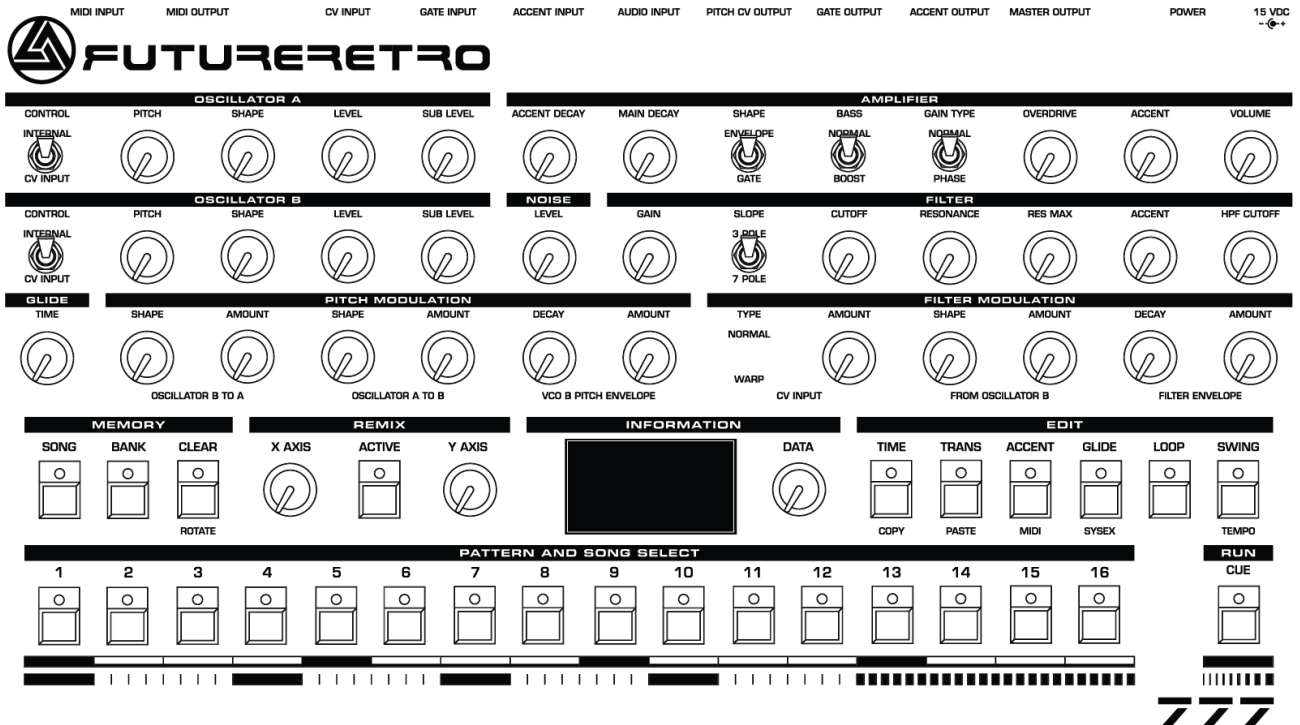




Sequencer Operation Manual

Reissue Edition

This manual covers the 777's new sequencer only, and is an addendum to the original 777 Owner's Manual. The analog synthesizer section is unchanged from the original 777 — refer to the vintage manual for the analog voice.

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QUICK START

Want to make noise right now? This gets you sequencing in about a minute; the rest of the manual fills in every detail. (For the analog synth voice, see the original 777 Owner's Manual — it is unchanged.)

Get Playing in a Minute

- 1 Connect the 777's audio output to your mixer or amp and power it on. The sequencer plays the 777's own analog voice, and also sends MIDI and CV/Gate.
- 2 Press **CUE/RUN**. A pattern plays and the CUE/RUN light blinks at the tempo. Press it again to stop.
- 3 Set the tempo: hold **Swing/Tempo** and turn the **Data** encoder (20–250 BPM).
- 4 Pick another pattern: press **BANK** (its light comes on — you are in Pattern Select), turn **Data** to choose a bank, then press a **Step key (1–16)** to select a pattern in that bank.
- 5 That's it — you're sequencing. Every change you make is saved automatically.

Make Your Own Pattern

- 1 From Pattern Select, press **BANK** again to enter Pattern Edit (its light goes off).
- 2 Tap the **Step keys** to turn notes on and off — bright = note on, and the selected step blinks.
- 3 Set a note's pitch: hold **Shift/Clear** and tap a step to select it, then turn the **Data** encoder to change its pitch.
- 4 Make longer notes: hold one step and press a higher step to **tie** them. For a 303-style **slide**, hold a step and press the one just before it.
- 5 Set where it loops: tap the **Loop** key on the last step you want to play.

Five Things to Try

- **Ratchets & probability** — give a step a ratchet count so it retriggers, or a gate probability so it only plays some of the time.
- **Dynamic loops** — hold Loop and press two steps to loop any region; press them high-to-low to play that region in reverse.
- **Scale lock** — double-tap Xpose/Paste and dial in a scale so every note stays in key.
- **Remix** — press Remix and turn the Remix X/Y encoders to reshuffle the step order without changing your notes.
- **Instant variation** — hold Remix in Pattern Edit and press an encoder to randomize pitches, gates, or accents within the loop.

Ready for the details? The chapters ahead cover every feature, and the MIDI chapters add live CC control, per-step editing, and step-recording.

INTRODUCTION

Thank you for choosing the Future Retro 777. Please take the time to read through the entire manual for a complete understanding of the operations and procedures needed to master this instrument.

***Note:** This manual documents the 777's new sequencer and is an addendum to the original 777 Owner's Manual. The analog synthesizer voice operates exactly as it did on the original 777, so it is not repeated here — refer to the original manual for the analog voice, patching, and calibration.*

Overview

The 777 is a monophonic analog synthesizer with a powerful built-in digital step sequencer. The analog voice carries forward the fat, aggressive character the 777 is known for, while the sequencer has been completely rewritten to add a deep set of modern performance and composition features.

The sequencer can play the 777's own internal analog voice, and it can also play external MIDI sound modules and CV/Gate type synthesizers, sync its playback to other MIDI devices, act as a master clock for your studio, and function as a MIDI-to-CV/Gate converter.

