120 instruments, more than 80 chord sets, more than 75 phrase sets, more than 80 grooves, more than 50 arp patterns, more than 150 progressions, more than 30 wavetables and more than 250 effect presets, among others.

The content folder and the first run

The first time you open THE_INSTRUMENT 3, a card asks where your PHIL SPEISER CONTENT library should live and tells you how big the download is.

On the card	What it does
USE THE DEFAULT LOCATION	Your Music folder on macOS, your Documents folder on Windows
CHOOSE A FOLDER...	Any folder, for example on an external drive
INCLUDE THE FREE EXPANSIONS	Ticked, the expansions download after the factory library. **CHOOSE...** lets you pick them.
CONTINUE	Starts the download
CONTINUE WITHOUT CONTENT	Opens the instrument with no library

The factory library downloads first, and you can play as soon as it is in. You can close the plugin window: the download carries on in the background. The card comes back when something is not right: **CONNECT YOUR CONTENT** when the folder is empty, a note when the drive is not connected, and **COMPLETE YOUR LIBRARY** when expansions are still to get. **LOCATE FOLDER** points at a library you already have, and nothing is downloaded.

Moving the content folder

Content folder... in the preset menu tells the instrument where to read its library from. To move your library to another drive, quit your DAW, move the whole PHIL SPEISER CONTENT folder, then point **Content folder...** at its new place. Your User folder moves with it. The location is shared by every PHIL SPEISER plugin that uses the shared content folder. The menu's **Reading from** row is the quick check that the instrument is looking where you think.

The store

Expansions are free packs, and the store is where you get them. Open it with the download icon in the header or with **Expansions...** in the preset menu. A small count on the icon is the number of packs you have not seen yet, and a ring fills while packs download.

Each row shows the pack, what is in it, its size and its tags, with **DOWNLOAD**, **UPDATE**, **RETRY**, a progress bar, **QUEUED**, or **INSTALLED** with **SHOW IN LIBRARY**, which opens the preset browser on that pack. **DOWNLOAD ALL** gets everything at once. Downloads run one at a time, continue with the window closed, and pick up where they stopped if you quit your DAW.

When a pack you have not seen appears, a **NEW PACK** card drops down under the icon once, with **NOT NOW** and **DOWNLOAD**.

Missing packs and newer content

A preset that uses an instrument or a phrase set from an expansion you do not have still loads. That part is silent or empty, the chip says **Needs** and the pack's name, and, if the store has that pack, a banner offers **DOWNLOAD**. When the pack arrives, the missing parts fill in by themselves. A chip reading **1 Sample Not Found** means a preset points at audio that was moved or deleted.

Content made with a later version of THE_INSTRUMENT 3 wears **Needs** and the version number. It still loads; what your version does not know is left out, never replaced. In the store such a pack reads **NEEDS VERSION** and cannot be downloaded. Update the plugin and all of it plays as it was made.

With no library installed

Without the library you still have the complete synth, the built-in wavetables and your own items. The lists that come from the library are empty, and an effect you add starts at its plain defaults. Getting the library later is one click on the card, or a visit to the store.

COMPOSE - what your keys play

COMPOSE is the page where you decide what a key does when you press it. It can play its own note, one note of a scale, a whole chord, a phrase, or step aside while a melody is written for you. What you set here is saved with the sound.

There is no on and off switch for composing. Off is simply the **Free** tab.

The page, top to bottom

- **The setup card**, titled **Your keys play**, with five tabs, **Free**, **Scale**, **Chords**, **Phrases** and **Generate**, and under them the tray, one row of fields that changes with the tab.
- **The seven degree cards**, I to VII, in Chords and Phrases.
- **The Progression strip**, in Scale, Chords and Phrases. It folds to its header with the chevron at its left; folded, the degree cards grow and show a mini keyboard each.
- **The Edit card**, with the editor for whatever the keys play: the chord editor keyboard, the scale panel, the phrase editor or the melody roll. With a motion on, the motion's lane sits under it, and the keyboard or scale panel can fold to one line to give the lane room.
- **The detail row**, at the bottom of the Edit card, when the current setup has settings to show.

How the keys are read

Scale, Chords and Phrases all read your keyboard the same way.

- **Only the white keys count, by name.** C D E F G A B are the seven steps **I II III IV V VI VII**. You always play as if you were in C; the **Key** field moves the result to the key of your track.
- **A black key plays what the white key below it plays.** There are no dead keys.
- **The octave you play in is the octave you hear.** Sets are written around C3, which is middle C. Play C3 to B3 and you hear a set as written; play lower and you hear it lower.
- **Then Key and Octave move the result.**

The five tabs

Tab	What a key plays	Motions
Free	Its own note, black keys included	Sustained, Strum, Rhythm, Arp
Scale	One note: the step of your scale	Sustained, Strum, Rhythm, Arp
Chords	The whole chord on the card of its step	Sustained, Strum, Glide, Rhythm, Arp
Phrases	The phrase of its step, looping while you hold	None: a phrase is its own movement
Generate	The melody generator writes the notes	None

Free is the plain sound. With **Sustained** a card reads **Your keys play the sound as it is**, with **Strum it**, **Arpeggiate it** and **Play chords**. With a motion on, it works on exactly the keys you hold: strum or

arpeggiate your own chords, played your own way. Free keeps its own motion, separate from the one Scale and Chords share.

Scale: each white key plays one note of your scale, so nothing sounds out of key.

Chords: each white key plays the chord on its card. With **Sustained**, one chord sounds at a time and every note takes the velocity you played. A chord holds up to 8 notes. A card with no chord plays the key's own note.

Phrases: hold a white key and its phrase loops. The phrase plays at the velocities written in it. With no phrase set loaded, each key plays its own note.

Generate: the melody generator writes a melody that plays along with your song. See "GENERATE - a melody written for you".

The tray

Tab	Fields
Free	**Motion**, plus **Groove** under Rhythm
Scale	**Key**, **Octave**, **Motion**, plus **Groove** under Rhythm
Chords	**Key**, **Octave**, **Chord set**, **Motion**, plus **Groove** under Rhythm
Phrases	**Key**, **Octave**, **Phrase set**
Generate	**Key**, then the melody's **Length**

Key is two boxes, the note and the scale (see "Key and Scale"). **Motion** is five pills, **Sustained**, **Strum**, **Glide**, **Rhythm** and **Arp**; **Glide** works only in Chords. **Groove** is the rhythm the notes are struck in. Both are covered in "How the Notes Move".

Octave moves everything the keys play without moving your hand: minus and plus, -3 to +3 whole octaves, default 0. It works in Scale, Chords and Phrases, not in Free.

The chord set and phrase set field

The field shows the loaded set's name. Click the name or Browse to open the library, use previous and next to step through it (each step is one undo step), and in Chords the sparkle opens the chord set generator. A set you edited shows an asterisk after its name, and an edited set that never had a name reads **Custom**.

The playing register

The octave from C3 to B3 is "as written". Lower octaves play the same material lower, so your left hand can take a chord down for a bass and your right can lift it. The progression always presses its keys in the C3 octave. To move the whole instrument without changing where you play, use **Octave**.

Key and Scale

You set the key and the scale of your track once, in the **Key** field, and everything on COMPOSE follows it: the notes the Scale tab plays, where your chords and phrases sit, the names on the cards and the keyboard, and the scale Generate writes in.

The two boxes

- **The note box** shows the key note, like C or Eb. Click it for a picker with the twelve keys. The default is C.
- **The scale box** shows the scale, like Minor. Its picker lists every scale with its notes written out in your current key, and stays open so you can try scale after scale while you play.

Note names are spelled for your key: C Minor reads C D Eb F G Ab Bb. A key change moves what you play the shortest way from C, so a set never jumps out of its register. When hand-picked notes on the Scale tab no longer match a named scale, the scale box reads **Custom**.

The ten scales are **Major**, **Minor**, **Harmonic Major**, **Harmonic Minor**, **Dorian**, **Phrygian**, **Lydian**, **Mixolydian**, **Locrian** and **Melodic Minor**. In Scale the scale is what the white keys play. In Chords and Phrases it decides which version of a set is loaded and names the notes. In Generate it is the scale the melody is written in.

Linking the key across tracks

If you run several instances of THE_INSTRUMENT 3, they can share one key and scale, so a key change on one track is a key change on all of them. The last group of both pickers, **Other tracks**, has two choices:

Choice	What it does
Follow together	Shares key and scale with every instance set the same way. The default; the caption then reads **Key - linked**.
This track only	Neither sends nor follows. **A key change here stays here**

Only a pick you make yourself is sent to the others; loading a preset or reopening a session never sends a key. A new instance takes the key of a linked one already running. A followed key arrives even with the window closed. The choice is saved with your session, not with a preset.

A preset never changes your key or scale

When you load a preset, your key and scale stay. Its chords and phrases are moved into your key and scale as part of the load, so you can step through sounds in the middle of a track and every one plays in your key. A session your DAW reopens restores the key and scale it was saved with.

A loaded set follows a scale change

The scale you pick is the only thing that sets the scale. You never have to look for "the minor version" of a chord set: the browsers list one row per set, and you get the library's own version for your scale when there is one, or the nearest scale's version converted into yours. Change the **Scale** and what is loaded is converted the same way. A note of the old scale moves to the same step of the new one (C Major's E becomes Eb in C Minor), and every note of the result is in the new scale. Such a scale pick is one undo step.

Scale

The Scale tab is for playing lines: a bass, a lead, a melody under your fingers that cannot leave the key. The tray shows **Key**, **Octave** and **Motion**; under it come the Progression strip and the Edit card with the scale panel. Scale has no degree cards.

The scale panel

The panel shows your scale as twelve circles, C to B. Filled means in the scale, with the root in the page's colour. Click a circle to switch that note on or off; switching it on plays it. The root cannot be switched off. This is how you get a pentatonic, a blues scale, or any scale of your own.

As soon as your notes differ from the named scale, the title reads Custom and **Back to** with the scale's name appears; click it to restore the scale. Each click is one undo step, and your notes are saved with the sound.

With fewer than seven notes the white keys run on into the next octave. With more than seven all twelve keys are used, and the black keys play notes of their own.

Above the circles, the pitch graph shows the last 6 seconds of your playing, and when the scale moved a note it says so, like **pressed C#** and **plays D**.

Single notes

Single notes, at the left of the detail row, gives you one note at a time for bass lines and melodies. It is off by default. A new key ends the note before it. Played legato, the new note starts before the old one ends, so a sound set to Legato ties the notes, and with a legato glide it slides between them. With Rhythm, a strum pattern or Arp, overlapping keys keep the pattern running and each hit plays the last key you pressed.

Chords

In Chords every white key plays a whole chord. Seven chords that belong together make a chord set, one per step of the scale, and the seven degree cards show them. Play a set as it is, swap it while you keep playing, change any chord note by note, or have a new set generated.

The degree cards

Seven cards, I to VII, are the white keys C to B. Each shows its numeral in the step's own colour, the chord's name in your key (like Cm, Fm7 or Bb/D) and its notes, bass first. A padlock marks a card locked for Generate. The card of the step you play lights up and becomes selected.

Click a card to select it and play its chord. Right-click it for **New chord N**, **Lock chord N (until you close the window)**, **Clear chord N** and **Clear all chords**.

In Phrases the cards are slimmer and show only the numeral and the step's note; a click selects the card for the phrase editor.

The chord set

The **Chord set** field names the loaded set, with previous, next, Browse and the Generate sparkle.

Tip: the quickest way to find the right set is to keep playing the same keys and press next. The harmony stays, the voicing and colour change.

The browser, **Chord sets**, loads a set as you move the selection, so you can play while you browse; closing without choosing puts back the one that was there. **Save chord set...** opens a save card with **Name**, **TYPE**, **Style** and **Description** and writes the set into your user library. Phrase sets work the same way with **Phrase sets** and **Save phrase set...**.

There are no separate voicing, inversion or spread controls. A chord's voicing is its notes, and you edit those on the keyboard. **Octave** moves all seven chords together.

The chord editor keyboard

The Edit card holds one wide keyboard showing the selected card's chord at its real pitch, so what you see is what sounds. Keys in your key are lighter and named, the root in gold. The chord's notes are tinted in the step's colour; a note outside the key is hatched, and the top line says so, like **Eb is not in the key**.

Gesture	What it does
Click a key	Plays that note. Nothing changes.
Double-click a key	Adds the note to the selected chord, or removes it. One undo step.
Arrows at the left and right	Move the view an octave down or up. The chord does not change.

An edit goes to the selected card. Any of the twelve notes can go into a chord, up to 8 notes. A dot above an arrow means chord notes lie out of view on that side. An edited set shows an asterisk and follows every later Key, Octave and Scale change.

While a motion lane shows under it, the keyboard can fold to one line, **Voicing**; click the line to open it.

Generate a Chord Set

When no set in the library is quite it, let the instrument make one. Click the sparkle on the **Chord set** field in the Chords tab, choose the moods, press **Generate**, and a new chord set in your key and scale lands on the seven cards.

The panel

Control	What it does
MOOD	Any number of chips: **Uplifting**, **Euphoric**, **Hopeful**, **Romantic**, **Dreamy**, **Chill**, **Nostalgic**, **Melancholic**, **Mysterious**, **Tense**, **Dark**, **Epic**. A mood with nothing in your scale is dimmed.
COLOUR	**Any**, **Simple**, **Rich**, **Complex**. Simple leans to plain three-note chords, Complex to fuller ones.
HOW BOLD	**Safe**, **Some**, **Bold**. Safe is the most settled, Bold the most surprising.
Generate	One press, one new set on all seven cards, heard at once. One undo step.
Carets	Walk back and forward through the sets generated since you opened the window

The set is named after its first two moods, or **Generated** with none. The note line says what you got, which locked cards were kept, and when it had to widen your moods to fill the set.

The list of generated sets is not saved. When you have one you want, keep it with **Save chord set...** in the chord set browser.

Lock and New chord

Found two chords you love and five you do not? Right-click each card to keep and choose **Lock chord N (until you close the window)**. That card keeps its chord through every Generate, and the new chords are chosen to fit it.

To change one chord and leave the rest alone, right-click its card and choose **New chord N**. Only that card gets another chord for the same step, one that fits the other six, and you hear it at once. Use it again and again to walk through choices. When nothing else fits, the field says **No other chord fits**.

The Progression

A chord set gives you seven chords. A progression says which of them plays when. The Progression strip is a small chord lane inside the instrument: it plays your chords over bars, in time with your DAW, through whatever your keys are set to play.

What a progression is

A progression is written as steps, I to VII, not as chord names. That is what makes it travel: the chord set decides what each step sounds like, **Key** and **Octave** where it sits, and the **Motion** how it moves. One progression works with every chord set, in every key.

It plays by pressing the step's white key for you in the C3 octave, I on C3 up to VII on B3. So in Chords it plays chords, in Scale single notes, in Phrases the phrases, and Strum, Rhythm, Arp and Glide move it exactly as they move your own playing. It is 1, 2, 4 or 8 bars of 4/4, plays legato, and is saved with the sound. It does not play in Free.

The header

From left to right: the fold chevron (folded, the header keeps playing), Play, the name with its chords in your key and its steps, **Bars**, **With DAW**, **Capture**, **Library**, and the **Keys** and **Chords** pill for dragging MIDI out. While your pointer is on a control, the title line tells you what it does.

Play and With DAW

Click Play to hear the progression through your sound; click again to stop. With your DAW stopped, it runs on its own clock from bar 1 at the DAW's tempo (120 BPM if there is none). With your DAW playing, it is locked to the DAW's bar grid. An edit you make while it plays is heard at once.

Switch **With DAW** on and your DAW's transport starts and stops the progression: start the song and the chords are there. It is off by default.

Bars

Click **Bars** for **1 bar**, **2 bars**, **4 bars** or **8 bars**. Longer repeats what is there; shorter drops the chords past the new end. One undo step.

Capture

The fastest way to write a progression is to play it. The strip listens all the time to what you play. Play your chords on the white keys, then click **Capture**: the last phrase you played becomes the progression and starts playing at once. One undo step.

The lamp on **Capture** lights when there is something to capture. A pause of 4 beats or more starts a new phrase. Keys pressed together are one chord, read from its lowest key. Starts snap to the nearest eighth note, and the length becomes 1, 2, 4 or 8 bars. When your DAW was playing, its bar line is bar 1; otherwise your first key is.

Library

Library opens **Progressions**, filed by style with **Basic** first, and your own under **Mine**. Each row shows its steps, like I VII VI VII. The browser opens on Major or Minor to match your scale. Moving the selection plays that progression in your sound; closing without choosing puts back the one that was there. **Save progression...** writes your progression into your user library.

Dragging MIDI out, and dropping it in

Press on a half of the pill and drag it into your DAW.

Half	What the clip holds	Use it for
Keys	The trigger keys, C3 to B3, one note per chord	A clip for THE_INSTRUMENT 3 itself. It plays through whatever chord set, key and motion the instrument has when it plays back.
Chords	The notes the instrument actually plays, with the motion written out	Any other instrument

Drop a MIDI file on the strip to read its chords in. Notes that start together are one chord, read from its lowest note, and the progression takes the file's name. One undo step.

The blocks

Each chord is a block with its name in your key and its step in colour. The chord you hear is washed in its colour. An empty strip reads **Pick one in the Library, play chords and press Capture, or double-click to draw one**. Moves and lengths snap to an eighth note; hold **Shift** for a sixteenth.

Gesture	What it does
Drag a block sideways	Moves it
Drag a block up or down	Changes its step
Drag the line between two blocks	Moves the chord change
Drag a block's edge	Lengthens or shortens it
Wheel over a block	Steps its chord up or down
Double-click a block	Opens the chord picker
Double-click an empty place	Adds a chord there
Right-click a block	**Change chord...**, **Push - start an eighth early**, **Split in half**, **Duplicate after**, **Delete**

The chord picker lists the seven steps with their job: I, III and VI are **home - it rests**, II and IV **away - it moves on**, V and VII **tension - it wants home**. Swap a chord for one marked **same job** and the progression keeps its shape; pick another job and it goes somewhere else.

With the strip focused, Delete removes the selected chord, Left and Right select, Up and Down change its step, and Esc deselects. Every finished edit is one undo step.

What Your DAW Can Record

THE_INSTRUMENT 3 has a MIDI output. Route it to a MIDI track in your DAW and you can record what the composing layer plays.

- **What goes out is what the instrument plays, not the keys you press.** Press one white key in Chords and the output carries the chord's notes. The same goes for scale notes, phrases and arps, all after Key and Octave, and for what the progression plays.
- Messages the instrument uses only for its own sound stay inside and never reach your DAW.

To get MIDI into your DAW without recording, drag it out: the Progression strip has its **Keys** and **Chords** halves, and the Arp, the groove editor and Generate have drags of their own, described in their chapters. **Getting It Into Your DAW** has the full detail of what a recording holds.

