AKAI
professional

Roger Linn

Operator's manual

MPC60

Midi Production Center

Software version 2.0

Operator's Manual

By Roger Linn

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READ THIS BEFORE YOU START!

Power requirements

Power requirements for electrical equipment differ from area to area. The operating voltage of this machine is preset at the factory according to its intended destination. However, some models are equipped with a voltage selector. If your machine is so equipped, before connecting, check to see that the VOLTAGE SELECTOR on the rear panel is set to the voltage for your area. **If not, please set it correctly before plugging in the power cord:**

> 220V, 50 Hz for Europe except UK.
> 240V, 50 Hz for UK and Australia.
> 120V, 60 Hz for U.S.A. and Canada.

If the VOLTAGE SELECTOR on your machine looks like this: If the VOLTAGE SELECTOR on your MPC60 looks like the diagram on the right, please disconnect the power cord, then set the switch to the correct voltage for your area, using a flat screwdriver.
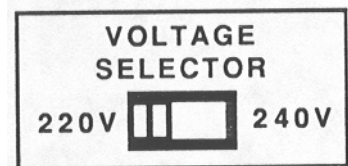
What you should know to protect yourself and the Akai MPC60:

Watch out! You might get an electric shock.
• Never touch the power plug with wet hands.
• Always pull out the power plug by the plug and never the cord.
• Only let a qualified professional repair or reassemble the Akai MPC60. An unauthorized person might touch the internal parts and receive a serious electric shock.
• Never allow a child to put anything, especially metal, into the Akai MPC60.

Let's protect the Akai MPC60 too.
• Use only a household AC power source. Never use a DC power source.
• If water is spilled on the Akai MPC60, disconnect the power and call your dealer.
• Make sure that the Akai MPC60 is well ventilated and away from direct sunlight.
• To avoid damage to the internal circuits and the external surface, keep away from heat (stoves, etc.)

• Avoid using spray type insecticide near the Akai MPC60. It can damage the finish and might ignite suddenly.
• To avoid damaging the finish, never use denaturated alcohol, paint thinner or other similar chemicals to clean the Akai MPC60.
• Place the Akai MPC60 on a flat and solid surface.

WARNING!

Warning - This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J or Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

"This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications"

For customers in the UK

IMPORTANT FOR YOUR SAFETY - TWO CORE FLEX

The wires in the mains lead of your machine are coloured in accordance with the following code: Blue: Neutral Brown: Live As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings indentifying the terminals in your plug, proceed as follows: The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
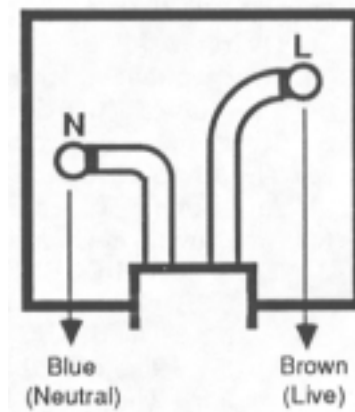
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.
• When wiring a plug, do not connect any wire to the larger pin marked either by "E" or by this symbol:

Ensure that all terminals are securely tightened and that no loose strands of wire exist.

Table of contents

Section 1: Introduction

1.1 Welcome!

Thank you for purchasing the Akai MPC60. The Akai engineering team, my engineering team and myself have all worked very hard to bring to you a product which we truly believe answers the needs of today's professional musician. I am sure you will find that the combination of innovative features, high sound quality, ease of use and attention to detail will be very useful in the process of composition, recording and performing. It has been said that technology has always had a profound influence on art. If this is true, I invite you all to take this piece of technology and use it to change the direction of music for tomorrow. Now, let's begin...

Roger Linn

P.S. I'd like to know if you use the MPC60 on any famous records. If so, I'd appreciate it if you would write a brief letter to your local distributor and they'll tell me. Thanks.

1.2 How to use this manual

The MPC60 and this manual were designed for people who don't like reading manuals and want to start working immediately.

The manual teaches the MPC60's operation in a logical, step-by-step manner. The sections are presented in the order that most people want to learn them. To start using your MPC60 as soon as possible, we recommend that you first read (or skim) through sections 2 and 3, "The Basics" and "Recording sequences", to get a general understanding of the MPC60. After that, you will find that most other functions are very easy to figure out by experimentation:

1. Press the key which you think would most likely contain the function you are looking for. For example, to sample a new sound, press the SOUNDS key.
2. Follow the instructions presented on screen. If you're confused, press and hold the HELP key for further explanation.
3. If you still can't figure it out, find the section in the manual which explains that function, either by looking in the table of contents or the index.

Section 2:
The Basics

2.1 Overview

This section is a simple introduction to operating the MPC60. In this section you will learn to:

- Hook up the MPC60 to your system.
- Enter and change data and parameters using the CURSOR keys, the NUMERIC KEYPAD, the DATA CONTROL, and the +/- keys
- Use the SOFT KEYS and the HELP key
- Play the drums and use the associated keys
- Adjust the stereo drum mixer
- Play the preset sequences
- Adjust the playing tempo and a few other basic functions

2.2 Hooking up your system and turning it on:

To get started using the drum machine section:

1. Connect the power cord to an AC outlet. 2. Connect the STEREO OUT LEFT and STEREO OUT RIGHT jacks to the inputs of an amplifier or mixer.

Note: If you are only using the MPC60 as a drum machine right now, you don't need any other connections. Skip down to the section "Turning the MPC60 on".

To also use the sequencer section with a single integrated keyboard synthesizer:

1. Connect the synthesizer's MIDI OUT to the MPC60's MIDI IN 1. You may alternatively use MIDI IN 2. Both inputs merge together. 2. Connect the MPC60's MIDI OUT 1 to the MIDI IN of the synthesizer.

To use the sequencer section with a midi master keyboard and separate multiple midi sound modules:

1. Connect the MIDI OUT of the midi keyboard to the MIDI IN 1 of the MPC60. You may alternatively use MIDI IN 2. Both inputs merge together. 2. Connect the MIDI OUT 1 of the MPC60 to the MIDI INPUT of the first midi sound module. 3. Connect the MIDI THRU of the first sound module to the MIDI INPUT of the second sound module. 4. Connect the MIDI THRU of the 2nd sound module to the MIDI INPUT of the third sound module, and continue this until all sound modules are connected.

The above hookup only uses one of the four midi output jacks of the MPC60. Later in the manual, you'll learn how to use all 4 of the midi output jacks.

To use the sampling input, foot switches, sync input/output, echo inputs/outputs, individual mix output 1 - 8, or the metronome output, please read the corresponding sections of the manual.

Note: the RS-232C computer port currently has no function.

