

HOPPER

NOTE TANK

OPERATION MANUAL



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CONVENTIONS USED IN THIS MANUAL

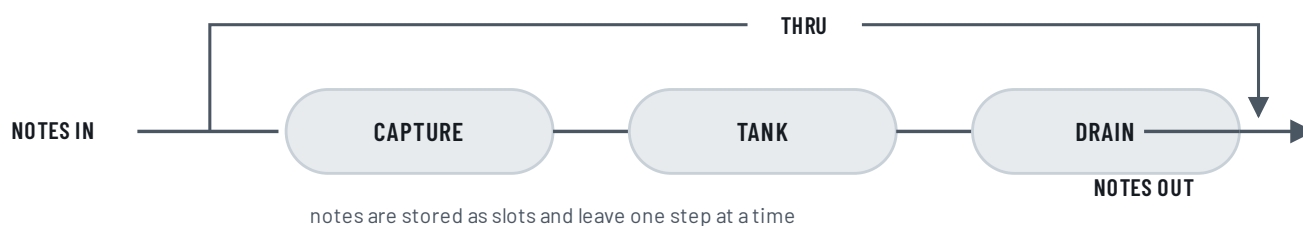
Panel labels are printed like **RATE** or **THRU**. Numbers in amber circles **7** refer to the front panel overview on page 4; letters **C** refer to the back panel on page 5. Note names follow Reason's convention: **C3 is middle C** (MIDI note 60), which is what the tank display shows under the pile.

1 INTRODUCTION

Hopper is a note player for Reason's rack. It sits above an instrument, catches the notes you play, and drops each one into a **tank**.

The tank drains in time: one step at a time, at a musical rate, in an order you choose. A chord you hold becomes a line. A ragged flurry comes back out even. A phrase played once keeps returning, forwards, backwards, by pitch or at random — and if you switch to Loop, it never runs out at all.

How the tank empties is the other half of the instrument. It can drain as you play, fill up and wait for your cue, or fill until it reaches a line you set and tip itself out. On top of that sit an eight-segment pattern walker, a pressure control that ties the rate to how full the tank is, and a set of weighted dice that nudge the rate as it runs.



DEVICE TYPE	Rack Extension Player(note player), 4U
TANK	25, 50 or 100 slots; one slot per captured note, with its velocity and chord grouping
TRIGGER MODES	Direct(drain as you play) · Accumulate(fills, waits for Play) · Threshold(tips out at a set level)
DRAIN	12 rates from 1/1 to 1/32 including dotted and triplet · gate 5–100% of the step · free-running or quantized
ORDER	FIFO · LIFO · Random · Random without repeat · Ping-pong · Pitch up · Pitch down, consuming or looping
ENGINES	SEQ(one rate) or PATTERN(8 segments of 1–8 notes, each with its own rate)
RATE MODIFIERS	Pressure(fill bends the rate ± 3 ladder steps) and a weighted stochastic ladder(± 1 to ± 3 steps)
VOICE	4 velocity sources · transpose ± 24 semitones · emit probability · chord split, block or strum
CV	13 inputs: Play, Flush, Threshold, Rate and nine bipolar modulation inputs
PATCHES	21 in 7 categories · 52 automatable parameters in 7 Combinator groups

2 FRONT PANEL AT A GLANCE

The tank display runs down the left side, with the device's on/off button, its two activity lamps and the round fill meter on the rail beside it. Everything else is grouped in five bordered sections: what a note becomes (VOICE), how the drain is triggered (MAIN / TRIGGER), how it runs (ENGINE), and the two sections that bend the rate (PATTERN SEGMENTS and STOCH RATE).

