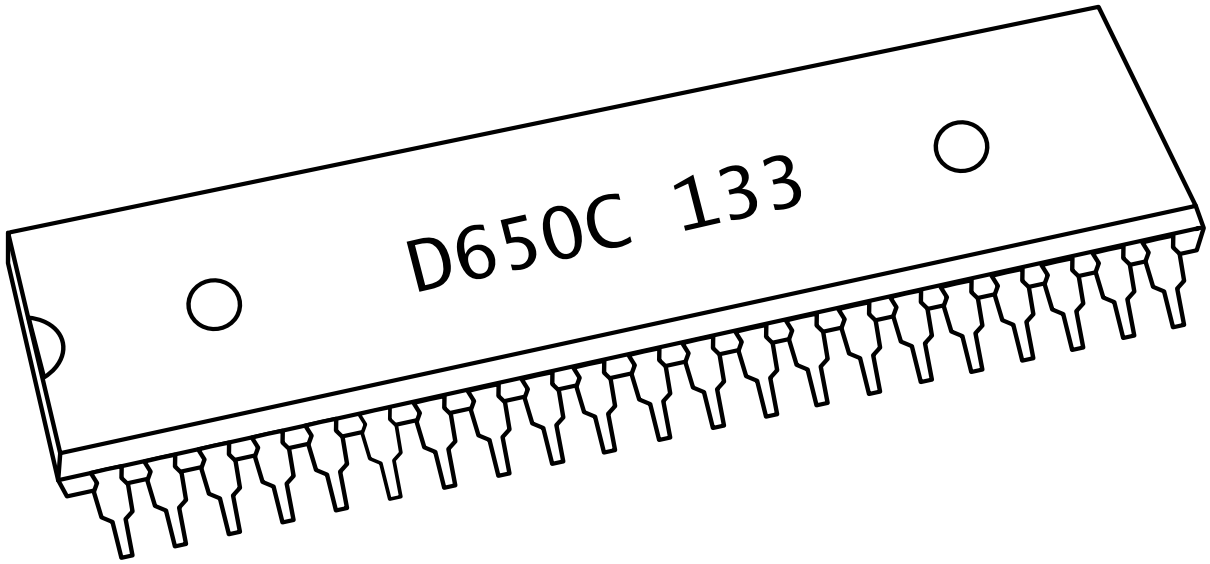
Quicksilver 303

TB-303 CPU Upgrade



User Guide

Social Entropy Electronic Music Instruments

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BACKGROUND

The Quicksilver 303 CPU upgrade is the result of many projects and experiments in building and customizing TB-303 synthesizers. Although there are many clones, emulators and plug-ins, there is still something special in the sound of the original machine.

One comment that is always made about the TB-303 is that the sequencer is difficult to understand and program. This complexity would lead to happy accidents and a different way of thinking about programming patterns.

Most modern TB-303 clones focus on the analog synthesis components of the machine, and combine this with a more conventional sequencer engine.

Our desire is to keep the "spirit" of the original sequencer intact, but take it to a new level and prove that the TB-303 still has a few new tricks left to uncover.

CONCEPTS

One of the key concepts of the Quicksilver 303 is that PITCH and TIME information can be entered and manipulated independently.

What does that mean? Well, the original 303 method of entering pattern information was handled in two "passes".

First you enter PITCH information, which consists of a sequence of pitches and associated attributes, like transposition, accents and slides.

After entering PITCH information, the TIME information is entered separately. This consists of defining how many steps are in the pattern, and what event the step represents. This could be a "note", a "tie" or a "rest".

Together, this PITCH and TIME information creates a complete pattern. The problem was, the 303 sequencer had only limited capability to modify and enter this information, and the sequencer could not be running while entering pattern information. Many times the result of this process was an unexpected pattern, which may or may not sound musically pleasant! Editing an existing sequence was just as unforgiving, where any mistake could ruin or alter an awesome pattern permanently.

The Quicksilver 303 sequencer builds upon this unique capability of handling PITCH and TIME as two separate chains of information. Almost every function can be initiated for either PITCH or TIME information separately or for both at the same time. Also many of the limitations of the original sequencer have been removed, with the capability to perform almost all functions while the sequencer is running!

Most TB-303 users stay in PATTERN PLAY mode and never venture into TRACK MODE, but we have changed the TRACK MODE quite a bit, and tried to make it easier to create interesting sequences of patterns. Every user should try TRACK MODE at least once to see what they are missing.

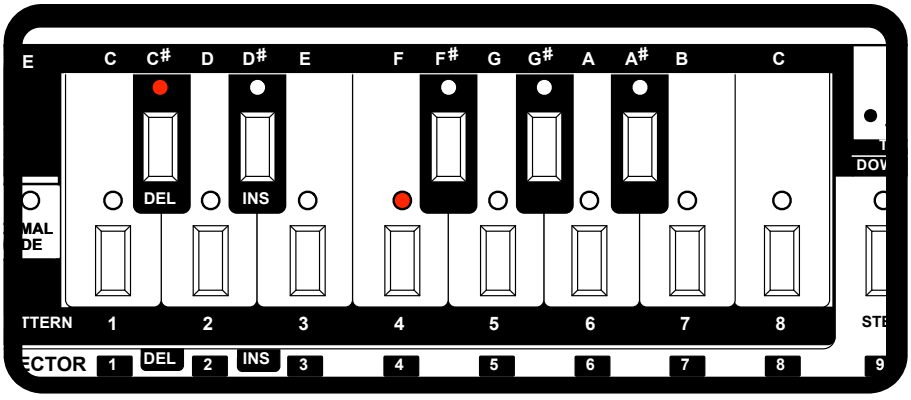
DISPLAYING NUMERIC VALUES

Because the 303 interface does not have a good way to display values (such as 16 step LEDs or an LCD screen) a special system was devised to display numeric values. The LEDs of the keyboard are used when a numeric value needs to be displayed (such as the step number, the chase LED or MIDI channel) .

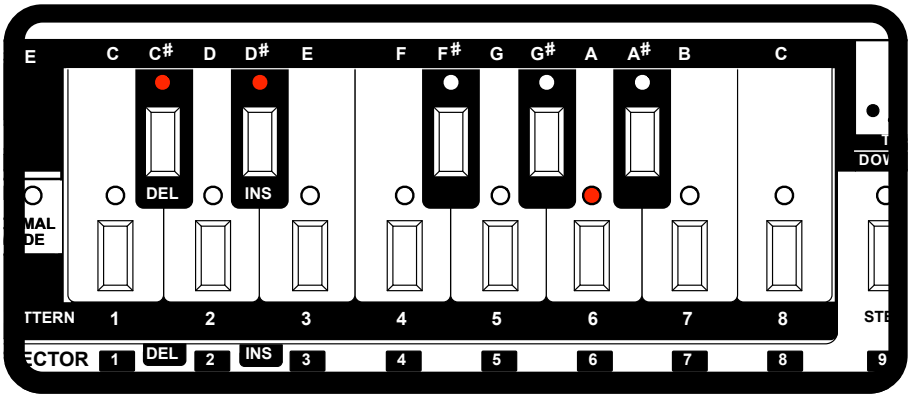
Using this display method the "white" keys are used to denote a value from 1 to 8, while the "black" keys signify “groups of eight”.

For example, to display the value “4”, the C# LED illuminates to signify the first group of eight values and the “F” LED illuminates to designate “4”.

When displaying higher numbers, the “black” key LEDs will use various patterns of flashing to designate higher groups of eight.



The number "4" represented on the 303 keyboard LEDs.



The number "14" represented on the 303 keyboard LEDs.

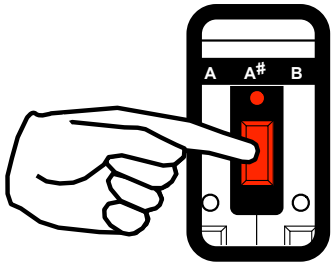
DIAGRAM CONVENTIONS

Throughout this document, diagrams are used to illustrate the buttons used to perform various actions.

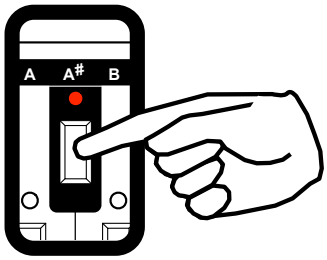
To illustrate that a button should be pressed and held, the button will be displayed as RED.

To illustrate that a button should be pressed and released (clicked), the button will be displayed as WHITE.

Example:



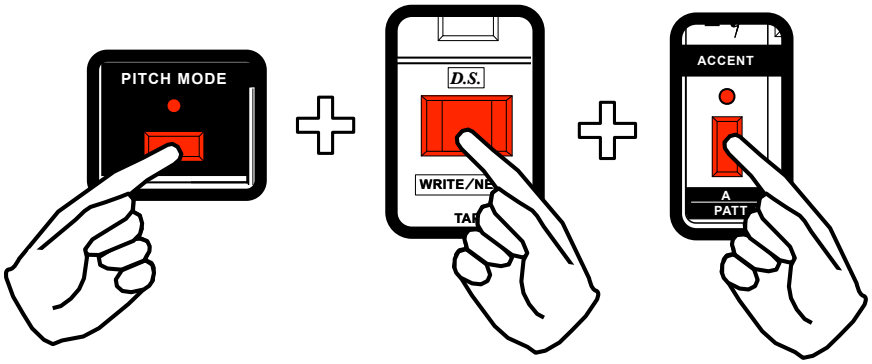
This shows a button being HELD



This shows a button being CLICKED

When multiple buttons are used to perform an action, the diagram will use a plus sign to show the combination of buttons used.

Example:



This shows three buttons being HELD at the same time

A NOTE ON SAVING TO MEMORY

The entire memory contents of the Quicksilver 303 are stored temporarily in RAM, any changes to patterns or tracks are stored in RAM to allow the sequencer to continue playback in all modes without glitches. Each time the sequencer is stopped, any modifications to the RAM memory contents are automatically stored to longterm EEPROM memory.

Because all information is stored to non-volatile EEPROM memory, it is no longer necessary to use batteries in the 303 to maintain memory!

This method is used so that a "save to memory" function is not necessary, which can interrupt the creative flow.

Be aware that if the 303 is powered down while the sequencer is running, any changes to pattern or track data may be lost.

Changes made to patterns or tracks may be lost if the sequencer has not been started and stopped before powering the 303 down.

The machine state can be explicitly saved in CONFIG MODE by pressing the PITCH MODE button (see CONFIG MODE documentation for details on the save function).

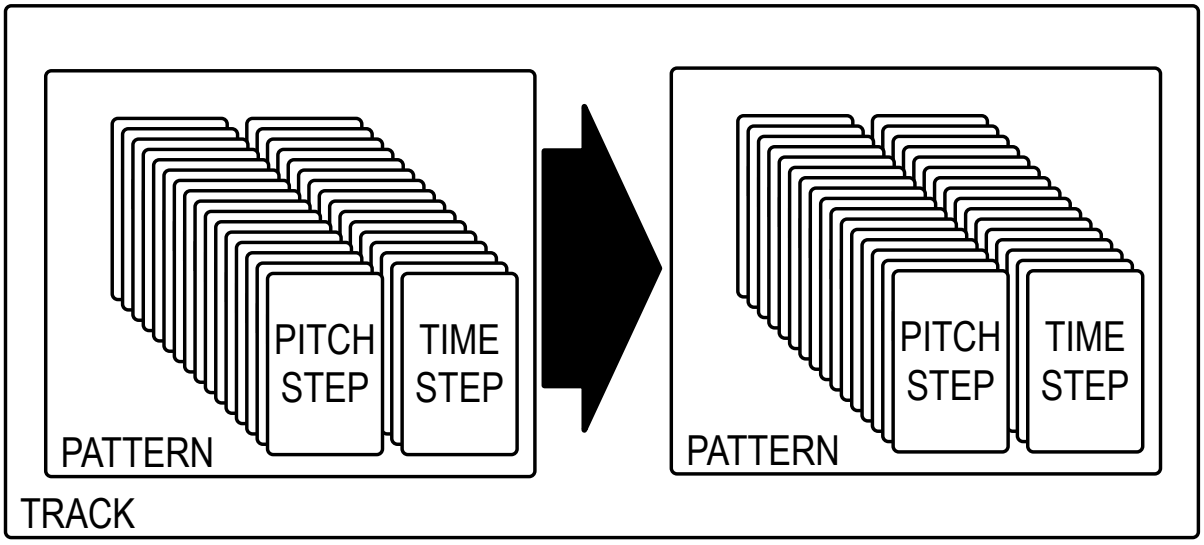
THE BASICS

SEQUENCER BASICS

This section covers the basic features and building blocks of the Quicksilver 303. If you own or have used a TB-303 in the past, you can probably skip this section.

The Quicksilver 303 sequencer works with three main components; STEPS, PATTERNS and TRACKS.

MODES select what component is currently possible to play or edit. FUNCTIONS allow components to be modified.



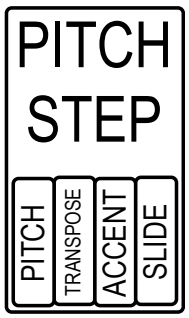
STEPS

Starting at the lowest level is the STEP. A STEP typically represents one musically significant event, such as a 16th note, although this can change depending on the time signature and number of ticks per step.

There are two types of STEP:

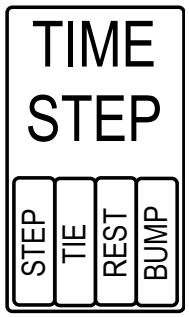
- PITCH STEPS – Contain pitch info: PITCH, TRANSPOSE, ACCENT and SLIDE
- TIME STEPS – Contain timing info: STEP, TIE, REST and BUMP

Each type of step has different STEP ATTRIBUTES, and can be entered and edited independently using the PITCH ENTRY MODE and TIME ENTRY MODE.



PITCH STEPS have attributes that determine TRANSPOSE DOWN, TRANSPOSE UP, ACCENT and SLIDE. Multiple attributes can be set per PITCH STEP.

- PITCH – Defines the base pitch of the step
- TRANS DOWN – Transposes the step one octave down
- TRANS UP – Transposes the step one or two octaves up
- ACCENT – Causes a note to sound with more force
- SLIDE – Causes the note to play without retriggering an envelope



TIME STEPS have four attributes.

- STEP – Means that a note will begin on the step.
- TIE – Extends the currently playing note by one step.
- REST – No note will be played on the step.
- BUMP - Increases the filter cutoff frequency by a fixed amount.

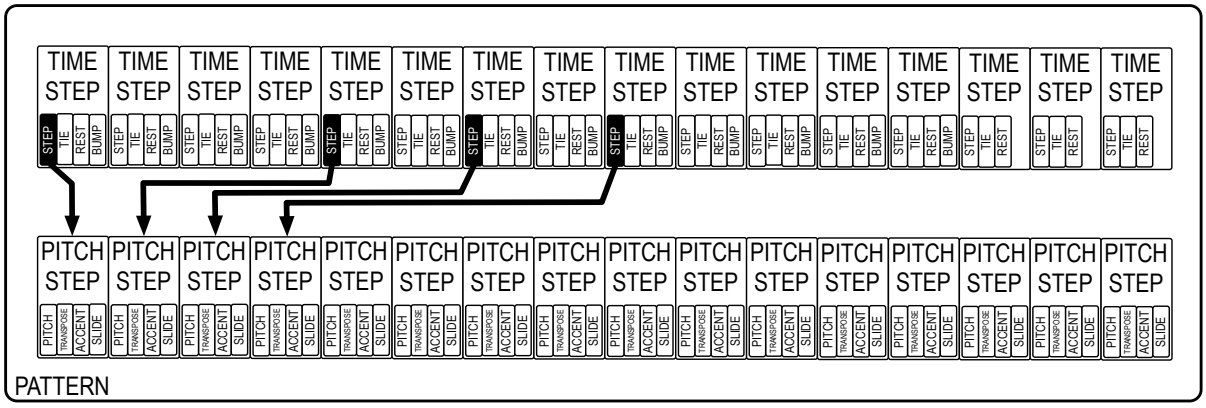
The attributes STEP, TIE and REST are the same as on the original 303. Only one of these three attributes can be set per TIME STEP.

The BUMP attribute is an interesting new way to introduce some programmed variation to the filter cutoff. This requires the filter control option is installed. The BUMP attribute can be placed on any time step.

PATTERNS

PATTERNS contain PITCH STEPS and TIME STEPS. Each pattern has a separate sequence for PITCH STEPS and TIME STEPS.

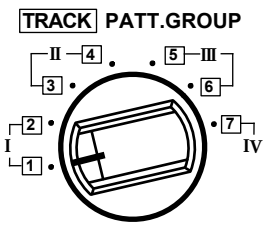
Although there is the same number of PITCH STEPS and TIME STEPS per pattern, not all PITCH STEPS may be in use by the pattern because PITCH STEPS are only advanced when a STEP event occurs in the sequence of TIME STEPS.



The pitch step number does not always correspond to the time step number. As shown in this example pattern.

In addition to PITCH STEP and TIME STEP sequences, PATTERNS also have additional settings that apply to the entire pattern:

- PATTERN LENGTH – The current number of TIME STEPS in use.
- TRIPLETS – Determines the time signature and maximum pattern length.
- MAXIMUM LENGTH – The maximum number of steps allowed in the pattern.
- TRANSPOSE – Modifies the pitch of all PITCH STEPS in the pattern.



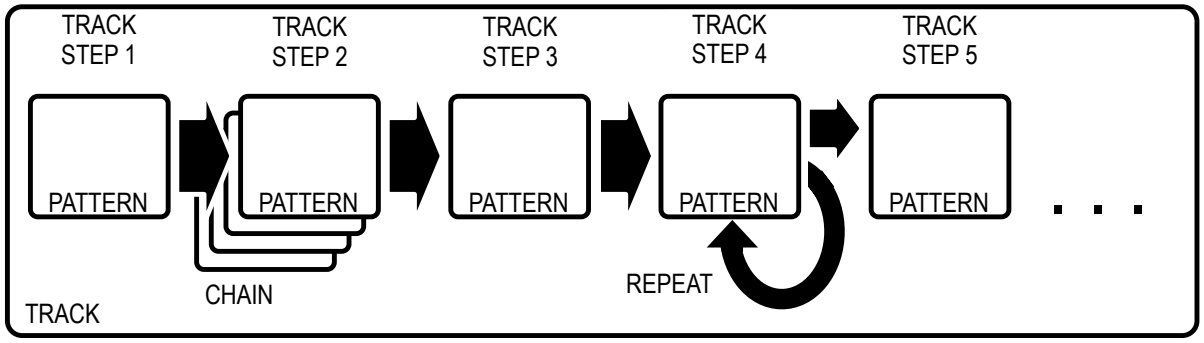
There are 64 total patterns in memory, split into 4 PATTERN BANKS and 2 PATTERN SECTIONS per bank (as on the original 303).

PATTERN BANKS are selected using the TRACK/PATTERN BANK SELECT knob on the 303.

TRACKS

A TRACK is a sequence of PATTERNS. TRACKS allow for entire songs to be constructed out of different patterns and played back in sequence automatically.

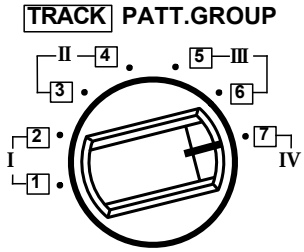
Each TRACK is made up of a series of TRACK STEPS (not to be confused with PITCH STEPS and TIME STEPS). A TRACK can contain up to 64 individual TRACK STEPS.



Each TRACK STEP has settings for:

- TRANSPOSE – Transpose overall pattern pitch
- REPEATS – How many times a TRACK STEP will play before advancing to the next step. Playback of an entire pattern chain counts as one repeat.
- CHAIN – Multiple patterns can be chained in a single track step (up to 8 patterns).

A TRACK also contains settings for TRACK LENGTH. After reaching the last TRACK STEP, a TRACK will loop back to the beginning.



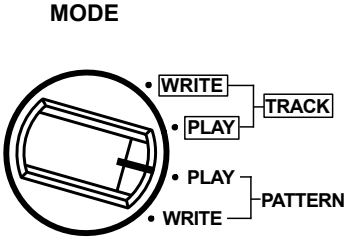
There are 7 total tracks in memory.

TRACKS are selected using the TRACK/PATTERN BANK SELECT knob. Because this selector also switches PATTERN BANKS, only patterns in the bank selected with the current TRACK can be used in the track.

MODES

There are two types of MODES in the Quicksilver 303; PRIMARY MODES and SUB MODES. This naming convention can be somewhat confusing, but the 303 front panel has modes all over the place!

For most of this manual we will refer to both primary modes and sub modes simply as "modes".



PRIMARY MODES are used to determine what type of data can be edited or played by the sequencer. Primary modes are selected using the MODE SELECT knob on the 303.

There are 4 primary modes in the Quicksilver 303 sequencer:

- PATTERN WRITE - Create and edit patterns
- PATTERN PLAY - Playback of existing patterns, with a focus on live performance
- TRACK PLAY - Playback of tracks
- TRACK WRITE - Editing and construction of new tracks with existing patterns

Choose the appropriate mode depending on what type of action you wish to perform.

Each PRIMARY MODE has several SUB MODES, which are described in detail in the reference section of this manual.

Examples of sub modes in the Quicksilver 303 sequencer:

- PITCH MODE - Entry of PITCH STEP data.
- TIME MODE - Entry of TIME STEP data.
- CONFIG MODE - Overall machine configuration settings.
- NORMAL MODE - The default mode of any PRIMARY MODE.
- CLEAR MODE - Modification of pattern or track data
- REALTIME PITCH MODE - Modifying pattern or track pitch data.

FUNCTIONS

FUNCTIONS perform actions on pattern or track data. Each sub mode has one or more functions accessed through various combinations of buttons.

Many pattern functions can be used to modify pitch or time data independently.

Some examples of Quicksilver 303 functions are:

- PATTERN CLEAR - Clearing pattern data.
- TRACK COPY - Copy track data to the track copy buffer.
- CHOP - Pulse the gate signal of the synthesizer on every time step.
- ALL ACCENT - Play every note accented.
- RANDOMIZE - Randomize pattern data.

Each function is documented in full detail throughout the remainder of this User Manual.

QUICK START

QUICK START

This section should help you get started as quickly as possible. It covers some of the basic methods of entering PATTERN and TRACK data. It also covers using the TB-303 as a MIDI sound module

CONNECTIONS

Before using the Quicksilver 303, you will need to connect the machine to power, an audio output device and optionally to other MIDI equipped devices.

CONNECTING MIDI

Assuming you have the MIDI dongles installed in your TB-303, there are two MIDI ports available. One is the MIDI input and the other MIDI output.

Because the TB-303 case doesn't allow much extra room for large MIDI ports, we have used mini DIN ports with converter dongles. These dongles have a 5-pin MIDI port which accepts standard MIDI cables.

The MIDI input can be used to synchronize the 303 with other MIDI equipment, such as drum machines, sequencers or DAWs.

MIDI output can be used to send MIDI sync or note output from the 303 sequencer.

The MIDI ports can also be used to send or receive MIDI SYSEX messages, which allow transmission of PATTERN, TRACK or configuration data.

CONNECTING AUDIO

Connect audio cables before turning on audio amplifiers.

Connect the TB-303 audio output to a mixer or other audio input. The headphone output can be used for private listening.

CONNECTING POWER

Be sure to use a good quality regulated 9V power supply to power the Quicksilver 303 CPU!

The Quicksilver 303 CPU consumes more power than the original TB-303 CPU. Because of this, it is not recommended to power the TB-303 with batteries. Although battery power will work, we have seen occasional CPU restarts when battery power runs low.

If you have the USB dongle option installed, it will reside in the battery compartment, and batteries will not fit into the battery compartment.

Once the power supply is connected, turn the power switch to the ON position. You should see the LEDs light in sequence as the Quicksilver 303 boots.

CREATE A PATTERN

First we will quickly create some new patterns. There are many ways of entering pattern data, but for this exercise we will use the most direct methods. For details on other methods, please refer to the REFERENCE GUIDE section of this manual.

NOTE: All of these actions can be done while the sequencer is running!

1. Select PATTERN WRITE MODE using the mode selector knob.
2. Press the pattern 1 button to select a pattern for editing.
3. Clear the pattern by pressing and holding the PATTERN CLEAR button, then press the pattern 1 selector button.
4. Press and release the TIME MODE button to enter time entry mode.
5. Press the STEP, TIE or REST buttons to enter time step attributes for 16 steps. If you have the filter control option installed, you can also add some filter BUMP to the time steps.
6. If the AUTO END setting is enabled (default), TIME MODE will exit automatically after 16 steps.
7. Now enter PITCH MODE by pressing and releasing the PITCH MODE button.
8. Press the keyboard buttons along with TRANS UP, TRANS DOWN, SLIDE or ACCENT to create an interesting sequence of pitches.
9. If the AUTO END setting is enabled (default), PITCH MODE will exit automatically after 16 steps.
10. Press the RUN/STOP button to hear your masterpiece play back!

MODIFY A PATTERN

Now that you have created a pattern, you can do something dynamic with it.

- Try the CHOP function by pressing and holding the TIME MODE button then press the TRANS UP button.

- Try the ALL ACCENT function by pressing and holding the PITCH MODE button then press the ACCENT button.

- Quickly modify the pattern length by pressing and holding the FUNCTION button and then pressing the ACCENT or SLIDE buttons.

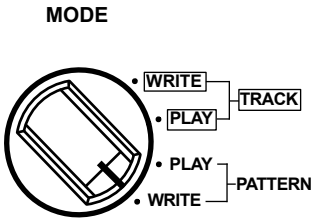
CREATE A TRACK

After you have created a nice sounding set of patterns, you can use them to build a track.

1. Select TRACK WRITE MODE using the mode selector knob.
2. Select a TRACK by rotating the TRACK selector knob, be sure that the selected track resides over the same PATTERN BANK where your desired patterns are located.
3. Clear the track by pressing and holding both the (PATTERN) CLEAR button and the WRITE/NEXT (TAP) buttons, then press the BACK button to confirm the action.
4. Select the first pattern of the track by pressing the appropriate pattern selector button.
5. Press the WRITE/NEXT button to move to the next track step.
6. Select a second pattern by pressing the appropriate pattern selector button.
7. Set this track step to repeat 4 times by pressing and holding the TIME MODE button and then the ACCENT button.
8. Set this track step as the last track step by pressing and holding the TIME MODE button and then pressing the PATTERN CLEAR button.
9. Change the TRACK STEP TRANSPOSE of this step by pressing and holding the PITCH MODE button and selecting a transpose amount on the keyboard buttons.
10. Rotate the MODE selector knob to TRACK PLAY and press the RUN/STOP button to hear your track play back!

REFERENCE GUIDE

PATTERN WRITE MODE



PATTERN WRITE mode is accessed by moving the MODE selector knob to PATTERN WRITE.

PATTERN WRITE mode is for creation and editing of patterns.

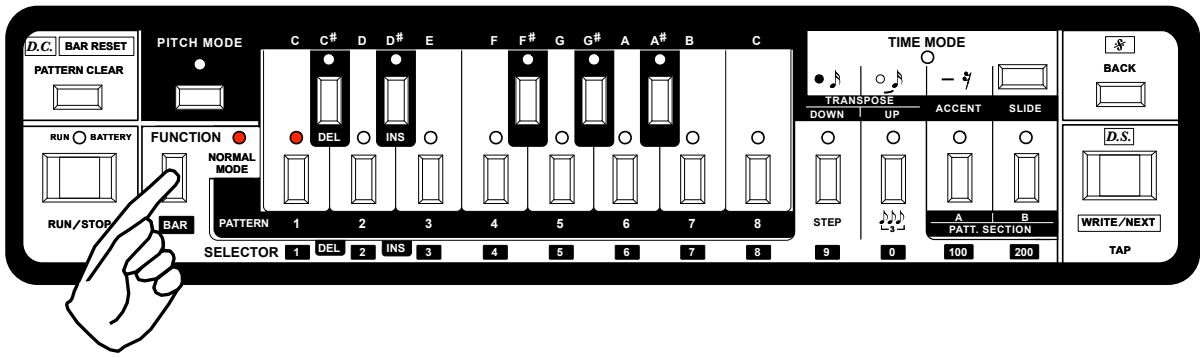
In PATTERN WRITE mode there are eight sub modes:

- NORMAL MODE
- LIVE ENTRY MODE
- REALTIME PITCH MODE
- PITCH ENTRY MODE
- REALTIME TIME MODE
- TIME ENTRY MODE
- CLEAR MODE
- FUNCTION MODE

NORMAL MODE

NORMAL mode is the default mode for PATTERN WRITE. In NORMAL mode, new patterns can be selected for editing by pressing the pattern select buttons on the keyboard. The current PATTERN section can be changed by pressing the appropriate section button.