Turning the MPC60 on

1. Of the disks which are included with the MPC60, find the disk "STUDIO SET and SYSTEM ALL" and place it into the disk drive. This disk contains a general purpose set of drum sounds and a collection of demonstration sequences.

Note: Every time you turn the MPC60's power on, you must re-load the drum sounds (and sequences if desired) from disk. This is because ALL SOUND AND SEQUENCE MEMORY IS LOST WHEN YOU TURN THE POWER OFF. While it is true that most drum machines hold their memory when power is removed, these are devices with very low memory capacity. There are no samplers and no high capacity sequencers which retain memory when power is removed for one reason: the cost of low-power memory, which can be kept active by a battery, is much more expensive than the type of memory commonly used. We at Akai believe the customer would prefer to pay a substantially lower price for the minor inconvenience of saving his work to disk before powering down. For this reason, whenever you do any sampling or editing of sounds, or recording or editing of sequences, you must always save the changes to disk, or the changes will be lost!

2. Turn the power ON and wait for about 1 1/2 minutes for the MPC60 to load the sounds and sequences into memory. While loading, the screen will display the following message:

```
=============== Akai MPC60 ===============

      Copyright 1987, 1988, 1989
        AKAI ELECTRIC CO., LTD.
             Version 2.00


Loading files...
```

Note: If the version number is a lower number than 2.00, your MPC60 is running an older software version. If so, you should update your MPC60 to version 2.00. To update your MPC60, contact your dealer or service center and say "I want to have the latest software update installed in my MPC60".

When finished loading (after about one minute), the following screen should appear:

```
=============== Play/Record ==============
Sqnc: 1-Ultimate_hipness Tmpo: 90.9 BPM
TSig: 4/ 4   Bars:   4     Loop:TO BAR  1
=============== Track data ===============
Trak: 1-TRK01              Ch:16A-Drums
Vol%:100     Prog:  0      Ch: 0A-(off)
===== Now:001.01.00 (00:00:00:00) ======
<Trak=ON ><Solo=OFF><Tmpo=SEQ><SortTrks>
```

This is the PLAY/RECORD screen. It is the main operating mode of the MPC60 and all playing and recording of sequences is done while this screen is displayed. This screen will be discussed further in the section entitled "Recording sequences'". If at any time while operating the MPC60 you are confused and want to return to this mode, press the MAIN SCREEN key.

Note: There are three other disks included with the MPC60:

> ROCK SET and SYSTEM ALL,
> DRY SET and SYSTEM ALL, and
> SYNTH SET and SYSTEM ALL.

These disks contain 3 additional sets of drum sounds, but contain the same demonstration sequences. To hear the sounds on these disks, follow the above instructions again, but use one of these disks instead. It is also possible to load the files on these disks by using the DISK key, discussed later in the section "Saving to and loading from disk".

2.3 The CURSOR keys

While the PLAY/R,ECORD screen is showing, notice that a small rectangular block is blinking near the upper left corner. This is called the CURSOR. It is possible to move the cursor around the screen using the four grey direction keys in the CURSOR section of the panel. Try doing this, then return the cursor to the upper left corner where it was.

Notice that the cursor does not move from letter to letter, but rather jumps across many letters at a time, landing only in certain locations, usually to the right of a colon (":"). These areas are called DATA FIELDS and each one controls a specific parameter. For example, the upper leftmost data field is called SQNC, an abbreviation for "sequence". To the right of this field is another field containing the name for the selected sequence number, followed by the TMPO field, an abbreviation for "tempo".

The PLAY/R,ECORD screen is one of many screens available on the MPC60. Each of the panel keys presents at least one unique screen, and each screen has its own unique data fields. Try pressing a few of the different keys in the COMMANDS section of the panel such as DISK or TEMPO/SYNC. When you're finished, press MAIN SCREEN to return to the PLAY/RECORD screen.

2.4 The NUMERIC KEYPAD, DATA CONTROL and +/- keys

The NUMERIC KEYPAD

To change the data in a field, move the cursor to it and type in the new number using the numeric keypad, followed by ENTER. For example, to change to sequence number 2:

1. Move the cursor to the SQNC field;
2. Type 2, followed by ENTER.

Notice that the sequence name (located immediately to the right of the sequence number) now automatically changes, because it must now display the name of sequence 2. Try changing the playing tempo in the same way (move the cursor to the TMPO field).

Another use of the numeric keypad is to select from a list of options presented on-screen. For example, pressing the DISK key causes the following screen to be displayed:

```
=============== Save/load ===============
1)Save a sequence    2)Save all seqs/songs
3)Save a sound       4)Save all sounds
5)Save parameters    6)Load/erase/rename
7)Format disk        8)Copy a disk


Select option:
```

If a screen like this is displayed, you are expected to select one of the options by pressing a single number - it is not necessary to press ENTER afterwards.

The DATA CONTROL

Another way of changing on-screen data is to use the DATA CONTROL. While the cursor is in a data field, if the DATA CONTROL is rotated one "step" to the right (as you turn the knob, you can "feel" the steps), the on-screen number will increment by 1. If the DATA CONTROL is rotated one step to the left, the on-screen number will decrement by 1. Continuously turning the DATA CONTROL will repeatedly increment or decrement the on-screen value. It is not necessary to press ENTER after turning the data control.

There are certain data fields called "choice" fields. These fields do not contain numeric data, but rather a specific number of preset

selections, but only one may be active at a time. In this case, the `DATA CONTROL is` used to select from the available options. For example, press the `OTHER` key and move the cursor to the RATE field, which is a "choice" field. `Now` turn the `DATA CONTROL` and notice that with each step of the control, a different preset option appears.

The + and - keys

Pressing the "+" key has the same effect as turning the `DATA CONTROL` one step to the right. It either increments a number in a numeric field or chooses a new option in a "choice" field.

Pressing the "-" key has the same effect as turning the `DATA CONTROL` one step to the left. It either decrements a number in a numeric field or chooses a new option in a "choice" field.

2.5 The SOFT KEYS (1 - 4)

In the upper right corner of the front panel are four buttons labeled SOFT KEY 1, SOFT KEY 2, SOFT KEY 3 and SOFT KEY 4. The functions of these buttons change from one screen to another and are always displayed on the lowest line of the screen. For example, while the PLAY/RECORD screen (accessed by pressing the MAIN SCREEN button) is showing. notice the lowest line:

```
============== Play/Record ==============
Sqnc: 1-Ultimate_hipness Tmpo: 90.9 BPM
TSig: 4/ 4    Bars:   4     Loop:TO BAR   1
=============== Track data ==============
Trak: 1-TRK01              Ch:16A-Drums
Vol%:100      Prog:   0    Ch: 0A-(off)
===== Now:001.01.00 (00:00:00:00) =====
<Trak=ON ><Solo=OFF><Tmpo=SEQ><SortTrks>
```

There are four titles enclosed in angle brackets ("<" and ">"). The titles are <Trak=ON >, <Solo=OFF>, <Tmpo=SEQ> and <SortTrks>. These four titles indicate the functions of the four soft keys, but only while this screen is showing. Each of the many functions in the MPC60 displays a unique screen of data, and the lowest line of each of these screens indicates the function of the 4 soft keys while that screen is showing. Demonstrate this by pressing the ERASE key, then the TIMING CORRECT key, then MAIN SCREEN to return to the PLAY/RECORD screen. Some screens have less than four active soft keys and some have none.