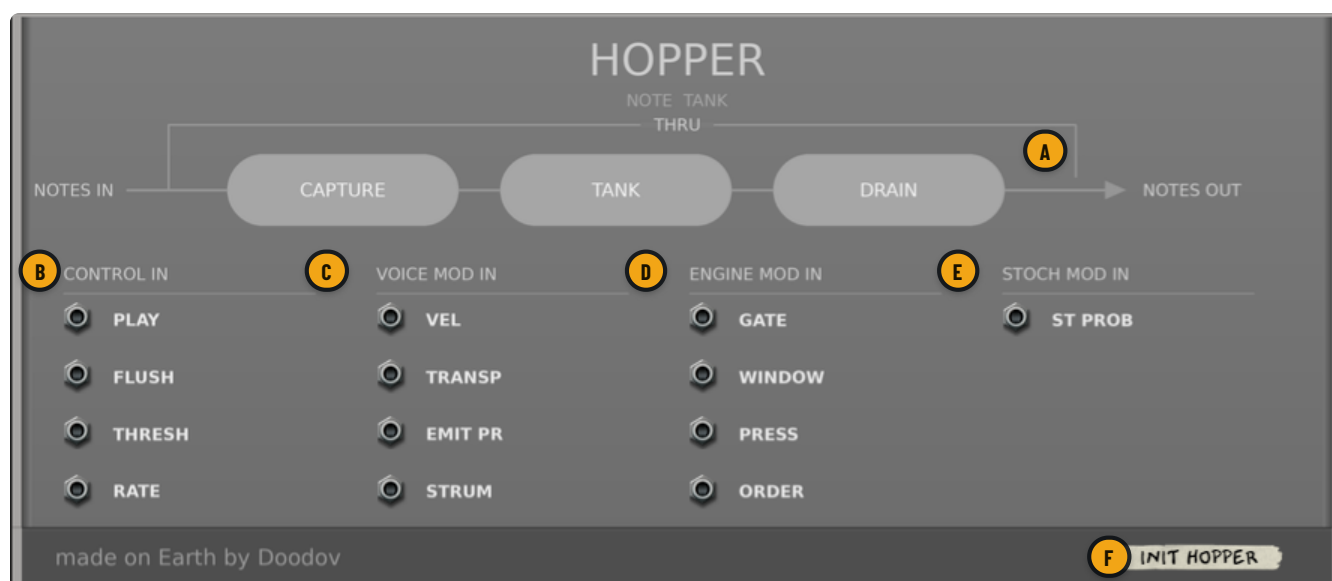


1	ON device on/off	chapter 4.2	2	Tank display	chapter 5.5
3	In / out lamps and fill meter	chapter 4.5	4	Patch browser and name	chapter 14
5	VOICE section	chapter 13	6	MAIN / TRIGGER section	chapter 6
7	ENGINE section	chapter 7-11	8	LOOP lamp	chapter 9
9	PATTERN SEGMENTS	chapter 11	10	STOCH RATE	chapter 12
11	Stochastic activity strip	chapter 12.3			

EDITING ON THE DISPLAY

In **THRESH** mode the threshold line in the tank is draggable: grab it anywhere across the tank and drag to set the level, or double-tap it to return to 50%. Each drag is a single undoable step in Reason.

3 BACK PANEL AT A GLANCE



GROUP	CONTENTS
A Signal flow	Printed reminder of the path: notes in, captured, held in the tank, drained, out. The THRU arc is the route your own playing takes when THRU is on
B Control in	PLAY and FLUSH triggers, THRESH and RATE modulation
C Voice mod in	VEL (velocity amount), TRANSP, EMIT PR, STRUM
D Engine mod in	GATE, WINDOW (chord window), PRESS (pressure), ORDER
E Stoch mod in	ST PROB (stochastic probability)
F Patch name	The loaded patch; Hopper has no CV outputs

Every socket is described in chapter 15. Hovering over a socket in Reason shows its full name.

4 SETTING UP

4.1 INSERTING HOPPER

Hopper is a **Player**. Players attach to an instrument device and process the notes on their way to it: whatever you play on the instrument's track, and whatever its note lane contains, passes through Hopper first. Insert it on the instrument you want it to drive, as you would any other Player, and it can be combined with other Players above or below it.

Sounds with a clear attack show the drain most plainly — plucks, mallets, pianos, marimbas, percussion. Pads work too, especially with long gate settings and a slow rate.



4.2 ON/OFF AND BYPASS

The **ON** button ① switches Hopper off; Reason's own Bypass has the same effect. In both states nothing is captured and nothing drains, anything still sounding is released, and incoming notes pass straight through to the instrument. **The tank keeps its contents**, drawn dimmed, and picks up where it left off when you switch back on.

4.3 THE LAMPS AND THE FILL METER

On the rail ③: the upper lamp flashes when a note arrives, the lower one when Hopper emits a note, and the round meter below them shows how full the tank is — the same reading as the display, in the corner of your eye.

4.4 THRU: WHAT YOU HEAR

THRU decides whether your own playing reaches the instrument, and it means something slightly different in each trigger mode.

MODE	THRU ON	THRU OFF
DIRECT	Your notes pass through untouched and the tank does not fill : what you hear is your playing, not the engine. Anything already in the tank still drains.	The tank takes over: your notes are swallowed and come back out at the rate.
ACCUM / THRESH	You hear yourself while the tank fills, so you can play into it and listen at the same time.	You hear nothing until the tank drains — the classic fill-then-release.

