PC70

A late-90s sound module: 90 synthesised patches in ten groups, with a split keyboard that puts one of twelve basses under the left hand.

> **A Lab plug-in.** The Lab is where new GFX plug-ins are built in the open: they may change sound or controls between versions.

Overview

PC70 is a sound module in the spirit of the late-90s desktop boxes: pick a patch and play. There are 90 patches in ten groups - synthetic pianos, FM and chorus electric pianos, clav, drawbar organ, bells and glass, guitars and plucks, strings, pads, choirs, brass, leads, basses and a drum kit on the GM drum map. Every sound is synthesised; there are no samples.

Each patch comes with its own effects: the GFX Mod Rack (tremolo, chorus, vibe and delay) and a reverb (room, hall or plate). The editor page lets you move a patch from

where it stands - brighter, darker, faster or slower envelopes - and choosing a patch puts everything back.

The keyboard can be split. Keys below the split point play a bass, chosen from the twelve basses in the bank, with its own octave and level; keys from the split point up play the patch. The bass plays dry, without the patch's effects and reverb, so one hand plays the bass line and the other the chords or lead.

It plays up to 16 notes at once for the patch and 4 for the bass. Each part has its own DRIFT dial: the tuning wanders a little and every note lands slightly differently, on each part independently of the other.

Reach for it for

- Quick, playable sounds for sketching and demos
- 90s-style keys, pads and choirs
- Basses and leads without building a patch
- A GM-style drum kit for programming beats
- Playing a bass line and chords at the same time from one keyboard

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Playing it

1. Insert PC70 on a track as an instrument (in REAPER's FX list it is PC70 [sound module] (GFX Lab)). It has no audio input; it plays from MIDI.
2. Arm the track for recording with a MIDI input and turn on record monitoring, or draw notes in a MIDI item.
3. Click a patch name on the patch list to choose it. The MIDI IN light blinks green when notes arrive.
4. The mod wheel (CC1) adds vibrato, the sustain pedal (CC64) holds notes, pitch bend follows BEND, and CC120 / CC123 stop all notes. A program change 0 - 89 on the MIDI channel selects patches 1 - 90.
5. The SPLIT key is lit on a new instance: keys below C3 play Finger Bass. Turn SPLIT off to play the patch across the whole keyboard.
6. If you use more than one MIDI channel, set MIDI CH on the editor page to the one you want; OMNI plays on all.

Controls

The top bar

Display	Shows the patch's group, number and name. While you turn a knob on the editor page it shows that knob's name and value for a moment instead. Click the display to go to the patch list.
< / >	Step to the previous or next patch (wrapping round at the ends).
EDITOR	Opens the editor page; the key lights while it is open. Click it again, or click the display, to go back to the patch list.
MIDI IN	Blinks green when a note arrives.
VOLUME	Output level, -24 to +6 dB (0 dB by default).
S / M / L	Panel size: small, medium or large (it opens at large). The panel also scales to fit the plugin window.
?	Opens a pop-up with the design credit, the GFX website address and the address of this manual. Click anywhere to close it.

The SPLIT strip

Below the top bar, on both pages. While SPLIT is off the rest of the strip is greyed, apart from MAIN DRIFT.

SPLIT	Turns the split on or off (on by default). Off, every key plays the patch.
LEARN	Click it, then play a key: that key becomes the split point. The key reads PLAY A KEY while it waits; that note is not played. Click it again to cancel.
Keyboard picture	Five octaves, C1 to C6. The bass keys are tinted brown and an amber line marks the split. Click a key to make it the split point (this also turns SPLIT on). The line of text above it reads, for example, BASS BELOW C3 - PATCH FROM C3 UP (middle C is C4).
BASS SOUND	The bass under the left hand: one of the twelve basses of the bank (patches 76 - 87, see Basses below), Finger Bass by

	default. Click it for the list. Changing it while you play fades the bass part out and back in over about 10 ms.
OCTAVE	Shifts the bass by -2 to +2 octaves. Click it for the menu.
BASS LEVEL	The bass part's level, -24 to +6 dB (0 dB by default, where it sits as loud as the same sound chosen as a patch).
BASS DRIFT	See Drift below.
MAIN DRIFT	See Drift below.

The bass has its own sound settings: the editor page's TONE, FILTER ENVELOPE, AMP ENVELOPE, Mod Rack and reverb work on the patch only. VELOCITY, TUNE, BEND, the mod wheel, the sustain pedal, VOLUME and the output stage work on both. A note-off always reaches both parts, so moving the split while keys are held never leaves a note hanging.