2.6 The HELP key

Whenever this key is pressed and held down, the contents of the screen will be temporarily replaced with a paragraph of further explanation about the function you are currently working with. To return to the previous screen, release the HELP key. There is a different help screen for every data field in every screen in the MPC60. To demonstrate this:

1. Press HELP, notice the screen, then release it;
2. Move the cursor to a different field;
3. Press HELP again, notice the different screen and release it.

2.7 The DYNAMIC DRUM PADS

The 16 drum pads are dynamic- the harder you strike them, the louder the drum will sound.

2.7.1 The FULL LEVEL and 16 LEVELS keys

• The FULL LEVEL key: The FULL LEVEL key defeats the variable dynamics of the drum pads, causing all drums to play at full dynamic level, regardless of how hard or soft the pad is struck. However, this has no effect on drums which are playing back from sequences. Press FULL LEVEL once to turn this mode ON (the light will go on); press it again to turn it OFF.

• The 16 LEVELS key:
This key has 2 functions, but only one may be in use at a time:

> 1. It may be used to play a single drum at 16 fixed dynamic levels, using the 16 pads.
> 2. It may be used play a single drum at 16 fixed tunings, using the 16 pads.

To select which of these 2 functions is currently in use, press the SOUNDS key, then select option 8, "Mixer/hihat/other", and the following screen will appear:

```
=============== Mixer modes ==============
Stereo mix:SEQUENCE   Rcrd live chngs:YES
Echo   mix:SEQUENCE   Rcrd live chngs:YES
==== Hihat decay switch thresholds =====
Closed/medium:43        Medium/open:110
================= Other =================
Controller number for hihat decay:20
Function of "16 levels':16 TUNINGS
```

Now, move the cursor to the lowest field on the screen entitled FUNCTION OF "16 LEVELS". This is a "choice" type field and has 2 options:
> 1. "16 VOLUMES": If this option is selected, the 16 LEVELS key will cause a single sound to play from all 16 pads, but at 16 fixed dynamic levels with the softest level on the lower leftmost pad and the loudest level on the upper rightmost pad.

2. "16 TUNINGS": If this option is selected, the 16 LEVELS key will cause a single sound to play from all 16 pads, but at 16 fixed chromatic tunings, with the lowest tuning (-12 semitones) on the lower leftmost pad, and the highest tuning (+3 semitones) on the upper rightmost pad. If this mode is active and the pads are played while recording, these tunings are remembered within the sequence. After recording, the tuning of each note may be adjusted in Step edit mode. This is explained further in the Step edit section of this document.

Use the DATA CONTROL to select which function you wish to use. Once set, your selection will be retained even after power is removed. When you've finished, press the MAIN SCREEN key to return to the PLAY/RECORD screen.

To use the 16 LEVELS key (regardless of the selected function):

1. Play the pad of the drum you want to use.
2. Press the 16 LEVELS key. The light will go on indicating the feature is active. Now, the drum you played in step 1 will sound when any of the pads are played, but at 16 fixed dynamic levels (if "16 VOLUMES" is active) or at 16 fixed tunings (if "16 TUNINGS" is active).
3. To turn this feature off, press 16 LEVELS again and the light will go off.

NOTE: The "16 TUNINGS" feature does not operate if the Hihat is selected.

NOTE 2: The MPC60 performs its tuning all digitally without any distortion, but substantial distortion may be heard if a drum is tuned which was recorded at too high a record level. If you notice this distortion when tuning your own sampled sounds, the only solution is to re-sample your sound at a lower volume or to use a different sound which was not over-recorded.

2.7.2 The BANK 2 key

The MPC60 may contain as many as 32 drums in memory at once, yet there are only 16 front panel play pads. This button is used to select between bank 1 (the first 16 drums: Hihat through Percussion 4) and bank 2 (the second 16 drums: Drum01 through Drum16). Normally, bank 1 is active. To activate bank 2, press BANK 2 and the light will go on to indicate bank 2 is active. To return to bank 1, press BANK 2 again and the light will go out.

2.7.3 The HIHAT DECAY slider & the AFTER key

The slider controls the decay time of any notes played on the hihat pad, similar to how the foot pedal on a real hihat controls its decay time. Also, to add realism, one of three samples is played, depending on the position of the slider:

1. If a hihat is played while the slider is in the lower 1/3 of its range, a "closed hihat" sample is played; 2. If a hihat is played while the slider is in the middle 1/3 of its range, a "medium open hihat' sample is played; and 3. If the hihat is played while the slider is in the upper 1/3 of its range, an "open hihat" sample is played.

It is possible to change the thresholds within the slider's travel at which one hihat sample changes to another. To do this, read section 6.9 of the manual entitled "Mixer modes, hihat decay thresholds, mufti-pitch mode".

The decay information is recorded into the sequence with each hihat note, allowing every nuance of your hihat performance to be remembered.

Normally, the WHAT DECAY slider has no effect on hihat notes playing back from sequences. However, if the AFTER key is pressed (and the light goes on), the slider not only sets the decay for all new notes played, but also overrides the decay of any existing hihats playing in sequences. Further, if in RECORD or OVERDUB modes while the AFTER light is on, the current setting of the decay slider will replace decay settings for any existing hihats playing in the active track. To activate the AFTER mode, press AFTER (the light will go on). To deactivate it, press AFTER again (the light will go off).

Note: The RECORD and OVERDUB modes will be described in the next chapter, "Recording sequences".

2.8 The DRUM MIX key - adjusting the stereo drum mix

To adjust the individual volume and pan settings for the stereo mix outputs, press the DRUM MIX key and this screen will appear:

This is a graphic simulation of a 16 channel stereo mixer. For each channel, there is a four letter abbreviation of a drum, a graphic representation of a volume slider, and a graphic representation of a rotary pan control. Depending on the setting of the BANK 2 switch, either the first 16 drums (HIHT - PRC4) or the second 16 drums (DRO1 -DR16) will be displayed for adjustment. You can press the BANK 2 switch before or during the drum mix operation.

To adjust the volume of a particular drum: 1. Press the pad of the drum to be adjusted - the small triangle will move to directly above the selected drum; 2. Rotate the DATA CONTROL. As you turn it, the graphic volume slider will move up or down, indicating that the volume of the selected drum is being changed.