How the Notes Move

What your keys play is one decision: a note, a note in key, a chord. How those notes move is the second one, and it is the difference between a held pad and a part. A **Motion** takes whatever your keys play and turns it into a strum, a bend, a groove or an arpeggio, without you playing any of it in.

Where a motion is chosen

On **Compose**, the top card is headed **Your keys play**, with the tabs **Free**, **Scale**, **Chords**, **Phrases** and **Generate**. The **Motion** field in that row is five pills: **Sustained**, **Strum**, **Glide**, **Rhythm** and **Arp**. One click picks, and the chosen pill is lit white.

Your keys play	Motions on offer
Free	Sustained, Strum, Rhythm, Arp
Scale	Sustained, Strum, Rhythm, Arp
Chords	All five
Phrases	None. A phrase is its own movement.
Generate	None. The melody plays itself.

Glide bends one chord into the next, so it only exists in **Chords**. **Free** remembers its own motion and works on exactly the keys you hold: no key, no scale, no octave shift. Free with Sustained is the plain sound; the page offers **Strum it**, **Arpeggiate it** and **Play chords** as ways on.

The lower card, **Edit**, holds the editor for what the keys play, then the motion's picture, then one row of the motion's settings. The values in these rows are text cells: drag one up or down to change it. Under **Scale**, the **Single notes** switch leads the settings row whatever the motion is.

Sustained and Humanize

Sustained: notes ring exactly as you play them, for as long as you hold the key. This is the motion to start from.

A chord that lands with every note on the same sample at the same velocity sounds like a machine pressed it. **Humanize** (0 to 100, **Off** at 0, double-click for Off) gives every note of a chord its own small delay and its own velocity, new on every chord. The earliest note stays exactly on your key press, so nothing is ever early. Where a pattern runs (**Rhythm**, and **Strum** with a **Pattern**) it also moves every hit a little early or late and a little louder or softer.

It is shown for **Chords** with Sustained, for **Strum** and for **Rhythm**. It is one value for the page: switch between those motions and the same amount comes with you.

Strum

Strum plays a chord the way a hand crosses strings: one note after another. The card's header carries a two-way switch, **Once per key** and **Pattern**.

Control	What it does
Guitar mode	Plays every chord as a guitarist would finger it: a playable shape on six strings in standard tuning, struck string by string. With one of my sampled guitars every note plays on its own string's samples. Default off.
Strum Speed	How far the notes are spread apart, 0 to 120 ms (**Tight** at 0). Default 40 ms.
Humanize	See above.
Edit notes	Opens or folds the keyboard with the chord's notes above the picture.

Strum Speed means two different things. **Once per key**, it is the time from one note to the next (**ms a note**). Under a **Pattern**, it is the time the hand needs to cross all six strings (**ms a stroke**). So the same number strums much tighter under a pattern. If you switch faces and the strum suddenly feels different, set the speed again for the face you are on.

Strum - Once per key

Each key press strums the chord once, low to high. The list **How it rolls** gives five ready-made speeds: **Together** (0 ms), **Quick** (12 ms), **Strum** (40 ms), **Slow** (75 ms) and **Harp** (120 ms). The picture shows the chord struck note by note on a time ruler; drag sideways in it to set the speed by eye. **Hear it** plays the selected chord strummed at the current speed, so you can judge it without touching the keyboard.

Strum - Pattern

A held key is strummed in a looping pattern of strokes, 1, 2 or 4 bars of 4/4 long. This is the rhythm guitarist: down, down-up, a muted chop, a knock on the body.

Stroke	What the hand does
Down-strum	From the low string to the high one
Up-strum	From high to low, a little softer
Mute	A dead stroke: the strings are stopped
Bass	The lowest note alone
Top	Only the high strings
Knock	A knock on the guitar body; the strings ring on through it

How hard a stroke is decides how many strings it catches. The strings ring from stroke to stroke, on any sound, not only on guitars, until they are struck again, muted, or the chord changes.

The left column is the pattern list: **Search patterns**, a **Style** picker and every installed pattern with a small picture of its strokes. A click loads it and switches the pattern on. **All patterns and your own...** opens the full library **Strum patterns**, where moving through the rows lets you hear each one, favourites live and **Save strum pattern...** saves your own.

Strum - editing the strings

The picture shows the chord's notes as strings, the low one at the bottom, with a beat ruler above. The toolbox, captioned **Click adds**, has the tiles **Down**, **Up**, **Mute**, **Knock** and **Eraser**.

Gesture	Result
Click an empty step	Adds the stroke of the tile in hand
Drag down or up from an empty step	Draws a down- or up-strum; how fast you drag sets how hard
Click a stroke	Same tile in hand: takes it out. Another tile: the stroke becomes that kind.
Drag a stroke up or down	How hard it is. At 112 or more it lights as an accent.
Drag a stroke left or right	Moves it in time; Cmd (Mac) or Ctrl (Windows) places it freely
Drag an end of a strum onto a string	Sets which strings the strum crosses
Click the arrow under a strum	Flips it: down becomes up
Right-click a step	The picker **What the hand does**: **Strum**, **Soft**, **Bass**, **Top**, **Mute**, **Knock**, **Miss**

Soft, **Bass** and **Top** can only be made in that picker. Every edit switches the pattern on and is one undo step.

Control	What it does
Bars	1, 2 or 4. Longer repeats what is there.
Grid	**1/8** or **1/16** places per beat
Knocks	How loud the knocks play, 0 to 100. Default 20.
2 & 4	Adds a knock on beats 2 and 4, like a player slapping the guitar on the backbeat
Record	Play strokes into the running pattern
Clear	Empties the pattern

To record, switch **Record** on, hold a chord so the pattern runs, and swipe the pointer across the strings in time: down for a down-strum, up for an up-strum. Each swipe lands on the nearest step, and the speed of your swipe is how hard the stroke is.

Rhythm

Rhythm re-strikes every held key in a **groove**: a loop of hits, each with its own start, length and velocity. In **Chords** the whole chord is struck as a block on every hit. That is the stab, the pumping pad, the offbeat organ. If you want the chord strummed in rhythm, use **Strum** with a **Pattern**.

While the motion is Rhythm, the top card gains a **Groove** field. Click the name to open the library **Grooves** (every row draws its hits, so you can read a groove before you hear it); the arrows load the previous and next groove. An edited library groove shows its name with an asterisk.

Rhythm - the groove lane

The groove lane is the editor: one lane of notes, read left to right like a clip. A header holds **Snap** and **Bars** (1, 2, 4, 8); under the notes is a row of velocity stalks; the footer has **-**, **+**, **All** and an overview of the whole groove.

Gesture	Result
Click the empty lane	A new 1/16 note; keep dragging right to set its length
Click a note	Removes it
Drag a note	Moves it. A note never lands on another.
Drag a note's right end	Its length
Press or sweep in the stalk row	Sets velocity, 1 to 127
Cmd or Ctrl + wheel, or pinch	Zoom around the pointer
Right-click	**Copy bar N to every bar**, **Clear bar N**, **Clear the whole rhythm**

Take care with the plain click: a click on a note removes it, and a click beside it adds one. Cmd/Ctrl+Z brings it back.

Snap puts starts and ends on the 1/16 grid. Switch it off for a pushed or laid-back hit, or hold Cmd/Ctrl during one gesture to flip it. **Swing** (0 to 100) moves the off sixteenths late, by half a 1/16 at 100 %. **Humanize** sits beside it.

Glide

Glide is the motion I would show you first. The chord does not restart on the next key: every note slides into its place in the next chord. It is offered in **Chords** only.

Control	What it does
Glide	How long a chord takes to bend into the next, 20 to 2000 ms. Default 250 ms.
Sync	On: the length is a note value of the host tempo
Rate	The length as a note value, shown while Sync is on. Default 1/8.
When	**Legato - glide while held** or **Always - every chord glides**. Default Always.

The picture shows the previous degree's chord bending into the selected one, voice by voice. Press or drag sideways in it to set the length.

Press the next key while the first is held and every note bends to its partner in the new chord, along the path with the least movement in which no voices cross. Notes the chords share do not move. Leftover notes are let go; extra notes are struck fresh at the new key's velocity. With **Always**, even a key pressed after a release glides in from where the last chord was. Releasing the key you pressed last releases the chord.

There is nothing to set up in the sound. On the **Multisample** and **Instrument** generators a gliding note hands over from one recording to the next as it moves, so a slide keeps decaying as one note with no second pluck.

Arp

Arp plays the notes one at a time in a running pattern. It is offered in **Free**, **Scale** and **Chords**.

It is more than up-and-down. The arp is a step pattern with nine lanes, each with its own length of 1 to 64 steps. A 3-step lane over a 4-step lane lines up again only every 12 steps, which is how a short pattern keeps evolving. A fresh pattern is the classic arp: every step plays the next note in the **Order**.

Control	What it does
Rate	The length of one step, as a note value. Default 1/16.
Order	How the steps walk through your notes. Default Up.
Octaves	1 to 4 octaves before the walk starts over
Gate	Scales every step's gate, 5 % to 200 %. Past 100 % notes overlap. Default 75 %.
Swing	Moves every second step late (or early when negative)
Restart	**Follow song**, **First key**, **Every key** or **Every bar**
Latch	The arp keeps playing after you let go
More...	The deeper settings

The orders are Up, Down, Up/Down, Down/Up, As Played, Random, Random No Repeat, Random Once, Magic, Converge, Diverge, Thumb (the lowest note between every other note), Pinky (the top note between every other note) and Walk.

Follow song locks the pattern to the song position while the DAW plays, so a new chord never restarts it; with the DAW stopped it starts on your first key. With **Latch** on, the first key you press after letting everything go replaces the latched notes.

The arp's notes are, in **Chords**, the chord of the key you pressed last; in **Scale**, every key you hold moved onto the scale (only the last with **Single notes**); in **Free**, every key exactly as played.

Arp - the arp editor

The header holds the lane tabs (Note, Octave, Transpose, Velocity, Vel Random, Gate, Strum, Ratchet, Chance), the **Steps** well, **Library** and **Drag MIDI**. Under it, the **Plays** row draws what the arp will play at real pitches, and the open lane sits below. A lane that carries anything is underlined, so you see at a glance which lanes are doing something.

Drag **Steps** to set the open lane's length; longer repeats what it held. You can also drag the lane's end grip, or simply start drawing in the dimmed columns past its end.

In the value lanes, click sets a step, drag draws across steps, double-click returns to the default, right-click opens the lane menu.

Lane	What it does
Octave	-3 to +3 octaves on the step's note
Transpose	Semitones, or scale notes with the **Scale** chip
Velocity	Per cent of your key's velocity
Vel Random	A random velocity swing per step
Gate	How long the note rings. The **Slide** band at the top glides into the next note on a Mono or Legato sound.
Strum	Spreads a step with several notes, up or down
Ratchet	1x to 4x hits inside the step
Chance	How likely the step is to play

The **Note** lane decides which note each step plays: **Next** (the next note in the Order), a number **1** to **16** counted from the lowest, **Chord** (all at once) or **Tie** (the step before rings on). Click the choice a step already has to make it a rest. Shift + click a note row stacks several notes on one step.

The lane menu has **Shift left**, **Shift right**, **Reverse**, **Randomize** (musical, not uniform), **Reset** of the lane and **Reset every lane**. The **Scale** chip, shown while Transpose is open, switches Transpose to count **Scale notes**, so one pattern plays a line in key on any note. Its Key and Scale are the page's own: picking one there changes it for the whole page.

Arp - Library, Drag MIDI and More

Library opens **Arp patterns**. A pattern carries all lanes plus **Rate**, **Order**, **Octaves**, **Gate** and **Swing**. Moving through the rows lets you hear each one on what you hold; closing without a pick puts back what was there. **Save arp...** saves your own.

Drag MIDI turns the arp into a clip: drag it into your DAW and you get one full turn of the pattern, 1 to 8 bars, over the selected chord in Chords, or over C3, E3 and G3 in Scale and Free.

More... opens the rarer settings:

Section	What it does
MORE STEPS THAN KEYS HELD	What a numbered step past your held notes plays: **Repeat higher**, **Silent** or **From a note**
RESTART	**EVERY** sets the length for Restart on Every bar. **Key picks start** lets the key choose the start step.
VELOCITY RAMP	**Ramp** moves the velocity toward **To** over **In**. A ramp down to 1 over a second or two is the classic fade-out arp.
KEYS THE ARP TAKES	**From** / **To** and **Vel From** / **Vel To**. A key outside them plays as a normal note.

Use the key range to arpeggiate your left hand while your right plays a lead.

Playing in Time

Rhythm, a strum pattern, Phrases, the Arp and the Progression strip all run on one clock. That is why you can switch between them mid-song and nothing drifts.

While your DAW plays, Rhythm, a strum pattern and Phrases are locked to the song position, so a two-bar groove always starts on the same bars. Pressing a key joins where the song is; overlapping or changing keys never restarts them. The Arp sits on the same grid; whether it starts again is its **Restart** setting. Tempo changes, jumps and loops are followed.

While your DAW is stopped, a key pressed with nothing held starts the pattern from its top, exactly on the press, at the DAW's tempo or 120 BPM. While one key stays down it runs on.

A DAW note that lands a hair behind the grid still plays its hit, so clips drawn right on the bar line do what you expect.

Your keys play	Two keys overlapping
Chords, with Rhythm or a strum pattern	The pattern runs on; each hit plays the chord of the key pressed last
Scale or Free, with Rhythm or a strum pattern	The pattern runs on; each hit plays every held key
Scale with **Single notes**, with a pattern or Arp	The pattern runs on; each hit plays the last key alone
Scale with **Single notes**, Sustained	One note at a time. Played legato, a Legato voice ties and a glide sound slides.
Phrases	The last key's phrase plays
Chords with Glide	The chord bends into the next

Single notes is made for bass lines and melodies: overlap your keys and a groove or the arp keeps running instead of starting again.

Sustained, Strum **Once per key** and Glide do not follow the song position.

Phrases

A phrase is a part: a bass line, a sequence, a figure, drawn or loaded, sitting under one key. Choose the **Phrases** tab in **Your keys play** and each white key plays one.

Phrase sets and playing

A **phrase set** holds seven phrases, one for each white key and scale degree: C plays I, D plays II, up to B for VII. A black key plays the phrase of the white key below it. All seven phrases share one length.

Hold a key and its phrase plays and loops for as long as you hold it.

- A key in the octave C3 to B3 plays the phrase where it was written; an octave up plays it an octave up. **Octave** and **Key** come on top.
- Every note plays at the velocity written in the phrase. The dynamics are part of the phrase.
- One phrase plays at a time: the one of the key you pressed last. Letting go hands back to an earlier key still held.
- There is no **Motion** in Phrases.

Phrases run on the same clock as the patterns, locked to the song while your DAW plays.

When you move to another key, nothing is struck and nothing is cut. The old phrase's notes ring out to their own end, and the new phrase comes in with its next note. That is what makes phrases feel played and not triggered. Only a first key pressed into an already running loop catches up the notes that are under way, so a key pressed a moment late still plays its downbeat.

Expression

Each note of a phrase can carry three curves: **Bend** (pitch, up to 48 semitones either way), **Press** (pressure) and **Slide**. A set with expression plays each note on its own channel, so one note of a chord can bend while the others hold still. There is nothing to switch on. What **Press** and **Slide** do depends on the sound. A small violet dot on a degree card marks a phrase with expression.

The page and the editor

The top card has **Key**, **Octave** and **Phrase set**: click the name to open the library **Phrase sets**, or step through it with the carets. Under it are the seven degree cards, each with a tiny piano roll of its phrase. Click a card to select it; playing a key selects its card by itself.

The **Edit** card holds the phrase editor, which is **The Note Editor** with everything switched on. Its tools:

Tool	What it does
Expression	Shows and hides the expression lanes. Key E.
Draw	Draw mode. Key B.
Fold	Shows only the pitches the phrase uses. Key F.
Grid	1/4, 1/8, 1/16 or **Free**

Scale	On: notes and bends snap to your key's scale
Clear	Removes every note of this phrase

The editor shows the phrase in the key you hear, and while you hold keys it jumps to the phrase that is sounding. When the card is too short, Expression opens the editor over the whole page, with tabs **I** to **VII** and **Done**.

Every edit is heard at once and saved with your preset and session. An edited set's name gets an asterisk. The editor keeps its own undo, Cmd/Ctrl+Z and Cmd/Ctrl+Shift+Z.

Scale and saving

The page's scale is the only thing that sets the scale. A set loads in the page's scale, and picking another scale moves the loaded set: its own version for that scale if the library has one, else converted. Only pitches change; starts, lengths, velocities and expression stay.

Save phrase set... in the library saves the seven phrases now on the page, with a **Name**, **Type**, **Style** and **Description**. Moving through the library rows lets you play each set at once; leaving without a pick puts back what you had.

The Note Editor

One note editor serves the whole instrument. The **Phrases** editor and the **Generate** roll are the same editor with different parts switched on, so everything you learn here works in both.

Name	On a Mac	On Windows
Cmd/Ctrl	Cmd	Ctrl
Grid key	Cmd	Alt
Copy key	Option	Ctrl

The editor has a ruler across the top, a keyboard strip at the left, the note grid, and, when open, a lower lane. A note's fill is darker for a lower velocity; selected notes have a magenta outline. Click into the editor first so it has the keyboard focus.

Mouse on the grid

Gesture	Result
Double-click empty grid	Adds a note one grid step long. Keep the button down to stretch: sideways for length, up and down for velocity.
Double-click a note	Deletes it
Click a note	Selects it and plays it
Drag a note	Moves all selected notes, in time and pitch
Copy key + drag	Drags copies
Shift + click	Adds to the selection or takes out
Drag a note's right edge	Length of all selected notes
Drag a note's left edge	Moves the starts; ends stay
Grid key + drag a note	Up or down: velocity. Sideways: a free move off the grid.
Drag on empty grid	A selection box
Right-click	The menu

A note moved with the grid on snaps to a grid line or keeps its own offset from it, so a note played off the grid can keep its feel. **Two notes on one key never overlap, and the note you are writing wins.** Velocity by dragging is proportional across a selection, so the phrase keeps its shape; the velocity you end on becomes that of the next notes you add.

Draw mode

Press **B** to switch Draw mode on. Drag on empty grid to paint one note per grid cell; moving up or down inside a cell re-pitches it. Press on a note and drag to erase along that row. The menu entry **Draw with pitch lock** keeps painted notes on one key, for drawing rhythms.