The sequencer provides 256 storable patterns that you can create and edit in real time while the unit plays. Patterns may be selected and played in any order live, or prearranged into one of the 16 song locations stored in memory. The Remix feature provides 256 variations for every pattern and song. On top of the classic sequencer, the 777 adds per-step gate length, gate probability, ratcheting, pitch randomization, slides, scale quantizing, dynamic loop points with selectable playback direction, pattern randomization, Data Shuffle, deep MIDI control (performance CCs and per-step NRPN editing), and MIDI step-recording.

Compatibility

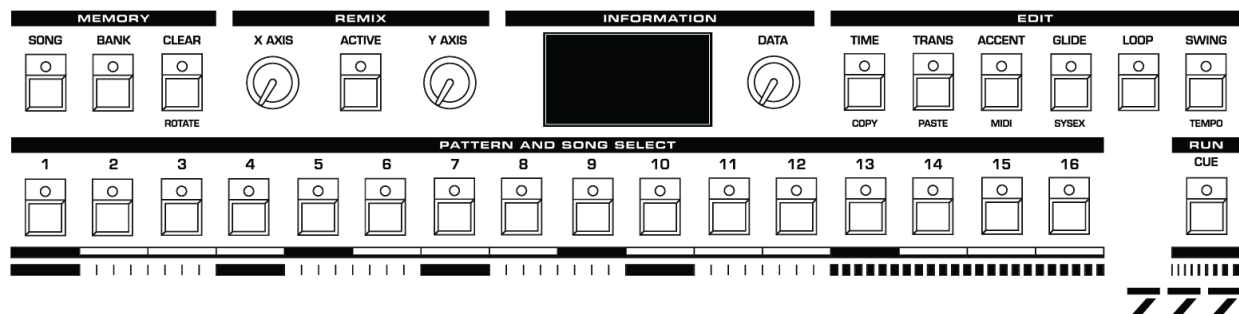
The 777's sequencer is descended from the same architecture used in the Orb, the Revolution, and the original 777. Pattern and song banks from those instruments can be imported into the 777 and translated to the new format using the SysEx Receive feature. Complete Orb and Revolution pattern and song libraries are also built into the firmware and can be loaded at any time. See “Loading the Built-in Libraries” for details.

Philosophy

The basis of music is time. Time is nothing more than our perception of the heavenly bodies spinning through their celestial orbits. From ancient sundials to modern analog clocks, time has been represented as the circle, a cycle which never ends, illustrating the infinite within a finite amount of space. The 777's sequencer is built around this same idea, arranging a measure of music as a ring of steps that loops endlessly. Enjoy the power of the 777.

CONTROLS AND CONVENTIONS

This manual documents the sequencer half of the 777's front panel, shown below. Controls are referred to by the names printed on the panel; where a key carries a secondary function it is shown with a slash, such as Swing/Tempo. The three rotary encoders — the two Remix encoders (X Axis and Y Axis) and the Data encoder beside the screen — are the heart of the sequencer, and each one also has a push switch.



The 777 sequencer control surface.

Panel Labels and This Manual

A few controls are labelled on the panel with names this manual pairs with a function word for clarity:

X AXIS / Y AXIS > the two Remix encoders; this manual calls them Remix X and Remix Y.

ACTIVE > the Remix on/off button in the Remix section; this manual calls it the Remix key.

CLEAR (Rotate) > the modifier and erase key; this manual refers to it as Shift/Clear. Held with another key it acts as a shift, pressed with a step it clears, and its Rotate function shifts a pattern's contents.

RUN (Cue) > the transport key; this manual calls it CUE/RUN.

The Three Encoders

REMIX X > the left Remix encoder (panel: X Axis). Selects remix variations and edits the assigned parameter on the various edit and randomization pages.

REMIX Y > the right Remix encoder (panel: Y Axis). Selects remix variations and edits assigned parameters; its push switch toggles a step's randomization or ratchet group on and off.

DATA > the encoder beside the screen — the primary value control. It replaces the up/down keys of earlier units, so “turn the Data encoder” appears wherever an older manual said “use the Up/Down keys.” Its push switch moves the edit cursor and toggles between moving and editing.

Keys

CUE/RUN > the transport key (panel: Run/Cue). Starts and stops playback, and arms (cues) the sequencer when synced to an external clock.

SONG > switches between Pattern mode and Song mode, and reaches the MIDI and SysEx menus.

BANK > enters Pattern Select and Pattern Edit, and is held to choose the bank when selecting patterns.

SHIFT/CLEAR > the modifier and erase key (panel: Clear / Rotate). Held with other keys it reaches secondary functions; pressed with a step it clears it.

LOOP > sets loop points — press quickly for the classic loop-end toggle, or hold for dynamic loop editing.

XPOSE/PASTE > transpose, the Scale/Transpose page, and the Paste half of copy/paste (panel: Trans / Paste).

TIME/COPY > time signature, step and swing timing, and the Copy half of copy/paste.

SWING/TEMPO > swing amount and tempo (BPM).

ACCENT/MIDI > step accents, and (from Song mode) the MIDI menu.

GLIDE/SYSEX > step glides, and (from Song mode) the SysEx menu.

REMIX > turns Remix on and off (panel: Active), and is held to reach Pattern Randomization and Data Shuffle.

STEP KEYS 1–16 > the row of sixteen keys (panel: Pattern and Song Select) used to enter notes, select steps, and choose patterns and songs.

MAINTENANCE AND SUPPORT

Power

Use only the power supply provided with this unit. If you should ever lose this power supply, please contact us for a replacement.

Care

Avoid exposing the unit to smoke or to damp, dusty, or extreme hot and cold environments. To clean the unit, use a soft damp cloth. Do not use abrasive cleaners, as these may harm the surface and finish of the unit.

Memory

All patterns, songs, and settings are stored in non-volatile EEPROM memory. Your work is retained when the power is turned off, and the 777 requires no backup battery. As a general rule, always back up your patterns and songs using the SysEx Dump feature to prevent the accidental loss of your work, especially before installing new firmware.

Warranty and Support

The 777 comes with a limited warranty covering mechanical and electrical defects. This warranty does not cover damage due to misuse or abuse of this product. Should you experience problems, we recommend you first check the Support page of our website for up-to-date help on common problems.

Support: www.future-retro.com/support.html | Email: support@future-retro.com

CONNECTIONS

Always turn the power off for all devices when making connections.