To adjust the pan position of a particular drum: 1. Press the pad of the drum to be adjusted - the small triangle will move to directly above the selected drum; 2. Press the CURSOR UP key - the small triangle will now point upwards, toward the graphic pan knob; 3. Rotate the DATA CONTROL. As you turn it, the graphic pan knob will move between one of 15 pan positions, indicating that the pan of the selected drum is being changed.

Even though no soft key functions are displayed on the screen, there is one active soft key: If SOFT KEY1 is pressed, the mixer changes to a mode in which all drums are changed simultaneously, indicated by 16 cursor triangles across the screen. This may be a global level or pan change. You can change between level and pan with the UP an DOWN cursor keys. To return to normal operation, press soft key 1 again.

NOTE: It is possible to select a special mode in which all mix changes made in real time while recording will be replayed on playback, just like an automated mixer. This is explained in section 6.9 of the manual entitled "Mixer modes, hihat decay thresholds, multi-pitch mode".

2.9 Playing the preset sequences

To play some of the preset sequences included with the MPC60, perform the following steps:

1. If you have not already done so, load the preset sounds and sequences from disk as described in the section "Turning on the MPC60" or Section 7 - "Saving to and loading from disk". Make sure the STEREO MIX VOLUME control and your amplifier/mixer controls are set properly.
2. Make sure the PLAY/R,ECORD screen is showing. If not, press MAIN SCREEN;
3. Make sure the cursor is currently in the upper left field of the screen, entitled SQNC, and that the number in this field is 1. If not, press 1, then ENTER;
4. Press the PLAY START key - sequence number 1 should start playing in a loop;
5. Press the STOP key - the sequence should stop playing;
6. Press 2, then ENTER - the name for sequence number 2 should appear directly to the right of the sequence number;
7. Press the PLAY START key - sequence number 2 should start playing in a loop;
8. Press the STOP key - the sequence should stop playing;
9. Turn the data wheel (very carefully) one step to the right, which should cause the sequence number to increment to 3;
10. Press the PLAY START key - sequence number 3 should start playing in a loop;
11. Press the STOP key - the sequence should stop playing.

2.9.1 How to change sequences while playing

It is also possible to change sequences while the MPC60 is playing. If you do, the newly selected sequence will not start playing until the current sequence has finished. When the new sequence number is entered, the top line of the screen will display the message:

"=========== (Next sequence: 2) =========="

This indicates that the newly selected sequence (in this case, sequence number 2) will start playing once the current sequence has finished playing.

IMPORTANT!: This process will only operate while the top line of the PLAY/RECORD screen displays the following words before the new sequence is selected:

"============ Play/Record =============""

This indicates that the MPC60 is NOT enabled for recording. This process will NOT operate if the MPC60 is enabled for recording, indicated by the following top line of the PLAY/RECORD screen:

"====== Play/Record (Record ready) ======"

If these words are displayed, you must first disable recording by doing the following:

> 1. Select a different sequence; then
> 2. Re-select the original sequence

This feature is very useful for creating the structure of a song in real time while the MPC60 is playing. For example, while the sequence containing the 1st verse is playing, you could enter the sequence number contain the chorus, which will starting playing once the verse sequence is finished. Then, you might enter the sequence number containing the second verse, which will start playing once the chorus sequence has finished. This process may be continued infinitely.

NOTE: If you use the DATA CONTROL to select a new sequence while playing, only the next higher or next lower sequence may be selected. If you want to select a sequence which is greater than one higher or lower, you must use the numeric keypad (remember to press ENTER after you have entered the new sequence number).

NOTE 2: If you notice a timing irregularity at the point of transition from one sequence into another, the problem may be due to the assignments of the PROG field (in the PLAY/RECORD screen) for the sequence which plays immediately after the timing irregularity. The PROG field is described in section 3.3, "The PLAY/RECORD screen- the main operating mode of the MPC60". If, while playing one sequence, you change to a sequence containing these program assignments, the sequence's program assignments are sent out at the moment that the sequence starts to play in the song. This can present a problem because most synthesizers require a brief time delay while changing programs, and this delay time will cause any notes existing at the start of the new sequence to be delayed. This delay is brief in most synthesizers, but is usually enough to cause a timing irregularity at the start of the sequence. To avoid this problem, remove any assignments of the PROG field for the sequence which you are changing to while playing (in the above described manner). This problem does not apply to sequences containing only drums tracks.

2.10 Adjusting the playing tempo

To adjust the playing tempo:

1. From the `PLAY/RECORD` screen, move the cursor to the TMPO
   field - this is the tempo setting; 2. Change the tempo either by typing
   in a new tempo number and pressing `ENTER,` or by turning the
   `DATA CONTROL;`

There are other ways to adjust the tempo and many other tempo related
parameters. These will be discussed later in the section entitled
`"RECORDING SEQUENCES".`

2.11 The MAIN SCREEN key- how to exit any function

Pressing the MAIN SCREEN key at almost any time will return you back to the main PLAY/R,ECORD screen of the MPC60 without damaging any data. Use this key as a "panic" button - if you find yourself in some function you don't understand and want to get out.

2.12 The RESET TO DEFAULTS function

The contents of most of the data fields in each of the screens in the MPC60 are retained after the power is turned off and on again. Even though all sounds and sequences are lost when power is removed, these settings are retained by a special battery powered memory. Because of this, there is no need to reset the MPC60's settings to your personal taste every time you power on.

However, there are times when it is desirable to reset all of these settings to their original factory-preset settings. There is a special function called "Reset to defaults" which does exactly this. To perform a reset to defaults:

1. Press the OTHER key, and this screen will appear:

```
=============== Metronome ===============
Volume:14     Rate:1/4 NOTE     In play:YES
=============== Foot switches ============
Foot1:ERASE              Foot2:TIMING CORECT
================= Other ==================
Free sequence memory%:100

<Defaults><Record 16 chs>
```

2. Press SOFT KEY 1, <Defaults>.

3. A second screen will appear, asking you if you are sure you want to reset to defaults. Press SOFT KEY 1 again, <Reset to defaults>.

Now, all data fields will be reset to their factory-preset status.

NOTE: These settings which are retained with power removed may be saved in a special file called a "Parameter file". See the DISK section of the manual to learn more about this feature.

