MORPHING FILTER SYNTHESIZER

Henge

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Henge is a morphing-filter synthesizer. At its heart is a fourteen-pole filter that moves between vowels, resonances and metal as you play.



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Henge, from the first sound to the last setting.

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A sound that turns into another: the panel, the filter and its 48 models, everything that moves it, and all 13 programs.

Welcome

Henge is a morphing-filter synthesizer. Every voice plays through a fourteen-pole filter that moves between vowels, resonating bodies, phasers, combs and walls as you play.

A filter model is a cube. At each of its eight corners sits a complete filter shape, and three coordinates choose a point inside it. **X** moves the whole shape up or down the spectrum: a lower voice to a higher one, a larger body to a smaller one, a cutoff swept upwards. **Y** takes it from soft and wide to sharp and strong. **Z** morphs from one shape to another, the two its name gives: Aah Ooh sings /a/ at Z 0 and /u/ at Z 1. Between the corners the filter's seven resonant sections blend smoothly, so every point is a filter, and every path through the cube is one sound turning into another.

Two engines feed it. Engine A plays Henge's own waves: single cycles, loops and short attacks. Engine B is an analogue-style saw, pulse, sub and noise. Three envelopes, two LFOs, two function generators and a twelve-slot matrix move the point; the vector pad moves it by hand, and its recorder loops what your hand did. You can give each engine a filter of its own and crossfade them, split the keyboard into zones that play other programs, run your playing through the arpeggiator and chord generator, and finish it all in a tape delay and a plate.

Five minutes with Henge

1. Put Henge on an instrument track and play. A new Henge opens on Aberdeen Neon, the first of the Pads.
2. Hold a chord and turn **Morph Z** slowly. Watch the **Response** display: the bright curve travels back through the model's shapes, from Z 0 at the front to Z 1 at the back.
3. Turn **Cutoff X** to slide the shape up and down, and **Emphasis Y** to sharpen it.
4. Roll the thumbwheel beside the **Filter Model** window to try another model, or click the window for all 48 by family. The filter crossfades, so a change never clicks.
5. Drag in the **Vector** pad. On most programs the pad's X moves Cutoff and its Y moves Morph; at the pad's centre the filter is exactly where the program put it.
6. Click **Rec** and move the pad for a bar, then click **Play**. The movement loops in time with your host.
7. Click the program name for the menu, and try Lighthouse Beam, Slow Orbit or Long Exhale. Hold the chord for ten seconds: they are still changing.

> NOTE NAMES
>
> Henge names keys as Ableton Live does: middle C, MIDI note 60, is C3. The zones and the on-screen keys use these names.

The panel



Henge on Slow Orbit, the Sources page open below the filter row.

1 Program	The program's number and name, its family, and the voices sounding. Click the name for the program menu; the arrows at either end step through every sound. A note such as Saved shows here for a few seconds.
2 Master −60 dB to +6 dB	The level of the sound you are editing, before the effects. Each program sets its own.
3 Filter Model 48 models	The model, its family and its number. Roll the thumbwheel, or click the window for every model by family.
4 Response	The filter as it sounds: the live curve, with the model's shapes along Z laid out behind it.
5 Vector pad	Drag to move the pad. The puck shows where the voices hear it; the bar at its side shows the filter's Z.
6 Pad to Filter Four routes	Which filter axes the pad moves by itself: Cutoff + Morph, Cutoff + Emphasis, Morph + Emphasis, or Matrix Only.

7	**Inertia** 0 to 100 %	How heavy the puck is. At 0 it follows your hand at once; higher, it lags and swings a little past.
8	**Bars** 1 to 4	The length of the motion recorder's loop.
9	**Motion Recorder** Off, Rec, Play	Records the pad's movement and loops it with the host.
10	**Filter row**	Morph Z, Cutoff X and Emphasis Y set the point in the model's cube; Drive, Env 2 > X and > Z, Key Track and Velocity > X drive it and move it. See The morphing filter.
11	**Tabs** Ten pages	Sources, Layers, Envelopes, LFOs, Functions, Matrix, Effects, Voice, Arp and Zones. The lit one is open.
12	**Page**	The page chosen by the tabs. Each has its own chapter in this manual.
13	**Keys**	Five octaves and a top C, lit as they play. Click a key to play it; the arrows at either end move them an octave.
14	**Key and size**	The licence key, and below it the window size.
15	**Keyboard**	Shows or hides the keys.

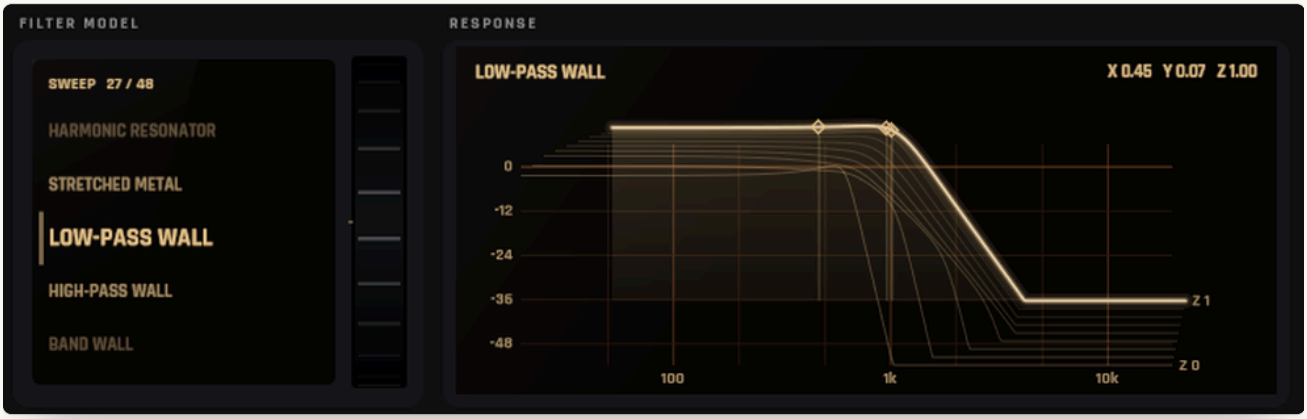
Working the controls

Dials	Drag up or down to turn; hold Shift for fine control. The mouse wheel moves a dial a little at a time, and a double-click returns it to its default. The readout under each dial shows its value.
Choosers	The gold readouts with a small arrow. Click for a menu of every option; drag up or down, or use the mouse wheel, to step through them.
Switches	Click to turn on or off. The bar on the button lights when it is on.
Amount bars −100 to 100	In the matrix and the zones. Drag sideways, Shift for fine; a double-click sets zero.

Controls that do nothing in the present setting dim, so a glance shows what is in play. Every control is a host parameter, the pad and the zones included, so your host can automate any of them and records your moves cleanly.

The morphing filter

Each voice has its own filter: seven resonant sections in series, fourteen poles in all. A model gives each section a place, a sharpness and a height at every corner of the cube; X, Y and Z choose the point between them.



The filter model and the response display, on Low-Pass Wall. The diamonds mark the seven sections' resonances; behind the live curve, the model's shapes from Z 0 at the front to Z 1 at the back.

The three axes

Every model keeps the same meaning for its axes, so what you learn on one carries to the rest.

AXIS	WHAT IT DOES
X, CUTOFF	Spectral shift. The whole shape moves up the spectrum from X 0 to X 1: a lower voice to a higher one, a larger body to a smaller one, a cutoff or a comb swept upwards.
Y, EMPHASIS	Soft, wide peaks at Y 0; sharp, strong ones at Y 1. On Low-Pass Wall and High-Pass Wall, Y is a resonance at the cutoff, from none to +16 dB.
Z, MORPH	One shape at Z 0, another at Z 1, as the model's name says. In between, the sections glide from one to the other: places and sharpness on a musical scale, heights in decibels.

The model wheel

The **Filter Model** window shows the model's family and number at the top, the model in large type, and two either side of it, dimmer. Drag the ribbed thumbwheel up or down, or roll the mouse wheel over it, to step through the 48 in turn; click the window for a menu of them all, grouped by family. A change of model crossfades the filter over 20 ms, so you can change it while notes sound, and automate it.