Power

Connect the supplied power supply to the Power jack and use the Power switch to turn the unit on and off.

CV Out

When notes are played, a 1 volt per octave control voltage is generated at this output. Connect it to the Pitch CV input of an analog synthesizer, or use it to modulate other analog parameters such as filter cutoff.

Gate Out

When notes are played, a positive-polarity gate signal is generated at this output. Connect it to the Gate input of an analog synthesizer to trigger its envelopes. The gate ranges from 0 volts (note off) to a positive voltage (note on).

Accent Out

When the 777 plays a step written with an Accent, a positive-polarity gate signal is generated at this output for the full duration of the step. Connect this output to the Velocity input of an analog synthesizer.

MIDI In, Thru, Out

Use MIDI cables to connect the 777 to other MIDI equipment. MIDI Out plays or syncs other devices and sends SysEx dumps. MIDI In receives clock, notes, Program Change, and SysEx. MIDI Thru passes everything received at MIDI In directly through for daisy-chaining multiple units.

USB MIDI

The 777 is a class-compliant USB MIDI device. Connect it to a computer to send and receive MIDI notes, clock, transport, Program Change, and SysEx over USB, with no driver installation required.

SEQUENCER OVERVIEW

Structure

There are 256 user patterns arranged as 16 banks of 16 patterns. Each pattern is up to one measure in length, divided into 12 or 16 equal steps depending on the time signature.

Each step can record a note on/off state, pitch, gate length, gate probability, ratchet count, ratchet probability, pitch randomization, accent, glide, and slide. Each pattern also records its loop points and playback direction, time signature, swing amount, scale and root note, and transpose setting. Patterns can be copied and pasted, shifted and rotated, transposed, remixed, randomized, and played forward or in reverse.

Patterns can be selected and played live in any order while in Pattern mode, or prearranged into one of the 16 song locations. Each song records the order in which patterns play, the transpose setting for each step, the song loop point, and the tempo. Each song can arrange up to 3,580 steps of music.

Pattern Mode and Song Mode

The sequencer has two main modes. When the Song key indicator is on, the machine is in Song mode; when it is off, the machine is in Pattern mode. Press the Song key to change modes. You can now switch between Song and Pattern modes while the sequencer is playing or cued:

- Switching from Song mode to Pattern mode keeps whatever pattern was playing for the active song step and continues looping that pattern.
- Switching from Pattern mode to Song mode plays the current pattern to its end, then advances to the next song step and resumes playing the song.

The sequencer automatically saves all changes made to patterns and songs, so you can create and manipulate music live and hear the changes as they happen.

PLAYING PATTERNS

Press the CUE/RUN key to start and stop playback. While playing, the CUE/RUN indicator blinks at the current tempo.

Playing in Reverse

To start a pattern playing in reverse, hold Shift/Clear and then press CUE/RUN. While a pattern is playing, holding Shift/Clear and pressing CUE/RUN reverses the direction at the end of the current pattern. The 777 always plays Step 1 as the first step, even when counting backward, so that down beats remain on down beats and the rhythm stays musical.

***Note:** Reverse playback started this way is separate from the playback direction you can set within a loop (see “Loop Points”). If you have defined a reverse loop and then start playback with Shift/Clear + CUE/RUN, the pattern plays forward.*

Syncing to an External Clock

If the clock source is set to MIDI, pressing CUE/RUN arms the sequencer: the indicator lights and stays on, showing the unit is cued and waiting for an external MIDI Start command.

SELECTING PATTERNS

Make sure you are in Pattern mode (the Song key indicator is off). Press the BANK key so its indicator turns on to enter Pattern Select. The display shows the current bank number, and one of the 16 step key indicators lights to show the selected pattern within that bank.

To select a pattern, turn the Data encoder to choose the bank, then press one of the 16 step keys to choose the pattern within that bank. If no step key indicator is lit, the current pattern is in another bank; turn the Data encoder to find it.

Patterns can be selected while the sequencer is playing. When you select a new pattern, its key indicator lights at half brightness to show it is cued; it begins playing once the current pattern reaches its loop point. You can change the cued pattern at any time until that loop point is reached.

Multiple Pattern Cueing

You can chain up to 16 patterns in a bank to create longer looping arrangements. In Pattern Select, press and hold the first pattern you wish to play, then press the last pattern to include in the loop. Patterns play sequentially from the lowest to the highest pattern number, so the first pattern must have a lower number than the last. Once a group is playing, you can cue up another group — in any bank, even partially overlapping the current group — to play when the first group reaches its last step.

Live Accent and Glide

While you are in Pattern Select and a pattern is playing, press and hold the Accent/MIDI or Glide/SysEx key to momentarily force Accent or Glide active across the playing pattern. This is a live performance effect only — it adds accent or glide for as long as you hold the key and does not alter the stored pattern data. Release the key to return to the pattern as written.

Copying and Pasting Patterns

Copy and paste now work while the transport is running. In Pattern Select, hold the Copy key (Time/Copy) and press a step key to copy the pattern in that location. Then hold the Paste key (Xpose/Paste) and press a step key to paste to that location. If you paste to the pattern that is currently active, the new data loads immediately; pasting to any other location does not disturb the pattern that is playing.

***Note:** Before editing a pattern you want to keep, copy it to another location first so you do not overwrite your original.*

EDITING PATTERNS

Pattern Edit mode is where one measure of music is recorded and edited. From Pattern Select, press the BANK key to enter Pattern Edit (the BANK indicator turns off). All editing can be done while the sequencer is stopped or playing.

When the sequencer is playing, the step key indicators blink to show the current step, which makes it easy to pinpoint steps to edit and shows where the loop point is set.

Entering and Removing Notes

In Pattern Edit, the 16 step keys toggle notes on and off directly. Press a step key where you want a note to begin; press the starting step of an active note again to turn it off. Note indicators are shown at full brightness where a note begins, at half brightness through the sustained portion of a tied note, and off where there is a rest.

The currently selected step is shown by a blinking indicator: bright if that step is on, dim if it is off. When the selected step is off, the display shows “off” in place of the gate parameters.

Selecting a Step Without Changing It

Hold Shift/Clear and press a step key to select that step for editing without toggling its on/off state. This is the way to inspect or edit a step's parameters without accidentally turning it on or off.

