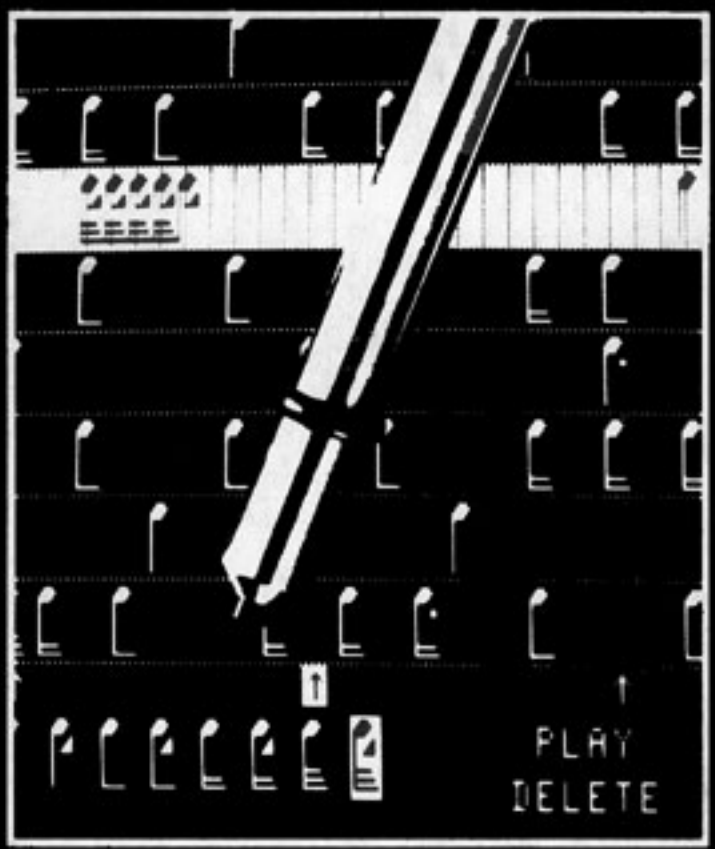

FAIRLIGHT

COMPUTER MUSICAL INSTRUMENT

F A I R L I G H T

- C M I -

Page R - Real Time Composer

OPERATION MANUAL

JULY 1983

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PAGE R : REAL-TIME COMPOSER - An Introduction -

The operation of the R.T.C. (Real-Time Composer) is based on the idea of musical "patterns". This term is often used in modern music to describe what all (or most) of the instruments are playing at a given point in a song. For example, one section of a typical song might consist of 6 bars of one pattern, 2 bars of a second pattern, 4 bars of a third, etc.

The basic building-block of an R.T.C composition has thus been called a **PATTERN.**

A PATTERN is a **1-bar** SCORE for **8 monophonic keyboards.** It consists of eight individual sequences of musical notes. The sequences are numbered from 1 to 8, corresponding to the KEYBOARD MAPS that are provided on PAGE 3. When a pattern is played, the eight sequences are reproduced simultaneously, each being "performed" on its associated keyboard map.

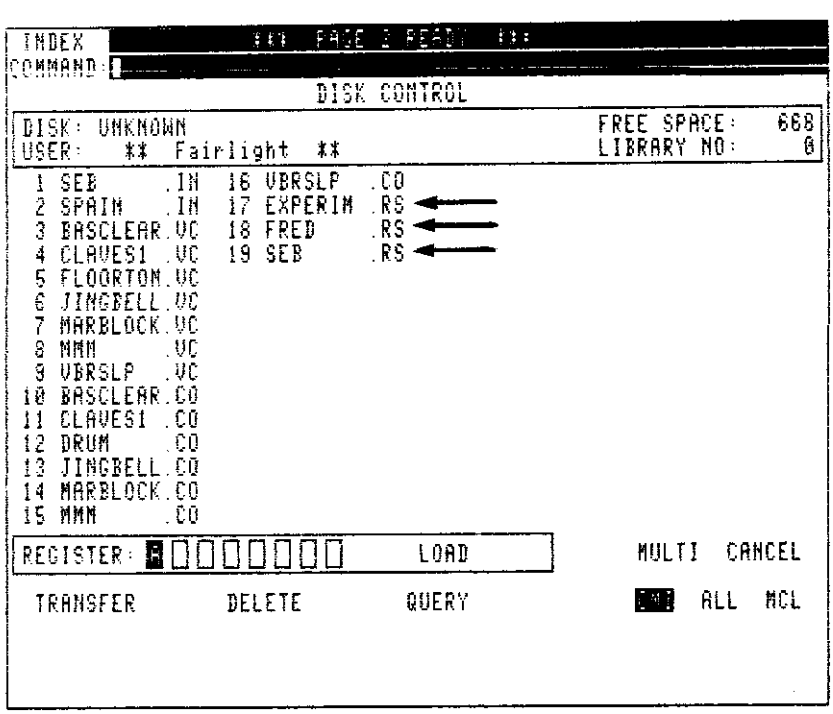
When using the R.T.C., a musical piece is developed by creating up to 255 different patterns and a list of the order in which these are to be played. The tools for doing this are provided by two separate interactive editing systems:

1) the PATTERN EDITOR to display, create or modify the musical patterns

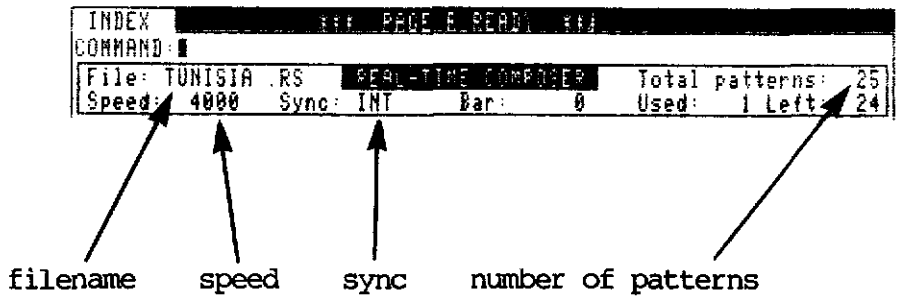
2) the SONG EDITOR to establish the playing order.

All of the patterns and the playing order for a single piece are stored together on disk in one FILE with an ".RS" suffix. Most Page R functions are **disabled** until you either LOAD an existing file or create a NEW file.

Here is a typical PAGE 2 display with some Page R files ...



When PAGE R is selected, the screen area just below the command line shows the name of the current file its SPEED and SYNC settings, and number of patterns available.



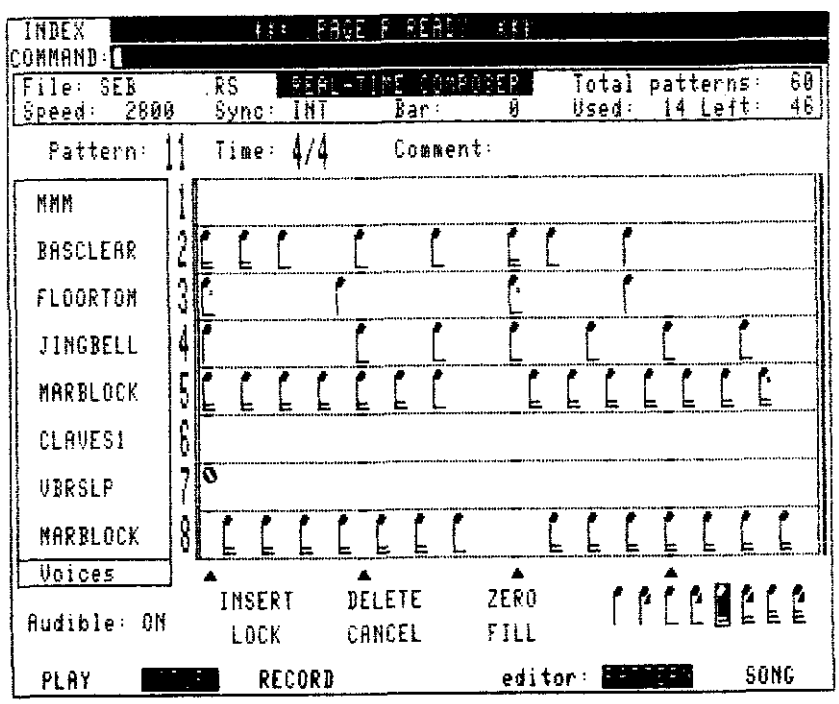
The appearance of the remainder of the screen is determined by which **EDITOR** is selected.

To select ...

PATTERN EDITOR

type: E<return>

lightpen:
=><PATTERN>

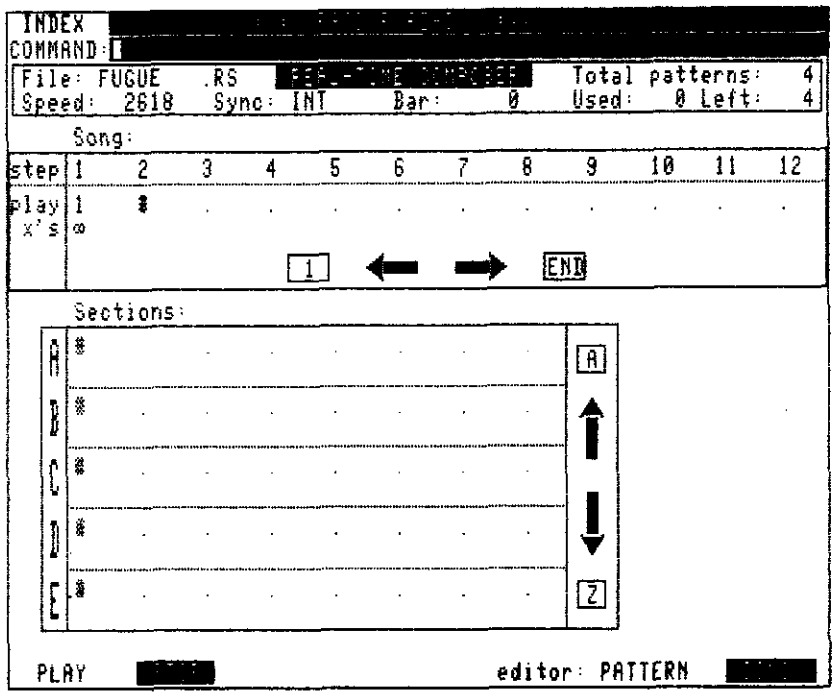


To select ...

SONG EDITOR

type: E<return>

lightpen:
=><SONG>



THE PATTERN EDITOR displays one complete pattern at a time.

When PAGE R is **STOPPED**, any pattern may be selected for viewing or editing.

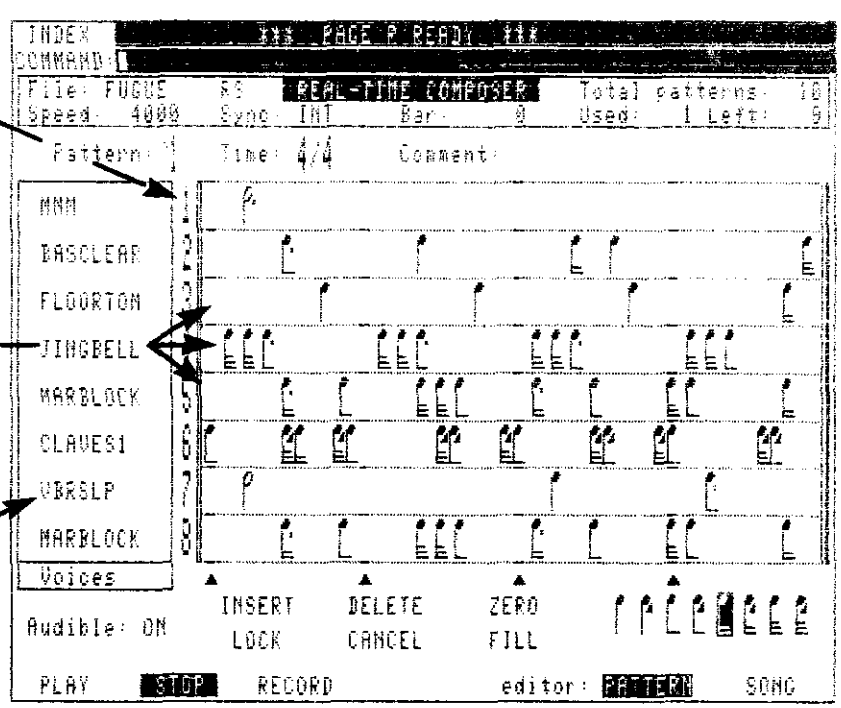
When **PLAYING**, patterns are displayed automatically as they occur and may be edited in real-time.

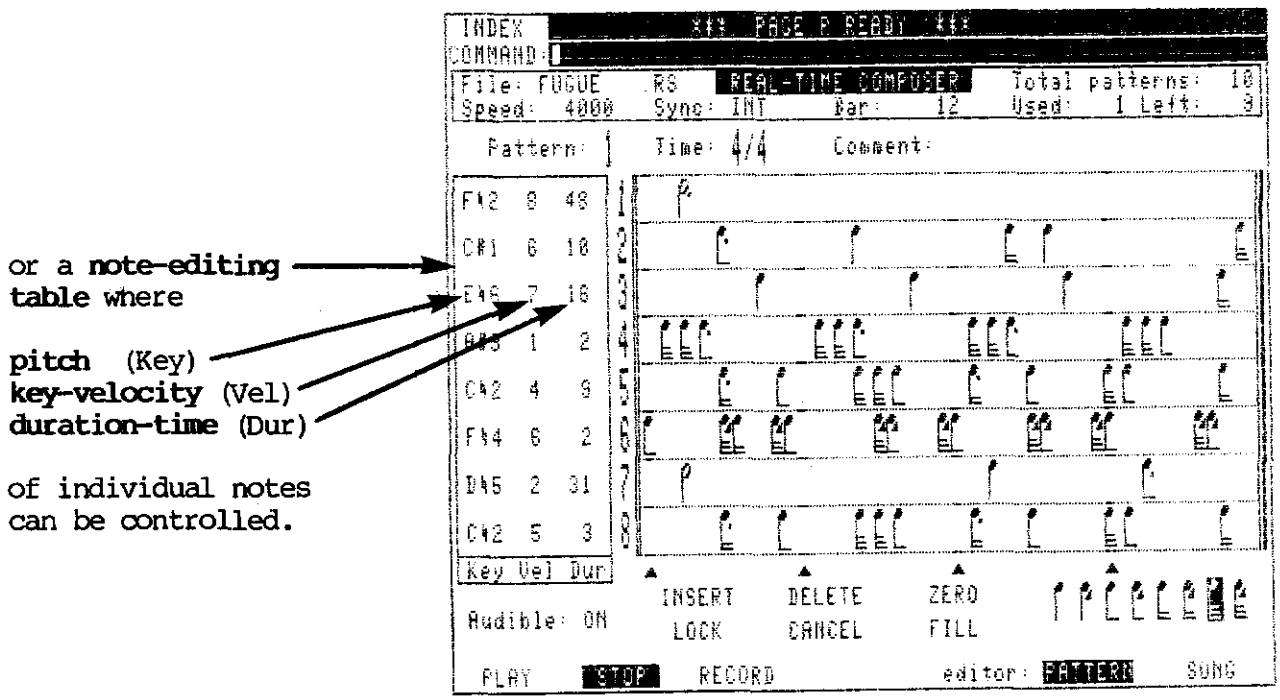
The large numbers running down the screen are **KEYBOARD numbers** and identify the eight sequences within a pattern.

To the right of these numbers are displayed the **sequences.**

To the left is a **dual-purpose** area where you can display either ..

the **VOICES** allocated to the keyboards on PAGE 3,





Notes may be inserted, modified, or deleted from the pattern using any combination of the alphanumeric keyboard, lightpen or music keyboard that is comfortable. The music keyboard can be used simply as a selection device for pitch and key velocity of individual notes, or performances can be RECORDED with automatic TIMING RESOLUTION adjustable to common rhythmic values.

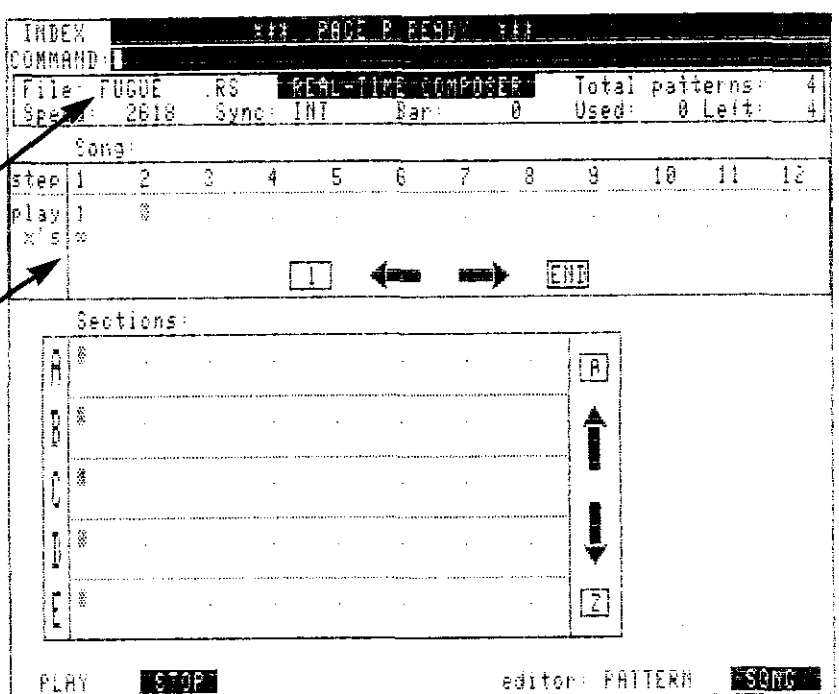
For making identical changes to multiple patterns, special commands are provided to modify the KEY, VEL or DUR for any or all of the keyboards in a range of patterns. Sequences can also be COPIED from one or more patterns to others.

THE SONG EDITOR provides various facilities to build, inspect and modify the SONG LIST.

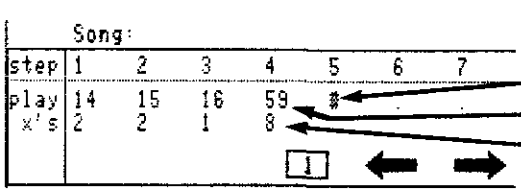
Displayed in the upper area of the screen, the song list is basically a list of PATTERN numbers in the order in which they are to be played. It consists of 255 sequential STEPS, with each step containing two items: the number of the pattern ("play"), and how many times it is to be played ("x's").

This is the default appearance of the SONG EDITOR just after CREATING a new file.

The SONG is called FUGUE and consists of PATTERN 1 playing endlessly.