The patch list

Every patch, by group, in six columns. Click a name to choose it; the selected patch is lit blue.

The editor page

A strip across the top shows the patch's number, name and group, with a reminder that the centre is the patch as made. The TONE, FILTER ENVELOPE and AMP ENVELOPE knobs move the patch from where it stands: the centre (or 100%) is the patch as made, and choosing a patch puts them back. Controls that the current patch has no use for are dimmed. Knobs: drag up or down, or use the mouse wheel; double-click to reset a knob to its default. While you turn one, its name and value show on the display.

TONE

TONE	Brighter or darker, by up to 1.5 octaves either way from the centre.
FILTER	Moves the patch's filter, from -6 to +3 octaves. On the FM, plucked-string, metal-bar, piano and organ patches (which have no filter of their own) it works a low-pass on the output, so only turning it down has an effect.
RESONANCE	Adds resonance to the filter, 0 to 100%.

FILTER ENVELOPE

Works on the analogue and GM-style patches. Session Piano, Bright Piano, Chorus EP, FM E-Piano, Clav, Glockenspiel, Drawbar Organ and Drum Kit have no filter envelope: the row is dimmed and reads (not on this patch). On those patches the AMP ENVELOPE's ATTACK and SUSTAIN are dimmed too, DECAY is dimmed on the organ and the kit, and RELEASE on the kit.

AMOUNT	How far the envelope moves the filter, 0 to 200% of the patch's own amount.
ATTACK / DECAY / RELEASE	Scale the patch's filter envelope times, from 10% (faster) to 400% (slower).
SUSTAIN	Moves the patch's sustain level, -100 to +100.

AMP ENVELOPE

ATTACK / DECAY / RELEASE	Scale the patch's volume envelope times, from 10% (faster) to 400% (slower). On struck and plucked sounds DECAY sets how long they ring.
SUSTAIN	Moves the patch's sustain level, -100 to +100.

PLAY

VELOCITY	0 to 100% (70% by default): how much playing harder makes notes louder (and on many patches brighter). 0 ignores velocity.
TUNE	Fine tuning, -50 to +50 cents.
BEND	Pitch-bend range, 0 to 12 semitones (2 by default).
MIDI CH	The MIDI channel it listens to: OMNI (all, the default) or 1 to 16. Click it for the list.

REVERB

ROOM / HALL / PLATE	The reverb type: a small room, a large hall, or a dense, bright plate.

PRE	Pre-delay before the reverb starts, 0 to 150 ms.
DECAY	Reverb time, 0.2 to 10 s.
DAMP	How quickly the high frequencies die away in the tail, 0 to 100%.
MIX	How much reverb is added, 0 to 100%.

MOD RACK

Four effects working side by side on the instrument: TREMOLO, CHORUS, VIBE and DELAY. Each adds its own effect to the dry sound. They are off when their depth or mix is at zero.

SYNC	Click to step through off, SYNC (straight), SYNC D (dotted) and SYNC T (triplet). With sync on, RATE (or TIME on the delay) becomes a note value from 4 BARS to 1/32, locked to the project tempo.
L / C / R	Which outputs the module works on: L the left side, R the right side, C a mono centre feed to both. With C and a side on together, the sides are offset for stereo movement.
TREMOLO: RATE, DEPTH	Volume wobble: 0.1 to 15 Hz, depth 0 to 100%.
CHORUS: RATE, DEPTH, MIX	Chorus: 0.05 to 8 Hz, depth 0 to 100%, mix 0 to 100%.
VIBE: RATE, DEPTH	A four-stage phase-shift swirl: 0.1 to 12 Hz, depth 0 to 100%.
DELAY: TIME, FDBK, MIX	Echo: 20 to 1500 ms (or a synced note value), feedback 0 to 95%, mix 0 to 100%.

OUTPUT

At the foot of the editor page.

SAT	Band saturation on the way out, 0 to 100% (0 by default): only the lows and highs are saturated (the mids stay clean), with a soft curve that loosens as the level rises.

OUTPUT CLIP	A soft clipper on the output (always on) catches overs at the ceiling.
MONO BELOW	Makes everything below this frequency mono, from off (20 Hz) up to 500 Hz.
WIDTH	Widens the stereo image above that, 0 to 100% (up to twice the side signal).