Tied Notes (Sustain)

To create a longer sustained note, press and hold the step key where the note starts, then press the step key for the last step the note should sustain to. The starting step shows at full brightness and the tied steps show at half brightness. When a tied note is selected, the display shows its start and end steps. The last step of a tied note must be higher in value than the starting step; to carry a note past Step 16, use a glide.

If you write a new note within the sustained portion of a tied note, the earlier note is shortened so that it sustains only up to the new note.

A Handy Pitch Shortcut

When you edit the pitch of a tied note, that same pitch is written to every step of the note. This makes a quick way to start a pattern based on one root note: tie all 16 steps into one long note, set the pitch you want (every step now shares it), then toggle steps on and off to build your rhythm without re-entering the pitch each time.

Slide

A Slide ties two steps of different pitches together so that the gate stays on while the pitch changes or glides from one to the next — the key to slinky, 303-style acid lines. To set a Slide quickly, hold a step key and press the immediately previous step key; this toggles Slide on the previous step so it slides into the held step. A step with Slide shows “sld” in place of its gate-length percentage. You can also set or clear a Slide by editing Gate Length: increasing it above 99% sets a Slide, and decreasing from “sld” returns it to 99%.

Clearing Notes

To clear individual notes, hold Shift/Clear and press the step key for each note you want to clear. To clear every note in a pattern at once, go to Pattern Select, hold the step key for that pattern, and press Shift/Clear. Clearing notes only erases where notes are placed and their durations; pitch, accent, glide, loop, time signature, and

swing settings are retained.

Saving a Pattern

Front-panel edits are saved automatically a moment after you make them. You can also commit the pattern immediately by double-tapping the Time/Copy key (two quick presses); a SAVED banner confirms. A manual save is mainly useful for committing live MIDI CC performance tweaks, which are otherwise temporary (see “MIDI Performance Control”). A double-tap is distinct from a hold, so it does not interfere with holding Time/Copy to edit step or swing timing.

Reverting Changes

To discard the edits you have made to the current pattern, hold Shift/Clear and press the Remix key in Pattern Edit. This opens the revert/discard option and returns the pattern to its previously saved state, including any unsaved MIDI CC tweaks.

PER-STEP PARAMETERS

Each step holds a rich set of parameters beyond simply on or off. How these appear while editing depends on the Step Edit Layer setting (see Global Settings).

Editing with the Data Encoder

On the main Pattern Edit page, the > and < symbols on the display show what the Data encoder is currently pointing at. When the cursor is showing, turning the Data encoder moves the cursor between parameters; pressing the Data encoder switch toggles between moving the cursor and editing the value it points to. While you are editing a value, its text is shown inverted for clarity, and the cursor blinks so it is easy to keep track of.

Cycling the cursor visits the per-step fields in order: Pitch, Pitch Range High, Pitch Range Low, Pitch Probability, Gate Length, Gate Probability, Ratchet Count, and Ratchet Probability, then wraps around. Fields belonging to a group that is switched off are hidden and skipped by the cursor (see “Switching Randomization and Ratchets On and Off”).

The Step Edit Layer

When the Step Edit Layer is turned on (the default), the main edit page shows only the pitch of the selected step, keeping the screen clean. To reveal and edit the extended per-step parameters, hold Shift/Clear and press a step key; this selects the step (without toggling it) and opens the Step Edit layer with all parameters visible. Press Shift/Clear by itself to back out of the layer. When the Step Edit Layer is turned off, all parameters are always visible while editing. Either way, the Data encoder navigates and edits every field as described above.

Pitch

Select a step and set its pitch with the Data encoder. The display shows the pitch of the selected step. When the sequencer is playing, the new pitch takes effect the next time that step plays. If a scale is active, an asterisk (*) appears beside the pitch to indicate that quantizing is changing the note you hear; the actual programmed pitch is still shown.

Gate Length

Gate Length sets how much of the step the gate stays open, shown as a percentage. A value above 99% becomes a Slide (shown as “sld”), tying the step into the next while the pitch changes.

Gate Probability

Gate Probability sets the chance that the step's gate fires each time the pattern repeats, letting notes drop in and out for evolving, generative rhythms.

Ratchet Count and Ratchet Probability

Ratchet Count subdivides the step into multiple rapid retriggers. The count is applied across the total length of the note, taking tied steps into account, so ratchets work correctly on long notes. Ratchet Probability sets the chance that the ratchet fires on a given pass.

Switching Randomization and Ratchets On and Off

Pitch randomization, gate probability, and ratcheting can each be switched off while remembering their settings — think of it as a mute for that parameter group. A switched-off group hides its value and shows a dash where

the value would be, so a clean step reads with dashes rather than numbers.

There are two ways to toggle a group, both per step:

- With the cursor on any field of the group, press the **Remix Y** encoder switch. This snaps between off (dash) and your remembered value; turning it back on returns exactly the amount you had set.
- Or dial the Data encoder through the off position: **Gate Probability** off sits just above .99 — this “always plays” position is where a value of 1.0 used to be; **Pitch Probability** off sits below .01; and **Ratchets** off sits below 2 hits.

While a group is off, its fields are hidden and skipped by the cursor; turning the Data encoder on the dash wakes the group at its remembered settings. Note that a gate probability of off means the note always plays, while a value of .00 means it never plays.

Conditional Probability

Any of the probabilities (pitch, gate, or ratchet) can be set to a deterministic “1 in N” value instead of a percentage. Dial a probability above its percentage range to reach 1/2 through 1/9: a value of 1/2 makes the event happen every second time the pattern repeats, 1/3 every third time, and so on — a powerful way to build long-form variation into a looping pattern.

Pitch Randomization

Pitch Randomization lets a step play an alternate, random pitch some of the time. When Pitch Probability is off, the display shows a dash and the step always plays its programmed pitch. Give it a probability and set the Upper and Lower Pitch Range — the semitone window above and below the pitch that a random note is drawn from. If the Upper and Lower Range are set to the same value, the step randomly plays either its programmed pitch or that single alternate note — an easy way to create predictable melodic variations. When Quantize to Scale is on, random pitches are constrained to the active scale.