Commands and keys

Command	Key
Undo, Redo	Cmd/Ctrl+Z, Cmd/Ctrl+Shift+Z
Select all	Cmd/Ctrl+A
Copy, Cut, Paste	Cmd/Ctrl+C, X, V
Duplicate (copies after its own end)	Cmd/Ctrl+D
Split at the pointer	Cmd/Ctrl+E
Join notes on one key	Cmd/Ctrl+J
Quantize starts / ends	Cmd/Ctrl+U / Cmd/Ctrl+Shift+U
Grid narrower / wider / triplet / Free	Cmd/Ctrl+1 / 2 / 3 / 4
Delete	Delete or Backspace
Pitch by a row / an octave	Up, Down / Shift + Up, Down
Move by a grid step	Left, Right
Length by a grid step	Shift + Left, Right
Draw mode / Fold	B / F
Zoom to selection (or fit all)	Z
Zoom time	+ and -
Cancel, then clear selection	Esc

The right-click menu also has **Chop** (2, 3, 4 or 8 parts), **Legato**, **Stretch x2**, **Stretch /2**, **Reverse**, **Invert**, **Fold to scale**, **Triplet grid**, **Zoom to selection** and **Fit all**.

Paste lands at the earliest selected note, or at the insert marker (the thin white line a click on empty grid sets). The clipboard is the system's, so you can paste into the other note editor and into another instance, expression included.

The editor keeps its own undo, up to 64 steps. One finished gesture or one command is one step.

Grid, fold and scale lock

The grid is set by the page's grid button or the keys above. **The Grid key inverts the grid for as long as you hold it**: with a grid on it bypasses the snap, on Free it snaps.

Fold to notes (F) shows only the keys that have notes, turning a five-octave grid into the rows your phrase really uses. **Scale lock**, the page's **Scale** button, tints the scale's rows and makes new notes, up and down moves and every bend land on the scale.

Zoom and scroll

The wheel scrolls the keys, Shift + wheel or a sideways swipe scrolls time, Cmd or Ctrl + wheel or a pinch zooms time, Option/Alt + wheel zooms the rows. In the ruler, drag sideways to pan and up or down to zoom; double-click it to fit all.

The lower lane

The lane opens with the page's lane button. Its tabs are **Bend**, **Press**, **Slide** and **Vel** (keys 1 to 4), with **Shapes** and **Clear lane** on the right.

In **Vel**, each note has a marker on a stem: drag it to set the velocity of all selected notes in proportion, or in Draw mode sweep across the lane.

Bend, Press and Slide are a curve per note, edited on the note in focus (the one you last clicked).

Gesture in the lane	Result
Click inside the note's span	Adds a point; keep dragging to move it
Drag a point	Moves it, snapping to the grid
Shift + drag a point	Only the value changes
Cmd/Ctrl + drag a point	Fine, and a bend free of the keys: any cent
Double-click or right-click a point	Removes it
Cmd/Ctrl + drag from the empty lane	A straight ramp
Draw mode on: drag	Freehand

The bend ring: a stretch between two different values has a small ring at its middle. Drag it to bend the stretch, so a slide can leave fast and settle, or hang and then drop. Double-click for straight. What you draw is what plays.

Bend on the grid

With the lane open on **Bend** and nothing folded, the note in focus shows its pitch line on the grid itself, where the pitch is. Each end of the note shows a dot: pull the end dot up or down and the note glides out there; pull the start dot and it slides in. Double-click the end dot for **Glide to next note**, the start dot for **Slide in from below**. Click on the line where it has left the notes to add a point.

Bends land in key. With scale lock on, every bend lands on a key of the scale or on the note's own pitch; without it, on semitones. Hold Cmd/Ctrl for any cent. Each key a bend lands on is played as it changes, so you bend by ear.

A bend is never out of reach: **Fit all** and **Zoom to selection** include the bends, and a point above or below the view gets an arrow marker you can click.

Shapes

Most expression is one of a handful of moves. **Shapes** in the lane header, or right-click then **Bend**, applies one to every selected note and the note in focus.

Shape	What it writes
Glide to next note	Bends into the next note's pitch, arriving as it starts
Slide in from below / **from above**	Starts one key away and rises or falls into the note
Fall off	Drops an octave over the note's last third
Vibrato	A wobble that starts after the attack and grows
Rise, **Drop**, **Swell**	Ramps on **Press** and **Slide**
Stronger, **Softer**	More or less of what is there, staying in key
Clear bend	Empties Bend

What each place switches on

	The Phrases editor	The Generate roll
Lanes	**Bend**, **Press**, **Slide**, **Vel**	**Vel** only
Bends and **Shapes**	Yes	No
Scale lock	The page's **Scale** button	Off; the scale's rows are marked
Empty editor reads	**Double-click to add a note - press B to draw**	**Hit Generate to write a melody - or double-click to draw one**

GENERATE - a melody written for you

Sometimes the sound is right, the chords are right, and the top line will not come. **Generate** writes one for you: a melody in your key, made for the sound you have loaded, looping with your song the moment it appears. If you like it, drag it into your DAW as MIDI. If you like half of it, keep that half and have the rest written again.

Choosing Generate

Generate is the fifth tab of **Your keys play** on COMPOSE. The page becomes much simpler: the top card shows **Key** and **Length**, and the rest is one melody card with a header, the note roll and a foot line. Choose any other tab and the melody stops at once.

Control	What it does
Generate	Writes a new melody. The one solid button on the page.
The arrows	Step back and forward through the melodies you have generated
Grid, Draw, Fold	The roll's tools, as in The Note Editor
Velocity lane	Opens and closes the velocity lane
Play	On: the melody loops. Off: your keys play the sound directly. Default on.
Drag MIDI	Drag the melody out as a MIDI file
Length	**2 bars**, **4 bars** or **8 bars**. Default 4 bars.

Length sets the loop and the next melody Generate writes. It does not rewrite the notes that are there.

The foot line describes the melody on screen in one sentence, such as **A bouncy bass line that climbs**.

What one press makes

One press writes one melody, as long as **Length** says, and starts playing it at once.

- **It is one line.** One note at a time, no chords.
- **It is in your key.** It is written in the page's key and scale.
- **It is written for the sound.** A bass sound gets a bass line, a pad a pad line, a pluck a pluck melody, each in the register the sound wants. None of that is a control. You press, you listen, you press again. Load another sound and Generate writes another kind of line.
- **It is never the same twice.**

Every melody is added to the end of the list behind the arrows, and your edits are kept in its place there.

The wand is for the melody that is nearly right. Select a part of the roll by dragging across the grid or selecting notes, and a wand pill appears on it in the ruler row. Click it and that part is written again, in the style of the melody and the register of the notes around it; everything outside stays untouched. Every click is a different idea, and the selection stays, so you can redo the same part until it sits.

Playback and editing

No key is needed. While Play is on and the roll holds notes, the melody loops by itself: locked to the song position while your DAW plays, running free at its tempo while it is stopped. While it runs it takes over the keys: the notes you play are set aside, but pitch bend, the mod wheel and the sustain pedal still reach the sound. A new melody takes over without a gap.

Switch **Play** off and your keys play the sound directly, so you can audition it by hand without leaving Generate.

The roll is the shared note editor with only the velocity lane. Notes are not snapped to the scale, so you can write a passing note outside it. Changing the page's key or scale moves the melody with it. The roll keeps its own undo: one Generate, one arrow click, one wand click or one edit is one step.

Drag MIDI gives a clip named after the key and scale, such as Melody C Minor, with your edits included. The melody, Play and Length are saved with your session and with a preset.

Hearing Things Inside Compose

Editing would be guesswork if you had to reach for the keyboard after every click. So most places on COMPOSE play what you touch. These previews go straight to the sound, need no DAW transport, and are not turned into chords, phrases, strums or arps.

Where	What sounds
A degree card, in Chords	The whole chord. In Phrases or Scale a click only selects.
The chord keyboard	A single click plays that key; a double-click adds or removes it
The phrase editor	The note you click or place
The scale map	A note you switch on
Strum, **Hear it**	The selected chord, strummed at the current speed
The strum strings	The string you pluck, as hard as you pluck it
The arp editor's Note lane	A row label or numbered cell
The Generate roll	A note you click or edit

SYNTH - building a sound

Everything that makes the sound is on one page. Read it from the top:

- **The generators** across the top: up to six sound sources, side by side.
- **Filter, Amp and Connections** in a row under them.
- **The sources bar**, one row of modulation sources you drag onto controls.
- **The Effects panel** along the bottom.

When you open an effect, the Effects panel takes the whole page, with the open effect standing on its row of tiles. Close the effect and the generators are back.

The generator area and the view strip

The generator area has three rows: the view strip, a header per generator, and the modules themselves, all the same height. A slim **+** card at the right end adds a generator. The area never scrolls: when the window is short, the pictures shrink first, then the trays get pages.

The view strip decides what you see, never what you hear. A hidden generator keeps playing. It holds a chip per generator, a **+**, and at the right **Sub**, **Noise**, **All** and **Focus**.

Gesture	What it does
Click a generator chip	Shows or hides that generator.
Double-click a generator chip	That generator alone on the page.
Click **Sub** or **Noise**	Opens or closes their controls at the right end of the row.
Click **All**	Every generator side by side.
Click **Focus**	The generator you touched last, alone. Click again to go back.

A hidden generator that is soloed wears a small headphones mark on its chip, so a solo you cannot see never surprises you.

Adding, changing and removing generators

The **+** opens **Add a generator**. Pick a type: **Oscillator**, **Wavetable**, **Instrument**, **Sample**, **Multisample**, **Granular**, **Spectral** or **Hyper**. A sound can have up to six.

The header over each module holds the type name (click it to change the type), a remove cross (click twice: the first click arms it), **Solo** (headphones, not saved with the sound) and the power switch at the far right, which is the generator's mute.

Each type keeps its own source and settings, so you can switch a Wavetable to Sample and back and the table is still there. Changing to or from **Instrument** empties the loaded instrument or map. **Start**, **End** and **Root** are shared by Sample, Granular and Spectral, so a change on one shows on the others.

Any generator can be removed, not only the last. The ones after it move up with everything they carry. Connections aimed at the removed one are deleted, and the whole removal is one undo step.

Inside a module

Every module is built the same way, from the top:

- **The source line**: what the generator plays. An Oscillator shows five wave tiles (a Dual style shows its Style, a Hyper generator its Mode); other types show the name of what is loaded. Click the name to open the browser; the two arrows step to the previous or next item.
- **The display**: the generator's picture.
- **The tabs** and one **tray** with the open tab's controls: **Main**, the type's own tab, **Unison**, **Warp**, **FM**, **Env**, **Drive**, **Output**.

A tab whose section is in use carries a dot in the generator's colour, so one look along the row tells you which parts are shaping the sound. A tab that cannot play on this generator is dimmed. A tab with more controls than fit gets pages: click the dots or swipe sideways.

Changing a value

Gesture	What it does
Drag a value cell	Right or up raises, left or down lowers.
Drag a knob	Up raises, down lowers.
Shift while dragging	Fine steps.
Double-click	Back to the default.
Right-click	The control card, where you type an exact value.
Drop a modulation source on it	Connects that source.

The mouse wheel never changes a value. A control that does nothing in the current setting stays dimmed and says why, for example **FIXED**, **NOT USED** or **ONE VOICE**.

Controls Every Generator Shares

Most of a generator is the same whatever it plays. This chapter covers the shared tabs once; the chapters after it cover what is different about each type.

Which tabs each type has

Type	Own tab	Warp	FM
Oscillator (single styles)	Oscillator	yes	yes
Oscillator (Dual styles)	Oscillator	no	no (on generator 2, **Ring 1×2** stays)
Wavetable	Wavetable	yes	yes
Sample	Sample	yes	yes
Multisample	none	yes	yes
Granular	Grains	no	generator 2 only, for **Ring 1×2**
Spectral	Spectrum	no	generator 2 only, for **Ring 1×2**
Instrument	none	no	generator 2 only, for **Ring 1×2**
Hyper	Hyper	no	generator 2 only, for **Ring 1×2**

Every type has Main, Env, Drive and Output. Unison is on all of them except the Dual styles (it reads ONE VOICE); Hyper has its own.

Main

The type's defining control comes first (**Position** on a Wavetable, **Density** on Granular, **Cross Mod** on a Dual style, the mode's two knobs on Hyper), then:

Control	What it does	Range and default
Octave	Moves the generator in whole octaves.	-4 to +4; default 0
Pitch	Tunes it. Drag for semitones, Shift for cents.	-48 to +48 st; default 0
Level	How loud it is.	-inf to +12 dB; default -1.9 dB

Unison

Unison plays several copies of the generator on every note, tuned and panned apart. It is the difference between one saw and a wall of them.

Control	What it does	Range and default
Unison	How many voices play each note.	1 to 16 (Spectral up to 8); default 1

Detune	How far the voices are tuned apart.	0 to 100 %; default 20 %
Spread	How far they spread across left and right.	0 to 100 %; default 50 %
Blend	The outer voices against the centre.	0 to 100 %; default 75 %
Stack	Tunes some voices to other intervals, such as Octave or Fifth.	default Off
Range	How many semitones the outer voices reach at full Detune.	0 to 48; default 2
Curve	Where the voices sit between the outer two.	Even, Super, Clustered, Wide, Random
Table Spread	Wavetable only: each voice reads its own place in the table.	0 to 100 %; default 0 %

Start with **Unison** and **Detune**. Reach for **Range** when Detune at 100 % is still not wide enough. **Table Spread** makes unison sound like several different waves at once.

Warp

Warp bends how the wave or sample is read, so one source gives many tones without a filter. It is on Oscillator (single styles), Wavetable, Sample and Multisample.

Control	What it does
Phase	Where each note's cycle starts: **Random**, **Restart**, **Free Run**, or **Auto** (Random on oscillators, Restart on samples).
Phase Offset, **Random Depth**	The starting point, and how far Random strays from it.
Warp, **Warp Amount**	The first warp and how strongly it bends.
Warp 2, **Warp 2 Amount**	A second warp after the first.
Gritty Warp	Wavetable only: brighter and harsher, with aliasing.

The Warp list holds only what sounds on the type you are on. It falls into four families: wave warps that change the shape of the cycle (Hard Sync, Bend, PWM, Skew, Mirror, Cycle, Steps, Sine Bend and more), fourteen distortion curves from Tube Clip to Saturate, Amp Mod and Ring Mod from another source, and **Warp 2**, which puts a second one after the first.

FM

FM lets another source push this generator at audio rate. A little adds bite to the attack; a lot turns a plain wave into bells, growls and metal.

Control	What it does
FM Source	Another generator, itself, the Noise or the Sub.
FM Amount	How strongly.

FM Mode	**Phase**, **Linear**, **Exponential**, **Phase Distort** and two more.
Depth Range	**Deep** gives a much deeper range on Phase and Phase Distort.
2nd Mod Source, **2nd Mod Amount**, **2nd Mod Type**	A second modulating source beside the first.
Hard Sync	Generator 1 only, as an Oscillator: turn it up for the classic sync sweep.
Ring 1×2	Generator 2 only, on every type: generator 1 multiplied by generator 2, for metallic, bell-like tones.
Global FM	Adds FM to every generator at once.

Global FM is the one to put on a macro: one knob that makes the whole sound more aggressive, however many generators it has.

Env

The Env tab gives one generator its own envelope and its own filter, before it meets the others. Use it when one layer should behave differently: a pluck that dies under a pad that holds, a click layer with its own high pass. A switch in the tab's caption turns it on; it is off by default.

It has **Attack**, **Hold**, **Decay**, **Sustain**, **Release** with a curve for each stage, **Envelope Style** (**Synth**, or **Natural Decay**, which falls the way a recording dies away), and a **Filter** (Low Pass, High Pass, Band Pass, Ladder Lite, Notch, Peak) with **Cutoff**, **Resonance** and **Drive**. Drag the handles on the envelope picture or the values under it.

Drive

The generator's own distortion, on this layer alone. Distorting one layer of a chord sound keeps the others clean, which a drive in the Effects panel cannot do. Switch it on in the caption, then pick **Type** (Soft Clip, Hard Clip, Tube, Diode, Wavefold, Round, Bitcrush), **Amount** and **Mix**.

Output

Output is where a generator leaves its module.

Control	What it does
Low Cut, **High Cut**	Remove lows or highs from this generator, each with its own slope.
Pan	Left to right.
Filter	Which main filter it goes through: **Filter 1**, **Filter 2**, **None** or **Both** (with **Balance** between them).
Effects	Where it goes after the filter: **Main**, **Sends Only**, **Gain Shaper Only** or **None**.
Bus 1, **Bus 2**	How much also goes to the two effect buses.

Key Low, **Key High**	The key range it plays in.
Velocity Low, **Velocity High**	The velocity range it plays in.
Velocity Track	Sample, Multisample and Granular: how much velocity sets the level.

Sends Only takes the layer out of the main mix so you hear it only through the buses. **Gain Shaper Only** keeps a layer pumping with the rest while every other effect leaves it alone. **None** adds it after the effects. Picking one of these sets Filter to None; picking a filter sets Effects back to Main.

Key Low and **Key High** turn one sound into a split: a bass layer below a key, a lead above it. The velocity range does the same by how hard you play, so a layer can come in only on accents.

Oscillator

The classic source: a saw, a square, a triangle or a sine, or a wave that morphs between them.

The wave and the Oscillator tab

The five tiles on the source line pick the wave: **Saw** (bright and buzzy), **Square** (hollow), **Triangle** (soft), **Sine** (pure) and **Morph**, which sweeps from ramp to square with one knob. Drag up or down on the display to set **Pulse Width** (named **Morph** on the Morph wave).

Pitch Track off plays one fixed pitch whatever key is held. **Pitch Ratio** (x0.25 to x64) and **Freq Shift** (-1000 to +1000 Hz) matter most when this generator is an FM source: Pitch Ratio sets the harmonic relation, Freq Shift detunes it into slow beating or clang.

The styles

Style	What it is
Clean	The clean oscillator: every wave, warp and FM.
Vintage	A warm, lively analog oscillator (saw, square, triangle).
DCO	Steady pitch, no drift.
Acid	For acid bass lines: a sagging saw and a square that narrows as it climbs.
Dual Classic	Two analog oscillators with cross mod and hard sync.
Dual Digital	Two digital oscillators, seven wave types, ring mod.

Vintage and Acid only do what they were built for. Ask for something outside that, such as a Sine or FM, and the generator plays as Clean; the list then reads **Vintage (plays Clean)** or **Acid (plays Clean)**.

The Dual styles

A Dual style turns the generator into two oscillators. Unison, Warp and FM do not apply. Both share **Hard Sync**, **Osc 2 Tune**, **Osc Mix**, **Cross Mod** and **Drift**.

Dual Classic adds **Tone** (Pure, Warm, Rough), chip rows to mix the waves of each oscillator, and **Pulse Width**. **Dual Digital** picks a wave for each oscillator (Saw, Multi Saw, Pulse, Triangle, Tri Wrap, Feedback, Noise), with two knobs named by the wave, plus **Raw** and **Ring** switches.

