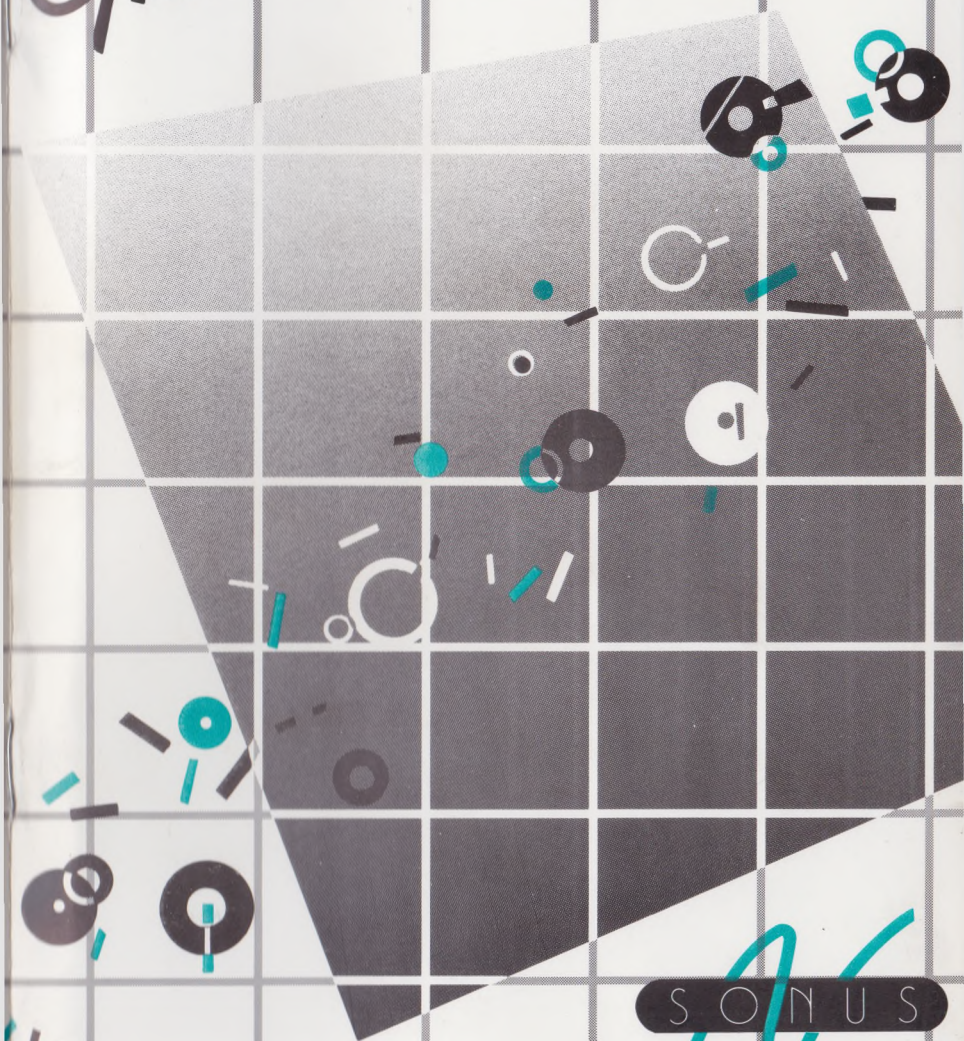


Glasstracks



SONUS



Glass Tracks Owner's Manual for the Commodore 64

First Edition - September, 1986

by

Marshall Otwell and Tim Ryan

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Warranty

SONUS Corporation does not warrant that the functions contained in this program will meet your requirements or that the operation of the program will be uninterrupted or error free. SONUS does warrant that the diskette on which the program is furnished is free of defects in materials and workmanship under normal use for a period of ninety (90) days from the date of delivery to you as evidenced by a copy of your receipt. The warranty card enclosed with the product must be completed and mailed to SONUS for this warranty to be valid.

Defective media returned by purchaser within the ninety day period will be replaced without charge, providing the purchaser has signed and returned the warranty registration card and provided that the returned media has not been subjected to any unusual damage or wear and tear.

Defective media should be returned, postage or shipping costs prepaid, to:

SONUS CORPORATION
21430 Strathern, Suite H
Canoga Park, CA 91304
Attention: Warranty Department
(818) 702-0992

Be sure that any returned media is shipped in a protective package, along with a description of the problem.

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Necessary Equipment

You will need the following items to use your Glass Tracks:

1. Glass Tracks Master Disk.
2. A blank disk for your music data.
3. MIDI Interface Card (Sonus, Passport, Yamaha, or Sequential Circuits Model C64 or 242).
4. Commodore 64/128 Computer.
5. Monitor (color or black & white T.V. or video monitor).
6. Commodore disk drive (1541 or 1571).
7. One or more electronic music synthesizers with MIDI capability.
8. Audio playback system.
9. Assorted connecting cables.

Starting Up

1. Make sure your Commodore 64, disk drive, and video monitor are installed and operating properly.
2. With the POWER OFF, insert your MIDI Interface card into your Commodore 64.
3. Make sure the synthesizer(s) and audio system are also installed and working properly.
4. Using standard MIDI cables (5-pin DIN), connect the MIDI OUT jack on your MIDI Interface card to the MIDI IN jack on your synthesizer; then connect the MIDI OUT jack on your synthesizer to the MIDI IN jack on the Interface card. If you are using more than one synthesizer, connect the MIDI THRU jack on your main synthesizer to the MIDI IN jack on your 2nd synthesizer, the MIDI THRU jack on the 2nd to the MIDI IN on your 3rd synthesizer, etc.
5. Turn on the power to your Commodore 64 and disk drive.
6. Insert your Glass Tracks Master Diskette into the disk drive. If you are using a Sequential Model 64 MIDI interface card, use "E" (for "Load Expansion Software") on your computer keyboard to load Glass Tracks. If you are using ANY OTHER MIDI INTERFACE CARD, proceed with the following instructions:
7. Type LOAD "*",8,1 on the computer keyboard and press RETURN.
8. After a brief pause, you will be asked to select which MIDI Interface Cartridge you will be using. Choose one of the following selections:

Press "1" for SONUS
Press "2" for Passport/Yamaha
Press "3" for Sequential

As soon as you select one of the options, your disk drive will start loading Glass Tracks.

9. When your computer has finished loading Glass Tracks you will see the following message:

Please remove the program disk
Press RETURN when ready

Remove your factory Master Diskette and press RETURN. You are now ready to use your Glass Tracks.

Chapter One

Getting To Know Your Glass Tracks

After loading Glass Tracks you should see the following window in the middle of the screen:

```
-----  
I                                     I  
I                                     I  
I                                     I  
I           PPQN                       I  
I           -----                     I  
I           I 24 I                       I  
I           -----                     I  
I                                     I  
I                                     I  
I                                     I  
I                                     I  
I                                     I  
I           Use F1 to set PPQN           I  
I                                     I  
I           RETURN to continue           I  
I                                     I  
I                                     I  
I                                     I  
-----
```

This window allows you to select the number (24, 48, or 96) of pulses per quarter note (PPQN) at which you would like to operate your Glass Tracks. This number should correspond to the PPQN setting on your drumbox; if you don't know which PPQN your drumbox uses, consult your drumbox instruction manual (most drumboxes use a PPQN = 24).

Press F1 to change the PPQN selection. If you have no drumbox, you can leave the PPQN at 24. For smoother, less rhythmic types of music, a PPQN of 96 offers greater resolution. When you have selected the proper PPQN number, press RETURN and Glass Tracks will display the Sequence Screen. Now you are ready to record and edit your music.

to the Main Menu. In Glass Tracks any time a menu selection is displayed in a lighter color it means that selection will take you to a different menu. On the other hand, selections which appear in darker colors perform the specific task indicated.

Now hold down either "Shift" key. A different set of four choices is displayed under Main Menu, now labeled "F2", "F4", "F6", and "F8". While holding the "Shift" key down, press F2 for "Set Clock" and notice that the Clock setting at the upper right hand corner of the screen changes from "Int Drum" to "Int Clk". Continue pressing the "F2" key to cycle through the various Glass Tracks clock options until you return to "Int Drum".

Find the "Ctrl" (for Control) key on the Commodore keyboard and hold it down. A third set of four choices (Set Cue, Set In, Set Out, and Set End) is displayed and labeled "F1", "F3", "F5", and "F7", respectively.

There are twelve choices available to you from the Main Menu even though only four are visible at any time. Each menu in your Glass Tracks works the same way, although not all the menus have as many as twelve choices. You might think of these as the different Levels of each menu. Remember, for each menu there are three different Levels:

Level 1. Regular - no SHIFT or CTRL key used.

Level 2. Shifted - Press either SHIFT key.

Level 3. Control - press the CTRL key.

These keys let you see the different Levels of the menus; to activate a choice, you must also press the appropriate function key on the Commodore keyboard while the choice you want is visible.

Track and Sequence Cursors

In addition to the functions which appear on the various menu Levels of Glass Tracks there are several other commands which are executed when certain Commodore keys are pressed. These are called "Hidden" commands because they aren't displayed on the menus. Chapter 8 of this manual explains all of these "Hidden" commands in detail; however, certain Hidden Commands will be explained here in order get started.

Hold down either "Shift" key and press the ">" key on your Commodore. Notice that the (light green) hilite in the middle left of your screen moved from the "A" to the "B" and the line above it now reads, "SeqB: ". This hilite is the Sequence Cursor. Do this again and see the cursor move to the "C" location. These letters denote the eight different Sequences (A to H) which are available to you. When the cursor is on a given Sequence letter, any recording, editing, saving, or loading you do will affect that Sequence and that Sequence only.

Now hold down either "Shift" key and press the "<" key. Notice that the Sequence cursor moves in the opposite direction.

WITHOUT holding either "Shift" key now press the ">" key. You will see that the hilite on the number "1" which appears to the right of the word "Track" moves to the number "2". Press ">" again and the highlight moves to "3" and so on. This is your Track Cursor. Any operation you perform involving a single track (such as recording or naming) will affect ONLY the Track currently indicated by the Track Cursor.