SONG editor



END symbol
pattern number
repeat count

The example above consists of four steps and would result in:

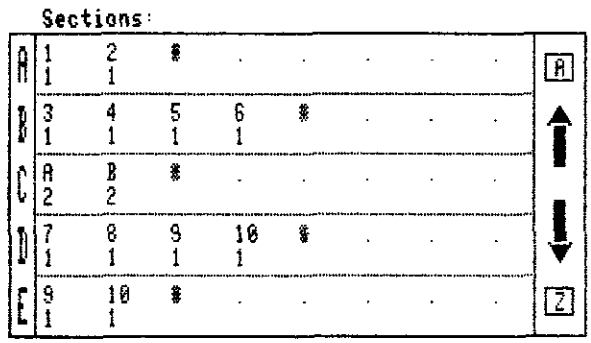
pattern 14 played 2 times
pattern 15 played 2 times
pattern 16 played once
pattern 59 played 8 times
END (CMI stops playing)

Although only 12 steps of the song list are shown at one time, any desired region of the song list can be chosen. It is convenient to think of the display as a "window" which is MOVED right or left to reveal the desired range of steps (indicated by the line of step numbers).

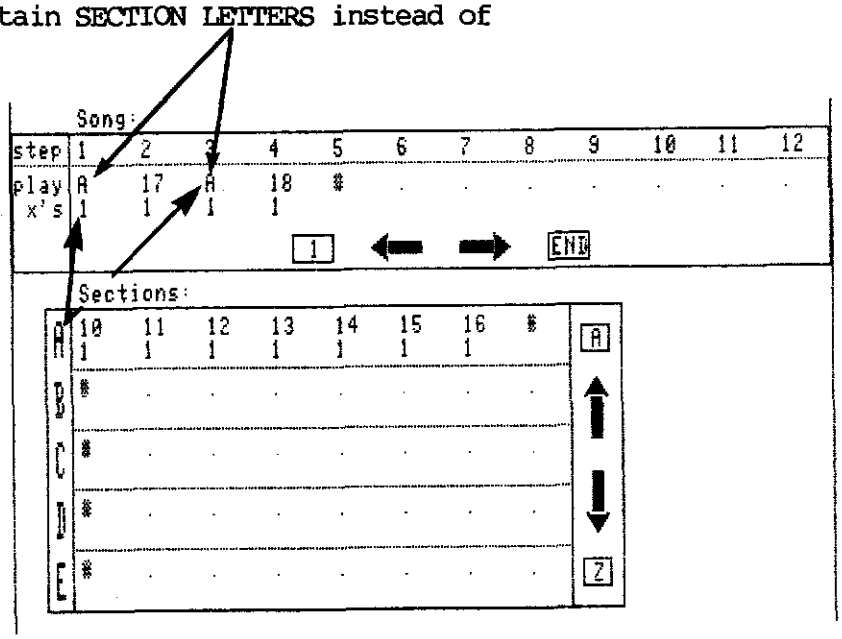
The R.T.C. features a unique method of breaking a piece down into smaller sub-units called **SECTIONS.**

In addition to the song list, there are 26 SECTION LISTS identified by the letters of the alphabet: A - Z. These are just the same as the song list, except that each section consists of EIGHT steps.

Five **sections** are displayed at a time in the lower area of the screen. This display is also a "window" - it can be moved up or down to reveal the desired range of sections.



The song list can contain SECTION LETTERS instead of PATTERN NUMBERS.

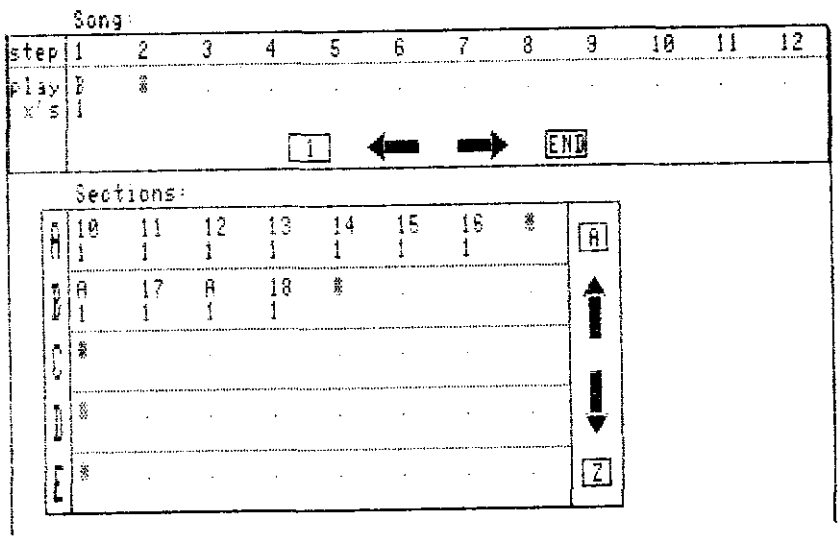


This example would result in:

patterns 1Ø-16 played once each (from section A)
patterns 17 played once
patterns 1Ø-16 again (section A)
pattern 18 played once

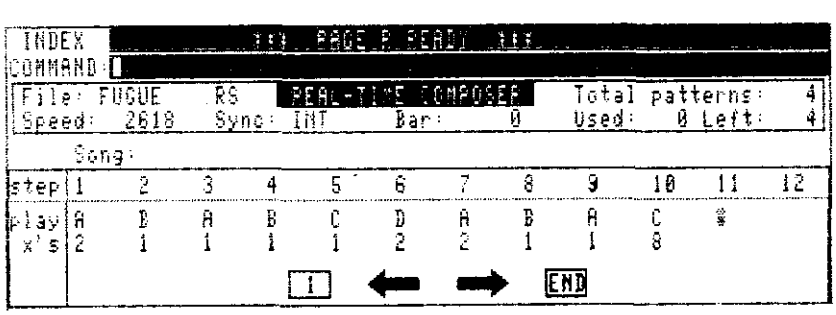
Furthermore, the section lists themselves can also contain other SECTION LETTERS (though a section may not contain its own letter).

The following would result in exactly the same sequence of patterns as the previous example.



The PLAY command allows a single section to be played; thus sections are useful for breaking a large composition down (e.g., verse/chorus/middle 8) for convenience in editing and recording. Sections also provide a good way to implement such things as a 1st-time/2nd-time bar (as in the previous examples) and to generally simplify the structure of the song.

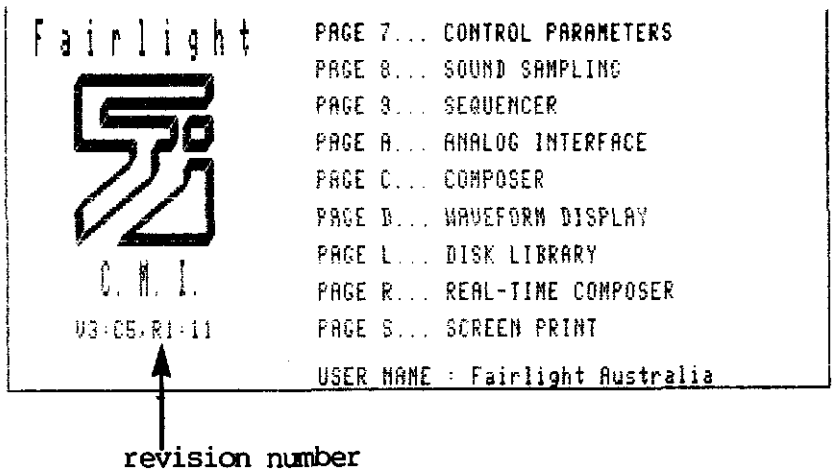
The song list for a typical 4-minute piece may look like this:



VERSION and REVISION NUMBER

The Real-Time Composer **revision** number is seen on Page 1.

The current revision number is **R1.**



The Real-Time Composer **version** number is seen on Page R by typing

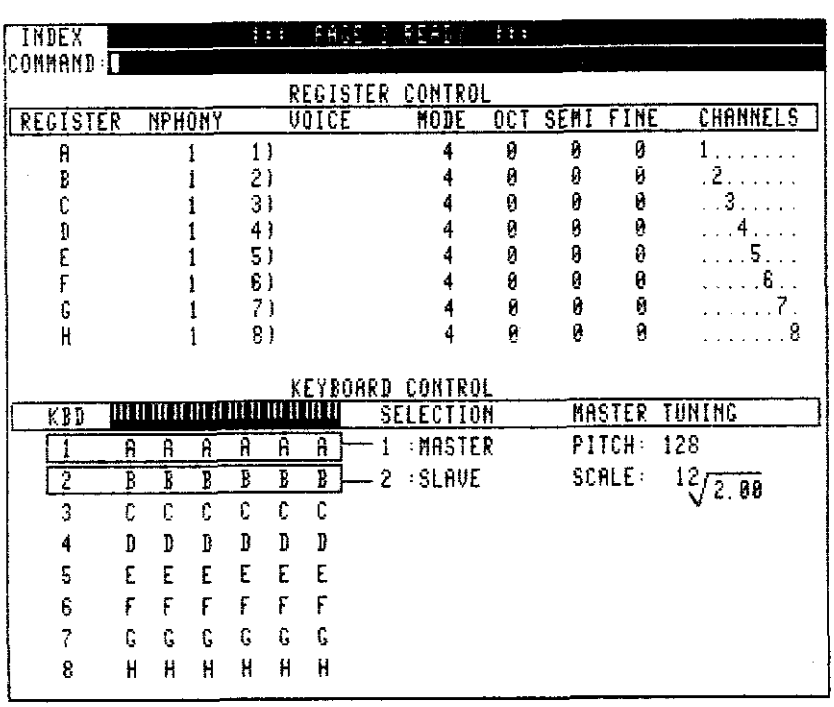
?<return>.

The current version number is **1.3Ø.**

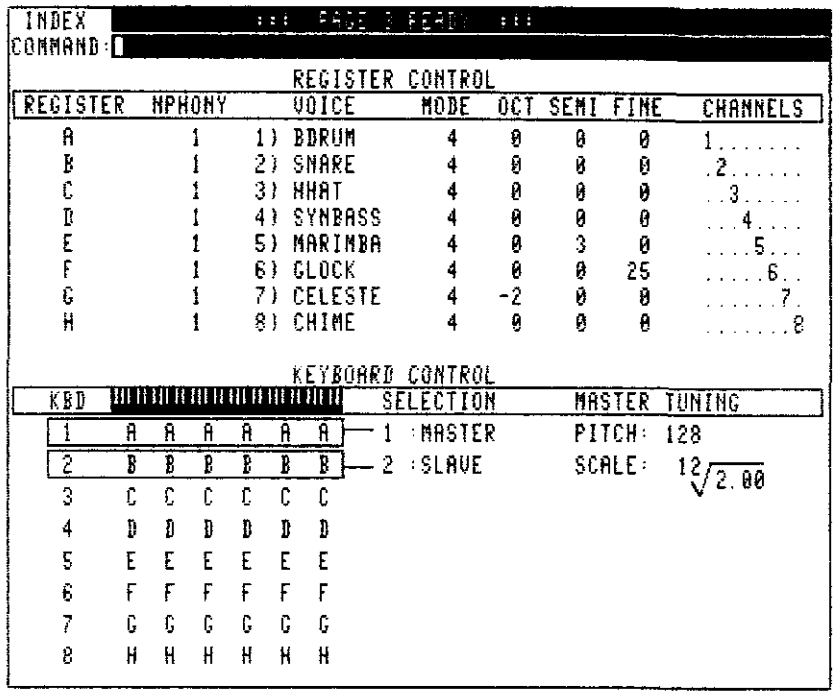
SETTING UP THE KEYBOARDS:

For Page R to function correctly all loaded voices would have an NPHONY of 1, and each register must have its own keyboard. Otherwise unpredictable results may occur.

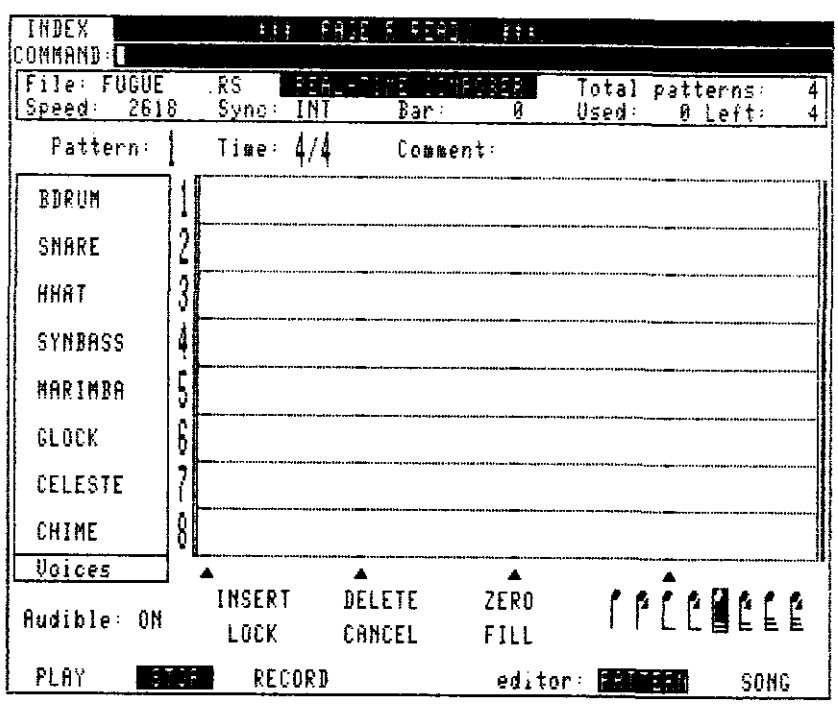
Prior to loading voices Page 3 must be set up in the following way:



Here is Page 3 with eight voices loaded and ready for Page R sequencing ...



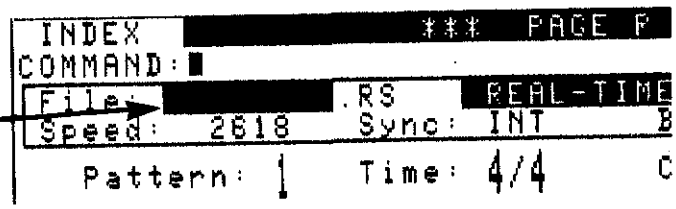
Page R shows the corresponding 8 voices on Keyboards 1 to 8



To LOAD a previously created sequence:

TYPE: L(OAD),filename<return>

Alternatively move CURSOR to space opposite "File:" (press DOWN ARROW once) and TYPE: filename<set>.



A file must be **LOADED** before it can be **played.**

Page R files can also be loaded from Pages 1,2,3,4,5,6,8,D,L like other files.

TYPE: L,RS,filename<return> or L,filename.RS<return>.

To CREATE a NEW FILE:

TYPE: N(EW),filename,number of patterns<return>

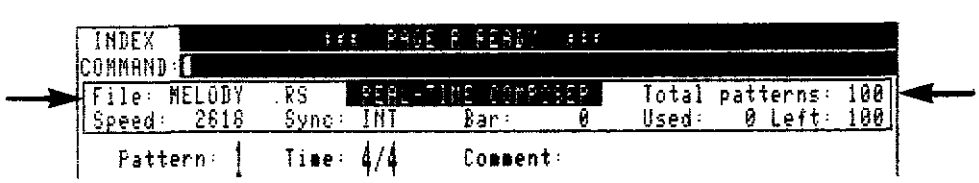
where: filename = 1-8 character filename, first character alphabetic
number of patterns = 1-255

If the number of patterns is not specified then the CMI will allocate as many patterns as possible depending on the remaining FREE SPACE (Page 2) to a maximum of 255 patterns. 255 patterns require 3332 sectors of disk space; 28 sectors for the first pattern then 16 sectors per pattern.

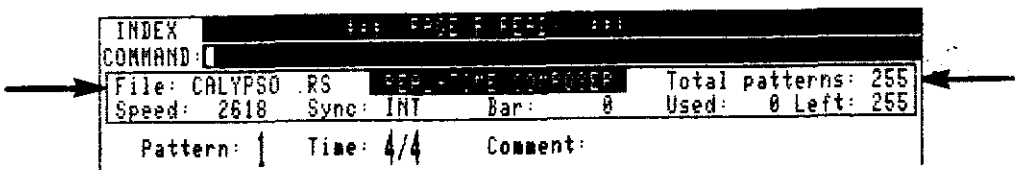
If the number of patterns is specified and is bigger than the remaining FREE SPACE on disk, the CMI will show you how many patterns are available and ask you if that is OK.

The total number of patterns available (used and unused) can be seen in the top right-hand corner of the display.

EXAMPLES:



N MELODY 1ØØ<return> - A new sequence called MELODY.RS is created and automatically SAVED. It has 1ØØ patterns available - as yet unused. If there is only enough remaining FREE disk space for say, 8Ø patterns the CMI will respond with "SPACE for only 8Ø PATTERNS - OK (Y)?" Respond by typing Y<return>.



NEW,CALYPSO<return> - A new sequence called CALYPSO.RS is created and automatically SAVED. The size (number of patterns) of the sequence depends on remaining FREE SPACE. In this case, a blank disk has been used and the maximum of 255 patterns is available.

A pattern is UNUSED (blank) until notes are put into the sequences or the default TIME SIGNATURE is changed.

A pattern is then USED. See also the "X" command.

Handling of disk files by the R.T.C. is slightly different to other display pages. There is no need for a "save" command since any modifications are automatically saved in the file whenever any of the major commands are used, or if another display page is selected.

PLAY or RECORD:

TYPE: P[LAY][,<thing>[,<count>]][,#<bar>][;<options>]<return>
or
REC[ORD]

where: <thing> is one of these...

*	- SONG
A or B or ... or Z	- SECTION
!	- CURRENTLY DISPLAYED PATTERN
1 or 2 or ... 255	- PATTERN NUMBER

<count> is number from Ø to 127. Ø signifies infinity.

<bar> is the start bar number from 1 to 65535 of <thing>. Bar number defaults to 1 if not included in command. See also BAR command.

<options>
- W - wait for any key on the alphanumeric keyboard to be hit before starting.
- F - free-run mode - maximum timing accuracy. Used when finally recording onto tape. Use when EXT ernal syncing.

At least 3 letters of the word RECORD need to be typed.

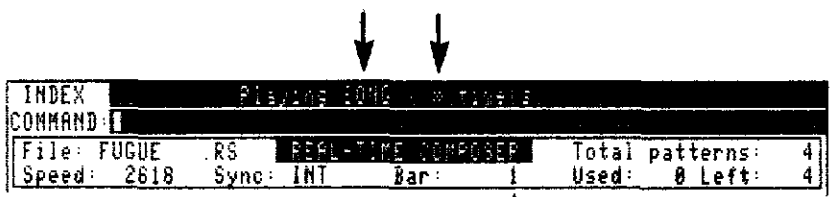
If using the lightpen point to "PLAY" or "RECORD".

The CMI features "default play-selection". This means that once the PLAY (or RECORD) mode is defined, it remains in effect for P<return>, REC<return> and the LIGHTPEN until a new play-selection is typed.

The very top line of the display shows what is being played.