Note-offs are always forwarded, whatever THRU is set to, so nothing can hang.

4.5 FLUSH

FLUSH empties the tank at once, closes everything Hopper is sounding, and clears an Accumulate latch or a Threshold trigger. The FLUSH socket on the back does the same from a trigger. Changing **CAPAC** also empties the tank — and so does loading a patch that carries a different capacity.

4.6 PATCHES

Hopper ships with 21 patches in seven categories (chapter 14). A patch sets the whole musical surface — mode, engine, order, rates, segments, voice and dice — so patches load predictably. The device's on/off state is **not** part of a patch; it belongs to the song.

5 THE TANK

5.1 SLOTS AND CAPACITY

Each captured note takes one **slot**, and keeps the pitch and velocity you played. **CAPAC** sets the tank to 25, 50 or 100 slots. Switching capacity empties the tank, so it is a setting to choose before a take rather than during one.

Slots stack from the bottom: slot 0, the oldest note, sits at the bottom of the display and is the next one out under FIFO. Releasing a key removes nothing – once a note is in the tank, only a drain step, a flush or an overflow takes it out again.

5.2 CHORD GROUPS

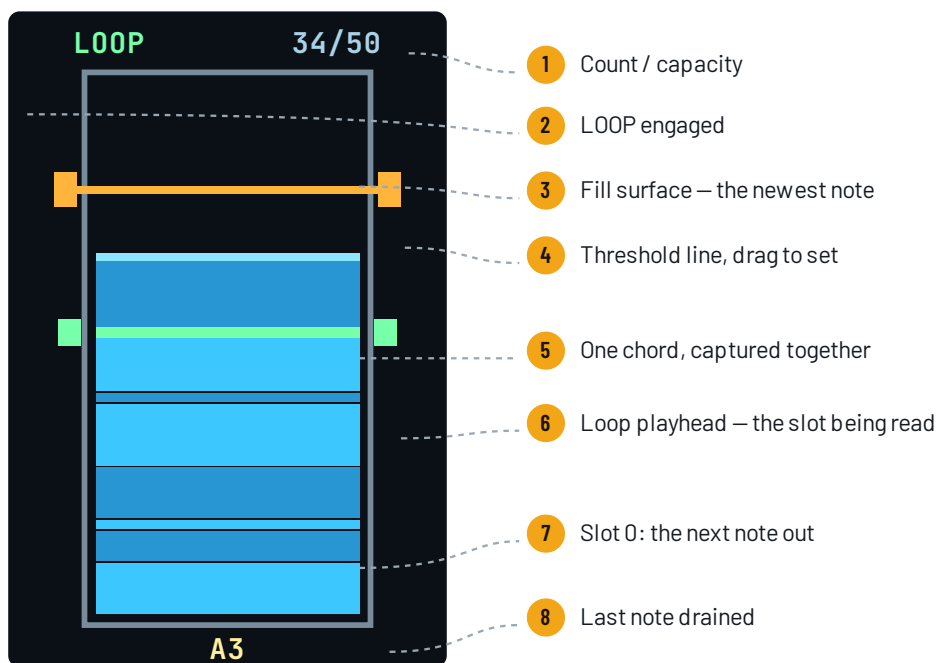
Notes that arrive within the **WINDOW** setting of each other (0–50 ms, 20 ms by default) are stored as one **group**: a chord. Groups are what **CHORD** mode acts on when the tank drains (chapter 10), and they are drawn as solid blocks in the display, so a captured chord reads as one brick rather than five slots.

5.3 OVERFLOW

OVFLOW	WHEN THE TANK IS FULL
REPLACE	The oldest note is dropped to make room for the new one. The tank always holds your most recent playing.
FREEZE	The stored material is protected and the new note is turned away. What is in the tank stays exactly as it is.

Freeze with a full tank and Loop engaged gives a fixed phrase that your playing can no longer disturb (chapter 9).

5.4 READING THE DISPLAY



Tick lines cross the tank every 25 slots. When the device is off, the pile is drawn dim. The note name under the tank is the last note Hopper drained, bright while it sounds and dim afterwards.

6 TRIGGER MODES



MODE 6 decides **when** the tank drains. The **THRESH** knob and the line in the display belong to the third mode; **PLAY** belongs to the second and third; **FLUSH** works in all three.