Again, WITHOUT pressing either "Shift" button, press the "<" key. You will now see the Track cursor hilite move in the opposite direction.

Make sure the Sequence Cursor (the hilite in the Sequence letter line) is on Sequence "A" and make sure the Track Cursor (the hilite which appears on one of the numbers to the right of the word "Track") is on the number "1" before going on to the next section.

Tape Transport Controls

The following box is displayed in the middle left of the screen:

```
-----  
| REC | PLAY > | << | >> |  
-----
```

These are the Tape Transport Controls which are designed to simulate the action of a tape recorder. The Tape Controls and the Counter ("CTR 001:01:01" in the middle right of the screen) should be hi-lited in a lighter color. Whenever the Tape Controls and the Counter are hi-lited, the Tape Transport functions (Record, Playback, Reverse, and Fast Forward) are active.

Recording Your First Track -

Now hold down the "/" key - the "REC" button of the Tape Transport Controls lights up (lite red). Hold down the "/" and press the SPACE BAR - the "REC" button and PLAY button will light and a metronome will sound through the speaker in your video monitor (make sure you have the volume up on your TV set or video monitor). At the bottom of the screen where the menu bar was, you will see a message which reads:

Press SPACE BAR or footswitch to stop

You should see that the numbers at the right end of the Counter are counting very quickly. Your Glass Tracks is now ready to record on Track 1 of Sequence "A". To record, all you need to do now is play your synthesizer keyboard. As soon as you play a note, the middle numbers in the Counter will start to count, indicating that the recording process has begun. Play a little music (more than four measures) and then press the SPACE BAR (or FOOTSWITCH if available on your MIDI Interface card) to stop. Notice that the "A" in the Sequence Letter line is now displayed in reverse field. This indicates that something has been recorded in Sequence A (You may give the Sequence a proper name in the Edit Sequence Menu - see Chapter 3). You should also see that the number 1 in the Track line and a space to either side are now reversed. This indicates that something has been recorded on Track 1.

Hold down either Shift key and press the ">" key to advance the Sequence Cursor to Sequence B. Notice that the 1 in the Track line is no longer reversed, indicating Track 1 in Sequence B is NOT recorded. Now hold down either Shift Key and press the "<" key to move the Sequence Cursor back to Sequence A.

Underneath the "Ctr" indicator in the middle right of the screen you will see a second indicator labeled "End". This indicator shows where the Sequence you just recorded ends. If you recorded exactly four measures your "End" counter should now read 005:01:01. If nothing has been recorded the "End" will show 001:01:01 indicating that the Sequence has no length.

The Counter Numbers -

The "Ctr" and "End" Counters on your SuperSequencer are similar to the Tape counters on a conventional tape recorder except they are designed to count in a more musical fashion. The meaning of the Counters is as follows:

Three Left most digits	-	Measure number
Two Center digits	-	Beat number within the Measure
Two Right most digits	-	Pulses within the Beat

To replay the Sequence you just recorded make sure the Sequence Cursor is still on Sequence A and press the SPACE BAR. You should hear the Sequence playing back. Notice that the "Ctr" indicator is counting. Press the SPACE BAR again to stop the playback. Press the SPACE BAR several times. Each time the Sequence will begin playing from the place in the Sequence which the "Ctr" is indicating.

Stop the playback of the Sequence somewhere near the start and press the ">" key to advance the Track Cursor to Track 2 (indicated by the highlighted number in the Track line). Now hold down the "/" key, press the SPACE BAR, and play your synthesizer. You are now recording on Track 2 of Sequence A, starting from the place indicated by "Ctr" when you started the recording. When you reach the End of the Sequence, the recording will automatically stop and the "Ctr" indicator will read 001:01:01. You have just performed an overdub. Notice that the number 2 in the Track line is now reversed indicating it too has been recorded. Press the SPACE BAR to hear both of the Tracks playing back.

Either while the Sequence is playing or when it has stopped, press the "1" key and notice that the reversed 1 in the Track line has been faded, and if the Sequence is playing you should no longer hear the material which was recorded on Track 1. You have just "Muted" Track 1. You can "Mute" and "Unmute" Tracks at any time with Glass Tracks. To "Unmute" the Track, simply press its number again.

If you would like to advance the Ctr forward to a specific place in a Sequence to start playback or to set the End, for example, you can use either the "Crsr Right" key for Fast Forward or the "+" key to advance by single pulses. If you want to move the Ctr to an earlier location, you can use the "Crsr Down" key for Rewind or the "-" key to decrement the counter by single pulses.

If at any time you would like to reset the Ctr to the start of a Sequence, press the "Home" key. If a Sequence has been recorded or the End Counter has been set you can advance the Ctr to the End value by pressing either Shift key and the "Home" key.

Some More About the End Counter -

The End Counter displays the length of any recorded Sequence. In the above case of a four measure Sequence, the End would read 005:01:01, meaning that when the Sequence reaches the first pulse of the first beat of the fifth measure it has finished and either loops back to the beginning or stops. If you record the first Track of a Sequence (which ordinarily determines the length of the Sequence) and fail to hit the SPACE BAR to stop recording at precisely the time you intended, you can still adjust the End later by using the Set End command in Level Three (CTRL) of the MAIN MENU. This procedure is discussed in Chapter Two.

IMPORTANT: Whenever you begin recording or editing (as opposed to merely playing back) a different Sequence, a considerable amount of memory management must be performed. It can take several seconds to complete this management if most of Glass Tracks' Sequence memory has been used. During this time no message appears, but the line in the bottom menu stops blinking. However, once the management has been done you can work on the Sequence as long as you like without encountering any further such delays. Press "H" on your Commodore keyboard to have this management done at the time of your choice, as opposed to at the beginning of an edit or when recording a new track.

Sequence Screen Indicators

Before discussing the various menus in Glass Tracks let's take a brief look at the other features of the Sequence Screen.

Memory (99)

The Memory indicator located at the top center of the screen shows you the amount of recording memory remaining in Glass Tracks at any time. The Memory indicator will start out showing 99 and will decrement to 0 as you use up the Sequence Memory. If all Sequence Memory has been used, you will be unable to do any more recording, and you will be prevented from using certain edit functions which themselves use some Sequence memory. Because of this, it's a good idea always to leave yourself a little Sequence memory for further editing.

Clock (Upper right hand corner)

Glass Tracks allows you to use any of four different clock options provided your MIDI interface card supports them. Glass Tracks starts out set to Int Drum (Internal Drum). Clock selection is made from Level 2 of the Main Menu (see Chapter 2). In any of the clock settings the "Play)" indicator in the Tape Transport Controls will reverse on each beat providing a visual metronome. Also, if you have your Commodore audio connected you will hear an audio metronome. This audio metronome can be enabled and disabled from the Commodore keyboard by pressing the "N" key. Any of Glass Tracks' clock settings can put out MIDI timing information by enabling "Midi Drum". "Midi Drum" out is turned on and off by pressing the "M" key on the Commodore keyboard (Both the Metronome and Midi Drum enable/disable are discussed further in Chapter 8 - the Hidden Commands chapter).

Int Drum - Internal Drum

This clock setting uses the Internal Clock in your interface card to play and record Sequences and Songs while putting drum timing signals out over the five pin DIN drum connector on your interface card (if provided). This type of click out is used on many Roland drum boxes. Start and stop signals are also sent over the DIN drum connector. When set to the Int Drum clock setting, Glass Tracks will playback and record Sequences and Songs at the tempos indicated by the Tempo display (see below).

Int Clk - Internal Click

If your MIDI interface card is equipped with tape click out, this Clock setting allows you to put out a tape sync track. This click track will be output at the rate specified by the Tempo settings of the individual Sequences. To record a click track, select "Int Clk" and decide which Track on your tape recorder to devote to the Click Track. Next, connect the Click out from your interface card to the appropriate input on your tape recorder. Press the SPACE BAR and begin playing your Song or Sequence. Now adjust the record level to around -5db (recording the click level too hot or too cold can cause problems). Stop the playback and press the "Home" key to go to the beginning of your Song or Sequence. Start your tape recorder and allow several bars of silence before pressing the SPACE BAR to begin putting out the Click Track. Play your Sequence or Song beyond the end to give yourself some extra Click Track. You can use this Click Track to individually move Tracks from your Glass Tracks to your multi-track tape recorder. To do this read the Ext Clk section below.

IMPORTANT - Getting a clean and reliable Click Track may take some experimentation on your part. You may have to carefully adjust input and output levels to get reliable results. With some interface cards a "click box" may be required to get adequate results.

Midi Clk - MIDI Clock

This Clock setting allows you to use an external MIDI timing source, such as a drum box or FSK to MIDI box, to drive Glass Tracks. To use this Clock setting the MIDI out on your timing source box must be connected to the Midi in on your interface card, thus making recording impossible. That is why this Clock setting would normally be used for playback purposes only. Also, because the clock information is coming from an external source, the Tempo settings on your Sequences will be ignored. If you select this Clock setting and begin playback by pressing the SPACE BAR, you will see a message saying "* Start drum box to begin *". This message is to let you know that Glass Tracks is waiting for the external timing source to start.

Ext Klik - External Click

Choosing this Clock setting allows you to do one of two things, depending on which interface card you are using. If you have one of the Sequential cards, this setting allows you to use the click out on your drum machine or other click generating device to drive Glass Tracks. If you are using an interface card equipped with a Tape Click-In, this setting allows you to use a Click Track, once recorded, (see Int Klik section above) as a clock for your Glass Tracks. By using the Track muting features of the Glass Tracks this Clock setting allows you to roll individual Tracks of Sequences or Songs onto individual tracks of your tape recorder for later mixdown. To use this setting, you must first have recorded an appropriate Click Track for the Sequence or Song you intend to roll off. Without worrying about replaying the Sequence or Song, start the tape recorder and adjust the output level of the Click Track channel to around -5db. Be sure the output of the tape recorder's Click Track is going to the click in of your interface card. Rewind the tape to somewhere within the bars of silence before your Click Track begins. Now, press the "Home" key on your Commodore to go to the beginning of your Sequence or Song. Making sure that your Clock setting is on Ext Klik, press the SPACE BAR and you will see the message "* Start drum box to begin *". Start the playback of your tape recorder. When you reach the beginning of the Click Track your Sequence or Song should begin playing back. If the playback tempo is inconsistent or irregular, the cause is probably the output level adjustments (on the tape recorder) or the way the Click Track was recorded originally. After the Song or Sequence has begun playing, press the "F1" key on the Commodore. This will stop playback of your Song or Sequence exactly at its end.