Each model is trimmed towards the same loudness, so a change of model doesn't leap in level. Sharp vocal shapes still sound a little quieter than the walls and resonators, which pass more of the sound.

The response display

Behind, faint, the model at the dials' X and Y, drawn at nine points along Z from the front (Z 0) to the back (Z 1): the whole morph laid out in depth. In front, where its Z places it, the live curve: the newest voice's filter as it sounds, with every modulation in it. The diamonds and their drop lines mark the seven sections' resonances. The readout at the top right gives the live X, Y and Z; with nothing sounding, the curve shows the dials' own point, and the readout says (dials). The scale runs from 20 Hz to 20 kHz, with lines every 12 dB.

The filter row

Morph Z 0 to 100 %; 0	Where the model is between its two shapes: the first its name gives at 0, the second at 100 %.
Cutoff X 0 to 100 %; 50 %	Moves the whole shape up or down the spectrum.
Emphasis Y 0 to 100 %; 50 %	From soft and wide to sharp and strong.
Drive 0 to 24 dB	Turns the voice up into the filter. Its first section saturates softly, more as Drive rises: warmth, then grit.
Env 2 > X −1 to +1	Env 2, the filter envelope, on Cutoff. At 1 the envelope's peak moves X across its whole range; below 0 it moves it down.
Env 2 > Z −1 to +1	Env 2 on Morph, the same way: each note can travel from one shape to the other and settle.
Key Track −1 to +1	Cutoff following the keyboard, centred on middle C. At 1, X rises by an eighth of its range for each octave up.
Velocity > X 0 to 100 %	Harder notes, higher cutoff. At 100 %, a note at full velocity adds X's whole range.

The point never leaves the cube: however much modulation piles up, each coordinate stops at 0 and 1. The vector pad and the matrix move the point too; see their chapters.

The forty-eight models

Five families, numbered as the wheel numbers them. The first 32 came first; the 16 that followed join their families in the menu but keep their later numbers on the wheel. Each line gives the shape at Z 0, then at Z 1.

VOCAL

MODEL	Z 0 TO Z 1
01 VOCAL FORMANT MORPH	/a/ (aah) to /i/ (eee). X from a tenor's formants to a soprano's.
02 AAH OOH	/a/ to /u/. A bass's mouth at low X, an alto's at high.
03 EEE OOH	/i/ to /u/.
04 OH EH	/o/ to /e/.
05 MALE CHOIR	/a/ to /o/, the formants widened as many voices blur them.
06 FEMALE CHOIR	/e/ to /a/, widened the same way: altos to sopranos along X.
07 THROAT SINGER	A drone's low formant and one razor-sharp whistle above it, which Z carries from 800 Hz to 2.4 kHz, picking out single harmonics.
08 WHISPER	/i/ to /o/, broad formants over a high-pass that takes the chest away.
09 TALK BOX	/o/ to /i/, sharper and stronger than a singer: a mouth shaping an instrument.
10 GIANT TO CHILD	A giant's /a/ to a child's /e/, beyond any real voice.
33 NASAL HUM	A murmur's low formant and the nose's anti-formant, carried from /m/ to /ng/.

RESONATOR

MODEL	Z 0 TO Z 1
11 WOOD BODY	A guitar body's resonances to a violin's.
12 MARIMBA TO XYLOPHONE	A tuned bar's partials, warm to bright.
13 OPEN TO CLOSED TUBE	Every harmonic to the odd ones only.
14 BELL TO GONG	A church bell's partials to a gong's.
15 PLATE REFLECTIONS	A square plate's modes to a long one's.

MODEL	Z 0 TO Z 1
16 GLASS TO SINGING BOWL	A glass's ring to a bowl's.
17 BOX TO ROOM	A small box, boxy and close, to a small room, lower and ringing longer.
18 TOM TO TIMPANI	A drum's modes, small to large.
19 BRASS BELL TO MUTE	An open bell's broad, bright formant to a stem mute's narrow, nasal peak.
20 OBOE TO BASSOON	A double reed's formants, high to low.
21 STEEL DRUM TO KALIMBA	A steel pan's partials to a kalimba's.
34 CHORD RESONATOR	Resonances on a major triad, to a minor seventh.
35 VIBES TO CHIMES	A tuned bar's partials to a tubular bell's.
36 PIANO SOUNDBOARD	The lid open, broad and bright, to the lid shut and the felt down.
37 GUITAR PICKUP	The neck pickup's resonance and pick dip to the bridge pickup's.

SWEEP

MODEL	Z 0 TO Z 1
22 DEEP PHASER	Six dips, close together to wide apart. Y takes them from soft to deep.
23 TWIN PEAK PHASER	Three peaks, each with a notch just above it, close to wide.
24 FLANGER COMB	Dips between the harmonics rising through flat into peaks on them, as a flanger sweeps through zero.
25 HARMONIC RESONATOR	Resonances on every harmonic, to the odd ones only.
26 STRETCHED METAL	Partials stretched like a stiff string's, to a metal bar's.
27 LOW-PASS WALL	A 72 dB-an-octave low-pass to a gentle four-pole. Y adds resonance at the cutoff.
28 HIGH-PASS WALL	The same, as a high-pass.

MODEL	Z 0 TO Z 1
29 BAND WALL	A band with steep walls and a peak in the middle, an octave wide to three.
30 WAH TO YOY	A wah pedal's single strong peak to two formants pulled apart.
31 GROWL TO SCREAM	A cluster of low formants, the top rolled away, to the cluster high and the chest cut away.
32 LASER SWEEP	Three whistling resonances in fifths and octaves, to stacked fourths.
38 SPLIT PEAKS	Two resonant peaks, one on top of the other, to three octaves apart.
39 DARK TO BRIGHT TILT	A broad tilt about a pivot that X moves: dark to bright.
40 HIGH SHIMMER	Narrow peaks high up in stretched fourths, to a dense cluster.

COMB

MODEL	Z 0 TO Z 1
41 OCTAVE FLANGE	Deep notches an octave apart under a low-pass, to shallower ones clustered high.
42 GOLDEN NOTCHES	Notches at the golden ratio, meeting a sound's harmonics one at a time as they sweep, to a closer spacing.
43 EVEN TO ODD CUTS	The even harmonics cut (hollow, square-like), to the odd ones above the fundamental.
44 PICK POSITION	A plucked string's comb: plucked a fifth of its length from the end, to a third.

CHARACTER

MODEL	Z 0 TO Z 1
45 SPEAKER CABINET	A closed four-by-twelve's thump and scooped middle, to an open-backed combo, brighter and wider.
46 TELEPHONE TO RADIO	A telephone's narrow band and nasal peaks, to an AM radio's wider one.
47 KICK TO SNARE	A kick's weight, scoop and click, to a snare's body and wires.
48 TAPE TO VINYL	Tape's head bump and sagging top, to a record's rumble filter and forward middle.

The two engines and the layers

Engine A plays waves; engine B is an analogue-style oscillator. Both sound in every voice, and unison stacks them up to four deep.



The Sources page on Slow Orbit: a quiet Soft Sine on engine A, and two saws an octave up, seven cents apart, on engine B, with two-deep unison.

Engine A: the waves

Wave
25 waves
The wave: seventeen single cycles and eight loops (below).

Attack
None, or 7
A short one-shot played at the start of each note: a breath, a consonant, a pluck. It plays at its own pitch whatever the key, and goes through the filter with engine A.

Level
0 to 100 %; 80 %
Engine A's level.

Octave
−3 to +3
Engine A's pitch in octaves.

Semi
−12 to +12 semitones
And in semitones.

Fine
−100 to +100 cents
And in cents: a little against engine B for a slow beat.

Start
0 to 100 %
Where in the wave each note begins: in a single cycle its phase, in a loop how far in. Unison copies after the first start anywhere, so a stack never starts in step.

Attack Lvl
0 to 100 %; 50 %
The attack's level.

The waves are Henge's own, made from spectra as it opens and kept as 16-bit samples. Each is stored at several bandwidths and read so that no note aliases, however high, and a glide never jumps in brightness.