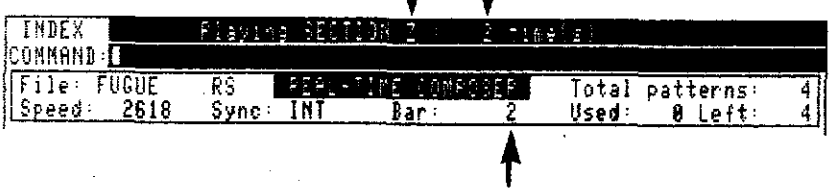
EXAMPLES:

P,*,Ø<return>
Play whole SONG forever; start at bar 1.



P A ♯42<return>
play section A start at bar 42.

P Z,2 ♯2<return>
play section Z twice; start at bar 2.



Other examples are ...

REC 4;W<return> - record pattern 4 once; wait until any key on the alphanumeric keyboard is pressed.
P *;F<return> - play SONG once; ready for final recording.
P<return> - play exactly what was previously played (same as using the lightpen).
REC !<return> - record displayed pattern continuously.

The RECORD command is exactly the same as the PLAY command except that performances are recorded in real time.

REC<return> may be typed in the middle of a PLAY.

You would probably use the **P !<return>** and **REC !<return>** commands often to play or record one pattern over and over, in the development of a song.

Notes may be changed while playing or recording.

The command P *;FW<return> would be used often when recording to tape.

It means "play the whole song for a final recording"

The "W" part of the command means that the CMI is cued up ready to play as soon as any key on the alphanumeric keyboard is hit.

STOP: TYPE: S(TOP)<return>
or <ctrl-esc> i.e.,hold down <ctrl> press <esc>
or point lightpen at the word "STOP".

This command will stop playing or recording. Audible: ON

INSERT
LOCK

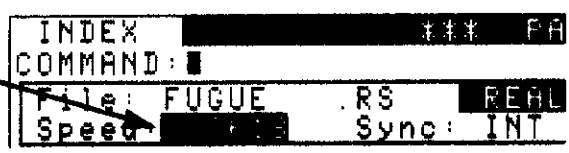
PLAY RECORD

SPEED: TYPE: n<set> or n<add> or n<sub>.
where n is a number between 5ØØ and 65535.
Default is 2618. (Crotchet = 12Ø M.M. beats/minute)

As a guide ...

M.M.	6Ø	7Ø	8Ø	9Ø	1ØØ	11Ø	12Ø	13Ø	14Ø	15Ø
SPEED	5236	4488	3927	3491	3142	2856	2618	2417	2244	2Ø94

This control sets the tempo of a song and behaves as on Page 9 and Page C.



A SPEED of 2ØØØ will play twice as fast as a SPEED of 4ØØØ. Thus you may RECORD at a very slow SPEED and PLAY at normal SPEED without any pitch change.

EXAMPLE: A completed song has a SPEED of 5ØØØ and is 35 seconds long. You want the song to be just 29 seconds long.

Speed up the song in the following way:

$$\frac{29 \text{ seconds}}{35 \text{ seconds}} \times 5ØØØ \text{ (old speed)} = 4142 \text{ (new speed)}$$

To convert between CMI speed and beats/minute (m.m.):

$$\text{beats/minute} = \frac{314160}{\text{CMI speed}} \quad \text{and} \quad \text{CMI speed} = \frac{314160}{\text{beats/minute}}$$

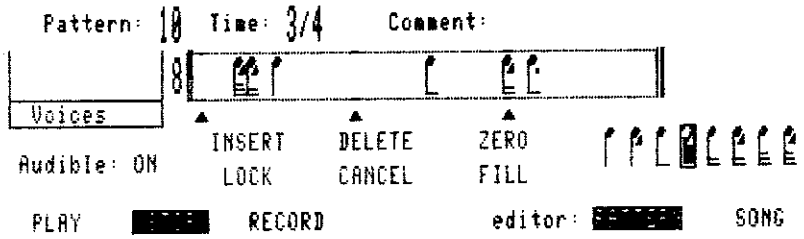
CLICK: On Page R, the digital metronome CLICK facility is always ON and comes out of the rear of the CMI at

1) Pin 3 of the SYNC socket
2) Monitor Speaker output
3) Phones output

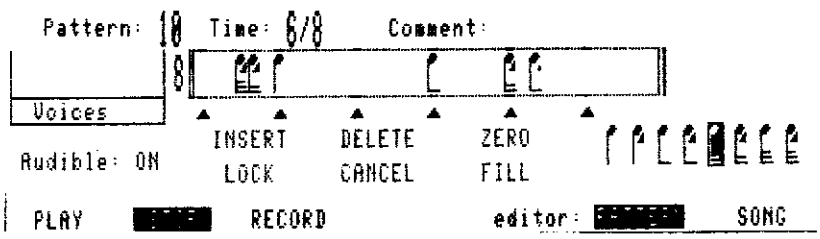
A click marker corresponds to the CLICK.
Here is the click marker on the **second** beat ...

A click occurs for each beat in a pattern.

For a 3/4 pattern, 3 clicks occur.



For a 6/8 pattern, 6 clicks occur. A 6/8 pattern is just as long as a 3/4 pattern but the click rate is double.



For synchronizing between Page R and Page C, one crochet on Page R would be B=192 and CLICK=192 on Page C.

A blank pattern may be used as the very first pattern of a song to provide a "count-in" CLICK.

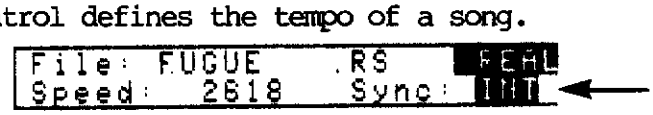
SYNC:

This selects the Page R replay synchronization mode either

INT(ernal) - default
or EXT(ernal).

When SYNC=INT the SPEED control defines the tempo of a song.

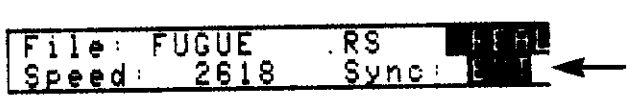
TYPE: INT<set>



When SYNC is in external mode the SPEED control is disabled.

The external SYNC mode is used to co-ordinate multi-track overdubbing of sequences by taping the SYNC tone and using the "sync-head" replay from the recorder to feed the external sync input of the CMI.

TYPE: EXT<set> or n<set>
where n is a number between 2 and 255.



The tone can be any periodic waveform between 1ØØ Hz and 5,ØØØ Hz.

The tone should be around 1 volt peak-to peak.

It is necessary to record a SYNC tone on an unused track of tape so that Page R can follow variations in the tape speed for perfect synchronization.

The SYNC tone should be a constant pitch derived from:

a tone generator
an audio oscillator
a synthesizer
a CMI channel

When using a CMI channel, **create** a MODE 4 voice, **FILL** it with a **Page 5** derived **sinewave.**

On Page 7 insert a **LOOP**, switch the SLUR **ON**, set LEVEL to **255** and ATTACK to **ZERO**. PORTAMENTO may be incorporated for smooth changes in tempo. Playing the music keyboard will change pitch and hence speed; a doubling of speed for each octave higher.

The SYNC tone should NOT be a CLICK.

The CMI plays music with a resolution in the order of milli-seconds and needs an AUDIO tone between 1ØØHz and 5,ØØØHz for such high resolution, rather than a CLICK which has a resolution of between .2Hz and 1ØHz.

The CMI can provide its own synchronized CLICK.

The CMI detects the very beginning of the SYNC tone and uses that as its starting point.

If the pitch of the SYNC tone **rises** the CMI will play **faster.**
If the pitch of the SYNC tone **falls** the CMI will play **slower.**

The procedure is as follows:

1) The Page R sequencers will play at the speed determined by the precise frequency of the SYNC tone.
To find out the correct frequency, connect the oscillator directly **into** Pin 2 of the SYNC connector at the rear of the CMI.
The CLICK will come **out** Pin 3 of the same connector.

   Any oscillator with a variable frequency output in the range 1ØØHz to 5,ØØØ Hz can be used for a SYNC tone. The shape of the waveform is irrelevant, however a smooth waveform such as a SINEWAVE or TRIANGLE wave is to be preferred over, say a SQUAREWAVE, which tends to "spill" somewhat onto other tracks of a multi-track.

2) Select EXTERNAL SYNC on Page R by tabbing to SYNC and typing EXT<set>.
For greater synchronizing accuracy **set** SYNC=4 or higher. This will mean that the external tone is **divided** by 4.
PLAY some Page R patterns. Varying the PITCH of the oscillator will vary the play speed of the sequence.
Make sure the CMI is getting enough level from the oscillator.
Select a suitable speed or range of speeds.

3) Connect the audio oscillator to the tape recorder input associated with the track which is to carry the SYNC tone. SYNC tracks are usually physically positioned at the other end of the record head to minimise "spill".

EXAMPLE If music is to be recorded onto tracks 1-5 of an 8-track machine, then the SYNC track should be track 8.

4) Connect the appropriate output of the tape recorder to the SYNC input of the CMI (Pin 2 of the SYNC connector). This is a single-ended (unbalanced) input, requiring a minimum level of 1 volt P-P for reliable operation.

5) Record the SYNC track **BY ITSELF** while monitoring the sequence. Differences in the position of the RECORD head and the PLAYBACK head on the multi-track means that if the SYNC tone and the sequences are recorded simultaneously then subsequent recordings will be out of synchronization by the amount of time it takes for the tape to move from the RECORD head to the REPLAY head. Otherwise take the SYNC tone directly from the RECORD head. Make sure that the start of the SYNC tone is clean and is preceded by a few seconds of silence. Page R will start replaying as soon as the tone starts. It is possible to vary the speed of the piece dynamically by varying the oscillator frequency while recording the SYNC track. For this purpose it is necessary to be MONITORING the Page R sequence in EXTERNAL SYNC mode while recording the SYNC track.
Let the SYNC track run for a few seconds longer than the total time for the piece.

6) From now on, all sequences will faithfully follow this SYNC track (unless SYNC=INT is re-selected). Record each group of sequences on a separate tape track, making sure that the PLAY is executed with SYNC=EXT.

For equal tempo between external and internal sync when SYNC=EXT:

$$\text{SPEED} = \frac{2010.5}{\text{EXT. SYNC in KHz}} \qquad \text{EXT. SYNC in KHz} = \frac{2010.5}{\text{SPEED}}$$

EXAMPLE: An EXTernal SYNC tone of 1000Hz is equivalent to an INTernal speed of 2010.

When SYNC is set to a number it means the tone is divided by that number. This gives greater synchronizing accuracy. When using external synchronization, it is advisable to always set SYNC to at least 4. The higher the number the more timing resolution.

EXAMPLE: SYNC=4<return> means that if an external tone of 2000Hz was used, the CMI would divide that tone by 4 and replay as if SYNC=EXT and a tone of 500Hz was used.

To UNALLOCATE unused patterns:

TYPE: UN(ALLOCATE),number of unused patterns<return>

At least 2 letters of the UNALLOCATE command must be typed.

When a composition has been completed, unused patterns represent wasted disk space. The UNallocate command allows you to dispose of unused patterns, thereby recovering the disk space. In other words, you can get rid of excess unused patterns.
Only do this if you are sure you wont need any more patterns - usually when a song is complete.

Typing UN,Ø<return> will not dispose of any patterns, but it will move any unused patterns to the end of the file (possibly reducing disk activity when playing).

UNALLOCATE is the converse of ADD. UNUSED patterns can always be UNALLOCATED i.e., given back as FREE SPACE.

EXAMPLE:

Before ...

```
Total patterns: 100
Used:  20 Left:  80
```

After TYPING: UN,3Ø<return>

```
Total patterns:  70
Used:  20 Left:  50
```

In the development of a song, some patterns will be used as "scratchpads" for practice and experimentation. To dispose of patterns which have been used but are no longer needed for the song, **RESET** a redundant pattern - type **RES<return>.**

This makes the patten **UNUSED.**

COPY the reset pattern to whichever patterns no longer required.
Then use the UNallocate command as described.

To ADD extra patterns to a currently loaded sequence:

TYPE: AD(D),number of extra patterns<return>

At least 2 letters of the ADD command must be typed.
Total number of patterns (used and unused) cannot exceed 255.

EXAMPLE:

Before ...

```
Total patterns:  20
Used:  20 Left:   0
```

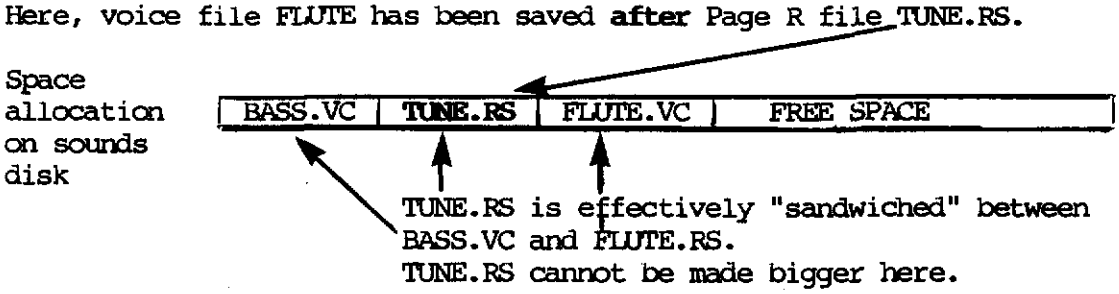
After TYPING: AD,5<return>

```
Total patterns:  25
Used:  20 Left:   5
```

The ADD command should be used if the Page R file is too small. Therefore when creating (with NEW command) a Page R file make it as large as may be needed.

Any file saved after the creation of a Page R file will restrict the size of that Page R file.

Here, voice file FLUTE has been saved **after** Page R file TUNE.RS.



The message ...

"NOT ENOUGH DISK SPACE"

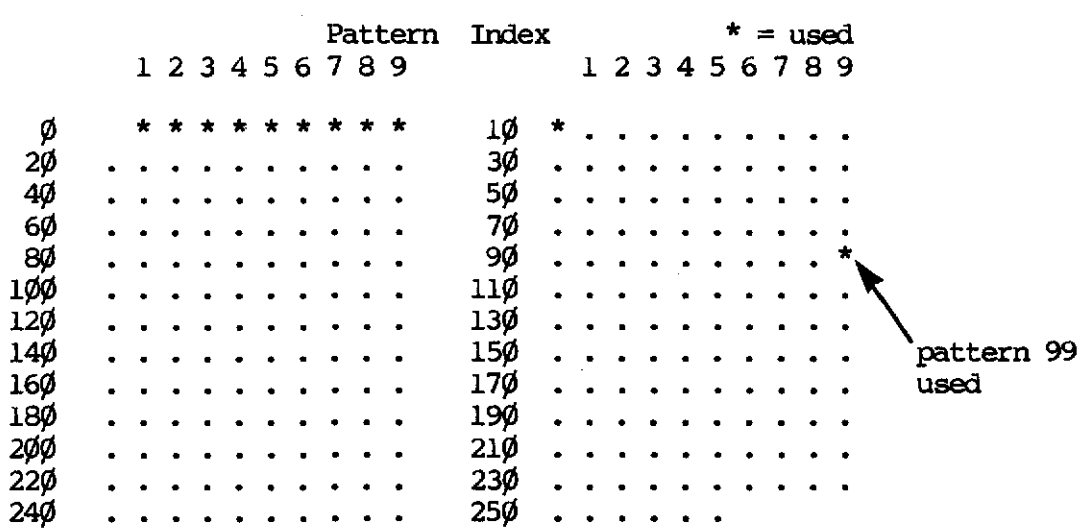
will appear if you try to **ADD** more patterns to TUNE.RS.

In this case, go to Page 2, TRANSFER the Page R file onto a blank disk. You may now ADD extra patterns on the transferred file up to the maximum of 255.

DISPLAY USED PATTERNS: TYPE X<return>

This will change the complete display to show which patterns out of the 255 possible pattern numbers are USED. This is useful when pattern numbers are not chosen sequentially.

Here we have patterns 1 to 1Ø used and pattern 99 used.



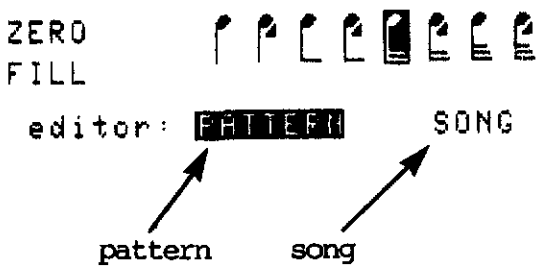
To return to the previous display TYPE: <clear>.

EDITOR SELECTION:

To select **PATTERN** or **SONG** EDITOR ...

Type: E<return>

lightpen ==> <PATTERN> or
==> <SONG>



PATTERNS:

Up to 255 different patterns are available in any one Page R song.

Pattern 1 is the default pattern initially displayed.

Patterns can be USED in any order, that is patterns 2Ø to 3Ø can be used without having to use patterns 1 to 2Ø.

Use the **X<return>** command to see which patterns are USED.

PATTERN NUMBER:

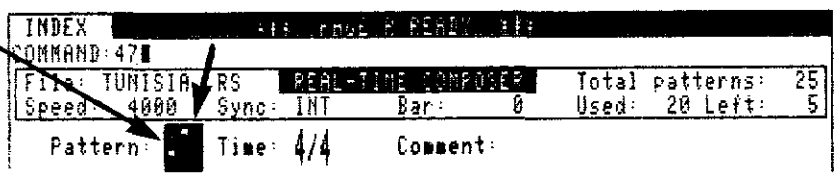
There are **three** ways to select a pattern for display:

1) TYPE: P=n<return> where: n is any pattern number (1 to 255)

2) Move the CURSOR to the number opposite the word Pattern (either press down-arrow key three times or use lightpen).

   TYPE: n<set> where n is a pattern number from 1 to 255 or use the <add> and <sub> keys to in/decrement number by one.

Pattern 47



3) Use the BAR command.

OPEN a keyboard:

One of the 8 keyboards must be **OPEN** before notes can be inserted or deleted or RECORDED.

When a keyboard is open, it is illuminated.

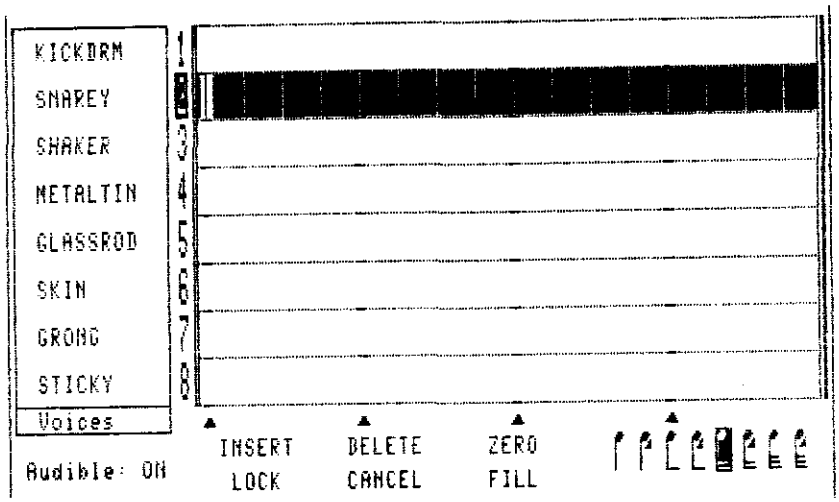
There are **three** ways to OPEN a keyboard ...