The classic sync lead is here: **Hard Sync** on, **Osc Mix** towards Osc 2, and an envelope or LFO on **Osc 2 Tune**.

Wavetable

A wavetable is a row of single-cycle waves. **Position** moves through the row, and moving it while a note sounds is what gives a wavetable its motion: put an envelope or an LFO on Position and the tone changes from one wave to the next.

Choosing a table and the Wavetable tab

Click the name on the source line to open the **Wavetables** browser: 16 built-in tables and every table in your library. Moving through the rows loads each one so you can play it; closing without picking puts the previous table back.

Control	What it does
Position	Where in the table the generator reads.
Frames	**Smooth** glides between waves, **Step** jumps.
Reverse	Plays the table back to front.
Pitch Track, **Pitch Ratio**, **Freq Shift**	As on the Oscillator.
Edit Table...	Opens the wavetable editor.
Use Built-in	Drops your own table and goes back to the built-in one.

The display shows all frames (Waterfall) or the one sounding now (Single Frame); click the icon at its top right to switch. Drag sideways on it to set Position.

The Wavetable Editor

Edit Table... opens a sheet where you draw a wave by hand, shape its harmonics, and build a whole table from a shape, a formula or a recording. **Every edit is heard at once** on the generator while you play. A table you edit becomes the generator's own, and the source line reads **Custom table**.

The editor has four areas:

- **Wave**: the selected frame, large. Draw with **Draw**, **Line**, **Curve** or **Smooth** (keys 1 to 4). **Snap** locks the pen to 8 to 64 steps; Shift ignores it.
- **Harmonics**: the frame's overtones as bars. Drag to set them, right-click to silence one. Switch to **Phase** to turn them.
- **Table**: the whole table in 3D (**Waves**), or as a map you paint on (**Spectrum**). One stroke there reshapes many frames at once.
- **Frames**: a strip of thumbnails. Click to select, Shift-click for a range, drag to move, right-click for Duplicate, Delete, Fill and Reverse.

The editor's buttons

Button	What it does
Undo, **Redo**	Up to 200 steps.
Duplicate, **Delete**	Copy or remove the selected frames.
Fill Between	Fills the frames between the two ends of a selected range.
Generate	A basic shape for the selection, a whole 64-frame table (Saw to Square, Pulse Width, Hard Sync, FM Bell, Vowels, Wavefolder and more), or **Write a formula...**
Import	A wavetable .wav file, or **Any audio (follows its pitch)**, which cuts single cycles out of any recording.
Process	Normalise, Smooth, Brighter, Darker, Odd or Even harmonics only, and for the whole table **Equal loudness across frames**, **Sort by brightness**, **Ping-pong** and more.
Revert	Back to the table as it was when the editor opened.
Export	Saves the table as a .wav file.

Fill Between is how most tables are made by hand: draw a first frame, duplicate until the table is as long as you want, draw the last frame, select from first to last, and fill. **Any audio** turns a vocal note or a bass note into a playable table.

Hold to hear plays one note for as long as you hold it; with **Hear Frame** on it plays the frame you are editing. You can also simply play your keyboard. Keys: 1 to 4 tools, Left and Right step frames, Z undo, D duplicate, M fill, N normalise, Esc drops a range selection, or closes the editor when there is none.

Sample

One recording, played across the keyboard: a one-shot, a loop, a vocal chop. Load it, set where it starts and ends, loop it if it should hold, and play it like any other generator.

Loading a sample

Click the name on the source line, or the empty display, to open the **Samples** browser. Moving through the rows loads each sample so you can play it. A row's play button plays the file itself without loading it.

You can also drop an audio file (.wav, .aif, .aiff, .flac, .mp3, .ogg) straight onto any generator. A Sample, Granular or Spectral generator takes it as its sample; any other type is switched to Sample. A card on the display says what will happen before you let go. The file is copied into your library, so the sound survives when you move the original.

The Sample tab

Control	What it does
Quality	Eco, Normal or High: how cleanly the sample is pitched across the keys.
Root	The note at which it plays at its recorded pitch.
Key Track	Off: every key plays the recorded pitch.
Slice	Each key plays one hit of the sample (see **How Sampled Sounds Behave**).
Normalize	On: a common loudness. Off: its own level.
Speed	The read speed; 0 stops, below 0 plays backwards.
Start, **End**	Where each note begins and stops.
Loop, **Loop Start**, **Loop End**, **Loop Fade**	The loop, and a fade so its seam does not click.

A modulation source on **Start** is worth trying early: with velocity or a random source on it, every note begins at a different place in the recording.

Drag the markers on the display to set Start, End and the loop. **Edit Sample...**, or a double-click on the display, opens the **Sample Editor**: the same markers on a large waveform you can zoom with Cmd/Ctrl + wheel. Its footer has the loop pill (**Off**, **Loop**, **Ping-Pong**, which hides a seam that will not loop cleanly one way), **Click-free Snap** and **Loop Fade**.

Multisample

A Multisample is your own instrument made of several recordings: a different sample for different keys and velocities. Pack instruments belong to the **Instrument** type; a Multisample is always yours.

Click the name or the display to open **My Multisamples**. Main, Unison, Warp, FM, Env, Drive and Output work as on every generator.

The Zone Editor

Edit Zones... at the bottom of the browser opens the zone editor. A zone is one recording with the keys and velocities it plays on. Every change is applied at once.

Button	What it does
Add Files...	Each file becomes a zone. Its root is read from a note name in the file name: Piano_C3.wav gets C3.
Auto-Map	Gives every zone the key range around its root.
Clear	Removes every zone (click twice).

The fast way to build an instrument: name your files with their notes, **Add Files...**, **Auto-Map**, and check the Root column.

The options **Normalise samples**, **Trim quiet tails** and **Fill missing keys from nearest recording** are on by default. In the zone list, set **Low vel** and **High vel** to stack recordings on the same keys, soft over loud. **Edit...** on a row opens the zone's **Gain**, **Tune**, trim, loop, and **Round robin**, where zones take turns on repeated notes.

Granular

Granular plays a recording as a cloud of tiny pieces, the grains. Play many at once, from one place or a place that moves, and a half-second sound becomes an endless pad, a texture, or a time stretch that keeps its pitch. The source is a sample from the browser or a file you drop on it.

Start From

The fastest way in. **Start From**, at the top of the **Grains** tab, sets all the grain controls to a starting point and keeps your sample: **Pad**, **Cloud**, **Texture**, **Stretch** or **Freeze**. Change anything and it reads **Custom**.

The Grains tab

The controls you need less often are behind **More...**. Folded with some of them set, it reads **More (N set)**, so nothing that shapes the sound is hidden without a sign.

Group	Main controls
Density	**Density**, counted per second, synced to the tempo, or as grains at once (**Density Mode**).
Length	**Length** of each grain, in time, synced, or relative.
Grain Shape	**Shape** (Bell, Round, Needle, Pluck, Swell and more) and **Fade**.
Playback	**Freeze** on holds the grains at **Position**; off, a read point moves through the sample at **Speed**, or once per **Sync** length.
Loop	Off, Forward, Reverse, Ping-Pong or Fade Out, with its ends and fade.
Random	**Spray**, **Pitch**, **Pan** and **Backwards**: how much each grain differs from the last.
Grain FX	An effect inside every grain: filters, the distortion curves, FM, Amp Mod or Ring Mod.

The Random group is what makes a cloud sound alive instead of mechanical.

On Granular the Unison tab adds **Timing** (when each voice starts its grains), its own **Stack**, and **Pos Spread**, which spreads the voices' read points across the sample.

The display and Region Editor

The display draws the waveform, the region and the grains playing right now. Drag the handles to set Start and End. With Freeze on, drag elsewhere to set Position; Shift + drag up or down sets Spray. Double-click opens the **Region Editor**, a large view of the region.

With Freeze on, dragging across the display while you hold a chord is an instrument in itself: you play the recording by hand.

Spectral

The Spectral generator takes a recording apart into its frequencies and rebuilds it as you play. That frees time from pitch: freeze a sound at one instant and hold it as a chord, play a recording at a tenth of its speed at any pitch, and reshape what it is made of.

The Spectrum tab

Play: **Freeze** on holds the sound at **Position**; off, it plays through at **Speed** (100 % is its own speed at any pitch, below 0 backwards) or in a set number of bars with **Sync**. **Start**, **End**, the **Loop** and **Root** work as on Sample.

Spectrum FX: two effects in series that work on the frequencies themselves, each with an amount and, on some effects, a second knob named by the effect. They come in five groups: PITCH (Pitch Shift, Freq Shift, octaves), HARMONICS (add harmonics or subharmonics, move them), FILTER (Comb, Endless Comb, Vowel, Gate and more), TEXTURE (Smear, Robotize, Swirl, Stretch, Mirror), and SOURCE (Mask, Vocode, PD), which work from another generator you pick as **FM Source**.

Curve: a gain shape you draw across the spectrum, with **Amount**, **Move**, **Low Cut**, **High Cut** and **Reset Curve**. A source on **Move** slides your whole drawn shape through the spectrum, which no ordinary filter can do.

Character: **Keep Attacks** plays the attacks as they are even at slow Speed. **Keep Formant** keeps the character of a voice when it is played higher or lower, and **Formant Shift** moves the character without changing the pitch. **Shimmer** sets how much a frozen sound moves. **Boost** adds level.

Drawing on the display

The display shows the spectrum with a timeline under it. Double-click to add a curve point, drag points to move them, drag the dot in a segment's middle to bend it, double-click or right-click a point to remove it. Shaping the curve always turns it on. Drag the cut edges to set Low Cut and High Cut. With Freeze on, drag on the timeline to set Position.

Instrument

An Instrument is one of my sampled instruments, chosen by name and played as it is: a piano, a guitar, strings, a sampled synth. Nothing to map. For your own sample maps, use **Multisample**.

Click the name or the display to open the **Instruments** list of your installed packs. Moving through the rows loads each one. If a sound uses an instrument from a pack that is not installed, the source line still shows its name, so you know what is missing.

An Instrument has **Main**, **Unison**, **Env**, **Drive** and **Output**. Everything after the generator still applies: filters, amp envelope, modulation and effects. With unison, its own envelope, a filter sweep and the effects rack, an Instrument is a long way from the raw recording.

Storage, in Output, decides where the recordings live: **Auto** plays smaller instruments from memory and streams bigger ones from disk, **RAM** always uses memory, **Disk** always streams. The display's status line shows which, and counts any **Dropouts**.

A deep instrument chooses among many recordings for every note: by key and velocity, with crossfading layers; by round robin, so repeated notes do not sound identical; by keyswitches on instruments that have them; and with release samples that play when you let go.

Hyper

Hyper is seven kinds of oscillator in one generator, each built around a wave you choose from 49, with up to nine voices that play in unison or as a chord. One held key can be a stacked minor ninth of detuned FM voices.

The modes

The Mode stands on the source line. Each has two knobs of its own, the first two controls on Main.

Mode	Knob 1	Knob 2
Shape	**Pulse**	**Width**
Noise	**Filter**	**Resonance**
FM	**Amount**	**Ratio**
Sync	**Shape**	**Sync**
Pulse Saw	**Saws**	**Width**
Hard FM	**Amount**	**Ratio**
Formant	**Vowel**	**Shift**

The Hyper and Unison tabs

The Hyper tab picks the **Wave** (Sine, Curve, Bass, Keys, Bow, Voice, Metal and more), **Wave Mix** (how much of it is mixed into the mode's sound), **Phase**, **Free Phase**, **Invert** and **Follow Keys**.

Hyper's own Unison tab has **Voices** (1 to 9), **Detune**, **Density**, **Stereo Width** and **Stack**, which tunes the voices to octaves or a chord: Major, Minor, Maj 7, Min 9, Sus 4, Fifth and more.

Stack is the reason to reach for Hyper: with the voices on a chord, one key plays that chord, and Detune and Stereo Width still work on top of it. Hyper has its own **Pan** in Output.

How Sampled Sounds Behave

Recordings are not oscillators. A recording has a pitch it was made at, a length, and an attack that only happens once. On Multisample and Instrument generators I built two behaviours around that, so sampled sounds play like instruments instead of like tape. Neither has a control.

Glide follows the recordings

On a Multisample or an Instrument, a gliding note plays the recording that belongs to the pitch it is at. While the glide moves, it hands over from one recording to the next with a short crossfade, so no recording is bent too far and a slide over three octaves is never a thin, chipmunked low note. The incoming recording does not strike again: a slide keeps decaying as one note, with no second pluck. A **Sample** generator has one recording, so glide simply bends it.

Held notes keep sounding

Many sustained recordings are one take with no loop: hold the key longer than the take and it would stop. So every recording without a loop of its own is checked, and if it is a sustained sound, a loop is placed in its steady part. A held note keeps sounding as long as you hold it, and when you let go the recorded release plays. Sounds that die away by themselves, such as a piano, a pluck or a bell, are left as recorded. A loop you set yourself in the zone editor is used instead.

Slices

Slice, on the Sample tab and behind **More...** on the Grains tab, turns a loop or a phrase into a kit. Each key plays one slice at its recorded pitch, starting on C1 and going up, black keys included. Drop a drum loop on a generator, switch **Slice** on, and the hits are laid out ready to be replayed in another order.

Filter, Amp, Sub and Noise

Everything a generator makes passes through here before the effects: two filters that shape the tone, the amp envelope that shapes the volume of every note, and the Sub and Noise, which add weight and air.

The row and how it folds

The **Filter**, **Amp** and (on a wide page) **Connections** cards stand in one row under the generators. Click a card's header (on the Connections card, its chevron) to fold it; beside an open card it becomes a narrow strip with a summary at its foot, such as "Low Pass 24 dB" or "Poly R 200 ms". Click a folded card to open it. The slim rail left of the Filter card folds the whole row in one click, and the next click brings it back exactly as it was.

The Filter card

The Filter card holds two filters. **Filter 1** always runs. **Filter 2** has a power switch at the far right of its tab; while it is off its controls stay editable, so you can set it up first.

Which sound goes into which filter is chosen at the source: each generator in its Output section, the Sub and the Noise in their own **Filter** choice.

The screen shows the live spectrum of the instrument as a grey fill, the curve of the filter you are editing in bright colour with a handle at the Cutoff, and the other filter as a quieter line. Drag sideways for **Cutoff**, up and down for **Resonance**; **Shift** + drag edits the other filter. When modulation moves the filter, the bright curve shows what you hear, and a strip along the top edge shows each Cutoff connection's whole reach, so you can read a sweep before you hear it.

Control	What it does	Range and default
Type	The kind of filter (below).	default Low Pass
Slope	How steep it is, on the types that use it. Otherwise it reads **Fixed** or **Not used**.	6 to 24 dB; default 12 dB
Cutoff	Where the filter starts to act.	20 Hz to 20 kHz
Resonance	Boosts the sound around the cutoff; high values ring.	0 to 100 %; default 11 %
Drive	Pushes the sound harder into the filter, for warmth and grit.	0 to +29.5 dB
Mix	Filtered against unfiltered.	default 100 %
Key Track	How much the cutoff follows the key. At 100 % one semitone per semitone, centred on C3.	default 0
Character or **Flavour**	The type's extra control or its named variants.	per type
Filter FM, **Feedback**	On eight analog types: Generator 1 moves the cutoff at audio rate, and the filter's output is fed back for grit.	

Amp Env	Off: the filter's output plays at full level for the whole note.	default On

On the wide card the cells sit on two pages; page 2 holds **Goes to** and **Amp Env**.

Filter types

The **Type** list has four sections. Both filters offer the same list.

- **Clean**: precise, neutral filters for everyday shaping. Low Pass, High Pass, Band Pass, Notch, Peak, Ladder Lite (one to four poles) and Glass.
- **Creative**: filters that are closer to effects. Combs (Comb, Multi Comb, Tuned Comb, Delay Comb), flangers, vocal ones (Talk, Vowel), Morph (low pass through band pass to high pass), Acid, Lo-Fi, Ring Mod, Sample & Hold, Hold Grit, Diffuser, Resonant Room and Drive Fold. **Extended** holds a whole second collection of 106 filters, chosen with **Mode** in Slope's place: low and high passes, morphs, combs, flangers, phasers, EQ shapes, ladders, vowels and character filters.
- **Analog**: filter circuits, saturation and all, for warmth and character. Ladder, Cascade, Poly Cascade, the Smooth and Growl types, Shaped Notch and Band, Gentle HP, the Acid, Squelch, Clean, Thin, Cream and Pole Ladders, the Classic LP, BP and HP, and the aggressive Snarl.
- **Dual**: two filter sections in one, such as LP + HP, LP + Peak, Twin Peak or Twin Notch. The second sits at **Second Cutoff**, which takes the Character cell's place.

On **Ladder Lite** and **Squelch Ladder** the Cutoff names the frequency where the filter rings, so the number you read is the note you hear. A **Flavour** is a named variant of the type, such as Clean or Warm on the Classic types.

The two filters and their routing

Goes to, on the Filter 1 tab, sets where Filter 1's output goes:

Goes to	What it means
Output	Side by side: each filter shapes only what is sent to it. A fresh sound starts here.
Filter 2	In series: Filter 1 runs through Filter 2 as well.
FX Sends Only	Filter 1 is heard only through its **Bus 1** and **Bus 2** sends.

Side by side is for layering: a bright generator through a high pass on Filter 2, a bass generator through a low pass on Filter 1. In series is for stacking: a low pass into a comb, or two slopes on the same sound.

Quality, in Global, sets how accurately Ladder, Cascade, the Smooth, Growl and Shaped types and Gentle HP work out their circuits: **Eco** saves CPU, **High** is the most accurate and renders the whole voice at twice the sample rate. An offline bounce always uses the top accuracy.

The Amp card and envelope

The Amp card shapes the volume of every note. Its header holds the voice mode chip, **Glide** and a magnifying glass.

The picture is the envelope itself, and the fastest way to shape it. Drag the handles sideways for **Attack**, **Hold**, **Decay** and **Release**, and the Decay handle up and down for **Sustain**. Drag the small ring in the middle of a slope to bend that stage; double-click it to straighten it. While a note sounds a dot runs along the envelope. **Fit** keeps the envelope filling the picture.

Control	Range and default
Attack	0 to 5 s; default 5 ms
Hold	0 to 5 s; default 0
Decay	0 to 30 s; default 100 ms
Sustain	0 to 100 %; default 80 %
Release	0 to 30 s; default 200 ms

The envelope can also run in note lengths of your song, or be a shape you draw; both are set on its card in **Modulation**.

The magnifying glass opens the **Envelopes** sheet: the same picture large, with tabs for **Amp**, **Env 2**, **Env 3** and **Env 4**, and all eight values including **Attack Curve**, **Decay Curve** and **Release Curve**. Below 0 a curve is faster and snappier; above 0 it is slower.