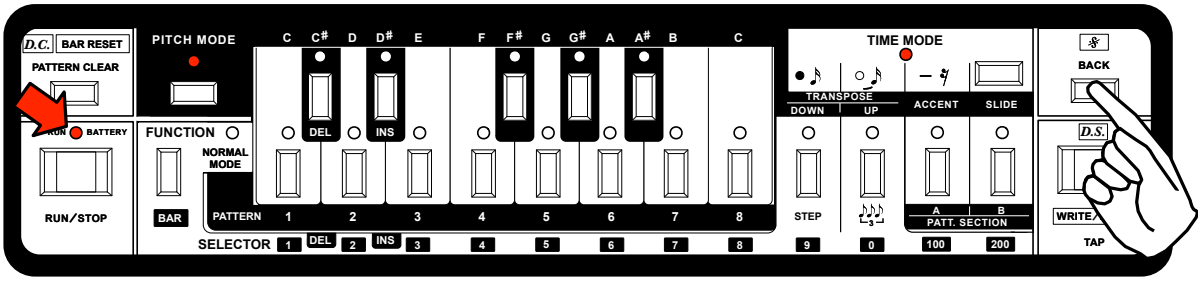
To return to NORMAL mode from any other mode, press the function button.



LIVE ENTRY MODE

LIVE ENTRY MODE is an (extremely) extended version of the original 303 "TAP button" method of setting note lengths. In LIVE ENTRY MODE, an entire pattern can be recorded into pattern memory. This includes PITCH information and TIME information. Incoming MIDI notes can also be recorded in LIVE ENTRY MODE.

To enter LIVE ENTRY mode, from NORMAL MODE, press the BACK button with the sequencer running. LIVE ENTRY mode will remain engaged until the BACK or FUNCTION button is pressed.



To enter LIVE ENTRY MODE, press the BACK button while the sequencer is running

While in LIVE ENTRY mode, you can play pitches from the keyboard buttons, holding the keyboard button down over multiple steps will add TIE events to the TIME information, creating longer note events.

SLIDE events can be recorded by playing the keyboard buttons "legato" (pressing another keyboard button before releasing the previous).

ACCENT events can be recorded by pressing and holding the ACCENT button before pressing a keyboard button.

By pressing the TRANS DOWN or TRANS UP buttons before pressing a keyboard button, the recorded PITCH will be transposed up or down one octave. If both TRANS DOWN and TRANS UP are pressed, then the recorded PITCH will be transposed up 2 octaves.

The original 303 method of hitting the TAP button to enter TIME information also works in LIVE ENTRY MODE. Press the TAP button to create a STEP event. Holding the TAP button will create TIE events in subsequent steps until the TAP button is released.

CLEARING NOTES

You can remove notes from a playing sequence in LIVE ENTRY mode. To remove a note, press the CLEAR button. Notes will continue to be removed as long as the CLEAR button is held.

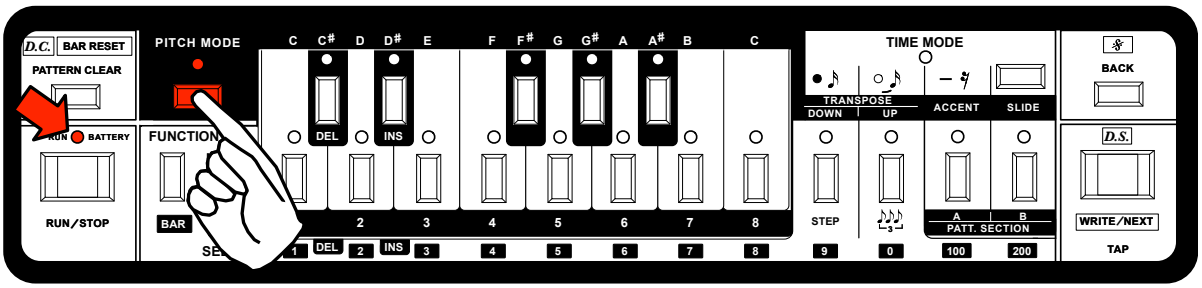
EXITING LIVE ENTRY MODE

To exit LIVE ENTRY MODE, press the BACK or FUNCTION button. LIVE ENTRY MODE is automatically exited when the sequencer is stopped.

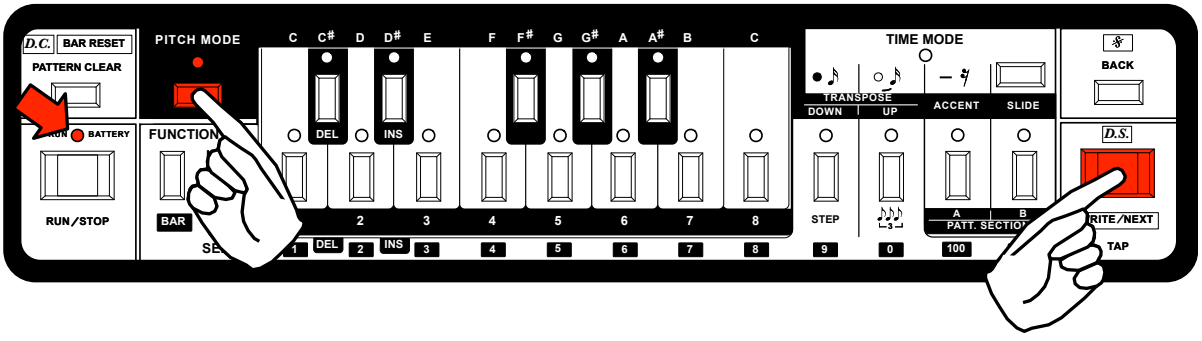
LIVE ENTRY - REALTIME PITCH MODE

Sometimes you may find some interesting pattern variations using REALTIME PITCH MODE... well, in LIVE ENTRY MODE you can record those realtime tweaks into the pattern PITCH information! You can also remove TRANS UP, TRANS DOWN, ACCENT and SLIDE data from pattern steps using REALTIME PITCH MODE... try it, you'll like it.

To enter REALTIME PITCH MODE, press and hold the PITCH MODE button while in LIVE ENTRY MODE. Now press any of the TRANS DOWN, TRANS UP, ACCENT or SLIDE buttons to record these attributes into steps as they play. Hold down both TRANS DOWN and TRANS UP to set PITCH information transposed two octaves up.

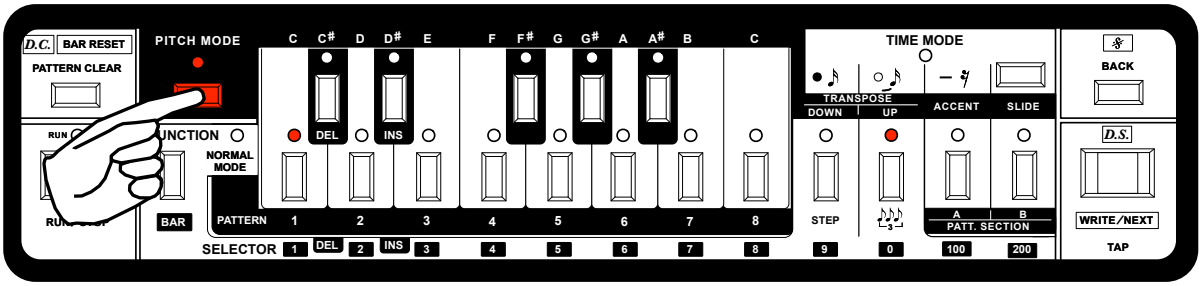


To remove pitch attributes, press and hold the PITCH MODE button, then press and hold the TAP button. Now press any of the TRANS DOWN, TRANS UP, ACCENT or SLIDE buttons to remove these attributes from steps as they play. Hold down both TRANS DOWN and TRANS UP to set PITCH information to zero transposition. Multiple key combinations like this are a good use for the MIDI CONTROL option, it is much easier to hold multiple keys on a controller keyboard.



REALTIME PITCH MODE

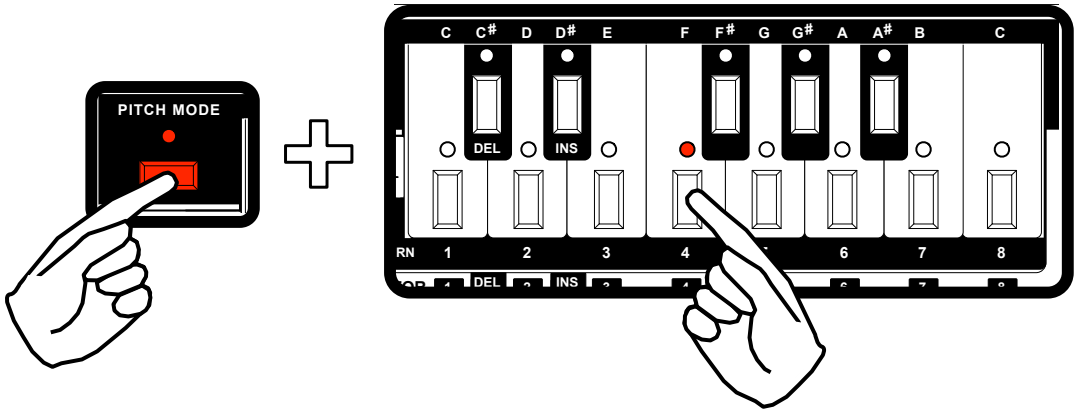
Holding down the PITCH MODE button enters REALTIME PITCH MODE. In this mode patterns can be transposed, or temporarily modified using the ALL ACCENT, ALL SLIDE, NO ACCENT or NO SLIDE functions.



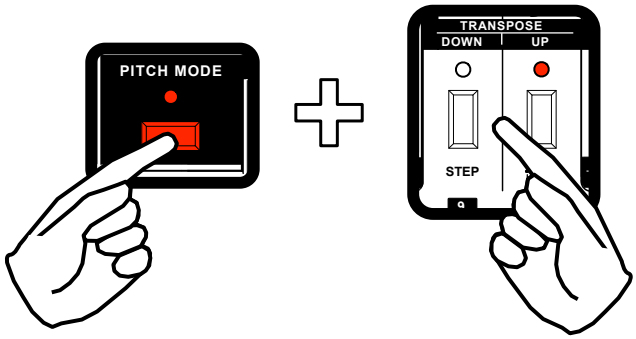
PATTERN TRANSPOSE

Patterns can be transposed higher in semitones, or 1 octave up or down. The amount of transposition is stored with the pattern in pattern memory. On the original 303 OS, pattern transpose could only be entered in PATTERN PLAY mode and was not stored with the pattern, it was lost when the machine was turned off.

To transpose upward in semitones. With the PITCH MODE button held, choose the amount of transposition by pressing one of the keyboard buttons.



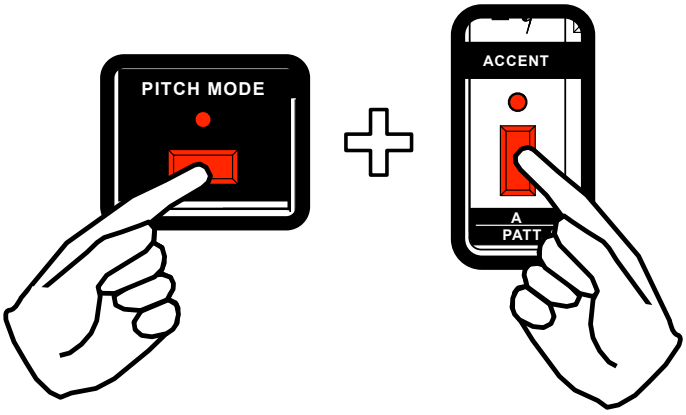
To transpose one whole octave up or down. With the PITCH MODE button held, press the TRANS DOWN or TRANS UP button.



ALL ACCENT

The ALL ACCENT function forces all steps to be played back with ACCENT regardless of the pattern information. This creates a dramatic change in the sound of playback.

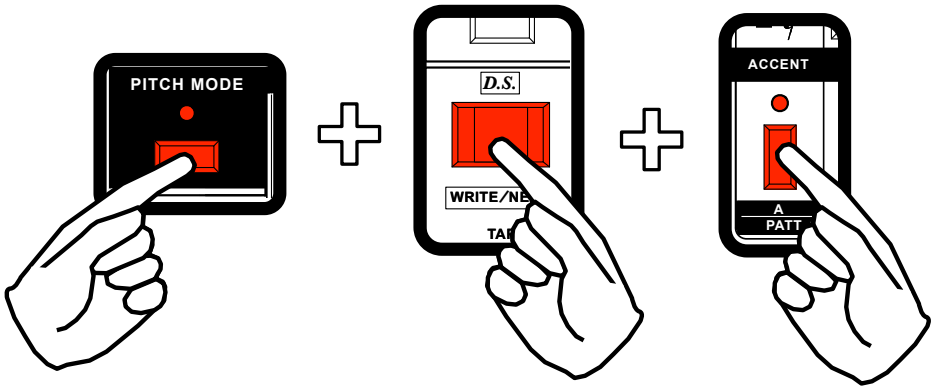
To engage ALL ACCENT, while holding down the PITCH MODE button, press and hold the ACCENT button. ALL ACCENT mode is disengaged when the ACCENT button is released.



NO ACCENT

The NO ACCENT function forces all steps to be played back without ACCENT regardless of the pattern information.

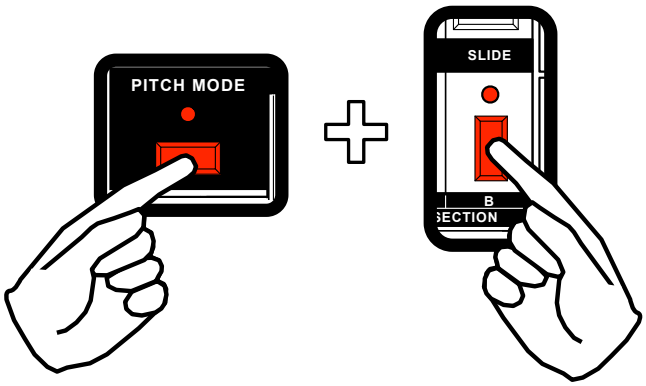
To engage NO ACCENT, while holding down both the PITCH MODE button and the TAP button, press and hold the ACCENT button. NO ACCENT mode is disengaged when the ACCENT button is released.



ALL SLIDE

The ALL SLIDE function forces all steps to be played back with SLIDE regardless of the pattern information. This creates a long note that decays to silence as the note slides between pitches.

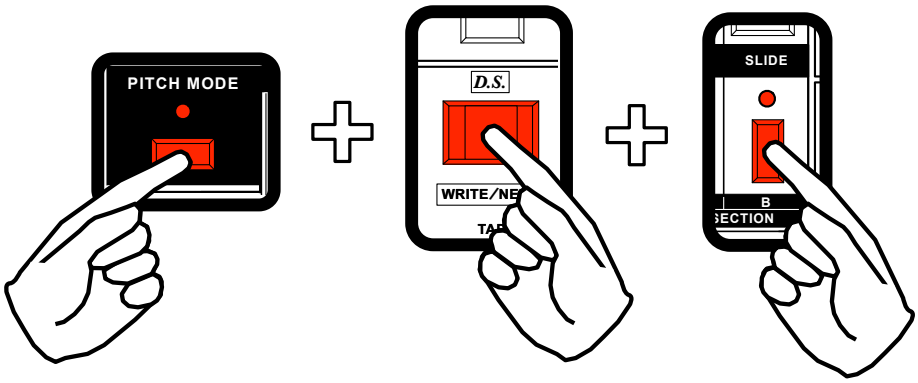
To engage ALL SLIDE, while holding down the PITCH MODE button, press and hold the SLIDE button. ALL SLIDE mode is disengaged when the SLIDE button is released.



NO SLIDE

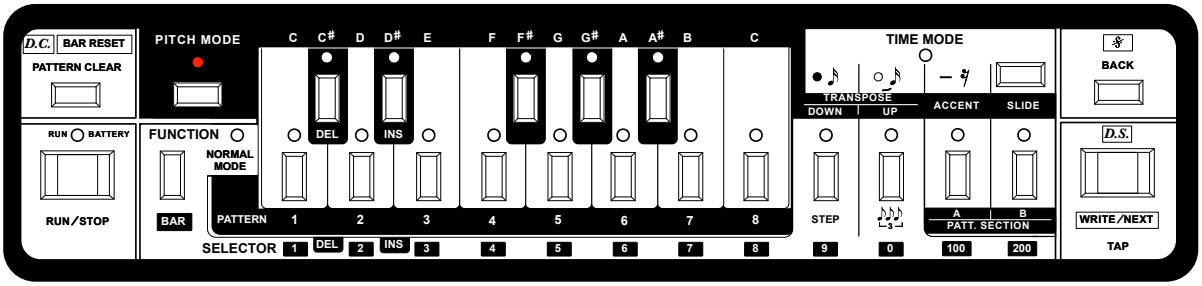
The NO SLIDE function forces all steps to be played back without SLIDE regardless of the pattern information. This makes a pattern with programmed slides sound dramatically different.

To engage NO SLIDE, while holding down both the PITCH MODE button and the TAP button, press and hold the SLIDE button. NO SLIDE mode is disengaged when the SLIDE button is released.



PITCH ENTRY MODE

After releasing the PITCH MODE button, you will be in PITCH ENTRY MODE.



PITCH ENTRY MODE is used for entering the PITCH information of a pattern. This includes the individual step pitches as well as the pitch attributes, such as TRANS DOWN, TRANS UP, ACCENT and SLIDE.

A new feature in the Quicksilver 303 CPU is the ability to transpose notes up two octaves. This can be done by pressing the TRANS UP button twice and is indicated by lighting both the TRANS DOWN and TRANS UP LEDs.

There are multiple ways to enter the pitch information in the Quicksilver 303 OS. You can immediately enter step pitches by pressing the keyboard buttons, or you can use the NEXT and BACK buttons to step through and modify the pitch information. These two methods can also be used concurrently, using direct pitch entry to enter some pitches, then using the NEXT and BACK buttons to move to a different pitch step.

There are two user configurable parameters that effect pitch entry (Please see CONFIG MODE for changing these options):

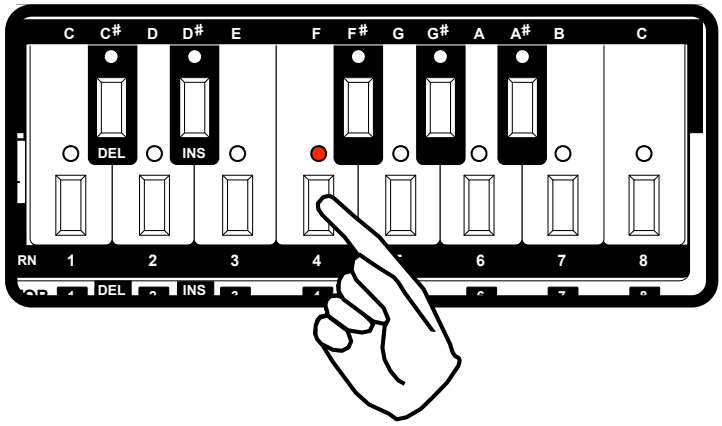
- CALCULATE PITCHES - This option calculates the number of STEP events defined for this pattern (in TIME MODE) and will only display pitch steps that are actually used by the pattern.

- AUTO END - If this option is set ON, pitch mode will automatically exit back to NORMAL mode when the maximum number of pitches has been reached. This option is also effected by the CALCULATE PITCHES option, if CALCULATE PITCHES is set to ON, then pitch mode will end when the maximum number of used pitches in the pattern is reached. If CALCULATE PITCHES is set to OFF, pitch mode mode will end when the maximum number of steps defined for the sequence is reached. If AUTO END is set to OFF, PITCH entry will cycle back to the first pitch step of the pattern after reaching the maximum number of pitch steps.

ENTERING PITCH DATA DIRECTLY

By pressing the keyboard buttons, the pitches of each step can be quickly entered. After pressing the keyboard button, the pitch step is automatically incremented to the next step, up to the maximum number of steps in the pattern (depending on the CALCULATE PITCHES configuration).

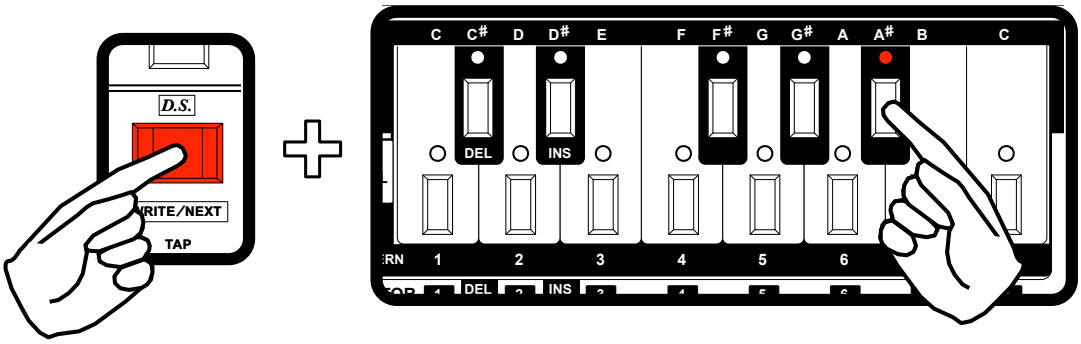
If the AUTO END option is on, pitch mode will exit back to NORMAL mode automatically when reaching the last pitch step in the pattern.



ENTERING PITCH USING THE NEXT AND BACK BUTTONS

The pitch steps of a pattern can also be viewed and edited by using the NEXT and BACK buttons. By pressing and holding the NEXT or BACK buttons while in PITCH MODE, the pitch and attributes of the current step are displayed.

The values of the pitch and pitch attributes can also be changed while the NEXT or BACK button is held. Press one of the keyboard buttons to change the step pitch, press the TRANS DOWN, TRANS UP, ACCENT or SLIDE buttons to turn on or off pitch attributes.

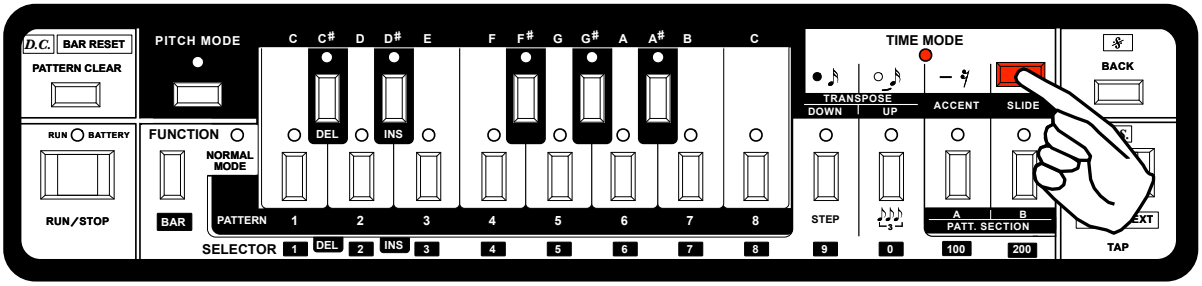


JUMPING TO THE FIRST PITCH STEP

You can quickly jump back to the first pitch step of the pattern without leaving PITCH MODE by pressing the PITCH MODE button.

REALTIME TIME MODE

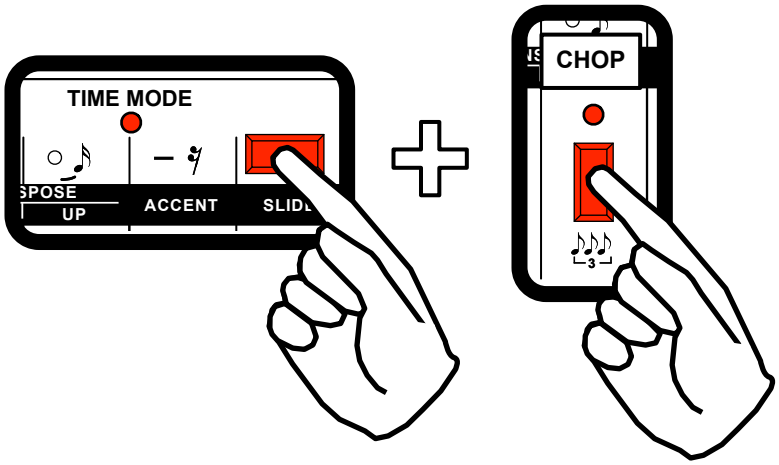
Holding down the TIME MODE button enters REALTIME TIME MODE function. In this mode the CHOP, ALL REST and BUMP functions can be accessed to temporarily modify a pattern.



CHOP

This function is interesting for realtime performance. While CHOP is activated, the gate signal of the synthesizer is pulsed on every step of the pattern. For long notes, this creates an interesting arpeggio type effect.

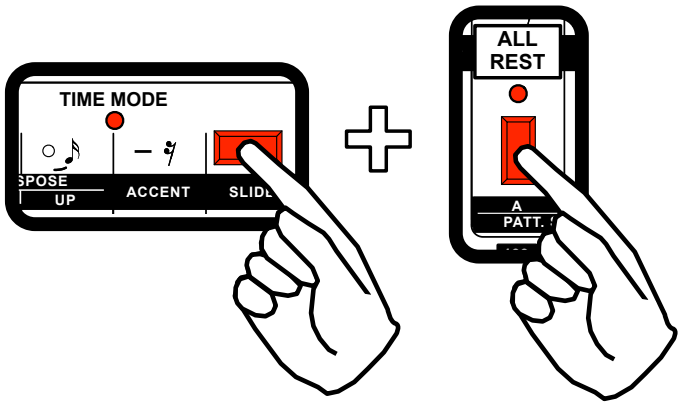
The CHOP function is accessed by pressing and holding the TIME MODE button and then pressing and holding down the TRANS UP button. CHOP mode is disengaged when the TRANS UP button is released.



ALL REST

The ALL REST function will essentially mute a pattern during playback by making every time step play a REST event.

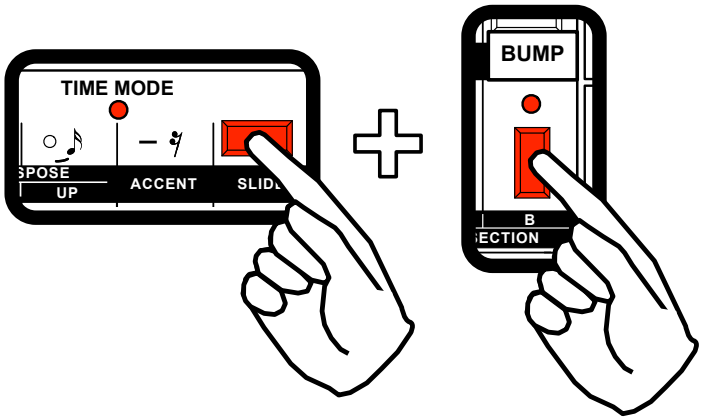
The ALL REST function is accessed by pressing and holding the TIME MODE button and then pressing and holding down the ACCENT button. ALL REST mode is disengaged when the ACCENT button is released.



FILTER BUMP

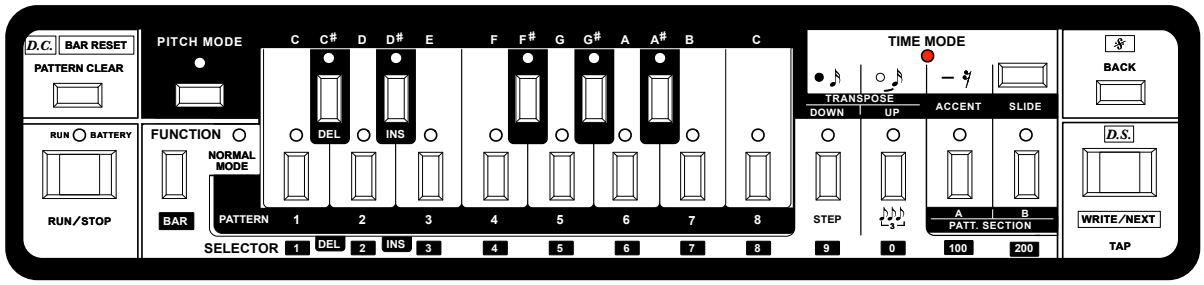
The FILTER BUMP function will temporarily increase the filter cutoff frequency. This function requires that the filter control option of the Quicksilver 303 is installed.

The FILTER BUMP function is accessed by pressing and holding the TIME MODE button and then pressing and holding down the SLIDE button. FILTER BUMP mode is disengaged when the SLIDE button is released.



TIME ENTRY MODE

After releasing the TIME MODE button, you will be in TIME ENTRY MODE.



TIME ENTRY MODE is used for entering the timing information of a sequence, such as STEP, TIE, REST or BUMP events.

There are multiple methods of entering time information in the Quicksilver 303 OS. You can enter time information directly by pressing the STEP, TIE or REST buttons, or you can use the NEXT and BACK buttons to step through and modify timing information.