ACCENTS AND GLIDES

Accents

Select a step and press the Accent/MIDI key to turn its accent on or off; the Accent indicator shows the current state. Accents are transmitted over MIDI as a high Velocity value and generate a positive-polarity gate at the Accent output for the full duration of the step. To clear all accents in a pattern, hold Shift/Clear and press the Accent/MIDI key.

Glides

Select a step and press the Glide/SysEx key to turn its glide on or off. On the analog CV output, a glide causes the pitch to slew smoothly to the next step at the rate set by the Glide Time control. Over MIDI, a glide is sent as two slightly overlapped notes, which most external synthesizers can use to trigger their own portamento. To clear all glides in a pattern, hold Shift/Clear and press the Glide/SysEx key.

***Note:** Tied notes cannot extend beyond Step 16. To carry a note seamlessly from Step 16 to Step 1, place a glide on Step 16 and set Step 1 to the same pitch.*

LOOP POINTS AND PLAYBACK DIRECTION

Each pattern has its own loop region that determines which steps play and in what direction before the pattern repeats. A pattern in 4/4 can play up to 16 steps; a pattern in 3/4 can play up to 12.

The Classic Loop Toggle

Select a step, then quickly press and release the Loop key to set or clear the loop end on that step. As with latching Transpose, the press must be quick — holding the Loop key opens the dynamic loop editor described below.

Dynamic Loop Editing

Hold the Loop key to enter the dynamic loop editor. The display shows an overlay reading LOOP [start step : end step]. While holding Loop:

- Press and release a step key to update the loop endpoint, without selecting or modifying that step in any way.
- Press and hold one step key, then press a second step key, to set the loop start to the first step and the loop end to the second. This lets you loop any region on the fly, not just regions that begin on Step 1.

Loop-Defined Playback Direction

The order in which you choose the two loop points sets the playback direction. For example, holding Loop and pressing-and-holding Step 9 then pressing Step 12 loops Steps 9–12 forward. Holding Loop and pressing-and-holding Step 12 then pressing Step 9 starts on Step 12 and plays in reverse down to Step 9, then loops back to Step 12.

This loop-defined direction works on top of the global forward/reverse control. If you have defined a reverse loop and then start playback by holding Shift/Clear and pressing CUE/RUN, the pattern plays forward.

SWING, TIME SIGNATURE, AND TEMPO

Swing

Swing delays the playback of the even-numbered steps to add a more human feel. Hold the Swing/Tempo key and turn the Data encoder to set the swing amount; a value of 0 means no swing, and higher values increase the effect.

Time Signature and Timing

Two time signatures are available: 4/4 divides the measure into 16 steps, and 3/4 divides it into 12 steps. Hold the Time/Copy key and turn the Data encoder to select the time signature. While holding the Time/Copy key, press the Data encoder switch to toggle between editing Step timing and Swing timing.

Tempo

Hold the Swing/Tempo key and turn the Data encoder to set the tempo from 20 to 250 BPM. For fine adjustment, hold the Data encoder switch down while turning to change the tempo in 0.1 BPM increments.

***Note:** While holding the Swing/Tempo key, press the Data encoder switch to toggle between editing Tempo and Swing. The edit cursor defaults to Tempo in Song mode and Pattern Select, and to Swing in Pattern Edit.*

TRANPOSE AND SCALE

Transpose

Hold the Xpose/Paste key and turn the Data encoder to transpose all of a pattern's notes from -36 to +36 half-steps. Releasing the key applies the new value. You can also latch Transpose on by quickly pressing the Xpose/Paste key; turn the Data encoder to set the value and quickly press the key again to exit. To reset transpose to 0, hold Shift/Clear and press the Xpose/Paste key.

The playable note range runs from C1 to D#6. Notes transposed beyond this range are interpreted as rests.

Committing the Transpose

To bake the current transpose offset permanently into the pattern, hold the Time/Copy key and press the Xpose/Paste key. A “Save Transpose?” prompt appears; turn the Data encoder to choose YES or NO and press it to confirm (Song, Bank, or Shift/Clear cancels). Choosing YES rewrites the stored step pitches at the transposed values and resets transpose to zero, so the pattern sounds identical but is now stored at concert pitch. Any steps that a large offset pushes past the ends of the pitch range are muted so the saved pattern plays back exactly as you heard it; their pitch values are preserved where possible so transposing back down can recover them.

The Scale / Transpose Page

Double-click the Xpose/Paste key to open the Scale/Transpose page, where you can quantize the pattern to a musical scale:

- **Remix X** selects the scale. Scale 0 is [off] (no quantizing); press the Remix X switch to toggle between [off] and the last scale you used.
- **Remix Y** selects the root note.
- **Data** sets the transpose amount.

While this page is open, you can also use the step keys to transpose the pattern up and down. When Quantize to Scale is active, any note that the scale is altering is marked with an asterisk (*) beside its pitch, and the pitch preview you hear while editing respects the active scale.

Available Scales and Chords

The following scales and chords are available, in order:

[off], Major, Nat.Minor, Har.Minor, Dorian, Phrygian, Lydian, Mixolydian, Locrian, Maj.Penta, Min.Penta, Maj.Hungarian, Min.Hungarian, Roma, Lydian Aug, Lydian Dim, Ukrain.Dorian, Octatonic 1, Octatonic 2, Hirajoshi, In, Insan, Iwato, Yo, Arabic, MajorTriad, MinorTriad, Dim.Triad, Aug.Triad, Sus4Triad, Sus2Triad, Major7th, Dom.7th, 7b5, Minor7th, HalfDim.7th, Dim.7th, Min-Maj7th, Major6th, Minor6th, 7b9, Ninth, 7#9, Maj7#11, Maj6-9, Min6-9, m-maj7-9, Eleventh, Thirteenth, 13#11.

SHIFTING AND ROTATING PATTERNS

You can move the contents of a pattern in time. In Pattern Edit, hold Shift/Clear and use the encoders for three different kinds of shift:

- **Remix X** keeps the gate pattern (the triggers and ties) in place but shifts the rest of the pattern's contents left or right across all 16 steps.
- **Remix Y** rotates the pattern steps left or right within the current loop points, leaving steps outside the loop untouched.
- **Data** rotates the entire pattern left or right (the classic shift behavior).

REMIXING PATTERNS

The Remix feature provides 256 variations for playing a pattern. It is not a randomization but a mathematical process that creates new ways of stepping through a pattern's information. Whatever is programmed into Step 1 always plays as the first step of a remix.