Glide and How Notes Play

Glide is the time a new note takes to slide from the last one, 0 to 8 s. It works in every voice mode. Raise it from **Off** and glide switches on.

Press the voice mode chip for **How Notes Play**:

Control	What it does
Poly / Mono / Legato	**Poly** plays chords. **Mono** plays one note at a time and restarts the envelopes. **Legato** does not restart them while a key is held, so a tied note only changes the pitch.
Polyphony	How many notes sound at once; default 16.
Glide When	**Always**, or **Overlap**: only notes played before the last was let go.
Glide Sync, **Synced Glide**	Glide over a note value at the song's tempo.
Repeat Notes	In Poly: **Stack** a new note on a ringing one, or **Retrigger** it.

A bass or a lead usually wants Mono or Legato with a little Glide and **Glide When** on **Overlap**: notes you play apart stay clean, notes you tie slide.

How much velocity changes loudness and tone is set in **Global**, under **Keys**.

Sub

The Sub is a simple oscillator below the note, for weight. It saves you a whole generator when all you need is a solid bottom.

Sub and Noise stand in a column beside the generators. Click a head to open or fold it, **Alt** + click to open it and fold the other, and click the lamp to switch it on (the Sub then starts at -12 dB).

Control	What it does
Wave	Square, Sine, Saw, Triangle, Pulse or Round Rect.
Octave	-4 to +2; default -1.
Level	How loud it is.
Notes	**Every Note**, **Lowest Note** (one sub under a chord) or **Bass** (the bass of the chord set or phrase).
Filter, **Effects**	Its route, as on a generator's Output.
Pitch, **Pan**, **Amp Env**, **Bus 1**, **Bus 2**	On page 2.
Key Low, **Key High**, **Vel Low**, **Vel High**	Where it plays.

For a chord sound, **Lowest Note** is the setting I reach for: one sub under the whole chord, the way a bass player would do it, instead of a sub under every finger. The key limits let it play only under the low octaves and not under a lead line.

Noise

The Noise adds air to a pad, a breath at the start of a pluck, hiss under a lead. Its lamp switches it on at -18 dB.

Control	What it does
Color	White, Pink, Brown, or Geiger (sparse clicks, with **Rate**).
Mode	**Hold** plays as long as the note; **One-Shot** fades out over **Decay**.
Level, **Pan**	How loud, and where.
Tilt	Darker to the left, brighter to the right.
Width	Mono to fully stereo.
Low Cut, **High Cut**	Trim the noise.
Pitched	A resonant band that rings at the note's pitch.
Filter, **Effects**, **Amp Env**, **Bus 1**, **Bus 2**, key and velocity limits	As on the Sub.

A One-Shot noise with a short Decay is the classic way to put a click or a breath on the front of a note. Raise **Pitched** and the same burst takes on the note's pitch.

Global - voice and instrument settings

Global holds what every note and voice of the sound share. Open it with the word **Global** at the right end of the sources bar. On a wide page it opens as a card over the Amp and Connections cards; on a narrower page it opens in the right-hand column.

Keys

Control	What it does	Range and default
Bend Range	How far the pitch wheel bends.	0 to 24 st; default 2
Transpose	Moves every played note before anything else sees it.	-48 to +48 st; default 0
Pitch	Tunes the whole sound, every generator and the Sub.	-48 to +48 st; default 0
Velocity > Volume	How much velocity changes loudness.	default 100 %
Velocity > Tone	Softer notes sound darker.	default 0

Transpose and Pitch are not the same thing. Transpose plays other notes, and everything that depends on the key follows; on sampled generators it picks the samples that belong to those notes. Pitch keeps the notes and bends the whole sound up or down.

Voices and Time

Drift (default 25 %) is a slow random wander in each voice's pitch, for an analog feel. **Voice Variance** gives every voice its own small, fixed differences in pitch, shape and cutoff, like the parts of an old polysynth. Drift moves; Voice Variance stands still.

Envelope Times and **LFO Times** (x0.10 to x10.00) scale every envelope stage and every LFO at once. They are the quickest way to make a whole sound tighter or lazier: pull **Envelope Times** down for a snappier pluck, push **LFO Times** up to slow every movement together.

Output and Setup

Control	What it does
Low End	**Flat**, **Boost** for weight, or a cut that trims the lows.
Soft Clip	Rounds off peaks at the very end.
Volume Mod Max	How far a modulation connection to the Amp can lift a voice.
Quality	**Eco** is lightest on your computer, **High** renders every voice at twice the sample rate, **Auto** does that only while the sound has an Oscillator or Wavetable generator with level. Default Normal.
MPE	Switches MPE on.

Tune A4	415 to 466 Hz; default 440 Hz.
Load..., **Clear**	Load a tuning file (.tun or .scl), or go back to standard tuning.

MPE

MPE lets a controller bend, press and shape each note by itself. With **MPE** on, channel 1 bends everything with **Bend Range**, and channels 2 to 16 each carry one note with its own pitch bend of up to 48 semitones, its own pressure (the **Aftertouch** source) and its own CC 74 (the **Slide** source). Route them like any other source. The instrument also switches MPE on by itself when the incoming MIDI announces it.

Both Filters

This heading appears only while the Sub or the Noise has its **Filter** on **Both**. **Sub Filter Balance** and **Noise Filter Balance** share that source between the filters: -100 is all Filter 1, +100 all Filter 2. Both accept a modulation source, so a sound can cross from one filter to the other with a macro or an LFO.

Volume

Volume is the whole sound's output level, -60 to +12 dB, default -6 dB, with the output meter beside it. It does not take a modulation source; to move loudness with a source, connect it to the **Volume** target in the **Voice** section of the target list.

Accent

Accent is a modulation source made for acid lines: notes you play hard become accents, and each accent fires a short sweep you can route to the cutoff or anything else. **Threshold** (default 100) sets the velocity that counts as an accent. **Sweep** sets its shape: at 0 a plain decay, at 100 % a climbing one where accents that follow each other closely stack up across notes.

Modulation

A sound that stands still gets boring fast, so almost every knob and value on the SYNTH page can be moved by something else: an envelope, an LFO, a macro, how hard you play. One source moving one control is a connection, and a patch holds up to 64 of them. You never set an abstract depth: every connection shows where the source takes the control, in the control's own unit, and you drag or type that value.

The sources

Every source list on the page shows the same sections in the same order.

Section	Sources
Envelopes	**Amp Env**, **Env 2**, **Env 3**, **Env 4**
LFOs	**LFO 1** to **LFO 10**
Macros	**Macro 1** to **Macro 8**
Playing	**Velocity**, **Key Track**, **Mod Wheel**, **Random**, **Aftertouch**, **Unison**, **Note**, **Slide-**, **Release Vel**, **Note Bend**
Generators	**Gen 1 Audio** to **Gen 3 Audio**, **Sub Audio**, **Noise Audio**, and the **Audio Late (Hyper)** sources
Other	**Fixed**, **Follower**, **Accent**

The ones you will use most:

- **Velocity**: how hard you hit each key. Harder notes move the control further.
- **Key Track**: the note you play, centred on C3, rising above it and falling below it.
- **Mod Wheel** and **Aftertouch**: your controller's wheel and key pressure. With MPE on, Aftertouch is each note's own pressure.
- **Random**: a new random value for every note, to vary a control from note to note.
- **Unison**: a different value for each unison voice. It reaches a generator's Detune and Spread only.
- **Gen 1 Audio** to **Gen 3 Audio**, **Sub Audio**, **Noise Audio**: a generator's own sound at audio speed, for growly, FM-like movement.
- **Follower**: follows how loud the instrument's sound is as it enters the effects rack.
- **Accent**: notes played at or above a velocity you set fire a short falling sweep, and accents in a row climb higher.

Each kind of source has its own colour, and that colour marks everything it does on the page: envelopes gold, LFOs steel, velocity ember, key track teal, mod wheel lagoon, random moss, macros violet.

One way and two ways

A source that runs from 0 to 1 moves a control **one way**: its range starts at the control's setting and goes in one direction. Envelopes, macros, velocity and the mod wheel work like this. A filter envelope is the classic case: the Cutoff knob is where the filter rests, and the envelope opens it from there.

A source that runs from -1 to +1 moves a control **two ways**: the setting is the middle and the range reaches to both sides. LFOs, Key Track, Random and the audio sources work like this. A vibrato is the classic case.

You can switch this per connection with **Both ways** in the connection's menu. An LFO's own **Min** and **Max** also decide its reach: with **Min** at 0 % the LFO only pushes upward.

Envelopes

There are four envelopes: the Amp envelope, which shapes the level of every note, and **Env 2**, **Env 3** and **Env 4**, which are free to move anything.

- **Mode**: **ADSR** is the classic envelope. **Drawn Once** plays a shape you draw once and holds its end; **Drawn Loop** repeats it.
- **Tempo Sync** switches the times from seconds to note lengths at your song's tempo.
- **Attack**, **Hold**, **Decay**, **Sustain**, **Release**: the stages. Attack and Hold go up to 5 s, Decay and Release up to 30 s.
- **Attack Curve**, **Decay Curve**, **Release Curve** bend each stage, -100 % to +100 %. Below 0 a decay drops fast first and sounds snappy; above 0 it holds before falling.
- In a Drawn mode, **Length** sets how long one pass through your shape takes.

On the envelope picture you drag the handles: the end of the rise for Attack, the Decay handle sideways for its time and up and down for Sustain, the Release handle for the release. Drag the ring in the middle of a sloped stage to bend it, and double-click the ring to make it straight. A readout beside the handle says what you are setting. The picture's time scale follows the envelope by default (**Fit**); drag or scroll the time readout to set it yourself.

The magnifying glass in the Amp card's header opens the **Envelopes** sheet: the picture at full size, with a tab per envelope. **Sync and shapes** takes you to that envelope's card.

Every stage can itself be moved by a source. In Global, under Time, **Env Times** scales the times of all four envelopes at once.

LFOs

Ten LFOs, **LFO 1** to **LFO 10**, each with its own card.

- **Rate**: how fast it runs, in Hz, or as a note length with **Tempo Sync** on.
- **Shape**: **Sine**, **Triangle**, **Saw**, **Square**, **Random Steps**, **Custom** (a shape you draw), and the chaos shapes, which wander without repeating.
- **Mode**: **Loop** repeats, **One-Shot** plays one cycle and holds its end.
- **Phase**: where in its cycle it starts.
- **Delay** and **Fade**: how long after a note the LFO starts, and how long it then takes to reach full strength.

- **Min** and **Max**: the lowest and highest value it reaches. Set Min above Max and the wave turns upside down.
- **Smooth** rounds off sharp corners and steps.

Restart decides whether every note gets its own LFO or all notes share one:

- **Every Note**: each note starts its own LFO from **Phase**.
- **First Note**: one LFO for all notes, restarted when a key goes down with no other key held. Play legato and it keeps running.
- **Runs Free**: one free-running LFO that never restarts.
- **With the Song**: one LFO locked to your host's song position while it plays.

With **Shape** on **Custom**, **Point Mod 1** and **Point Mod 2** pick one point of your drawn shape for a source to move, and **Moves** says what: **X** (its place in time), **Height** or **Bend**. Then connect a source to the target **LFO n Point Mod 1**. **More Point Mods...** opens lanes 3 to 16.

In Global, under Time, **LFO Times** scales the period of every LFO.

Follower and Accent

The **Follower** turns the level of the sound into movement: a filter that opens as the sound gets louder, a reverb that grows in the gaps. **Attack** sets how fast it rises, **Release** how fast it falls back, **Gain** how strongly it reacts.

The **Accent** is made for acid lines: notes you play hard fire a short sweep you can route to the cutoff or anything else. Its **Threshold** and **Sweep** are in Global, under **Accent**.

A click on either chip opens its card; a drag makes a connection.

Macros

A macro is a knob with no job of its own: it does whatever you connect it to. Connect one macro to five controls and one turn changes the whole character of a sound. There are eight, and each card has one control, **Amount**.

To rename a macro, double-click its card title or its chip. The name is part of the sound: it is saved with the preset and shows on the PLAY page's macro knobs.

A macro is also a target. Put the mod wheel on a macro and the wheel plays everything the macro drives. With no note held, a control driven by a macro still shows the value it will take, so you can set a macro by eye before you play.

Where sources live on the page

The bar. One row of source chips is always on the SYNTH page, between the Filter and Amp row and the Effects panel.

- A chip has two halves. The grip of six dots at the left is for dragging onto a control. The name at the right is for opening the source.

- **+ Add** at the right opens **Add a source**: the next envelope, LFO or macro, and every playing source not yet on the bar.
- **Global** at the right end opens the Global settings.

The Stage. On a wide page the row under the generators shows Filter, Amp and the **Connections** card. Click the name of an envelope, LFO or macro chip and that source's card steps onto the Stage. Its header has **Controls** (its own settings) and **Connections** (what it moves). A line **Goes to** lists the controls it moves. Click the same chip again, or the **Amp** chip, to go back. Click the name of a playing source such as **Velocity** and the Connections list shows only that source's connections.

The panel. On a narrower page, and over an open effect, the sources live in a panel at the right, with the tabs **Modulation** and **Global**: the rack, the card of the source you picked, and the Connections list. The rack holds the sources in four families, **Envelopes**, **LFOs**, **Macros** and **Playing**; the **+** beside a caption adds one. A right-click on a source that drives nothing offers **Remove from the rack**.

Over an open effect, the word **Modulation** in the effect's top line opens a row of the same chips inside the effect panel.

What a modulated control shows

On a knob, each connection is a thin arc outside the value ring, in its source's colour, from where the source's bottom takes the value to where its top takes it. Up to three arcs show; with more, **+N** says how many. The dot at the end of each arc is the connection's handle. While a note plays, a white dot rides the ring at the value that sounds right now.

On a well (a value shown as text), each connection draws a thin range bar with a small tab at its end: its handle. While a note sounds, the text shows the sounding value.

Making a connection

Drag a chip onto a control. A small pill with the source's name follows the pointer, and the control under it lights if it can take the source. Release, and the connection is made at half strength.

When a drop cannot land, the control says why for a moment:

Message	What it means
CONNECTIONS FULL	All 64 connections are in use
PER-NOTE SOURCES ONLY	This control is read once when a note starts, and this source is not known then
UNISON: DETUNE / SPREAD ONLY	The Unison source reaches Detune and Spread only
LFO 1 ALREADY HERE	That source already drives this control

A click without a drag on a **Playing** chip in the rack opens the assign picker instead: every target in columns, the ones the source already drives lit. Pick a lit one to disconnect it, any other to connect.

The stages of the envelopes are read once, when a note starts, so only sources known at that moment can move them: the macros, **Mod Wheel**, **Aftertouch**, **Velocity**, **Key Track**, **Note**, **Random**, **Slide**, **Note**

Bend and the **Follower**. Velocity on Attack, taken downward from a slow setting, is the kind of thing this is for: a pad that swells in when you play softly and speaks at once when you dig in.

Envelopes, LFOs on **Every Note**, **Velocity**, **Key Track**, **Random** and **Note** move each held note on its own. Macros, **Mod Wheel**, **Follower**, **Accent** and shared LFOs are one value for all notes. Effect controls always take one value, because the effects run after all notes are mixed.

The range on the control: handles

Every connection's range ends in a handle. It is the quickest way to say how far a source goes, because you put it exactly where you want the value to land.

Gesture	Result
Drag a handle	The source takes the value there. The knob does not move
Shift + drag a handle	Fine steps
Turn the knob	Every range slides with it
Option / Alt + drag the control	Holds the limits: the ranges keep their far end while the knob moves
Double-click the control	Its default value
Right-click the control	Opens the control card

A one-way source has one handle, at the far end of its range. A two-way source has one at each end. The nearest handle wins, and the control's caption names its source while you hold it. With three or more sources on a knob, the ring opens under the pointer with one lane per source. A press on the knob's face always turns the knob, never a handle.

The control card

Right-click any knob or well on the SYNTH page and one small card opens with everything about that control.

- The control's name and its value, open for typing at once. Type a number with or without its unit: 1.5k, 880 Hz, -6 dB, 50%, +12 st, 250ms, or a note name on a frequency. Return commits, Escape closes.
- A strip with the control's travel and one lane per source, for reading.
- One line per source: a colour dot, the source's name, then **to** and a number, where the source takes the value. The dot is the on / off lamp.
- Three dots at the end of a line open its menu: **Flip direction**, **Both ways**, under **Add** the extras **Curve**, **Smoothing**, **Scale by another source...** and **Raise the start by another source...**, and **Remove**.
- The last line offers chips for sources the patch already uses elsewhere: one click connects. **More** opens the full source picker.

Even on a control that is not a modulation target, the card is the fastest way to type an exact value.

The Connections list

The Connections list is every connection of the patch in one place, each as a sentence you can read: this source takes this control to this value. You find it in the **Connections** card of the Stage and in the panel.

In the panel, connections stand in groups under the control they move, with the control's name and its knob value as a heading and **+ Add source** at the foot of each group. A row has the source's colour dot, its name (a picker: choose another source to re-route the connection), **to** and a value, and a bar on the control's own scale with a handle you drag sideways. The switch at the far right turns the connection off without losing its settings. Three dots open the menu, which also has **Move to another control...**.

A rare setting takes a line under its row only once it is set:

- **Curve** bends how the source reaches the target.
- **Smooth up** and **down** glide the connection instead of letting it jump, so a control can rise slowly and fall at once.
- **Scaled by**: a second source scales how far the connection reaches. The classic use is a mod wheel that brings in an LFO.
- **Start raised by**: a second source lifts where the connection starts.

Shortcut: drop a source chip on a row's **to** number and it becomes the **Scaled by** source.

+ Add connection at the foot adds a proposal row: pick a source, then **choose a control...**, and the connection exists.

Modulating effects

Every continuous control of an effect and its Mix is a target. Each place in the rack has its own targets, so two delays are modulated separately, and connections follow their effect when you reorder or move it. On an effect value, drag the source dot up or down to set the strength, and right-click for **Type a value...**, **Remove** and **Remove all modulation**. Effect values have no range handles and no control card.

Drawing Shapes

When a sine or an ADSR is not the movement you hear in your head, draw it. One shape editor does all the drawing, so what you learn on an LFO works everywhere: on an LFO with **Shape** on **Custom**, on an envelope in **Drawn Once** or **Drawn Loop**, on the GAIN SHAPER and on the FILTER SWEEP.

The small editor

The editor stands on the card itself, with three tools above it: **Snap** (a magnet) makes points land on the grid and catch the bottom, middle and top levels; **Grid** sets 4, 8, 16, 32 or 64 steps; the expand glyph opens the full-size editor.