NOTE: Our experience is that the best Click Track synchronizing, with most cartridges, is accomplished by using a PPQN of 96. If you have problems synchronizing to a Click Track and have not recorded your material at 96 PPQN, use the Set PPQN command on Level 2 of the Main Menu to change the PPQN. However, keep in mind that the Click Track MUST be re-recorded at the new PPQN.

Auto Pnch - Auto Punch

Auto Punch is one of the ways you can "punch-in" material with Glass Tracks (the other way is Live Punch). To use Auto Punch you must first set several Counters. This procedure is described in detail in Chapter 2 of this manual. Auto Punch is toggled on and off by pressing the "@" key on your Commodore.

MIDI Drum

The MIDI Drum indicator is found near the top right of the screen. When MIDI Drum is turned ON, Glass Tracks will send MIDI Clock information along with normal Sequence information from the MIDI Out jack on your interface card. This feature allows you to drive a drumbox or another sequencer from Glass Tracks. MIDI Drum On can be used with any of the four Clock settings described above. If you DON'T want Glass Tracks to put out Midi timing information, be sure the Midi Drum indicator reads OFF. MIDI Drum is toggled on and off by pressing the "M" key on your Commodore.

Play Thru - Play Through

When turned on, Play Thru automatically "echoes" what is coming into the MIDI In on your interface card, out the MIDI Out over any MIDI channel you select. This feature allows you to hear the "destination" keyboard you intend to play the Track while recording from the "master" keyboard plugged into the MIDI In on your interface card (a great convenience when recording music with multi-synth set-ups). Glass Tracks' Play Thru feature works during BOTH playback and record. To toggle Play Thru on and off press the "X" key on your Commodore. Play Thru is more completely discussed in Chapter 8 of this manual.

Step Mode

Glass Tracks' Step Mode feature allows you to play back, record, punch-in, and edit your music OUTSIDE of "real" time. When Step Mode is On, the Clock can be advanced manually by pressing the Return key, the Cursor Right key, or the "+" key. Turn Step Mode on and off by pressing the "S" key on your Commodore. Each time you turn Step Mode on, you must select the size of the Step you wish to assign to the Return key. Chapter 8 discusses Step Mode in greater detail.

Count Dwn - Count Down

If a Sequence has had at least one Track recorded or had its End set, you may want to use the Count Down feature to ease recording the remaining Tracks. To use Count Down, make sure it is ON (press "C" on your Commodore keyboard to toggle it on and off), and that you are at the BEGINNING of the Sequence. Now when you start to record, you will see a box appear to the left of the Transport Controls. In the box will be a "4" (the number of beats per measure), which will "Count Down" to zero accompanied by the audio metronome (if enabled), giving one 4/4 measure of count-off before recording starts. If you are NOT at the BEGINNING of the Sequence or if Count Down is OFF, no count-off will occur.

Tempo

Each of Glass Tracks' 8 Sequences can have a different Tempo ranging from 44 to 240 beats per minute. The Tempo of the current Sequence is shown in the center of the screen below the Transport Controls. This Tempo, of course, applies only if you are using one of Glass Tracks' internal clock settings - either Int Drum or Int Clic. If you are using one of the external clock settings the Sequence's Tempo would be dictated by the external clock itself. For this reason, when one of the External Clock settings is chosen, the Tempo Indicator disappears from the screen. Tempo is set in Level 2 (Shifted) of the Main Menu (see Chapter 2).

Name

Located directly below the Track Number line is the Track Name line. Each of Glass Tracks' 8 Tracks per Sequence can be given a three character Name. Once given, the Name appears in the Name line under the appropriate Track Number. Tracks are named in Level 1 of the Track Edit Menu (discussed in Chapter 4).

Velocity

Each Track may also be assigned a Velocity scaling factor which can make the entire Track louder and softer or brighter and darker. This Velocity scaling factor will be of use only if the Track is assigned to a synth which accepts MIDI Velocity information (such as a DX7). Track Velocity is selected in Levels 1 and 2 of the Track Edit Menu (see Chapter 4) and, once selected, appears under the appropriate Track in the Velocity line directly under the Track Name line.

Channel

An over-riding Track MIDI Channel may be assigned to each Track. This MIDI Channel will over-ride all MIDI Channel information recorded in that Track. The ability to assign a Channel to a given Track allows you send the Track to any synth in your system, even if it wasn't previously recorded with that synth or on that synth's Channel. Track Channel is selected in Levels 1 and 2 of the Track Edit Menu (see Chapter 4) and once selected will appear in the Channel line directly below the Velocity line.

Chapter Two

Main Menu

The menu now at the bottom of your screen should be labeled "Main Menu". The Main Menu allows you to perform several functions as well as to select the other Glass Tracks menus. Also, when exiting from these various other menus you will always return to the Main Menu. As mentioned in Chapter 1, menu selections appearing in lighter colors, such as "Edit Seq", take you to other menus rather than perform specific tasks. To execute any of the four menu selections shown at the bottom of the screen, simply press the corresponding function key. Following is a description of the various selections available to you from all Levels of the Main Menu (if you don't understand the concept of Levels, review Chapter 1).

Level 1

F1 - Edit Seq

Pressing F1 takes you to the Sequence Edit Menu of Glass Tracks (see Chapter 3).

F3 - Edit Trk

Pressing F3 takes you to the Track Edit Menu of Glass Tracks (see Chapter 4).

F5 - Song

Pressing F5 takes you to the Song Menu of Glass Tracks (see Chapter 6).

F7 - Disk

Pressing F7 takes you to the SEQUENCE Disk Menu of Glass Tracks. Any saves, loads, or deletes you perform from the Sequence Disk Menu affect only the Sequence currently indicated by the Sequence Cursor. Saves, loads, or deletes of Song files must be performed from the Song Disk Menu and CANNOT be performed from the Sequence Disk Menu (see Chapter 7).

Level 2 (Shifted)

F2 - Trk Mods

Pressing F3 while holding down the Control key takes you to the Track Modification Menu of Glass Tracks (see Chapter 5).

F4 - Set Clock

Pressing F4 from Level 2 of the Main Menu allows you to cycle through Glass Tracks' various clock selections. Press F4 (while holding down either Shift key) once and you will see the Clock indicator which had read "Int Drum" change to "Int Klik". Continue to press F4 and you will see the Clock setting change to MIDI Clk, to Ext Klik, and then back to Int Drum. With Glass Tracks, you can record Sequences at any of the available Clock settings and play them back at any other setting.

You should note that when you select an external Clock setting (Ext Klik or Midi Clk) which relies on an external time source, the Tempo indicator in the center of the screen disappears. This is to remind you that, when you use an external timing source, the Sequence tempos which you have set in Glass Tracks will have no effect on the Tempos at which the Sequences will play.

F6 - Set PPQN

The Set PPQN command of the Main Menu allows you to change the entire PPQN "Time Base" of Glass Tracks. With Set PPQN you can have recorded Sequences or Songs at either 24, 48, or 96 PPQN and change them to any other PPQN for playback or editing at this different PPQN. Set PPQN changes the PPQN setting of ALL Song and Sequence material in Glass Tracks' memory and also changes the PPQN setting of Glass Tracks itself. Further recording and editing will all be done at the new PPQN.

VERY IMPORTANT: If you have recorded Sequence information at 96 or 48 PPQN and then use the Set PPQN command to change the PPQN to a LOWER value you can lose some of your fine timing resolution PERMANENTLY. This is because when going from a greater PPQN to a lesser PPQN, Glass Tracks has to round off note time values which CANNOT be recovered. If the loss of this resolution is important to you, you should use the Song and/or Sequence Disk Menus to save the recording you've done at the original greater PPQN. Going from a lesser to a greater PPQN doesn't harm any timing information.

Set PPQN can be used if you recorded your Song or Sequence at one PPQN but want to play it back with, for example, a drum box which operates only at one of the other PPQN. Or if you recorded a Sequence or Song at 24 PPQN and are having trouble synch-ing to tape, you may want to convert the Sequence to a higher PPQN where synch-ing is easier.

REMEMBER: Set PPQN effects ALL Sequences in memory - not just the one you happen to be working on. To Set PPQN press F6 while holding down either shift key. You will see the same PPQN window as when you first loaded Glass Tracks. You may now use F1 to cycle through the various PPQN's. If you decide not to change the PPQN, be sure to use F1 to set it back to the original value. When you've set the PPQN to the desired value, press RETURN to return to the Main Menu.

F8 - Set Tempo

Set Tempo allows you to set the Tempo of the current Sequence. Each Sequence can have its own Tempo setting which can range from 44 to 240 beats per minute. As mentioned above in Set Clock, the Tempo selection works only if you are using one of Glass Tracks' internal clock settings (either Int Drm or Int Klik). If you are using one of the external clock settings, this command will be ignored. To set a Sequence's Tempo, press F8 while holding down either Shift key. You will see the message "Use +/- to select RETURN to continue" at the bottom of the screen. Press the "+" and "-" keys until you arrive at the desired Tempo. When satisfied, press RETURN and you will be returned to the Main Menu.

Level 3 (Control)

Auto Punch

Level 3 of the Main Menu deals entirely with setting the various Counters which are used in Auto Punch. The three counters - Cue, In, and Out can be viewed by holding down SHIFT and pressing "V". With Auto Punch you can determine with great precision where to punch in and punch out, have Glass Tracks perform the punch for you automatically, and have both hands free to play the correct notes.