1) TYPE: Kn<return> where n = 1 to 8 as on all other CMI pages e.g., K4<return> will open Keyboard 4.

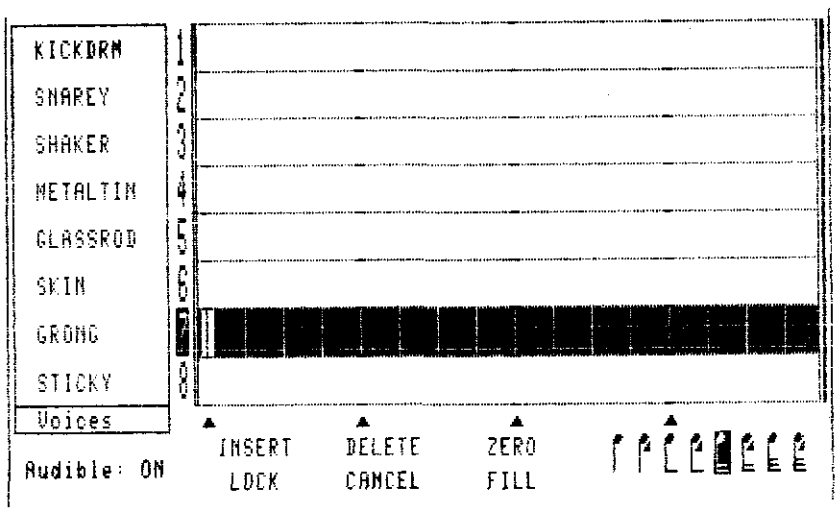
2) Press the down arrow key repeatedly until the cursor reaches the keyboard area.

3) Point the lightpen at the voice names or one of the big numbers 1 to 8 to the left of the actual note area.

Keyboard 2 is OPEN ...



Keyboard 7 is OPEN ...



TIMING RESOLUTION allows "combing" or "quantizing" of the pattern into specific time-slots. Time slots are where notes can be put into each sequence.

Only one note may occupy a time slot.

Thus inserting (or recording) one note on top of another note simply replaces or overwrites the existing note.

Time resolution is important when building patterns as notes can be placed exactly on the beat as required.

Using INSERT and DELETE and maximum time resolution it is possible to put notes slightly ahead or behind the beat.

TIME RESOLUTION may be changed in two ways:

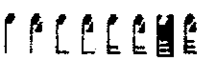
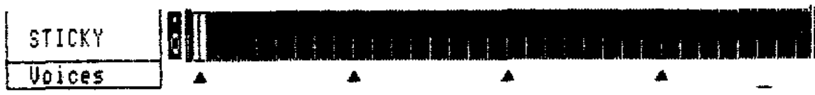
1) by pointing the light-pen at the collection of eight notes in the bottom right-hand corner of the screen.

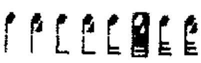
   Notes with triangles signify "triplets" i.e., three notes played in the time of two.

2) by OPENING a keyboard and then repeatedly pressing "+" or "-" on the alphanumeric keyboard to lower or raise timing resolution.

When **this** is selected, maximum time resolution is

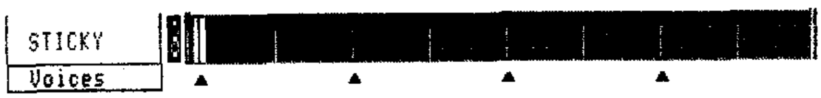
Similarly,

This  gives 

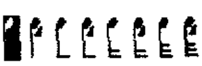
This  gives 

This  gives 

This  gives 

This  gives 

This  gives 

This  gives 

Time resolution is also related to time signature in a more general sense.

In a 3/4 or 4/4 bar the range of note lengths is 

In a 1/4 or 2/4 bar the range of note lengths is 

For double resolution, two 2/4 bars may be used instead of one 4/4 bar. This is rarely necessary.

In an 5/4,6/4,7/4 or 8/4 bar
the range of note lengths is 

To hold a note over 2 patterns, use one 8/4 bar in place of two 4/4 bars.

Time signature is expressed as

n/b where n is number of beats in bar
b is the beat value

If "n" is less than or equal to half of "b"
e.g., 1/4, 2/4 then this is the resolution ... 

If "n" is more than half or equal to "b"
e.g., 3/4, 4/4 then this is the resolution ... 

If "n" is more than "b" e.g., 5/4, 6/4, 7/4, 8/4
then this is the resolution ... 

NOTE CURSOR:

The note cursor is related to TIME RESOLUTION.

OPEN a Keyboard.

A gap in the illuminated band of light is the NOTE CURSOR.

The note cursor can be moved left or right to the next available "time-slot". This is the actual focal point for inserting and deleting notes.

In a 4/4 pattern, at maximum TIME RESOLUTION (demi-semiquaver triplets) there are 48 time-slots for the note cursor.

There are **three** ways to move the note cursor, once a keyboard is open:

1) move the light-pen along the note area of the relevant Keyboard. The lightpen can point to notes on any other keyboard and the note cursor will follow in its keyboard.

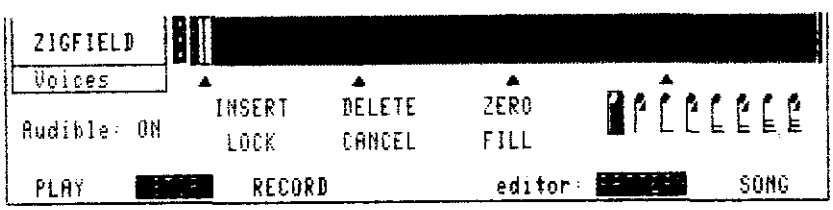
2) TYPE: > to shift the note cursor right
< to shift the note cursor left

The note cursor "wraps around", that is when at extreme right (end) of pattern, typing > will move it to the extreme left (beginning) of display.

3) put the CMI in the RECORD mode. The note cursor follows music keyboard performance in real time.

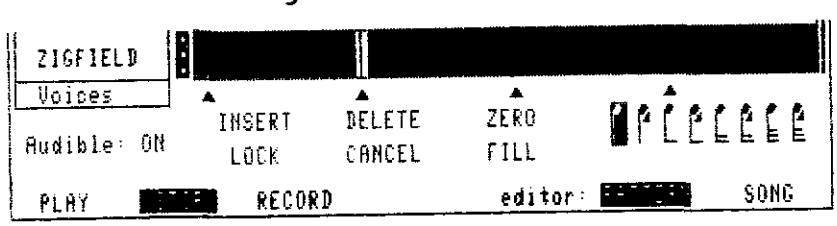
EXAMPLE:

Here is Keyboard 8 open with note cursor on the first beat of the pattern. There are **four** time slots available.

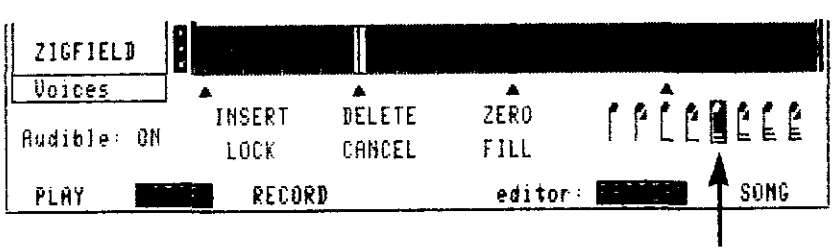


Type: >

Note cursor moves **right** to next available time-slot.

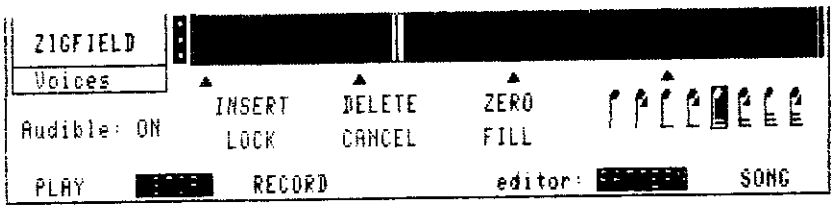


Change note resolution to semi-quavers either with lightpen or by typing the minus sign - four times.



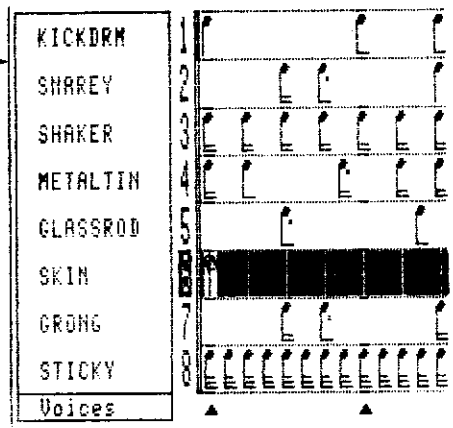
Type: >

Note cursor moves **right** to next available time-slot.



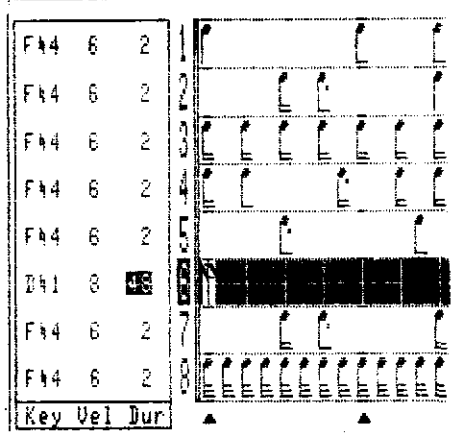
VOICE display:

To the left of the screen is the **voice** display showing which voices are loaded into the eight sequencers.The voice display also contains the NOTE EDITING TABLE.



The NOTE EDITING TABLE is "behind" the Voice names. OPEN any Keyboard.

By pointing the light-pen at any voice-name or pressing the left-arrow key, the voice names will change showing **KEY** (pitch), **VEL**(ocity), and **DUR**(ation).

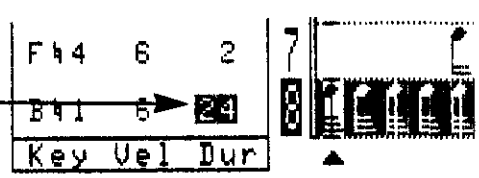


Playing the keyboard will show a corresponding change in KEY and VEL. This area should be thought of as a "scratch-pad" where note dynamics are adjusted before insertion.

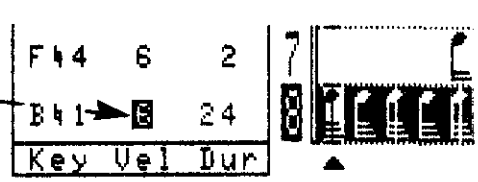
Changes can be made to KEY, VEL and DUR and INSERTED in the pattern.

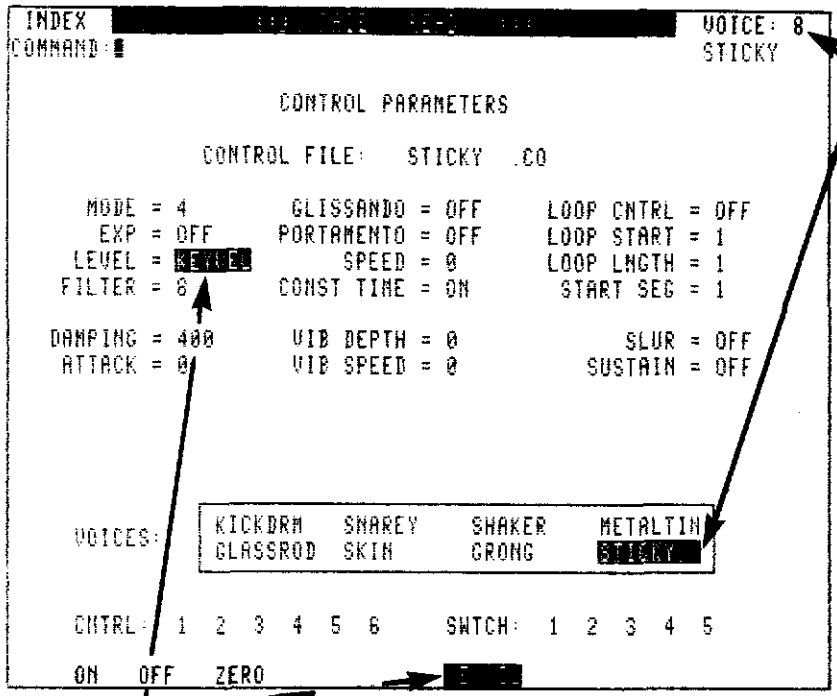
Depending on the position of the cursor within the Note Editing Table, the **<add>** or **<sub>** keys function as a convenience by raising or lowering values for KEY, VEL and DUR by one.

Here, the cursor is on Dur(ation) for Keyboard 8 (voice 8)



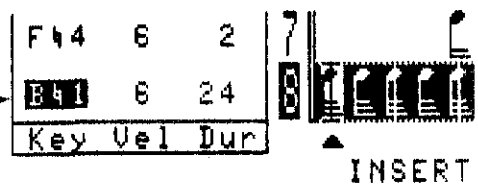
Press **left arrow** key or point lightpen to "6". Cursor is now on **Vel** value. 8 is loudest volume/quickest attack 1 is quietest volume/slowest attack This will set **LEVEL** or **ATTACK** of a note if corresponding patch has been made on Page 7.





Back to Page R ...

Press **left arrow** key
or point lightpen to "B♭1".
Cursor is now on **Key** (pitch) value.



Key shows black notes as **flats.**

To show black notes as **sharps,** TYPE: **<ctrl>S<return>**

Vel ranges from 1 to 8.

8 is **loudest** volume/**quickest** attack.
1 is **quietest** volume/**slowest** attack.

It's good practice to patch KEYVEL to all Voice LEVELS and/or ATTACKS on Page 7 to fully utilize Page R voice dynamics.

There are **three** ways to change **Key** and **Vel.**

1) Play the music keyboard.

Key will reflect the pitch of the last note played.
Vel will reflect how hard the keyboard was played.

New value is temporary until the INSERT command is given.

If in the RECORD mode, INSERT is automatic.
Previous values are overwritten.

2) If the cursor is on Key, type the part(s) of the pitch (note-letter A to G, accidental, octave 1 to 7) that you wish to change - then press <set>.

   The parts that you do NOT type will remain unchanged.

   To get accidentals <ctrl>S is **sharp**
   <ctrl>F is **flat**
   <ctrl>D is **natural**.

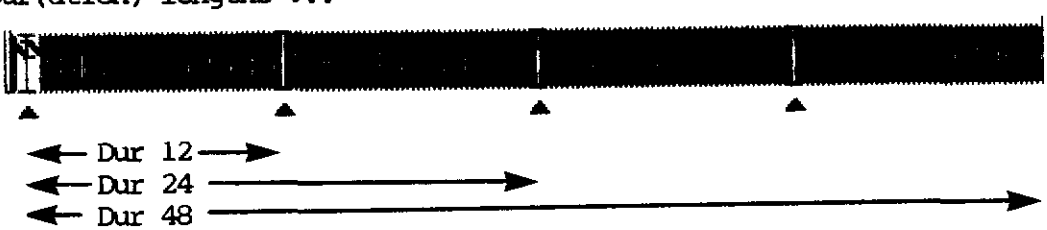
   If the cursor is on Vel

   TYPE: n<set> to set velocity where n = 1 to 8.
   8 is **loudest** volume/**quickest** attack.
   1 is **quietest** volume/**slowest** attack.

3) Use the KEY or VEL commands to change a pattern or groups of patterns at once, rather than changing notes individually.

   Dur(ation) ranges from **Ø** (minimum - staccato)
   to **48** (maximum - legato).

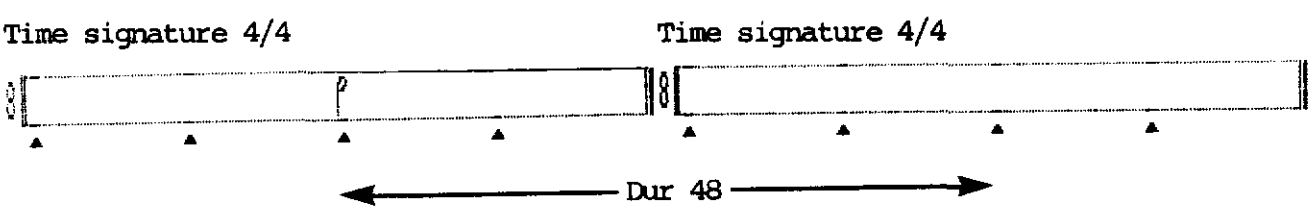
Dur(ation) lengths ...



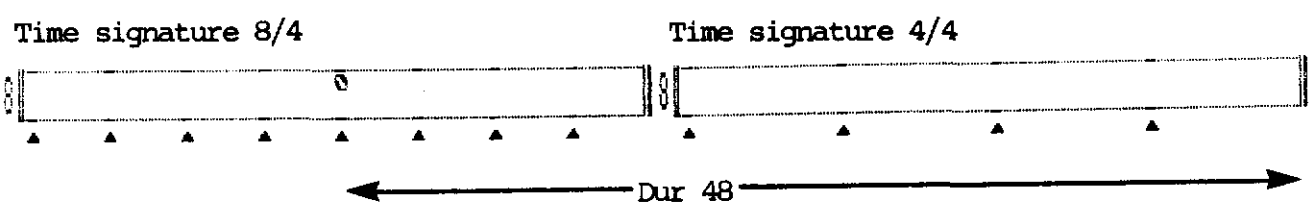
Any note that is inserted to occur before the duration of a previous note has expired will cut off the previous note.

If the note is near the end of a pattern and duration is longer than the rest of the pattern the note will carry over into the next pattern.

Long Dur(ation) carries over into next bar ...



Note that a Dur(ation) of 48 (longest) in a pattern with 8/4 time signature will last 8 crotchets.



There are **three** ways to change Dur(ation) ...

1) Put the CMI into the RECORD mode.

   As the music keyboard is played, length of note is recorded as duration.

   INSERT is automatic. Previous values are overwritten.

2) Move cursor to duration value.

   TYPE: n<add> to **increase** duration by n
         n<sub> to **decrease** duration by n
         n<set> to **set** duration to n
   where n = Ø to 48

3) Use the DUR command to change a pattern or groups of patterns at once, rather than changing notes individually.

   This is useful when making all note durations equal.

Page 7 DAMPING will have some bearing on note length. That is to say a voice with a long DAMPING value (above 5ØØ) will not play short durations.

Shorten the DAMPING value to between 1Ø-2ØØ for staccato notes.

Similarly, a slow ATTACK (above 1ØØ) will make rapid series of notes much quieter or not sound at all.

Shorten the ATTACK time to below 1ØØ for rapid note passages or use KEYVEL.

ATTACK and DAMPING values are in milliseconds.

KEY command:

This command will transpose **pitch** relatively, selected keyboards over current pattern or range of patterns.