Changing mode clears any latch or trigger that was running, so a mode switch is always a clean start.



MODE	HOW IT BEHAVES
DIRECT	The tank drains as you play. Notes leave at the set rate, so a ragged flurry comes out even and a held chord comes out as a line. With the tank empty and the engine idle, a single note leaves immediately rather than waiting for the next step.
ACCUM	The tank fills and waits. Tap PLAY and it latches: the tank drains until it is empty, then the latch releases on its own. Hold PLAY and it drains only while you hold. Tapping again while latched stops it. The PLAY CV input drains for as long as it is high.
THRESH	The tank fills until the pile reaches the threshold line, then tips out on its own and keeps draining until it is empty, when it re-arms. PLAY (button or CV) fires it by hand at any level. The line is set with the THRESH knob or by dragging it in the display.

LOOP CHANGES THE ENDINGS

In **LOOP** the tank never empties (chapter 9), so an Accumulate latch runs until you tap it off, and a Threshold trigger stays fired until you flush or change mode.

WHERE THE THRESHOLD SITS

The line is drawn on the slot grid, so “the pile touches the line” and “it fires” are the same moment. At a capacity of 25 each slot is 4% of the tank, so the line moves in visible steps; at 100 it moves almost continuously.

7

DRAINING: RATE, GATE AND GRID



7.1 RATE

RATE sets the step: twelve values from a whole note to a 1/32, dotted and triplet included. The step is always read at the song tempo, whether the transport is running or not.

A note occupies its own step: the gap **after** a note is that note's own period. So when the rate changes — by knob, by pattern segment, by pressure or by dice — the change takes effect from the next step onwards, and the note already sounding keeps the length it was given.

7.2 GATE

GATE sets how much of the step each note actually sounds, from 5% to 100%. Short values give a staccato line that leaves the step audible; long values make a legato stream. If a step repeats a pitch that is still sounding, the previous one is closed first, so repeated notes always re-articulate.

RATE	LENGTH
1/1	4 beats
1/2	2 beats
1/2T	1 1/3 beats
1/4D	1 1/2 beats
1/4	1 beat
1/8D	3/4 beat
1/8 (default)	1/2 beat
1/8T	1/3 beat
1/16D	3/8 beat
1/16	1/4 beat
1/16T	1/6 beat
1/32	1/8 beat

7.3 QUANTIZE

QUANT decides whether the drain is locked to Reason's timeline.

QUANT	TRANSPORT PLAYING	TRANSPORT STOPPED
OFF	Free-running: steps follow each other at the rate, starting from the first note that drains.	The same — Hopper keeps its own clock.
ON	Every step lands on the grid of its own rate, so the drain lines up with the song. A loop jump resets the step clock.	Free-running at the same rate, so a stopped jam still plays in time with itself.

Quantize is worth turning on whenever Hopper plays alongside sequenced parts, and worth turning off when you want the drain to follow your hands instead of the bar.

8 DRAIN ORDER

ORDER decides **which** slot leaves next. The examples below assume a tank holding four notes captured in this order: C3 G3 E3 B3.

ORDER	TAKES	THE EXAMPLE COMES OUT AS
FIFO	the oldest slot	C3 G3 E3 B3 — the phrase as you played it
LIFO	the newest slot	B3 E3 G3 C3 — the phrase backwards
RANDOM	any slot	any order; in Consume a note cannot repeat, because it leaves the tank
RND NOREP	any slot, never twice in a row	the same as Random when consuming; in Loop it shuffles the tank and deals it out before reshuffling
PING-PONG	alternately the oldest and the newest	C3 B3 G3 E3
PITCH UP	the lowest pitch	C3 E3 G3 B3 — always rising
PITCH DOWN	the highest pitch	B3 G3 E3 C3 — always falling

Order is read fresh at every step, so changing it mid-drain redirects the rest of the phrase immediately. The ORDER CV input sweeps the whole list (chapter 15), which makes a sample-and-hold or a slow LFO into an order roulette.

PITCH ORDER AND CHORDS

With **CHORD** set to **SPLIT**, the pitch orders sort individual notes, so a held chord climbs or falls note by note. With **CHORD** or **STRUM**, whole groups leave together and the pitch orders sort by each group's lowest note.

9 CONSUME AND LOOP

LOOP is the switch between a tank that empties and a tank that circulates.