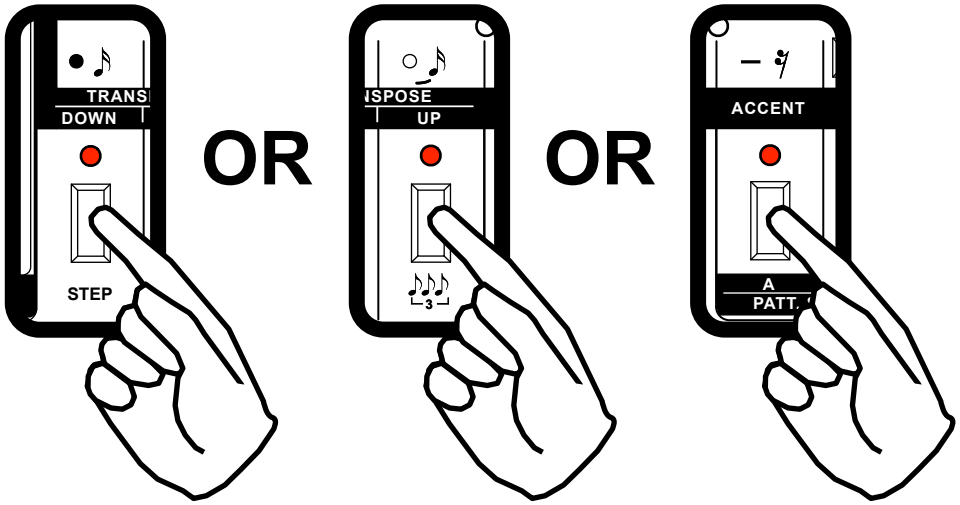
The BUMP attribute of a time step will temporarily increase the filter cutoff frequency for the duration of that step. This has a slightly different affect on the sound of the note than the ACCENT attribute of a pitch step.

There is one user configurable parameter that effects time entry (Please see CONFIG MODE for changing this option):

- AUTO END - If this option is set ON, time mode will automatically exit back to NORMAL mode when the end of the pattern is reached. If AUTO END is set to OFF, TIME entry will cycle back to the first step of the pattern after reaching the pattern end. The original 303 TIME MODE would automatically end after reaching the end of the pattern.

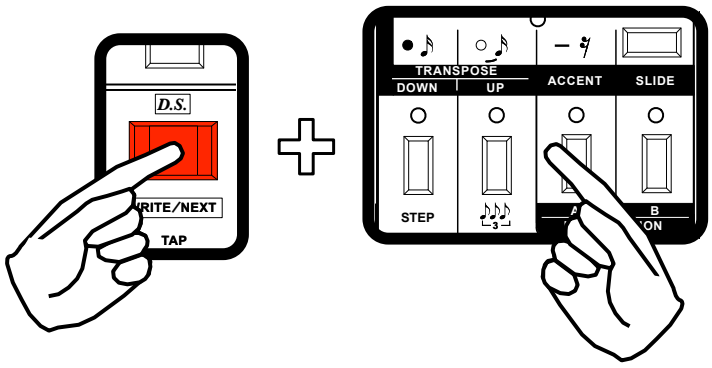
ENTERING TIME DATA DIRECTLY

By pressing the STEP, TIE or REST buttons, the timing information for each time step of the pattern can be quickly entered. After pressing one of the time attribute buttons, the step is automatically incremented to the next step, up to the maximum number of steps in the pattern. If the AUTO END option is on, time mode will exit back to NORMAL mode automatically when reaching the last step in the pattern.



ENTERING TIME DATA USING THE NEXT AND BACK BUTTONS

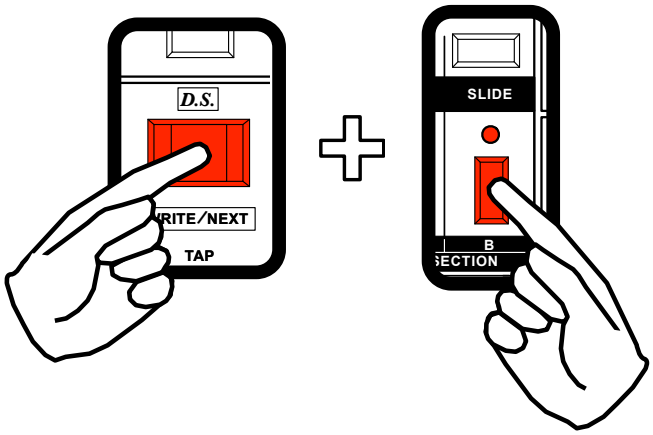
The time steps of a pattern can also be viewed and edited by using the NEXT and BACK buttons. By pressing and holding the NEXT or BACK buttons while in TIME ENTRY MODE, the time attributes of the current step are displayed. The current step number is also displayed using the keyboard LEDs. The values of the time attributes can also be changed while the NEXT or BACK button is held. Press the STEP, TIE, REST or BUMP buttons to select time attributes.



ADDING FILTER BUMP TO A TIME STEP

Time steps can have a programmed "filter bump". This temporarily increases the filter cutoff frequency for the duration of the time step. BUMP is useful for creating interesting and sometimes subtle variations of a pattern. The filter cutoff will return to normal on the next time step that doesn't have a BUMP programmed.

To program a BUMP on a time step, while the current time step is selected (by holding the BACK or NEXT button), press the SLIDE button to toggle the BUMP attribute on or off.



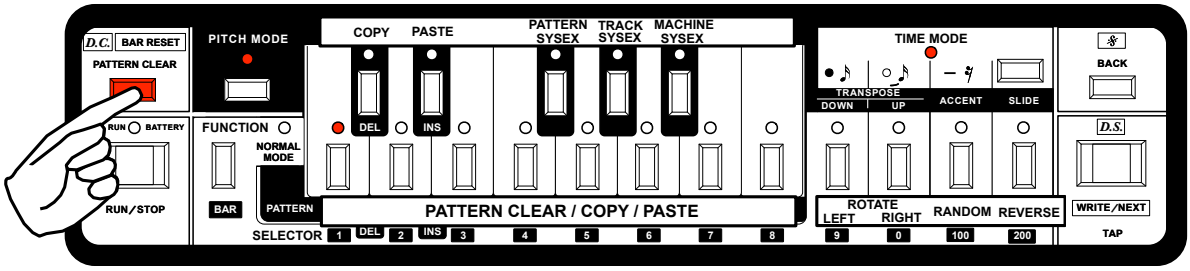
JUMPING TO THE FIRST TIME STEP

You can quickly jump back to the first time step of the pattern without leaving TIME MODE by pressing the TIME MODE button.

CLEAR MODE

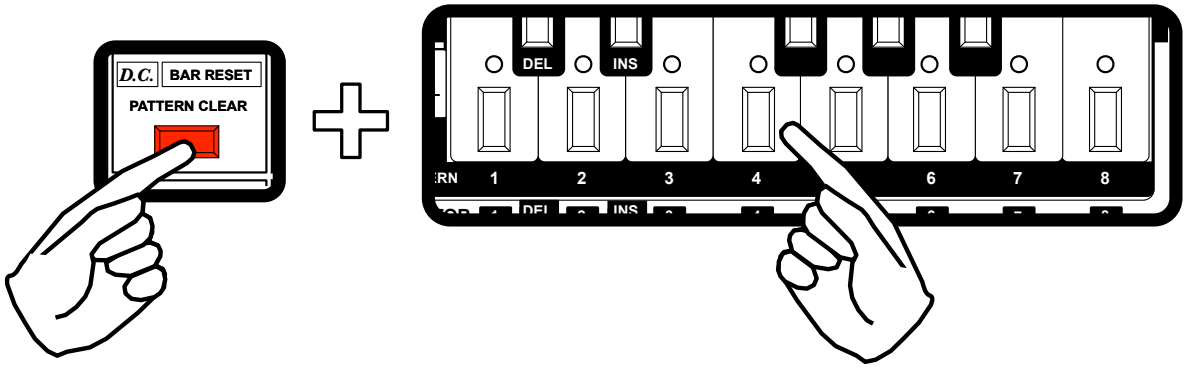
Clear mode is accessed by pressing and holding the CLEAR button while in PATTERN WRITE mode.

Although the name suggests this function is used for clearing patterns, it also has some cool additional features that have nothing to do with clearing. All of these additional functions are accessed while still holding down the CLEAR button. Additionally, most functions can also operate independently on PITCH or TIME data by holding down either the PITCH MODE or TIME MODE buttons while performing the operation.



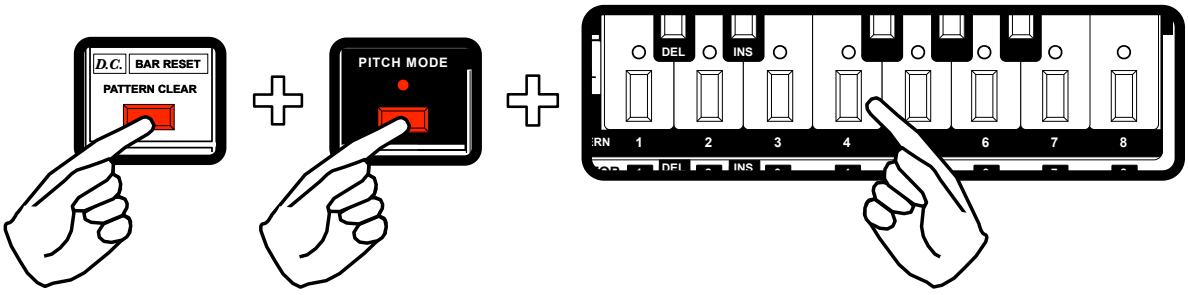
CLEARING PATTERNS - both PITCH and TIME information

To clear a pattern, press a pattern selector button while holding CLEAR. This clears out both the pattern PITCH and TIME information and resets the pattern to 16 steps duration, all rests, C pitch, no triplets.



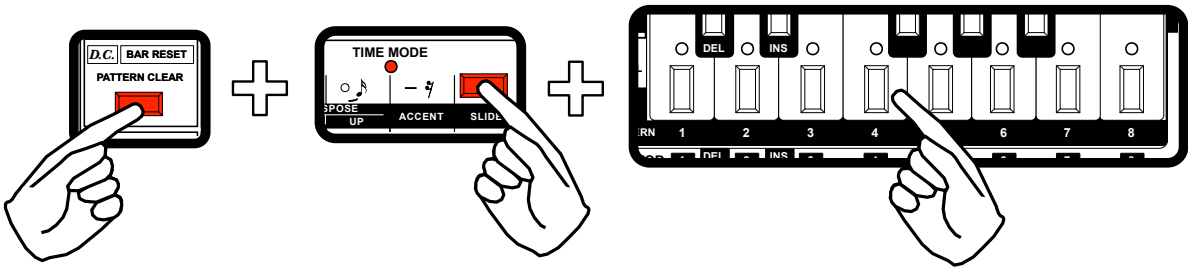
CLEARING PATTERN PITCH information only

To clear only the pattern pitch information, press and hold the PITCH MODE button and then press a pattern selector button (while holding CLEAR). This resets the pattern pitch information to all "C" pitches with no ACCENT or SLIDE.



CLEARING PATTERN TIME information only

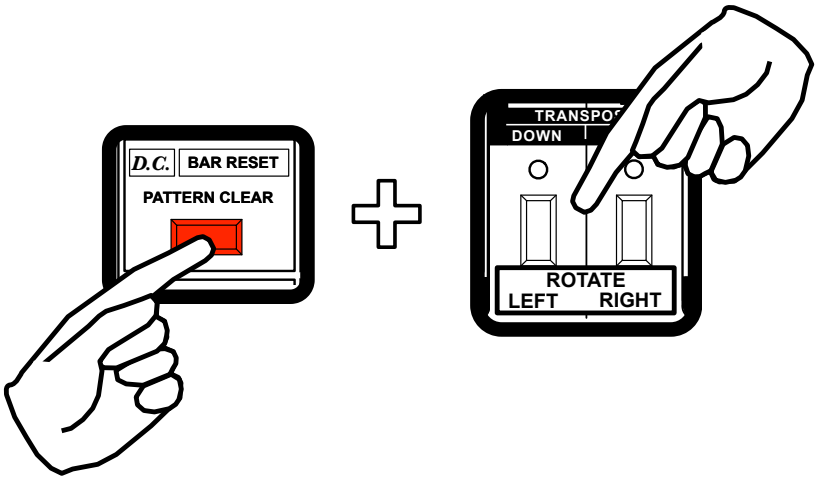
To clear only the pattern time information, press and hold the TIME MODE button and then press a pattern selector button (while holding CLEAR). This resets the pattern time information to all rests and resets the pattern to 16 steps duration, no triplets.



PATTERN ROTATE - both PITCH and TIME information

The pattern rotate function moves PITCH and TIME information forwards or backwards, step by step. This function is useful when a pattern sounds perfect but is off beat. The PITCH information is rotated intelligently, only rotating pitch steps that are in use by the pattern. If the pattern duration is less than the maximum possible duration (16 steps for 4/4, 12 steps for triplets), only the time information for steps in use by the pattern are rotated.

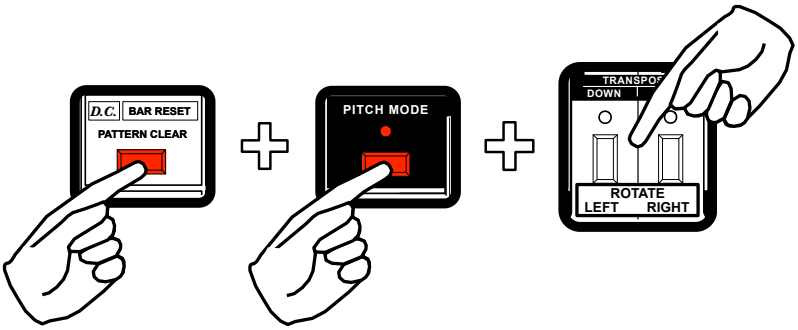
While holding the CLEAR button, press the TRANS DOWN button to move pattern information backward, or press the TRANS UP button to move information forward. The keyboard LEDs will change to show how many steps of rotation have been applied (the LEDs will remain lit until the CLEAR button is released).



PATTERN ROTATE - PITCH information only

The rotate function can operate on PITCH information independently. Rotating only the pitch information can create some interesting pattern variation. The PITCH information is rotated intelligently, only rotating pitch steps that are in use by the pattern.

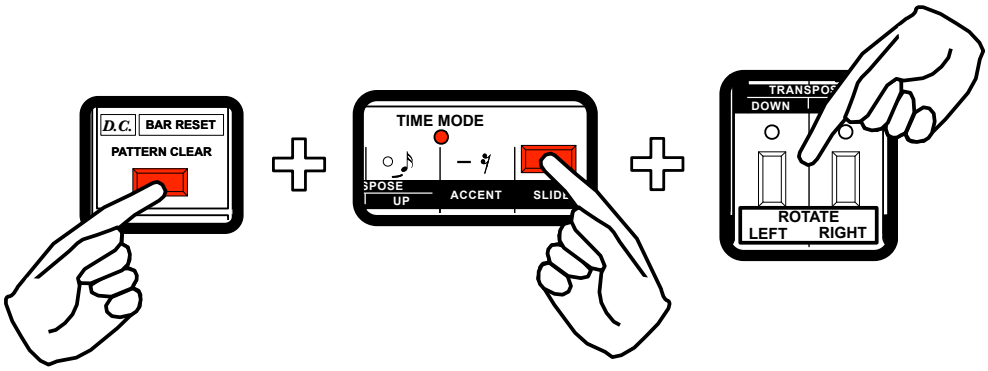
While holding both the CLEAR button and the PITCH MODE button, press the TRANS DOWN button to move pitch information backward, or press the TRANS UP button to move information forward. The keyboard LEDs will change to show how many steps of rotation have been applied (the LEDs will remain lit until the CLEAR button is released).



PATTERN ROTATE - TIME information only

The rotate function can operate on TIME information independently. Rotating only the time information can create some interesting pattern variation. If the pattern duration is less than the maximum possible duration (16 steps for 4/4, 12 steps for triplets), only the time information for steps in use by the pattern are rotated.

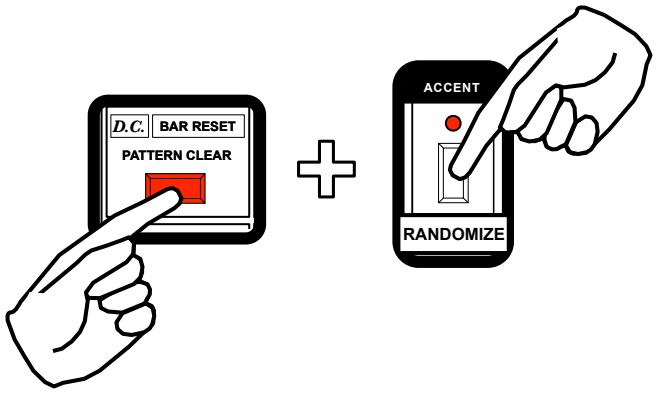
While holding both the CLEAR button and the TIME MODE button, press the TRANS DOWN button to move time information backward, or press the TRANS UP button to move information forward. The keyboard LEDs will change to show how many steps of rotation have been applied (the LEDs will remain lit until the CLEAR button is released).



PATTERN RANDOMIZE - both PITCH and TIME information

The pattern randomize function does just what it says, generates random PITCH and TIME information for the pattern. There is a slight bias for STEP type events in the random time information, which minimizes the number of TIE and REST events. Without this bias, the majority of random patterns would sound boring with too many TIE and REST steps.

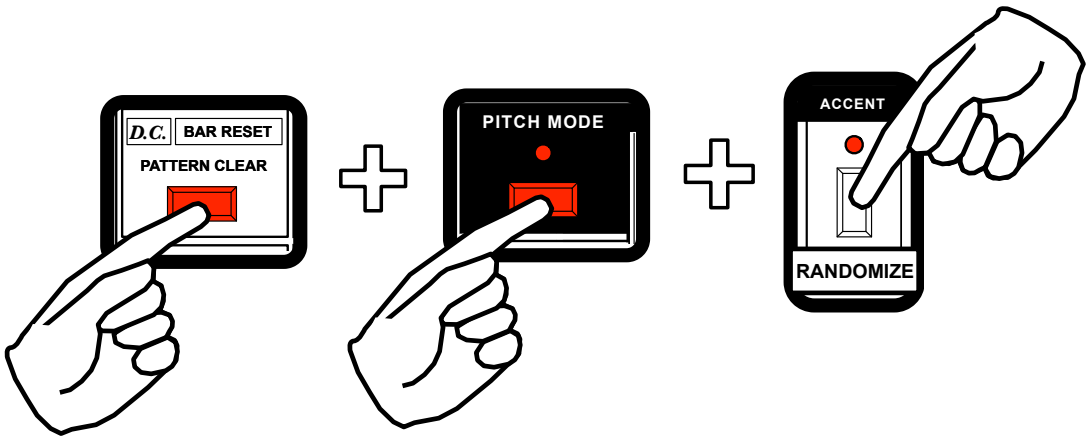
While holding the CLEAR button, press the ACCENT button to randomize all information in the current pattern.



PATTERN RANDOMIZE - PITCH information only

This will only randomize the pattern PITCH information.

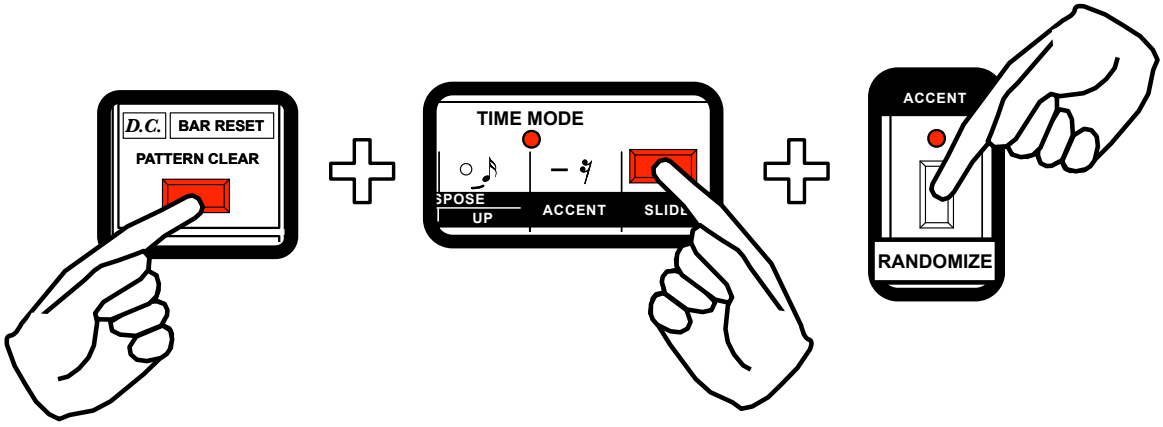
While holding the CLEAR button and the PITCH MODE button, press the ACCENT button to randomize pitch information in the current pattern.



PATTERN RANDOMIZE - TIME information only

This will only randomize the pattern TIME information. There is a slight bias for STEP type events in the random time information, which minimizes the number of TIE and REST events. Without this bias, the majority of random patterns would sound boring with too many TIE and REST steps.

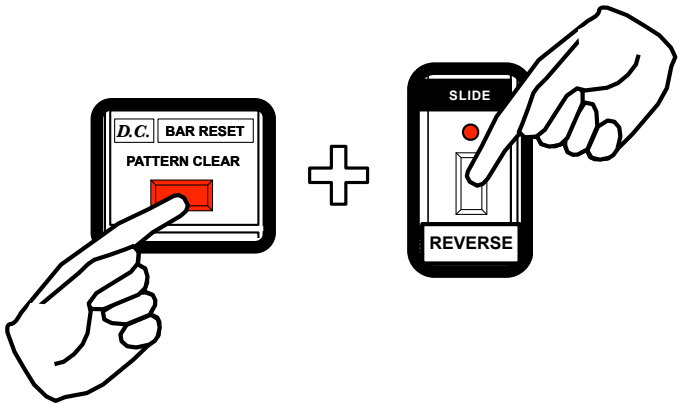
While holding the CLEAR button and the TIME MODE button, press the ACCENT button to randomize time information in the current pattern.



PATTERN REVERSE - both PITCH and TIME information

This function reverses both the PITCH and TIME information of a pattern. This means that events originally on the first step will now be on the last step, etc, etc. The PITCH data of the pattern is reversed intelligently, only reversing pitch steps that are in use by the pattern. If the pattern duration is less than the maximum possible duration (16 steps for 4/4, 12 steps for triplets), only the time information for steps in use by the pattern are reversed.

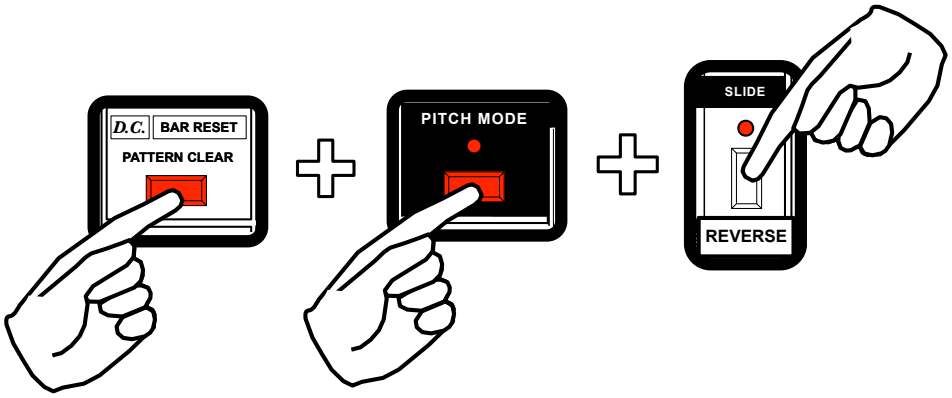
While holding the CLEAR button, press the SLIDE button to reverse all information in the current pattern.



PATTERN REVERSE - PITCH information only

This reverses only the PITCH information of a pattern. The PITCH data of the pattern is reversed intelligently, only reversing pitch steps that are in use by the pattern.

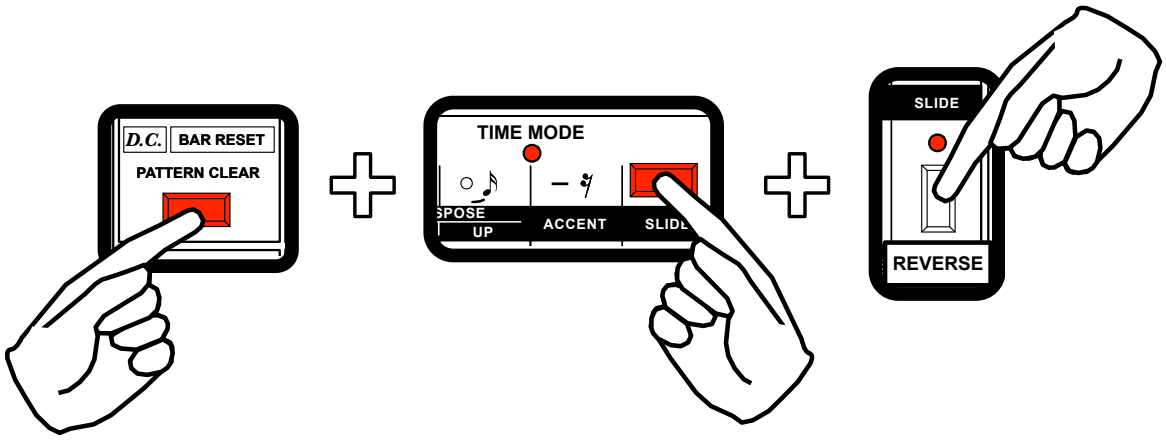
While holding the CLEAR button and the PITCH MODE button, press the SLIDE button to reverse all pitch information in the current pattern.



PATTERN REVERSE - TIME information only

This reverses only the TIME information of a pattern. If the pattern duration is less than the maximum possible duration (16 steps for 4/4, 12 steps for triplets), only the time information for steps in use by the pattern are reversed.

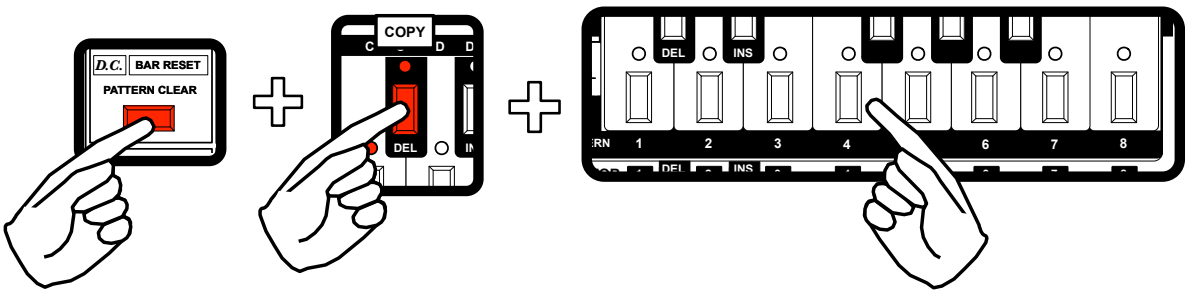
While holding the CLEAR button and the TIME MODE button, press the SLIDE button to reverse all time information in the current pattern.



PATTERN COPY - both PITCH and TIME information

The PITCH and TIME information can be copied from one pattern location to another. This is useful for creating multiple copies of a pattern and then adding variation. The copy buffer is also used for transmission of patterns over SYSEX. Any pattern can be copied into the pattern copy buffer for subsequent paste operations or SYSEX dumps.

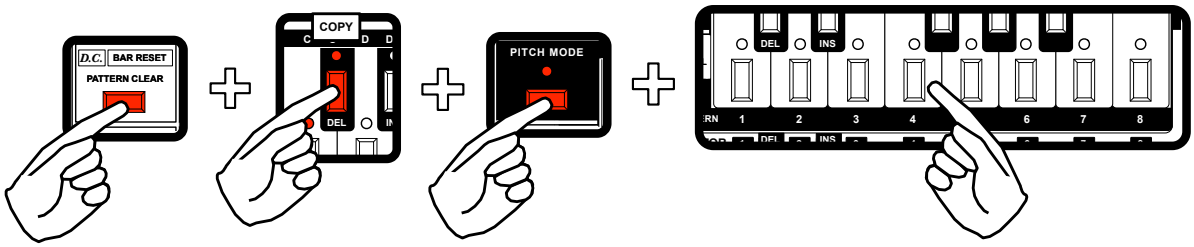
To COPY a pattern, while holding the CLEAR button, push and hold the "C sharp" keyboard button (also labeled as DEL - delete). Now push the pattern selector button of the pattern you wish to copy into the pattern copy buffer.



PATTERN COPY - PITCH information only

The pitch information of a pattern can be independently copied from one pattern location to another. The current time information in the pattern copy buffer will remain intact. This is useful for creating interesting variations of a pattern, by moving the pitch information of one pattern into the pattern copy buffer which contains the time information of a different pattern.