TYPE: KE(Y),offset,pattern range,(keyboard mask)<return>

where: at least 2 letters of KEY must be typed.

offset is -71 to +71 semitones. Can leave + out.

range of patterns is from 1 to 255 (if available) If not specified default to 1.

(keyboard mask) is from 1 to 8. If preceded by a - sign those keyboards are excluded. Must be surrounded by round brackets (and) .

If not specified all 8 keyboards are transposed.

Note that the Key command "wraps around". Thus if the lowest G on the keyboard is transposed down an octave, it becomes the highest G on the keyboard.

EXAMPLES:

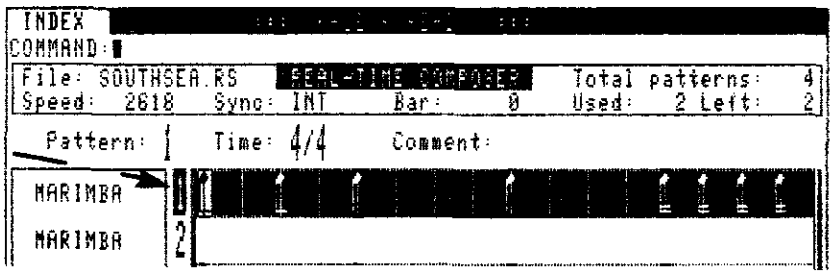
KEY,1	transpose up 1 semitone, currently displayed pattern, all keyboards.
KE,12,8	transpose up 1 octave (12 semitones), pattern 8 all keyboards.
KE -3,4,(678)	transpose down 3 semitones, pattern 4 keyboards 6, 7, and 8 only.
KE -36 16-31 (-12)	transpose down 3 octaves, patterns 16-31 but exclude keyboards 1 and 2.
KEY +4 (8)	transpose up 4 semitones, current pattern only keyboard 8.

The Key command, used in conjunction with the **GRAB** command allows you to rapidly construct harmony lines and octave doubling.

EXAMPLE: Double Keyboard 1 melody into Keyboard 2 an octave higher.

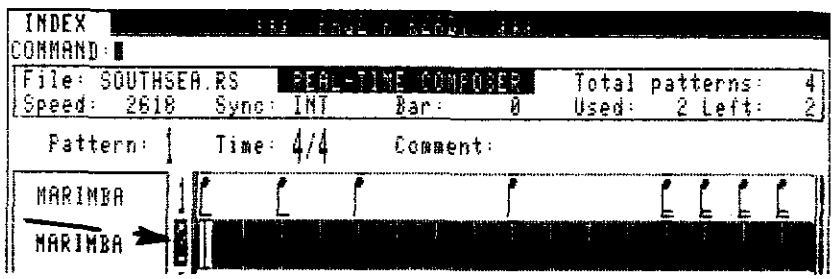
Original pattern.

Keyboard 1 open.



Open Keyboard 2.

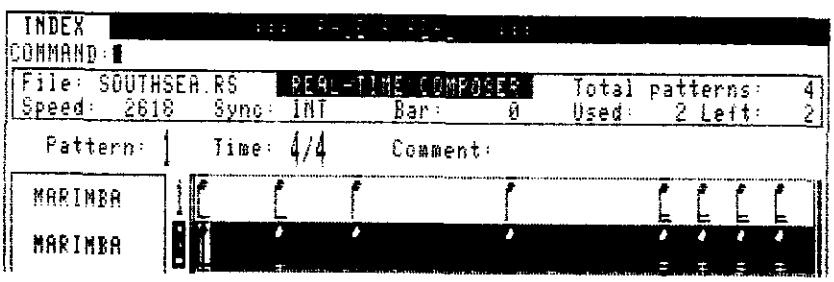
Point lightpen here or press down-arrow key.



GRAB Keyboard 1

Type **G 1<return>**

Keyboard 1 is copied into Keyboard 2



Type KEY 12 (2)<return>

Transpose — up one octave — Keyboard 2 only

VELOCITY and DURATION commands

These commands allow relative modification of Vel or Dur for selected keyboards over current pattern or range of patterns.

TYPE: VE(LOCITY),offset,pattern range,(keyboard mask)<return>
or
DU(RATION)

where: at least 2 letters of Vel or Dur must be typed.

offset is -7 to +7 for **Vel.** Can leave + out.
-48 to +48 for **Dur.** Can leave + out.

range of patterns is from 1 to 255 (if available)
If not specified default to 1.

(keyboard mask) is from 1 to 8. If preceded by a - sign those keyboards are excluded. Must be surrounded by round brackets (and) .

If not specified all 8 keyboards are modified.

Vel and Dur do not "wrap around".
Once a maximum or minimum is reached, further increases or decreases make no change.

EXAMPLES:

VE,1	increase Vel by 1, current displayed pattern, all keyboards.
DUR,12,8	increase Dur by 12, pattern 8 all keyboards.
VELOC 7,4,(678)	increase Vel by 7 (to the maximum), pattern 4 keyboards 6, 7, and 8 only.
DU -48 16-31 (-12)	reduce Dur by 48 (to the minimum), patterns 16-31, exclude keyboards 1 and 2.
DURATION 4 (8)	increase duration by 4, current pattern only keyboard 8.

EXAMPLE:

You want **all** notes in keyboards **7** and **8** to have a **Vel** of **5** over patterns **16-24.**

The method is to reduce all **Vel** values to the minimum value (1) regardless of previous values, then increase to desired value.

Type VEL -7 16-24 (78)<return>	Subtract 7 from Vel of all notes in Patterns 16-24, keyboards 7 and 8. If Vel previously 8, it is now 1.
	If Vel previously 2, it is now 1.
Type VEL 4 16-24 (78)<return>	Increase Vel by 4 Keyboards 7 and 8 now have a Vel value of 5.

To similarly set **duration** to **12**
over same pattern range and keyboards ...

Type DUR -48 16-24 (78)<return>	All durations to zero.
Type DUR 11 16-24 (78)<return>	All durations to 12.

INSERT:

A Keyboard must be OPENED and the NOTE CURSOR positioned.

If there are any changes in the NOTE EDITING TABLE (by typing or playing the music keyboard) a box will appear around the word INSERT thus ...

This means that the change is **temporary** until actually **INSERTED**.

The KEY (pitch), VEL(ocity) and DUR(ation) information in the NOTE editing table will be inserted into the current NOTE CURSOR position, overwriting any previous note.

There are **three** ways to insert notes into patterns:

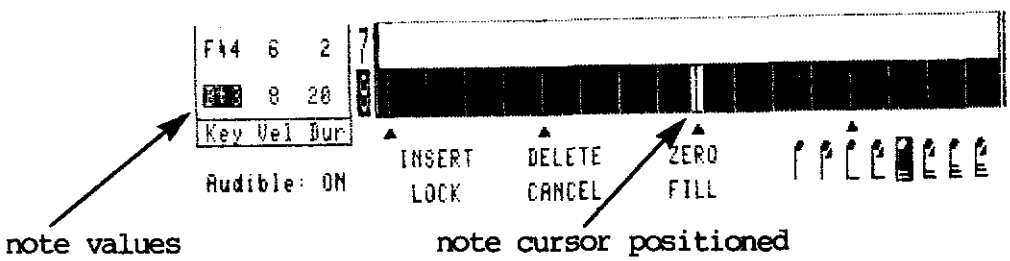
1) TYPE: I<return>

2) point the light pen at the word "INSERT".

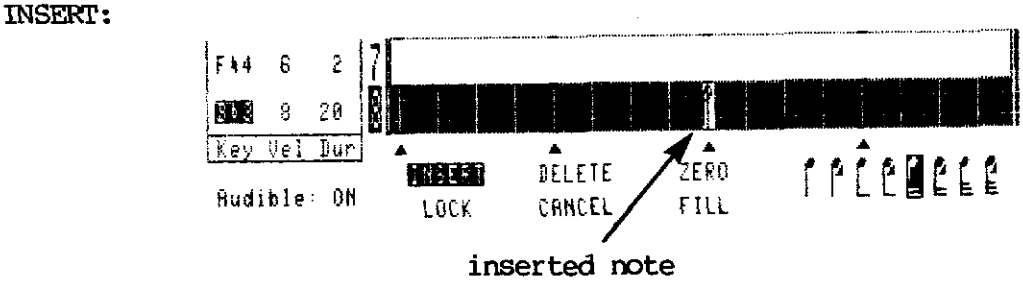
3) put the CMI into RECORD. Insert is automatic while the music keyboard is played.

1) and 2) are the best ways to correct isolated mistakes and to give each note individual expression.

Before INSERT:



After INSERT:



DELETE:

INSERT	DELETE	ZERO
LOCK	CANCEL	FILL

Opposite of INSERT.

A note will be deleted from the current NOTE CURSOR position.

See ZERO and RESET also.

There are **two** ways to delete a note in a pattern after positioning the note cursor:

1) TYPE: D<return>

2) point the light pen at the word "DELETE".

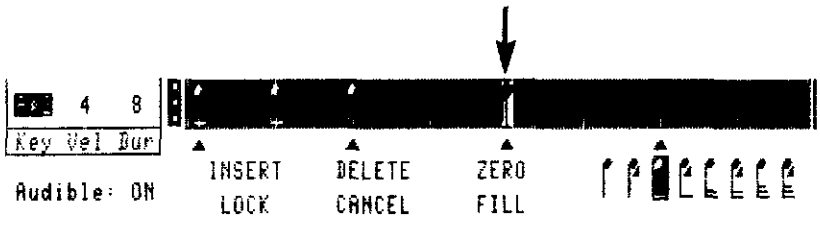
This is a good way to carefully delete one note from a cluster.

EXAMPLE:

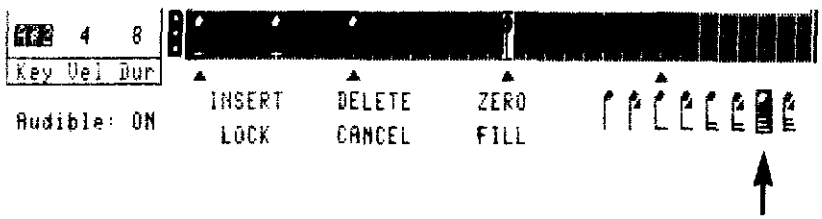
Use INSERT and DELETE to put a note slightly ahead of beat.

Select note.

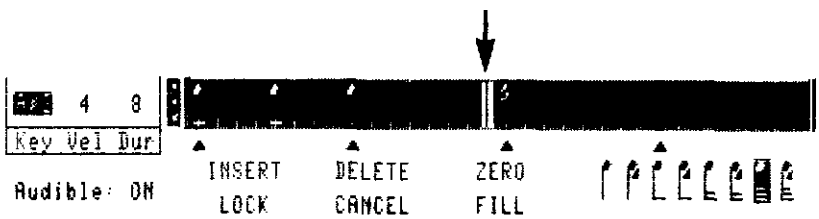
Note editing table shows the values for that note.



Select time resolution.

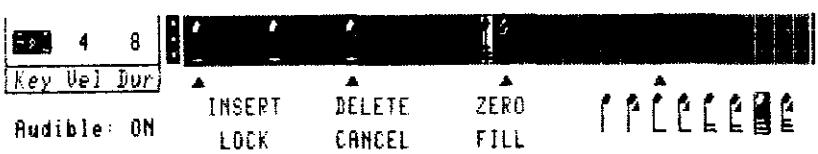


Move **note-cursor** left (ahead of beat)



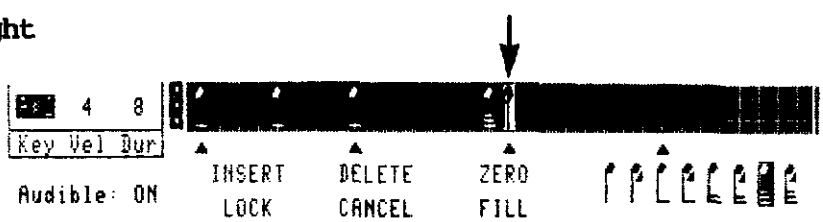
The note editing table temporarily stores note values when the note cursor is moved to a position unoccupied by a note.

Type I<return>
or
lightpen =>INSERT

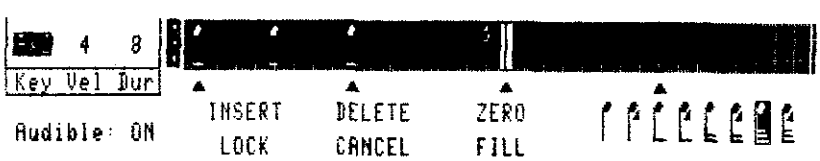


Move note cursor **right**

Type D<return>
or
lightpen =>DELETE



Note is now slightly ahead of beat.



LOCK:

Will lock **INSERT** or **DELETE** on until **CANCELLED**. See below.

CANCEL:

TYPE: C<return>
or
lightpen =>CANCEL

INSERT	DELETE	ZERO
LOCK	CANCEL	FILL

Cancel the LOCK. Opposite of LOCK.

Release INSERT or DELETE from being ON.

INSERT-LOCK:

TYPE: I,L<return>
or
lightpen =>LOCK then lightpen =>INSERT

INSERT	DELETE	ZERO
LOCK	CANCEL	FILL

Insert is locked ON.

Notes will be inserted wherever NOTE CURSOR moves in note area. KEY, VEL and DUR values derived from NOTE EDITING TABLE.

A good way to quickly insert many notes of the same pitch (as in percussion fills).

Remember if INSERT-LOCK is on, notes will be inserted wherever the NOTE cursor moves until CANCELLED.

DELETE-LOCK:

TYPE: D,L<return>
or
lightpen =>LOCK then lightpen =>DELETE

INSERT DELETE ZERO
LOCK CANCEL FILL

Delete is locked ON.

Notes will be deleted wherever NOTE CURSOR moves in note area.

Many notes can be selectively deleted quickly.

Remember if DELETE-LOCK is on, notes will be deleted wherever the NOTE cursor moves until CANCELLED.

ZERO:

TYPE: Z<return>
or
lightpen =>ZERO

INSERT DELETE ZERO
LOCK CANCEL FILL

Delete all notes from open keyboard. Converse of FILL.

FILL:

TYPE: F<return>
or
lightpen =>FILL

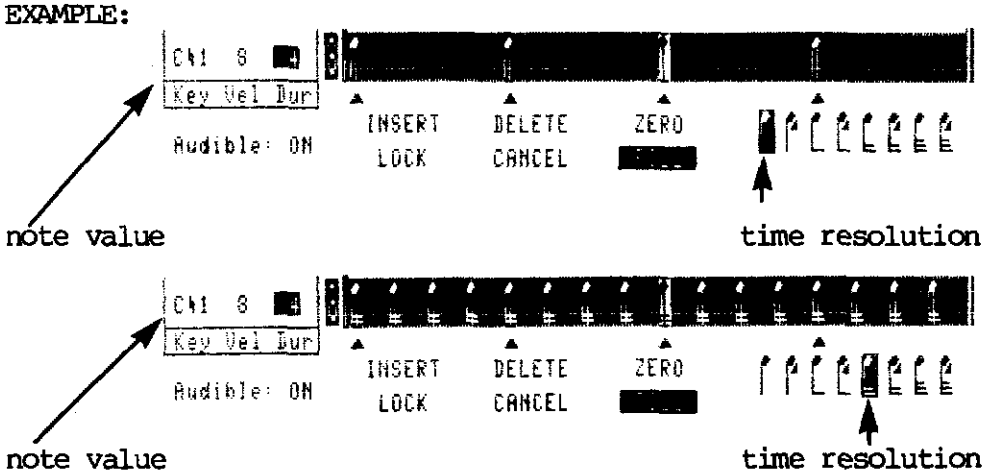
INSERT DELETE ZERO
LOCK CANCEL FILL

Fill all notes on open keyboard of a pattern.

Note value comes from current value in NOTE EDITING TABLE.

Number of notes depends on TIMING RESOLUTION selected.

EXAMPLE:



GRAB:

TYPE: G(RAB),n<return> where n is a keyboard number from 1 to 8.

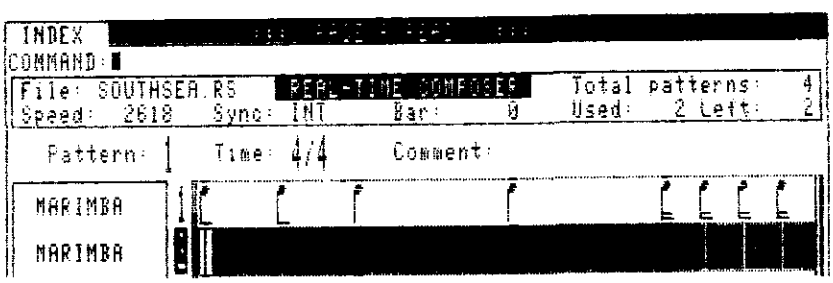
Notes in keyboard n are copied to the currently OPEN keyboard.
Previous contents are overwritten.

When used in conjunction with the **KEY** command,
voice doubling and harmonies may be rapidly generated.

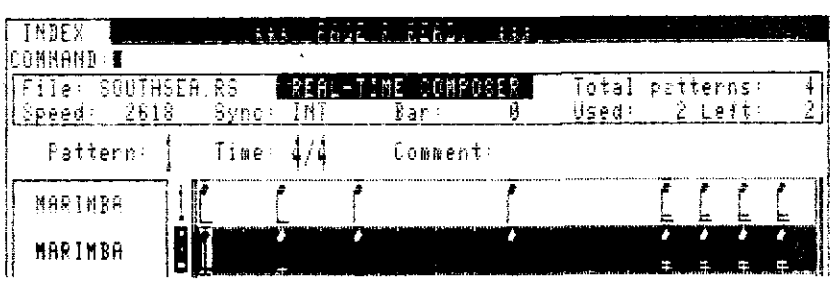
This command may be used while playing or recording.

EXAMPLE: G 1<return> - Copy contents of keyboard 1 to currently open keyboard.

Keyboard 2 is open



G 1<return>



TIME SIGNATURE:

The default time signature is 4/4.

This can be modified to any **default** time signature
e.g., 1/2, 3/4, 11/8, 31/16 etc.

The TIME SIGNATURE command is usually only used once, when the file is first created.

Only UNUSED patterns are affected.

This command may not be used while playing (or recording).

TYPE: TI(ME),n/b<return>

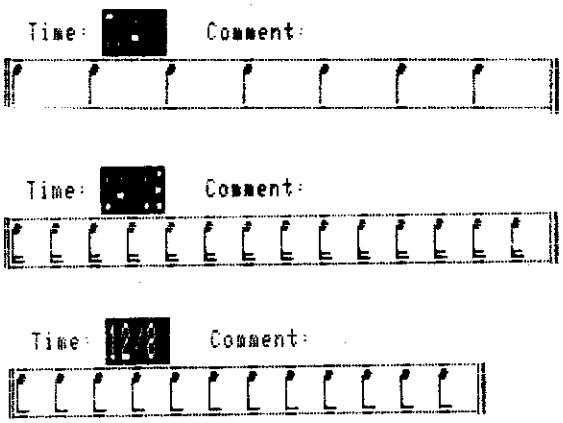
where: n = no. of beats in bar (range 1 to twice beat value)
b = beat value (2,4,8,16)
and / can be a comma, space, slash etc.