KIND	WAVES
SINGLE CYCLES	Saw, Square, Pulse 25, Pulse 10, Triangle, Soft Sine, Organ (drawbars), Vox Aah, Vox Ooh and Vox Eee (harmonics shaped by the vowels), Glass, Hollow, Digital Harsh (a flat spectrum that buzzes rather than clicks), Harmonic Bell, Reed, Folded Sine, Sync Saw.
LOOPS	Metal Loop, Bell Loop, Gamelan (inharmonic partials with slowly beating twins), Breath (shaped noise over a faint pitched core), Choir Loop (each harmonic sung by three voices a little apart), Shimmer, Swarm (seven detuned saws), Noise. Each is 0.68 s long and loops without a seam.
ATTACKS	Breath, Vocal T, Vocal K, Pluck, Mallet, Chiff, Blip.

Engine B: analogue

Saw 0 to 100 %	A clean saw's level.
Pulse 0 to 100 %	A pulse's level.
Width 5 to 95 %; 50 %	The pulse's width: a square at 50 %, thinner either side.
Sub 0 to 100 %	A square an octave below engine B.
Noise 0 to 100 %	White noise, one stream per voice.
Octave, Semi, Fine	Engine B's pitch, as engine A's.

Engine B has no level of its own: each of its four parts has one, all at 0 as Henge starts. The matrix's Level B moves them together.

Unison

Voices 1 to 4	How many copies of both engines each note plays. The attack and the noise are not stacked.
Detune 0 to 100 cents; 15	The spread in pitch from the lowest copy to the highest.

Spread 0 to 100 %; 50 %	How far the copies are panned apart. With more than one copy and any Spread, the voice's filter runs in stereo.

> TIP
>
> Unison copies share the voice's filter and envelopes, so a four-deep stack is still one voice of the sixteen.

Layers and the second filter

Engines A and B can be two layers, each through a filter of its own, crossfaded or switched by velocity, key, wheel, pressure or the pad.



The Layers page on Slack Water: engine B through Golden Notches on filter 2, crossfaded with engine A by the pad's X, which the recorder sweeps.

Layers

Filters Single Filter, Dual Filter	Single Filter, as Henge starts, puts both engines through the one filter. Dual Filter sends engine A (the waves and the attack) through filter 1, and engine B (saw, pulse, sub and noise) through filter 2.
B Amp Envelope Env 1, Env 3	In Dual Filter, Env 3 can shape engine B's level in place of Env 1: a pluck on A with a pad blooming under it on B. A note lasts until both envelopes have finished.
Spread 0 to 100 %	In Dual Filter, pans A to the left and B to the right of the voice's pan.

Filter 2

Filter 2 Model 48 models; Low-Pass Wall	Engine B's model, chosen from the same 48. Its family shows at the corner of the curve beside it.
Cutoff X, Emphasis Y, Morph Z 70 %, 30 %, 100 %	Filter 2's own point. As Henge starts it is a gentle, fairly open low-pass.

The curve draws filter 2 as its dials set it. Filter 2 sits at its own point and follows the modulation filter 1 receives: Env 2 > X and > Z, Key Track, Velocity > X, the matrix's Filter X, Y and Z, and the vector pad's route. Filter 1's own Morph, Cutoff and Emphasis dials move filter 1 alone, and the matrix's Filter 2 X, Y and Z move filter 2 alone. Drive drives both. Each filter's loudness is evened on its own.

Crossfade A / B

Fade Off, Crossfade, Switch	Off plays both layers in full. Crossfade blends from A to B as the controller rises; Switch jumps from A to B at a point.
By Velocity, Key, Mod Wheel, Aftertouch, Expression, Vector X, Vector Y	The controller. Velocity and key are fixed as each note starts; the others move the blend while notes sound.
Direction A to B, B to A	B to A turns the fade round: B at the low end.
Point 0 to 100 %; 50 %	Where along the controller the change happens.
Width 0 to 100 %; 50 %	For Crossfade: how wide the blend is, centred on Point. Below it A plays alone, above it B. The blend is equal-power, so the level holds through the middle.

The crossfade works in either filter mode: in Single Filter it blends the two engines into the one filter. The attack fades with A and the noise with B. The matrix's Layer Fade adds to the controller, so an LFO or a function generator can move between the layers too. For Key, the controller runs across the whole MIDI range: 50 % is about E3.

> TIP
>
> For a velocity switch with no blend, choose Switch, By Velocity, and set Point where the second layer should take over: 60 % is a velocity of about 76.

Envelopes, LFOs and the matrix

Three envelopes and two LFOs in every voice, and a twelve-slot matrix to send them, and everything else you play, wherever you like.



The Envelopes page on Lighthouse Beam: Env 1 striking the root and falling away, and Env 3, engine B's own amp envelope, rising over six seconds, slow at first.

The envelopes

Env 1 shapes each note's level. **Env 2** is the filter's, through Env 2 > X and Env 2 > Z on the filter row. **Env 3** is free, for the matrix, or for engine B's level in Dual Filter. All three are matrix sources. Each draws its shape as you set it, its times on a compressed scale so that both 2 ms and 20 s show.

Attack 0.5 ms to 30 s	The rise to full.
Decay 0.5 ms to 30 s	The fall to the sustain level.
Sustain 0 to 100 %	The level held while the key is down.
Release 0.5 ms to 30 s	The fall to silence once the key is let go.
A Curve, D Curve, R Curve −1 to +1	Each stage's shape. At 0 a straight line; above 0 it moves fast at first, as a snappy attack or a natural decay does; below 0 it starts slowly.
Sync On or off	Times follow the host's tempo: each is read as at 120 BPM, snapped to the nearest note value, and played at the host's tempo. So 500 ms is a quarter note.

As Henge starts, Env 1 is 2 ms, 400 ms, 100 % and 300 ms; Env 2 and Env 3 are 2 ms, 400 ms, 50 % and 500 ms. The curves start at 0.30, 0.60 and 0.60.

A new note starts its attack from wherever the envelope is, so a retrigger never clicks. Sustain follows its dial while a note is held; a changed time takes effect from the next stage.

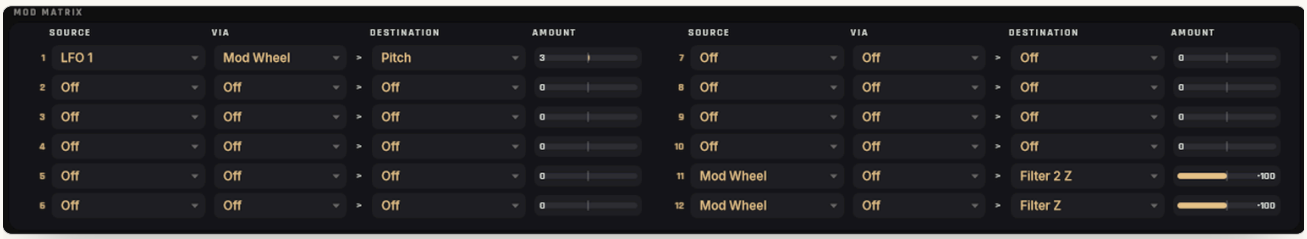


The LFOs page on Last Ferry: LFO 1 a slow smooth random, drifting the pitch like worn tape; LFO 2 a triangle over eight bars, morphing the filter.

The LFOs

Wave Sine, Triangle, Saw Up, Saw Down, Square, Sample & Hold, Smooth Random	The shape, drawn over two cycles beside it. Sample & Hold jumps to a new random level each cycle; Smooth Random glides between them.
Rate 0.01 Hz to 50 Hz	The speed, with Sync off. LFO 1 starts at 5 Hz, LFO 2 at 0.5 Hz.
Note Value 8 Bars to 1/64	The length of one cycle, with Sync on: bars, halves to sixty-fourths, dotted and triplet. 1/4 as Henge starts.
Fade In 0 to 10 s	Brings the LFO in gradually after each note starts.
Sync On or off	Note Value instead of Rate. The one not in use dims.
Key Sync On or off; on	On, each note restarts the LFO. Off, it runs freely; synced and free, it locks to the host's beat while the host plays.

The LFOs run in every voice, so with Key Sync on each note of a chord has its own, in step with its note.