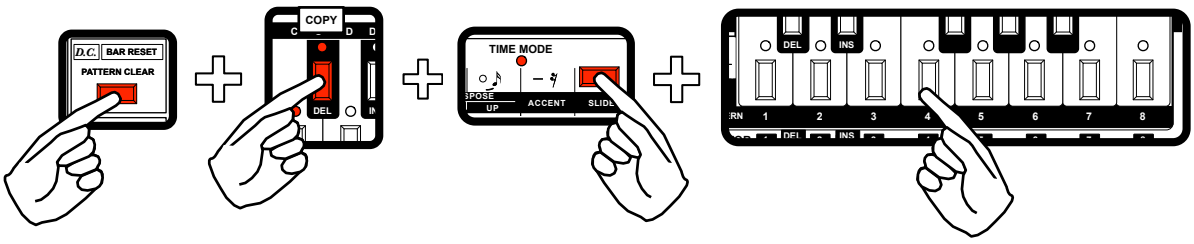
To COPY only the pitch information of a pattern, while holding the CLEAR button, push and hold the "C sharp" keyboard button and the PITCH MODE button. Now push the pattern selector button of the source pattern you wish to copy pitch information from.



PATTERN COPY - TIME information only

The TIME information can be independently copied from one pattern location to another. The current pitch information in the pattern copy buffer will remain intact. This is useful for creating interesting variations of a pattern, by moving the time information of one pattern into the pattern copy buffer which contains the pitch information of a different pattern.

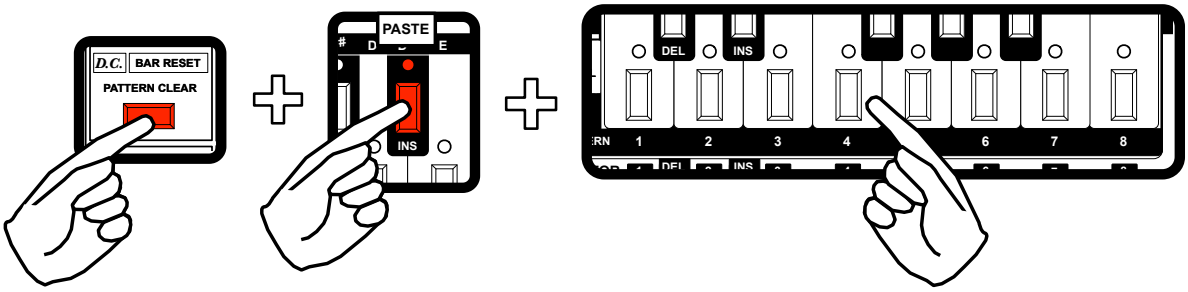
To COPY only the time information of a pattern, while holding the CLEAR button, push and hold the "C sharp" keyboard button and the TIME MODE button. Now push the pattern selector button of the source pattern you wish to copy time information from.



PATTERN PASTE - both PITCH and TIME information

The PITCH and TIME information stored in the pattern copy buffer can be pasted into another pattern location. The PASTE operation can be performed multiple times using the same pattern copy buffer information. This makes it easy to quickly create a few copies of a source pattern.

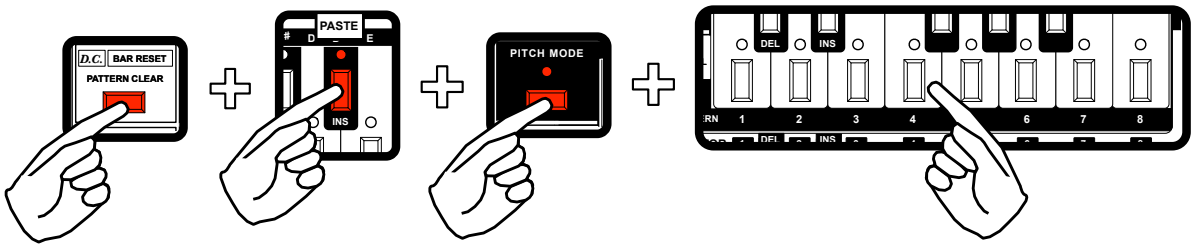
To PASTE a pattern, while holding the CLEAR button, push and hold the "D sharp" keyboard button (also labeled as INS - insert). Now push the pattern selector button of the pattern you wish to overwrite with the pattern copy buffer pattern.



PATTERN PASTE - PITCH information only

The PITCH information stored in the pattern copy buffer can be pasted independently into another pattern location. The time information of the destination pattern will remain intact. This can be used to create interesting new variations of a pattern. The PASTE operation can be performed multiple times using the same pattern copy buffer information.

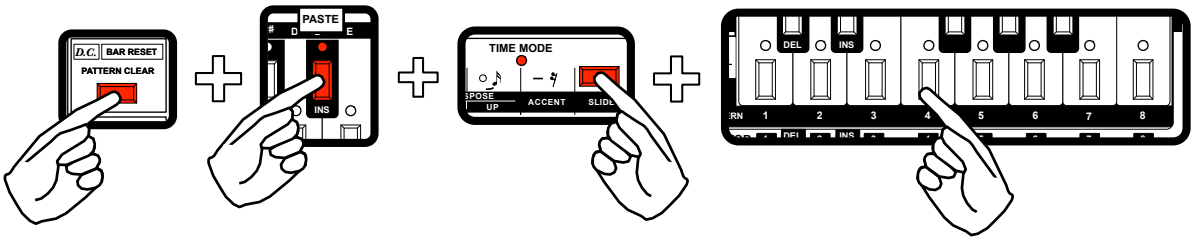
To PASTE pitch information from the pattern copy buffer, while holding the CLEAR button, push and hold the "D sharp" keyboard button and the PITCH MODE button. Now push the pattern selector button of the pattern you wish to overwrite with pitch information from the pattern copy buffer.



PATTERN PASTE - TIME information only

The TIME information stored in the pattern copy buffer can be pasted independently into another pattern location. The pitch information of the destination pattern will remain intact. This can be used to create interesting new variations of a pattern. The PASTE operation can be performed multiple times using the same pattern copy buffer information.

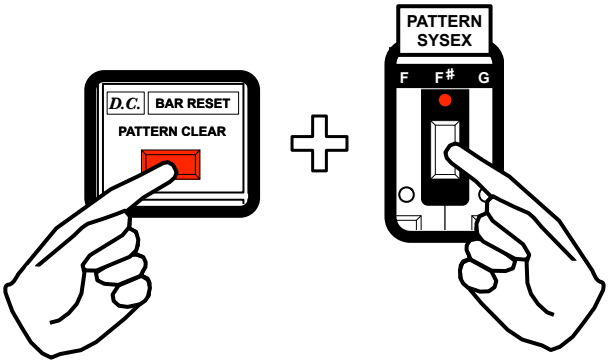
To PASTE time information from the pattern copy buffer, while holding the CLEAR button, push and hold the "D sharp" keyboard button and the TIME MODE button. Now push the pattern selector button of the pattern you wish to overwrite with time information from the pattern copy buffer.



PATTERN SYSEX DUMP

The pattern information of the pattern copy buffer can be dumped over MIDI as system exclusive information. This allows patterns to be backed up to a computer for storage. To transmit a specific pattern, it should first be copied to the pattern copy buffer using the COPY function. When a SYSEX pattern dump is received over MIDI, it is placed into the pattern copy buffer and must then be pasted into the destination pattern location. Pattern dumps can be sent and received while the sequencer is running.

To dump a pattern over MIDI, first copy the source pattern into the pattern copy buffer. Configure your receiving MIDI device to listen for the SYSEX dump information. While holding the CLEAR button, press the "F sharp" keyboard button. The pattern information stored in the pattern copy buffer will be immediately transmitted as MIDI information.

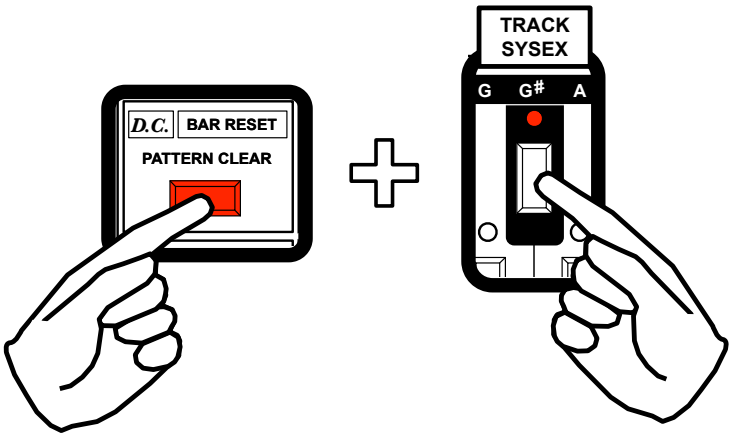


TRACK SYSEX DUMP

The track information of the track copy buffer can be dumped over MIDI as system exclusive information. In PATTERN WRITE mode, this function is limited, because the TRACK COPY and PASTE functions are located in TRACK WRITE MODE. For more information on COPY and PASTE functions for tracks, please see the TRACK WRITE mode documentation.

To transmit a track, it should first be copied to the track copy buffer using the COPY function (this must be performed in TRACK WRITE mode). When a SYSEX track dump is received over MIDI, it is placed into the track copy buffer and must then be pasted into the destination track location. Track dumps can be sent and received while the sequencer is running.

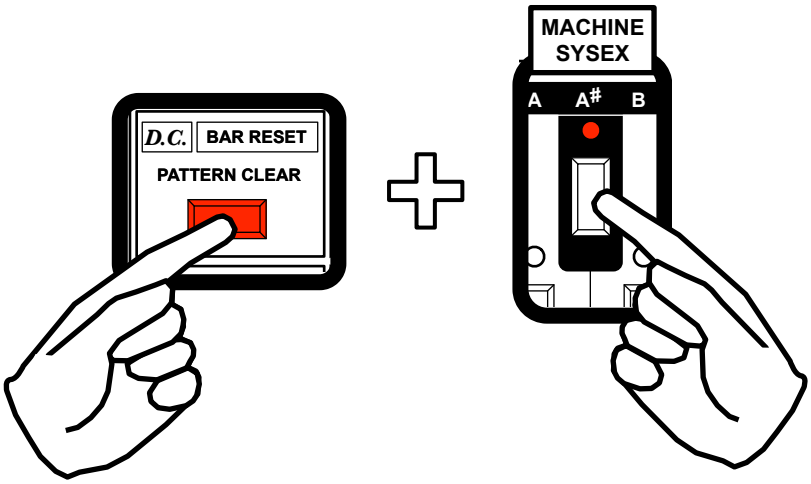
To dump a track over MIDI, first copy the source track into the track copy buffer in TRACK WRITE MODE. Configure your receiving MIDI device to listen for the SYSEX dump information. While holding the CLEAR button, press the "G sharp" keyboard button. The track information stored in the track copy buffer will be immediately transmitted as MIDI information.



MACHINE STATE SYSEX DUMP

The entire contents of memory can be dumped in a single button press using the MACHINE SYSEX DUMP function. This dumps all 64 patterns, 7 tracks and the machine configuration as MIDI system exclusive data. This is useful for creating a snapshot of the entire machine for backup purposes. The MACHINE STATE DUMP can be performed while the sequencer is running, but reception of a MACHINE DUMP while the sequencer is running wil result in audible timing glitches as the entire contents of memory are overwritten.

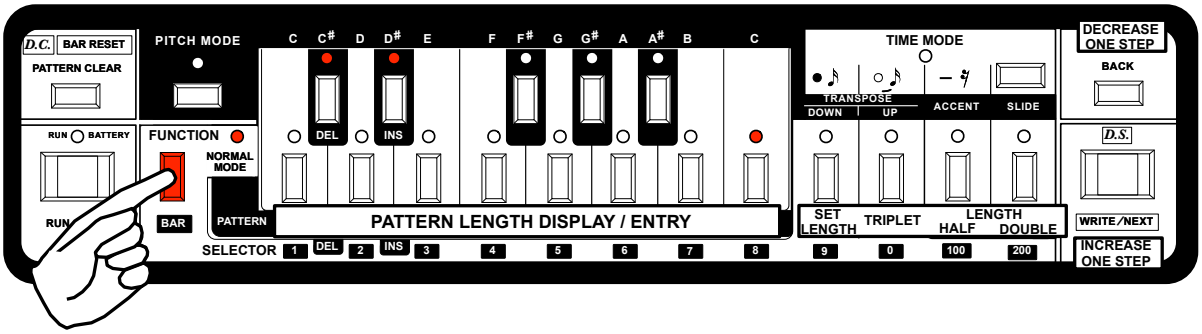
To dump a the entire machine state over MIDI, configure your receiving MIDI device to listen for the SYSEX dump information. While holding the CLEAR button, press the "A sharp" keyboard button. The entire contents of memory will be immediately transmitted as MIDI information.



FUNCTION MODE

Function mode is primarily focused on actions that effect the length of patterns. This includes setting the number of pattern steps, shortening or lengthening a pattern or setting the pattern to triplet mode.

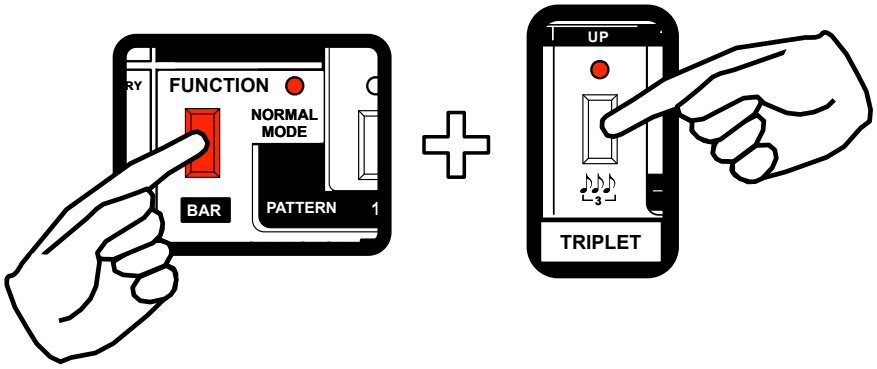
To enter FUNCTION MODE, press and hold the FUNCTION button. The current pattern length will be displayed on the keyboard LEDs while the FUNCTION button is held.



PATTERN TRIPLETS (3/4 time)

A pattern can be set to 3/4 (triplet) time. In triplet mode, the pattern length has a maximum of 12 steps, with three steps per quarter note.

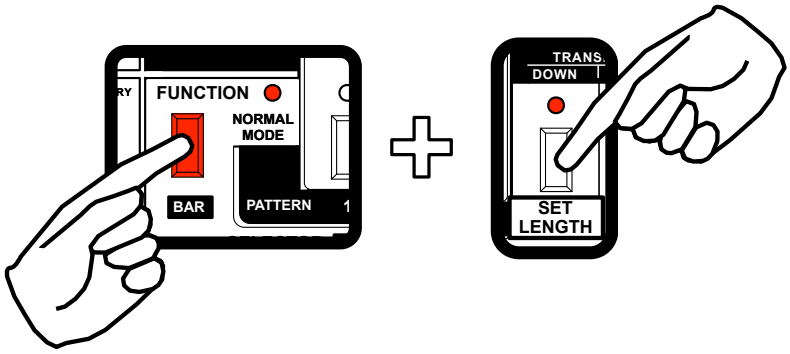
While holding the FUNCTION button, press the TRANS UP button to toggle triplets ON or OFF. When triplets are set ON, if the current pattern length is greater than 12 steps, the pattern length will automatically be reduced to 12 steps. If the current pattern length is less than 12 steps, the pattern length will not be changed.



SETTING PATTERN LENGTH - ORIGINAL 303 METHOD

The original 303 allowed you to set the pattern length by pressing the TRANS DOWN switch one time for each step. The Quicksilver OS supports this same capability, but some of the other methods of setting the pattern length are a bit more exciting!

To set the pattern length using the old-school 303 method, press and hold the FUNCTION button, then tap the TRANS DOWN button repeatedly, each tap will add one step to the length of the pattern (starting from zero) up to the maximum allowable pattern length (16 steps for 4/4, 12 steps for triplets). The keyboard LEDs will update to show the new pattern length.



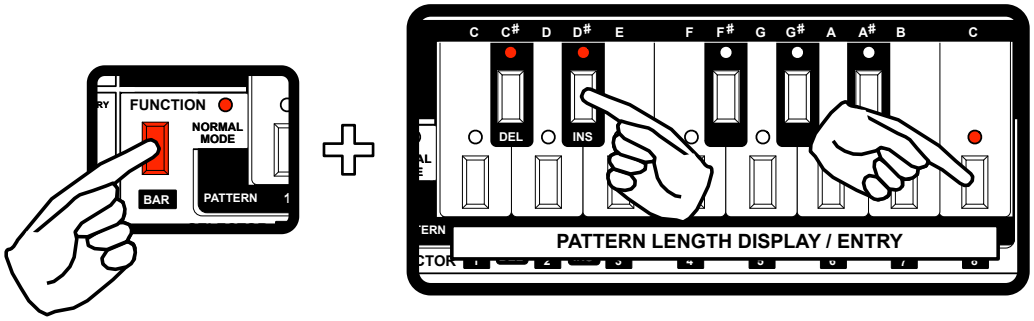
SETTING PATTERN LENGTH - USING KEYBOARD BUTTONS

The length of the pattern is displayed on the keyboard LEDs while the FUNCTION button is held, but the length can also be set by directly pressing the keyboard buttons.

While holding the FUNCTION button, press the keyboard button corresponding to the number of steps you wish to set the pattern length. The white keys select numeric values 1 through 8, while the "D sharp" button selects the multiplier value (x1 when off, x2 when on) This allows the full range of number to be selected (1-16).

The keyboard LEDs will update to show the new pattern length.

TIP The direct method of setting pattern length is useful for quickly creating a "roll" effect, while the sequencer is running.



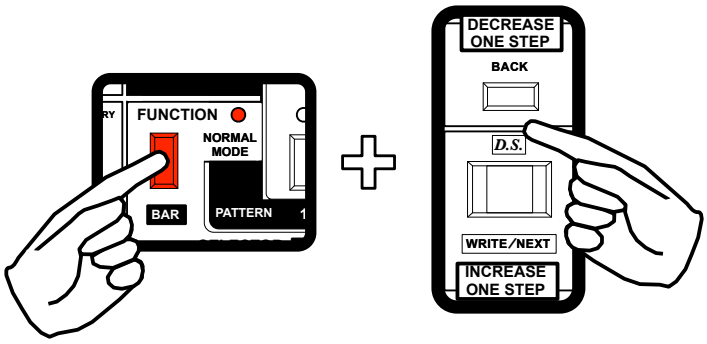
SETTING PATTERN LENGTH - ONE STEP AT A TIME

The current pattern length can be increased or decreased by one step easily using the NEXT or BACK buttons.

While holding the FUNCTION button, press the NEXT button to increase the pattern length by one step, up to the maximum allowed pattern length (16 steps for 4/4, 12 steps for triplets).

While holding the FUNCTION button, press the BACK button to decrease the pattern length by one step, down to a minimum of 1 step.

The keyboard LEDs will update to show the new pattern length.



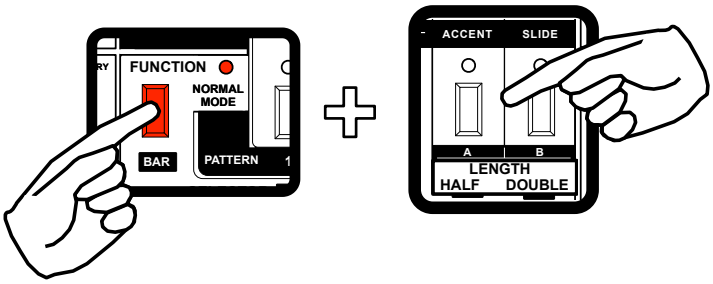
SETTING PATTERN LENGTH - DOUBLING OR HALVING CURRENT LENGTH

Another interesting method of setting the pattern length allows for the current length to be cut in half or doubled in length. This can be used creatively to create an increasing or decreasing stutter or roll effect while the sequencer is running. It also is a quick way to get to the minimum or maximum pattern length with only a few button presses.

While holding the FUNCTION button, press the ACCENT button to divide the pattern length in half, down to a minimum of 1 step in length.

While holding the FUNCTION button, press the SLIDE button to double the pattern length, up to the maximum allowed pattern length (16 steps for 4/4, 12 steps for triplets).

The keyboard LEDs will update to show the new pattern length.

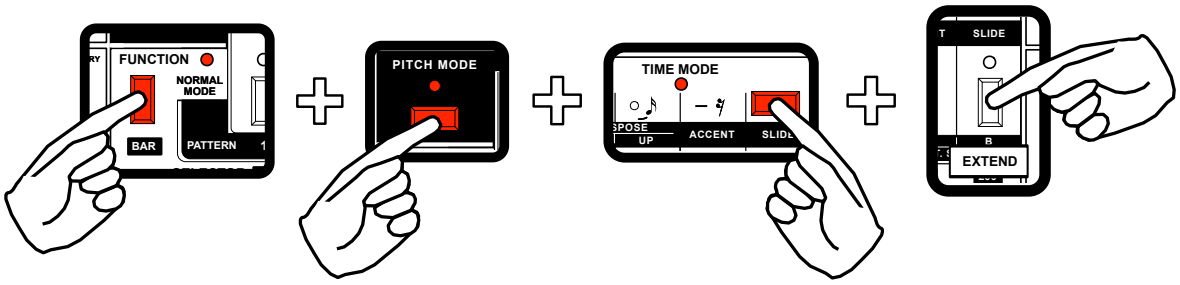


PATTERN EXTEND - both PITCH and TIME information

The PATTERN EXTEND function is a variation of doubling the pattern length. When extending a pattern, the PITCH and TIME information of the current length is duplicated into the extended pattern steps. The PITCH information is extended intelligently, only duplicating pitch steps that are in use by the pattern. PATTERN EXTEND is useful for duplicating shorter basslines and adding variations to the duplicated data.

For example a short 4-step pattern can be extended to 8 steps in length and the 4-step pattern will be duplicated to steps 5 through 8. Extending a second time will duplicate the first 8 steps to steps 9 through 16, resulting in the original 4-step pattern being duplicated 4 times. Now, small changes can be made to the entire 16 step pattern for interesting variation, instead of repeating the original short 4-step loop.

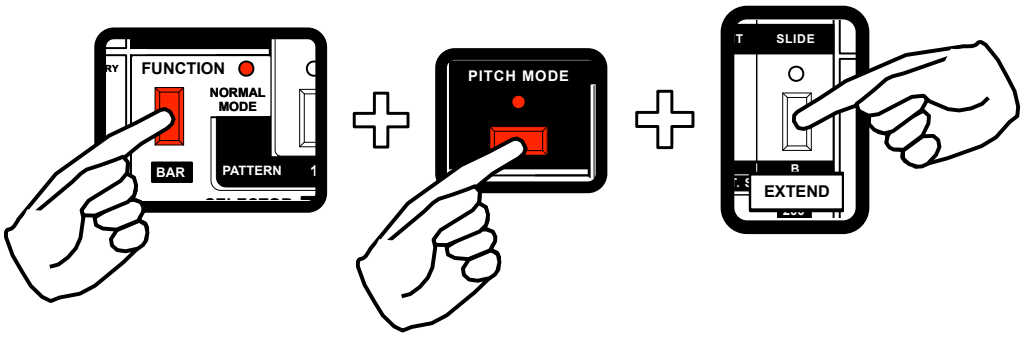
While holding the FUNCTION button, press and hold both the PITCH MODE and TIME MODE buttons, then press the SLIDE button to extend the pattern to double the length with duplicated PITCH and TIME information.



PATTERN EXTEND - PITCH information only

The PATTERN EXTEND function can operate on PITCH information independently. The PITCH information of the current pattern length is duplicated into the extended pattern steps. The PITCH information is extended intelligently, only duplicating pitch steps that are in use by the pattern. The TIME information of the extended steps will remain what was previously held in those extended steps.

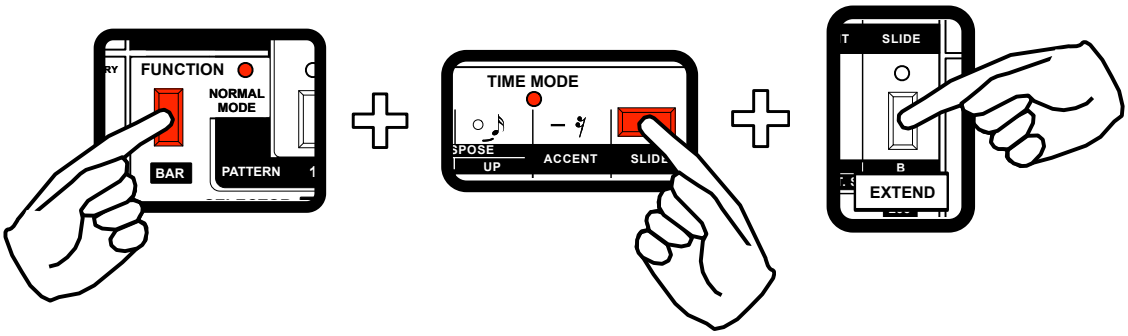
While holding the FUNCTION button, press and hold the PITCH MODE button, then press the SLIDE button to extend the pattern to double the length with duplicated PITCH information.



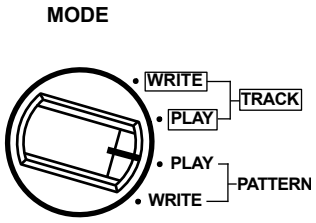
PATTERN EXTEND - TIME information only

The PATTERN EXTEND function can operate on TIME information independently. The TIME information of the current pattern length is duplicated into the extended pattern steps. The PITCH information of the extended steps will remain what was previously held in those extended steps.

While holding the FUNCTION button, press and hold the TIME MODE button, then press the SLIDE button to extend the pattern to double the length with duplicated TIME information.



PATTERN PLAY MODE



Pattern play mode is used for playback of existing patterns. PATTERN PLAY mode is good for performance playback, because it allows for dynamic changes in REALTIME PITCH and REALTIME TIME mode.

Transpose settings (semitone or octave transpose) are stored with the pattern even when changed in PATTERN PLAY mode.

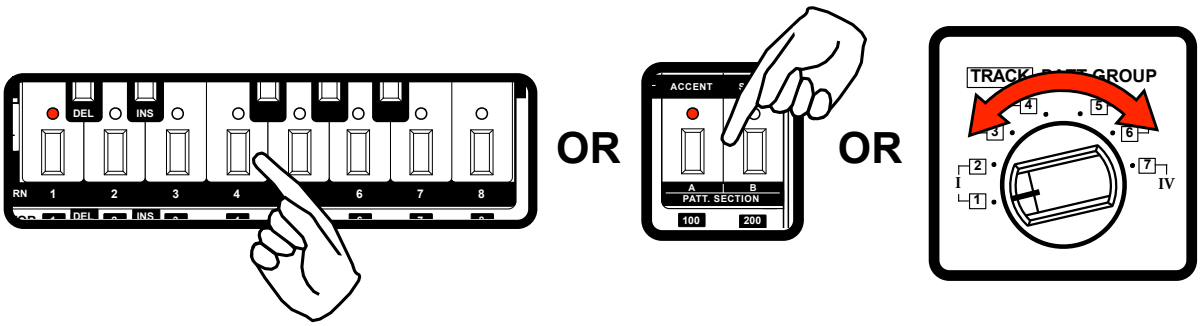
SELECTING PATTERNS

A new pattern can be selected for playback while the sequencer is playing or stopped. If a pattern is selected during playback, the current pattern will play to completion before the new pattern begins playback. When the sequencer is stopped, the new pattern is selected immediately.

Patterns can be forced to switch immediately while the sequencer is running by pressing the BACK button while selecting a new pattern.

To select a new pattern, press the appropriate pattern selector button. The pattern section can also be changed by pressing one of the section selector buttons.

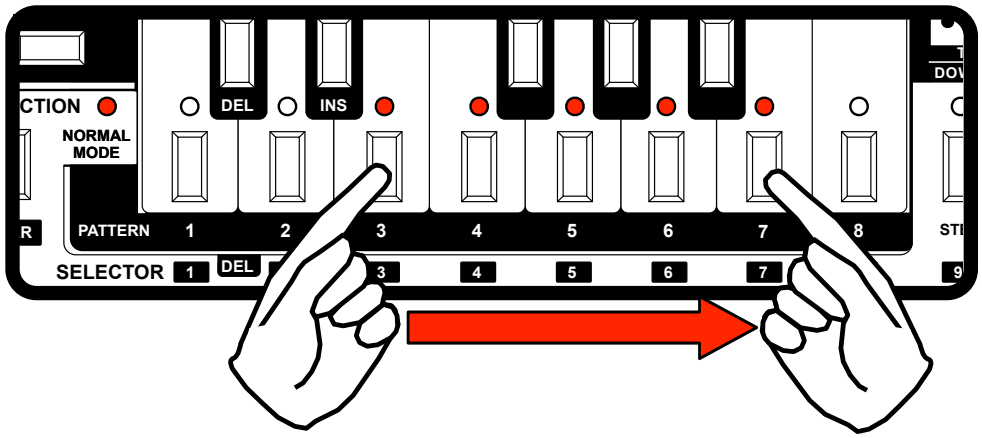
Additionally, the pattern bank can be changed by rotating the TRACK/PATTERN selector knob. Remember that changing the pattern bank will also change the current track.