SETTING	WHAT A STEP DOES
CONSUME	The step plays the slot it picked and removes it. The tank empties as it drains, which is what makes Direct a rate limiter and Threshold self-clearing.
LOOP	The step plays the slot it picked and leaves it in place. A playhead moves through the tank in the current order and the phrase circulates indefinitely. The tank display shows a green band on the slot being read, and LOOP appears in the header.

Because a looping tank never empties, the modes that wait for an empty tank keep running: an Accumulate latch stays latched and a Threshold trigger stays fired. To stop, tap **PLAY**, press **FLUSH** or switch back to **CONSUME** and let it run dry.

Anything you play while a loop runs is still captured, so a loop grows as you add to it — until the tank is full, when **OVFLOW** decides whether new notes push the oldest out (**REPLACE**) or are turned away (**FREEZE**). Freeze is how you lock a loop and keep playing over it.

LOOPS AND CHORDS

In Loop the tank is read as a sequence of **groups** when **CHORD** or **STRUM** is selected, so a captured chord circulates as a chord. With **SPLIT** the playhead moves slot by slot.

10

CHORDS

Two controls decide what happens to notes played together: **WINDOW** in the ENGINE section, which groups them on the way in, and **CHORD**, which decides how a group leaves.

10.1 THE CAPTURE WINDOW

WINDOW spans 0 to 50 ms and sits at 20 ms by default. Notes arriving within that time of the previous capture join the same group. A chord played normally lands well inside it; a slowly rolled chord becomes several groups, which is sometimes exactly what you want.

10.2 HOW A GROUP LEAVES

CHORD	A STORED CHORD COMES OUT AS
SPLIT	one note per step, in the current drain order — the chord becomes a line
CHORD	all of its notes on the same step, as a block
STRUM	all of its notes spread across the step, lowest slot first, the spread set by STRUM

STRUM runs from 0 to 100% of the step, so at a slow rate and a wide setting the chord rolls out like a harp, and at 1/16 with a narrow setting it is a guitar-like flick. Strummed notes all take the same gate length, so they end together.

THE FIRST CHORD INTO AN EMPTY TANK

In **CHORD** and **STRUM** a chord arriving into an empty tank waits for the capture window to close before it leaves, so the whole chord goes together rather than one note leaving early. That costs the window's length in latency — 20 ms by default, 50 ms at most. With **QUANT** on the grid decides the moment instead, so a chord arriving just before a grid point can still be split across two steps; play a touch earlier, or widen the window and work unquantized.

11 ENGINES: SEQ AND PATTERN



The **ENGINE** switch chooses where each step's rate comes from. **SEQ** takes it from the **RATE** knob: one rate for every step. **PATTERN** takes it from a walker across the eight segments.

11.1 THE EIGHT SEGMENTS

Each segment has three controls: **CNT**, how many steps it supplies (1 to 8); **RATE**, the rate those steps run at; and **ON**, whether the walker visits it at all. The walker plays a segment's count, then moves to the next **enabled** segment, wrapping round at the end. The small lamp above each ON switch lights for the segment that owns the step you are hearing.

S1 2 × 1/8 ON	S2 3 × 1/16 ON	S3 2 × 1/4 OFF	S4 1 × 1/4 ON
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RESULTING STEPS



S3 is switched off, so the walker skips it: two eighths, three sixteenths, one quarter, then round again.

Uneven counts are where this earns its keep: two eighths against three sixteenths against one quarter is a rhythm no single rate setting will give you, and it repeats as a phrase rather than as a grid.

ALL SEGMENTS OFF

The walker has nothing to visit, so **PATTERN** falls back to the **SEQ** rate and drains normally. No segment lamp lights, because no segment is playing.

The segment rates are read live, so turning a segment's **RATE** while the pattern runs reshapes it from the next step. Switching a segment off mid-phrase takes it out of the round immediately.

12 PRESSURE AND THE RATE DICE

Every step resolves its own rate: the base rate (the **RATE** knob, or the current segment's rate), plus pressure, plus whatever the dice are doing, plus the RATE CV input. The sum is clamped to the twelve-step ladder, so the extremes hold rather than wrap.

12.1 PRESSURE

PRESS ties the rate to how full the tank is. At its centre it does nothing. Turned one way, a full tank drains up to three ladder steps **faster**, easing back towards the base rate as the tank empties; turned the other way, a full tank drains that much **slower** and accelerates as it clears. The effect is scaled by the fill ratio, so it breathes with the level rather than switching on at a threshold.

In Loop the fill ratio stays put, so pressure becomes a fixed offset — a way of reaching rates beyond the ends of the ladder knob.