Section 3: Recording Sequences

3.1 Overview

This section describes functions which are used in the process of recording sequences. In this section you will learn:

• How sequences, tracks and channels are organized
• How to use the PLAY/R.ECORD screen
• How to create both "drums" and "non-drums" tracks
• The keys in the PLAY/RECORD section of the panel
• How to record both a drum sequence and a multi-track keyboard sequence
• How to use the TIMING CORRECT function
• The TEMPO function
• The WAIT FOR KEY and AUTO PUNCH keys
• How to use the recording metronome
• How to use the foot switches
• How to see how much memory is available for new sequence recording
• How to record Midi system exclusive data
• How to transfer sequences to and from other sequencers

3.2 How sequences, tracks and channels are organized

Sequences:

The MPC60 holds 99 sequences in memory at one time. A sequence can be thought of as a segment of mufti-track tape of variable length. Depending on the sequence contents, it could be a 2 bar repeating drum pattern, an eight bar verse, or a 200 bar song with time signature and tempo changes. Normally, only one sequence may play at one time, unless the 2ND SEQUENCE feature is on, allowing two sequences to play simultaneously.

A sequence has a format consisting of time signature and number of bars. If no format is assigned to a sequence, it is automatically given a time signature of two bars of 4/4. However, this default setting may be changed by pressing the EDIT key, then selecting option 2: CREATE SEQUENCE.

Tracks:

Within each of the 99 sequences are 99 tracks, which contain the actual midi events. These may be thought of as the tracks on a mufti-track tape recorder - they each contain a specific instrument or piece of the total arrangement, but all play simultaneously. For example, track 1 could be drums, track 2 percussion, track 3 bass guitar, track 4 piano, track 5 horns, track 6 more horns, etc. Each track may be either a "drums" track or a "non-drums" track, but not both. This is explained further in the section "How to assign drums and non-drums tracks".

Channels:

In order for the sequences to play external synthesizers, it must send its notes out through midi on one of the 64 midi output channels (16 channels for each of the 4 midi output jacks). On the MPC60, each track may be independently assigned to output its notes through any one of these 64 output midi channels. It is also possible to send the output of any track through two midi output channels simultaneously.

Exactly how tracks and channels are assigned is explained later in the next section entitled "The PLAY/RECORD screen - the main operating mode of the MPC60".

3.3 The PLAY/RECORD screen - the main operating mode of the MPC60

When the MPC60 is first powered on (with the STUDIO SET and SYSTEM ALL disk in the drive), the following screen appears after the disk has loaded:

```
=============== Play/Record ===============
Sqnc: 1-Ultimate_hipness Tmpo: 90.9 BPM
TSig: 4/ 4    Bars:   4      Loop:TO BAR  1
=============== Track data ===============
Trak: 1-TRK01             Ch:16A-Drums
Vol%:100      Prog:  0     Ch: 0A-(off)
===== Now:001.01.00 (00:00:00:00) =====
<Trak=ON ><Solo=OFF><Tmpo=SEQ><SortTrks>
```

Note: It is also possible to turn on the MPC60 without any disk in the drive. In this case, no sounds or sequences will be loaded and the MPC60 may be used as a sequences only.

At this point, the device is in its standard operating mode, in which all recording and playing of sequences is done. On this screen are presented many data fields useful to the process of real-time recording. A detailed description of each of the data fields and soft keys follows:

• The title "============== Play/Record ===============":
This is not actually a field, but rather the title of this screen. Sometimes, however, this title line will appear slightly different:

"====== Play/Record (Record ready) ======"

If this message appears, it means that the currently selected sequence is ready to be recorded into. If the "(Record ready)" message is not displayed and you want to record into the current sequence, press either the RECORD or OVERDUB keys once, and the "(Record ready)" indicator will be added to the title line, indicating that the current sequence is ready to be recorded into. Remember that selecting a different sequence and then reselecting the original one will remove the "(Record ready)" message.

• The SQNC field: This field displays the active sequence number, from 1 to 99. This is the sequence which will play when either the PLAY START or PLAY keys is pressed. The MPC60 holds up to 99 sequences in memory at one time.

The "sequence name" field: This is the 16 character name for the current sequence. This field has no on-screen title, but is located directly to the right of the SQNC field. To change the sequence name, move the cursor to this field and turn the DATA CONTROL one step in either direction. This will cause the keys which have the alphabetic letters printed next to them to change to their alpha functions. To indicate that this alpha mode is active, the cursor changes from the normal blinking block to a blinking underline. Now change the name by typing in the letters printed above the keys. Use the ERASE key as a space, and the TAP TEMPO key to change between upper and lower case. The left and right cursor keys do not type letters, but allow you to move backwards and forwards in the name. For punctuation, position the cursor where you want the character to appear, and rotate the DATA CONTROL knob until you see the character you want, then press the right cursor key to move on to the next position. This process applies to all names that you enter into the MPC60 (sequences, songs, sounds, etc.). When finished, press ENTER and the cursor will return to a blinking block at the beginning of the field, indicating that the alpha keys have returned to their normal functions.

Note: If the DATA CONTROL is <u>not</u> turned while the cursor is in this field, moving the cursor one position to the left or right will move to the previous or next data field - not the adjacent character position within the sequence name.

If no sequence data exists, the name is always "(Unused)". Once any data is recorded into the sequence, the name defaults to "SEQXX" with "XX" being the number of the sequence.

• The TMPO field This is the playing tempo. Additional tempo parameters are available by pressing the TEMPO/SYNC key.

• The BPM field (Tempo display method) This right half of the tempo field is actually a separate field. This field indicates the tempo display method. One of two options may be selected: BPM (Beats Per Minute) or FPB (Frames Per Beat). If set to FPB, the fractional portion of the tempo field denotes 1/8s instead of 1/lOs, as in Beats per minute.

• The TSIG field (Time signature): This field shows the time signature of the current bar of the active sequence. It is for display only and cannot be changed. To change the time signature of a bar or to insert time signature changes, read the section of the manual entitled "Editing sequences".

• The BARS field: This shows shows the total number of bars in the active sequence. It is for display only and cannot be changed.

• The LOOP field: This is a choice field and
has two options:

>1. OFF: If this option is selected, the sequence stops playing when it reaches its end. However, if in RECORD mode, recording continues past the end, adding one measure (at the time signature of the previous bar) onto the end of the sequence as each new bar is entered, until the sequence is stopped.

>2. LOOP TO BAR 1:
>If this option is selected, when the sequence plays to the end, it immediately loops back to the bar number displayed to the right of the word BAR. To set the number of the bar which the sequence loops back to, move the cursor to the field to the right of the word BAR and enter the new number.

>NOTE: If the bar to loop to is 1 and the sequence is in RECORD mode, the MPC60 will automatically switch from RECORD to OVERDUB mode at the moment the sequence loops back- this will prevent accidental erasure of any notes just recorded. In the event that the "loop to" bar is 2 or higher and the sequence is in RECORD or OVERDUB modes, the MPC60 will automatically switch to PLAY mode at the moment the sequence loops back to the specified bar.

The "Track data" area (lines 5 and 6):

• The TRAK field This field displays the active track within the sequence. The active track is the track which, when record or overdub mode is entered, will be recorded into. Only one track may be active at a time.