The Matrix page on Harbour Choir: a vibrato that arrives late, LFO 2 drifting the vowel, Env 3 starting each note a fraction flat, and the wheel on Cutoff.

The matrix

Twelve slots, each a **Source**, an optional **Via**, a **Destination** and an **Amount** from −100 to 100. A slot sends the source times the amount; with a Via, that is scaled again by the second source. So LFO 1 via Mod Wheel to Pitch is a vibrato the wheel brings in, which is what slot 1 holds as Henge starts, at 3. Slots on the same destination add up.

SOURCES

SOURCE	RANGE AND MEANING
VELOCITY	0 to 1: the note's velocity.
AFTERTOUCH	0 to 1: channel or polyphonic pressure, whichever is greater for the note.
KEY	−1 to +1: the note, 0 at middle C, ±1 five octaves either way.
MOD WHEEL	0 to 1.
PITCH BEND	−1 to +1.
EXPRESSION	0 to 1: CC11. Full until the first expression message arrives.
ENV 1, ENV 2, ENV 3	0 to 1.
LFO 1, LFO 2	−1 to +1.
VECTOR X, VECTOR Y	−1 to +1: the pad as the voices hear it, 0 at the centre.
RANDOM	−1 to +1: a new random value for each note, held for its length.
CONSTANT	Always 1: a fixed offset.
FG 1, FG 2	−1 to +1: the function generators.

DESTINATIONS

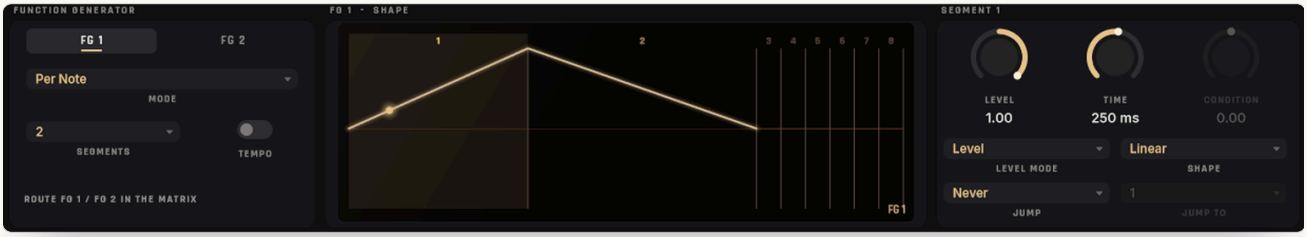
DESTINATION	AT AN AMOUNT OF 100, WITH THE SOURCE AT 1
PITCH, PITCH A, PITCH B	Both engines, or one: 12 semitones at full.
LEVEL A, LEVEL B	An engine's level: from silent at −100 to double at +100.
PULSE WIDTH	Engine B's width, within 5 to 95 %.
UNISON DETUNE	Adds up to 100 cents to Detune.
FILTER X, FILTER Y, FILTER Z	Filter 1's point (and filter 2's with it): the whole axis at full.
DRIVE	Up to 24 dB more.
AMP	The voice's level: silent at −100, +6 dB at +100.
PAN	The voice across the stereo field.
LFO 1 RATE, LFO 2 RATE	Faster or slower: +100 is sixteen times as fast, −100 a sixteenth.
ATTACK LEVEL	Adds to Attack Lvl.
FG 1 RATE, FG 2 RATE	A function generator's speed, as the LFO rates.
FILTER 2 X, FILTER 2 Y, FILTER 2 Z	Filter 2 alone, in Dual Filter.
LAYER FADE	Adds to the crossfade's controller.

> **SLOTS 11 AND 12**
>
> Every factory program but Init uses slot 12 for the mod wheel on Filter Z, and those with two filters slot 11 for Filter 2 Z. Leave them when you borrow a program's other slots, and the wheel still morphs.

Function generators

Two function generators, each of up to eight segments: an envelope with a loop in it, a stepped pattern, an LFO of your own shape, or a slow random wander. Motion with intent.

A segment travels from wherever the generator is to its level, over its time, along one of 22 shapes. At its end the generator moves on to the next segment, or jumps to any segment, itself included, when the segment's condition holds. After the last segment, with no jump, it holds its level. The output runs from −1 to +1, and reaches the sound through the matrix, as the sources FG 1 and FG 2.



The Functions page on Long Exhale. FG 1 rises along an S-curve over six seconds, falls back over six, and settles over eight more; the matrix sends it to Morph and Cutoff. The dot is the newest voice, just begun.

The generator

FG 1, FG 2	Which generator the page shows.
Mode Per Note, Free Run	Per Note, each voice has its own, started by its note; a retrigger carries on from where it stands. Free Run, one runs for the whole instrument and every voice hears it.
Segments 1 to 8; 2	How many segments it uses.
Tempo On or off	Follow Tempo: times are written as at 120 BPM and scale with the host's tempo, so 125 ms is a sixteenth note at any tempo.

As Henge starts, each generator rises to full in 250 ms and falls back to 0 over 500 ms: heard only once a matrix slot routes it.

The shape

The middle of the page draws the generator segment by segment, each as wide as its time on a compressed scale. Click a segment to edit it on the right; segments past the count show as faint narrow columns, there to click and set. A random level's reach is shaded. Jumps are dashed arcs to their targets, named by their conditions (ALWAYS, HELD, UP

for released, LFO 1, LFO 2, VEL, KEY, WHEEL, PEDAL; a ! marks the kinds that act at once). The moving dot is the newest voice's generator, or the free one.

The segment

Level −1 to +1	Where the segment goes.
Time 1 ms to 30 s	How long it takes.
Level Mode Level, Change, Random, Random Change	How Level is read (below).
Shape 22 shapes	The path it takes (below).
Jump 12 conditions	Whether, and when, it jumps (below).
Jump To 1 to 8	The segment it jumps to. It starts from wherever the generator is, so nothing steps.
Condition −1 to +1	The value the LFO, velocity, key and wheel conditions compare with. It dims for the others.

LEVEL MODES

LEVEL	Go to this level.
CHANGE	Go this far from the last segment's level: a loop that climbs or falls each time round.
RANDOM	Go to a random level between 0 and this one, new each time.
RANDOM CHANGE	Take a random step from where it is, up to this far.

SHAPES

LINEAR	A straight line.
FAST 1 TO FAST 4	Fast at first, then easing in; Fast 4 the most.
SLOW 1 TO SLOW 4	Slow at first, then hurrying; Slow 4 the most.
S-CURVE, SHARP S	Slow, fast, slow; Sharp S more so.
HOLD	Stays where it is, then steps to the level at the end.
JUMP	Steps to the level at once, then stays.
OVERSHOOT	Goes about 11 % past the level, then comes back.
SPRING	Rings about the level as it settles.
BOUNCE	Falls onto the level and bounces three times, each lower.
RIPPLE	Ripples on its way.
ARC	Bows out past the straight line, then arrives.
STAIRS 4, STAIRS 8	In four or eight steps.
JITTER	A line with a random tremble, new each time.
WANDER	A random path from start to level, new each time.

JUMPS	
NEVER	No jump: on to the next segment.
ALWAYS	At the end, every time: a loop.
HELD AT END, HELD NOW	While the key is held. At End waits for the segment to finish; Now jumps the moment it holds.
RELEASED AT END, RELEASED NOW	Once the key is let go: a release stage of your own.
LFO 1 AT END, LFO 2 AT END	When the LFO is at or above Condition.
VELOCITY AT END, KEY AT END, WHEEL AT END	When the note's velocity, its key (as a share of the MIDI range: 0.5 is about E3) or the mod wheel is above Condition; with a negative Condition, below its size (−0.6: below 0.6).
PEDAL AT END	While the sustain pedal is down.

Free Run

A free-running generator starts as soon as it is switched to Free Run, or as a program that uses one loads, and runs on whether or not you play. For it, held means any key down or held by the pedal, and velocity and key are the last note's. The LFOs belong to the voices, so a free generator sees them as 0.

The matrix's FG 1 Rate and FG 2 Rate speed a generator up or slow it down: +100 runs it sixteen times as fast.