Drift

BASS DRIFT and MAIN DRIFT (0 - 100%, 50% by default) set the drift of the bass part and of the patch. At 50% each part drifts as the Stable PC70 does: the tuning wanders slowly (up to about 2 cents) and every note lands slightly differently in pitch and brightness, and the Mod Rack's speeds waver slightly (patch only). 100% doubles it; 0 turns it off. The two parts wander independently of each other.

Patches

90 patches in ten groups. The basses (76 - 87) can also be chosen as the SPLIT bass. The number before each name is its place in the list; MIDI program change 0 - 89 picks patches 1 - 90. Every patch carries its own reverb (type, decay and mix) and Mod Rack settings.

Pianos & Keys

01 Session Piano	Synthetic acoustic piano, warm and even.
02 Bright Piano	The synthetic piano with harder hammers and more shimmer.
03 Chorus EP	FM tine electric piano with a deep chorus and tremolo.
04 FM E-Piano	The FM tine electric piano, plain.
05 E.Piano 1	GM-style FM electric piano with a gentle tremolo.
06 E.Piano 2	A brighter GM-style FM electric piano with tremolo.
07 Clav	A bright plucked string, picked up near its end - the funky clav.

08 Clavi	GM-style clavi: a short, dark, resonant pulse.
09 Harpsichord	GM-style plucked-string harpsichord.
10 Drawbar Organ	Drawbar organ with third-harmonic percussion on fresh chords and a fast rotary-style chorus; room reverb.

Mallets & Bells

11 Glockenspiel	A struck metal bar with a soft mallet click.
12 Fantasy Bells	A slow pad with bell partials ringing over it.
13 Crystal Harp	Chiming bell partials over a soft, bright pad.
14 Staccato Glass	A short 'aah' choir with a glassy chime and a tempo-synced dotted 1/8 echo.
15 Celesta	FM celesta, an octave up.
16 Music Box	FM music box, an octave up, with a light 1/4 echo.
17 Vibes	FM vibraphone with a long ring.
18 Marimba	Short, woody FM marimba.
19 Xylophone	Short, bright FM xylophone, an octave up.
20 Tubular Bells	Long-ringing FM tubular bells.
21 Dulcimer	GM-style plucked-string dulcimer.
22 Tinkle Bell	Small FM bell, an octave up.

Guitars & Plucks

23 LA Nylon	A round nylon pluck with a soft pick, over a quiet sine body that swells in.
24 LA Steel	A bright steel-string pick with a shimmering synth body.
25 LA Clean	A chorused clean electric with a dotted 1/8 echo.

26 LA Harmonics	Glassy string harmonics over a soft pluck, with a dotted 1/8 echo.
27 Nylon Atmos	A nylon pluck inside a slow pad, with a 1/4 echo.
28 Pizz Flow	A bright pizzicato pluck with bell partials and a 1/8 echo.
29 Harp	A long, round pluck.
30 Nylon Gtr	GM-style nylon guitar: a soft, dark pluck.
31 Steel Gtr	GM-style steel guitar: a brighter pluck.
32 Muted Gtr	GM-style muted guitar: a short, damped pluck.
33 Overdrive Gtr	GM-style sustaining guitar lead from detuned saws.
34 Koto	GM-style plucked koto with a light 1/4 echo.
35 Kalimba	FM kalimba with a light 1/4 echo.

Strings & Orchestra

36 Strings	Analogue strings with a slow attack and vibrato.
37 String Ensemble	Bright analogue strings through a three-phase ensemble.
38 Fat Strings	Thick saws into the ensemble.
39 Orchestra Hit	A big octave stab that drops in pitch.
40 Violin	GM-style violin: slow attack, strong vibrato.
41 Viola	GM-style viola, a little darker.
42 Cello	GM-style cello, an octave lower.
43 Strings 1	GM-style string section with a slow attack.
44 Syn Strings	GM-style synth strings from widely detuned saws.

Pads

45 Synth Pad	A slow, detuned saw pad.
46 Warm Pad	A dark, warm pad with a sub and a gently moving filter.
47 Soundtrack Pad	A chime over a slow, warm sweep, with a 1/4 echo.
48 Native Dance	A tempo-synced 16-step log-drum loop, retuned to each held note, riding a dark resonant sweep, with a dotted 1/8 echo.
49 Poly Synth	GM-style poly synth pad with a long release.
50 Bowed Pad	Slow pulse pad with a dotted 1/4 echo.
51 Metal Pad	Slow FM pad with a dotted 1/4 echo.
52 Sweep Pad	Slow, dark saw pad that swells and settles, with a dotted 1/4 echo.