• The "Track name" field This field has no on-screen title, but is the 16 character name of the active track, located directly to the right of the active track number. It is changed in exactly the same manner as the sequence name above. If no track data exists, the name is always "(unused)". Once any data is recorded into the track, the name defaults to "TRKXX" with "XX" being the number of the track.

• The CH field (line 5) This field specifies which of the midi channels the active track will send its output through. There are 64 possible channels - 16 on each of the 4 midi output jacks. To select the channel number (1 - 16), move the cursor to the numeric field directly to the right of the word "CH". To select which of the 4 output midi jacks the track will play through, move the cursor one additional position to the right of the channel number. This is a choice field with 4 options: A, B, C, and D, corresponding to midi output jacks 1, 2, 3, and 4, and can be changed by using the DATA CONTROL. For example, to assign the

active track to play through midi channel 5 on output jack 3, select 5C in these fields. If you want the active track to be a "drums" track, this should be set to 16, which is the midi channel the internal drums sound generator normally receives its notes from (in this case the port selection - A, B, C, or D - is only used for additionally triggering an external drum sound generator). For more information on "drums" and "non-drums" tracks, see section 3.4: "How to assign "drums" and "non-drums" tracks".

• The midi channel name field (right side of line 5): This is the 8 character name for the currently selected midi output channel. This field has no on-screen title, but is located directly to the right of the upper CH field. This would commonly contain the name of the synthesizer which is being played from the displayed midi channel, for Example, "5900_#2". There are 64 names - one for each of the 64 output midi channels. If the selected midi channel is assigned to the internal "drums" channels (16A, B, C, or D), the assigned name for that channel is always "Drums" to indicate that the selected track will play the internal drums.

NOTE: These 64 names are intended to be used is to identify the midi devices which are externally connected - not the data contained in the track . For this reason, they are not saved within sequence files or "ALL" files. They are, however, retained in memory after power is removed and are also saved within "parameter" files.

• The CH field (line 6):
This field allows a second midi output channel to be assigned to the active track in addition to the one displayed in the upper CH field, so that the active track may play into 2 midi channels simultaneously. If an additional output channel is not desired, a "0" should be entered here to indicate that no additional midi channel is assigned.

• The midi channel name field (right side of line 6): This field, located directly to the right of the lower CH field, has the same function as the upper midi channel name field, directly above, but in this case is used to display the assigned name of the midi channel selected in the lower CH field (line 6). If a "0" has been entered in the lower CH field, indicating that no additional midi channel has been selected for the active track, the name "(Off)" will be displayed here.

• The VOL% field:
This is an overall output volume control for active track. It actually scales the velocities of all notes which play from the track. However, unlike a normal volume control, this setting actual adjusts the dynamics played. The range is from 0 to 200%. Select 100 for normal velocity. It is also possible to adjust the velocity values for a region of notes after recording. To learn more about this, read

section 4.3.10 "Changing the velocity or duration of a group of notes after recording".

• The PROG field:
This field permits a midi program number (1-128) to be assigned to the active track. Each track may have a unique program number assigned to it. To assign a program number for the active track, enter the desired number into the PROG field. To select no program assignment for the active track, enter a "0" in this field. Whenever a sequence is selected in the SQNC field (before the sequence is played), the assigned program number for each track is immediately sent out over the track's midi channel to the external synthesizer, causing it to change to the assigned program number. This way, all external synthesizers are immediately changed to the correct program numbers by merely selecting the sequence.

NOTE 1: It is also possible to record midi PROGRAM CHANGE events at any location within a track, either in real time or in STEP EDIT mode. (See STEP EDIT for more details about this.) It is important to note that if one of these PROGRAM CHANGE events is inserted in mid-sequence and the portion of the sequence containing the change is played (causing the external synthesizer to change to the new program), the original program number (as set up in the PROG field) will not be re-sent over midi until the sequence is reselected in the SQNC field. Simply restarting the sequence will no implement the program change. If the MPC60 did send out all assigned program numbers whenever PLAY START was pressed, this problem would be corrected, but there would also be a brief delay at the start of the sequence because the external synthesizers must take time to change their program data. If you do want a program change to be sent out whenever PLAY START is pressed, it is better to insert a midi PROGRAM CHANGE event at the start of the track, using STEP EDIT.

NOTE 2: If a sequence containing these program assignments is played in SONG MODE, the sequence's program assignments are sent out at the moment that the sequence starts to play in the song. This can present a problem because most synthesizers require a brief time delay while changing programs, and this delay time will cause any notes existing at the start of the new sequence to be delayed. This delay is brief in most synthesizers, but is usually enough to cause a timing irregularity at the start of the sequence. To avoid this problem, don't assign any program changes to sequences which you are using in SONG MODE. If you need to use program changes within the song, make sure that no notes exist at the start of the sequences containing the program changes. Another alternative is to insert Midi PROGRAM CHANGE events within sequences in the song at locations where no notes exist. This same problem exists when manually changing sequences while playing (see section 2.9.1 "Changing sequences while playing") and can be corrected in the same way.

• The NOW field

This field displays the current position within the sequence simultaneously both in musical terms and as a SMPTE number. The left side of this field shows the current position in musical terms - as a 3 part number separated by decimal points. The first part is the bar number; the second is the "beat" number within the bar (the beat is equal to the denominator of the time signature); and the third is the "clock" number within the beat (there are 96 clocks to a quarter note). Bars and Beats start at 1; Clocks start at 0.

To the right of the above described BAR.BEAT.CLOCK number is another 4 part number, displayed in parentheses. This field displays the current position of the sequence as a function of elapsed time from the beginning of the sequence, in HOURS:MINUTES:SECONDS:FRAMES. However, the number displayed when the sequence is set to the start is not necessarily 00:00:00:00, but rather is equal to the number entered in the "Sequence Starts at SMPTE#" field in the SYNC screen.

These 2 fields cannot be changed by directly entering numbers -the cursor will not move to this field. This field is normally changed by using the <, >, « , and » keys, or the LOCATE function, described in another section. Also, these fields change in real time while the sequence plays. However, the rightmost part of each field - the "clocks" and "frames" parts - are replaced with 2 dashes ("-") while playing because they would otherwise change too quickly to be useful.

The 4 SOFT KEYS:

• SOFT KEY 1 - <Trak=ON >:

This soft key acts as a "mute on/off switch for the active track. Pressing SOFT KEY 1 changes from <Trak=ON> to <Trak=OFF>, and pressing it again changes it back. When set to ON, the active track plays; when set to OFF, the track doesn't play.

• SOFT KEY 2 -<Solo=OFF>:

Pressing this soft key turns SOLO mode ON or OFF. If set to ON, only the active track is heard, as all other tracks are temporarily muted.