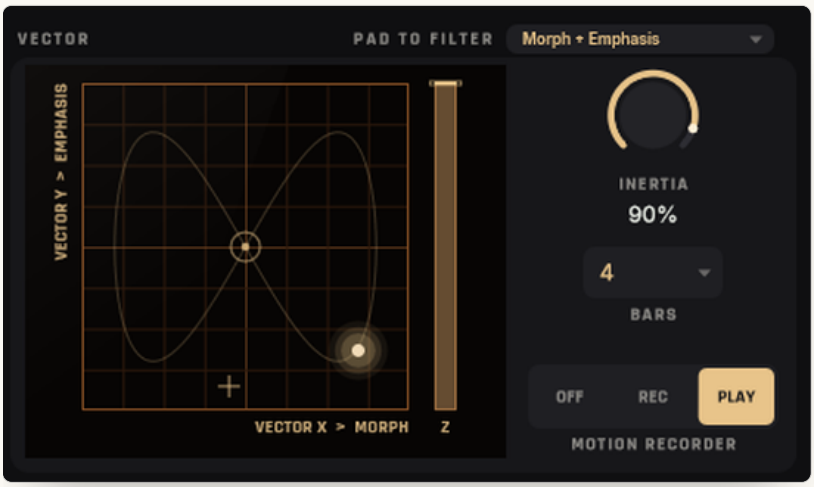
A stepped filter sequence

1. On FG 1, set **Segments** to 8 and switch **Tempo** on.
2. Click each segment in turn and give it a **Time** of 125 ms (a sixteenth), the **Shape** Jump, and a level of your own.
3. On segment 8, set **Jump** to Always and **Jump To** to 1.
4. On the Matrix page, route FG 1 to Filter Z at 50.

That is Morph Sequencer, one of the Functions programs. Each of the seven shows one thing a function generator does that an envelope or an LFO can't.

The vector pad and motion recorder

An X/Y pad with weight to it, and a recorder that loops up to four bars of what your hand did.



The Vector frame on Slow Orbit: the recorder playing a figure of eight, the puck behind the ring.

The pad

Drag anywhere on the pad to move it: that sets **Vector X** and **Vector Y**, two host parameters, and a hollow ring marks where they are. The glowing puck, with its fading trail, is where the voices hear the pad: behind the ring by the inertia, or following the recorder. The small cross is the newest voice's filter X and Y, and the bar at the side its Z, with the Morph dial's own Z as a hollow tick, so the pad shows the whole filter point moving. The legends along the pad's edges name where each axis goes.

Pad to Filter

The tag on the frame's title line chooses which filter axes the pad moves by itself, with no matrix slot needed: pad X first, then pad Y.

Cutoff + Morph	As Henge starts: pad X on Cutoff, pad Y on Morph.
Cutoff + Emphasis	Pad X on Cutoff, pad Y on Emphasis.
Morph + Emphasis	Pad X on Morph, pad Y on Emphasis.
Matrix Only	The pad moves nothing by itself; route Vector X and Y in the matrix.

At the pad's centre the filter sits exactly where the program put it. Towards an edge the routed axis moves, in proportion, all the way to that end: pad X at its right edge takes Cutoff to 100 % wherever the program had it, and at its left edge to 0. So a program is heard as written until the pad moves, and from there the pad reaches the whole axis. The matrix's Vector X and Vector Y sources work alongside, from −1 to +1 with 0 at the centre. In Dual Filter the pad moves filter 2 the same way.

Inertia

Inertia gives the puck weight. At 0 it follows your hand at once. Turned up, it gets heavier: it lags behind the ring and swings a little past before it settles, like a hand on a real joystick. Fast scribbles become slow, curving sweeps.

The motion recorder

Off	The pad follows your hand.
Rec	Records. A new take begins holding the pad where it is; then, as the loop goes round, each moment takes the pad's position where you put it, over whatever was there. REC blinks red on the pad.
Play	Plays the take back, smoothly, driving the pad in place of your hand. Its path is traced faintly on the pad. With no take yet, the pad stays yours.
Bars 1 to 4	The loop's length, in bars of four beats.

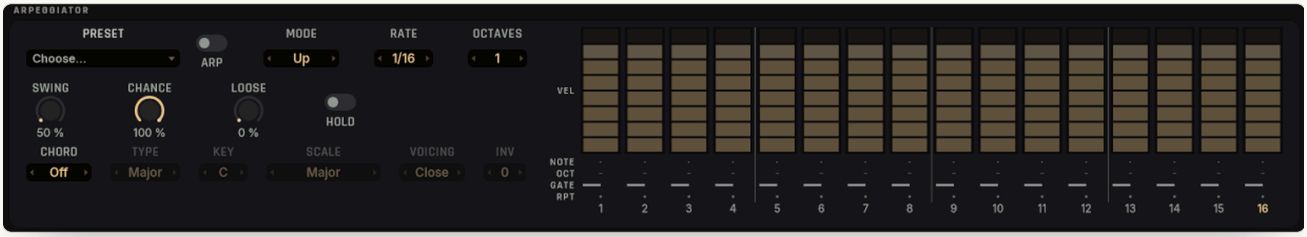
The loop runs with your host's transport, so a take stays in time with the song. While the host is stopped it runs on Henge's own clock, at the host's tempo. It records the ring, where your hand puts the pad; Inertia smooths the take as it plays, just as it smooths your hand.

1. Choose how many **Bars** to record.
2. Click **Rec**, and move the pad until the loop has gone round once. Rec keeps writing for as long as it is on, still or moving, so go straight on to the next step.
3. Click **Play**. Turn **Inertia** up to smooth it.

The take is saved with the project and with your presets. Loading a program replaces it: Slack Water brings a ready-made sweep (with Pad to Filter at Matrix Only, the pad crossfading its layers), and Slow Orbit a figure of eight (with Pad to Filter at Morph + Emphasis); every other program clears it.

Arpeggiator, chords and zones

The Denki Digital arpeggiator and chord generator stand between your keys and the voices. Each key can become a chord, and the arpeggiator plays what is held through a sixteen-step pattern.



The Arp page on Last Ferry: each key a minor ninth chord, openly voiced, walked up and down two octaves in dotted eighths; the first of every four steps accented, a step in eight left to chance.

The keys go first to the chord generator, then to the arpeggiator, then to the voices. While both are off, the keys pass straight through. On this page the choosers step with the arrows at their ends, and list every choice when clicked in the middle; the small dials work as the rest of the panel's.

The arpeggiator

Preset 59, in five styles	Classical, Electronic, Progressive, IDM and Ambient patterns. Loading one sets every arpeggiator and chord setting but the chord key.
Arp On or off	Switches the arpeggiator on.
Mode Up, Down, Up-Down, Played, Random, Chord, Converge, Thumb, Walk	The order of the held notes. Chord plays them all at once; Converge from the outside in; Thumb returns to the lowest between each of the others; Walk takes a random step up or down each time.
Rate 1/4, 1/8., 1/8, 1/8T, 1/16, 1/16T, 1/32	The length of a step.
Octaves 1 to 4	How many octaves the notes climb through.
Swing 50 to 75 %	Pushes every second step late: 50 % is straight.
Chance 0 to 100 %	How likely each step is to play. The pattern's first step always does, to hold the bar.

Loose 0 to 100 %	Lets hits fall a little late and a little softer, at random, like a hand or a worn tape.
Hold On or off	Keeps notes playing after you let go, until you play a new chord.

The chord generator

Chord Off, Chord, Scale	Chord plays one chord type on every key. Scale plays the chord that belongs to each key in a key and scale: in C major, D plays D minor. A key outside the scale plays the chord of the degree below it.
Type 20 types	In Chord mode: Major, Minor, Sus2, Sus4, Maj7, Min7, Dom7, Maj9, Min9, Add9, Power, Dim, Aug, Min11, 6/9, Quartal, Maj7#11, 7sus4, Min Add9, Cluster.
Size Triad, Seventh, Ninth	In Scale mode, in Type's place: how high the chord is stacked in thirds of the scale.
Key C to B	The scale's key, in Scale mode.
Scale 18 scales	Major, Minor, Harmonic Minor, Melodic Minor, Dorian, Phrygian, Lydian, Mixolydian, Locrian, Minor Pent, Major Pent, Blues, Whole Tone, Hirajoshi, In Sen, Phrygian Dom, Lydian Dom, Hungarian.
Voicing Close, Open, Wide	Open raises every second note an octave; Wide adds the root an octave below.
Inv 0 to 3	Inversion: lifts the lowest notes an octave.