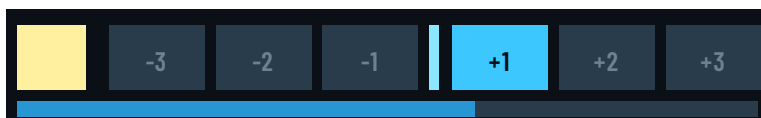
12.2 THE RATE DICE

The STOCH RATE section rolls for a rate change as the tank drains. **EVERY** sets how many steps between rolls (1 to 16). **PROB** sets how likely a roll is to do anything (0–100%; at 0 the section is off). **LEN** sets how many steps the change lasts (1 to 5).

What a successful roll picks is up to the six weights: **W -3** to **W +3**, in ladder steps. A weight of zero means that offset is never drawn; equal weights make all six equally likely. There is no zero offset — a roll that lands always moves the rate.

Defaults lean on the near neighbours: **W -1** and **W +1** at full weight, the rest at a quarter. With **PROB** at 0, none of it runs.

12.3 THE ACTIVITY STRIP



- | | | |
|---|-------------------------|---|
|  | Roll lamp | a roll just happened, whatever it decided |
|  | Six offset cells | the ladder steps a roll can pick, -3 to +3 |
|  | Lit cell | the excursion running now, here +1 step; it goes dark when the excursion ends |
|  | Centre tick | lit while the rate sits at its base, with no excursion |
|  | Countdown bar | how far along the wait for the next roll is |

The strip separates two facts that sound alike: a roll **happened** (the lamp), and a roll **landed** (a lit offset cell). A roll that fails the odds still flashes the lamp, and the lit cell stays lit for exactly as long as the excursion has left to run.

13

VOICE: VELOCITY, TRANSPOSE, PROBABILITY



The VOICE section shapes notes on their way out. The tank itself is untouched: it keeps the pitches and velocities you played, so these controls can be changed while a loop circulates and the loop follows.

CONTROL	RANGE	FUNCTION
VEL SRC	4 positions	Where the velocity of an emitted note comes from (see below).
VEL AMT	0-100	Its meaning depends on VEL SRC.
TRANSP	-24...+24	Shifts every emitted note in semitones.
EMIT PR	0-100 %	The chance that a step sounds at all.
STRUM	0-100 %	Strum spread, as a share of the step (chapter 10).
OVFLOW	Replace · Freeze	What happens when a note arrives at a full tank (5.3).

13.1 VELOCITY SOURCES

VEL SRC	VEL AMT MEANS	RESULT
AS PLAYED	nothing	Each note keeps the velocity you played it with. The default.
FIXED	the velocity itself	Every note plays at one velocity, 1 to 127. At the halfway setting, 64.
SCALE	0-200 % of as played	Your dynamics are kept but scaled — halved, or pushed towards the top.
RANDOM	the spread, up to ± 64	As played, with a random amount added or taken off each note.

13.2 EMIT PROBABILITY

EMIT PR thins the output: at 70%, roughly three steps in ten stay silent. A skipped step **still happens** — it consumes its slot, or advances the loop playhead — so the phrase keeps its shape and its timing, with holes in it. That is what makes it usable on a loop: the notes that do sound stay where they were.

14 PATCHES

Hopper ships with 21 patches in seven categories, browsed with the arrows and folder button at the top of the panel. Each one states the whole musical surface — mode, engine, order, rates, segments, voice and dice — so what you load is what you get, with nothing carried over from the patch before.

CATEGORY	PATCHES	WHAT THEY SHOW
01 Basics	Straight Echo Tank · Quantized Repeater · Gated Sixteenths	The plain drain: a rate limiter, the same locked to the grid, and a short-gate version
02 Arpeggio	Rising Arp Loop · Falling Cascade · PingPong Bounce	The pitch and ping-pong orders, held in Loop
03 Rhythmic	Pattern 3-3-2 · Ratchet Steps · Waltz Pulse	The pattern walker: uneven segment counts and mixed rates
04 Generative	Drunken Walk · Rare Double Time · Nervous Ticks · Scatter Sixty	The rate dice and emit probability, from a gentle stumble to a thinned scatter
05 Threshold	Tip The Bucket · Hair Trigger	Threshold mode at a high and a low level
06 Chords	Brick Layer · Silk Strum · Harp Spill	The three chord modes, with the strum wide and narrow
07 Performance	Freeze Frame Loop · Pressure Cooker	Loop with Freeze overflow, and pressure driving the rate from the fill

Init Hopper is the starting point and the patch a new device loads: Direct mode, THRU on, 100 slots, 1/8, FIFO, Consume, SEQ, no dice, no transposition. Coming back to it is the quickest way to clear an experiment.