• SOFT KEY 3 - <Tmpo=SEQ>:

Pressing this soft key alternates between the 2 tempo modes used in the MPC60: MASTER (MAS) and SEQUENCE (SEQ). These two tempo modes are explained in section 3.9.1, "The tempo screen".This is useful, for example, to quickly alternate between a normal play tempo and a slower tempo when recording.

• SOFT KEY 4 - <SortTrks>:

This function is used to rearrange the order of the tracks. Pressing this soft key displays the following screen:

```
============== Sort Tracks ==============
  Move track: 1-Track_Name_#1
Before track: 2-Track_Name_#2

(Tracks between those displayed above
 will be renumbered.)

<Execute>
```

This function operates by removing one track and inserting it before another, which causes all tracks between to be re-numbered. Many of these operations may be required to put the tracks in the desired order. To perform this function, enter the track number to be removed in the MOVE TRACK field; enter the track number you want to insert the "moved" track before in the BEFORE TRACK field, then press <Execute>, and the PLAY/R,ECORD screen will be re-displayed.

3.4 How to assign "drums" and "non-drums" tracks

Each of the 99 tracks within a given sequence may individually be assigned to act as either a "drums" track or a "non-drums" track, but not both simultaneously.

To assign a track as either a "drums" or "non-drums" track, follow these simple rules:

• To assign a track to be a "drums" track: Set the track's midi output channel number (the CH field in the PLAY/R,ECORD screen) to 16 (A, B, C, or D), which is the midi channel number normally assigned to the internal drums. Once a track has been recorded as a "drums" track, DO NOT change its midi output channel assignment from 16, unless you have erased all the notes in the track first. The internal drum generator plays all notes received on channel 16, regardless of the assigned output midi jack (A, B, C, or D). In this case, the output jack selection is only used to determine which output jack will be used to send out midi note commands when the drums play.

• To assign a track as a "non-drums" track: Set the track's output midi channel (the CH field in the PLAY/RECORD screen) to any channel other than 16 (A, B, C, or D). Once a track has been recorded as a "non-drums" track, DO NOT change its midi output channel assignment to 16, unless you have erased all the notes in the track first.

Note: Although the internal drums normally receive their data on channel 16 (A, B, C, or D), this may be changed to any other channel. If you change it, then use this new assignment in place of 16 in the above two paragraphs. This is explained further in section 9.3.

A more technical explanation:

In a "non-drums" track, incoming midi note numbers are stored in the sequence exactly as they are received. However, in a "drums" track, incoming midi note numbers (if the drums are played from an external keyboard) are converted by the "Assign incoming notes to drums" function to numbers 0 through 31, representing the 32 drums, and stored in the sequence as those 32 midi note numbers. When the sequence is played back, these numbers (0 - 31) are converted to selected midi note numbers within the keyboard range by the "Assign outgoing drums to notes" function and output in that

form. This method has the advantage of being able to change the assignments of keyboard note numbers to drums at any time without affecting the sequence data. (These two assignment functions are accessed by pressing the MIDI key and selecting option 2.)

THE ONLY FACTOR WHICH DETERMINES WHETHER A TRACK IS A "DRUMS" OR "NON-DRUMS" TRACK, AND THEREFORE WHETHER OR NOT THESE CONVERSIONS ARE DONE IS THE TRACK'S OUTPUT MIDI CHANNEL ASSIGNMENT - IF IT IS ASSIGNED TO THE SAME CHANNEL AS THE INTERNAL DRUMS (NORMALLY 16), IT IS A "DRUMS" TRACK; IF IT IS NOT ASSIGNED TO THE SAME CHANNEL AS THE INTERNAL DRUMS, IT IS A "NON-DRUMS" TRACK.

Because the aforementioned note number conversions are only performed on "drums" tracks, it is important that you DO NOT do the following:

> • DO NOT record a drums track , then change its midi channel assignment to a channel other than 16. Otherwise, when the sequence is played, midi note numbers 0 - 31 will play instead of the correctly assigned note numbers.

> • DO NOT record a non-drums track, then change its midi channel assignment to "16". Otherwise, when the sequence is played, keyboard note numbers below 32 will be translated to the assigned drum note numbers, and notes above 31 will not play at all.

There are some functions in the MPC60 which treat a "drums" track differently than a "non-drums" track. For example, the screen which is displayed when the ERASE key is pressed is different for "drums" and "non-drums" tracks. Other examples are the STEP EDIT screen and the TRANSPOSE function.

3.5 The PLAY/RECORD keys

These ten keys operate similarly to the transport keys on a tape recorder, with some very useful additions:

• The PLAY START key: This key causes the sequence to begin playing from the beginning.

• The PLAY key: This key causes the sequence to begin playing from the current position within the sequence, displayed in the NOW field in the PLAY/RECORD screen.

• The STOP key: This key causes the sequence to stop playing.

• The OVERDUB key: This key, when held down while either PLAY or PLAY START is pressed, causes OVERDUB mode to be entered, in which new notes may be recorded onto the active track, but existing notes will not be erased. While OVERDUB mode is active, the light above the OVERDUB key goes on.

It is also possible to "punch in" into overdub mode while playing. To do this:

> 1. The top line of the PLAY/RECORD screen must display the words "Play/Record (Record ready)". This means that the sequence is ready to record. If the words "(Record ready)" do not appear in the title, simply press and release the RECORD or OVERDUB keys once while stopped.
> 2. While the sequence is playing, simultaneously press the OVERDUB and PLAY keys. Overdub mode is now active, indicated by the light above the OVERDUB key.

To "punch out" of OVERDUB mode, simply press the OVERDUB key once, and the light above the OVERDUB key will turn off.

NOTE: If OVERDUB mode is entered while the sequence is set to loop to a bar higher than bar 1, OVERDUB mode will automatically be turned off at the moment the sequence reaches the end and starts to loop.

• The RECORD key: This key, when held down while either PLAY or PLAY START is pressed, causes RECORD mode to be entered, in which new notes may be recorded onto the active track while existing notes are

erased, just like a tape recorder. While RECORD mode is active, the light above the RECORD key goes on.

It is also possible to "punch in" into record mode while playing. To do this:

      1. The top line of the PLAY/RECORD screen must display the words "Play/Record (Record ready)". This means that the sequence is ready to record. If the words "(Record ready)" do not appear in the title, simply press and release the RECORD or OVERDUB keys once while stopped.
      2. While the sequence is playing, simultaneously press the RECORD and PLAY keys. Record mode is now active, indicated by the light above the RECORD key.

To "punch out" of RECORD mode, simply press the RECORD key once, and the light above the RECORD key will turn off.