On the five- and six-note scales, "stacked in thirds" means every second note of the scale, so the chords come out in fourths and fifths: open, unresolved.

The pattern

Velocity	The bars. Drag across them to draw; the very bottom rests the step. A right-click rests a step or brings it back; a double-click sets it to 100.
Note Auto, or 1 to 8	Auto plays the mode's next note. A number plays that chord tone, counting up from the lowest held note; past the last, the tones repeat an octave up. Click to step up, right-click to step down, or use the mouse wheel.
Oct −2 to +2	Shifts the step's note by octaves. Click to step through 0, +1, +2, −2, −1; right-click goes back.

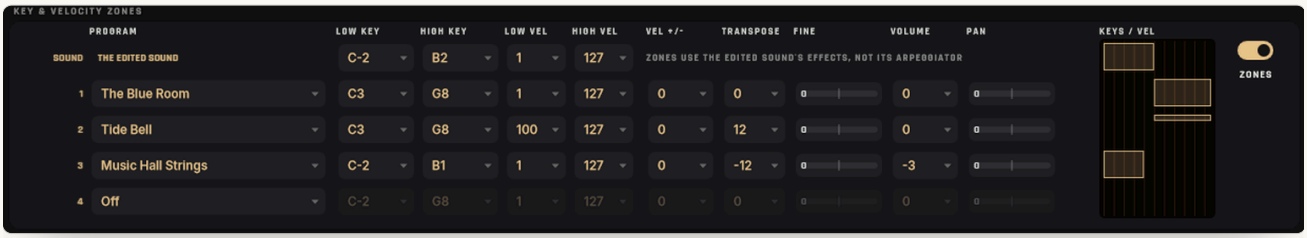
Gate Short, Half, Long, Tie	Click to change. Tie holds the note into the next step, so a mono sound slides.
Rpt 1 to 4	Ratchet: the step repeats its note up to four times. Click to change.
Step numbers	Click a number to end the pattern there. The step playing lights.

While the host plays, the steps sit on its grid. Stopped, the arpeggiator runs at the host's tempo from the first key, and a pattern that opens with rests starts on its first sounding step, so a key always speaks as it goes down.

> PROGRAMS
>
> Last Ferry brings its own arpeggiator pattern and chord: hold one key with your host running. Any program without a pattern switches the arpeggiator and the chord generator off, and leaves the pattern for next time.

Zones

Zones make Henge a performance: the sound you are editing and four more programs, split and layered across the keyboard and by how hard you play.



A performance on the Zones page: the edited sound below middle C, The Blue Room above it, Tide Bell an octave up on the hardest notes, and Music Hall Strings an octave down under the lowest keys.

Zones are off until you switch on **Zones**, at the right. Then the edited sound plays only in its own keys and velocities, and each of the four zones plays one of the factory programs in its own. A key sets off every zone it falls in, and letting it go releases exactly the notes it started. The map beside the rows draws each one's keys along and velocities up, lit while Zones is on.

Program Off, or any factory program	What the zone plays. The first row is the sound on the panel, whatever it is; its row sets only its keys and velocities. A zone set to Off dims.
Low Key, High Key C-2 to G8	The zone's keys. Middle C is C3.
Low Vel, High Vel 1 to 127	The velocities it answers, as played.
Vel +/- −126 to +126	Added to the velocity the zone's program hears: louder or softer than you played.

Transpose −36 to +36 semitones	Up or down, up to three octaves.
Fine −100 to +100 cents	Added to the program's own tuning.
Volume −40 dB to +6 dB	The zone's level.
Pan Left to right	The zone's place in the stereo field.

How zones play

A zone plays its program as the program plays, with two exceptions. It leaves out the program's arpeggiator: the arpeggiator belongs to the edited sound, and the zones hear your keys as you play them. And it leaves out the program's effects: everything, zones included, passes through the edited sound's delay, plate and limiter. Bend, the mod wheel, aftertouch, expression and the sustain pedal reach every zone. Master sets the edited sound's level alone; the zones have Volume.

The zones belong to the performance, not to a sound: loading a program or a preset leaves them as they are. They are saved with the project, their programs by name. Change a zone's program while it sounds and its notes are let go, it fades out over 5 ms, and the new program comes in. Switch Zones off and the zones' notes are let go; their tails ring on.

Building the performance above

1. Switch **Zones** on, and set the edited sound's **High Key** to B2.
2. Zone 1: The Blue Room, **Low Key** C3. A pad above middle C.
3. Zone 2: Tide Bell, Low Key C3, **Low Vel** 100, **Transpose** 12. Bells an octave up when you play hard.
4. Zone 3: Music Hall Strings, High Key B1, Transpose −12, **Volume** −3 dB. Strings an octave down under the lowest keys, layered with the edited sound.

Effects, voice and MIDI



The Effects page on Tide Bell: half-note and dotted-quarter repeats, and a long, full-size plate.

After the voices, a tape delay, a plate reverb and an output limiter. Every factory program sets its own delay and plate.

Tape Delay

Mix 0 to 100 %	The repeats' level. They are added over the full dry sound. At 0 the delay is out, and costs nothing.
Feedback 0 to 95 %	How much of each repeat comes round again.
Cross 0 to 100 %	Sends part of each side's feedback to the other side. At full, the repeats ping-pong.
Tone 0 to 100 %	A low-pass in the loop, from 1 kHz to 16 kHz: each repeat darker than the last. A low cut at 60 Hz keeps the loop from muddying.
Wow 0 to 100 %	Slow wow (0.55 Hz) and flutter (6.3 Hz), bending the repeats' pitch.
Drive 0 to 100 %	Tape saturation in the loop.
Sync On or off; on	On, each side's time is a note value of the host's tempo; off, a time in milliseconds.
Left, Right 8 Bars to 1/64, or 1 ms to 2 s	The two heads' times: 1/8. and 1/4 as Henge starts, or 375 ms and 500 ms. The longest a head reaches is 4 s. A change of time glides over about a tenth of a second, as a tape machine's speed would.

Plate Reverb

Mix 0 to 100 %	The plate's level, added over the dry sound. At 0 the plate is out.
Decay 0 to 100 %	The reverb time: about 0.15 s at 0, 1.15 s in the middle and 9 s at 100 %, the same at any Size.
Damping 0 to 100 %	How quickly the highs die away in the tail.
Predelay 0 to 200 ms; 20 ms	A gap before the reverb begins.
Size 0 to 100 %; 70 %	The plate's size. Size and Predelay glide when changed, so the tail bends rather than crackles.
Vintage On or off; on	The character of a late-eighties digital reverb: a darker input, and a tank held to 16 bits, so tails grain away as they fade, and still end in silence.

Output

Limiter, on as Henge starts, lets nothing leave above −0.5 dBFS. It looks 1.5 ms ahead, so it turns the level down smoothly before a peak arrives, and lets it back up over about 80 ms; below the ceiling it leaves the sound untouched. A chord of wide unison voices can pass full scale, as on any polysynth, and the limiter is what keeps it clean.



The Voice page as the programs leave it: sixteen voices, Mono off, the bend at two semitones.

Voice

Voices 1 to 16; 16	How many notes can sound at once.
Bend Range 0 to 24 semitones; 2	How far the pitch wheel bends, both engines together.
Mono On or off	One voice, last note first, legato: a key pressed while another is held changes the pitch without a new attack, and letting it go returns to the key still held.
Glide 0 to 5 s	Slides each new note from the last: quickly at first, then settling. It works in mono and in poly.

Velocity 0 to 100 %; 50 %	How much velocity sets each note's level. At 0 every note plays at full level; at 100 %, level follows velocity all the way.
Pan Left to right	The voices' place in the stereo field.