CREATING PATTERN CHAINS

In PATTERN PLAY mode, multiple patterns can be chained together to create a longer pattern loop. The chain will loop indefinitely until a different pattern or pattern chain is selected. A pattern chain can be up to 8 patterns in length.

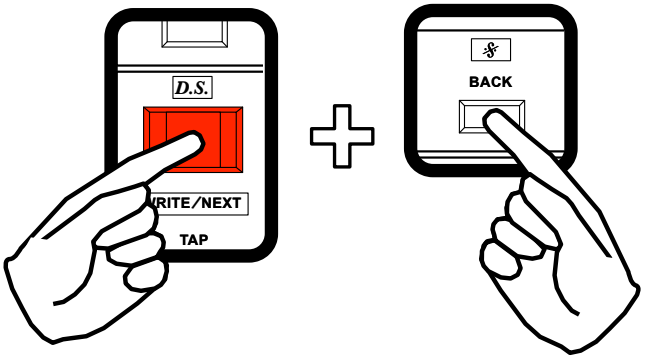
To create a pattern CHAIN, press and hold the pattern selector button for the first pattern in the the chain, then press the pattern selector button of the last pattern in the chain. The LEDs of the pattern buttons will light to show the current chain. The currently playing pattern is indicated with a blinking LED.



RESTARTING A RUNNING PATTERN

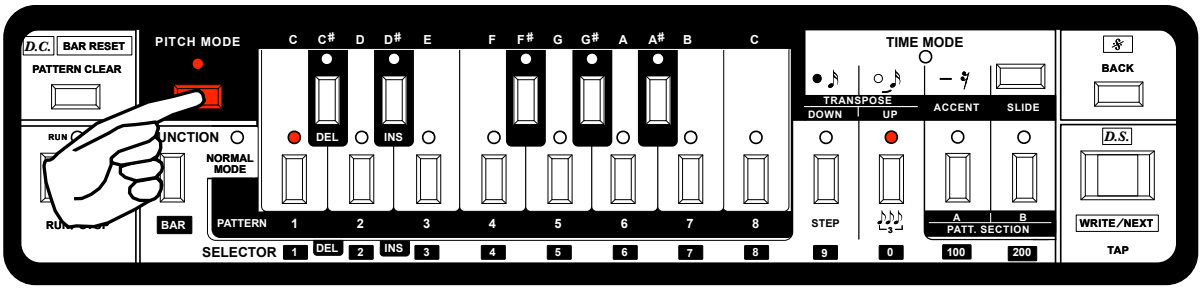
While the sequencer is running in PATTERN PLAY mode, the current pattern can be restarted, or forced to play from the first step. This is useful for manually resyncing a pattern with an external source, or for creatively stuttering pattern playback.

To restart a pattern, press and hold the TAP button, then press the BACK button. This combination is used to avoid accidentally restarting a pattern.



REALTIME PITCH MODE

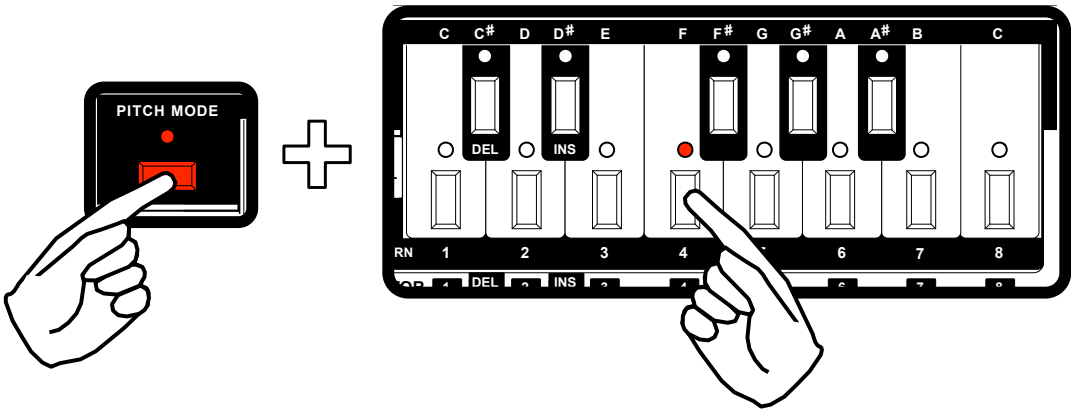
Holding down the PITCH MODE button enters REALTIME PITCH MODE. In this mode patterns can be transposed, or temporarily modified using the ALL ACCENT, ALL SLIDE, NO ACCENT or NO SLIDE functions. These temporary functions are useful for dynamic variation to patterns during playback.



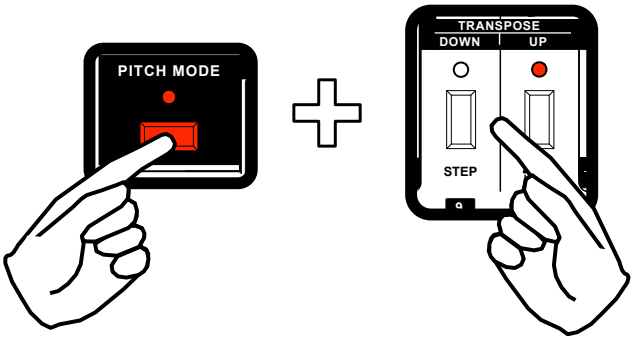
PATTERN TRANSPOSE

Patterns can be transposed higher in semitones, or 1 octave up or down. The amount of transposition is stored with the pattern in pattern memory even in PATTERN PLAY MODE. On the original 303 OS, pattern transpose could only be entered in PATTERN PLAY mode and was not stored with the pattern, it was lost when the machine was turned off.

To transpose upward in semitones. With the PITCH MODE button held, choose the amount of transposition by pressing one of the keyboard buttons.



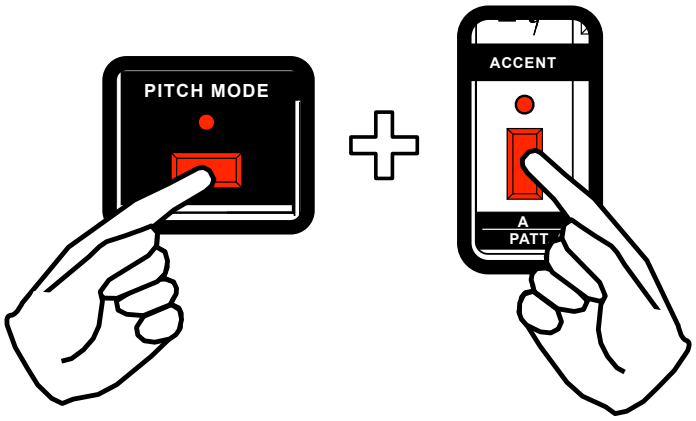
To transpose one whole octave up or down. With the PITCH MODE button held, press the TRANS DOWN or TRANS UP button.



ALL ACCENT

The ALL ACCENT function forces all steps to be played back with ACCENT regardless of the pattern information. This creates a dramatic change in the sound of playback.

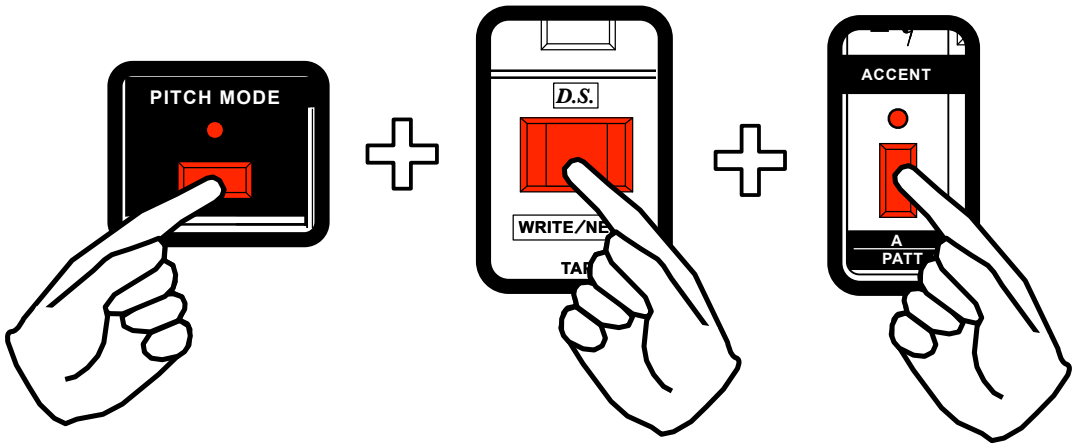
To engage ALL ACCENT, while holding down the PITCH MODE button, press and hold the ACCENT button. ALL ACCENT mode is disengaged when the ACCENT button is released.



NO ACCENT

The NO ACCENT function forces all steps to be played back without ACCENT regardless of the pattern information.

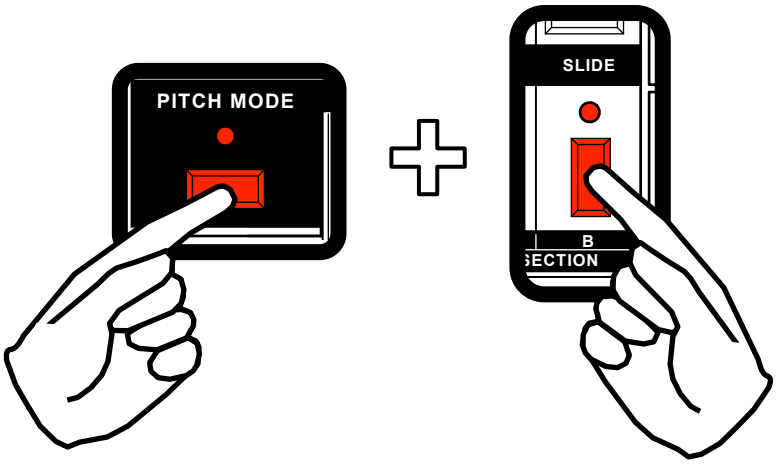
To engage NO ACCENT, while holding down both the PITCH MODE button and the TAP button, press and hold the ACCENT button. NO ACCENT mode is disengaged when the ACCENT button is released.



ALL SLIDE

The ALL SLIDE function forces all steps to be played back with SLIDE regardless of the pattern information. This creates long note that decays to silence as the notes slide between pitches.

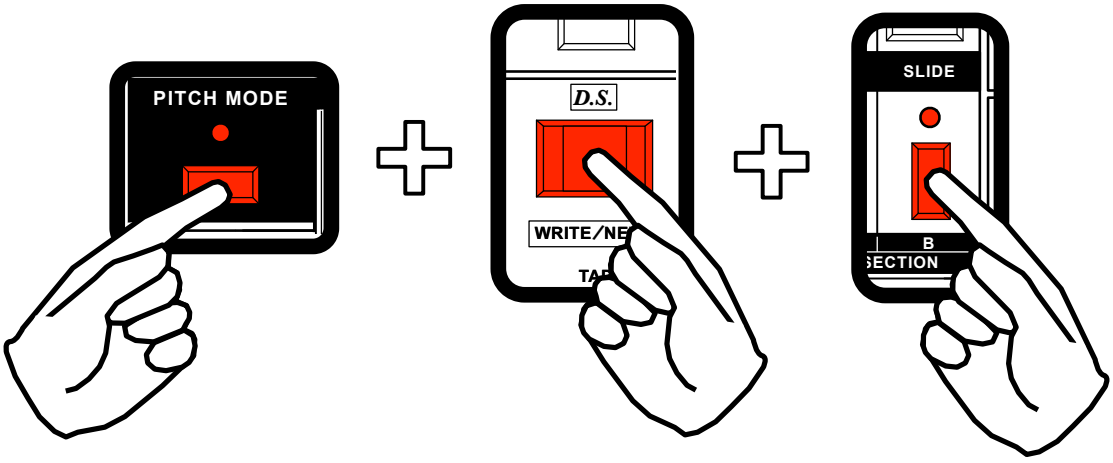
To engage ALL SLIDE, while holding down the PITCH MODE button, press and hold the SLIDE button. ALL SLIDE mode is disengaged when the SLIDE button is released.



NO SLIDE

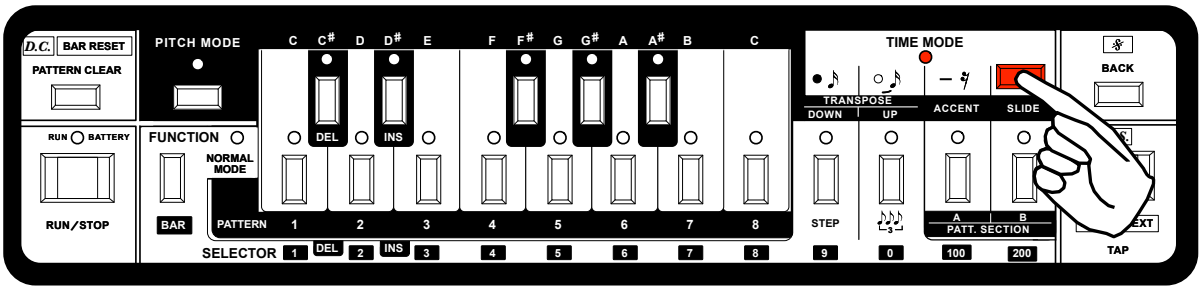
The NO SLIDE function forces all steps to be played back without SLIDE regardless of the pattern information. This makes a pattern with programmed slides sound dramatically different.

To engage NO SLIDE, while holding down both the PITCH MODE button and the TAP button, press and hold the SLIDE button. NO SLIDE mode is disengaged when the SLIDE button is released.



REALTIME TIME MODE

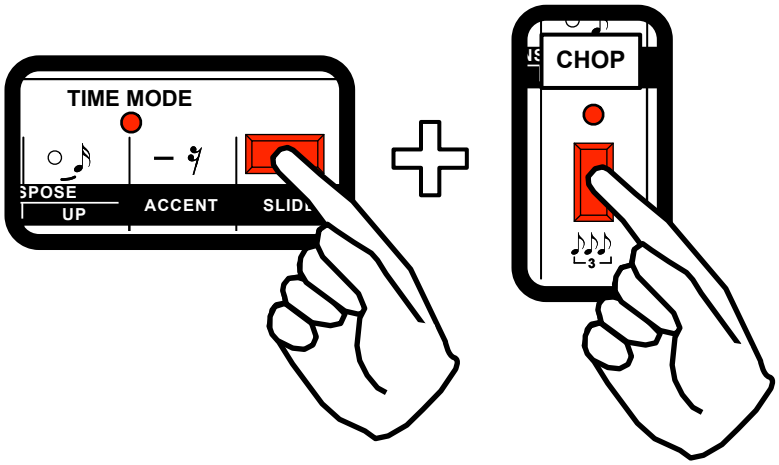
Holding down the TIME MODE button enters REALTIME TIME MODE. In this mode the CHOP, ALL REST and BUMP functions can be accessed to temporarily modify a pattern.



CHOP

This function is interesting for realtime performance. While CHOP is activated, the gate signal of the synthesizer is pulsed on every step of the pattern. For long notes, this creates an interesting arpeggio type effect.

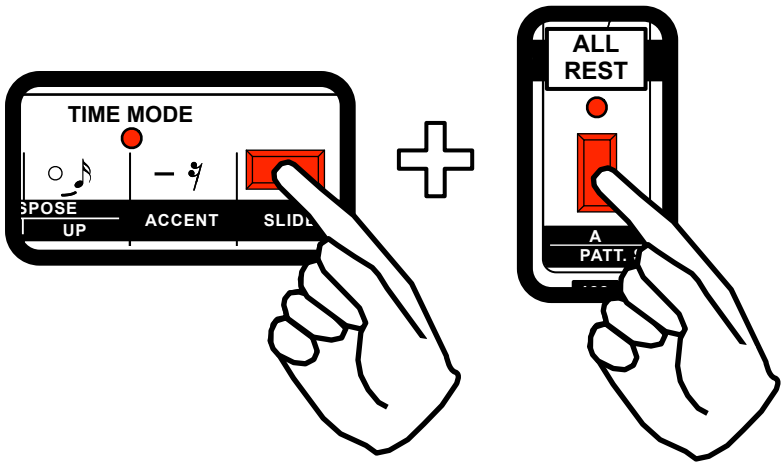
The CHOP function is accessed by pressing and holding the TIME MODE button and then pressing and holding down the TRANS UP button. CHOP mode is disengaged when the TRANS UP button is released.



ALL REST

The ALL REST function will essentially mute a pattern during playback by making every step play a REST event.

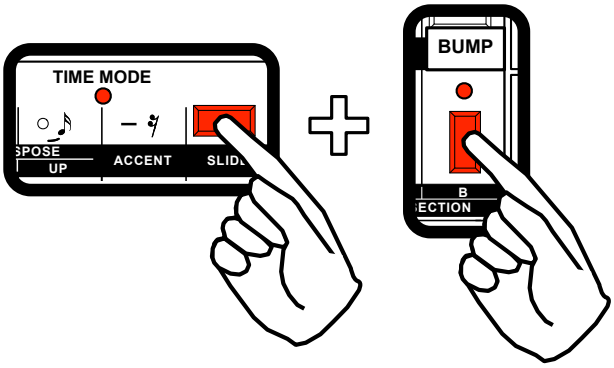
The ALL REST function is accessed by pressing and holding the TIME MODE button and then pressing and holding down the ACCENT button. ALL REST mode is disengaged when the ACCENT button is released.



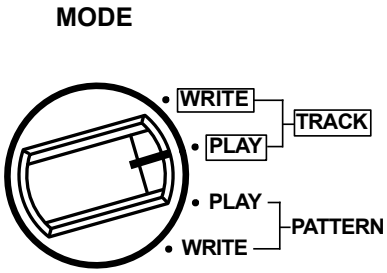
FILTER BUMP

The FILTER BUMP function will temporarily increase the filter cutoff frequency. This function requires that the filter control option of the Quicksilver 303 is installed.

The FILTER BUMP function is accessed by pressing and holding the TIME MODE button and then pressing and holding down the SLIDE button. FILTER BUMP mode is disengaged when the SLIDE button is released.



TRACK PLAY MODE



TRACK PLAY mode is used to play back programmed tracks.

TRACK PLAY mode is accessed by moving the MODE selector knob to TRACK PLAY.

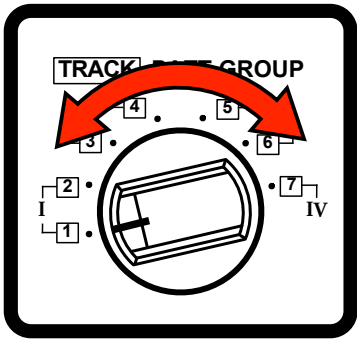
Only a few functions are available in TRACK PLAY mode, to avoid accidental disruption of a track during playback. Both REALTIME PITCH MODE and REALTIME TIME MODE can be accessed in TRACK PLAY mode.

As a track plays back, the pattern selector LEDs will light according to the patterns or pattern chains selected for each step of the track.

SELECTING TRACKS

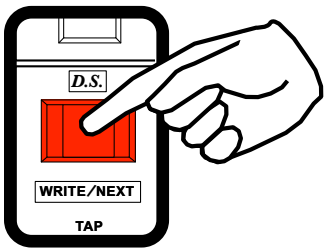
Tracks are selected by rotating the TRACK/PATTERN selector knob. When selecting a new track, playback will begin from the first step of the track.

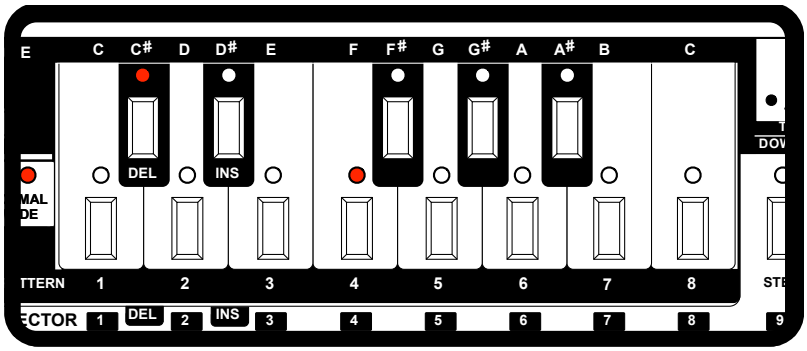
If the sequencer is running when selecting a new track, the current pattern will complete playback before switching to the first step of the newly selected track.



DISPLAYING THE CURRENT TRACK STEP

The current playing track step can be displayed on the keyboard LEDs by pressing and holding the TAP button. The display will update as the track step advances. This can be useful to determine the current playback location within a long track.

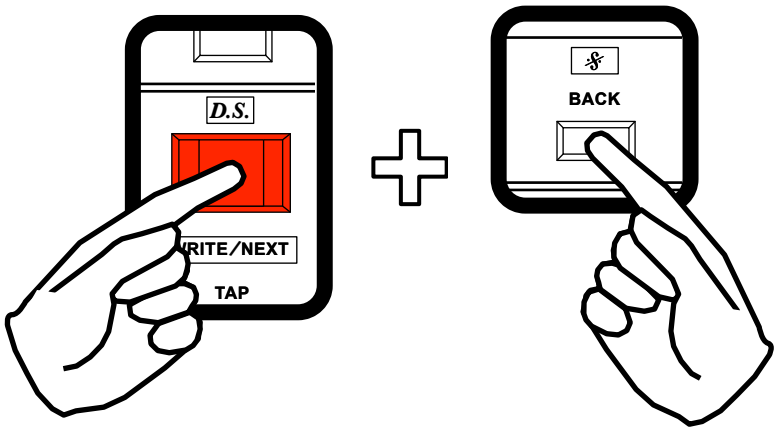




RESTARTING A PLAYING TRACK

While the sequencer is running in TRACK PLAY mode, the current track can be restarted, or forced to play from the first step immediately. This is useful for manually resyncing a track with an external source, or for creatively stuttering track playback.

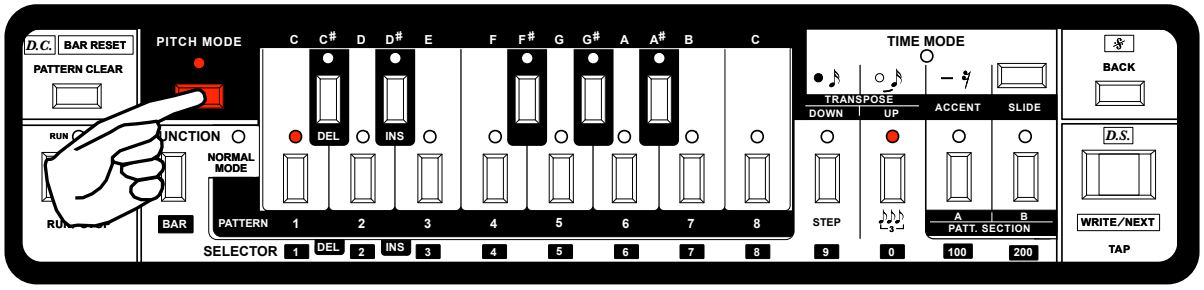
To restart a track, press and hold the TAP button, then press the BACK button. This combination is used to avoid accidentally restarting a track.



REALTIME PITCH MODE

Holding down the PITCH MODE button enters REALTIME PITCH MODE.

The ALL ACCENT, ALL SLIDE, NO ACCENT or NO SLIDE functions can be activated while in TRACK PLAY mode. These temporary functions are useful for dynamic variation to patterns during playback.

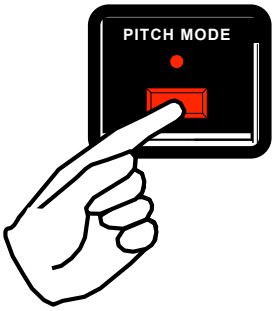


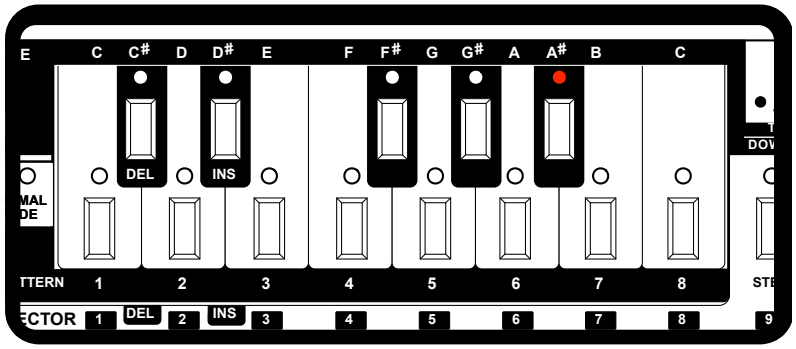
DISPLAYING TRACK TRANSPOSE VALUE

In TRACK PLAY mode pattern transposition cannot be changed, but the current programmed track transposition is displayed on the keyboard LEDs while holding the PITCH MODE button.

The display will update as the track step advances.

Remember that track transposition is separate from the stored pattern transpose value.

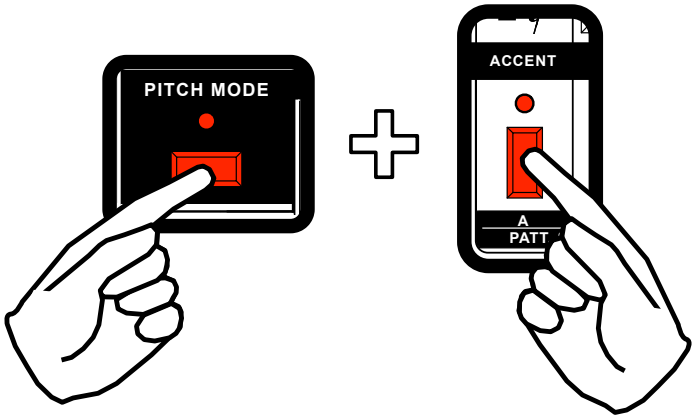




ALL ACCENT

The ALL ACCENT function forces all steps to be played back with ACCENT regardless of the pattern information. This creates a dramatic change in the sound of playback.

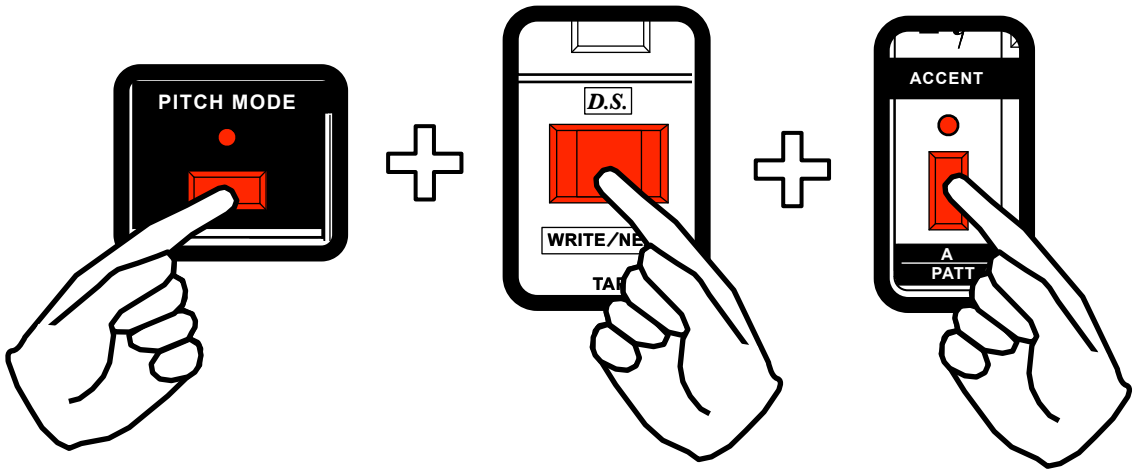
To engage ALL ACCENT, while holding down the PITCH MODE button, press and hold the ACCENT button. ALL ACCENT mode is disengaged when the ACCENT button is released.



NO ACCENT

The NO ACCENT function forces all steps to be played back without ACCENT regardless of the pattern information.