Gesture	Result
Double-click empty space	Adds a point
Drag a point	Moves it. The two end points only move up and down
Drag the ring in the middle of a segment	Bends that segment
Option / Alt + drag on the line	Bends the segment under the pointer
Double-click a ring	Straightens the segment
Double-click or right-click a point	Removes it
Hold Shift	Inverts **Snap** for that gesture

You hear every edit as you make it, and each drag is one undo step. A white dot shows where the shape is playing.

The full-size editor and the library

The full-size editor opens the shape over the whole instrument, with **Grid**, **Snap**, **Reverse** (mirror in time), **Flip** (mirror in level), **Reset** and the x. Edits are live; Escape closes it.

Below the shape stands the library, **Shapes - click one to use it**, with category tabs such as **Envelope**, **Pulse**, **Rhythm**, **Ducking** and **Pump**. Click a tile and that shape replaces yours. Clicking through the library while a note is held is the fastest way to find a movement, and any shape is a starting point: click it, then move its points. Installed packs can add their own curves.

There is no copy and paste for shapes. To get the same movement in two places, pick the same library shape in both, or drive both controls from one LFO or envelope.

Effects

The last thing a sound passes on its way out is the effects rack. I built it as three chains you can fill freely, with any effect as many times as you like, and with one rule for the whole rack: every effect looks and behaves the same way around its own controls. Learn one, and you know where the preset, the Mix, the band and the power switch are on all of them.

The rack and its three chains

The **Effects** panel is the bottom module of the SYNTH page: a header and a row of tiles, one per effect. The header has the chain switch **Main / Bus 1 / Bus 2**, **Chain presets** and **Add effect**. Click empty space on the header to fold the panel; folded, it lists the effects switched on in Main.

A chain is read from left to right, in the order your sound passes the effects. A reverb left of a drive is a driven reverb. The rack holds up to 32 effects in total, with no limit per chain or per type.

Main is the chain the whole sound passes through. **Bus 1** and **Bus 2** are side chains: you send part of a source there, process that copy on its own, and bring it back. That is how you put a long reverb on the top layer only, or a delay on the noise and nothing else, while the body of the sound stays tight.

Sends, routing and the dry path

A bus only hears what you send it. Each generator, the Sub and the Noise have **Bus 1** and **Bus 2** send knobs; Filter 1 has them too while its **Goes to** is **FX Sends Only**. A send is a copy, so a source can be in the main sound and on both buses at once. Every send takes modulation: a macro on a generator's **Bus 1** is a clean way to open a reverb throw from the PLAY page.

Each generator's Output controls also have an **Effects** choice:

Choice	Where the generator goes
Main	Into the Main chain
Sends Only	Out of the main sound; you hear it only through its sends
Gain Shaper Only	No filter and no effects, except that the Main chain's GAIN SHAPER still moves it
None	Past the filters and the whole rack: the dry path

Use **None** for a sub you want untouched by the reverb and the limiter. **Gain Shaper Only** is the same, except the source still ducks with the pump.

While a bus is on screen, a word beside the chain switch says where it comes back: **Into Main** (the default: the main effects process it too), **To Output** (after the main effects, untouched by them), or into the other bus, so a delay on Bus 2 can feed the reverb on Bus 1.

The tile row

A tile shows the effect's name, its power lamp in the top right corner, a small live picture and one headline value, such as Decay 2.0 s or Threshold -18 dB.

A tile moves only with sound. Every tile that is on reads the signal passing its own effect and moves with it, and stands still in silence. That makes the row a signal check: if a tile on a bus stands still while you play, nothing is being sent to that bus.

Gesture	What happens
Click the lamp	Switches the effect on or off
Click anywhere else	Opens the effect; click again to close it
Drag a tile sideways	Reorders it within its chain
Right-click	The menu: **Duplicate**, **Save as preset...**, **Move to Main** / **Bus 1** / **Bus 2**, **Applies To**, **Remove**

Adding an effect

Add effect in the header and the slim **+** tile after the last tile open the same list, grouped as **Tone**, **Colour**, **Movement**, **Space**, **Stereo**, **Rhythm** and **Dynamics**, each row with a line on what it does. You do not have to read it: just type. Every effect also answers to words that are not printed on it, so typing sat leaves DRIVE, TAPE, GRIT SHAPER and OUT CLIP. **Return** adds the first match, **Escape** clears the search.

The effect lands at the end of the chain, switched on, and opens. It does not arrive with every knob at its default: it loads its starter preset, a setting that already does something good, so you hear the effect the moment it lands. EQ, UTILITY and IR LOADER arrive neutral on purpose.

An open effect

Click a tile and the effect takes the page, standing directly on its tile row. Close it with its tile, the **x**, or **Esc**. A click beside the card does nothing, so you cannot close an effect by accident.

The top line is the same on every effect: the name, the main choice (**Type**, **Style**, **Shape** or **Mode**), the preset with a step arrow on each side, the page words, **Modulation**, the **x** and the power lamp at the far right.

Under it, the picture runs the full width. On most effects you work directly on it, and while the pointer is over it the top line prints what you can drag there. Under the picture are the knobs. Drag a knob up or down, hold **Shift** for fine steps, double-click for the default, right-click to type a number. The mouse wheel never changes a value.

The bottom row: Works on, Channel and Mix

The last line of every effect reads **Works on**, **Channel**, the page's own choices, and **Mix** at the right end.

Works on says which part of the sound the effect touches. Click it and the band rail opens. Drag the low edge inward and the effect works only above that frequency, the high edge and it works only below, both and it works only between them. The rest of the sound passes around the effect untouched. Double-click **Works on** for the whole sound again. A great deal of mixing inside a sound is exactly this:

drive on the mids only, so the low end stays clean; chorus above 200 Hz, so the bass stays in the middle.

Channel does the same for the stereo picture: **Stereo**, **Center** or **Sides**. **Sides** on a reverb or a chorus keeps the middle dry and solid; **Center** on a drive leaves the width alone.

Mix is the one Mix of every effect, always here. On an effect without a dry and wet balance of its own, such as COMPRESSOR or TAPE, it blends processed against unprocessed: parallel compression or half a tape machine with one move.

Modulating your effects

Every continuous value of every effect is a modulation target. While an effect is open, the page's source chips move to the top of the page, and the effect's own **Modulation** word opens a second row inside the card. Drag a chip onto a knob, a well, the Mix or the band rail. To edit a source without leaving the effect, click its chip: its editor opens as a drawer over the right side.

A connection belongs to the effect: reorder, move or duplicate it and its connections go along. A DRIVE pushed up on its Drive, a CHORUS, DELAY or REVERB (not the lush types) pushed up on its Mix, a WIDTH moved on its Width, or an EQ moved on its high band's gain runs while the source drives it, even when switched off. Every other effect stays off when off.

Effect presets and chain presets

An effect preset is one effect's settings; a chain preset is a whole chain. The factory library carries more than 250 effect presets and over 20 chain presets.

The preset in the top line reads the name of the preset the settings match, or **Presets** when they match none. The arrows step through the list, which is the fastest way to hear what an effect can do. Click the name for the list: **Yours** first, then **Factory**, and **Save as preset...** at the foot.

Loading an effect preset never rewires the sound. It carries the settings, the Mix and the band, and leaves the on / off state and the modulation alone. The LFO you put on the delay's time is still on it after you step through ten delay presets.

Chain presets in the header load or save a whole chain. Loading one replaces the chain on screen, with the modulation on the effects it replaces; one undo brings the old chain back. An effect preset changes how one effect sounds; a chain preset is a rebuild, the right tool for trying a sound through a completely different finish.

Latency, Pump and cost

Almost every effect adds no delay. TAPE adds a fraction of a millisecond whenever it is on, and the LIMITER about 3 ms in its **Clean** mode. The instrument tells your DAW, which moves it back into time. The reported delay changes when you add or switch such an effect, so decide on a TAPE before the take. For live playing, leave TAPE off and the LIMITER on **Instant**.

The **Pump** on the PLAY page is a remote for a GAIN SHAPER on the Main chain, which is why a pump is saved with the sound and can be opened in the rack and drawn to any shape. Turning Pump up with no such shaper adds one.

An effect that is off is not run, and the whole rack rests in silence. You can leave a prepared effect switched off in a chain, or keep a bus loaded with nothing sent to it, and pay nothing for it.

Every change to the rack is in the undo history, one gesture per step.

The Effects, One by One

Each effect below: what it is for, its main controls, what you can drag on its picture, and one tip. What all effects share, from the bottom row with **Mix** to presets and modulation, is in Effects. The **starter** is what an effect loads when you add it.

EQ

EQ turns frequency ranges up or down with three bands, **Low**, **Mid** and **High**. I reach for it to fix a muddy or dull sound, to cut the lows under a pad, or to push the range that makes a lead speak. It arrives flat.

Each band has **Freq**, **Gain** (-24 to +24 dB) and **Q**. The Low band's type can be **Shelf**, **High Pass**, **Bell** or **Shelf Q**; the High band's **Shelf**, **Low Pass**, **Bell** or **Shelf Q**. The Mid band is always a bell. A knob that means nothing for the chosen type stays dimmed and says why.

On the picture, drag a band's handle sideways for **Freq** and up or down for **Gain**; on a pass band it sets the **Q**. Drag the width marks beside a bell for its **Q**, and double-click a handle to reset the band. The live spectrum sits behind the curve.

Presets include **Smile**, **Warm**, **Air**, **Mud Cut**, **Low Cut 120** and **Telephone**.

FILTER SWEEP

Filter Sweep is a filter whose cutoff follows a shape you draw, repeating in time with your song. I use it for rhythmic filter movement on the whole sound after the voices, and for long drawn builds. The starter, **Held Low Pass**, stays where it is until you move **Low** and **High** apart.

Rate sets how long one pass lasts, from 32/1 to 1/32, with **Straight**, **Dotted** and **Triplet** keys. **Low** is the cutoff at the bottom of the shape, **High** the cutoff at the top. Pick the filter type on the plate (**LP**, **HP**, **BP**, **Notch**, **Peak**, ladders, combs, flangers) and set **Resonance** and **Drive**. **Style More Modes** opens over a hundred more filters in groups, with **Variation** and **Stereo**. **Offset** and **Smooth** are on the **Sweep** page.

Draw the shape on the screen with the usual shape gestures, and drag the sweep ends beside it for **Low** and **High**. While the host plays, the sweep is locked to the song position.

COMPRESSOR

Compressor evens out the loud and quiet parts. I reach for it to glue layers, to give a pluck more punch, or, with **Mix** pulled back, for parallel compression. The starter is **Gentle Glue**: 2:1, slow.

The controls are **Threshold**, **Ratio**, **Attack**, **Release** and **Makeup**. **Detector** on the bottom row is **Fast** (follows the wave) or **Hold** (keeps each peak for a moment, so low notes do not make the level wobble). Five **Mode** keys pick what kind of compressor it is: **Compress**, **Brickwall**, **Comp + Clip**, **Comp + 0 dB Clip** and **Brickwall + 0 dB**.

The picture shows the level over time with the reduction hanging in red, and the curve beside it. Drag the Threshold fader or the bend of the curve for **Threshold**, and the Ratio handle for **Ratio**.

Tip: **Parallel Squash** among the presets is the classic heavy compressor at Mix 50.

MULTIBAND

Multiband compresses the lows, mids and highs separately, in both directions: each band holds down what gets too loud and lifts what gets too quiet. I use it to make a sound dense and present without one range pumping the others. The starter is **Squeeze Light**.

Each band has **Squash At** and **Squash** (the level above which it is held down, and how hard), **Lift At** and **Lift** (the level below which it is lifted, and how much), **Attack**, **Release** and **Gain**. **Edit** picks which band the controls show. **Input** and **Output** work on all bands; the crossovers **Low/Mid** and **Mid/High** are on the **More** page. **Timing** is **Standard**, **Fast** or **Band Tuned**.

On the picture, one row per band: drag an edge sideways for **Squash At** or **Lift At**, drag up or down in a shaded zone for its ratio, and drag a crossover line to move it.

SQUASH 3-BAND

Squash 3-Band is the one-knob version: it lifts the quiet parts and holds the loud ones in three bands. I reach for it when a sound should get bigger and more even right away, without setting nine thresholds. The starter is **Light Squash** at 35 %.

There is one control, **Amount**. At 0 the effect is bypassed. Drag up or down anywhere on the picture to set it; the three panes show each band's level in against level out.

LIMITER

Limiter is the safety net: it stops peaks going over a ceiling, and with **Push** it makes the sound louder against that ceiling. Put it last in the chain. The starter, **Safety**, catches peaks at -1 dB and changes nothing else.

Mode in the header is **Instant** (no latency, can distort on low notes when pushed hard) or **Clean** (looks ahead, stops at the ceiling cleanly, about 3 ms late). **Push** drives the sound in, **Ceiling** is where the output stops, **Release** and the **Release Mode** keys (**Fixed**, **Two-Speed**, **Auto**) set how it lets go. **Saturate** adds colour, with **Style Transformer**, **Tube** or **Tape**. **Clipper** is the last stage: **Off**, **Soft** or **Hard**.

Drag the Ceiling fader on the right ruler and the Push fader on the left one.

OUT CLIP

Out Clip drives the sound into a soft clip under a ceiling. Where a limiter turns the level down for a moment, a clipper shaves the peak itself, so it is the tool for loudness with bite. The starter, **Soft Ceiling**, catches the peaks just under 0 dB and keeps the level.

Type Clipper has **Drive**, **Ceiling**, **Knee** (0 % is a hard clip) and **Output**. With Drive and Output at 0 it changes nothing until the sound reaches the knee. **Type One Knob** has **Volume** into a fixed clip curve and **Boost +6 dB**. Both have **Sub Cut 5 Hz**.

Drag up or down on the picture for **Drive** (or **Volume**); the line shows where it bends into the clip.

GAIN SHAPER

Gain Shaper is a volume shape that repeats in time: the pump of a sidechained bass or pad, a gate, a tremolo, a swell over four bars. I reach for it when a pad or a bass has to make room for a kick: the pump sits exactly where I draw it and needs no kick to trigger it. The starter is **Sidechain 1/4**.

Rate sets how long one pass lasts. Seven shape keys load **Pump**, **Hard Pump**, **Soft Pump**, **Long Pump**, **Double Pump**, **Gate**, or bring back your own with **Custom**. **Depth** is how deep it cuts, **Offset** slides the start, **Smooth** rounds off jumps. **When stopped** decides what happens with the transport stopped: **Rests** lets the sound through at full level, **Runs** keeps the shape going, which is the setting for a gate or tremolo you want to hear while you play.

Draw on the display with the shape gestures and drag the Depth cap. The **Pump** knob on PLAY is a remote for this effect.

DRIVE

Drive adds harmonics, from warm to wrecked: tube, tape, guitar amps with their cabinets, clean saturation, transformers, clippers, folders and a handful of special effects, all on one card. I reach for it whenever a sound is too clean to sit in a mix. The starter is **Tube Glow**.

Pick the **Style** with the family keys (**Tube**, **Tape**, **Amp**, **Saturate**, **Transformer**, **Clip + Fold**, **FX**), the name, or its arrows. The main controls are **Drive**, **Output**, and an EQ after the drive with **Bass**, **Mid**, **Treble** and **Presence**. The **Character** page has **Quality**, **Sustain**, **Feedback** and **Feedback Pitch**.

Amp Custom builds the amp yourself: **Amp** model, **Cabinet**, **Mic** position, **Tone**, and the amp's own tone controls. On a **Clip + Fold** style, **Drive** is gain, and a **Filter** before or after the curve brings **Cutoff** and **Resonance**.

Drag up or down on the picture for **Drive** and the Mix handle for **Mix**.

CABINET

Cabinet is a guitar speaker cabinet: the tone that finishes an amp. I put it after a drive that has no cabinet of its own, or on its own to box a sound in. The starter is **2×12 Combo**.

Pick the **Cabinet** with five keys on the picture: **Studio** (all-round), **4×12** (big and tight), **2×12**, **1×12** (small and boxy) and **1×15** (deep). **Mix** blends cabinet against direct sound.

The picture shows the box with its cones moving and the cabinet's response as a waterfall, with **Body**, **Peak** and **Rings** stats. The **Parallel Cab** preset is a 4×12 at Mix 50.

IR LOADER

IR Loader plays the sound through a recorded space or object, an impulse response: a room, a speaker, a spring. It is the effect for a real place or a real box that no knob-built reverb gives you, and it takes your own files. It passes the sound unchanged until an impulse is loaded.

Click the bay to open the **Impulse** list: every impulse of your installed packs, and **Browse for a file...** for a WAV, AIFF or FLAC of your own. Or drop a file anywhere on the editor. The two step keys go to the previous and next impulse, in the pack list or in the same folder on your disk. **Channels** is **Mono**, **Stereo** or **Split L/R**, and **Mix** blends it against the direct sound.

At most the first 12 seconds of a file are used.

GRIT SHAPER

Grit Shaper is a waveshaper with soft curves, tubes and folds, plus a bit and rate crusher, and it can work on one frequency band only. I use it for dirt in the mids of a bass while the sub stays clean. The starter is **Warm Grit**.

Style in the header picks the curve: **Soft**, **Warm**, **Hard**, **Clip**, **Tube 1** to **Tube 3**, two folds, **Filter + Crush** and **Crush**. **Drive** pushes into the curve, **Bits** and **Rate** set the crusher, **High Quality** cleans up the highs. **Low Cut** and **High Cut** set the band it works on, and **Outside the band** says whether the rest is **Kept** or **Cut**.

Drag the curve up for **Drive**, and the band's left or right half sideways for its cuts.

WIDTH

WIDTH sets how wide the sound sits between the speakers. I use it to open a pad or to pull a bass to mono, and I always check very wide settings in mono. The starter is **Wide**, at 140 %.

There is one control, **Width**: 0 % is mono, 100 % untouched, 200 % twice as wide. Only the sides change; the middle is never touched.

The picture is a scope of what leaves the effect, with handles on its rim that set **Width**. Its needle shows the correlation: above 0 the sound survives being summed to mono, below 0 it cancels.

UTILITY

Utility is the tidy-up tool: level, pan, width and a low and a high cut in one place. I reach for it to trim a sound between two effects, to make the bass mono, or to flip a side's polarity. It arrives neutral.

High Pass (with **Slope** 12 or 24 dB) and **Low Pass** clean up the ends. **Bass Mono** puts everything under its frequency in the middle. **Gain** is the level, **Pan** moves the sound, **Width** goes from 0 to 800 %, **Balance** turns one side down, and **Invert L** and **Invert R** flip a side's polarity.

On the picture, drag the cut dots on the curve, the fan's middle for **Pan** and its rims for **Width**.

Presets include **Bass Mono**, **Low Cut 80**, **Mono**, **Minus 6** and **Plus 6**.