When every voice is busy, a new note takes the quietest voice that is releasing, or else the oldest, fading it out over 3 ms so the steal never clicks. A note played again while it sounds is retriggered in its own voice. The sustain pedal holds released notes.

MIDI and the host

CHANNELS	Henge plays from every MIDI channel.
NOTES	Note on and off, with velocity.
PITCH BEND	Bends by Bend Range; also a matrix source.
MOD WHEEL (CC1)	A matrix source, and a crossfade and function generator controller. Slot 1's vibrato is on it as Henge starts.
EXPRESSION (CC11)	A matrix source and a crossfade controller.
SUSTAIN (CC64)	Holds released notes; a function generator condition.
AFTERTOUCH	Channel and polyphonic pressure, as one matrix source and crossfade controller.
ALL NOTES OFF, ALL SOUND OFF	Stop every note, the zones' too, and reset the arpeggiator and chords.
TEMPO	The host's tempo and position drive everything synced: LFOs, envelopes, function generators, the delay, the recorder and the arpeggiator. The standalone runs at 120 BPM.
AUTOMATION	Every control on the panel. Map a controller to a parameter in your host, or learn it on the panel (MIDI learn, below).
PROGRAMS	Your host sees the 13 factory programs as Henge's program list.
OUTPUT	Stereo, or mono on a mono track.
LATENCY	1.5 ms, the limiter's lookahead, reported to the host so it can line Henge up (71 samples at 48 kHz).

BYPASS	Your host's bypass stops everything, tails too, so Henge starts clean when it returns.
THE PROJECT	Keeps every setting, the program or preset by name, the recorder's take, the zones, the MIDI controllers learned, and the page, size and keyboard you left.

MIDI learn

The knobs, keys and menus on Henge's panel can be moved by a knob or fader on your MIDI controller. Right-click it (Control-click on a Mac), choose Learn MIDI control, and move the hardware. While Henge waits, a thin outline breathes round the control (on a knob, its value reads MOVE A CONTROL); once learned, the controller's number shows there for a moment.

Learn MIDI control	Waits for the next controller (CC) to arrive, on any channel. While it waits, the menu reads Waiting for a MIDI control… (click to stop).
Forget CC 74	Shown when the control has one: lets that controller go.
Knob	Shown when the control has one: what kind of knob it is, as learning found it (ticked). Choose another if it guessed wrong: Ordinary knob, or one of three kinds of Endless knob.
Use these for every new Henge	Keeps the controllers learned now as the starting set for every Henge you add from now on. Projects keep their own. Choose it with none learned to start new ones with none again.
Forget every MIDI control	Lets every learned controller go, on every control.

A controller moves one control, and a control answers one controller: learning a controller already in use moves it to the new control. Its whole travel, 0 to 127, sweeps the control's whole travel, as the mouse does; a switch turns on from the middle up, and a choice steps evenly through its choices. The moves reach your host as the mouse's do, so it writes them as automation and undo takes them back.

Controls never jump. An ordinary knob sends where it is, so when it and the control disagree (a project just opened, a new program, the mouse moved the control) the control waits until the knob reaches it, then follows; meanwhile its value reads TURN UP or TURN DOWN, with a steady outline round it. An endless knob, one that turns round and round, sends only a little up or a little down, so the control moves on from wherever it is. Learning tells the two apart from the first few turns, so turn the knob a little way after it is learned before you judge it.

The controllers learned are kept with the project; a project saved before Henge had MIDI learn opens with none. A learned controller still reaches Henge as before: learn the mod wheel (CC1) onto a knob and it turns the knob and goes on being the mod wheel. Notes, pitch bend, aftertouch, bank select and the like are never learned.

The starting set is a small file, `%APPDATA%\Denki Digital\Henge\midi-map.json` on Windows and `~/Library/Application Support/Denki Digital/Henge/midi-map.json` on a Mac.

The vector pad takes no MIDI learn, as it moves two parameters at once: map a controller to Vector X and Vector Y in your host. The Arp page's knobs, menus and switches learn like the rest; its step pattern does not.

> HOSTS
>
> The controller reaches Henge only as notes do: in Logic Pro, on the track selected or armed; in Live, on a track armed or monitoring. A knob your host has kept for itself (Logic's Controller Assignments, Live's MIDI Map) stays your host's: free it there, or learn another.

Factory programs

Twelve sounds and Init, chosen by ear. Henge is at its best on sounds that change while you hold them, and the bank leans that way: pads, slow morphs, voices and a single arpeggio, made to be held, with room around them.

Many take their time. Hold a chord for ten seconds before you judge one: the Morphs are still arriving at five.

Pads

01 Aberdeen Neon

A detuned swarm and a saw through Band Wall, travelling along Z over each chord's slow swell: the morph laid bare.

02 The Blue Room

A warm chord that blooms and settles, its echoes trailing off darker on drifting tape. The wheel lets the filter breathe slowly.

03 Music Hall Strings

Two saws a few cents apart, rather than a chorus, through Wood Body: a slow attack, a long release, and a vibrato that arrives after a second. The wheel brightens them.

04 Northern Lights

Glass through Split Peaks, two free-running function generators wandering its morph and cutoff at their own paces: an aurora that never quite repeats.

05 Slack Water

A swarm through Deep Phaser and a saw and pulse through Golden Notches, crossfaded as the recorder sweeps the pad across four bars.

Morphs

Each builds a second layer as you hold it: engine B through a filter of its own, let in slowly by Env 3, while the filter morphs.

06 Lighthouse Beam

A quiet sine root, and a saw two and a half octaves up through Glass to Singing Bowl that builds over five seconds, LFO 2 turning it slowly like a beam.

07 Tide Bell

A bell morphing into a gong over nine seconds through Bell to Gong, a chime an octave and a fifth up rising through it.

08 First Light

A dark swarm tilting bright over ten seconds through Dark to Bright Tilt, like dawn, a shimmer two octaves up coming in on top, the layers spread left and right.

09 Slow Orbit

Two detuned saws ringing through Chord Resonator as the recorder draws a slow figure of eight, morphing it and changing its emphasis, a soft sine root under them.

Voices

10 Harbour Choir

A choir whose vowels drift, each note starting a fraction flat and sliding into tune as a singer's does, a vibrato arriving after a second and a half. The wheel brightens the voices.

11 Long Exhale

A breath moving through its vowels on a slow curve and back, a high choir an octave up fading in behind it, a vibrato after two seconds.

Arps

12 Last Ferry

Hold one key, your host running: a minor ninth walked up and down two octaves in dotted eighths, every note left to ring, a step in eight skipped. A mallet through Glass to Singing Bowl with a sub beneath, morphing over eight bars, on drifting tape.

Init

13 Init

Every setting at its default: a saw through Vocal Formant Morph, singing 'aah', the effects off. Start here.

Ways to start

PADS	Aberdeen Neon or The Blue Room, then move the pad. Northern Lights to leave it to itself.
SLOW BUILDS	Lighthouse Beam, Tide Bell or First Light: hold a chord and wait.
MOVEMENT	Slack Water and Slow Orbit play the pad themselves; watch the puck.
VOICES	Harbour Choir, then the wheel; Long Exhale for a voice that breathes.
AN ARPEGGIO	Last Ferry: one low key, the host running.
BUILDING YOUR OWN	Init, a wave, a model; then Env 2 > Z for movement in every note, and the pad for movement by hand. For a slow build, Dual Filter on the Layers page with engine B on Env 3.

Programs and your presets

Henge keeps two kinds of sound: the factory programs it ships with, which never change, and your own presets, which are plain text files you can keep, copy and share.

Click the program name at the top of the panel to open the program menu. The arrows step through the sounds in turn: the factory programs, then your own, then any designer banks.