Press the Remix key to turn Remix on or off; its indicator lights when Remix is active. With Remix on, the Remix X and Remix Y encoders select the remix variation. When both encoders are at their zero position, Remix has no effect and the pattern plays sequentially from Step 1, even if the Remix indicator is on.

Remix can be turned on or off and changed at any time, whether stopped or playing; changes take effect as soon as the next step plays. Try turning Remix on for only the last couple of steps of a loop to create a transitional fill, or take the DJ approach and introduce a new remix now and then.

***Note:** When a pattern is played in reverse, Remix is bypassed and the pattern plays backward sequentially. Switch back to forward playback to resume remixing.*

Pattern Randomization

Hold the Remix key while in Pattern Edit to reach the randomization functions. While holding Remix:

- **Remix X** adjusts the pitch randomization amount; press its switch to generate a new set of random pitches.
- **Remix Y** adjusts the gate randomization amount; press its switch to generate a new set of random gates.
- **Data** adjusts the accent/glide randomization amount; press its switch to generate a new set of random accents and glides.
- Press Shift/Clear while holding Remix to randomize everything at once.

All randomization operates only on the current loop region; steps outside the loop are not affected. Pitch randomization uses the pitch of the starting step as its base note and does not randomize that first step, which is musically useful for creating bassline variations. At low amounts most steps repeat the base pitch; as you turn the amount up, more steps change and the range of possible pitches widens, taking the variation from mild to wild. Higher gate and accent/glide amounts add more notes, accents, or glides. When Quantize to Scale is on, randomized pitches stay in the selected scale.

Data Shuffle

Data Shuffle populates a pattern with elements drawn from other patterns — shuffling pitch, gate, and accent/glide data together like a deck of cards. Hold the Remix key while in Pattern Select to open it. Each “from” source starts on the active pattern; turn each encoder to choose the pattern to draw its pitch, gate, or accent/glide data from. Press an encoder switch while turning to jump by whole banks. Your changes are applied when you release the Remix key; press Shift/Clear before releasing to cancel and return to the original.

WORKING WITH SONGS

A song arranges patterns into a longer composition. Press the Song key (its indicator turns on) to enter Song mode. By default, songs work just as they did on earlier Future Retro sequencers.

Selecting and Playing Songs

In Song Select, the 16 step keys select songs 1–16. Press CUE/RUN to play the selected song; the display shows the current song step. Pressing CUE/RUN while playing stops on the current step, and pressing it again resumes from there. To start from the beginning, press Shift/Clear before starting playback. When you select a new song while one is playing, the new song is cued and begins at the first song's loop point.

Editing a Song

Turn the Data encoder to select the song step you are editing. To set which pattern plays on a step, hold the BANK key; the display shows the active bank in large type. Turn the Data encoder to choose the bank and press one of the step keys 1–16 to write that pattern to the selected step. Work through the song step by step in this way.

To speed this up, double-click the BANK key to latch the Song Edit page on, so you do not have to hold BANK the whole time; press BANK again to exit. On the Song Edit page, press the Data encoder switch to toggle between choosing the bank and choosing the song step, which makes it quick to drop different patterns from the same bank onto successive steps. On the Song Select page, press the Data encoder switch to toggle between setting the song step and setting its pattern; when set to the pattern, the Data encoder scrolls through the entire pattern memory in order.

Transposing a Song Step

Select a song step, then hold the Xpose/Paste key and turn the Data encoder to transpose that step's pattern from –36 to +36 half-steps. To reset all song-step transpositions to 0, hold Shift/Clear and press the Xpose/Paste key.

Song Loop Point and Tempo

Use the Data encoder to select a step, then press the Loop key to set that step as the song's loop point (the last step before the song repeats). Press Loop again to remove it, or hold Shift/Clear and press Loop to clear all loop points. To set the song tempo, hold the Swing/Tempo key and turn the Data encoder; hold the Data encoder switch while turning for 0.1 BPM steps.

Advanced Song Editing

If a song is at any step other than the first and you exit Song mode, the pattern used for the current song step is automatically selected in Pattern mode, complete with its transpose and tempo, so you can edit it and hear exactly how it will sound in the song. Changing the tempo here changes the whole song's tempo. Return to Song mode to save your changes. To leave Song mode without auto-selecting the current step's pattern, press Shift/Clear before exiting.

MIDI

All MIDI parameters are reached from Song mode. Press the Song key, then press the Accent/MIDI key to open the MIDI menu; press it again to step through the pages, and once more to exit.

MIDI Menu

- **Clock Source** — Internal or MIDI. With Internal, the 777 runs on its own clock and can act as a master. With MIDI, the 777 follows incoming MIDI clock.
- **MIDI Channel** — 1 to 16, used for note and Program Change data. Clock, Start, and Stop are global and not tied to a channel.
- **Program Change** — on or off, for sending and responding to Program Change messages.

Playing the Internal Voice and External Gear

With the clock source set to Internal, starting the sequencer plays the 777's own analog voice and simultaneously sends MIDI notes and CV/Gate/Accent/Glide signals, so you can layer the internal voice with external MIDI sound modules and analog synthesizers.

As a Master Clock

With the clock source set to Internal, the 777 sends MIDI Clock, Start, and Stop from its MIDI Out (and USB). Set the receiving devices to follow external MIDI clock; starting, stopping, and changing tempo on the 777 then controls them all.

Syncing to an External Clock

With the clock source set to MIDI, the 777 follows an external sequencer or DAW. Press CUE/RUN to arm the sequencer; it then waits for a MIDI Start. If the 777 is not cued, incoming MIDI Start is ignored. Send only simple MIDI Clock, Start, and Stop — avoid MMC or MTC.

MIDI-to-CV Conversion

When the clock source is set to MIDI and the sequencer is not running, incoming MIDI notes within the playable range play the 777's voice and are converted to CV, Gate, and Accent signals at the outputs. A note with a high Velocity produces an accented gate; two overlapping notes produce a glide, heard as a smooth pitch slew on the CV output. For best results, filter out MIDI data the 777 does not use, such as aftertouch, pitch bend, and continuous controllers.

Program Change

With Program Change turned on, selecting a pattern sends the matching Program Change message from the 777, and incoming Program Change messages select patterns in the 777. The 777 responds to Program Change instantly: if a message arrives mid-pattern, the new pattern is selected and continues from the current step. Program Change applies in Pattern mode.