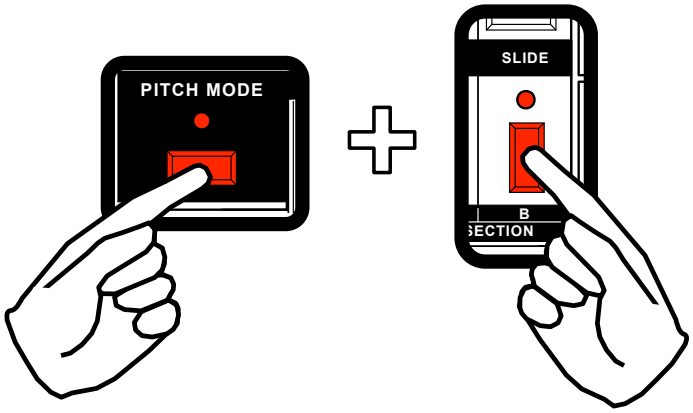
To engage NO ACCENT, while holding down both the PITCH MODE button and the TAP button, press and hold the ACCENT button. NO ACCENT mode is disengaged when the ACCENT button is released.



ALL SLIDE

The ALL SLIDE function forces all steps to be played back with SLIDE regardless of the pattern information. This creates a long note that decays to silence as the note slide between pitches.

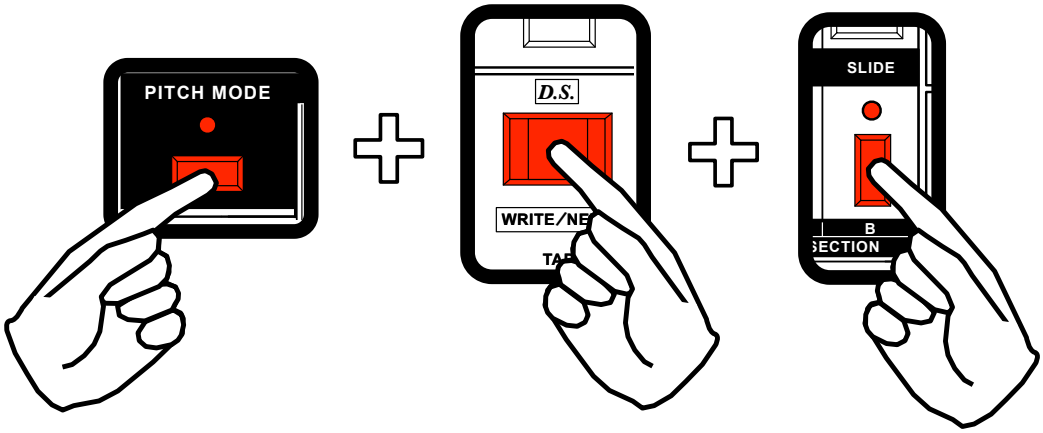
To engage ALL SLIDE, while holding down the PITCH MODE button, press and hold the SLIDE button. ALL SLIDE mode is disengaged when the SLIDE button is released.



NO SLIDE

The NO SLIDE function forces all steps to be played back without SLIDE regardless of the pattern information. This makes a pattern with programmed slides sound dramatically different.

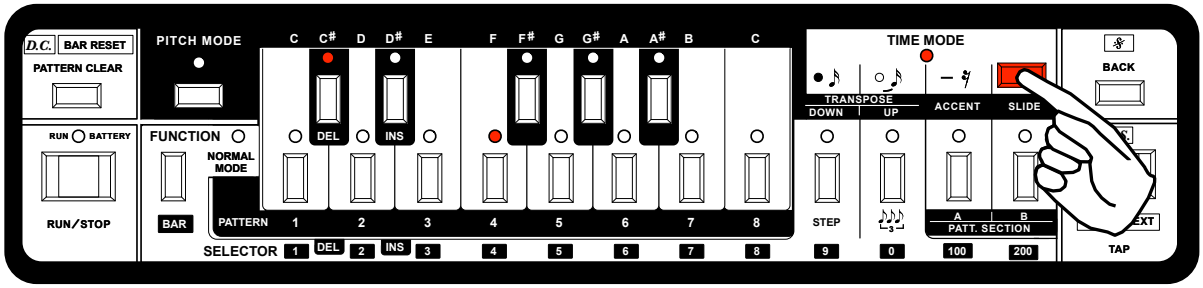
To engage NO SLIDE, while holding down both the PITCH MODE button and the TAP button, press and hold the SLIDE button. NO SLIDE mode is disengaged when the SLIDE button is released.



REALTIME TIME MODE

Holding down the TIME MODE button enters REALTIME TIME MODE. In this mode the CHOP, ALL REST and BUMP functions can be accessed to temporarily modify a pattern.

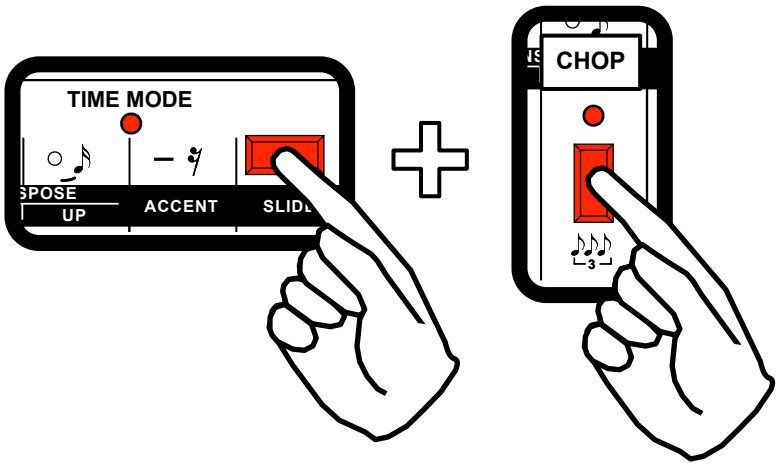
The current track step repeat is displayed on the keyboard LEDs and will dynamically change as the track step playback progresses.



CHOP

This function is interesting for realtime performance. While CHOP is activated, the gate signal of the synthesizer is pulsed on every step of the pattern. For long notes, this creates an interesting arpeggio type effect.

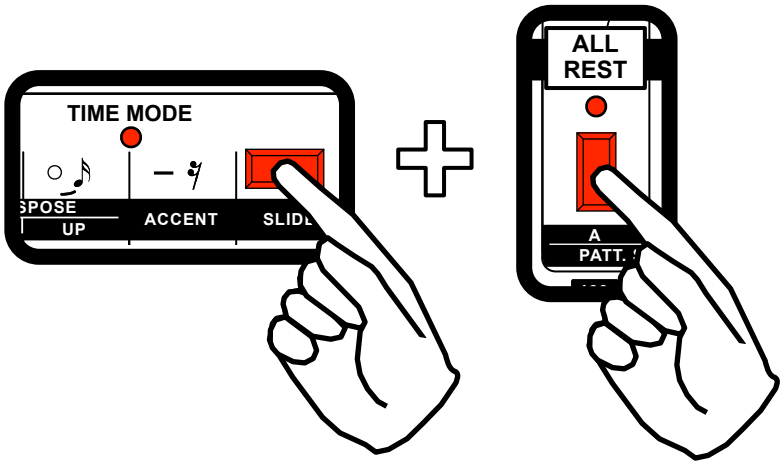
The CHOP function is accessed by pressing and holding the TIME MODE button and then pressing and holding down the TRANS UP button. CHOP mode is disengaged when the TRANS UP button is released.



ALL REST

The ALL REST function will essentially mute a pattern during playback by making every step play a REST event.

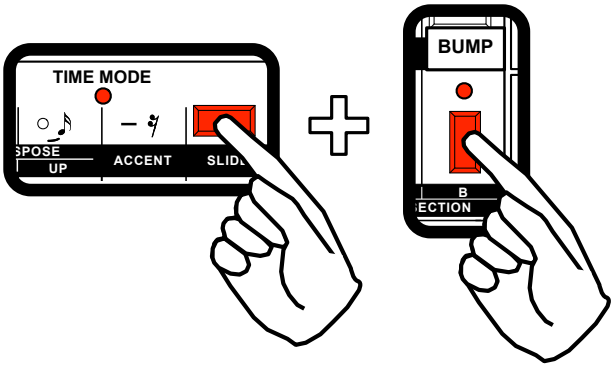
The ALL REST function is accessed by pressing and holding the TIME MODE button and then pressing and holding down the ACCENT button. ALL REST mode is disengaged when the ACCENT button is released.



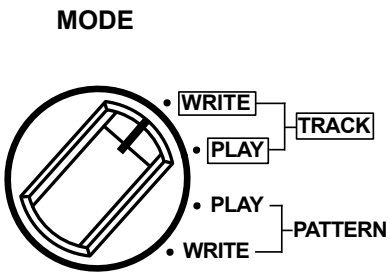
FILTER BUMP

The FILTER BUMP function will temporarily increase the filter cutoff frequency. This function requires that the filter control option of the Quicksilver 303 is installed.

The FILTER BUMP function is accessed by pressing and holding the TIME MODE button and then pressing and holding down the SLIDE button. FILTER BUMP mode is disengaged when the SLIDE button is released.



TRACK WRITE MODE



In TRACK WRITE mode, tracks can be created and edited. If the sequencer is running while in TRACK WRITE mode, the track steps are not advanced automatically (as they are in TRACK PLAY MODE).

Tracks can be a maximum of 64 steps in length and each step can be a chain of up to 8 patterns. A track step can also be programmed to repeat up to 16 times before advancing to the next track step.

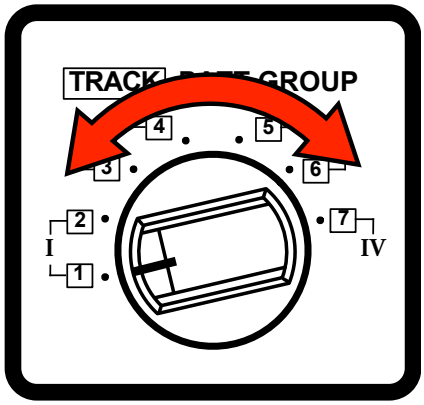
Each track step can also have a transpose amount applied, which is separate from the pattern transposition saved with each pattern.

To enter TRACK WRITE mode, rotate the mode selector knob to TRACK WRITE.

SELECTING TRACKS

The track to edit is selected by rotating the TRACK/PATTERN selector knob. When selecting a new track, the current track step will be reset to the first step of the track.

If the sequencer is running when selecting a new track, the current pattern will change immediately to the first step of the newly selected track.



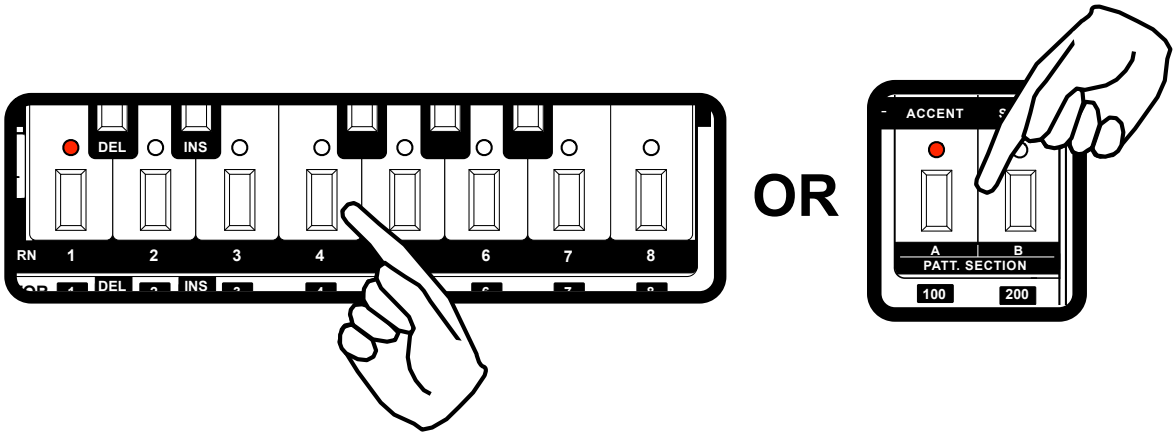
SELECTING PATTERNS

A pattern can be selected for each track step while the sequencer is playing or stopped. The new pattern is selected immediately regardless of the sequencer state. This makes it quicker to program many steps into a track.

To select a new pattern, press the appropriate pattern selector button.

The pattern section can also be changed by pressing one of the section selector buttons.

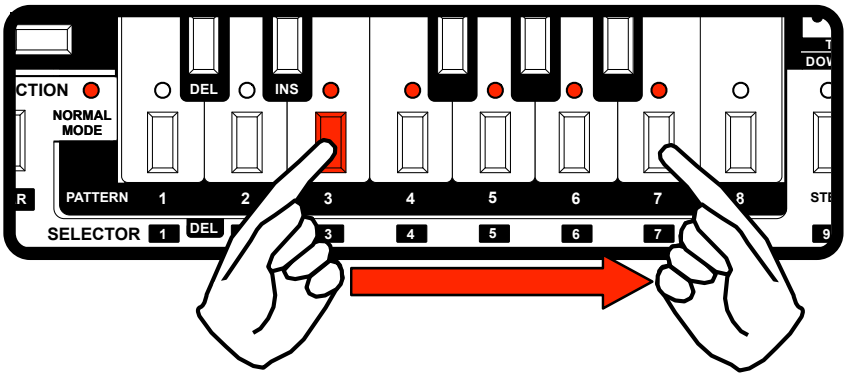
All selected patterns must reside in the same bank as the currently selected track. If the TRACK/PATTERN BANK selector knob is rotated, the currently selected track will be changed along with the pattern bank.



CREATING PATTERN CHAINS

In TRACK WRITE mode, each track step can have multiple patterns chained together to create a longer pattern loop. The chain will loop once per track step repeat. A pattern chain can be up to 8 patterns in length.

To create a pattern CHAIN, press and hold the pattern selector button for the first pattern in the the chain, then press the pattern selector button of the last pattern in the chain. The LEDs of the pattern buttons will light to show the current chain. The currently playing pattern is indicated with a blinking LED.

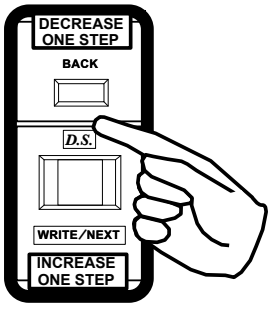


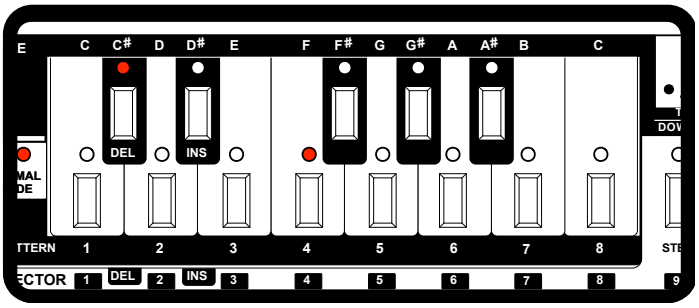
CHANGING THE CURRENT TRACK STEP

In TRACK WRITE mode, the track steps are not advanced automatically. This allows changes to be made to the track step before moving to a different track step.

The current track step can be selected by pressing the TAP/NEXT and BACK buttons.

Tap the TAP/NEXT or BACK button to change the current track step. If the TAP/NEXT or BACK button is held down, the track steps will begin to increment or decrement automatically. The currently selected track step number is displayed on the keyboard LEDs.



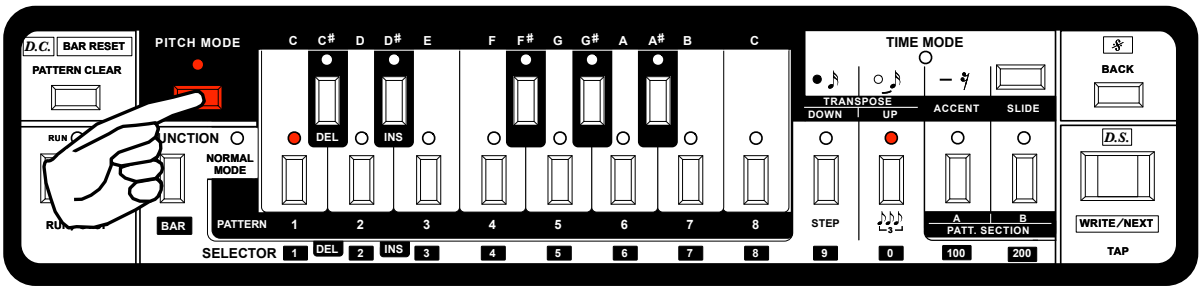


REALTIME PITCH MODE

Holding down the PITCH MODE button enters REALTIME PITCH MODE.

In this mode track steps can be transposed, or temporarily modified using the ALL ACCENT, ALL SLIDE, NO ACCENT or NO SLIDE functions.

The track step transpose value is in addition to any existing pattern transpose value.



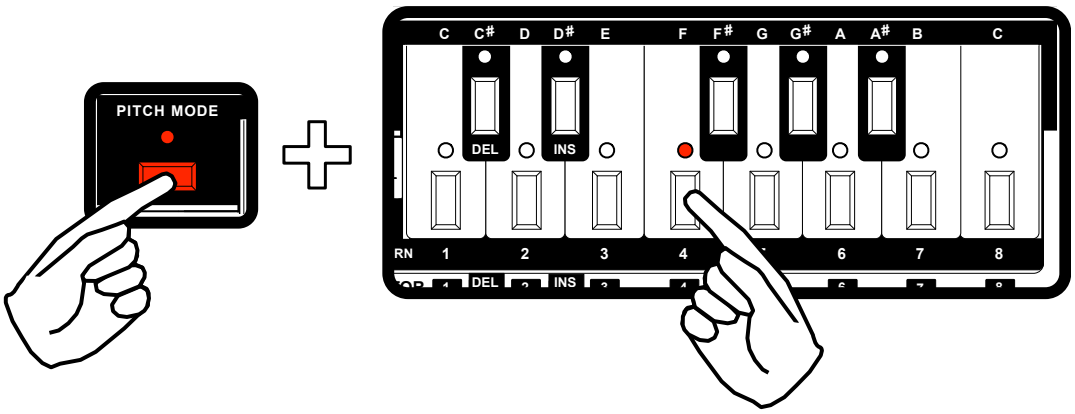
TRACK STEP TRANSPOSE

Track steps can be transposed higher in semitones, or 1 octave up or down. The amount of transposition is stored with the track step (not with the pattern).

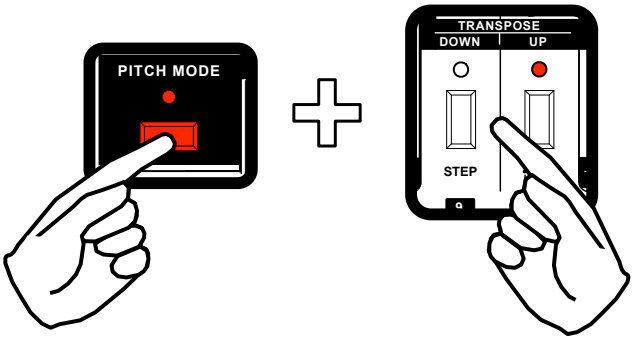
Transpose values set on track steps are not used in PATTERN PLAY or PATTERN WRITE modes.

This capability allows a single pattern to be used with different track step transpose values to create a musically useful sequence of transpositions.

To transpose upward in semitones. With the PITCH MODE button held, choose the amount of transposition by pressing one of the keyboard buttons.



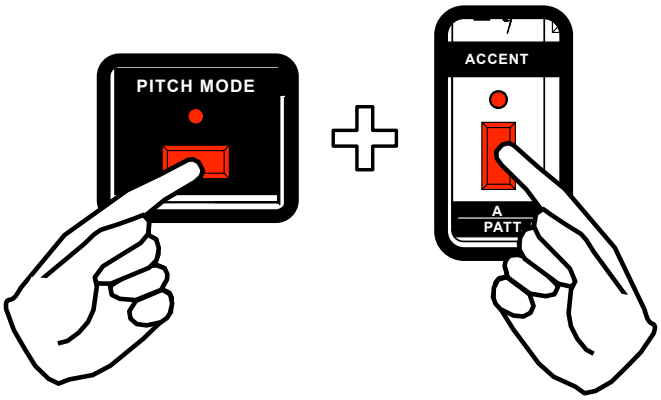
To transpose one whole octave up or down. With the PITCH MODE button held, press the TRANS DOWN or TRANS UP button.



ALL ACCENT

The ALL ACCENT function forces all steps to be played back with ACCENT regardless of the pattern information. This creates a dramatic change in the sound of playback.

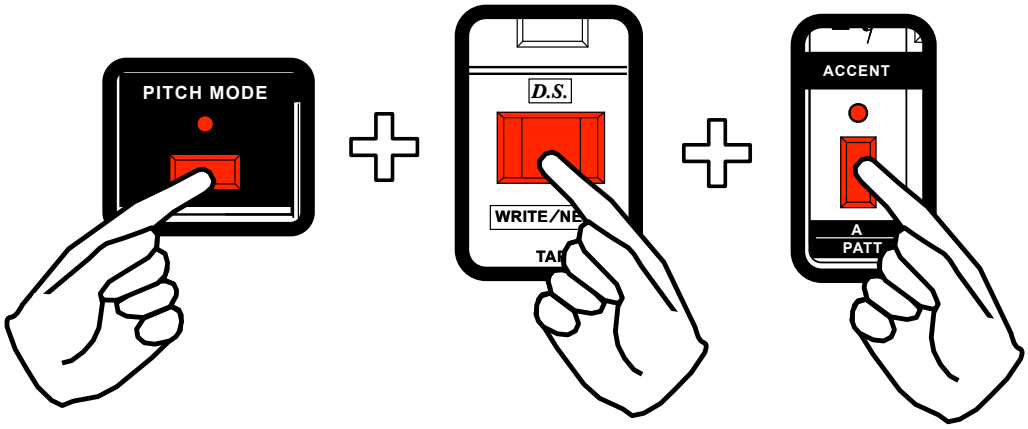
To engage ALL ACCENT, while holding down the PITCH MODE button, press and hold the ACCENT button. ALL ACCENT mode is disengaged when the ACCENT button is released.



NO ACCENT

The NO ACCENT function forces all steps to be played back without ACCENT regardless of the pattern information.

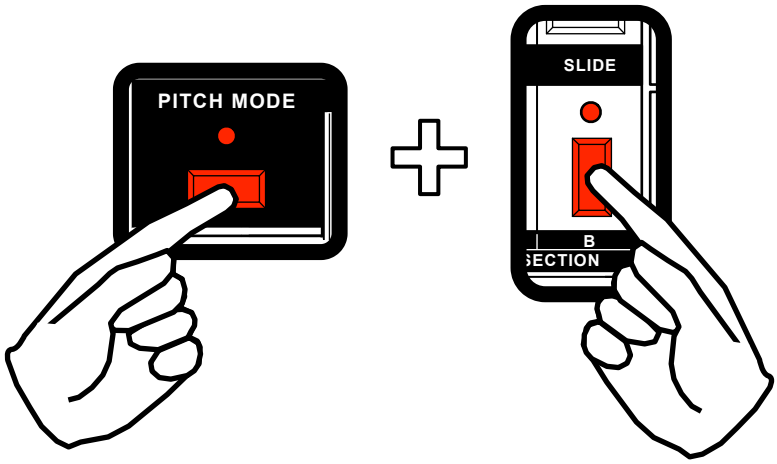
To engage NO ACCENT, while holding down both the PITCH MODE button and the TAP button, press and hold the ACCENT button. NO ACCENT mode is disengaged when the ACCENT button is released.



ALL SLIDE

The ALL SLIDE function forces all steps to be played back with SLIDE regardless of the pattern information. This creates long note that decays to silence as the notes slide between pitches.

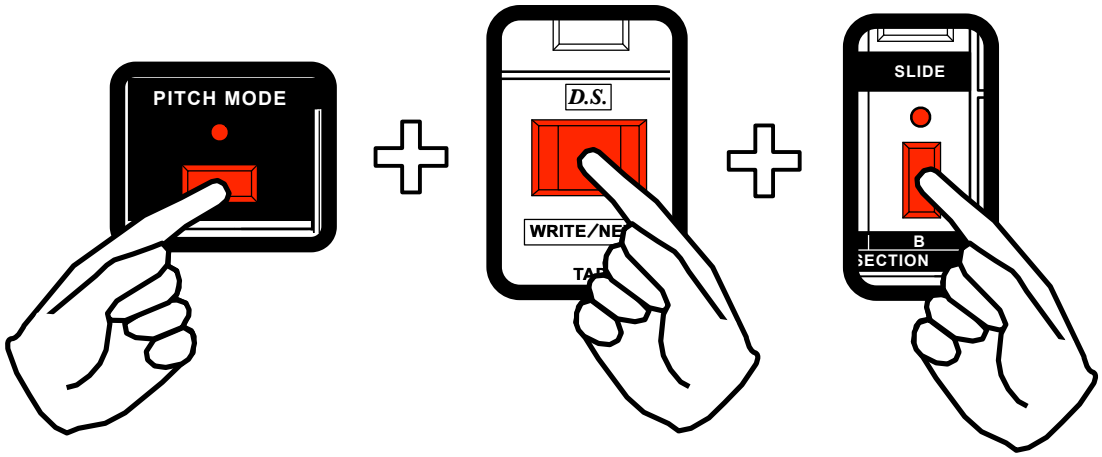
To engage ALL SLIDE, while holding down the PITCH MODE button, press and hold the SLIDE button. ALL SLIDE mode is disengaged when the SLIDE button is released.



NO SLIDE

The NO SLIDE function forces all steps to be played back without SLIDE regardless of the pattern information. This makes a pattern with programmed slides sound dramatically different.

To engage NO SLIDE, while holding down both the PITCH MODE button and the TAP button, press and hold the SLIDE button. NO SLIDE mode is disengaged when the SLIDE button is released.

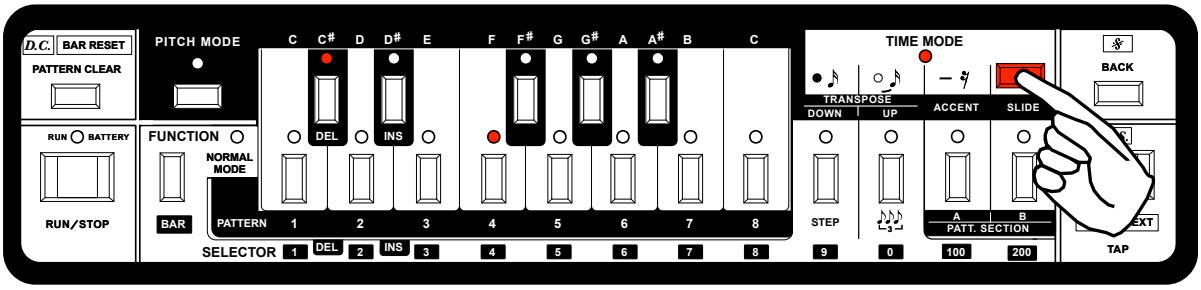


TRACK WRITE TIME MODE

Holding down the TIME MODE button enters TRACK WRITE TIME MODE.

In this mode, track step repeats and the last track step can be set.

The current number of repeats is displayed on the keyboard LEDs. If the current track step is the last step of the track, the four LEDs above the TRANS DOWN, TRANS UP, ACCENT and SLIDE buttons will light.

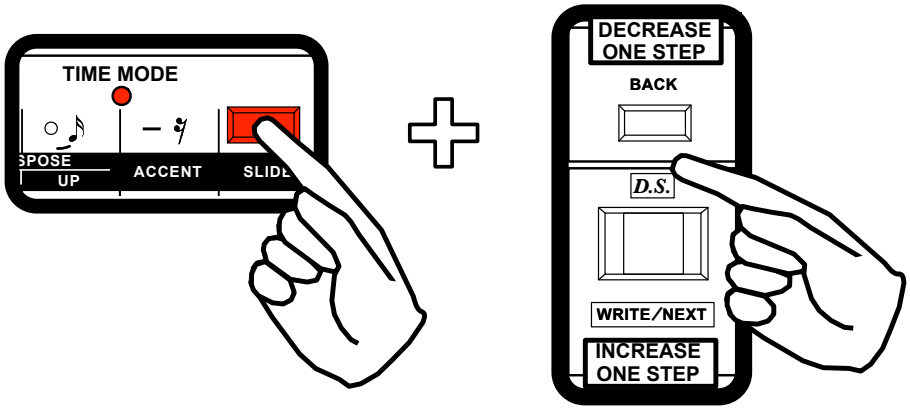


TRACK STEP REPEATS

Each track step can be set to repeat up to 16 times before advancing to the next step. If a track step has a pattern chain defined, the playback of the complete chain counts as one repeat. There are multiple methods of setting the current track step repeats.

SETTING REPEATS - USING TAP/NEXT AND BACK BUTTONS

The current track step repeats can be increased or decreased by one. While still holding the TIME MODE button, press the TAP/NEXT to increase the number of repeats or press the BACK button to decrease the number of repeats. The new repeat value will be displayed on the keyboard LEDs.