The program menu

Factory programs	Listed first, by family: Pads, Morphs, Voices, Arps, and Init. Choosing one replaces the sound, all but the zones, which stay as they are. Your changes to it are kept with the project until you choose another. In every one but Init, the mod wheel morphs the filter: push it and the sound travels from where the program sits towards the far end of its model, both filters in a program with two. At rest the wheel changes nothing.
User	Your own presets, grouped by the category you gave them.
Designer	Banks of presets from other sound designers, if you have added any. They load like your own, but can't be overwritten: save a changed one under a new name.
Save	Saves the current sound over your own preset of the same name. Only offered while one of your own is loaded.
Save As...	Saves the current sound as a new preset, with a name, a category and an author.
Rename...	Renames your own preset, and its file with it.
Delete...	Deletes your own preset. Its file goes, so this can't be undone.
Import Preset...	Adds a preset file someone has sent you to your own.
Export Preset...	Saves a copy of your own preset wherever you choose, ready to send.
Open Preset Folder	Shows the folder in File Explorer, or in the Finder on a Mac.

A preset holds everything a factory program holds: every setting but the zones, the arpeggiator and chord settings while either is on, and the motion recorder's take, one you recorded included. Save As... offers the family of the program you started from as the category. While one of your own is loaded, the readout shows USR in place of a number, and User with its category in place of the family.

Where they live

Your presets are in `Documents/Denki Digital/Henge/Presets`, one `.txt` file each, in your Documents folder on Windows and on a Mac alike. Designer banks go beside them, in `Documents/Denki Digital/Henge/Banks`, one folder per bank. The files are readable text, so a preset can be sent in an email as easily as attached. Back the folder up with your music.

Your host saves the whole sound with every project as well, so a project always opens as you left it, whether or not the preset is still in the folder.

Installing and unlocking

Installing on Windows

1. **Close your music software.** Windows can't replace a plugin that is in use.
2. Run `Henge-1.1.0-Windows.exe`. Windows asks whether to allow it to make changes; the publisher should read Denki Digital Limited. If it says Unknown publisher, don't run it, and write to **hello@denkidigital.com**.
3. **If Windows shows "Windows protected your PC",** choose More info, check the publisher, then Run anyway. Windows says this about new releases while it learns to recognise them.
4. **Choose what to install.** The VST3 plugin always installs; the standalone application is ticked too.
5. **Open your music software.** Henge is under Denki Digital, listed as Henge Synth. If it isn't there, ask your host to rescan its plugins.

PLUGIN	`C:\Program Files\Common Files\VST3\Henge.vst3`
STANDALONE	`C:\Program Files\Denki Digital\Henge`, and in the Start menu under Denki Digital
THIS MANUAL	`Henge Manual.pdf` beside the standalone, and in the Start menu under Denki Digital Manuals
YOUR PRESETS	`Documents/Denki Digital/Henge`
LICENCES	`Documents/Denki Digital/Licences`

Installing on a Mac

Henge runs on macOS 12 or later, Apple silicon or Intel.

1. **Close your music software.**
2. Open `Henge-1.1.0-Mac.pkg`. It is signed by Denki Digital Limited and notarised by Apple, so it opens without a warning. If your Mac says it can't check it for malicious software, don't open it, and write to **hello@denkidigital.com**.
3. **Agree to the licence, and choose what to install.** The VST3 plugin, the Audio Unit and the standalone application are all ticked; Customise leaves any out. Your Mac asks for your password, as it does for any plugin installed for everyone on the computer.
4. **Open your music software.** Henge is under Denki Digital, listed as Henge Synth: Logic Pro and GarageBand find the Audio Unit as they start, and other hosts may need to rescan their plugins.

VST3 PLUGIN	`/Library/Audio/Plug-Ins/VST3/Henge.vst3`
AUDIO UNIT	`/Library/Audio/Plug-Ins/Components/Henge.component`
STANDALONE	`/Applications/Denki Digital/Henge/Henge.app`
THIS MANUAL	`Henge Manual.pdf` beside the standalone, whichever parts you install, and on www.denkidigital.com, from Henge's page
YOUR PRESETS	`Documents/Denki Digital/Henge`
LICENCES	`Documents/Denki Digital/Licences`

Unlocking

Your licence comes with your order, in the email and on the order page: a few lines of text that begin Denki Digital licence and end with a signature. It carries your name, and nothing in it needs the internet: no account and no activation, now or later.

1. **Copy all of it,** from Denki Digital licence to the end of the signature line. Then click the small key at the right-hand edge of the panel, just above the window-size control, and choose Paste licence from the clipboard.
2. **Or keep it as a file:** paste it into a plain text file (ending `.txt` or `.denkilicence`) and drop that onto the panel, or choose Load licence file... from the same key.
3. **That's all.** The key's menu now reads Licensed to your name, and every instrument the licence covers unlocks at once, in every open project.

Before it is unlocked, Henge works fully, with no time limit, and rests for two seconds once a minute: the sound fades out and back. A small Demo notice on the panel says so, with Buy and Load licence; its cross closes it until the panel is next opened. The key's menu also shows the licences folder, and the notices for the fonts and code inside.

The window

The window-size control, the small square of corner marks low at the right-hand edge of the panel, sets the window's size, from 60 % to 160 % of its natural size, with Fit to screen for the largest that fits. You can also drag the window's corner. The size is kept with your project, and the window never opens bigger than the screen it is on. In the standalone application, Full screen in the same menu, or the F11 key (Control-Cmd-F on a Mac), fills the whole screen with the panel; the same key or Esc brings the window back.

The keyboard glyph low at the left-hand edge of the panel shows or hides the on-screen keys. Without them the panel is shorter, 1320 by 720 points instead of 784, so a window that fills the screen opens larger. The page you left open, whether the keys show and the octave they start on are kept with the project.

On a Mac: where this manual says Ctrl, press Cmd; where it says Alt, press Option; and a right-click is a Control-click, or a two-finger click on a trackpad.

Ableton Live on Windows: if the window looks soft, right-click the title of Henge's device in Live's Device View, untick Auto-Scale Plug-In Window, then open the window again. Henge scales itself to your screen and stays sharp at any size; Live's auto-scaling stretches a smaller picture instead.

Updating and moving

Run a newer installer over the old one; your presets, licence and projects are left as they are. On a new computer, Windows or Mac, install, then copy `Documents/Denki Digital` across: your licences and presets come with it. To uninstall on Windows, open Windows Settings, then Apps, then Installed apps, and choose Henge. On a Mac, drag the plugin files and the standalone's folder, where the table above shows them, to the Bin. Either way, your files in Documents stay where they are.

The full guide, with each host's rescan menu, is at **www.denkidigital.com/support/install**.

Technical

VOICES	1 to 16, or mono with legato and glide
SOUND SOURCES	Wave engine and analogue-style engine; unison up to 4
FILTER	14-pole morphing filter, 48 models in 5 families; Single or Dual
MODULATION	3 envelopes, 2 LFOs, 2 function generators, 12-slot matrix
PERFORMANCE	Vector pad with motion recorder, arpeggiator and chord generator, 4 zones
EFFECTS	Dual tape delay, plate reverb, output limiter
FACTORY PROGRAMS	12, chosen by ear, plus Init
CPU	3.2% of one core for 16 voices; under 10% with everything engaged
LATENCY	71 samples (limiter lookahead)
OUTPUT	Stereo
PANEL	1320 × 784, scalable from 60 to 160%
MIDI	Every channel: notes and velocity, pitch bend, mod wheel (CC1), expression (CC11), sustain (CC64), channel and polyphonic aftertouch; MIDI learn on the panel's controls
FORMAT	VST3 plugin and standalone application; on a Mac also an Audio Unit
SYSTEM	Windows 10 or 11, 64-bit; or macOS 12 or later, Apple silicon or Intel
VERSION	1.1.0

Notices

Henge is © 2026 Denki Digital Limited. Its sounds, programs, panel and this manual are the studio's own.

Using Henge is governed by Denki Digital's end-user licence agreement, which the installer shows before it installs, and which is at **www.denkidigital.com/licence**. In short: use it on any of your own computers, for any music; what you make with it is yours; keep your licence file to yourself; every update is free.

Its panel is set in Rajdhani and Inter, both under the SIL Open Font License 1.1, and it carries code from the open-source projects listed in its notices: choose Third-party notices… from the key's menu, or open `THIRD-PARTY-NOTICES.txt` in the `Licences` folder beside the standalone.

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変化

電 DENKI DIGITAL

Inspired by Tokyo. Built in Aberdeen.

東京に着想を得て、アバディーンで作る。

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