USB MIDI

Everything above is also available over USB MIDI. Connect the 777 to a computer with a standard USB cable; no drivers are required.

MIDI PERFORMANCE CONTROL

The 777 responds to a set of MIDI Control Change (CC) messages for live performance — tweaking swing, scale, transpose, loop, remix, gate length, tempo and more from a controller or DAW. All MIDI editing listens on the MIDI IN channel set in the global menu, on both DIN and USB MIDI at once, and is enabled by the global menu item “CC Edit” (on by default).

CC changes act on the pattern in memory only. They are meant for performance: sweep a control, then load another pattern and everything snaps back to what is stored. Nothing is written to storage unless you save manually (double-tap Time/Copy) or make a front-panel edit afterward, which marks the whole pattern — including any CC tweaks still in effect — for auto-save. The revert function (hold Shift/Clear and press Remix) discards all unsaved changes, CC tweaks included.

Control Change Map

CC	Parameter	Values
0	Pattern bank select	0 = patterns 1–128; 1 or more = 129–256 (used with Program Change)
20 + 52	Tempo (14-bit)	Send CC 20 (MSB) then CC 52 (LSB); value = BPM × 10 (1200 = 120.0 BPM). Range 10.0–999.9 BPM
72	Global Gate Scale	0–127; 64 = neutral (see below)
102	Swing amount	0–127 to 0–100%; 64 = straight (50.0%)
103	Step timing	0–30 selects the step note value, longest to shortest
104	Scale (quantize)	0 = off / chromatic; 1–49 = scale or chord index
105	Scale root	0–11 = C to B
106	Pattern transpose	0–72; 36 = no transpose; gives ±36 semitones
107	Loop start step	0–15
108	Loop end step	0–15 (start greater than end = reverse loop)
109	Remix X	0–15 (mirrors encoder 1)
110	Remix Y	0–15 (mirrors encoder 2)
111	Remix enable	0–63 = off; 64–127 = on
112	Play direction	0–63 = forward; 64–127 = reverse
113	Pendulum (direction toggle)	0–63 = off; 64–127 = on
114	Random-pitch probability	0–127 to 0–100%
115	Random-gate probability	0–127 to 0–100%
116	Random-accent probability	0–127 to 0–100%
117	Random-glide probability	0–127 to 0–100%
118	Randomize now	Bitmask: 1 = pitches, 2 = gates, 4 = accents, 8 = glides (e.g. 5 = pitches and accents)
119	Time signature	0–10; takes effect at the next loop start

Out-of-range values on any CC are ignored. The channel-mode messages are always honored regardless of the CC Edit setting: CC 120 (All Sound Off) drops the gate and clears sounding notes — the escape hatch for a stuck note; CC 121 (Reset All Controllers) returns Global Gate Scale to neutral and clears pending tempo and NRPN selections; CC 123 (All Notes Off) releases held notes. MIDI Song Select cues a song (0–15) in Song mode at the next song boundary.

Global Gate Scale (CC 72)

A single live control that shortens or lengthens every step's gate proportionally. CC 64 is neutral (each step plays its programmed gate). Below 64, gates shrink toward a floor of 1% (maximum staccato at CC 0); above 64 they grow up to roughly double, capped at 99%. Because the ceiling is 99%, gate scale can never turn separate notes into ties or slides — overlap remains the job of the Slide flag, and slide steps are unaffected. It applies live, even to notes already sounding, is never saved, and resets to neutral at power-on and on CC 121.

NRPN PER-STEP EDITING

NRPN (Non-Registered Parameter Number) messages let external gear and DAWs edit individual step parameters remotely. Unlike CC performance control, NRPN edits persist — they save exactly as if you had made the edit from the front panel. NRPN reception is gated by the same “CC Edit” global setting.

Message Sequence

Each edit is three CC messages on the 777's MIDI IN channel: CC 99 (NRPN MSB) = the field number from the table below; CC 98 (NRPN LSB) = the step number (0–15 for steps 1–16); CC 6 (Data Entry MSB) = the value, which applies the edit. CC 38 (Data Entry LSB) is accepted and ignored. The address stays latched, so you can send several CC 6 values to the same field and step, or re-send only CC 98 to walk the same field across steps. Selecting an RPN or sending CC 121 clears the latched address.

Field Table (the CC 99 value)

Field	Parameter	Value (CC 6)
1	Pitch	0–63 (0 = C1 / MIDI note 24 ... 63 = MIDI note 87)
2	Gate length	1–100 (%)
3	Gate probability	100 = off (always plays; stored value kept); 1–99 = %; 101–108 = every 2nd...9th loop
4	Pitch probability	0 = off (stored value kept); 1–100 = %; 101–108 = every 2nd...9th loop
5	Pitch range low	0–72; 36 = 0 semitones (window below the pitch)
6	Pitch range high	0–72; 36 = 0 semitones (window above the pitch)
7	Ratchet count	1 = off (single hit; stored count kept); 2–9 = hits per step
8	Ratchet probability	1–100 = %; 101–108 = 1-in-N (gated by field 7)
9	Active flag (gate on/off)	0 or 1
10	Tie flag	0 or 1
11	Accent flag	0 or 1
12	Glide flag	0 or 1
13	Slide flag	0 or 1

NRPN edits behave like panel edits: setting the pitch of the head of a tied run re-pitches the whole run, and the display refreshes if the edited step is currently shown.

MIDI STEP-RECORD

Step-Record writes a pattern by playing it one step per note from any MIDI keyboard. In Pattern Edit, double-tap the Loop key to enter it: the title changes to “PATTERN REC,” the Loop indicator blinks, and the step cursor shows where the next note will land. Exit by double-tapping Loop again, pressing Song or Bank, or pressing CUE/RUN (which exits and immediately plays from step 1 so you can audition your take). Recording works with the transport stopped or running; while stopped, incoming notes also sound on the synth voice so you hear what you record.

What Each Note Writes

Each Note-On in the range MIDI 24–87 (others are ignored) writes the step under the cursor and advances it. The step is set active at the pitch you played, as a single hit at the default 75% gate length, with tie, glide, and all randomization and ratcheting switched off (their stored values are kept, just disabled). A velocity above 69 sets Accent; softer notes clear it.