CHORUS

Chorus makes detuned copies that thicken a thin sound. I reach for it when a sound is right but too narrow or too still: a plain saw pad, a thin pluck. The starter is **Classic I**.

Style is three keys. **Classic** is a ready-made stereo chorus with **Speed** (**Slow 0.4 Hz**, **Fast 0.83 Hz** or **Both**) and **Width**. **Custom** gives you two voices to set by hand: **Rate**, **Depth**, **Feedback**, **Voice 1**, **Voice 2** and **Tone**. **Quad** is four lines with **Start Point** and a tempo **Sync**.

The picture shows each delay line at work; it takes no drags. Tip: more **Feedback** makes the copies harder and more metallic.

ENSEMBLE

Ensemble gives up to four drifting copies, from wide chorus to flanger. I use it for string-machine pads and for anything that should smear across the speakers. The starter is **String Machine**.

Voices picks how many swept voices play per side, from **1 Voice** to **4 Drifting** and **Bucket Chain**. **Rate** is the sweep speed, **Depth** how far it moves, **Delay** the base delay, **Wide** how far the two sides run apart. **Feedback** works either side of the middle; turn it up and the ensemble becomes a flanger. **Low Cut** and **High Cut** in the **Tone** row filter only the voices.

Drag sideways on the picture for **Depth**, up or down for **Delay**.

DOUBLER

Doubler stacks copies that are slightly out of tune and puts them left and right. I use it when a lead or a bass layer should sound like several players without any audible movement. The starter is **Thick**.

Style Classic has four copies with **Detune**, **Amount** and **Spread**. **Style Unison** has **Detune**, **Rate**, **Voices** (1 to 7), **Spread** and **Level**, plus **Free running** or **Restarts per note**, and a **Dimension** page with **Size** and **Level**.

The picture is a strobe tuner, one band per copy. Drag sideways along the bands for **Detune** and the Spread point up or down for **Spread**.

PHASER

Phaser cuts a few moving notches into the sound: the soft, round kind of sweep. I use it on pads, keys and held chords that need slow life without sounding detuned. The starter is **Slow Sweep**.

Rate is the big knob; **Free / Sync** sets it in Hz or as a note value. **Depth** is how far the notches travel, **Feedback** deepens them, and **Style Custom** opens the **Stages** page with **Frequency**, **Width**, **Stages** (1 to 18), **Spread**, **Start Point** and **Song Lock**.

On the picture, drag the stop on the rail for **Depth**, the second stop (Style **Custom**) for **Frequency**, and the point on the highest peak for **Feedback**.

FLANGER

Flanger is a very short delay swept against the sound: a whole comb of notches, the jet-plane sweep. I use it when the movement should be heard as an effect: risers, noise sweeps, a metallic edge on a lead. The starter is **Slow Flange**.

It shares the phaser's layout: **Rate** with **Free / Sync**, **Depth**, **Feedback** (sharper comb, more jet) and **Style**. **Spread** opens the **Stereo** page with **Width**, **Start Point** and **Song Lock**.

Drag the stop on the rail for **Depth** and the point on the highest peak for **Feedback**.

STAGE PHASER

Stage Phaser is the second phaser in the rack. I pick it for a fixed number of stages chosen straight from the header, and for the three vowel types, which sweep peaks instead of notches and make a sound talk. The starter is **Slow Stage**.

Type in the header is **2 Stages** to **12 Stages**, or **Vowel Low**, **Vowel Mid** and **Vowel High**. **Rate**, **Depth** and **Start** set the sweep, **Feedback** sharpens it, **Spread** sets the right side apart from the left.

Drag sideways on the picture for **Start**, up or down for **Feedback**.

ROTARY

Rotary is a spinning speaker, a horn for the highs and a drum for the lows. The sound is in the change of speed: I leave it on Slow for a gentle swirl and throw it to Fast at the end of a phrase. It belongs on organs first, and is worth trying on keys, guitars and pads. The starter is **Chorale**.

Speed is the big switch with **Slow** and **Fast**: click to throw it, drag for a speed in between. **Mic Spread** sets the width, **Drive** adds grit, **Horn / Drum** balances the rotors, **Output** sets the level. **Mode** in the header is **Normal**, **Locked** or **Horn Only**. The **Rotors** page has **Slow Rate**, **Fast Rate** and **Spin-Up**.

Click the cabinet to throw the speed and drag a microphone round the ring for **Mic Spread**. **Speed** is a good target for a macro or the mod wheel.

FREQ SHIFT

Freq Shift moves every frequency by the same number of Hz. It is not a pitch shifter: anything more than a small shift turns a musical sound into a bell or a machine, and a fraction of a Hz gives a slow, endless phasing. I use the small shifts for movement and stereo, and the large ones for sound design. The starter is **Slow Spiral**.

Shift is the big dial. **Blur** smears the attacks before the shift. The **Echo** section feeds the shifted sound back with **Feedback** and an **Echo Time** set by **Timing** (**Free**, **Sync** or **Beats**), so each repeat is shifted again. **Mirror L/R** shifts the left side down and the right side up.

Drag the lower scale of the picture sideways for **Shift**.

DELAY

Delay is the main echo of the rack: free in milliseconds or locked to the tempo, one time for both sides or one each, with a filter in the loop so the repeats get darker and narrower as they go. I use it far more often than reverb to give a lead or a pluck depth without washing it out. The starter is **Dotted Eighth**.

Turn the **Time** wheels, with **Sync** for note values and **Straight**, **Dotted** or **Triplet**. **Link L/R** shares one time. **Stereo**, **Ping-Pong** and **Tap Delay** set the routing. **Feedback** sets how many repeats, **Tone** the band they pass through. The **Duck** page turns the echoes down while you play so they come up in the gaps. The **Character** page has **Tone Width**, **Drive**, **Width** and **Cross-Feed**.

On the picture, drag the first repeat for **Time**, the second for **Feedback**, and the dot on the first repeat's shape for **Tone** and **Tone Width**.

ECHO LINE

Echo Line is the character echo: a left and a right line with their own times, a feedback loop you can tilt dark or thin, and a wobble that makes the repeats drift in pitch like an old machine. I pick it over DELAY when the echo itself should have a sound. The starter is **Synced Echo**.

Sync and **Ping Pong** are switches; **Time L** and **Time R** set each line. **Feedback** sets the repeats, **Color** the band the loop keeps, **Wide** how the lines reach the speakers. **Wobble** and **Wobble Rate** in the **Motion** row set the drift.

Drag up or down on the repeats for **Feedback** and the band sideways for **Color**.

REVERB

Reverb holds two groups in its **Type** list. **Rooms & Halls** is the workhorse: real-sounding spaces you can shape in detail. **LUSH** is five reverbs with a sound of their own, **Lush Plate**, **Hall**, **Old Plate**, **Abyss** and **Space**, for long, moving tails behind pads and plucks. The starter is **Soft Plate**.

In **Rooms & Halls** the main controls are **Size**, **Decay**, **Pre-Delay** (a little keeps the front of the sound clear), **Low Cut** and **High Cut**. **Era** in the header is **Vintage**, **Retro** or **Modern**. The **Space**, **Tone** and **Level** pages add **Diffusion**, **Mod Depth**, **Bass Decay**, **Treble Decay**, **Build-Up** and **Duck**.

The **LUSH** types have **Decay** or **Size**, **Pre-Delay** (with **Sync**), cuts or shelves, and (except on Lush Plate) **Mod Rate** and **Mod Depth**.

The picture is the room, measured, with handles for **Pre-Delay**, **Decay**, the cuts and the bass and treble decay.

ROOM TANK

Room Tank is the quick reverb: seven rooms, five knobs, and a tail that moves a little inside. I use it when I want a space in two clicks and do not need to shape the room. The starter is **Medium Tank**.

Room picks **Plate 1**, **Plate 2**, **Hall**, **Sparkles**, **Ambience**, **Dimension** or **Aura**. **Decay** sets how long it rings, **Damp** how fast the highs die, **Color** what goes in, darker or thinner, and **Wide** the width. **Pre-Delay** can be in ms or a note length with **Pre-Delay Sync**.

Drag sideways on the picture for **Decay**; the readings show the tail time.

TAPE

Tape is a whole machine, not a saturation curve: how hard you record, which tape, at which speed and how it is aligned all change the tone together. I use it gently on almost anything that sounds too clean, and hard on basses and percussive sounds that should round off. The starter is **Classic 15 IPS**.

Speed (**Off**, **7.5 IPS**, **15 IPS**, **30 IPS**) and **Tape** (**Vintage**, **Classic**, **Hot**, **Modern**) are rotary selectors. **Input** is the drive, **Output** the level after the machine. **Noise** switches on the hum and hiss, with **Hum** and **Hiss** levels. The **Record** and **Playback** keys on the picture open the alignment pages; with **Auto Setup** on, the machine aligns itself. **Mode** on Playback goes from **Bypass** through **Electronics** to **Full Tape**.

When the VU needle is in the red, the tape is saturating.

BITCRUSH

Bitcrush does what an old converter did to a sound: it rounds the level to fewer steps and holds each sample longer. A little gives a sound the edge of an early sampler; a lot is a destroyed, aliasing lead. The starter is **Twelve-Bit Sampler**.

Bits (1 to 24) and **Rate** (100 Hz to 48 kHz) are the big readouts. **Mode** is **Classic**, **Gritty**, **Phone** or **Smooth**. **Anti-Alias** folds less back into the sound, **Clip** stops at full scale. The **Tone** page has **Drive**, **Smooth** and **Output**; the **Converter** page has **Dither** and **Jitter**.

Drag up or down on the display for **Bits** and sideways for **Rate**: one diagonal movement finds the grit you want.

RETRO

Retro is seven small machines in one box: noise, a wobbling cassette, a distortion, a digital stage, a small space, tape wear and an output with two cuts. One knob, **Amount**, turns all of it up and down together. I usually start from a preset, such as **Cassette**, **Vinyl**, **Old Radio** or **Broken Walkman**, and then move only Amount. The starter is **Subtle Age**.

Each card has its own knob: **Level** on **Noise**, **Wow** and **Flutter** on **Wobble**, **Amount** on **Distort**, **Digital**, **Space** and **Wear**, and **Output**. A card's lamp switches its section off and back on. Click a card for its detail page, such as the noise **Type**, or **Bits** and **Rate** on **Digital**.

The noise is placed under the music and fades with it, so it never hisses on its own between phrases.

How to Use It - Real-World Workflows

Chords into a DAW clip, through the progression

1. On COMPOSE, choose the **Chords** tab, set **Key** to your track's key and scale and load a chord set.
2. Play the chords in the order and rhythm you hear them, then click **Capture** on the Progression strip. The last phrase you played becomes the progression. If nothing comes to you, click **Library**: moving the selection plays each progression in your sound.
3. Shape it on the blocks. Drag a block up or down to change its step, drag an edge to change its length, double-click a block for the chord picker.
4. Set the length with **Bars** and switch **With DAW** on. Start your song and the chords are there on the bar grid.
5. Drag the pill at the right of the header into your DAW. **Keys** gives you the trigger keys, one note per chord. **Chords** gives you the notes the instrument actually plays, for any other instrument.

The **Keys** clip only presses keys, so you can record it once and try other chord sets under the same clip.

A bass line with Scale and Single notes

1. On PLAY, click **Bass** in the type row and pick a sound.
2. On COMPOSE, choose the **Scale** tab and set **Key**. Every white key plays a note of your scale.
3. Switch **Single notes** on. Each key you press ends the note before it.
4. On SYNTH, press the voice mode chip in the Amp header, choose **Legato**, set **Glide When** to **Overlap**, and raise **Glide** a little.
5. Play legato where you want a slide and apart where you want a clean note.
6. For a groove, set **Motion** to **Rhythm** and pick a **Groove**. Every hit plays the last key you pressed.

A strummed guitar part with the hand

1. On PLAY, load a **Guitar**. Any sound can be strummed; the guitars just make it obvious.
2. On COMPOSE, choose **Chords**, load a chord set, set **Motion** to **Strum** and switch the Strum card to **Pattern**.
3. Pick a **Style** and a pattern in the list, and hold a key.
4. Switch **Guitar mode** on: every chord becomes a six-string shape, struck string by string.
5. Set **Strum Speed**. Small numbers are tight strokes.
6. Make it yours: pick **Down**, **Up**, **Mute** or **Knock** in the toolbox and click a step, drag a stroke up for an accent, right-click a step for **What the hand does**. Or switch **Record** on and swipe across the strings in time.
7. Keep it with **Save strum pattern...**.

A pumping pad

1. On PLAY, load a pad.
2. Raise **Pump** and pick the rate under it: **1/4** for a duck on every beat, **1/8** for twice a beat. **Soft Pump** never goes quite silent.
3. Start your DAW. The pump moves while the host plays and rests at full level while it is stopped.
4. For a sub that pumps with it but stays clean, switch on the **Sub** on SYNTH and set its **Effects** choice to **Gain Shaper Only**. On a chord sound, set the Sub's **Notes** to **Lowest Note**.
5. For your own shape, open the GAIN SHAPER tile, open the full-size editor and click through the **Pump** and **Ducking** tabs while a chord holds.

Importing your old presets

1. Drop a folder of presets anywhere on the plugin window, or use the import entry in the preset menu.
2. The name chip counts along while you keep playing. If anything failed, the **Import report** says which preset and why.
3. In the preset browser, set **Source** to **Imported**.
4. On the ones you love, right-click and choose **Edit details...** to give them a type, styles and a description, so the search by sound finds them next to my sounds.
5. A preset with an arpeggiator brings it along on COMPOSE. Load it with **Sound only** off.

Your own sound from Init

1. Choose **Init patch** in the preset menu.
2. Set generator 1 to **Wavetable** and walk through the tables while you play.
3. On the **Unison** tab raise **Unison** and **Detune**; **Table Spread** gives each voice its own place in the table.
4. Add a layer with the **+** card: add a **Sample** and drop an audio file on it.
5. Drag on the Filter curve: sideways for **Cutoff**, up and down for **Resonance**.
6. Add **Env 2** with **+ Add**, drag its grip onto **Cutoff** and drag the handle to where the envelope should open the filter.
7. Add **Macro 1**, drag it onto **Cutoff** and onto **Detune**, and name it on its card.
8. Add a REVERB and set its **Channel** to **Sides**.
9. Choose **Save as...**, with a name, **TYPE**, **Style** words, a **Description** and what **Preview Plays**.

Saving your own chord set

1. On COMPOSE, choose **Chords** and click the sparkle on the **Chord set** field. Pick **MOOD** chips, a **COLOUR** and **HOW BOLD** (**Safe**, **Some** or **Bold**), and press **Generate**.
2. Right-click a card you love and choose **Lock chord N**; Generate again and the rest fit around it.
3. One chord wrong? Choose **New chord N** on its card.
4. Voice it by hand on the chord editor keyboard: double-click keys to add or remove notes.

5. Choose **Save chord set...** in the chord set browser. Generated sets are not kept when you close the window.

A melody with Generate and the wand

1. Load the sound the melody is for. A bass gets a bass line, a pad a pad line.
2. On COMPOSE, choose **Generate**, check **Key** and pick a **Length**.
3. Press **Generate** and start your DAW. Press again until one catches your ear; the arrows step back through them.
4. If a melody is nearly right, select the part that is not and click the wand: only that part is written again.
5. Fix single notes by hand and shape the dynamics in the velocity lane.
6. Drag **Drag MIDI** onto a track, or save the preset.

Pro Tips and Creative Techniques

- **Same part, other sounds.** Switch **Sound only** on and step through presets. Your chords, groove and progression stay; only the sound changes.
- **Describe instead of browse.** Type how a sound should feel into **Describe a sound**, for example warm evolving pad. The presets are ranked by how they actually sound.
- **Left hand for the bass.** Play a chord an octave or two lower and you hear it there, so one hand can take it down for a bass.
- **Strum your own voicings. Free** with **Strum** or **Arp** works on exactly the keys you hold.
- **A pentatonic in two clicks.** On the **Scale** tab, click circles in the scale panel to switch notes off. **Back to** restores the named scale.
- **An arp that never quite repeats.** Give the arp lanes different lengths with **Steps**, and pull a few **Chance** steps under 100 %.
- **Soft notes swell, hard notes speak.** Set the Amp envelope's **Attack** slow, drop **Velocity** on it and choose **Flip direction**.
- **Splits and accent layers.** A generator's **Key Low** and **Key High** make a split; **Velocity Low** and **Velocity High** bring a layer in only when you play hard.
- **One knob for aggression.** Put a macro on **Global FM**.
- **Reverb throws from PLAY.** Put a reverb on **Bus 1** and connect a macro to a generator's **Bus 1** send.
- **Drive on the mids only.** Click **Works on** and pull the band edges in. **Channel** on **Sides** keeps the middle of a chorus or reverb solid.
- **Step presets, keep the wiring.** Put an LFO on a delay, then step through the delay's presets: the LFO stays on it.
- **The tile row is a signal check.** If a bus tile stands still while you play, nothing is being sent to that bus.
- **A loop becomes a kit.** Drop a drum loop on a Sample generator and switch **Slice** on: the hits are laid out from C1 upwards.
- **One key for the whole track.** Leave every instance on **Follow together**; set a part that must stay put to **This track only**.

Getting It Into Your DAW

THE_INSTRUMENT 3 is an instrument plugin: MIDI goes in, stereo audio comes out, and the notes it plays go back out to your DAW as MIDI.

What your DAW sees

- An instrument: put it on an instrument or MIDI track. It comes as VST3, AU and AAX on macOS (Intel and Apple Silicon) and as VST3 and AAX on Windows.
- One stereo output. No audio input and no sidechain input.
- MIDI in and MIDI out, MPE included.
- Presets are the plugin's own. A program change from the DAW does nothing.
- The plugin reports no tail length, so leave room at the end of a bounce for releases, delays and reverbs.

The first time, the plugin asks once for your philspeiser.com login.

MIDI in

Notes and velocity play. Pitch bend bends everything by **Bend Range** (default 2 semitones). The mod wheel is the Mod Wheel source, channel pressure the Aftertouch source, and the sustain pedal holds releases until it comes up. All notes off releases every voice.

There is no MIDI learn: to move a macro from a hardware controller, map the controller to the macro's automation parameter in your DAW. The computer keyboard does not play notes; every key except undo and redo goes back to your DAW, so your transport shortcuts keep working.

If THE_BRIDGE is running, the Play page shows a **THE_BRIDGE** switch. Switch it on and a note you sing plays this instance. It is off by default and set per instance.

MPE

MPE is one switch, **MPE** in **Global**, off by default. A controller that announces itself as MPE switches it on for you. Each note then brings its own pitch bend, pressure and CC 74, which arrive as the **Aftertouch** and **Slide** sources per note, so you can drop them on any control. Channel 1 still bends all notes by **Bend Range**.