At least 2 letters of the TIME command must be typed.

To change an individual pattern time signature, move cursor to time signature and type:

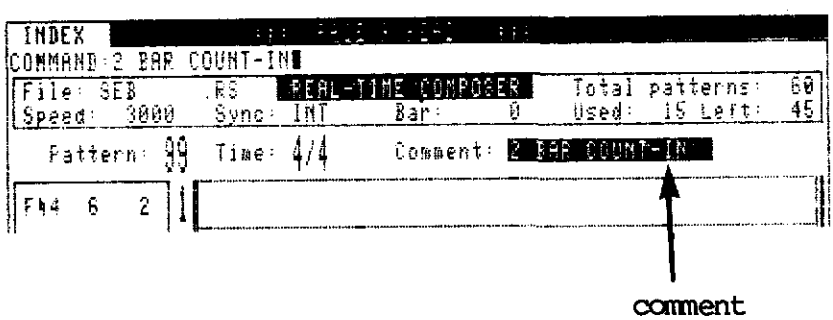
n/b<set>

This only affects the displayed pattern.



COMMENT: TYPE: (a maximum of any 16 characters)<set>

This 16 character area to the right of the time signature allows you to put a relevant comment for your own use.



RESET: TYPE: RES(ET)<return>

At least 3 letters of the RESET command must be typed.

Deletes all notes in the current pattern,
blanks out the COMMENT area,
changes the TIME SIGNATURE to the default value and
returns the pattern being USED to UNUSED (left).
This is reflected in the top right-hand corner of the screen.

RESET is not available for the light-pen because of its major effect.

Many patterns may be RESET (UNUSED) by COPYING a reset pattern into used patterns.

COPY command:

This command allows copying blocks of patterns into other patterns, selectively including or excluding keyboards. The only restriction is that the range of patterns being copied cannot include any of the destination patterns. That is, the 'from' and 'to' ranges may not overlap.

TYPE: C(OPY),from pattern(s),to pattern(s),(kbd. mask)<return>

where: from pattern(s) range from 1 to 255

to pattern(s) range from 1 to 255
(if not specified default is displayed pattern)

CMI will give a message if pattern blocks overlap

(keyboard mask) is from 1 to 8. If preceded by a - sign those keyboards are excluded. Must be surrounded by round brackets (and) .

If not specified all 8 keyboards are copied.

EXAMPLES:

C,2 Copy pattern 2 to currently displayed pattern all keyboards.

C 3-6 Copy patterns 3 to 6 to currently displayed pattern all keyboards.
If current pattern was 7 then 3 into 7, 4 into 8 5 into 9 and 6 into 1Ø. If current pattern was 4 then blocks would overlap and error message result.

COPY 12 2Ø Copy pattern 12 into pattern 2Ø, all keyboards.

CO,12 2Ø-23 Copy pattern 12 into patterns 2Ø to 23 all keyboards.

C 4 (12347) Copy pattern 4 into currently displayed pattern only keyboards 1, 2, 3, 4 and 7.

C 1-3 8-13 Copy pattern 1 into 8, 2 into 9, 3 into 1Ø, 1 into 11, 2 into 12 and 3 into 13.

C,1 (-36) Copy pattern into currently displayed pattern but exclude keyboards 3 and 6.

C 1-4 2-5 **Invalid.** Patterns 2, 3 and 4 overlap.

Consider changing Pattern 2.
A good idea would be to **COPY** Pattern 2 to a "scratchpad" pattern, say Pattern 255.

Type **C,2,255<return>**

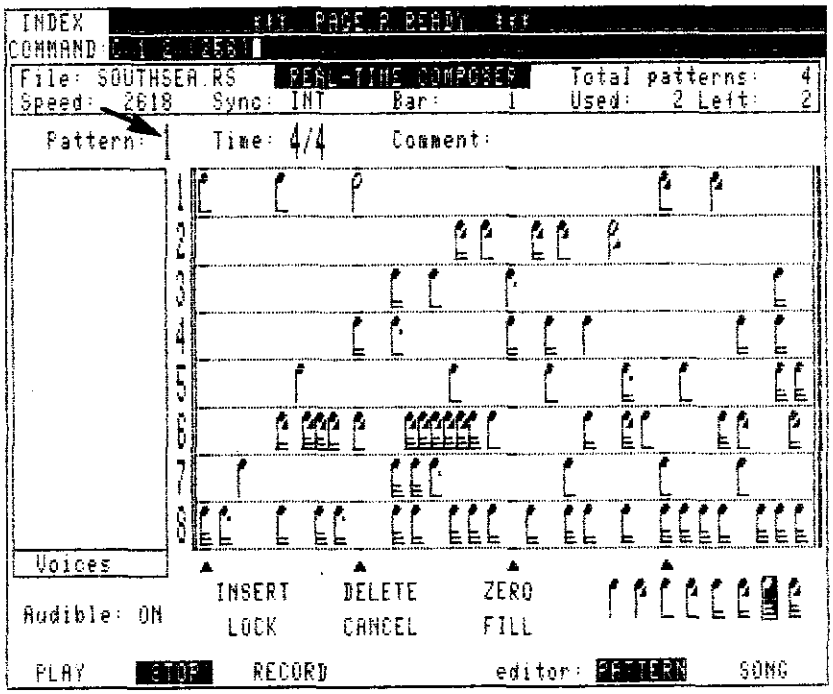
Now work on Pattern 255. When you are happy with Pattern 255, COPY it back to Pattern 2.

Type **C,255,2<return>**

If you inadvertantly "mess up" Pattern 255, you just re-copy Pattern 2 into Pattern 255 and have another go.

EXAMPLE:

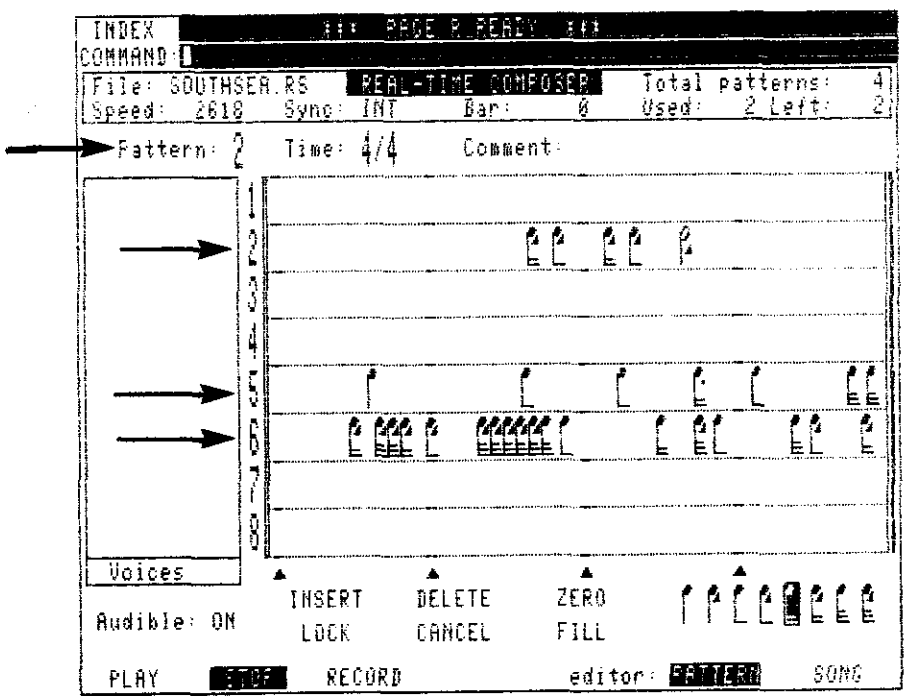
Here is
pattern one ...



Type:

C 1,2 (256)<return>

Copy pattern 1
into pattern 2
keyboards 2,5,6
only.



BAR command: TYPE: B(AR),n<return> where n=1 to 65535.

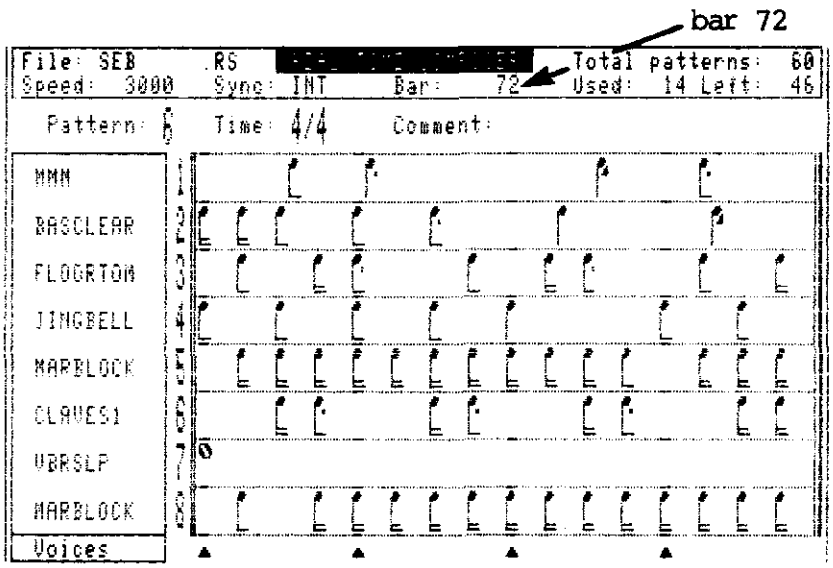
This displays the bar number related to the linking of patterns in the SONG EDITOR.

The bar number corresponds to the number of patterns, including repeats up to that point.

In the pattern editor, the **pattern** for bar "n" is displayed.

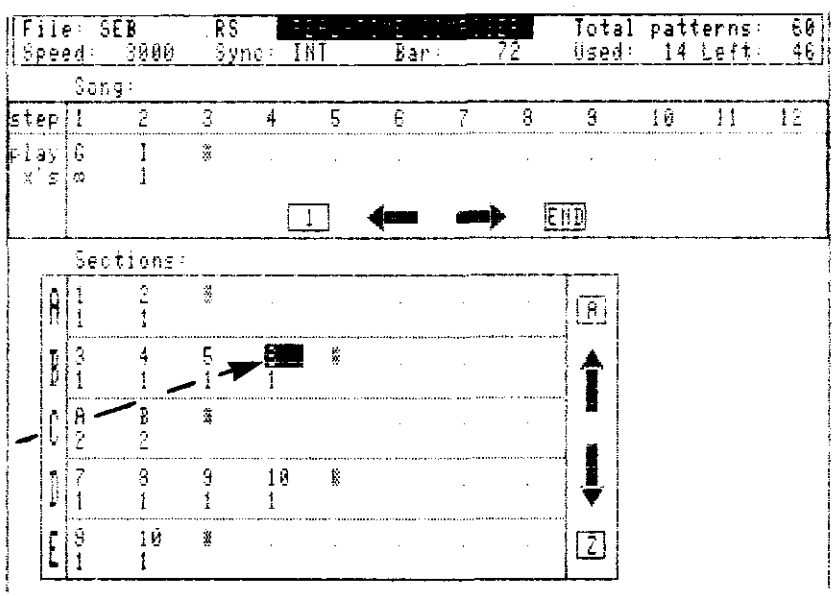
Here is the pattern for bar 72.

Type:
B 72<return>



In the song editor, the cursor is positioned to the point where bar "n" occurs, either in the song list or the section list.

Here is the SONG EDITOR showing where bar 72 occurs in the song.



The bar command is often used in conjunction with the PLAY/RECORD command.

EXAMPLE:

B 9<return>	Look at the ninth bar in the song.
REC !<return>	Record that bar continuously.
B 12<return>	Look at bar 12.
P * #1Ø<return>	Play the song from two bars before bar 12.

AUDIBLE:

TYPE: ON<set>
or OFF<set>

Default is ON.

This gives you audible feedback for KEY (pitch) and VEL(ocity) of notes whenever:

1) the NOTE CURSOR is made to pass over a note either with the lightpen or by typing > or <.

2) KEY, VEL or DUR are changed in the NOTE EDITING TABLE.

PATTERN EDITOR COMMAND SYNTAX

Commands that require at least 2 letters:
AD D
UN ALLOCATE
KE Y
VE LOCITY
DU RATION
TI ME

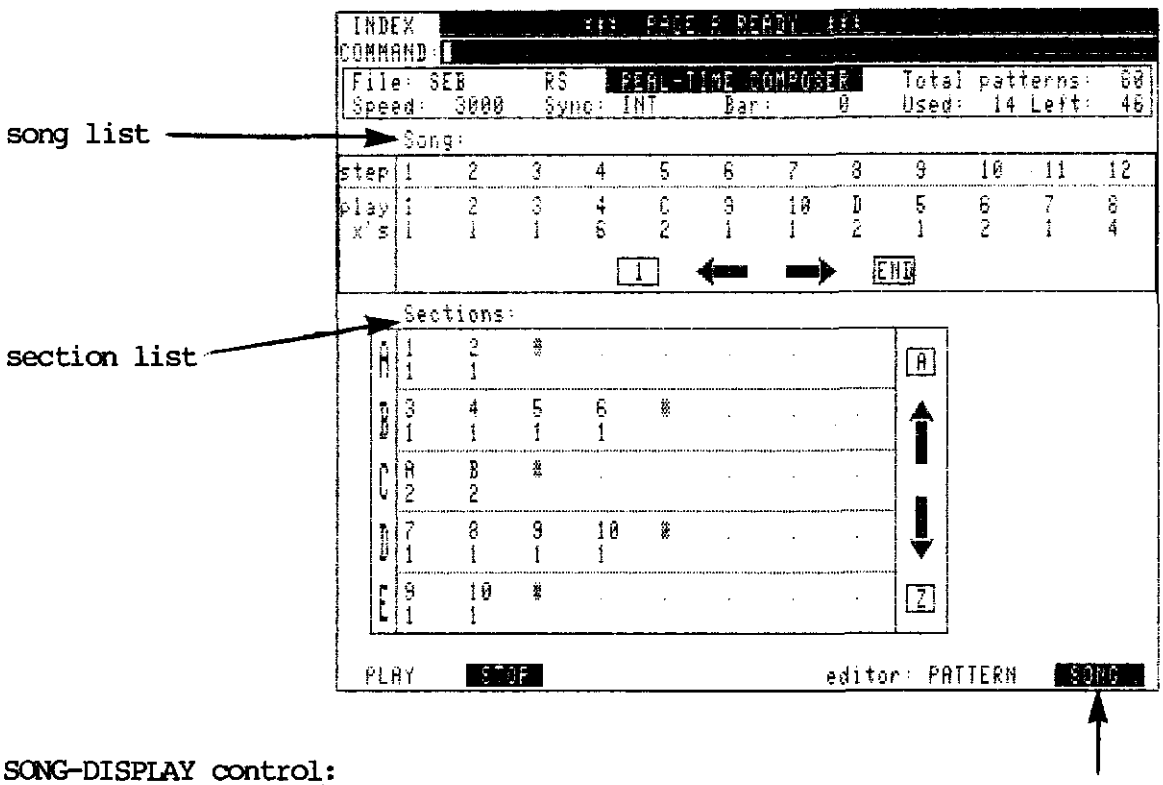
Commands that require at least 3 letters:
RES ET
REC ORD

BEHAVIOUR of SLAVE Music Keyboard:

If the OPEN (illuminated) keyboard on Page R is the one to which the SLAVE keyboard is assigned (on Page 3) then the slave keyboard will work just like the master keyboard; otherwise it remains independent.

SONG EDITOR:

Integral to the linking of patterns and sections with the song-editor is the ability to change the position of the "windows" through which different steps or sections are displayed.



SONG-DISPLAY control:

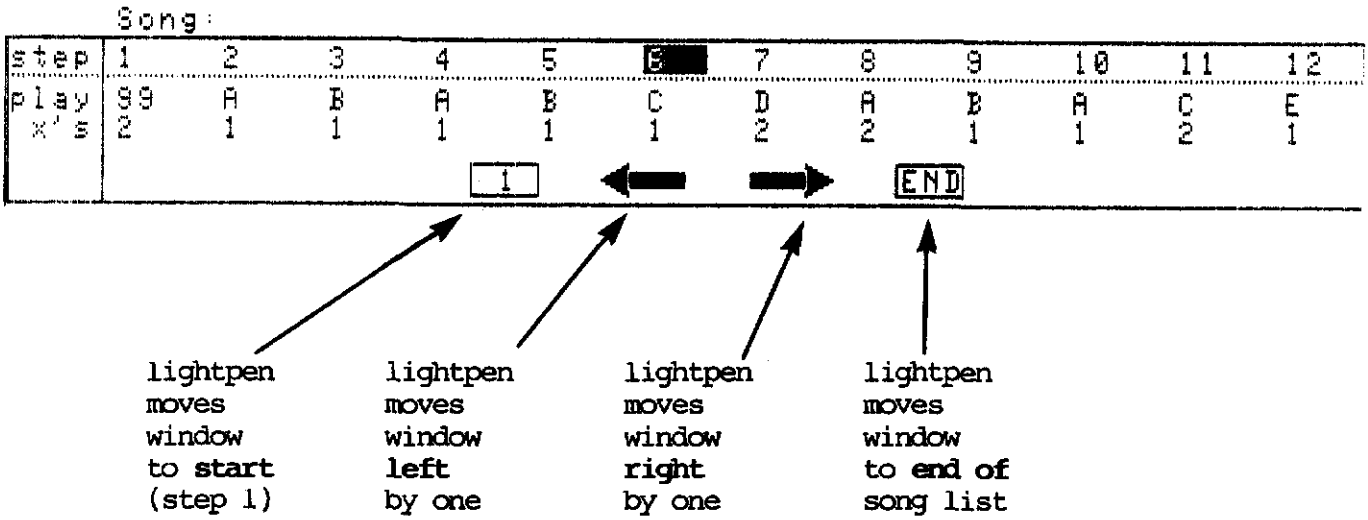
There are **two** ways to move the song list window:

1) Use the lightpen to point to the large horizontal **right** or **left** arrows. The window will shift accordingly.

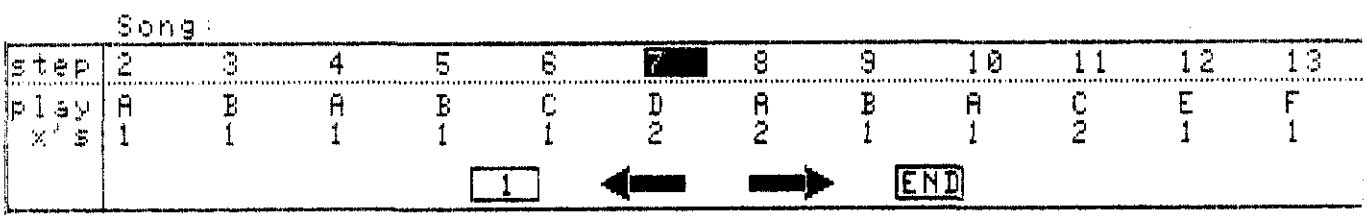
Point to the word "END" and the **end** of song list will appear.
Point to the number "1" and the **beginning** of song list will appear.