Auto Punch is performed on a single Track - the Track indicated by the Track Cursor. When you actually perform the Auto Punch the previous Track information located between the punch in point and the punch out point is erased. So you should be careful when using Auto Punch. If you are concerned about saving any of the material you intend to punch, you should probably back the Track up by bouncing it onto another empty Track (see Chapter 4). When using Auto Punch, playback starts at the Cue point; recording starts at the Punch In point and stops at the Punch Out point. Therefore, all three counters must be appropriately set before starting your Auto Punch. As mentioned in Chapter 1, Auto Punch is turned on and off by pressing the "@" key on your Commodore. If you attempt to press the "@" key now you will see a message which reads "* Illegal punch: In = Out *". The three Counters must be properly set before you can even turn on Auto Punch. If you did press the "@" key press Return to exit. We will now discuss how the Counters have to be set before you can go into Auto Punch.

Hold down SHIFT and press "V" to replace the Indicator portion of the screen with the Auto Punch Counters display. All of the indicators that were at the upper right of the screen (except for Auto Pnch) will be replaced with the Auto Punch Counters: Cue, In, and Out. The Auto Punch Counters display does NOT defeat the Hidden Commands which affect the underlying indicators (Midi Drum, Play Thru, Step Mode, and Count Dwn). This allows you to change the status of these indicators without having to remove the Auto Punch Counters display (in this case, no change will be visible on the screen). To remove the Auto Punch Counters display, hold down SHIFT and press "V" again. The indicators will be restored.

To set the Counters, you must follow these rules: Punch Out must be equal to or less than the Sequence End; Punch In must be less than Punch Out; and Cue must be equal to or less than Punch In. Given these rules, all the Counters are set in the same way. Using the Transport Controls (Fast Forward/Rewind and +/-), set the CTR Counter to the desired value and, using Level 3 (Control) of the Main Menu, press the appropriate function key to transfer the value to the appropriate Counter.

Because of the rules for setting the Counters, it makes most sense to set the Counters from the bottom up, i.e. set Out first, In second, and Cue last. If you attempt to set an illegal value on one of the Counters, such as a Punch In greater than the Punch Out, Glass Tracks will simply ignore the command.

Perhaps the best way to illustrate Auto Punch is by example. Record a simple Sequence of at least four measures so that the End Counter reads at least 005:01:01 when you have finished. Use SHIFTed "V" to view the Auto Punch Counters. Now let's say you want to Punch In on the second beat of measure three and to Punch out by the third beat of measure four. This is how to set the Auto Punch Counters:

F5 - Set Out

Move the Ctr to the End of the Sequence by holding down either Shift key and pressing Home on your Commodore. Press the Cursor Down key (Rewind) repeatedly until the Ctr shows 004:03:01 which is the third beat of the fourth measure. Now, while holding down the Control key, press F5. Notice that the Ctr value of 004:03:01 appears in the Out window.

F3 - Set In

Continue to press the Cursor Down key (Rewind) until the Ctr shows 003:02:01, which is the second beat of the third measure. When you have this value in the Ctr, hold down the Control key and press F3. You should see the Counter value 003:02:01 appear in the In window.

F1 - Set Cue

Setting a Cue point allows you to specify where (BEFORE the Punch In point) you would like the Sequence to begin playing. This is especially useful if the Sequence is very long and you are doing an Auto Punch somewhere in the middle. You might want to try the Auto Punch repeatedly, and being able to start playback at the same place each time (say two measures before the Punch In) could be a big time-saver. Press the Cursor Down key until the Ctr shows 002:02:01. Now, while holding down the Control key, press F1. You should see 002:02:01 appear in the Cue window.

You are now ready to perform an Auto Punch. Turn Auto Punch on by pressing the "@" key and notice that the Auto Punch indicator at the top right of the screen says ON. Press the Home key to set Ctr to the beginning of the Sequence. Start the Sequence playing, NOT RECORDING YET. Your Sequence should start playing back not from the start but from the Cue point. Notice that when you get to the Punch In point the border of the screen turns yellow indicating Punching In. When you reach the Punch Out point, the border will return to its regular color. You can use this playback feature to rehearse your Punch. When you're ready to record the Punch, go ahead and press the "/" key and then press the SPACE BAR. If the current Track is already recorded, you will see a message at the bottom of the screen which reads "Punch will destroy some track data Is this OK? (y/n)". This is to warn you that if you go ahead with the Punch, you will at the very least record silence between the Punch In and Punch Out points, thus destroying data. If you are ready to go ahead with the Punch, press the "Y" key. Once satisfied with the Auto Punch, turn Auto Punch off by pressing the "@" key.

F7 - Set End

F7 allows you to change where any Sequence ends, letting you make it either longer or shorter. To change where a Sequence ends, simply use the Tape Transport Controls to set the Ctr to where you would like the new End to be. If shortening the Sequence, you will see the message "* Ending here may destroy some data. * Is this End correct? (y/n)". This message is intended to warn you that you may lose some recorded material from the End of your Sequence by shortening it. If this is acceptable to you, answer yes by pressing the "Y" key. When lengthening a Sequence no recorded material is lost so the message given simply reads "Is this End correct? (y/n)". NOTE: A Sequence must be at least one beat long. After Setting the End the new END will appear in the End Counter.

The Set End Command can be used to fix a Sequence's length which is either too short or too long because the SPACE BAR was hit (to stop recording) at the wrong time when the first Track was recorded. Alternatively, you may use the Set End command to preset the length of a Sequence before you've recorded anything. This also allows you to record a Sequence with some silence at the beginning. Do this in the same manner described above. With the End set in this fashion, Glass Tracks will automatically stop recording when it reaches the End.

Chapter Three

Sequence Edit Menu

Glass Tracks' Sequence Edit Menu offers several powerful functions which affect Sequences only. All functions in this Edit Menu affect only the current Sequence. When performing any of the Sequence Edit Menu's commands, MAKE SURE the Sequence Cursor is on the Sequence you wish to Edit.

Level 1

F1 - Appnd Seq

The Append Sequence command allows you to append the current Sequence to itself, to any other existing Sequence, or to an empty Sequence. If you Append the Sequence to itself, you "double" the Sequence, making it repeat once and doubling its length. If you Append the Sequence to another Sequence, the current Sequence will be tacked onto the end of the other chosen Sequence (quite useful if you like working with "building blocks"). If you Append the Sequence to an empty Sequence, you will create a copy or "backup" of the current Sequence. In all cases, the append uses Sequence memory, and the memory indicator will usually decrease as a result.

To Append a Sequence, put the Sequence Cursor on the Sequence which you wish to Append (NOT the Sequence you wish to Append TO). When you press F1, you will see the message "Append Seq [x] to which Sequence? [x] Use +/- to select RETURN to continue". Use the "+" and "-" key to select the Sequence TO which you would like to Append this Sequence (keeping in mind the three cases discussed above). When you've selected the desired destination Sequence, press Return. You will be asked to confirm the Append. If you want to go on with the Append press "Y".

F3 - Name Seq

Name Sequence allows you to assign an eight-character Name to each of your eight Sequences. Press the F3 key and you will see the "Seq" indicator in the middle left of your screen hi-lited and a cursor (the reversed square) for Name entry. The message "Enter name & press RETURN to continue" will appear at the bottom of the screen. Enter the desired letters, numbers, or the separators ".", "-", "/", and Space. If you make a mistake you can use the "DEL" key at the upper right of the Commodore keyboard to back-space. When you have finished entering the name, press Return.

F5 - Xpose Seq

Transpose Sequence allows you to transpose the entire current Sequence to any key you desire. When you press F5, the message "Play note to transpose RTN to exit" will appear at the bottom of the screen. If you decide not to transpose the Sequence, simply press Return now. If you do wish to transpose the Sequence, play a note on the keyboard you're using to record music. Transposes are performed relative to Middle C on your keyboard. That is, if you play Middle C no transpose is done. If you play the C one octave above Middle C the entire Sequence will be transposed up one octave, etc..

F7 - EXIT

Pressing F7 exits you from the Sequence Edit Menu back to the Main Menu.

Level 2 (Shifted)

F2 - Erase Seq

The Erase Sequence command allows you to Erase any unwanted Sequence and reclaim the memory that it used. To Erase a Sequence, BE SURE the Sequence Cursor is on the Sequence you wish to Erase. Hold down either Shift key and press F2. You will be asked to confirm the Erase. If you answer yes ("Y"), the Sequence will disappear and the Memory Indicator should reflect the reclaimed memory.

F4 - Set Tempo

The Set Tempo command in the Sequence Edit Menu is identical to the Set Tempo command in Level 2 of the Main Menu (see Chapter 2) and is duplicated in this menu as a convenience.

F6 - Set End

This command is identical to Set End in Level 3 of the Main Menu (See Chapter 2).

F8 - EXIT

Press F8 to return to the Main Menu

Chapter Four

Track Edit Menu

The Track Edit Menu contains all editing commands which pertain to the individual Tracks within a Sequence. When using the Track Edit Menu, BE SURE that the Sequence Cursor is on the correct Sequence AND that the Track Cursor is on the specific Track you wish to Edit. All of the Track Edit commands affect only one Track at a time.

Level 1

F1 - Velocity+

Glass Tracks' "Velocity +" command allows you to set a Velocity scaling factor for each Track which will be used to scale all the Note On and Note Off velocities within the Track. This scaling will make a difference only if you are using synthesizers (and patches) which respond to MIDI velocity information (such as a DX7). With this scaling factor, you can make a Track louder or softer. Glass Tracks allows you to specify a Velocity scaling factor between -7 and +7. The positive values of +1 to +7 make the velocity value greater (louder) where +7 corresponds to four times greater. The negative values of -1 to -7 make the velocity value smaller (softer) where -7 corresponds to one sixteenth of the original value. Between -1 and +1 there is a "Space" setting which is passive; with this setting, Glass Tracks sends whatever Velocity information was originally recorded in the Track, doing no scaling.

NOTE: Velocity scaling leaves your accents in the Track, but either magnifies or diminishes them according to the scaling.

To use the Velocity + command be sure your Track Cursor is on the correct Track and press F1. You will see a +1 in the Velocity line appear under the current Track. Hold it down and you'll see a +2, a +3, etc., until you reach the maximum value of +7 where the Velocity + command will no longer have an effect. To reduce the Velocity use the "Velocity -" command in Level 2 of the Track Edit Menu (see below).