The MIDI your DAW receives

The plugin sends out the notes it PLAYS, not the keys that came in: the chords, the arp, the rhythm, the phrase or the melody. Record its output on a second MIDI track and you have the performance as notes. Chord **Glide** and expressive phrases leave with per-note bends, which another instrument only plays as heard if it reads MPE.

For a part that replays exactly, drag out the clips made for that purpose:

- **Keys** on the progression strip: the trigger keys. Played back into this instrument, they replay the progression exactly.

- **Chords** on the progression strip: the chords with voicing and motion as plain notes, for any instrument.
- **Drag MIDI** on the Generate page: the melody.
- The clip handle of the arp editor: one full turn of the arp pattern.

All clips are written at the host's tempo.

Host automation

Nine parameters are automatable, on purpose: **Macro 1** to **Macro 8** (0 to 100 %) and **Volume** (-60 to +12 dB). A macro can drive anything in the sound, so nine lanes reach everything.

- The host always lists the macros by number. The name you gave a macro shows only in the plugin, so check its number before you draw a lane.
- Turning a macro or the volume in the plugin is reported to the host, so you can record the move: arm the track, turn the knob.
- Moving a macro from the DAW moves every connection it has.
- To automate any other control, drag a macro's chip onto it, set where it lands, and automate the macro.

Tempo and transport

The instrument follows the host's tempo and song position (120 BPM when the host gives none). LFOs, envelopes, glide, the time-based effects and the whole composing layer can lock to the tempo. The **Pump** ducks on the beat; it is tempo ducking, not a sidechain.

With the host stopped, a progression plays free from when you start it (with **With DAW** on it plays whenever the DAW plays). A GAIN SHAPER, and with it the **Pump**, rests at full level so you can play and edit without the ducking. Set its **When stopped** switch to **Runs** for a gate or tremolo that should run anyway.

Latency

Almost the whole instrument has no latency. Two effects add some, and the plugin reports it so your tracks stay in time: a TAPE effect that is on, and a LIMITER on **Clean** (3 ms, traded for lower distortion; **Instant** has none). With neither on, latency is 0.

Offline bounce

When the host renders offline, large streamed instruments wait for the disk instead of dropping notes. There is nothing to set.

What a session stores

The session holds the whole instrument, not a reference to a preset: every value of the sound, drawn shapes, macro names, your wavetables, which samples it points at, the whole Compose setup and the page you were on. It does not store the undo history or the library itself (packs and your files stay in your content folder).

A fresh instance starts on Init, or on the patch you chose with **Set as startup preset (every new instance)** in the preset menu.

A session made with a later version

It still loads. Whatever this version does not know is left out, never swapped for something else. The header shows a **Needs** pill and a card, **MADE WITH A NEWER VERSION**, says what was left out. **Get the update** opens the update page.

Opening a session on another computer

The samples, instruments and wavetables live in the content folder, so the other computer needs the same content. A sound whose pack is missing plays without it; if that pack is a free expansion, a banner offers **DOWNLOAD**. Audio you dropped on a generator was copied into your own library, so take your content folder with you.

On the **CONNECT YOUR CONTENT** card, **GET CONTENT** downloads the factory content and **LOCATE FOLDER** points at a folder you already have. **Content folder...** in the preset menu changes it at any time. By default the content folder is PHIL SPEISER CONTENT in your Music folder (macOS) or Documents folder (Windows), shared by all my products that use content.

Undo and Redo

There is one undo history for the whole instrument, 64 steps deep. Use the two arrows in the header, or **Cmd+Z** and **Cmd+Shift+Z** (**Ctrl+Z** and **Ctrl+Shift+Z** on Windows) while you are not typing in a field. If your DAW keeps those keys for itself, use the arrows.

One step is one gesture, not one value: a whole knob drag, a menu pick, reordering an effect tile. Loading a preset, **Init patch**, a **Sound only** load and each take of **Generate** are one step each, and undo brings back the whole sound before it. Scale picks, chord set edits, progression edits and arp edits are steps too.

Three editors keep their own history, so you can walk back through many small edits without touching the sound:

Editor	Its undo
Note editor (Phrases)	64 steps. Cmd/Ctrl+Z, Cmd/Ctrl+Shift+Z or Cmd/Ctrl+Y, and in its right-click menu.
Melody editor (Generate)	The same. **Generate**, a take step and every edit are one step each.
Wavetable editor	Up to 200 steps. **Undo** and **Redo**, or **Z** and **Shift+Z**. **Revert** puts back the table you opened with.

Not covered: loading content into a generator (what you do with it afterwards is), and auditions in the browsers. Closing a browser without keeping anything puts back what you had. The history is not saved with the session.

Keyboard Shortcuts and Gestures

A few rules hold everywhere:

- The mouse wheel never changes a knob. It scrolls, or zooms where an editor says so.
- **Shift** while dragging a value means fine.
- A double-click on a value puts it back to its default.
- A right-click on a value opens its control card: type an exact number and see what modulates it.
- **Cmd/Ctrl** means Cmd on macOS and Ctrl on Windows; **Option/Alt** the same.

Keyboard shortcuts at a glance

Keys	Where	What it does
Cmd/Ctrl+Z, Cmd/Ctrl+Shift+Z	Anywhere, no field in use	Undo, redo
Escape	Any menu, picker or call-out	Closes it
Up / Down	Sound wheel, after a click on the big name	Previous / next sound
Up / Down, Return	Preset browser	Audition the previous / next row; keep it
Left / Right, Up / Down, Delete	Progression strip	Select a chord, change it, remove it
B, F, Z	Note editor	Draw mode, fold to notes, zoom to selection
Cmd/Ctrl+A, C, X, V, D	Note editor	Select all, copy, cut, paste, duplicate
Cmd/Ctrl+E, J, U	Note editor	Split, join, quantize
1, 2, 3, 4	Wavetable editor	Draw, Line, Curve, Smooth

Every other key goes to your DAW.

Window and header

Gesture	What it does
Click **Play**, **Compose** or **Synth**	Shows that page.
Click the preset arrows / name	Previous or next preset / the preset browser.
Click the dots	Preset menu: **Init patch**, **Save**, **Save as...**, **Import presets...**, **Content folder...**, **Set as startup preset (every new instance)**.

Click **Sound only**	Loading a preset then changes only the sound and keeps your Compose setup.
Drop preset files on the window	Imports them and loads the first.
Click the gear	Settings: **LANGUAGE**, **SHOW TOOLTIPS**, **RESET ZOOM**.
Drag the corner grip	Scales the window. Double-click for 100 %.
Press on the bottom keyboard	Plays notes; near the tip is harder.

Play page

Gesture	What it does
Type in **Describe a sound**	The sound wheel shows matches as you type. Return loads the next match; Up / Down step through them. Escape clears.
Click a name above or below the big one	Loads that sound.
Drag a macro knob	Turns the macro. Double-click: 0 %. Double-click its name to rename it.
Drag the **Pump** amount	How deep the sound ducks. Click the word **Pump** to switch it on / off; click the rate under it for **How Often** and **Shape**.
Click **Key**, **Keys play**, **Motion**, **Pattern**	Key and scale; what the white keys play; how notes move; the groove or arp pattern.
Click - or + on **Octave**	One octave down / up.
Click **Browse** / **Generate**	Preset browser / Generate panel.

In the Generate panel, pick **WHAT CHANGES** (**Everything**, **Compose**, **Sound**, **Space**), a **TYPE** and any **GENRE** pills, then click **Generate**. The carets and take dots step through the takes; the disk icon saves the one on screen.

Browser

The same browser serves presets, chord sets, grooves, samples and wavetables.

Gesture	What it does
Click a row	Auditions it. Nothing is kept yet.
Double-click a row, or Return	Keeps it and closes.
Up / Down	Next / previous row, auditioned.
Click a row's play button / star	Preview / favourite.
Click a row's **Sound only** pill	Loads only the sound and keeps your Compose setup.
Right-click a row	**Rename...**, **Edit details...**, **Move to Trash** for your own items.

Type anywhere	Searches the list. Escape clears.
Click type chips, style tags, **Favourites**	Filters. **Clear filters** clears them.
Click the disk icon	The Save card: **Name**, **TYPE**, tags, **Description**.

In the Expansions store, **DOWNLOAD** or **DOWNLOAD ALL** fetches packs in the background.

Compose page

Gesture	What it does
Click **Free**, **Scale**, **Chords**, **Phrases** or **Generate**	Chooses what the white keys play.
Click the two boxes of **Key**	The key; the scale. A scale pick moves the loaded chord or phrase set with it.
Click the carets of **Chord set** / **Phrase set**	Previous / next set. The name opens the browser; the sparkle opens the chord set generator.
Click a **Motion** pill	**Sustained**, **Strum**, **Glide** (Chords only), **Rhythm**, **Arp**.
Click a chord card	Selects and plays it. Right-click: **New chord**, **Lock chord**, **Clear chord**.
Double-click a key of the chord keyboard	Adds the note to the chord or takes it out.

The chord set generator: pick **MOOD** pills, a **COLOUR** and **HOW BOLD**, then **Generate**. Locked chords are kept.

The groove lane (Rhythm):

Gesture	What it does
Click the empty lane, or press and drag right	Adds a note; the drag sets its length.
Click a note	Takes it out.
Drag a note / its right end	Moves it / sets its length. Cmd/Ctrl flips **Snap** for that drag.
Sweep in the velocity row	Sets velocity.
Bars, Cmd/Ctrl + wheel	Groove length; zoom.
Right-click	**Copy bar**, **Clear bar**, **Clear the whole rhythm**.

Strum: **Once per key** gives one roll per key; pick **Together**, **Quick**, **Strum**, **Slow** or **Harp**, or drag **Strum Speed**. **Guitar mode** turns every chord into a six-string shape. With **Pattern** on,
pick a **Click adds** tool (**Down**, **Up**, **Mute**, **Knock**, **Eraser**) and click an empty swing, or drag down or up across the strings to draw a strum (faster is harder). Drag a stroke up / down for how hard, sideways to move it. Right-click a swing for **What the hand does**. With **Record** on, sweep the strings while it plays to write your strums in.

Glide: drag the picture or **Glide** for the time, or switch on **Sync** and pick a **Rate**. Arp: **Rate**, **Order**, **Octaves**, **Gate**, **Swing**, **Latch**, and **More...** for the rest.

Progression strip

Gesture	What it does
Click play / **Capture** / **Library**	Play the progression / make what you just played the progression / open the library.
Drag a chord sideways / up and down	Moves it / changes it from I to VII.
Drag a chord's edge	Lengthens or shortens it.
Double-click a chord / a gap	Chord picker / adds a chord.
Drag **Keys** or **Chords** out	MIDI clip for your DAW.

Note editor

The editor for Phrases and the roll inside Generate. The Grid key is Cmd on macOS and Alt on Windows; the Copy key is Option on macOS and Ctrl on Windows.

Gesture	What it does
Click / Shift-click a note	Selects it / adds it to the selection.
Drag a note	Moves the selection. Grid key: off the grid. Copy key: drags copies.
Drag a note's end	Length.
Grid key + drag up / down	Velocity.
Double-click a note / the empty grid	Deletes it / adds a note.
Drag on the empty grid	Selection rectangle.
Wheel, Shift + wheel, Cmd/Ctrl + wheel	Scroll keys, scroll time, zoom.
Up / Down, Left / Right	Move the selected notes a row / a grid step.

The right-click menu adds **Chop**, **Legato**, **Stretch x2**, **Reverse**, **Invert** and the **Bend** shapes. Under the notes, the lanes **Bend**, **Press**, **Slide** and **Vel** shape the note in focus: click to add a point, drag it, double-click to remove it, or use **Shapes** (**Glide to next note**, **Slide in from below**, **Fall off**, **Vibrato** and more). With **Bend** open, drag the dot at a note's end to pull a glide out of it.

Melody editor

The Generate page is a row of controls around the note editor.

Generate writes a new melody for the sound; the take arrows step through your takes, edits kept. The length chip picks **2 bars**, **4 bars** or **8 bars**. Select a part and click the wand on the ruler to regenerate only that part. Drag **Drag MIDI** out for the melody as a MIDI file.

Values everywhere on the Synth page

Gesture	What it does
Drag	Sets the value. A click never jumps it.
Shift + drag	Fine.
Double-click	Default.
Right-click	Control card. Type a value with or without its unit (1.5k, -6 dB, 250ms; note names on a frequency) and press Return.

Generators

Gesture	What it does
Click a generator chip	Shows / hides its column. Double-click: that one alone.
Click **+**	**Add a generator**. Six is the limit.
Click the type name / power mark / headphones	Change type / on-off / solo.
Click the x twice	Removes the generator.
Click the source name or its arrows	Opens the browser / steps through it.
Drag on the display	Pulse width, wavetable Position or sample markers, depending on the type.
Drop an audio file on a generator	Sample, Granular and Spectral take it; any other type becomes a Sample generator.
Drag a handle on an envelope picture	Sets that stage.

Wavetable editor

Opened by **Edit Table...**; every edit is heard as you make it. Pick **Draw**, **Line**, **Curve** or **Smooth** and drag on the wave; hold **Hold to hear** to play a note. In **Harmonics**, drag across the bars. Click a frame tile to select it, Shift-click for a range. The bottom row holds **Generate**, **Import**, **Process**, **Revert** and **Export**.

Filter and amp

Gesture	What it does
Drag on the filter curve	Sideways is Cutoff, up / down is Resonance.

Click **Filter 1** / **Filter 2**	Shows that filter.
Click the **Output** chip	**Output**, **Filter 2** or **FX Sends Only**.
Drag the Amp picture or a stage cell	The amp envelope.
Click the voice-mode chip	**How Notes Play**: **Poly / Mono / Legato**, **Polyphony**, glide.
Drag **Glide** up from 0	Glide time; switches glide on.

Modulation and connections

Gesture	What it does
Drag a source chip by its grip onto a control	Makes a connection.
Click **Add**	Adds an envelope, LFO, macro or playing source.
Drag a range handle on a modulated control	Sets where the source takes the value. The knob stays.
Option/Alt + drag the control	Moves the knob while every range keeps its far end.
Click a line's colour dot on the control card	Connection on / off.
Click the three dots	**Flip direction**, **Both ways**, **Add** a curve or smoothing, **Remove**.

Effects rack

Gesture	What it does
Click **Main**, **Bus 1**, **Bus 2**	Shows that chain.
Click **Add effect** or the + tile	Picker of effects; type to search.
Click **Chain presets**	Load or save a whole chain.
Click a tile / its lamp	Opens the effect / switches it on or off.
Drag a tile sideways	Reorders it.
Right-click a tile	**Duplicate**, **Save as preset...**, **Move to**, **Applies To**, **Remove**.

Effect editors

Gesture	What it does
Click the preset name or its arrows	Effect presets.
Click **Works on:**	The band rail: the effect works only on part of the spectrum.
Click **Channel:**	**Stereo**, **Center** or **Sides**.

Drag a value cell, **Mix** included	Sets it. Right-click to type a value.
Drag the picture	Most effects take their main values right on it: EQ bands, compressor threshold, limiter ceiling, delay time.

In the drawn shapes of GAIN SHAPER and FILTER SWEEP, double-click to add a point, drag to move it, double-click it to remove it.

Popups

Every menu and picker works the same way: a click on its control opens it, a second click or Escape closes it, and a click outside only closes it.

Specs

The instrument

- Generators: 6 per sound, plus Sub and Noise
- Generator types: Oscillator, Wavetable, Instrument, Sample, Multisample, Granular, Spectral, Hyper
- Unison: up to 16 voices per generator (Spectral up to 8, Hyper up to 9)
- Generator level: up to +12 dB
- Wavetables: 1 to 256 frames
- Voices: 1 to 128; voice modes Poly, Mono, Legato
- Glide: 0 to 8 s, or synced to a note value
- Filters: 2, with 62 filter types, every type available in both
- Envelopes: 4; LFOs: 10; macros: 8
- Modulation connections: 64
- Effects: 32 in total, over 3 chains (Main, Bus 1, Bus 2)
- Quality: Eco, Normal, High, Auto
- Volume: -60 to +12 dB, default -6 dB
- Pitch and Transpose: -48 to +48 semitones
- Bend Range: 0 to 24 semitones, default 2; per-note bend with MPE 48 semitones each way
- Tuning: A4 from 415 to 466 Hz, default 440 Hz; tuning files .tun and .scl
- Notes in a chord: up to 8
- Octave on Play and Compose: -3 to +3
- Note editor grid: from 1/64 note to one bar
- Undo: 64 steps for the instrument and the note editor, up to 200 in the wavetable editor

In the host

- Instrument plugin: VST3, AU and AAX on macOS, VST3 and AAX on Windows
- One stereo output; no audio input, no sidechain input
- MIDI in and out, MPE in and out
- 9 automatable parameters: Macro 1 to Macro 8, Volume
- Latency 0, unless a TAPE effect is on or a LIMITER is on Clean; always reported to the host
- Runs at the host's sample rate and buffer size; 120 BPM when the host gives no tempo

Files it reads and writes

- Preset import: the preset formats listed in **Import presets...** (.fxp, .fxb, .h2p, .spf, .spf2 and more)
- Audio on a generator: .wav, .aif, .aiff, .flac, .mp3, .ogg

- Wavetables: import a wavetable .wav or any audio; export a .wav
- Impulses for IR LOADER: .wav, .aif, .aiff, .flac
- Tuning files: .tun, .scl
- MIDI in: a .mid clip dropped on the progression strip
- MIDI out: clips dragged from **Keys**, **Chords**, **Drag MIDI** and the arp editor, at the host tempo

System and window

- macOS 10.13 or later, Intel and Apple Silicon, or Windows 10 or later
- Window 1100 x 900 at 100 %, zoom from 50 % to 300 %
- Tooltips in English, German, French, Spanish and Italian
- Content folder: by default PHIL SPEISER CONTENT in your Music folder (macOS) or Documents folder (Windows); you can put it anywhere, an external drive included
- Internet: needed for the login, downloading the library and expansions, the assistant, the update check and looking up search words online. The assistant sends the instrument's current state with your question, so it can answer about the sound you have loaded.

Trading quality for CPU

How hard the instrument works depends on the sound: the voices, the unison and which generators play. These settings move the balance:

- **Polyphony**: fewer voices, less work
- Quality: Eco, Normal, High, Auto
- Unison per generator: more voices, more work
- Storage of a sampled instrument: Auto, RAM or Disk. Small instruments load into memory, large ones stream from disk.
- Amp Custom in DRIVE on **Eco**: the tube amp at half its internal rate
- LIMITER: **Instant** has no latency; **Clean** has lower distortion and adds 3 ms

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Stuck, or found something this manual doesn't cover? Write to me at philspeiser.com/support. I answer support myself.