Your own settings can be saved as patches in the usual way, and they sit alongside the factory folders in the browser. Two things do not travel with a patch: the device's on/off state, which belongs to the song, and the contents of the tank, which is live material rather than a setting.

PATCHES AND THE TANK

A patch carrying a different **CAPAC** setting empties the tank as it loads (5.1). Browsing patches mid-performance is therefore a way to clear the tank as well as to change the sound — useful to know before it surprises you on stage.

15 CV CONNECTIONS

Hopper has thirteen CV inputs and no CV outputs. The two triggers react on a rising edge above 0.2. Every other input is **bipolar around the panel control**: it adds to what the knob or switch says, positive and negative, and the result is clamped to the control's own range. An unconnected input has exactly no effect, so patching one never changes the sound until the cable carries something.

SOCKET	GROUP	TYPE	EFFECT
PLAY	B	gate / trigger	In Accumulate, the tank drains for as long as the input is high. In Threshold, a rising edge fires the tank by hand.
FLUSH	B	trigger	Empties the tank and closes held notes, like the FLUSH button.
THRESH	B	bipolar	Moves the threshold level, a full swing covering the whole tank.
RATE	B	bipolar	Shifts the rate by up to six ladder steps. From the default knob position a full swing reaches 1/1 at one end and 1/32 at the other.
VEL	C	bipolar	Velocity amount – the meaning follows VEL SRC (13.1).
TRANSP	C	bipolar	Transpose, up to ± 24 semitones on top of the knob.
EMIT PR	C	bipolar	Emit probability, $\pm 100\%$.
STRUM	C	bipolar	Strum spread, $\pm 100\%$ of the step.
GATE	D	bipolar	Gate length, across the whole 5–100% range.
WINDOW	D	bipolar	Chord capture window, across the whole 0–50 ms range.
PRESS	D	bipolar	Pressure, across its whole range – an LFO here makes the tank breathe.
ORDER	D	bipolar	Drain order, up to ± 6 positions: a sample-and-hold turns it into an order roulette.
ST PROB	E	bipolar	Stochastic probability, $\pm 100\%$ – an envelope here brings the dice in and out.

MODULATING STEPPED CONTROLS

Rate, order and transpose are stepped, so a smoothly changing CV moves them in jumps rather than glides. That is what makes them musical here: an LFO on ORDER re-deals the phrase, it does not blur it.

16

RECIPES

Starting points. Anything not mentioned stays at its default.

EVEN OUT A FLURRY

DIRECT **THRU OFF** **RATE 1/16** **ORDER FIFO** **GATE 20%**
CONSUME

The plain rate limiter. Play as unevenly as you like, in handfuls; the tank hands it back at a steady sixteenth with your own phrasing intact.

Add a little **EMIT PR** to punch holes in it, or switch to **Pitch Up** to sort every handful as it goes.

CHORD SPILL

ACCUM **THRU ON** **CHORD SPLIT** **ORDER PITCH UP**
RATE 1/8 **GATE 90%**

Hold a chord, let go, then tap **PLAY**: the chord climbs out one note at a time and stops when the tank is empty.

Hold **PLAY** instead of tapping and you meter the spill by hand. Switch **ORDER** to **Ping-pong** for a wider shape.

TIP THE BUCKET

THRESH **CAPAC 25** threshold ~60% **RATE 1/16** **PRESS**
towards faster

Feed it a few notes at a time and it empties itself in bursts whenever the pile reaches the line — the more you play, the more often it tips.

With **Pressure** engaged, each burst starts fast and slows as the tank clears.

FROZEN LOOP, PLAYED OVER

LOOP **OVFLOW FREEZE** **CAPAC 25** **ORDER RND NOREP**
QUANT ON **RATE 1/16**

Play until the tank is full: it locks, and the phrase circulates on the grid while you keep playing over the top, safe from your own notes.

FLUSH is the way out; capacity 25 fills fast enough to catch a single bar.

UNEVEN PATTERN

PATTERN **S1 2 × 1/8** **S2 3 × 1/16** **S4 1 × 1/4**, **S3** and **S5-S8 off**, **LOOP**

Three segments give a rhythm that repeats as a phrase instead of a grid. Use the segment lamps to see where the walker is.