F3 - Channel+

Glass Tracks allows you to assign each Track a separate MIDI output channel, in order to send the Track to a synthesizer which is on a different MIDI Channel. When you assign a Channel to a Track, all information in the Track during playback or record is sent to the specified Channel. If you don't want the Track "channelized", be sure that the Channel information under the Track shows a "space", which corresponds to NO channelizing. You may assign a MIDI Channel of 1 to 16. When using the the Channel+ and Channel- commands, notice that between the settings 16 and 1 there is a "space". This "space" is the passive setting for NO channelizing, i.e. whatever channel information was recorded in the Track will be played.

To use the Channel+ command make sure the Track Cursor is on the correct Track and press F3. You will see a "1" appear in the Channel Line under the appropriate Track. Press F1 again and you will see a "2", and a "3", etc..

F5 - Name Trk

The Name Track command allows you to assign a three character name to each Track in the Sequence. Press the F5 key and you will see the message "Enter name & press RETURN to continue" at the bottom of the screen. Enter the three letter name and press Return (if you make a mistake you can use the Delete key). After the Return the Name will appear under the appropriate Track in the Name Line.

F7 - Exit

F7 returns you to the Main Menu.

Level 2 (Shifted)

F2 - Velocity-

The Velocity- command is the same as the Velocity+ command described above except that Velocity- reduces the Track Velocity value instead of increasing it.

F4 - Channel -

The Channel- command is the same as the Channel+ command described above except that Channel- lowers the MIDI Channel number instead of raising it.

F6 - Bounce Tk

Glass Tracks allows you to bounce any Track into any other Track in the same Sequence. A Track can be bounced into another Track for either of two purposes. First, the track can be bounced into an empty track to create a backup or duplicate. Second, a Track can be bounced into another recorded Track to free a Track location so that more recording can be done. (After the Bounce, you should erase the original track.) When a Track is bounced into another already recorded Track, any Velocity or Channel information the "source" and "destination" Track had assigned to them by Glass Tracks will be put into the Tracks themselves and then bounced together, to preserve the submix. That is why if you perform such a bounce, the Velocity and Channel information on the screen under the destination track will be erased indicating the mix has been made. On the other hand, if you're bouncing the Track into an empty Track to make a back-up, the Channel and Velocity information WILL be shown in the destination Track. Preserving the submix when bouncing Tracks together provides you with an effectively unlimited number of Tracks.

To Bounce a Track, make sure the Track Cursor is on the correct Track, hold down SHIFT, and press F6. You will see the message "Bounce Track #x to which track? (x) Use +/- to select RETURN to continue" at the bottom of the screen. Use the "+" and "-" keys to select the desired destination Track and press Return. You will be asked for a confirmation; if you answer yes ("Y"), the bounce will be performed. Since with a bounce you are duplicating the information from the source Track in the destination Track, memory is used and the Memory Indicator will probably decrease. IMPORTANT: It can take up to a minute to bounce together two Tracks which both use large amounts of Sequence memory. While it is being done, the "* Processing *" message will be displayed.

F8 - Auto-Corr

Glass Tracks' Auto-Correct function can be used to correct rhythmic irregularities in a Track. Auto-Correcting a Track allows you to round the timing values of events in a Track to the nearest correct rhythmic value. To Auto-Correct a Track, make sure the Track Cursor is on the Correct Track, hold down SHIFT, and press F8. A list of various Auto-Correct values ranging from a 1/4-note to a 1/32-note triplet will appear; use the "+" and "-" key to move the horizontal cursor to the Auto-Correct value you want and press Return. You will be asked to confirm that you wish to Auto-Correct the Track. If you do, press the "Y" key.

IMPORTANT: Auto-Correcting a Track permanently alters timing information in a Track which cannot be recovered. If you don't know exactly which Auto-Correct value to select it is a good idea to make a backup of the Track by bouncing it onto an empty Track. By doing this you can continue to try various Auto-Correct values until you find the right one, and then erase the backup.

Level 3 (Control)

F1 - Shift Trk

The Shift Track command allows you to shift a Track forward or backward by individual pulses using the "+" and "-" keys. The Shift Track command is intended to be used to shift Tracks small amounts to create effects or to match up various synths' "reaction" times. With Shift Track you can shift a Track right or left (later or earlier in time) up to 96 pulses. If you would like to shift more than this, you must use this command more than once.

There are some limits to the Shift Track command. When shifting a Track earlier (minus), you cannot shift past the point where the first note in the Track meets the beginning of the Sequence. If this happens the border will flash and further shifting will be ignored. Also, when shifting a Track later (plus), you cannot shift the Track past the point where the end of the last note in the Track bumps up against the End of the Sequence. Again, the border will flash and further shifting will be ignored. To get past these restrictions you can use Punch to create a rest at the beginning of the Track or you can use Set End to create a rest at the End of the Sequence.

To use Shift Track, put the Track Cursor on the correct Track, hold down Control, and press F2. You will see the message "Shift Track #n: 00 Use +/- to select RETURN to continue" at the bottom of the screen. Press the "+" and "-" keys to shift the Track the desired amount. You will see the "net" shift indicated where the double zero (00) is. That is, if you shift the Track right 10 pulses and left 3 pulses, the indicator will show 10-3 or +07 pulses. When you have finished shifting, press Return to exit the Shift Track command.

REMEMBER: In addition to the restrictions mentioned above, Shift Track will not let you shift greater than 96 pulses in either direction at one time.

F3 - Xpose Trk

The Transpose Track function works exactly like the Transpose Sequence command (see Chapter3) except that it Transposes only the current Track rather than all Tracks in the Sequence.

F5 - Erase Trk

To use the Erase Track command simply put the Track Cursor on the Track which you wish to erase, hold down the Control key, and press F5. You will be asked for confirmation that you want the Track erased. If you do, press the "Y" key. Erasing a Track recovers memory, so you may see the Memory indicator increase.

F7 - EXIT

Pressing F7 while holding down the Control key in the Track Edit Menu returns you to the Main Menu.

Chapter Five

Trk Mods - Remove Track Data Menu

With the Track Modification Menu you can selectively remove specific types of "controller" data from individual Tracks. The ability to remove data allows you to redo the Pitch Bend, for example, on a Track without having to re-record the entire Track. This can be done by first using the appropriate Track Mod to remove the unwanted data (such as the Pitch Bend) from the Track. Next, go to an empty Track and re-record only the Pitch Bend (be sure both Tracks are assigned to the same MIDI Channel). You can continue to re-record the Pitch Bend until you are satisfied, and then bounce it BACK into the original Track. If you ever want to redo the Pitch Bend, follow the same procedure.

The ability to remove certain types of data which use up substantial amounts of memory (such as Pitch Bend and Mod Wheel) can come in very handy when the amount of available Sequencer memory gets very small. If you're out of memory and need to record one more Track, you might look for unnecessary Pitch Bend or Mod Wheel to remove and reclaim the needed amount of memory.

All of the Track Mods operate on the current Track in the current Sequence.

Level 1

F1 - Prog Chgs

Pressing F1 in the Track Mods Menu (Remove Track Data) allows you to remove all of the program (or "patch" or "preset") changes that have been recorded in a particular Track without affecting any of the other data in the Track. This would be a very useful command if you wanted to "revoice" a Track. To use the Remove Program Changes command be sure the Track Cursor is on the correct Track and press F1. You will be asked to confirm that you wish to remove Program Change data. If you do, answer yes ("Y").

F3 - Pitch Whl

With the F3 on the Track Mods Menu (Remove Track Data) you can remove all the Pitch Wheel information in a selected Track. Pitch Wheel information usually uses a significant amount of memory, so after removing pitch wheel from a Track you should see the Memory Indicator increase. To remove pitch wheel from a Track place the Track Cursor on the correct Track and press F3. You will be asked to confirm that you wish to remove the Pitch Wheel data from the Track.

F5 - Mod Wheel

With the Remove Mod Wheel command, Mod Wheel data can be selectively removed from a particular Track. To remove Mod Wheel, place the Track Cursor on the correct Track and press F5. You will be asked to confirm that you wish to remove the Mod Wheel data from the Track.

F7 - EXIT

F7 returns you to the Main Menu.

Chapter Six

Song Menu

To enter the Song Menu, go to the Main Menu and press F5. The light gray reverse-field box at the upper left of your screen will get darker and a (light green) horizontal bar cursor will appear at the top left of the box. The indicators in the upper right of the screen will fade to the lighter gray and the Sequence name location, Tempo indicator, and End counter will appear in the darkest gray. The Sequence cursor will disappear from the Sequence letter line, and the Song Menu will appear at the bottom of the screen.

The Song Menu enables you to chain together the Sequences you have created in the Main and Edit Menus. Up to sixteen (16) elements can be chained together. For each of the 16 elements you can select any one of the eight sequences (A-H) available. Songs allow you to string together elaborate chains of Sequences but require no additional Sequence memory. The Song can be transposed and named and saved on diskette.

At the top left of the screen you can see where the Song name, once given, will appear. The Song Transpose, if assigned, will appear just to the right of the Song name.

The horizontal bar at the top left of the reverse-field box is the "Element" Cursor. There are 16 locations in the box, each called a Song Element. When you specify a Sequence in the Song Menu it will appear in the Song Element indicated by the Element Cursor. The Element Cursor can be moved forward and backward by holding down either Shift key and pressing the ">" and "<" keys respectively. To return the Element Cursor to the top left of the Song list, press the Home key. To place the Element Cursor on the last Song Element hold down either Shift key and press Home.

The Song Elements are played top left to bottom left and top right to bottom right. So the first Song Element is the top left Element and the last, the bottom right Element. Eventually you will specify a Sequence for many of the Elements using the Sequence+ and Sequence- commands discussed below. When the Song is played the Sequences will be played in the order in which they appear in the box. Empty Elements will be ignored, and if an unrecorded Sequence is specified in an Element, it too will be ignored.