2) Move the cursor to any of the step numbers.

TYPE:
- <add> Move window **right** by one.
- <sub> Move window **left** by one.
- 255<add> Move to **END**.
- 255<sub> Move to **START**.
- nnn<set> Move window to step **nnn** (1 to 255).



Song window from above example has been moved **right** by one ...



SECTION-DISPLAY control:

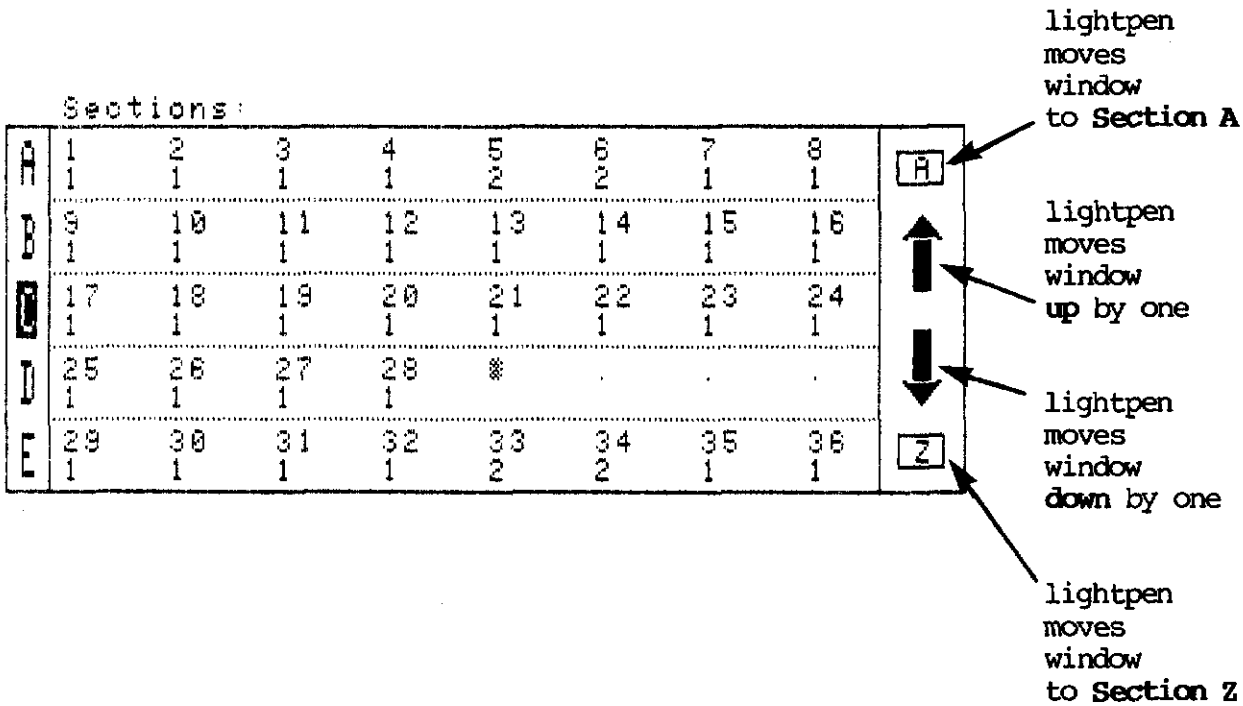
There are **two** ways to move the section list window.

1) Use the lightpen to point to the large vertical **down** or **up** arrows.

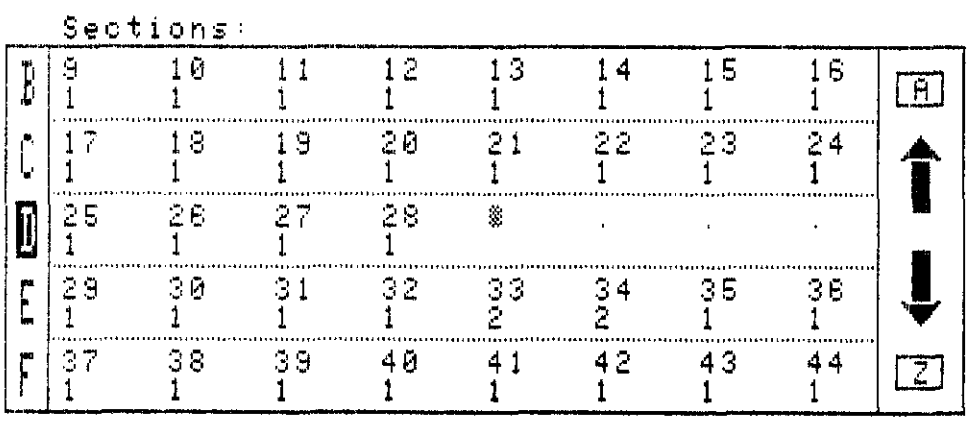
Point to the letter "Z" and the last five section lists (V to Z) will appear. Point to the letter "A" and the first five section lists (A to E) will appear.

2) Move the cursor to any of the big section letters.

TYPE: <add> to move the window **down.**
<sub> to move the window **up.**
X<set> to move the window to section letter **X** (A to Z)

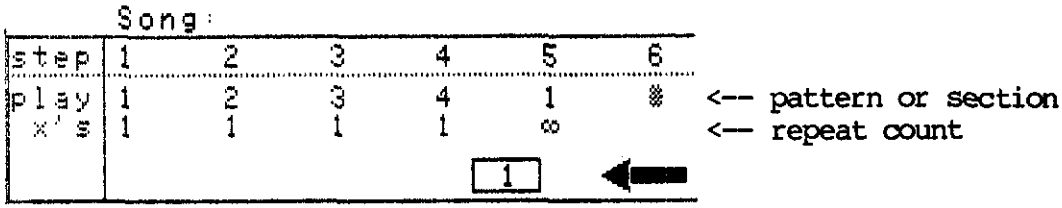


Section window from above example has been moved down by one.



STEPS:

Each step has **two** items in it:



Repeats may range from 1 to 127 or infinity.

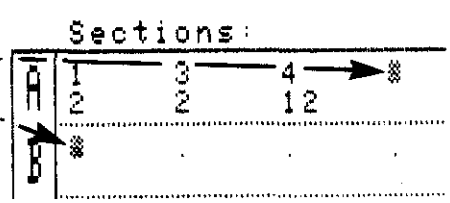
Whenever infinity is encountered, playing repeats endlessly at that point.

To get the infinity symbol, type: Ø<set>

Zero is equivalent to infinity.

By moving the cursor around with the up, down, left and right arrow keys and by using the <add>, <sub> and <set> keys in the usual way, pattern numbers and repeats can be put into the song list and section list.

The ※ symbol signifies the end of the song or section list.



Typing **END<set>** will end a song or section list.

SONG EDITOR TRACE FUNCTION:

Whenever the cursor is positioned within the SONG list or the SECTION list it will automatically trace the progress of the song during <PLAY>.

No tabbing or assignments are allowed.
To escape from this (e.g., to change SPEED) press <home> key.

The BAR command also positions the cursor, to the relevant bar.

BLOCK COMMANDS:

In addition to using the <add>, <sub>, and <set> keys to modify STEP values one at a time, there are several commands which operate on a BLOCK, or consecutive group of steps within the **SONG** or **SECTION** lists.

These block editing commands enable the linking of many patterns or sections, and take effect from the **CURRENT CURSOR POSITION.**

SUMMARY of song editor block commands:

> **ESCAPE** function.

> **INSERT** one or more steps with specified values.

> **OVERWRITE** one or more steps with specified values.

> **DUPLICATE** one or more steps, **INSERTING** new step(s).

> **DUPLICATE** one or more steps, **OVERWRITING** existing step(s).

> **DELETE** one or more steps.

> **MAKE** a section.

> **END**

ESCAPE function:

ESCAPE reverses the effect of the commands to be described i.e., INSERT, OVERWRITE, DELETE, DUPLICATE, END and MAKE.

To "escape" from an editor operation press the <esc> key.

This message will appear:

"ESCAPE FROM LAST OPERATION - (Y)??"

To un-do the last thing you just did, TYPE: Y<return>.

Otherwise just press <return> or <ctrl-esc>, that is hold down <ctrl> key, press <esc> key.

INSERTION versus OVERWRITING

An understanding of these two concepts is crucial for effective use of block commands.

When INSERTING, existing step values are NOT wiped out instead, new steps are effectively created by "bumping" existing values along to make room for the new values.

When OVERWRITING, existing STEP VALUES are wiped out and replaced with new values.

Using the <add>, <sub> and <set> keys also results in overwriting.

INSERT:

TYPE: I(NSERT)[,list of step values]<return>

One or more steps may be inserted from the CURSORED step.

Ranges of values may be specified for the insertion of sequentially incrementing (or decrementing) blocks of either pattern numbers or section letters with repeats.

If insuffient steps exist then nothing will change.
A warning will be given.

This would most likely occur when inserting into SECTIONS where a maximum of **eight** steps may exist.

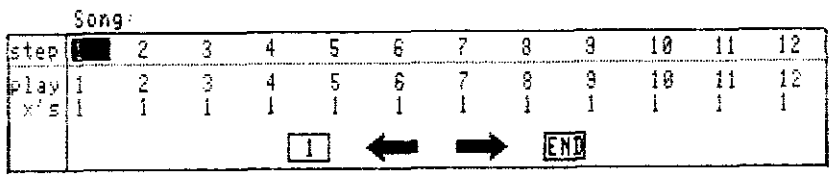
EXAMPLES:

To set up the CMI to play straight through the first 1ØØ patterns of the SONG without repeating any patterns (like a tape recorder):

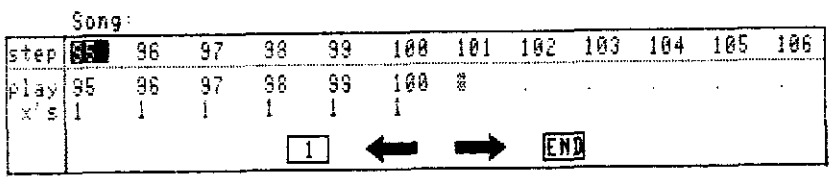
TYPE:

I 1-1ØØ<return>

The first 12 steps of the song list will look like this ...

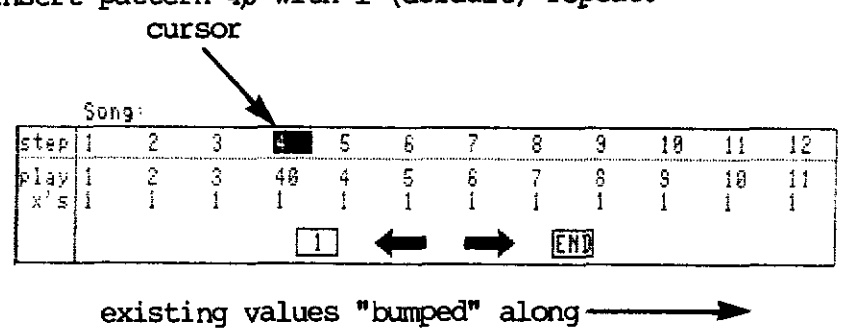


The last few steps of the song list ...



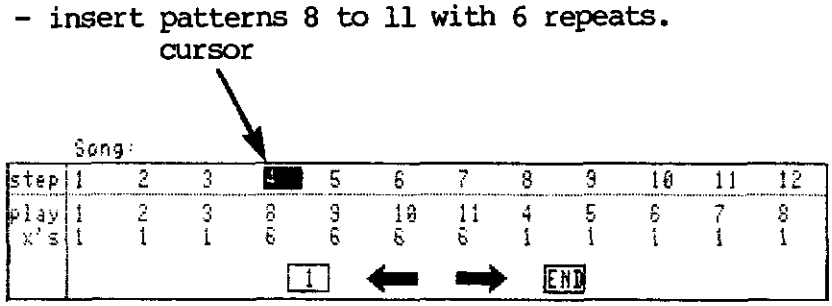
If the cursor position is at **step 4**, then the following commands will have the following effects:

I,4Ø<return> - insert pattern 4Ø with 1 (default) repeat.

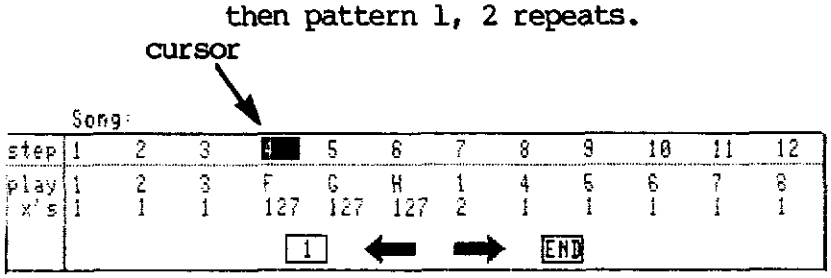


existing values "bumped" along ⟶

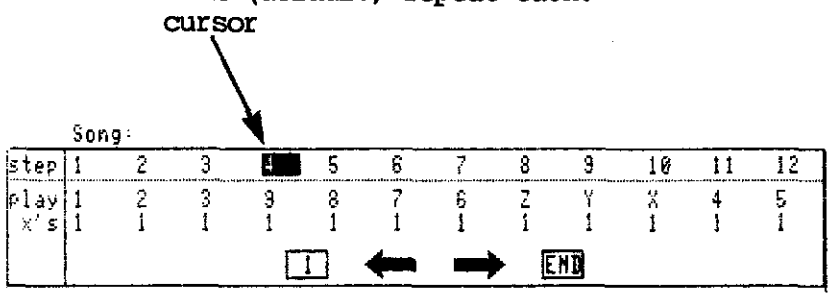
IN 8-11:6<return> - insert patterns 8 to 11 with 6 repeats.



I F-H:127 1:2<return> - insert sections F to H, 127 repeats, then pattern 1, 2 repeats.

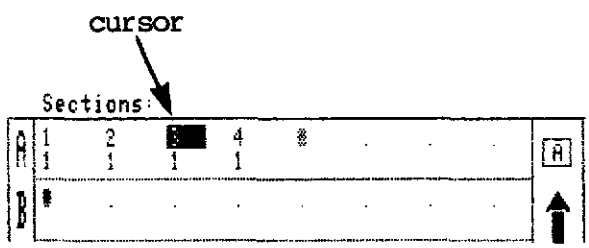


I 9-6 Z-X<return> - insert patterns 9 to 6 (decreasing),
sections Z to X (decreasing).
1 (default) repeat each.



Commands behave similarly in the **SECTION** list.

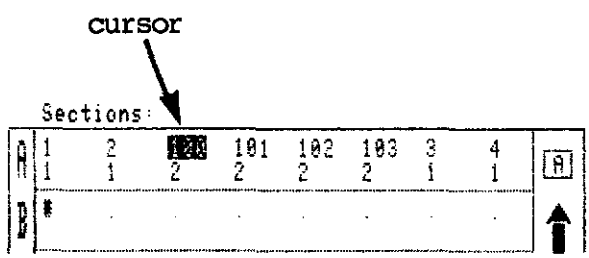
Before ...



After typing

I 1ØØ-1Ø3:2<return>

Insert patterns
1ØØ to 1Ø3 with
two repeats each.



Eight step values are the maximum for each section.

EXAMPLE: **I 1-12<return>** would not fit into a section, giving the error message "TOO BIG - WILL NOT FIT".

OVERWRITE: TYPE: O(VERWRITE)[,list of step values]<return>

One or more steps may be overwritten from the **CURSORED** step.

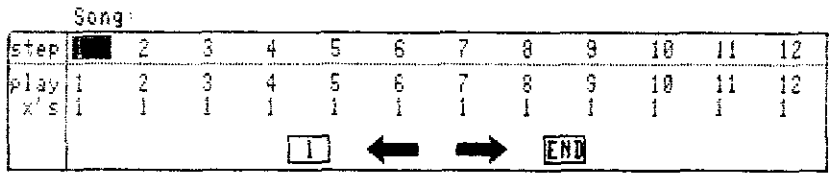
Ranges of values and repeats are the same as for the INSERT command.

If insuffient steps exist then nothing will change.
A warning will be given.

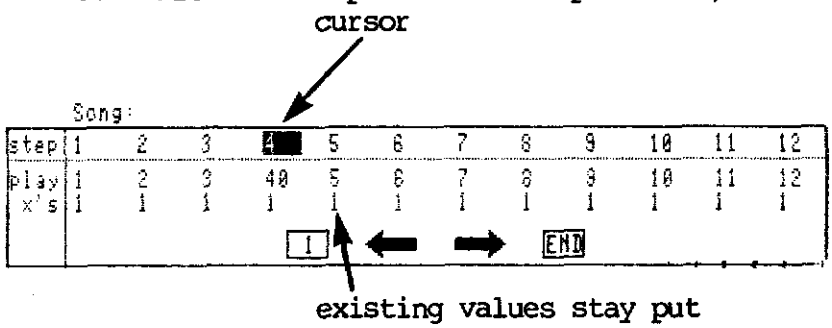
This would most likely occur when inserting into SECTIONS where a maximum of **eight** steps exist.

EXAMPLES:

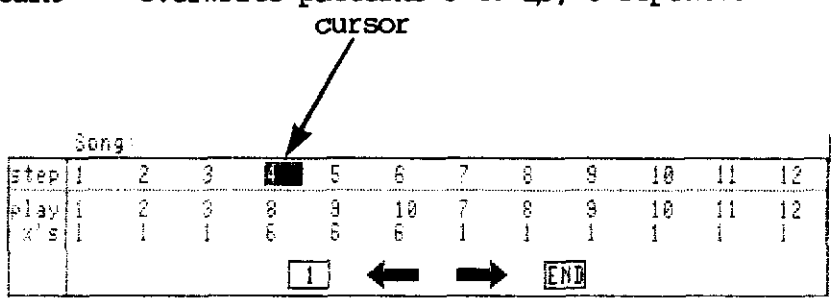
Original song list:



O,4Ø<return> - overwrite cursor position with pattern 4Ø.



O 8-1Ø:6<return> - overwrite patterns 8 to 1Ø, 6 repeats.



DUPLICATE INSERT command:

TYPE: D(UPLICATE)I(NSERT)[,section A to Z],[step range]<return>
or [pattern 1 to 255]
or (song *) (default)

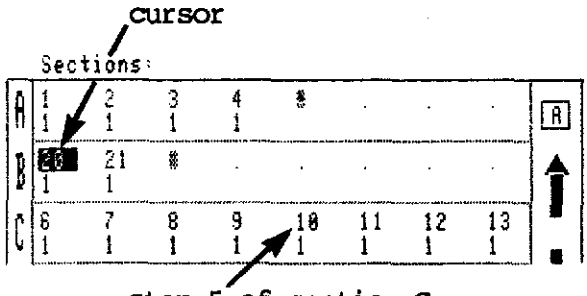
A range of one or more steps may be duplicated, starting at the CURRENT CURSOR POSITION, inserting new values and "bumping" existing values to the right.

The range of steps to be duplicated may be selected from the SONG list or any SECTION list. An error message will be given if more than a total of 8 values will occur in a section.