Switch one segment on or off while it runs to turn the phrase inside out.

DRUNKEN RATE

STOCH **EVERY 3** **PROB 60%** **LEN 2**, weights on **W -1**
W +1 and a little **W +3**

The drain keeps its pulse but stumbles: mostly a step either side, occasionally a sprint.

Pair with a slow **LFO** into **PRESS** for long-term drift, and watch the strip to see the rolls land.

17 AUTOMATION AND MIDI CC

52 parameters can be automated in the sequencer and controlled remotely. In the Combinator they are grouped as **Main** (thru, quantize, mode, threshold, capacity), **Voice** (velocity source and amount, transpose, emit probability, strum, overflow), **Engine** (engine, rate, gate, chord window, loop, order, chord mode, pressure), **Seg Count**, **Seg Rate**, **Seg On** and **Stoch Rate**.

PLAY and **FLUSH** are momentary transport-style buttons: they are not automatable, and are driven from the back panel instead.

CC	PARAMETER
13	Thru
14	Quantize
15	Tank Capacity
16	Drain Rate
17	Gate Length
18	Chord Window (ms)
19	Trigger Mode
20	Threshold Level
21	Consume/Loop
22	Draw Order
23	Engine
24	Chord Mode
25	Pressure
26	Segment 1 Count
27	Segment 2 Count
28	Segment 3 Count
29	Segment 4 Count
30	Segment 5 Count
31	Segment 6 Count
33	Segment 7 Count
34	Segment 8 Count
35	Segment 1 Rate
36	Segment 2 Rate
37	Segment 3 Rate
39	Segment 4 Rate
40	Segment 5 Rate

CC	PARAMETER
41	Segment 6 Rate
42	Segment 7 Rate
43	Segment 8 Rate
44	Segment 1 Enable
45	Segment 2 Enable
46	Segment 3 Enable
47	Segment 4 Enable
48	Segment 5 Enable
49	Segment 6 Enable
50	Segment 7 Enable
51	Segment 8 Enable
52	Velocity Source
53	Velocity Amount
54	Transpose
55	Emit Probability
56	Overflow Mode
57	Strum Spread
58	Stochastic Every
59	Stochastic Probability
60	Stochastic Length
61	Stochastic Weight -3
62	Stochastic Weight -2
63	Stochastic Weight -1
68	Stochastic Weight +1
69	Stochastic Weight +2
70	Stochastic Weight +3

18

TROUBLESHOOTING

Nothing comes out.

In **ACCUM** the tank waits for **PLAY**; in **THRESH** it waits for the pile to reach the line. In **DIRECT**, check the device is on and not bypassed.

I only hear what I play.

DIRECT with **THRU** on passes your notes through and leaves the tank empty (4.4). Switch **THRU** off and the engine takes over.

I hear every note twice.

THRU is on in **ACCUM** or **THRESH**, so you hear yourself and the drain. That is useful while filling; turn **THRU** off for the drain alone.

It keeps playing and won't stop.

Either an Accumulate latch is running (tap **PLAY** to clear it), or **LOOP** is engaged, in which case the tank never empties. **FLUSH** ends both.

Threshold fired once and never again.

It re-arms when the tank empties. In **LOOP** it cannot empty, so the trigger stays fired until you flush or change mode.

The tank emptied by itself.

Changing **CAPAC** flushes the tank by design, and so does loading a patch that carries a different capacity.

A chord came out split across two steps.

With **QUANT** on, the grid decides the emission moment, so a chord arriving just before a grid point can be split. Work unquantized, or widen **WINDOW** (10.2).

New notes are being ignored.

The tank is full and **OVFLOW** is on **FREEZE**, which protects what is stored. Switch to **REPLACE** or press **FLUSH**.

Some steps are silent.

EMIT PR is below 100%, or its CV input is pulling it down. Skipped steps still consume, so the timing stays intact (13.2).

The rate CV doesn't reach the ends of the ladder.

A full swing moves the rate six steps. From the default position that spans the whole ladder; from a knob setting near one end, the clamp stops it sooner.

No segment lamp lights in PATTERN.

Every segment is switched off, so the walker has nothing to visit and the engine falls back to the SEQ rate (11.1).

The stochastic strip is dark.

PROB is at 0, which switches the section off altogether.

The sequencer records nothing from Hopper.

Hopper plays live from what reaches it, and a drain with random order, dice or emit probability is different on every pass. To keep one performance, record the instrument's audio.

HOPPER

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