The Track Cursor appears in the Song screen and is still moved forward and backward by pressing the ">" and "<" keys respectively. The Track Cursor is used for changing a Track's Velocity scaling and Channel assignment without having to return to the Track Edit Menu.

To play a Song (once assembled with valid Sequences), simply press the SPACE BAR as if you were playing a Sequence. The Song will play starting from the Element indicated by the Element Cursor. If you wish to play the Song from the top you should be sure the Element Cursor is on the first Element in the Song. If you would like the Song to end exactly after finishing the last Element in the Song, just press F1 anytime during playback; otherwise the playback will loop back to the first Element. All Mute commands work during Song playback. You can stop playback at any time by pressing the SPACE BAR.

The Midi Drum send discussed in Chapter 1 can be toggled on and off from the Song Menu by pressing the "M" key.

Level One

F1 - Sequence+

F1 is used to select which Sequence you would like to appear in the Element indicated by the Element Cursor. Press F1 and you will see the letter A appear at the left end of the Element Cursor and to the right of the "Seq" indicator just under the Transport Controls. If Sequence A has been recorded, you will see its mutes, Track Names, Velocity and Channel Assignments appear at the bottom of the screen. If Sequence A has been named, you will see its name appear in the the Element Cursor and also to the right of the "SeqA:" indicator. Press F1 again and the A will change to a B. By continuing to press F1 you can set the Element to any of the 8 Sequences available in Glass Tracks. As you increment past the last available Sequence - Sequence H - you will come back to a blank space, which is the way you UN-assign an Element in the Song screen. When creating a Song, just decide which Sequence you would like in the Element and continue to press F1 until you arrive at the desired Sequence.

F3 - Name Sng

The Song includes everything which is in Glass Tracks at any one time. This includes all eight Sequences, whether they have been assigned in the Song list or not. When you save a Song on a disk you have saved a complete picture of Glass Tracks when the save was performed. This is in contrast to a Sequence save which saves only a single Sequence. The Name Song command allows you to give the Song an 8-character name. This will be the name that the Song will have when saved to diskette (preceded by the 3 letters "SNG"). To name the Song, press F3. You will see the message "Enter name & press RETURN to continue". You will also see the word "Song" hi-lited in the upper left hand corner of the screen and a cursor will appear. You can now enter the Song name and press Return. When entering a name, the Delete key may be used to fix mistakes.

F5 - Insert

If you have forgotten an Element somewhere in your Song and need to create a space for another Sequence, use the Insert command. Set the Element Cursor to the Element where you need to put the space and press F5. You will see that all the following Elements and the one you were on are moved down one location.

NOTE: Any Sequence assigned to the last Element (#16) when the Insert is done will "disappear" from the Song only, having been "pushed off the end".

F7 - EXIT

Pressing F7 returns you to the Main Menu.

Level 2 (Shifted)

F2 - Sequence-

Sequence- acts exactly like the Sequence+ command discussed above except that it decrements the Sequence you are assigning to a Song Element instead of incrementing it. To use Sequence- be sure the Element Cursor is on the correct element, hold down either Shift key, and press F2 until the desired Sequence is indicated.

F4 - Channel+

The Channel+ command is identical to the Channel+ command described in the Track Edit Menu (Chapter 4) and is used to change an individual Track's MIDI Channel. To use the Channel+ command make sure the Track Cursor is on the appropriate Track, hold down either Shift key, and press F4 until the desired Channel is showing.

F6 - Delete

The Delete command is the opposite of the Insert command described above: it is used to remove unwanted Song Elements instead of Inserting a new blank Element. To use the Delete command move the Element Cursor to the Element you wish to remove, hold down either Shift key, and press F6. The unwanted Element will disappear. Notice that a new blank Element will appear in the last Element location (#16).

F8 - DISK

Pressing F8 while holding down the Shift key takes you to the Song Disk Menu. When in the Song Disk Menu all loading, saving and deleting pertains to Song files only (see Chapter 7).

Level 3 (Control)

F1 - Velocity+

The Song Velocity+ command is identical to the Velocity+ command in the Track Edit Menu (Chapter 4) except that it requires a recorded Sequence to be specified in the Song Element under the Song cursor. It is used to increase an individual Track's Velocity scaling factor. To use the Velocity+ command be sure the Track Cursor is on the correct track, hold down the Control key, and press F1 until the desired Velocity is showing.

F3 - Velocity-

The Song Velocity- command is identical to the Velocity- command in the Track Edit Menu (Chapter 4) except that it requires a recorded Sequence to be specified in the current Song Element. It is used to decrease an individual Track's Velocity scaling factor. To use Velocity- be sure the Track Cursor is on the correct Track, hold down the Control key, and press F3 until you see the Velocity you want.

F5 - Erase Song

To erase the Song, hold down Control and press F5. Erase Song clears all of the Song Elements and blanks out all names. ERASE SONG does NOT erase or affect any of the recorded Sequences.

F7 - Xpose Song

With the Transpose Song command you can Transpose an entire Song. To set the Song Transpose, hold down the Control key and press F7. The same message will appear as in the Transpose Sequence command in the Sequence Edit Menu. Play the appropriate note on your keyboard to set the desired Song Transpose. The selected Transpose will appear at the upper left of the Song Screen. If you wish to remove the transpose from the Song, use this command again and press Middle C on your keyboard.

Chapter Seven

Song and Sequence Disk Menus

Almost all the disk operations necessary to use Glass Tracks are provided on the Sequence and Song Disk menus. If you wish to perform other disk functions consult your Commodore reference manual.

You may at times see the message "Disk error ... press RETURN", when using the Disk Menu commands. This message appears if any disk error is encountered. Some of the possible sources of disk error are: 1) an improperly connected disk drive; 2) an open disk drive door; 3) a save attempted to a write protected diskette; 4) any disk operation to an unformatted diskette; and 5) No disk in the disk drive slot. If you run into a disk error, check to see if the source is one of these. If it is not, you may have a bad diskette or a malfunction in your drive. Repeat the operation with another formatted diskette.

It's a good idea to create backups of your Sequences and Songs by saving them on more than one diskette. It is also a good idea, if you have been working a long time on a single piece, to save it even if you haven't finished. A power glitch or problems with a disk could destroy all your work. Saving your work each hour may be bothersome but you will never lose more than an hour of work. Also, saving under a different name each time may fill up a diskette more quickly, but you will have several nearly completed backups of your work.

Keep your diskettes away from dirt and magnetic fields (such as loudspeakers) and don't touch the exposed area on your diskettes. Always keep your diskettes in their envelopes when not in use.

The Song and Sequence Disk Menus are identical except that saves, loads and deletes (scratches) in the Sequence Screen apply to Sequences only and in the Song Screen apply to Songs only. The directory and new disk (formatting) commands do exactly the same things in both Disk Menus.

When a Sequence is saved using the Sequence Disk Save command, the Sequence file is saved to diskette under the name you have given it preceded by the three letters "SEQ" which indicate it is a Sequence file. Similarly Songs are saved under their given name preceded by the three letters "SNG".

Be sure that a properly formatted data diskette is in your drive before attempting any Disk commands. The first thing Glass Tracks does before carrying out any Disk command is to make sure a Diskette is in the drive. If there is no diskette in the drive or if there's an improperly formatted diskette in the drive, a Disk Error will result.

Level One

F1 - Disk Load

Sequences that have been saved onto diskette using the Sequence Disk Save command can be loaded into any Sequence slot using the Sequence Disk Load command. To perform a Sequence Load be sure the Sequence Cursor is on the Sequence where you would like to load the previously saved Sequence. If another Sequence has been recorded in this slot, you may wish to save it on diskette or to load the Sequence into another Sequence location. Press F1 to initiate the Sequence load and you will see the message "Load Sequence: Enter name & press RETURN to continue". Enter the name of the Sequence you wish to load and press Return.

Glass Tracks checks to see if there is enough memory remaining to hold the new Sequence. If insufficient room is present you'll have to make additional memory available before Glass Tracks will let you execute the Load.

The Song Disk Menu allows you to load an entire Song, which includes all Sequences that were in memory when the Song was saved. To perform a Song Load, make sure you're in the Song Disk Menu and press F1. The message "Load Song : Enter name & press RETURN to continue" will appear. Enter the name of the Song Set you wish to Load and press Return. If you have correctly entered the name of a Song which is on the diskette currently in the drive, you will see the message "* Current memory will be lost. * Is this OK? (y/n)". This message is reminding you that when you load a Song EVERYTHING currently in memory will be LOST. If this is acceptable, answer yes ("Y") and the Load will be executed.

When trying a Disk Load in either the Sequence or Song Disk Menus, you may see the message "* File not found .. press RETURN * ". If you encounter this message, use the directory command to check to see that you have properly entered the name and that the correct diskette containing the file is in the drive.

F3 - Blank

F3 in both the Sequence and Song Disk Menus has no function.

F5 - Disk Save

Pressing F5 in the Sequence Disk Menu allows you to save the Sequence currently indicated by the Sequence Cursor. If this Sequence has not been recorded and you press F5 you will be given a message indicating that nothing has been recorded. If something has been recorded in the Sequence, a window will appear reading "Save Sequence: NameHere Please confirm (y/n)". If you have not yet given the Sequence a name, a Cursor will appear in the first location of "NameHere". You need to enter a name for the Sequence and answer yes ("Y"). If you previously named the Sequence the name you gave it will appear in the "NameHere" location. If a Sequence has already been saved on the diskette under this name, you will be asked if you wish to replace the old file with this file. If you do, answer yes ("Y") - the old file will be scratched and the new file saved. If you wish to keep the old file, answer no ("N") and give the current Sequence a different name.

If you attempt a Disk Save in the Song Disk Menu you will see the message "Save Song : NameHere Please confirm (y/n)". Just as in the Sequence Save, if you have given the Song a name it will appear in the "NameHere" location. If you haven't named the Song, you need to enter one here. Then answer yes by pressing "Y". Just as in the Sequence Save, if a Song exists on the diskette under the same name you will be asked if you wish to replace the old file. If you wish to keep the old file, press "N"; otherwise, Glass Tracks will go ahead and save the entire Song Set file onto the diskette.