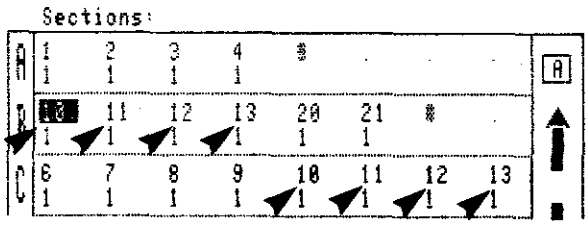
EXAMPLES:

DI,8 - insert step 8 of song
D I *8-12 - insert steps 8-12 of song
D I * - insert entire song
DI A - insert section A
D I C4 - insert step 4 of section C

Before ...



After typing **DI C5-8<return>**



steps 5 to 8 of section C
duplicated and **inserted** into
section B

DUPLICATE OVERWRITE command: TYPE:

D(UPLICATE)O(VERWRITE)[,section A to Z][,step range]<return>
or [pattern 1 to 255]
or [song *] (default)

Syntax is identical to DUPLICATE INSERT.

A range of one or more steps may be duplicated, starting at the CURRENT CURSOR POSITION and overwriting existing values.

EXAMPLES:

```
DO,8       - duplicate step 8 of song
D O *8-12  - duplicate steps 8-12 of song
DO *       - duplicate entire song
DO A       - duplicate section A
D O C4     - duplicate step 4 of section C
```

DELETE:

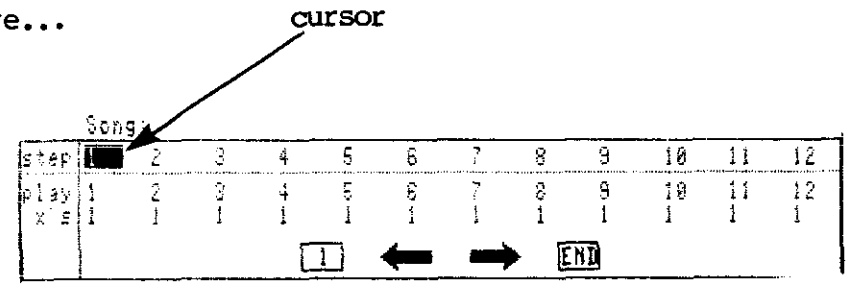
TYPE: D(ELETE),n<return>
where n = number between 1 and 255.

D 255<return> is the same as END<set>

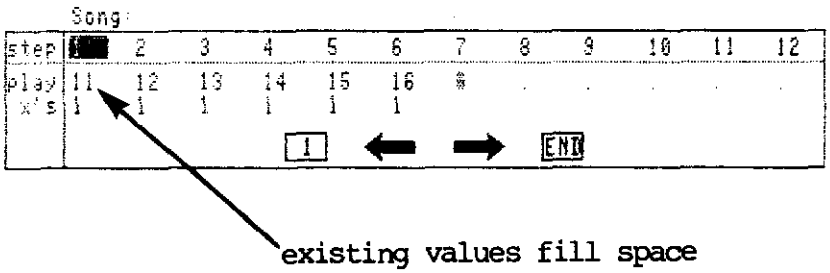
This command **deletes** step values. The converse of INSERT.

EXAMPLE:

Before...

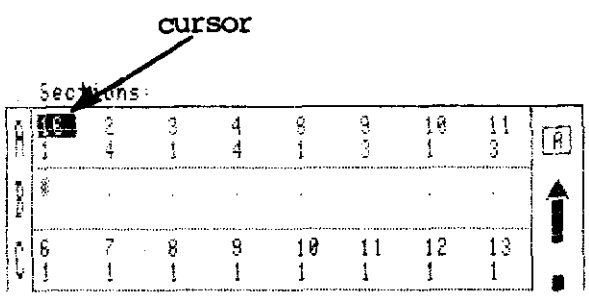


After typing D,1Ø<return> Delete 1Ø step values.

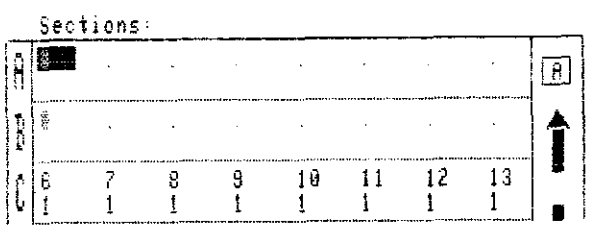


In the section list:

before ...



After typing D 8<return>



END:

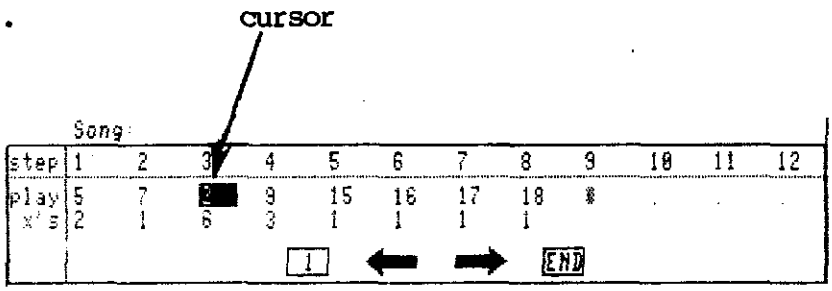
TYPE: END<set>

This command deletes all step items, from the current cursor position. End of SONG or SECTION.

It may be used to reset the song or section list.

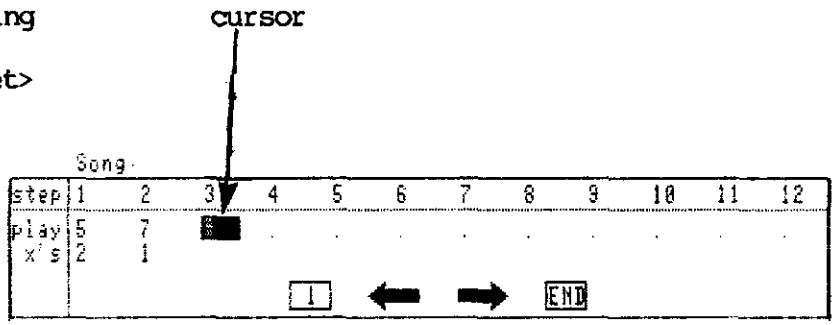
Equivalent to D(ELETE) 255<return>

EXAMPLE:
Before...

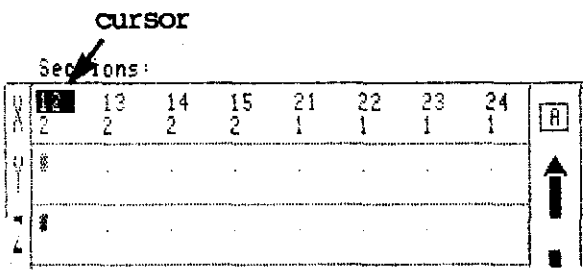


After typing

END<set>

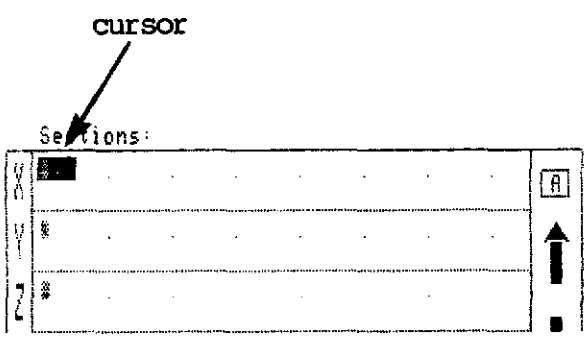


Before...



After typing

END<set>



MAKE SECTION command:

TYPE: M(AKE),(section A to Z),[step count],<return>.
(default 8)

This single command combines the functions of several other commands in a single common operation - the creation of a section list.

Starting at the CURRENT CURSOR POSITION, a block of from 1 to 8 steps is duplicated in the desired section list.

The original block is then deleted, and a single step inserted which calls the new section.

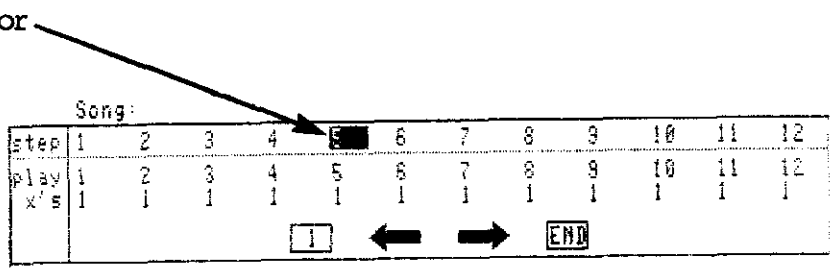
If the specified section is not empty then an abort - option message will appear -

"OVERWRITE SECTION - (Y)??". Reply **Y<return>** to proceed.

The original block may be within another section but not the section being MADE.

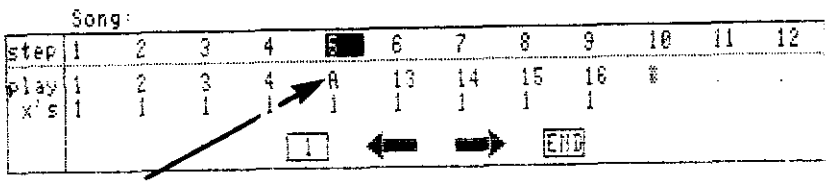
EXAMPLE:

Before... cursor

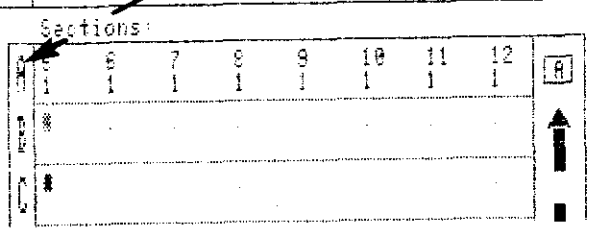


TYPE: M,A 8<return> - make section A from the next 8 (default) steps beginning at the current cursor position.

After ...

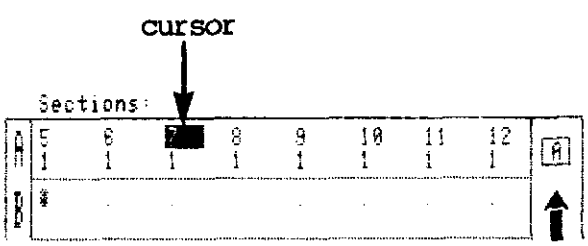


and section A contains ...

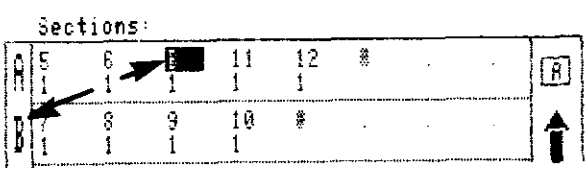


From section to section ... cursor

Before ...



After typing M B 4<return> - make section B from the next 4 steps beginning at the current cursor position.



The following is a summary of responses from the CMI when using the REAL-TIME COMPOSER.
Responses common to other pages (e.g., number must be between 1 and 255) are not included.

MESSAGES encountered in both PATTERN and SONG EDITOR ...

"Playing SONG : (1 to 255) time(s)" - Appears in response to
(or infinity) PLAY or RECORD command.

"Playing SECTION (A to Z) : (1 to 255) time(s)" - Appears in
(or infinity) response to
PLAY or RECORD
command.

"Playing PATTERN (1 to 255) : (1 to 255) time(s)" - Appears in
(or infinity) response to
PLAY or RECORD
command.

"REAL-TIME COMPOSER : Version 1.3Ø" - Type **?<return>** to see
the version number.

"Revising <filename.RS>, please wait..." - CMI updates a file
created from a pre-release
version of the
REAL-TIME COMPOSER.

MESSAGES encountered in the PATTERN EDITOR ...

"SPACE for only N PATTERNS - OK (Y)??" - You have asked for more
patterns than are avail-
able as free space on
the disk. For maximum
number of patterns (255)
insert a blank disk.

ERRORS encountered in the PATTERN EDITOR ...

"Type at least 2 letters of command word" - that is AD D
UN ALLOCATE
KE Y
VE LOCITY
DU RATION
TI ME

"CANNOT LOAD PATTERN N" - The sounds disk has been removed while the song is playing (never do this!)

- Pattern N has somehow been corrupted. Either the disk has been damaged or exposed to intense heat or magnetic field.

"CANNOT SAVE PATTERN N" - Faulty disk as desribed above.

"NO UNUSED PATTERNS" - You have tried to **UNALLOCATE** unused patterns. There are no unused patterns.

"FILE FULL - CAN'T ALLOCATE PATTERN N" - There are no UNUSED patterns left. Use the **ADD** command.

"NOT ENOUGH DISK SPACE" - You have tried to ADD extra patterns. See explanation on Page 18. On PAGE 2, **TRANSFER** file to a **blank** disk. Extra patterns may then be added.

"SORRY, N/N OUT of RANGE" - Time signature is not musically valid.

"ENTER TIME as "#/#" - press <set>" - Time signature must consist of two valid numbers seperated by a delimiter (comma, space, slash etc.) See Page 37.

MESSAGES encountered in the SONG EDITOR ...

"OVERWRITE SECTION (A to Z) - (Y)??" - Some values are already in the section referred to.

"ESCAPE FROM LAST ACTION - (Y)??" - Typing **<esc>** will reverse the effect of INSERT
OVERWRITE
DELETE
DUPLICATE
DELETE
MAKE
and END

ERRORS encountered in the SONG EDITOR ...

"INVALID SECTION LETTER" - Section letter must be a letter between A and Z.

"TOO BIG - WILL NOT FIT" - Song list may contain a maximum of 255 steps.
Section list may contain a maximum of 8 steps.

"SECTION NESTING TOO DEEP in SECTION (A to Z)" - Example:
Section A plays
Section B which plays
Section A which plays
Section B and so on.
In other words, an endless loop.

"INVALID STEP NUMBER or RANGE" - Step number must be between 1 and 255.
Range must be between 1 and 127 or infinity (Ø<set>).

"ERROR: SECTION (A to Z) CANNOT CALL ITSELF" - Section A cannot play itself.

"CAN'T SAVE <filename>, RE-INSERT CORRECT DISK" - You have changed disks while working on a song.

"TRAP CODE : inform your distributor." - Inform your distributor.

*** Develop a systematic method of working.

*** When creating a new Page R song, be liberal with the number of patterns allocated.

The reasons are... 1) you can always **UNALLOCATE** unused patterns back to **FREE SPACE** on disk
2) you will almost always need more patterns than originally envisaged
3) having extra patterns as a scratch-pad area allows you to copy blocks of patterns for experimentation without losing the original patterns

*** For recording with multi-track and live musicians, have a blank two-bar click-track count-in. No-one is then caught by surprize.

*** Avoid repetitive typing. Familiarise yourself with all the Page R facilities and commands. There is nearly always a command which shortcuts repetition. Let the CMI do the work.

*** Patch **KEYVEL** to either ATTACK or LEVEL on Page 7 for all voices to utilize Page R note dynamics. Avoid patching both LEVEL and ATTACK to KEYVEL for a voice. This would result in a voice having a slower ATTACK for a lower LEVEL.

*** A combination of music keyboard, alpha-numeric keyboard and lightpen can be the most convenient way to INSERT many notes

*** To convert between CMI speed, beats per minute (m.m.) and external synchronization, use the following relationships:

$$\text{CMI speed} = \frac{314160}{\text{beats per minute}}$$

$$\text{CMI speed} = \frac{2010.5}{\text{EXTernal sync tone in KHz}}$$

$$\text{beats per minute} = \frac{314160}{\text{CMI speed}}$$

$$\text{beats per minute} = \frac{\text{EXTernal sync tone in KHz}}{156.26}$$

$$\text{EXTernal sync tone in KHz} = \frac{2010.5}{\text{CMI speed}}$$

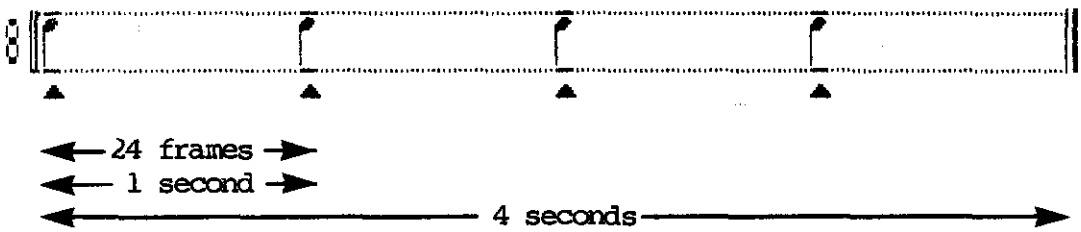
$$\text{EXTernal sync tone in KHz} = \frac{\text{beats per minute}}{156.26}$$

*** When synchronizing cue points for video and cinema, the following time relationships apply:

at 24 frames/second,

SPEED	5236 - 60m.m.	2618 - 120m.m.
𝅗𝅥	24 frames	12 frames
𝅗𝅥	16 frames	8 frames
♩	12 frames	6 frames
♩	8 frames	4 frames
♩	6 frames	3 frames
♪	4 frames	2 frames
♪	3 frames	1.5 frames
♪	2 frames	1 frame

At a SPEED of 5236 and time signature 4/4 ...



*** Observe that a pattern with time signature 8/4 is equivalent to two 4/4 patterns. Thus a note can be made to hold for the equivalent of two 4/4 bars. To make a note hold longer use **SLUR** on Page 7.

*** If you are going to use a completed song as the basis for a new one but do not want to lose the original, then the following example will be helpful.

EXAMPLE:

You have finished a Page R song in which you have used up all eight voices, and you want to make another similar Page R song to externally synchronize with the first or use as the basis of a new song. You want to keep the original rhythm sequences, melody sequence and pattern structure as a reference in developing the new song.

Original song called **NEWTUNE.RS.**

On Page 2, **TRANSFER** NEWTUNE.RS to another sounds disk.

Insert the sounds disk with the copy of NEWTUNE.RS into right-hand disk drive.

On Page 2, change the name of NEWTUNE.RS to **NEWTUNE1.RS.**

LOAD NEWTUNE1.RS.

On Page R, you see that the song consists of say 1ØØ patterns,
and you only want to keep Keyboard sequences 1 - BASSDRUM,
2 - SNARE,
and 8 - MELODY as a
guide to developing the new song.

Therefore you will want to **ZERO** out Keyboard sequences 3,4,5,6 and 7 over the 1ØØ patterns.

Select an **UNUSED** (empty) pattern, say pattern 255.

Type **P=255<return>**

If there are no UNUSED patterns, type **AD,1<return>**. This adds one empty pattern.

Copy pattern 255, keyboards 3,4,5,6 and 7 into patterns 1 to 1ØØ.

Type **C 255 1-1ØØ (34567)<return>**

So now Page R file NEWTUNE1.RS is identical to NEWTUNE.RS except Keyboard sequences 3,4,5,6 and 7 are empty.