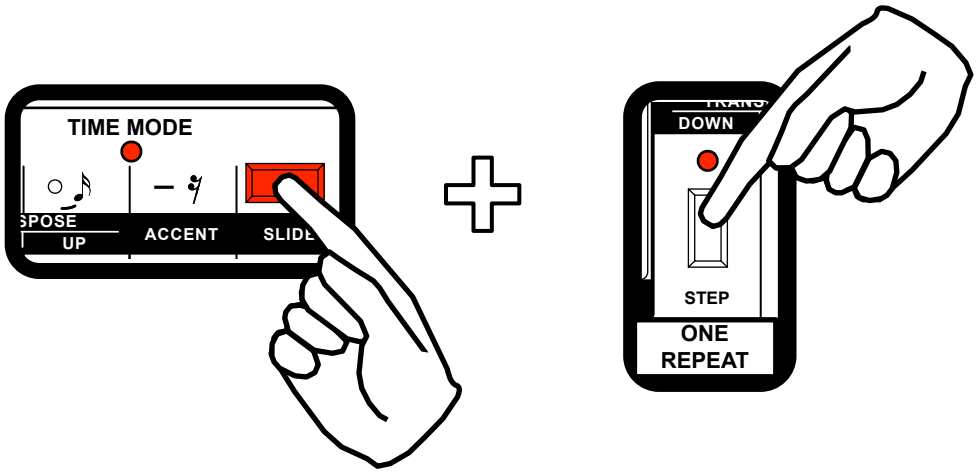


SETTING REPEATS - USING SHORTCUT BUTTONS

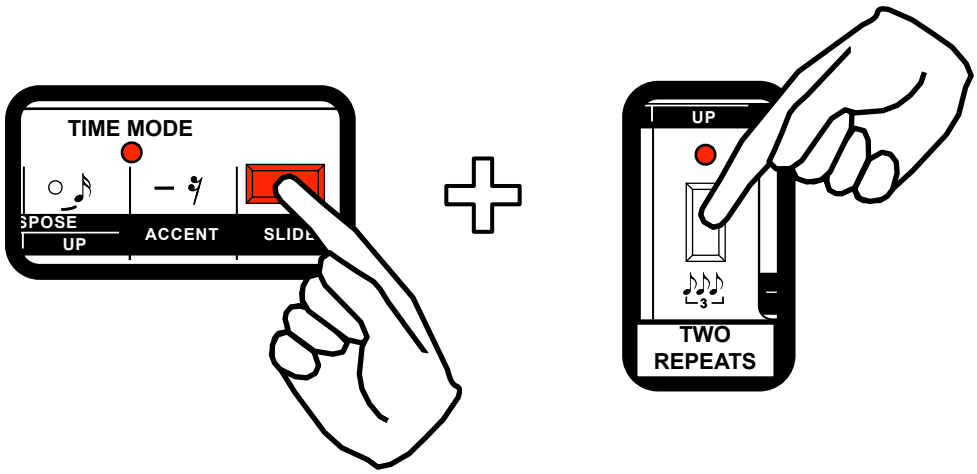
The number of track step repeats can be quickly set to some common values using the TRANS DOWN, TRANS UP, ACCENT and SLIDE buttons.

The new repeat value will be displayed on the keyboard LEDs.

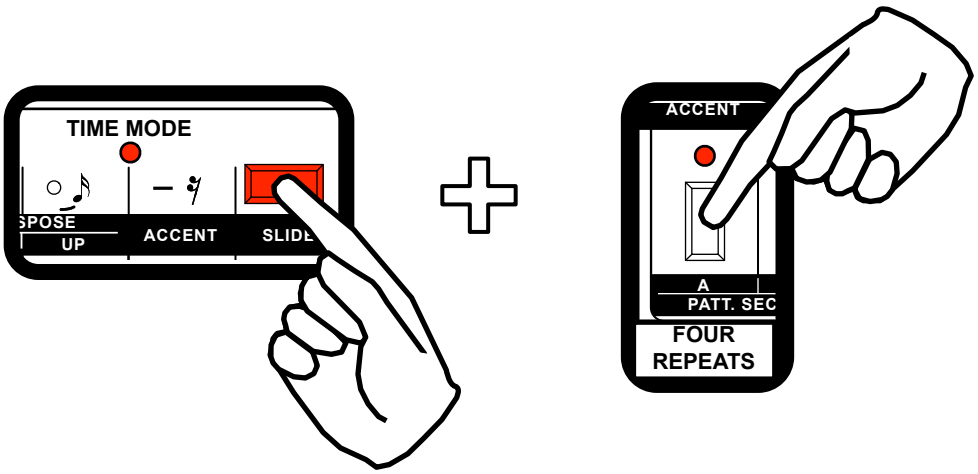
To set the repeats to one, press the TRANS DOWN button.



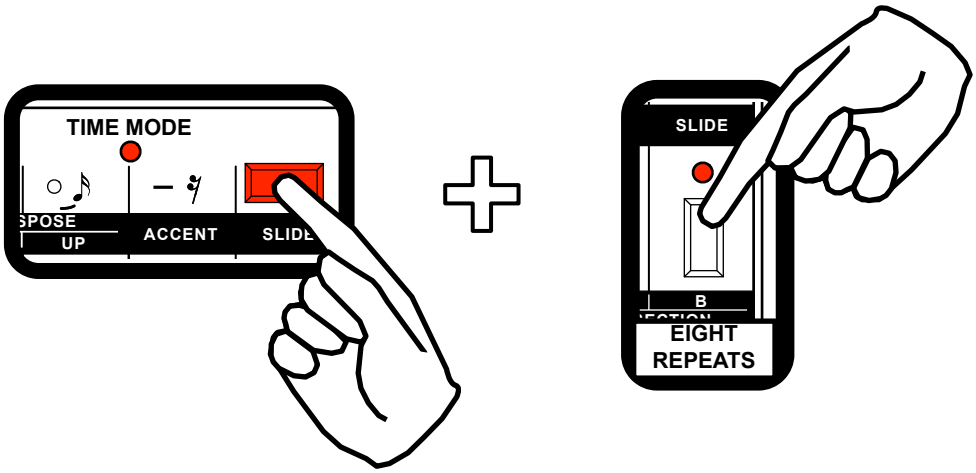
To set the repeats to two, press the TRANS UP button.



To set the repeats to four, press the ACCENT button.



To set the repeats to eight, press the SLIDE button.



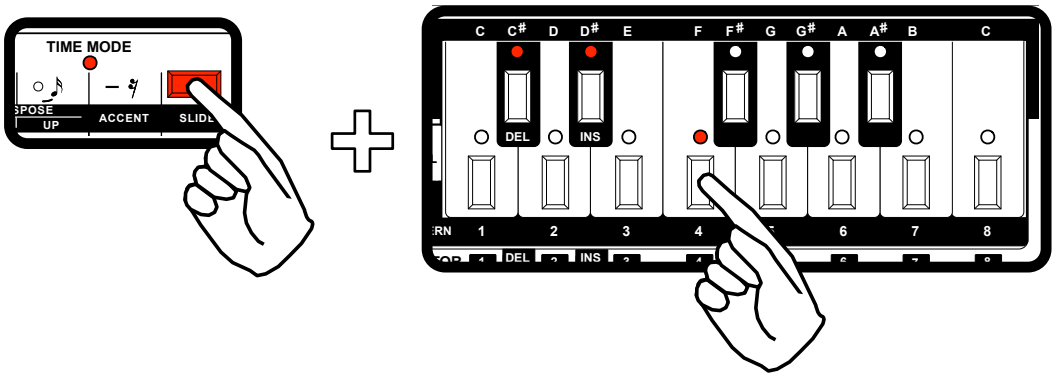
SETTING REPEATS - DIRECT KEYBOARD ENTRY

The current track step repeats is displayed on the keyboard LEDs while the TIME MODE button is held, but the repeats can also be set by directly pressing the keyboard buttons.

While holding the TIME MODE button, press the keyboard button corresponding to the number of repeats you wish to set.

The white keys select numeric values 1 through 8, while the "D sharp" button selects the multiplier value (x0 when off, x1 when on) This allows the full range of values to be selected (1-16).

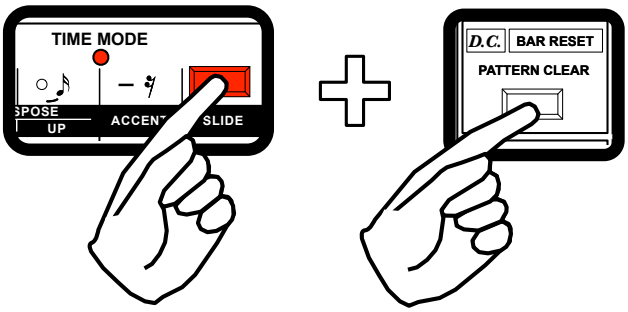
The keyboard LEDs will update to show the new repeat value.



TRACK LENGTH - SETTING THE LAST TRACK STEP

A track can have a maximum of 64 track steps defined. For shorter tracks, the last track step can be set. When the track reaches the last track step, it will loop back to the beginning of the track and continue playback. Track steps beyond the last step can still be edited in TRACK WRITE mode.

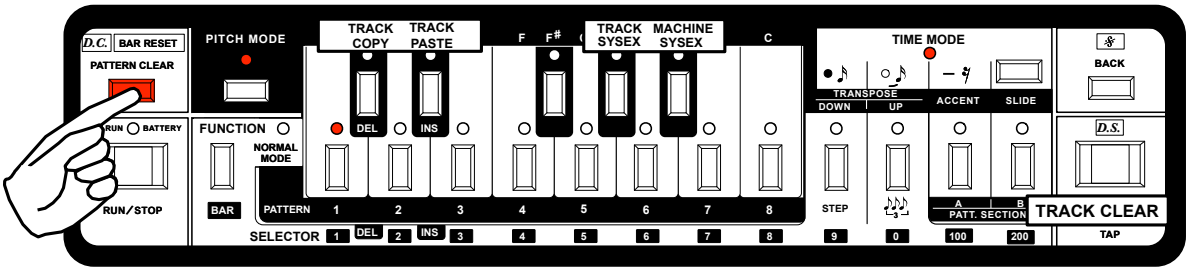
To set the current track step as the last step, while the TIME MODE button is held, press the CLEAR button. This will remove the last step flag from any previously defined track steps. When a track step is set as the last step, the four LEDS above the attribute buttons will light.



TRACK CLEAR MODE

Although the name suggests this function is used for clearing tracks, it also has other useful functions that have nothing to do with clearing. All of these additional functions are accessed while still holding down the CLEAR button.

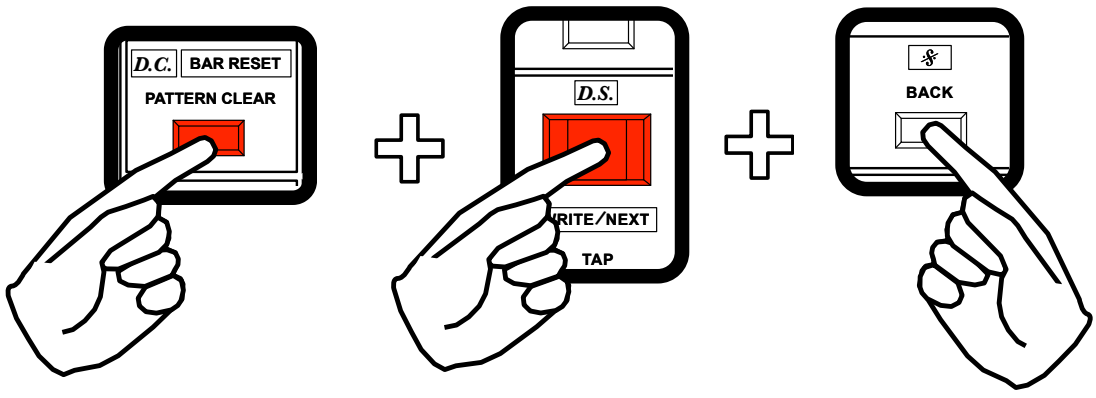
Track clear mode is accessed by pressing and holding the CLEAR button while in TRACK WRITE mode.



CLEARING TRACKS

To clear a track, press and hold the TAP/NEXT button while holding CLEAR. Then press the BACK button to confirm the action.

This sets each track step to pattern one, no transposition, one repeat and the track length to 64 steps. Track clearing cannot be undone!

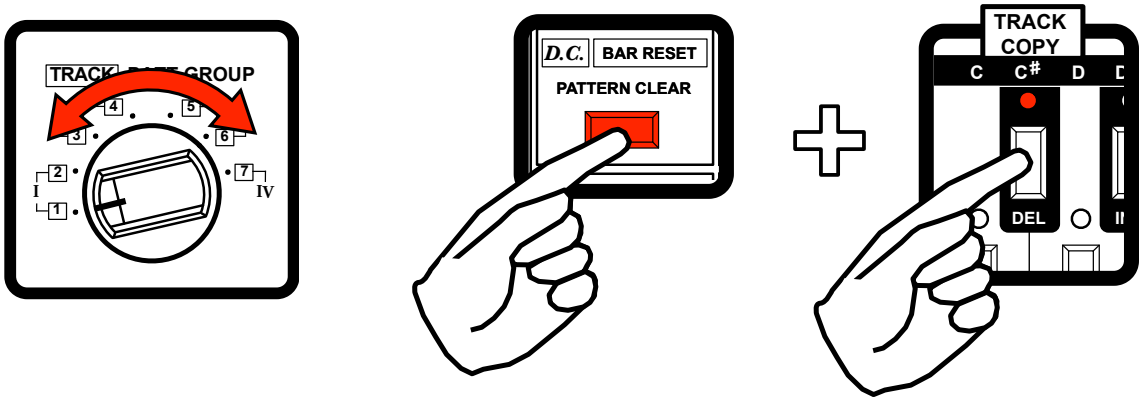


TRACK COPY

A track can be copied from one track location to another. This is useful for creating multiple copies of a track before editing. The copy buffer is also used for transmission of tracks over SYSEX. Any track can be copied into the track copy buffer for subsequent paste operations or SYSEX dumps.

First select the source track by rotating the TRACK / PATT GROUP selector knob.

To COPY a track, while holding the CLEAR button, push the "C sharp" keyboard button (also labeled as DEL - delete).

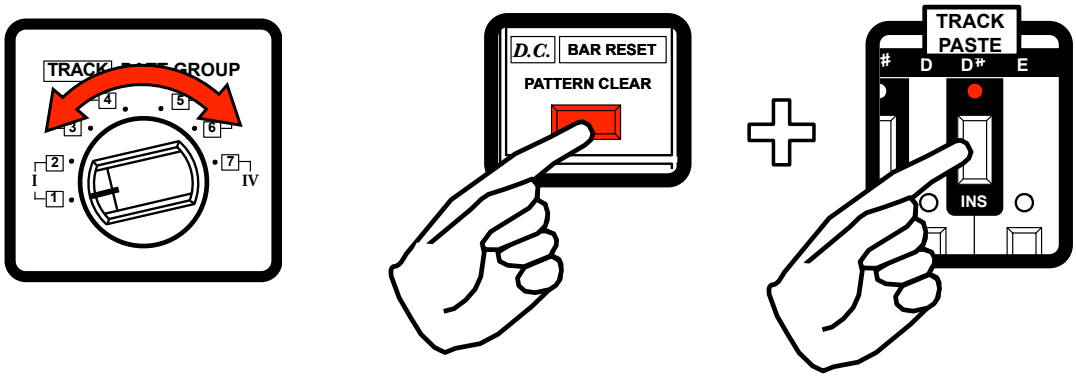


TRACK PASTE

The track stored in the track copy buffer can be pasted into another track location. The PASTE operation can be performed multiple times using the same track copy buffer information. This makes it easy to quickly create a few copies of a source track.

First select the destination track by rotating the TRACK / PATT GROUP selector knob.

To PASTE a track, while holding the CLEAR button, push the "D sharp" keyboard button (also labeled as INS - insert).



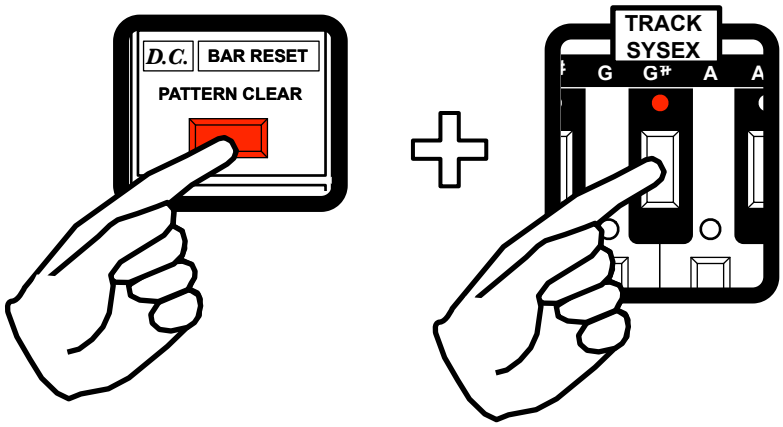
TRACK SYSEX DUMP

The track information of the track copy buffer can be dumped over MIDI as system exclusive information. This allows tracks to be backed up to a computer for storage.

To transmit a specific track, it should first be copied to the track copy buffer using the COPY function. When a SYSEX track dump is received over MIDI, it is placed into the track copy buffer and must then be pasted into the destination track location.

Track dumps can be sent and received while the sequencer is running.

To dump a track over MIDI, first copy the source track into the track copy buffer. Configure your receiving MIDI device to listen for the SYSEX dump information. While holding the CLEAR button, press the "G sharp" keyboard button. The track information stored in the track copy buffer will be immediately transmitted as MIDI information.



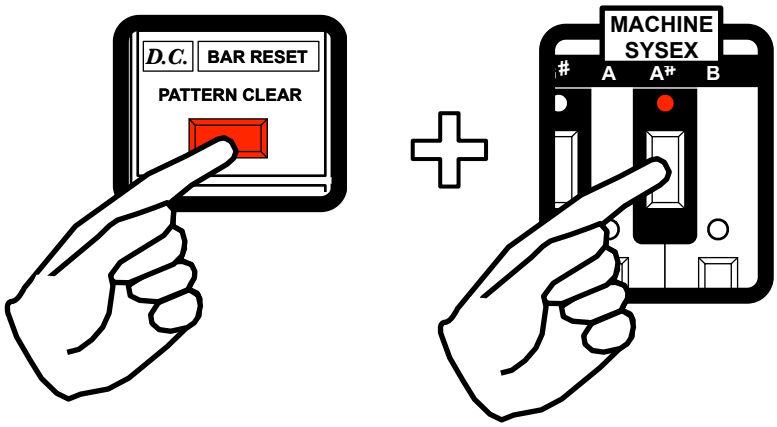
MACHINE STATE SYSEX DUMP

The entire contents of memory can be dumped in a single button press using the MACHINE SYSEX DUMP function. This dumps all 64 patterns, 7 tracks and the machine configuration as MIDI system exclusive data.

This function is useful for creating a snapshot of the entire machine for backup purposes.

The MACHINE STATE DUMP can be performed while the sequencer is running, but reception of a MACHINE DUMP while the sequencer is running wil result in audible timing glitches as the entire contents of memory are overwritten.

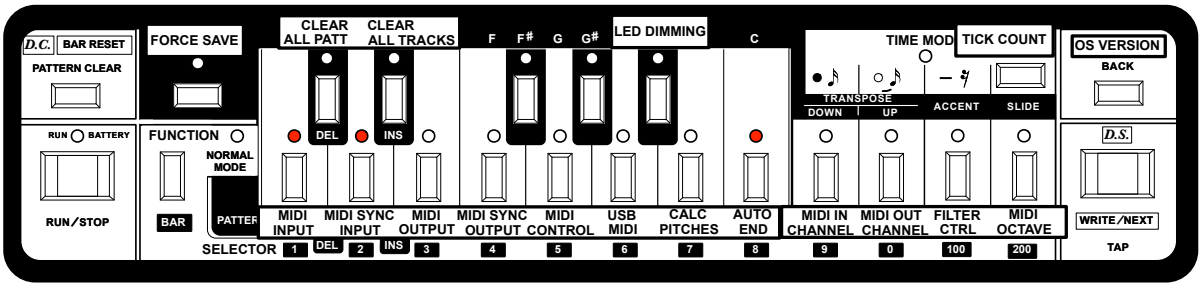
To dump the entire machine state over MIDI, configure your receiving MIDI device to listen for the SYSEX dump information. While holding the CLEAR button, press the "A sharp" keyboard button. The entire contents of memory will be immediately transmitted as MIDI information.



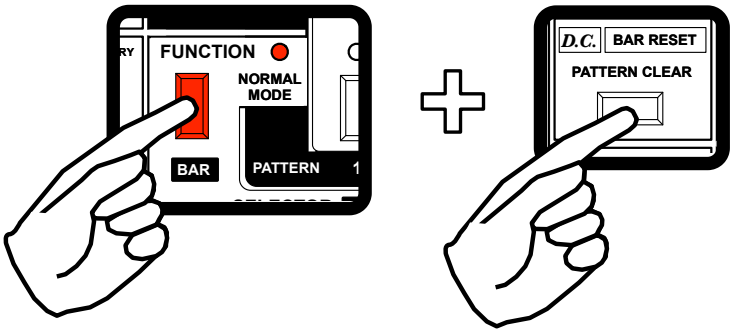
CONFIG MODE

CONFIG MODE is used to set user configurable options, such as MIDI SYNC input/output, MIDI channels, AUTO END, etc. These settings apply to the overall machine and are not specific to a pattern or track.

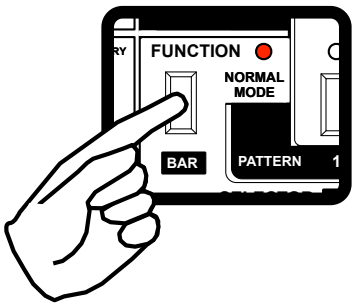
Config mode settings are stored to memory, and are retained even after power down.



To enter CONFIG MODE, from any other mode, press and hold the FUNCTION button, then press the CLEAR button.



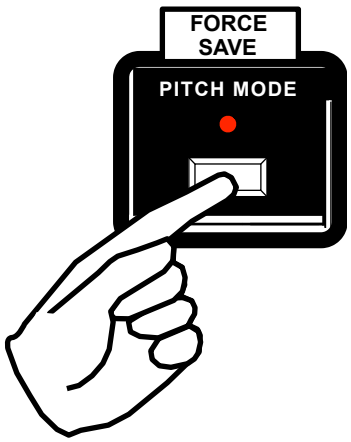
To exit CONFIG MODE, press the FUNCTION button.



SAVE MEMORY TO EEPROM

Please see the note regarding saving to memory at the beginning of this manual. Under normal usage it should not be required to use this function.

It is possible to force the machine to save RAM contents to EEPROM by pressing the PITCH MODE button while in CONFIG MODE.



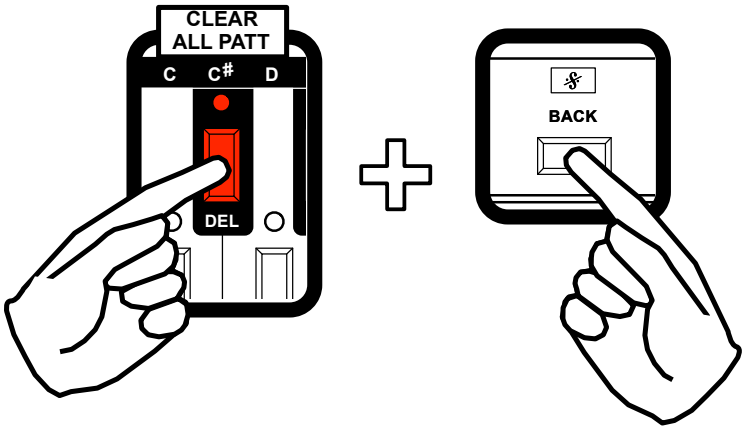
CLEAR ALL PATTERNS

Be careful, this function will clear all patterns in memory!

CLEAR ALL PATTERNS is useful for resetting all patterns to a blank state to work on a new project. This procedure cannot be undone, so be sure to save any patterns you wish to keep using MIDI SYSEX dump.

NOTE: When clearing all patterns, existing tracks will now point to empty patterns!

To clear all pattern data, press and hold the "C sharp" keyboard button. The TIME MODE LED will blink to warn you. Now press the BACK button to confirm the operation. The attribute LEDs will all light to indicate that the operation is complete.

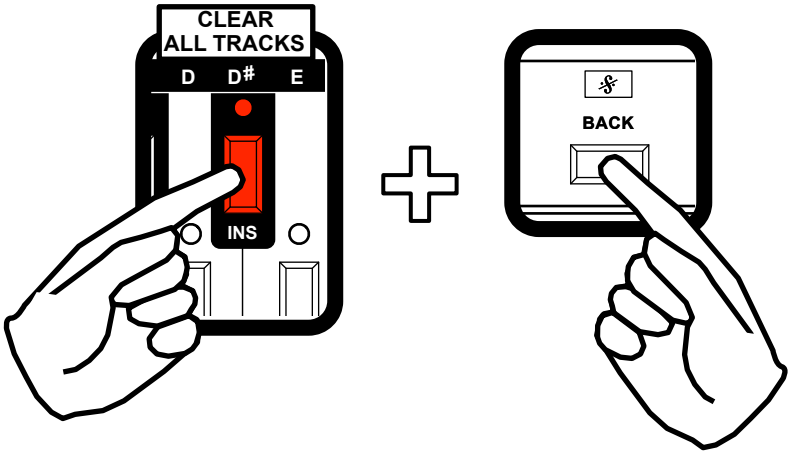


CLEAR ALL TRACKS

Be careful, this function will clear all tracks in memory!

CLEAR ALL TRACKS is useful for resetting all tracks to a blank state before starting work on a new project. This procedure cannot be undone, so be sure to save any tracks you wish to keep using MIDI SYSEX dump.

To clear all track data, press and hold the "D sharp" keyboard button. The TIME MODE LED will blink to warn you. Now press the BACK button to confirm the operation. The attribute LEDs will all light to indicate that the operation is complete.

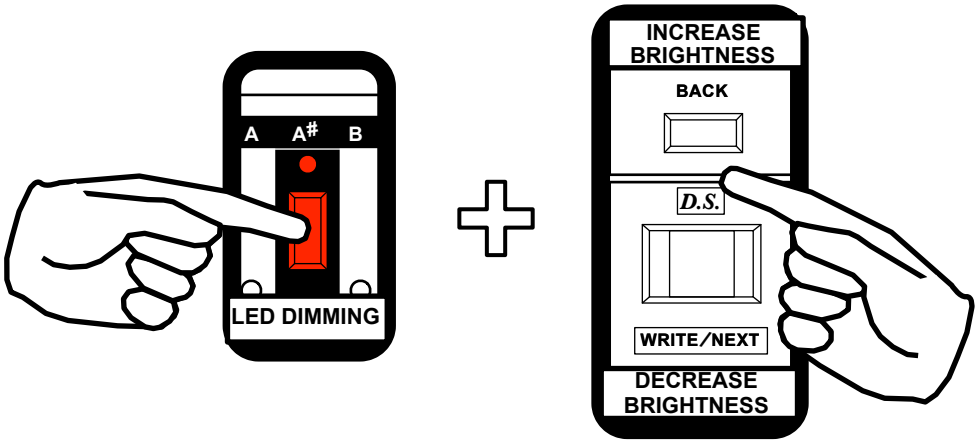


LED DIMMING

The brightness of the LEDs can be adjusted as needed. By dimming the LEDs, some inherent noise (audible on the audio output) can be reduced.

Depending on the LEDs installed in the 303, the brightness can be set at a usable level. For example, the original red LEDs will need a higher brightness setting than more efficient blue LEDs.

The LED brightness can be adjusted by pressing and holding the "A sharp" keyboard button, then increase or decrease the brightness by pressing the BACK and NEXT buttons.



MIDI NOTE INPUT DISABLE/ENABLE

Reception of MIDI notes can be disabled or enabled. This only effects reception of MIDI note information, but not reception of MIDI clock, or the MIDI control function (see MIDI CONTROL documentation).

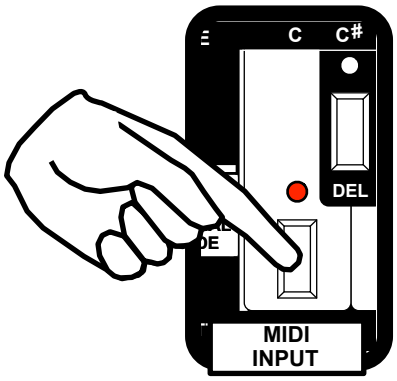
The internal synthesizer will respond to incoming MIDI note messages when the internal sequencer is stopped. This allows the synthesizer to be used as a "sound module" with an external sequencer or DAW.

Incoming MIDI note messages will also be recorded if the internal sequencer is playing in LIVE ENTRY MODE. This can be useful for recording sequences into the 303 sequencer from an external sequencer for further editing. MIDI notes with velocity greater than 65 will trigger ACCENT. Notes that are played legato (overlapping) will trigger the SLIDE circuit.