F7 - EXIT

Pressing F7 in the Sequence Disk Menu returns you to the Main Menu. Pressing F7 in the Song Disk Menu takes you back to the Song Menu.

Level 2 (Shifted)

F2 - Directory

In both the Sequence and Song Disk Menus holding either Shift and pressing F2 allows you to view the Directory of the diskette currently in your drive. When you have finished viewing the Directory, press Return to return to the appropriate screen.

REMEMBER: On diskette, Song files will be preceded by "SNG-", and Sequence files will be preceded by "SEQ-".

F4 - Blank

F4 in both Disk Menus has no function.

F6 - Delete

With the Disk Menu Delete command you can delete (scratch) unwanted files from your diskettes. When in the Sequence Disk Menu, delete scratches only Sequence files and when in the Song Disk Menu, delete scratches only Song files. To execute a Delete hold down either Shift key and press F6. Enter the name of the Sequence or Song you would like to Delete, and press RETURN. If a file with the same name exists on the diskette currently in the drive you will be asked to confirm the Delete. Once a file is Deleted it cannot be recovered by Glass Tracks.

F8 - New Disk

The New Disk commands in the Song and Sequence Screen Disk Menus are identical. Before any diskette can be used as a data diskette in Glass Tracks it MUST be formatted. The New Disk command allows you to format old and new diskettes. To format a diskette hold down either Shift key and press F8. You will be asked to insert the diskette you wish to format into the drive. Do so and press Return. You may then enter up to a 16 letter name for the diskette which will appear at the top of the diskette's Directory when viewed. Enter any name you wish and press Return. You will then be asked to confirm that you wish to format the diskette currently in the drive. IMPORTANT: Using the New Disk command erases EVERYTHING on the diskette. Make absolutely sure there is nothing you wish to keep on a diskette before you format it. The New Disk command may take several minutes to format an unused diskette.

Chapter Eight

Hidden Commands

There are several commands in Glass Tracks which do not appear on the Menu. They are executed by pressing various keys on the Commodore keyboard. Because these commands do not appear on the Menu, they are called "Hidden" Commands. Many of Glass Tracks' most powerful features are performed through Hidden Commands, so you should read this Chapter carefully.

Play Through - The "X" key

By pressing "X", you turn Glass Tracks' unique Play Through feature on and off. With Play Through on you can send the material you are playing, during both playback and record, out over a MIDI channel of your choice. If you are preparing Sequences on a multi-synthesizer system, Play Through is particularly important. You may be recording material on your "Master" keyboard which you intend to send to one of the other synths in your system (perhaps a rack-mounted modular synth). It is often desirable to hear the music you are recording not on the "Master" keyboard from which you are recording it, but instead on the "Destination" synth which ultimately will play it. Play Through allows you to do just this.

If you wish to use Play Through, press "X" to turn Play Through on (the Play Thru Indicator at the top right of the screen should say ON). Next, you need to assign a Play Through channel, the MIDI channel over which the music played on your "Master" keyboard will be sent. Generally this would be the channel of the destination synth on which you intend to play the Track you're recording. This Play Through channel is selected by specifying a Track channel before recording, just as normally you would specify the playback channel after recording. Use the Track Edit Menu's Channel+ and Channel- Commands to set the desired Track. If you don't specify a Track and Play Through is turned on, Glass Tracks will output the incoming MIDI information over whichever channel it comes in on (which isn't necessarily the destination synth channel).

Now turn your "Master" keyboard's volume all the way down and record a little music. You should hear the destination synth play as you record the material. If you don't, Play Through isn't on, or you've set the wrong destination channel. If you are using a multi-synth system in this manner you probably want to put your synths in omni mode off/poly mode on (see the "o" Hidden Command).

REMEMBER: With Glass Tracks you can use Play Through in both Record AND Playback.

Step Mode - The "S" Key

Step Mode is a Glass Tracks Hidden Command which allows you to manually advance Glass Tracks' internal Clock, WHEN IN PLAYBACK AND RECORD, by pressing Return, the "+" key, or the Cursor Right key. You can enter Step Mode only from the Main Menu, the Sequence and Track Edit Menus, or the Sequence Disk Menu (not the Song Menu or the Song Disk Menu). When in Step Mode all of Glass Tracks features work exactly as before (including playback, record, Auto Punch, Live Punch etc.) but the Clock is entirely under your control; it will advance only when you advance it. To enter Step Mode, press the "S" key and notice that the Step Mode Indicator at the upper right of the screen says ON. Also, a window appears in the middle of the screen, listing the various Step values which can be assigned to the Return key (the only programmable time advance key in Step Mode). Use the "+" and "-" keys to move the cursor to select the size of the programmable Step. If you select a 1/16 note, for example, each time you press Return to advance the Clock, the Clock will move forward by 1/16 note.

When Step Mode is ON and you are in playback or record the "+" key will advance the Clock by one pulse and the Cursor Right key will advance the Clock to the next whole beat. The Return key will advance the Clock by the value selected when you entered Step Mode.

As an example of how Step Mode can be used, move the Sequence Cursor to an empty Sequence and then, if you have not already done so, enter Step Mode and select 1/16 note steps. Hold down the "/" key, and press the SPACE BAR to start recording. Now record a series of 1/16 notes by holding down a key on your synth keyboard, pressing the Return key to advance the Clock, and then releasing the key. Hold down another key, press Return, and again release the key. Continue to do this until you have recorded a couple measures of 1/16 notes, watching the Ctr as you record.

When you have finished, press the SPACE BAR to stop recording just as you would in a regular record. Press the SPACE BAR again to start playback and you will hear the first note you recorded sound. Press the Return to manually advance the clock and you will hear the second note you recorded sound. You can continue to press the Return, "+" key, or Cursor Right to hear the entire series of notes you recorded. To stop the playback press the SPACE BAR.

Now exit Step Mode by pressing the "S" key again and make sure the Step Mode Indicator says OFF. Press the SPACE BAR to hear the series of 1/16 notes you recorded in Step Mode playback in a normal fashion.

When you record in Step Mode no Auto-Correct is necessary since you can "Step" the notes in exactly as you intend them to be played.

NOTE: When Step Mode is ON and you are in record or playback, nothing is happening to indicate that all Menu functions are inactive except for the normal playback/record message "press SPACE BAR or footswitch to stop". Because nothing is happening you might often try to execute normal Menu commands forgetting you're in playback or record. If you have Step Mode On and Glass Tracks isn't responding to your commands, you should check to see if you have inadvertently entered playback or record.

IMPORTANT: When Step Mode is ON and you are recording material it is very important to remember that you are in total control of the clock. It will advance only if you advance it using the "+", Cursor Right, or Return keys. When recording notes you MUST hold the key down, advance the clock and release the key. If you press a note down and immediately let it up without advancing the clock, the note on and note off will occur at the same time, resulting in a note of no duration. A note of this type often sounds like a click upon playback. Make very sure that you advance the clock before releasing notes you are recording.

To record rests when Step Mode is ON simply advance the clock without playing any notes. Step Mode is the perfect way to place program changes at precise locations in your recorded Tracks. Turn Step Mode ON and start recording on an empty Track in the Sequence. At the appropriate places press the desired program changes on your synth. Step through the entire Sequence recording all the program changes you like. When you have finished recording all of the changes press the SPACE BAR to exit record. If you're satisfied with the program changes as recorded you can bounce them into the appropriate Track.

The "+" key can be used in Step Mode to find the exact pulse on which a "clam" starts and stops. Stepping forward by pulse to the exact start of the clam you can use the Live Punch command (see the "P" Hidden Command below) to Punch in a new correct note.

Live Punch - The "P" Key

Glass Tracks' Live Punch command is very much like Auto Punch except it can be done on the fly and no counters need be set in advance. Live Punch can be used only during playback. To perform a Live Punch put the Track Cursor on the Track you would like to Punch in on. You may Punch in on an empty Track if you only want to record additional material and don't need to remove clams or an undesired portion of a Track. Start playback by pressing the SPACE BAR and when you get to the place you need to Punch in press the "P" key and you will see the border flash just as in Auto Punch. When you get to the place you want to Punch out hit the "P" key again and the border will return to normal. If you don't Punch out, Glass Tracks will automatically Punch you out at the end of the Sequence.

Only one Live Punch may be performed on each playback of a Sequence. If you need to Punch in more than one place you will have to repeat the Punch process.

When Using Live Punch BE SURE the Track Cursor is on the correct Track or you may accidentally Punch a hole in a good Track. Also, if you don't intend the Punch to go to the end of the Sequence, BE SURE to Punch out. Otherwise you may erase the material on the Track beyond the place you intended to Punch out.

Record/Playback Commands

Muting and Unmuting - #'s 1 to 8, 0 and the Left Arrow

As discussed in Chapter 1, Glass Tracks allows you to mute and unmute any Track you have recorded during both playback and record. To mute or unmute a Track that has been recorded, simply press the corresponding number on the Commodore. If you are muting the Track, its Track number, any given Track name, and the Velocity and Channel information will all fade to a lighter gray. If you're un-muting a Track, it will return to its original color and the Track will resume playing. To mute all Tracks, hold down the Left Arrow key at the upper left hand corner of the Commodore keyboard and press the "0" key. To unmute all Tracks press the "0" key.

To solo a given Track, hold down the Left Arrow and press the Track's corresponding number on the Commodore keyboard. You will then see all the other recorded Tracks muted.

F1 - Exit at the End of a Sequence or Song

Pressing F1 at any time during the playback of a Sequence or Song will cause Glass Tracks to stop playing at the Sequence's or Song's end rather than looping back to the start.

F7 - Start Record of 1st Recorded Track

When recording the first Track of a Sequence, Glass Tracks waits for a note to be played before letting the clock begin to count. This is done to ensure that the first note you play comes in on "one". If you would like to record a rest at the start of the Sequence rather than wait for the first note, simply press F7 after starting the Record. After pressing F7, you will see the clock begin to count beats and measures, indicating that recording has begun. Using F7 applies to the recording of the first Track ONLY and has no effect if you previously have set a Sequence End or if you are in Step Mode.