Choirs & Voices

53 Glass Voices	An airy 'aah' choir with breath and vibrato.
54 Dark Voice	A low, slow 'ooh' choir.
55 Fantasy Voice	A bright 'aah' with a glassy chime on the front.
56 Spaced Voice	Airy 'eh' voices with a slowly drifting filter and a long dotted 1/4 echo.
57 Choir Pad	GM-style choir pad with a slow attack and vibrato.

Brass & Winds

58 Brass Section	Swelling filter, a little rise into the note, and vibrato.
59 Synth Brass	Classic analogue synth brass with a snappy filter sweep.
60 Velo Stab	A short stab: playing harder opens it right up.
61 Hoover	Wide saws and pulses that scoop up into the note; mono with glide.

62 Pan Flute	A sine with its breath tuned to the note, a soft chiff and vibrato.
63 Syn Reed	GM-style synth reed with vibrato.
64 Whistle	GM-style whistle, an octave up, with vibrato and a dotted 1/8 echo.
65 Ocarina	GM-style ocarina with vibrato and a dotted 1/8 echo.

Leads

66 Square Lead	Two squares an octave apart with glide; mono, with a dotted 1/8 echo.
67 Calliope Lead	A pipe with pitched breath, a short chiff and vibrato, with a 1/8 echo.
68 Square Wave	GM-style square lead with vibrato and a dotted 1/8 echo.
69 Saw Lead	GM-style detuned saw lead with a dotted 1/8 echo.
70 Calliope	GM-style calliope with a dotted 1/8 echo.
71 Chiff Lead	GM-style pulse lead with a shorter decay and a dotted 1/8 echo.
72 Charang	GM-style detuned saw lead, darker, with a dotted 1/8 echo.
73 Voice Lead	GM-style soft voice lead with a slow attack, a long release and a dotted 1/8 echo.
74 Fifth Lead	GM-style lead with saws a fifth apart and a dotted 1/8 echo.
75 Bass & Lead	GM-style lead with saws an octave apart, pitched low, with a dotted 1/8 echo.

Basses

76 Bass Synth	Saw and square with a sub, a resonant envelope sweep and glide; mono.

77 Sub Bass	A pure sine; mono with glide.
78 Acid Bass	A resonant saw with a snappy envelope and slides; mono.
79 Round Bass	Saw, square and sub; mono.
80 Pluck Bass	Short and punchy, and polyphonic.
81 Hollow Bass	Sine and square; mono.
82 Reese Bass	Wide detuned saws with a sub; mono.
83 Acoustic Bass	GM-style acoustic bass.
84 Finger Bass	GM-style finger bass (FM).
85 Synth Bass 1	GM-style dark saw bass.
86 Synth Bass 2	GM-style pulse bass.
87 Synth Bass 3	GM-style saw bass two octaves down, with a softer attack and vibrato.

Drums & Perc

88 Drum Kit	A synthesised kit on the GM drum map (see below).
89 Agogo	FM agogo bell.
90 Woodblock	FM woodblock.

The drum kit (patch 88)

Drum Kit follows the GM drum map: kicks on 35 and 36, side stick 37, snares 38 and 40, clap 39, closed, pedal and open hi-hat on 42, 44 and 46 (the closed and pedal hats cut off the open one), toms on 41, 43, 45, 47, 48 and 50, crashes on 49 and 57, china 52, splash 55, ride 51 and 59, ride bell 53, tambourine 54, cowbell 56, bongos and congas on 60 - 64, cabasa and maracas on 69 and 70, claves 75 and woodblocks on 76 and 77. Other keys play a short generic hit.

Tips

- Choosing a patch resets the editor's knobs and loads its own reverb and Mod Rack, so make your edits after you have picked the patch.
- Native Dance follows the project tempo: its loop locks to the timeline when the project plays.
- Turn on the delay's SYNC so the echoes sit in time with the track.
- Use OCTAVE to bring the bass where your left hand wants it: the GM-style basses (83 - 87) already sound an octave or two below the key played, the analogue ones at the key played.
- With a mono bass (Bass Synth, Sub Bass, Acid Bass, Round Bass, Hollow Bass, Reese Bass), overlapping left-hand notes glide into each other; Pluck Bass and the GM-style basses play chords.
- On bass patches, set MONO BELOW to around 120 Hz to keep the low end centred if you add stereo chorus or width.

File: gfx-lab-g-pc70.jsfx