MIDI note reception listens on the configured MIDI input channel. See documentation on configuring the MIDI input channel.

To toggle MIDI NOTE INPUT on or off, in CONFIG MODE, press the "low C" keyboard button.

An illuminated LED indicates that MIDI NOTE INPUT is active.



MIDI SYNC INPUT

The reception of MIDI start/stop and clock messages can be turned on or off.

While MIDI SYNC INPUT is turned on, the 303 will automatically begin playback when a MIDI start or continue message is received. The sequencer tempo will lock to incoming MIDI clock messages after receiving a MIDI start message. When a MIDI stop message is received, the 303 will revert back to internal clock.

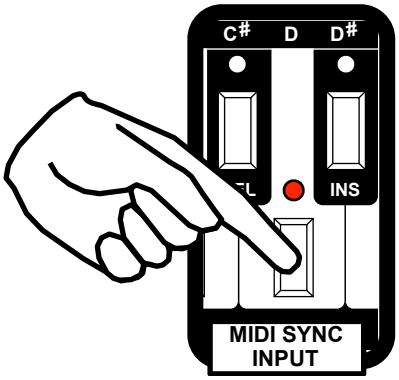
The internal clock generator always runs independently, regardless of the MIDI sync setting, enabling the sequencer to be started by pressing the START button, even when being controlled from external MIDI.

If a MIDI start is received after the internal clock is started, the 303 will automatically switch to MIDI sync, and then back to internal clock when MIDI stop is received without stopping the sequencer.

A subsequent MIDI start will restart the current pattern at the first step, allowing the sequencer to continue uninterrupted playback while remaining in sync. This is very useful for live performance!

To toggle MIDI SYNC INPUT on or off, in CONFIG MODE, press the "D" keyboard button.

An illuminated LED indicates that MIDI SYNC INPUT is active.



MIDI NOTE OUTPUT DISABLE/ENABLE

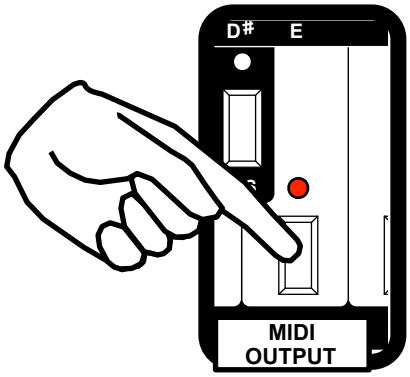
Transmission of MIDI notes can be disabled or enabled. This only effects transmission of MIDI note information from the internal sequencer, not transmission of MIDI clock.

This allows the internal sequencer of the 303 to play other MIDI enabled devices.

MIDI notes will be sent with velocity 127 for ACCENT steps. Slide steps will be sent as overlapping MIDI notes.

MIDI note transmission uses the configured MIDI output channel. See documentation on configuring the MIDI output channel.

To toggle MIDI NOTE OUTPUT on or off, in CONFIG MODE, press the "E" keyboard button.



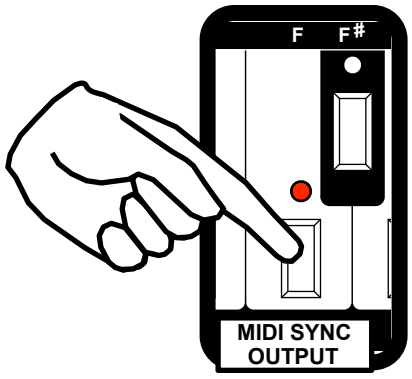
MIDI SYNC OUTPUT

MIDI start/stop and clock messages can be sent from the sequencer to an external device. MIDI start/stop messages are sent when starting and stopping the internal sequencer. MIDI clock messages are sent at the standard 24 ppqn.

If the 303 is synchronized to an external MIDI clock, it will retransmit MIDI sync messages (rather than passing the incoming messages as-is). Note that many modern DAWs cannot sync to incoming MIDI clock, and the few DAWs that can receive incoming clock do not synchronize to it well. If using the 303 with a DAW, it is recommended to set the 303 as MIDI sync slave.

To toggle MIDI SYNC OUTPUT on or off, in CONFIG MODE, press the "F" keyboard button.

An illuminated LED indicates that MIDI SYNC OUTPUT is active.



MIDI CONTROL

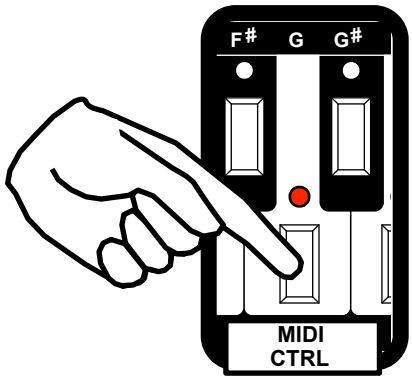
The Quicksilver 303 has a special "MIDI Control" function which allows MIDI note messages to operate the front panel buttons as if they were being physically pressed. This enables a keyboard controller or some other MIDI device to be used in place of the 303 front panel (which may be too fragile for vigorous live tweaking).

Some of the more "challenging" button combinations used on the front panel could be mapped to an external controller, such as an iPad, for quick use in a live performance situation.

Another interesting use of MIDI control mode, is to record the MIDI note messages being sent to the 303 and allow "programming sessions" to be replayed or edited, rather than storing the audio or pattern data.

Please see the MIDI CONTROL appendix for the MIDI note to button mapping.

To toggle MIDI CONTROL on or off, in CONFIG MODE, press the "G" keyboard button.



USB MIDI

The Quicksilver 303 allows for MIDI messages to be sent over the USB interface instead of using standard serial MIDI input/output.

When USB MIDI is enabled, MIDI messages are not received over the standard MIDI ports. MIDI messages will still be output from the standard MIDI ports.

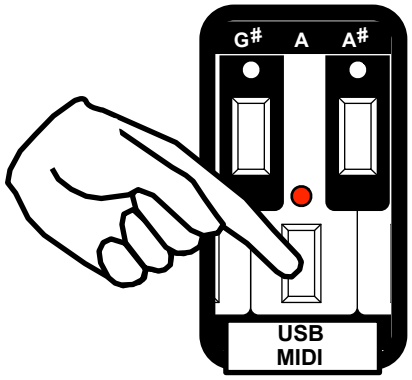
All other aspects of MIDI operation work exactly the same over USB MIDI.

NOTE: When USB MIDI is enabled, the CPU will consume more power. This will have an effect on battery life. If using USB MIDI it is recommended to run the TB-303 from a good power supply, not batteries.

When connecting the Quicksilver 303 to a host computer with USB MIDI enabled, the Quicksilver 303 will appear as a new MIDI interface named "Quicksilver 303". Select this interface to send or receive MIDI over USB.

NOTE: We have seen some machines exhibit "USB noise" from the audio output of the TB-303 while connected to a host computer via USB. This noise can be reduced somewhat with proper gain staging, or reconfiguring the grounding/power arrangement of the computer or TB-303. This noise can also be eliminated by using an external "USB isolator".

To toggle USB MIDI on or off, in CONFIG MODE, press the "A" keyboard button.

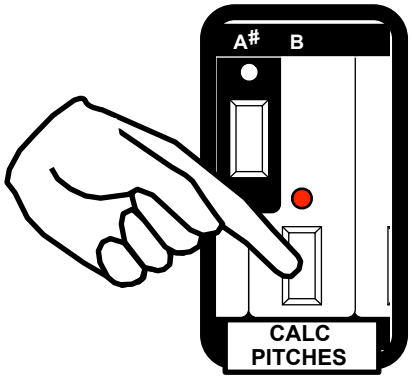


CALCULATE PITCHES

This option effects the behavior of PITCH ENTRY MODE. When CALCULATE PITCHES is set ON, PITCH ENTRY MODE will only show the pitches that are actually in use by a pattern. This means that a 16 step pattern with only 4 STEP events (in TIME MODE) is only using 4 PITCH steps. The CALCULATE PITCHES option eliminates the confusion of editing PITCH STEPS that may not be heard during pattern playback.

With the CALCULATE PITCHES option turned off, then all 16 PITCH steps can be edited in PITCH ENTRY mode, regardless of whether they are actually used in the pattern. This can be useful when combining PITCH entry with dynamic modification of the pattern length.

To toggle CALCULATE PITCHES on or off, in CONFIG MODE, press the "B" keyboard button.



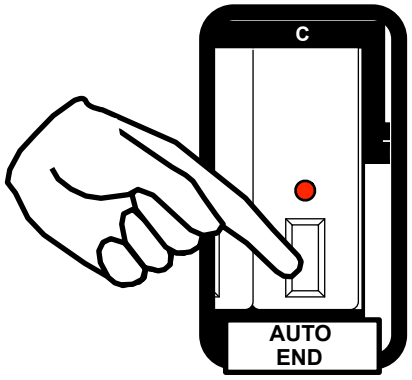
AUTO END PITCH/TIME ENTRY

On the original 303, in TIME ENTRY MODE, the mode would exit automatically back to NORMAL MODE when reaching the end of a pattern. This behavior can be enabled or disabled on the Quicksilver 303 using the AUTO END option.

When AUTO END is turned on, both TIME ENTRY MODE and PITCH ENTRY MODE will automatically exit back to NORMAL mode when reaching the end of the pattern. Additionally, if CALCULATE PITCHES is turned on, PITCH ENTRY MODE will automatically exit when reaching the last valid pitch step. Using the back button to move to previous steps will only allow the pattern to back up to the first step of the pattern, rather than looping back to the last step of the pattern.

When AUTO END is turned off, TIME ENTRY MODE and PITCH ENTRY MODE will not end automatically. When reaching the first or last note of a pattern, the current step will loop around to the beginning or end of the pattern. This is useful when you will be making a lot of realtime edits to a pattern during composition. To leave TIME ENTRY MODE or PITCH ENTRY MODE, some other mode must be selected, such as returning to NORMAL MODE by pressing the function button.

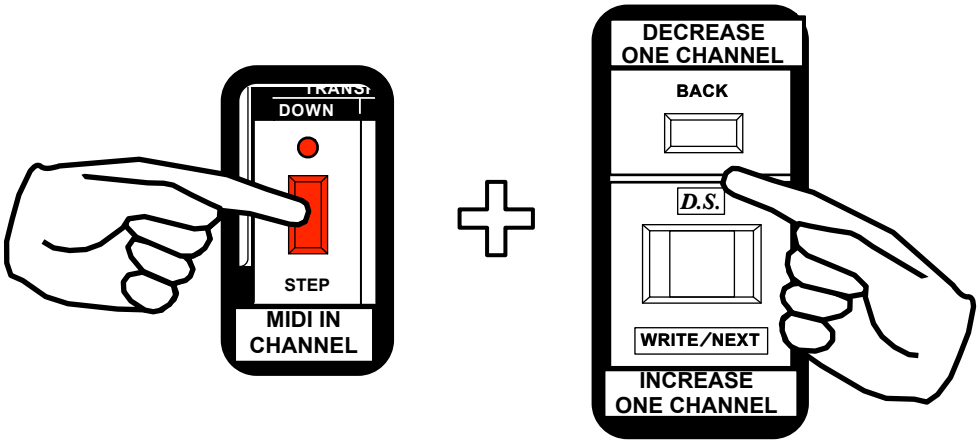
To toggle AUTO END on or off, in CONFIG MODE, press the "high C" keyboard button.



MIDI INPUT CHANNEL

The MIDI INPUT CHANNEL defines which MIDI channel will be used for incoming MIDI notes or MIDI CONTROL (notes).

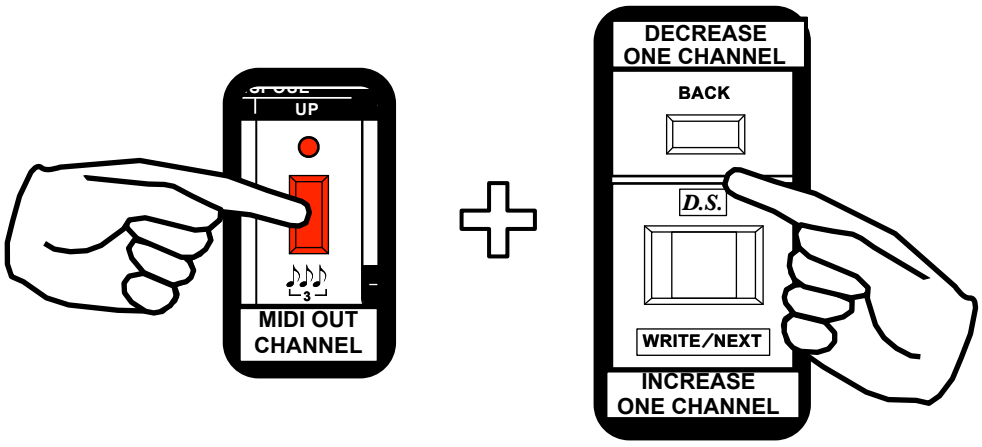
To set the MIDI INPUT CHANNEL, press and hold the TRANS DOWN button, then use the TAP/NEXT and BACK buttons to increment or decrement the current MIDI INPUT CHANNEL. The currently selected channel is displayed on the keyboard LEDs.



MIDI OUTPUT CHANNEL

The MIDI OUTPUT CHANNEL defines which MIDI channel will be used for transmitting MIDI notes from the internal sequencer.

To set the MIDI OUTPUT CHANNEL, press and hold the TRANS UP button, then use the TAP/NEXT and BACK buttons to increment or decrement the current MIDI OUTPUT CHANNEL. The currently selected channel is displayed on the keyboard LEDs.



FILTER CONTROLLER NUMBER

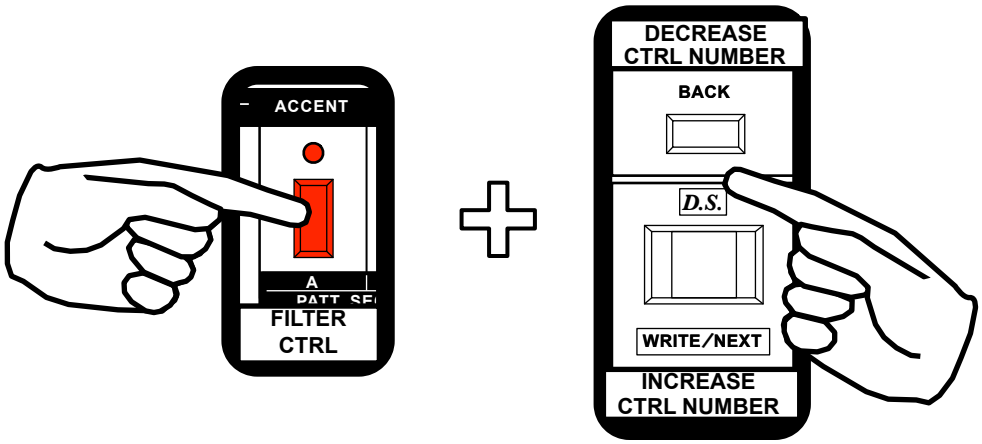
If the optional filter control circuit has been installed with the Quicksilver 303 CPU, the filter cutoff frequency can be controlled using a MIDI controller message. This allows for automation of the filter cutoff.

Any MIDI controller number from 1-127 can be assigned to control filter cutoff frequency on the same MIDI channel configured for MIDI input. Controller number zero is not used. The filter controller can also be turned completely off.

There is an interaction between the setting of the filter cut off freq knob and the MIDI control of the filter, allowing for extended cutoff range control. Experiment with different setting of the cut off freq knob to find a usable frequency range for the MIDI controller.

To change the MIDI controller number assigned to filter cutoff, press and hold the ACCENT button, then use the TAP/NEXT and BACK buttons to increment or decrement the controller number. The current value is displayed on the keyboard LEDs.

To turn MIDI filter control completely off, select controller number 128, which will be displayed by lighting all four LEDS of TRANS DOWN, TRANS UP, ACCENT and SLIDE. The controller number will "wrap around", so you can quickly turn the filter control off by decrementing from controller number 1 or incrementing from controller number 127.



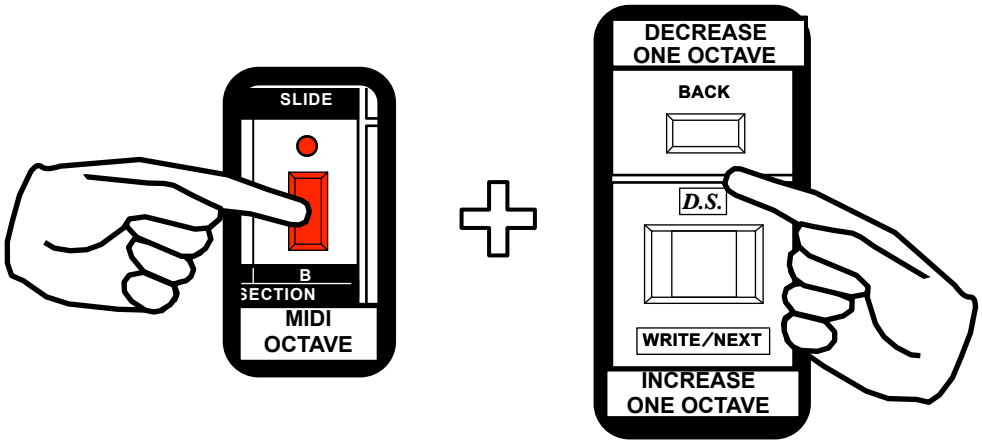
MIDI OCTAVE TRANSPOSE

The MIDI note range can be tranposed up or down by octaves. This setting only effects the MIDI input and output. The internal synthesizer is not effected by this setting.

Some particular bass synthesizers have the MIDI note range shifted to accomodate a larger range of playable note values. Also, some controller keyboards have a limited range that does not allow for playing some of the lowest bass notes.

The Quicksilver 303 can be matched up to the note range of other synthesizers and keyboards by changing the MIDI OCTAVE it uses to send and receive note information. The default value is 2, for normal MIDI range.

To set the MIDI OCTAVE TRANSPOSE value, press and hold the SLIDE button, then use the TAP/NEXT and BACK buttons to increment or decrement the MIDI octave. The current value is displayed on the keyboard LEDs.



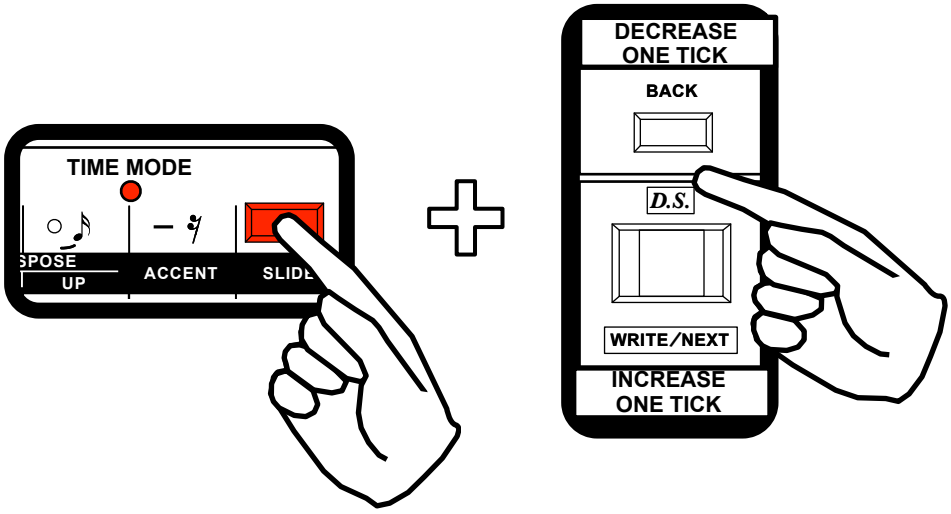
CLOCK TICKS PER NOTE

This setting should normally be left alone, but in some special cases you may wish to modify it. The number of "clock ticks" per note can be changed. The normal setting for a 4/4 pattern is 3 ticks per note, or 4 ticks per note in a triplet pattern. By changing the number of ticks, the internal sequencer can be forced to play faster or slower than normal in relation to the clock (either internal clock or MIDI clock messages).

As an example, if the number of ticks per note is changed to 6 ticks, a 4/4 pattern will play at 1/2 tempo. Conversely if the number of ticks per note is changed to 2 ticks, a triplet pattern will play at double tempo.

This setting is not stored to EEPROM memory, and will automatically change when selecting a new pattern.

To set the CLOCK TICKS PER NOTE, press and hold the TIME MODE button, then use the TAP/NEXT and BACK buttons to increment or decrement the number of ticks per note. The current value is displayed on the keyboard LEDs.



USING THE 303 AS A MIDI SOUND MODULE

The Quicksilver 303 can be used as a "simple" MIDI sound module. This allows the internal synthesizer to be played from an external sequencer or computer.

There are a few setup options that must be properly configured before the Quicksilver 303 can be used as a sound module.

1. The MIDI input channel must be configured, to match your MIDI source.
2. The MIDI note input option must be enabled. This allows the Quicksilver 303 to receive MIDI note messages
3. The MIDI sync input option must be disabled. This stops the internal 303 sequencer from starting with external sync. The Quicksilver 303 will not play external MIDI notes when the internal sequencer is running.
4. The MIDI CONTROL MODE option must be disabled.

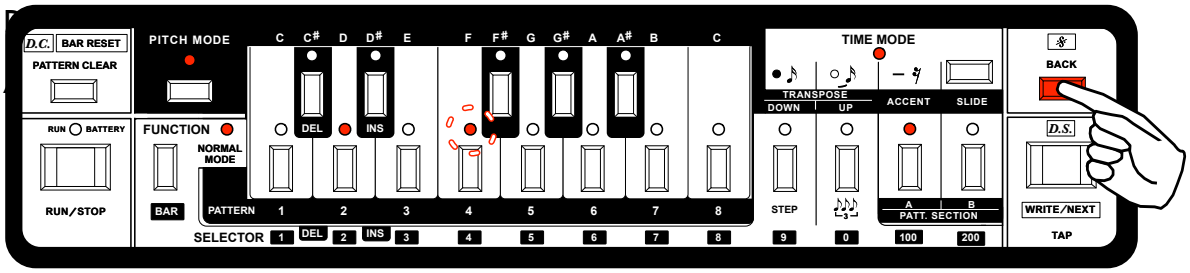
INITIALIZING MEMORY

The machine can be completely initialized during start-up, this will erase all tracks, all patterns and reset the machine config to default values.

Initialization can be used if the memory becomes corrupted, or if directed after an operating system update.

This action cannot be undone, so any patterns or tracks should be backed up using the MIDI SYSEX dump functions before initialization!

To initialize memory, press and hold the FUNCTION button and the PATTERN CLEAR button while turning on the machine.



OS Version 1.24 displayed on the keyboard LEDs

DISPLAYING THE OS VERSION

To display the current CPU operating system version, in CONFIG MODE, press the BACK button.

The major version number is shown on the 100 or 200 LEDs (ACCENT and SLIDE) as a solidly lit LED.

The minor version numbers are shown as a solid and a blinking LED. Solid for the 10s value, blinking for the 1s value. If the minor values are the same, the LED will blink alternately.

UPDATING THE OPERATING SYSTEM

Occasionally the operating system may need to be updated for bugfixes or new features. This can be done using the USB connection to the CPU.

There is a video of the update process available from the Social Entropy website.

Start by downloading the new OS hex file and the update utility from the Social Entropy website. (http://www.socialentropy.com/quicksilver).

You will need the update utility to get the new operating system onto the CPU.

From the update utility, choose the new OS hex file to upload to the Quicksilver 303 CPU.

Now, set the update utility to automatic mode by pressing the AUTO mode button in the update utility.

After installing the update utility and loading the OS hex file, you will need to connect the Quicksilver 303 CPU to your PC using a standard USB cable.

If you have the USB dongle installed, the USB port should be available inside the battery compartment of the 303. Otherwise, you will need to (carefully) open the case of the 303 to access the USB port directly on the CPU.

With the 303 connected to your PC, you will now boot the 303 in update mode. To do this, press and hold both the TAP/NEXT button and the BACK button while turning on the machine.

You should see the update utility recognize the Quicksilver 303 and begin uploading the new operating system automatically, you can release the TAP/NEXT and BACK buttons now.

After the new operating system is loaded, the TB-303 will reboot itself running the new OS.

You can check the OS version in config mode by pressing the BACK button.

That completes the upgrade process!

MIDI Implementation Chart

FUNCTION		TRANSMITTED	RECOGNIZED	REMARKS
BASIC CHANNEL	DEFAULT	1 - 16	1 - 16	MIDI input and output channels can be set independently. Channel settings are stored in EEPROM memory
	CHANGED	1 - 16	1 - 16	
MODE	DEFAULT	X	X	
	MESSAGES	X	X	
	ALTERED	********		
NOTE NUMBER		5 - 63[1] 6 - 63	6 - 63	MIDI notes are used for "MIDI Control" mode as well as sound generation.
VELOCITY	NOTE ON	O[2]	O[2]	Only two velocities are used, one for unaccented notes, one for accented notes.
	NOTE OFF	O	O	
AFTERTOUCH		X	X	
PITCH BEND		X	X	
CONTROL CHANGE		X	O	The controller number for filter cutoff is configurable
PROGRAM CHANGE		X	X	
SYSTEM EXCLUSIVE		O	O	Transmission of pattern, track and machine configuration
SYSTEM COMMON		X	X	
SYSTEM REALTIME	CLOCK	O	O	
	COMMANDS	O	O	
AUX MESSAGES		X	X	

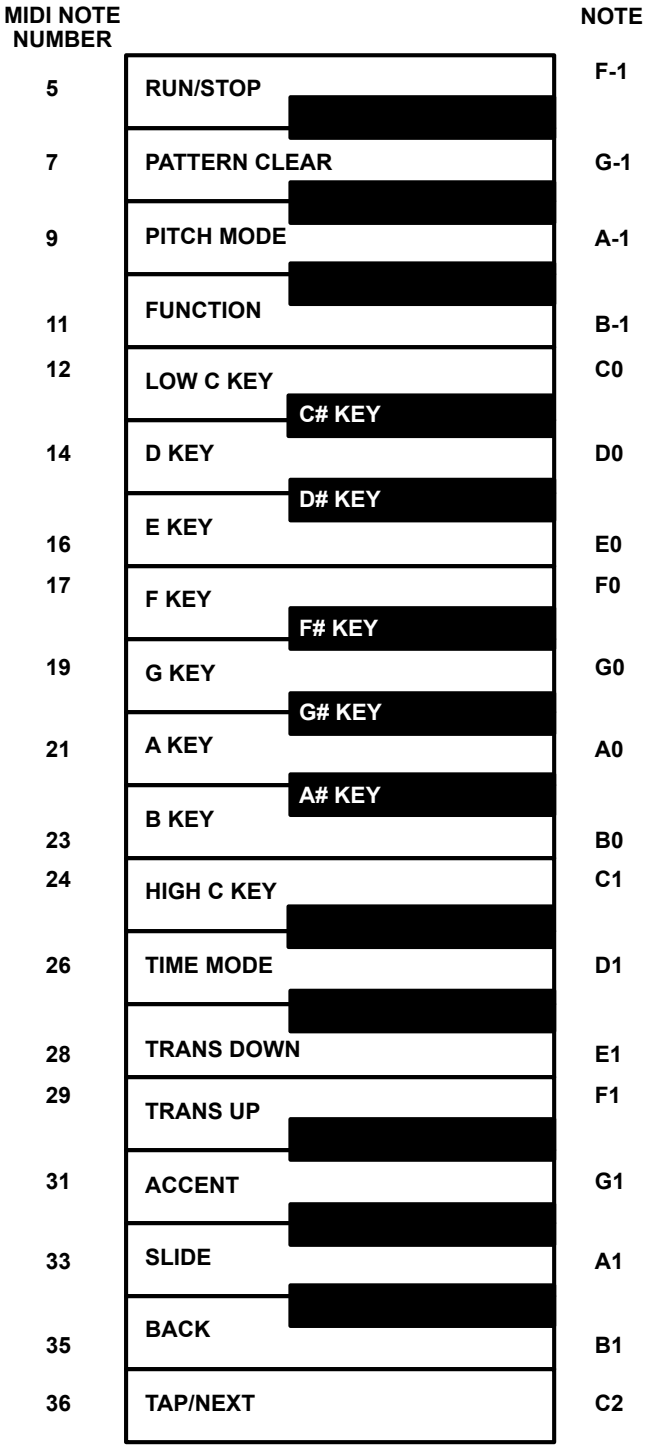
NOTES

[1] The valid sound generating note range is 6-63, MIDI Control mode starts at note number 5

[2] Note transmission uses velocity 63 for unaccented notes, 127 for accented notes

O : Yes
X : No

MIDI Control Mode Button Mapping



This mapping is used for incoming MIDI notes when MIDI CONTROL MODE is enabled.

Each MIDI note corresponds to a button on the TB-303 front panel.

The RUN/STOP LED will not light when the sequencer is started with MIDI Control messages.

Quicksilver 303 User Guide

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