Return - Playback Pause Key

If you wish to Pause during Song or Sequence playback simply press the Return key. Playing will stop immediately. To Unpause press Return again. Playback will resume only on the next whole beat. This is done to ensure that any drum box you might be using will stay in some kind of time with the Sequence playback. Pause works ONLY in playback - it does NOT work in record. When you have Paused playback clock information such as Midi drum out is still sent out to allow external devices such as a drum box to continue playing.

Other Hidden Commands

The following is a list of some of the remaining Glass Tracks Hidden commands. Hidden Commands which have already been discussed at length are not discussed here. For a complete list of Hidden Commands see Appendix B.

Count Down On/Off ("C")

Pressing the "C" key turns the recording Count Down feature on and off (see Chapter 1)

Move Sequence to Top of memory ("H")

When you change from one Sequence to another, certain operations require that the new current Sequence be moved to the "Top" of the data so that editing can be done. With a large amount of Sequence data in the computer's memory, this move may involve a considerable lag time at the beginning of an overdub, for instance. You can avoid this lag by pressing "H" after you have changed to the new Sequence. This will manually move the current Sequence into position to be edited, and the lag will be avoided; when you start work on another Sequence, press "H" again. This allows you to have the lag when you want it (when you press "H"), not as a surprise or unexpected disturbance.

Midi Drum On/Off ("M")

Pressing the "M" key turns Midi drum output on and off (see Chapter 1).

Metronome On/Off ("N")

If you have the Commodore audio output hooked up to a speaker and go into playback or record you will hear an audio metronome. If you wish to turn the metronome off, simply press the "N" key on your Commodore. If you wish to turn the metronome back on press the "N" key again. There is no indicator on the screen to show whether the metronome is on or off.

Omni Mode Off/Poly Mode On ("O")

Pressing the "O" key on your Commodore will send out an Omni Mode Off/Poly Mode On command over all MIDI Channels. Some synths when first turned on come up in Omni Mode, i.e. they will receive and respond to all MIDI channels. This means that during Sequence and Song playback they will play information from all Tracks rather than the specific Track to which you have assigned that synth's MIDI Channel. This is important only if you are using a multi-synth set-up.

If this is the case and you wish to put all of your synths in Omni Off/Poly On, press the "O" key to send the command over all Channels. It will affect all units which you have connected to the MIDI Out of your Interface card and which are turned on at the time you press "O". After you press "O", your synths should play information coming only over the specific MIDI Channel to which they are assigned. If you don't want certain synths to be in poly mode, be sure they are turned off or disconnected when you use this command.

Clear Memory (SHIFT + "Q")

You can erase everything in Glass Tracks' memory including the Song and all Sequences by holding down either Shift key and pressing the "Q" key. You will be asked to confirm that you wish to erase everything in memory. If you do, answer yes ("Y"); everything in memory will be erased and you will have to reset Glass Tracks' PPQN.

View Auto Punch Counters (SHIFT + "V")

Hold down SHIFT and press "V" to display or remove the Auto Punch Counters (see the discussion of Auto Punch in Chapter 2). Active in Sequence Mode only.

Zero Pitch & Mod Wheels, Maximize MIDI Volume & Sustain Off ("Z")

Pressing the "Z" key on your Commodore sends zero pitch and mod wheel out over all channels, sends turn off sustain pedal over all channels, and sends out maximum MIDI volume over all channels. All of these commands are important if the wheel settings, sustain, or volume have somehow been set to funny values. This command is automatically executed when you exit playback or record of a Sequence or a Song. This is done to ensure that the various controllers are reset to normal settings upon exiting playback or record rather than some arbitrary value recorded in one of the Tracks.

Sequence and Track Cursors (">" and"<")

Pressing the ">" key moves the TRACK Cursor to next Track.
Pressing the "<" key moves the TRACK Cursor to previous Track.
Holding down either Shift key and pressing the ">" key moves the SEQUENCE Cursor to the next Sequence.
Holding down either Shift key and pressing the "<" key moves the SEQUENCE Cursor to the previous Sequence.

Appendix A

SuperSequencer Menu Maps

Main Menu *

```

=====
Key          ||      F1      |      F3      |      F5      |      F7
=====
Regular      ||  EDIT SEQ   |  EDIT TRK   |  SONG       |  DISK
-----
Shifted      ||  TRK MODS   |  Set Clock  |  Set PPQN   |  Set Tempo
-----
Ctrl         ||  Set Cue    |  Set In     |  Set Out    |  Set End
=====
    
```

Sequence Edit Menu

```

=====
Key          ||      F1      |      F3      |      F5      |      F7
=====
Regular      ||  Appnd Seq  |  Name Seq   |  Xpose Seq  |  EXIT
-----
Shifted      ||  Erase Seq  |  Set Tempo  |  Set End    |  EXIT
=====
    
```

Track Edit Menu

```

=====
Key          ||      F1      |      F3      |      F5      |      F7
=====
Regular      ||  Velocity+  |  Channel+   |  Name Trk   |  EXIT
-----
Shifted      ||  Velocity-  |  Channel-   |  Bounce Tk  |  Auto-Corr
-----
Ctrl         ||  Shift Trk  |  Xpose Trk  |  Erase Trk  |  EXIT
=====
    
```

* Labels appearing in all caps take you to other Menus.

Song Menu

```

=====
Key      | |      F1      | |      F3      | |      F5      | |      F7
=====
Regular  | | Sequence+ | | Name Song | | Insert  | | EXIT
-----
Shifted  | | Sequence- | | Channel + | | Delete  | | DISK
-----
Ctrl     | | Velocity+ | | Velocity- | | Erase Sng | | Xpose Sng
=====

```

Disk Menus (Both Song and Sequence)

```

=====
Key      | |      F1      | |      F3      | |      F5      | |      F7
=====
Regular  | | Disk Load | | ---- | | Disk Save | | EXIT
-----
Shifted  | | Directory | | ---- | | Delete  | | New Disk
=====

```

Trk Mods Menu (Remove Track Data)

```

=====
Key      | |      F1      | |      F3      | |      F5      | |      F7
=====
Regular  | | Prog Chgs | | Pitch Whl | | Mod Wheel | | EXIT
=====

```

Appendix B

Hidden Commands

In Sequence Mode, pressing the following keys on the Commodore keyboard will execute the corresponding command:

a	- All notes off (all channels)
m	- Midi drum send enabled/disabled
n	- Audio metronome on/off
o	- Omni mode off/poly mode on (over all channels)
Q (Shifted)	- Clear everything in memory (with confirmation)
Return	- Pause in playback, and when pressed again resumes play on next beat
Space Bar	- Start playback if Sequence recorded, when pressed again stops playback
z	- Zero mod and pitch wheels, zero sustain, maximize midi volume over all channels
)	- Move track cursor to next track
(- Move track cursor to previous track
#'s 1 to 8	- Mute and unmute corresponding track (if recorded)
0	- Unmute all recorded tracks
Left Arrow & #'s 1 to 8	- Solo selected track
Left Arrow & 0	- Mute all tracks
@	- Auto punch on/off
c	- Overdub count down on/off
h	- Move current Sequence to Top of memory
p	- Live punch-in during playback, press again to punch out
s	- Step mode on/off
V (Shifted)	- Display and remove Auto Punch Counters
x	- Play through during record/playback (over channel under track cursor)
F1	- If pressed anytime during playback will exit at end of sequence
/ & Space Bar	- Start record of indicated track
F7	- On recording 1st track starts record without waiting for 1st note
	- Counter forward by 1 pulse

	Counter backward by 1 pulse
Cursor Right	- Counter fast forward
Cursor Left	- Counter fast reverse
home	- Set Counter to start (001:01:01)
Home (Shifted)	- Set counter to sequence end
Pound Sign	- Set counter to Auto Punch Cue setting
) (Shifted)	- Move sequence cursor to next sequence
((Shifted)	- Move sequence cursor to previous sequence

In Step Mode, during playback and record, the following keys are active:

*	- Advance counter by 1 pulse
Cursor Right	- Advance counter to next full beat
Return	- Advance counter by selected amount

In Song Mode, pressing the following keys on the Commodore keyboard will execute the corresponding command:

@	- All notes off (all channels)
M	- Midi drum send enabled/disabled
O	- Omni mode off/poly mode on (over all channels)
Q (Shifted)	- Clear everything in memory (with confirmation)
Return	- Pause in playback, and when pressed again resumes play on next beat
Space Bar	- Start/stop playback of song
x	- Play through during record/playback (over channel under track cursor)
Z	- Zero mod and pitch wheels, zero sustain, maximize midi volume over all channels
[- Move track cursor to next track
]	- Move track cursor to previous track
#'s 1 to 8	- Mute and unmute corresponding track (if recorded)
0	- Unmute all recorded tracks
Left Arrow & #'s 1 to 8	- Solo selected track
Left Arrow & 0	- Mute all tracks
F1	- If pressed during playback of song exits after playing last sequence in song
home	- Move element cursor to first song element
Home (Shifted)	- Move element cursor to last song element
] (Shifted)	- Move element cursor to next song element
[(Shifted)	- Move element cursor to last song element

Appendix C

Note Pulse Values for Different PPQN

The following Tables give the pulse numbers for various note values at different PPQN settings:

At a PPQN of 24

- Note Value -	----- Pulse Number -----								
QTR:	01	-	-	-	-	-	-	-	-
8-th:	01	-	-	-	13	-	-	-	-
16-th:	01	-	07	-	13	-	19	-	-
32-th:	01	04	07	10	13	16	19	22	-

At a PPQN of 48

- Note Value -	----- Pulse Number -----									
QTR:	01	-	-	-	-	-	-	-	-	-
8-th:	01	-	-	-	25	-	-	-	-	-
16-th:	01	-	13	-	25	-	37	-	-	-
32-th:	01	07	13	19	25	31	37	43	-	-

At a PPQN of 96

- Note Value -	----- Pulse Number -----									
QTR:	01	-	-	-	-	-	-	-	-	-
8-th:	01	-	-	-	49	-	-	-	-	-
16-th:	01	-	25	-	49	-	73	-	-	-
32-th:	01	13	25	37	49	61	73	85	-	-

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