- **The loop follows what you record.** Your first note or rest claims the loop (start = step 1, end = that step); each further step extends the loop end. Record 8 steps, press CUE/RUN, and the pattern loops exactly those 8 steps. The loop never shrinks on its own.
- **Legato equals slide.** Play a new note while still holding the previous one and the previous step gets its Slide flag — its gate holds through into the new note. Play detached to keep steps separate. A rest or a cursor jump breaks the chain, so slides are never written across a rest.

Keys While Recording

Key	Action
Shift/Clear	Rest — clears the gate at the cursor step and advances
Step keys 1–16	Jump the record cursor to that step (fix a mistake without starting over)
Accent / Glide	Toggle accent or glide on the record-head step (its LED shows the state)
Loop (hold) + steps	Edit the loop points, overriding the automatic loop-grow
CUE/RUN	Exit record mode and play from step 1

After Step 16 — the Step Record Setting

The global menu item “Step Record” sets what happens when the cursor passes step 16:

- **Single** (default) — record mode exits automatically. One pass, done.
- **Wrap** — the cursor wraps to step 1 and recording continues, replacing until you exit.
- **Multi** — the 777 advances to the next pattern in the bank and keeps recording at its step 1, saving each pattern as it goes and setting each loop to its own recorded length. Every pattern in the take inherits the performance settings (step and swing timing, swing amount, scale and root, remix state) of the pattern where recording started. Recording ends after step 16 of the bank's 16th pattern. Multi requires the transport stopped; if the sequencer is running, Multi behaves as Single.

MIDI SYSTEM EXCLUSIVE (SYSEX)

SysEx is used to save and load your patterns and songs, to back them up to a computer, and to exchange data with other Future Retro instruments. The SysEx menu is reached from Song mode by pressing the Glide/SysEx key.

Sending Data

On the SysEx menu, the available operations are Send Pattern, Send Bank, and Send Song.

- **Send Pattern** sends the currently active pattern. Loading it back into the 777 replaces whatever pattern is active at the time.
- **Send Bank** sends a chosen bank 1–16. Press the Data encoder switch to move to the bank number, then turn to choose it.
- **Send Song** sends a chosen song.

To start a transfer, hold the Data encoder switch when the display reads “(hold)”; a countdown runs and the data is sent. Releasing the switch before the countdown finishes cancels the send.

Receiving Data

Set SX Receive to ON to allow the 777 to accept incoming pattern, bank, and song data. The Device ID must match the ID the data was sent with (you can also edit the third byte of the SysEx header, which is the Device ID byte).

Importing Legacy Patterns

The 777 can receive pattern banks from the Orb, the Revolution, and the original 777 and translate them into the new format automatically. Set SX Receive to ON and Device ID to 1, then send the banks from the legacy instrument.

GLOBAL SETTINGS

The Global Settings menu holds preferences that apply to the whole instrument.

- **OLED Timeout** — the number of minutes (1 to 60) of inactivity before the display sleeps.
- **Step Edit Layer** — when on, the extended per-step parameters are hidden until you hold Shift/Clear and press a step key; when off, all parameters are always shown while editing. (On by default.)
- **Ignore Wake Action** — when on, the first key press or encoder turn after the display has slept only wakes the display and does not perform its action. (On by default.)
- **CC Edit** — on or off; enables the MIDI performance CCs and NRPN per-step editing. (On by default. Bank Select and the channel-mode messages always work regardless.)
- **Step Record** — Single, Wrap, or Multi; sets what happens when MIDI step-recording passes step 16. (Single by default.)

***Note:** The MIDI and SysEx menus are reached from their own keys in Song mode (Accent/MIDI and Glide/SysEx), as described in the MIDI and SysEx sections.*

***Note:** Installing a firmware update that adds these MIDI features performs a one-time factory reset of the global settings. Your patterns and songs are not affected.*

STARTUP OPTIONS AND BUILT-IN LIBRARIES

Hold the following key combinations while turning on the power. Each of these overwrites the entire pattern and song memory, so export anything you want to keep first.

- **Swing/Tempo + Loop + Accent/MIDI** — load the complete Orb pattern and song library.
- **Swing/Tempo + Loop + Xpose/Paste** — load the complete Revolution pattern and song library.
- **Swing/Tempo + Loop + Glide/SysEx** — erase and initialize all patterns and songs to a clean, blank state.

Creating a Default Pattern

Because clearing a pattern only removes its notes and durations, you may want to keep a custom starting point in a spare location — for example all 16 steps written at C3. Copy that pattern and paste it whenever you want to begin a new one with your preferred default settings.

SPECIFICATIONS

Sequencer

- 256 patterns (16 banks of 16 patterns).
- Per-step content: note on/off, pitch, gate length, gate probability, ratchet count, ratchet probability, pitch randomization, accent, glide, slide.
- Per-pattern content: loop points and playback direction, time signature, swing, scale and root note, transpose.
- Steps per pattern: up to 16 (4/4) or 12 (3/4).
- Note pitch range: C1 to D#6 (internal), C2 to D#7 (MIDI).
- Transpose: -36 to +36 half-steps.
- Remix: 256 variations for each pattern and song.
- 16 songs, up to 3,580 steps each; per-step pattern, transpose, and song loop point; song tempo.
- Tempo: 20 to 250 BPM, adjustable in 0.1 BPM increments.
- Performance tools: pattern randomization, Data Shuffle, shift/rotate, scale quantizing, copy/paste while running, forward/reverse playback, multiple pattern cueing.
- All editing in real time while running or stopped; automatic save to non-volatile EEPROM.

MIDI

- MIDI In, Thru, Out, plus class-compliant USB MIDI.
- Internal or external (MIDI) clock; sends and follows Clock, Start, Stop.
- Note on/off, pitch, velocity (transmitted and received).
- Program Change for remote pattern/sound selection.
- MIDI CC performance control (swing, scale, transpose, loop, remix, tempo, randomization, Global Gate Scale, and more).
- NRPN per-step editing of any step parameter.
- MIDI step-recording from an external keyboard (Single, Wrap, or Multi).
- SysEx for pattern and song backup, exchange, and legacy import.
- MIDI-to-CV/Gate conversion.

Analog Interfacing

- 1 V/octave CV output.
- Positive-polarity Gate output.
- Accent output.