Note: If RECORD mode is entered while the sequence is set to loop to bar 1(or a portion of the sequence is looped with the EDIT LOOP function), RECORD mode automatically switches to OVERDUB mode at the moment the sequence reaches the end and starts to loop. This prevents accidently erasing any data which was recorded on the previous pass through the loop. If, however, RECORD mode is entered while the sequence is set to loop to a bar higher than bar 1, RECORD mode will automatically be turned off at the moment the sequence reaches the end and starts to loop.

NOTE: If an empty sequence is selected (the sequence name says "unused"), and either RECORD or OVERDUB is pressed, the sequence will instantly be created using the settings in the CREATE SEQUENCE screen. This function is normally accessed by pressing the EDIT key and selecting 2.

• The "«" key: This key causes the current position within the sequence to rewind to the beginning of the nearest earlier bar.

• The "»" key: This key causes the current position within the sequence to fast forward to the beginning of the nearest higher numbered bar.

• The "<" key This key normally causes the current position within the sequence to rewind to the previous 1/16 note. However, the amount of movement is set by the NOTE VALUE field in the TIMING CORRECT screen, which is usually set to "1/16 NOTE". To change the amount of movement, simply change the setting in this data field.

The ">" key

This key normally causes the current position within the sequence to fast forward to the next 1/16 note. However, the amount of movement is set by the NOTE VALUE field in the TIMING CORRECT screen, which is usually set to "1/16 NOTE". To change the amount of movement, simply change the setting in this data field.

• The LOCATE key:

This key is used to instantly go to a specific position within the active sequence. When pressed, it displays the following screen:

```
================= Locate =================
    Press Soft keys To Go To Markers:
          Marker A: 001.01.00
          Marker B: 001.01.00
          Marker C: 001.01.00


===== Now:001.01.00 (00:00:00:00) =====
 <Goto'A'><Goto'B'><Goto'C'><Load'Now'>
```

There are three sequence position markers, labeled A, B and C. Pressing soft key 1, 2 or 3 causes either marker A, B or C, respectively, to be loaded into the NOW field, having the effect of going to that location. Pressing SOFT KEY 4, <Load'Now'>, causes the contents of the NOW field to be loaded into the marker field currently containing the cursor. To load any of the three markers, move the cursor to it and enter the desired bar numbers in the format: "BAR. BEAT.CLOCK" (separated by ".", using the numeric keypad). If you only want to enter the bar number, type it, followed by ENTER, and the note and clock numbers will be automatically reset to 01.00.

There is a faster way to use LOCATE. If, while the LOCATE screen is showing, you press the LOCATE key again, the MPC60 will immediately move to the sequence location of the marker (A., B, or C) where the cursor is currently positioned, exactly as if the soft key for that marker (soft key 1, 2, or 3) had been pressed. Therefore, from the PLAY/RECORD screen, to immediately move to the sequence location contained in the LOCATE marker (in the LOCATE screen) in which the cursor is currently positioned, simply press LOCATE twice.

3.6 An example of recording a drum sequence

The MPC60 is both a "linear" type sequences and a "pattern oriented" sequences. The following examples use short sequences with the loop function turned on, and are therefore examples of "pattern-oriented" recording. To record linearly, simply set the LOOP field (in the PLAY/RECORD screen) to "OFF". Then, the sequence length will automatically increase as you record past the existing end. See the description of the LOOP field to learn more about this.

The following is a step-by -step example of how to record a repeating two bar drum sequence:

1.The PLAY/RECORD screen should be displayed. If not, press MAIN SCREEN.

2. Move the cursor to the SQNC field and select 80 (ENTER) or any other empty sequence.

3. The upper line of the screen should display:

    "====== Play/Record (Record ready) ======"

    If not, press either the RECORD or OVERDUB keys once. This will make the current sequence ready for recording.

4. The TRAKfield should contain a 1. If not, move the cursor to the TRAK field and select 1 (ENTER).

5. The upper CH field should contain "16A". If not, move the cursor to the upper CH field and select "16" (Enter), and "A" in the field directly to the right.

6. While holding OVERDUB, press PLAY START. The OVERDUB and PLAY lights should go on, and the metronome should be heard through the stereo outputs. The metronome will play on 1/4 notes, with a louder sound at the start of each bar. Also, the NOW display will be constantly changing to reflect the current position within the sequence.

7. Start recording your drum pattern by playing the drum pads in time to the metronome. Since no specific format of time signature or number of bars has been entered, "repeat two bars of 4/4 time" has automatically been selected. Every time the two bar pattern loops back to the start, any drums recorded on the last pass will be heard at the position they were recorded, except that the TIMING CORRECT function has automatically moved all of your notes to

the nearest 1/16 note. (This may be defeated- it is explained further in the section "The TIMING CORRECT key").

8. Press STOP.

Note: To learn how to select a different time signature or number of bars when creating the sequence, read section 4.3.2, "Creating a new sequence". To turn the loop off or change the loop setting, change the LOOP field.

Note 2: To adjust the TIMING CORRECT function or turn it off, read section 3.8, "The TIMING CORRECT key".

If you don't think it sounds as good as you intended, you may need some practice in following the metronome. If you want to erase what you've just recorded and start again, simply repeat steps 6 through 8 above, except this time hold down the RECORD key and press PLAY START. In RECORD mode, any existing notes in the track are erased as you record new notes, just like a tape recorder, whereas in OVERDUB mode, new notes are merged into the existing notes in the track.

If you only want to erase a particular drum from the sequence you just recorded, follow these steps:

1. Press the ERASE key. The following screen will appear:

```
================= Erase =================
Track(0=all): 1
From:001.01.00        To:001.01.00
============= Erase filter =============
Erase:ALL EVENTS
======= Press drums to be erased =======

<Erase it><All bars><All drums>
```

2. Press the drum pads) of the drums) you wish to erase. A 4 letter abbreviation of the drum names) will appear on the screen.

3. Press SOFT KEY l: <Erase it>. When you press this soft key, the drum you pressed will be erased throughout the track, then the PLAY/RECORD screen will be re-displayed.

4. Now, you can enter OVERDUB mode again and re-record that drum into your sequence.

The ERASE function is described in further detail in the section "The ERASE key".

3.7 An example of recording a sequence containing both drums and keyboard instruments

The following is a step-by-step example of recording a multi-track sequence with a format of 4 bars of 4/4 time, containing the following tracks:

Track 1: Drums   Track 2: Percussion
Track 3: Bass   Track 4: Piano chords
Track 5: Piano melody

First, set up the instruments:

1. Connect the MIDI OUTPUT of a midi keyboard to the MIDI IN 1 of the MPC60. You may alternatively use input 2. Both inputs merge together.

2. Connect the MPC60's MIDI OUT 1 to the MIDI INPUT of a synthesizer. Set that synthesizer to play a bass guitar - like sound and set its midi receive channel to 1.

3. Connect the MIDI THRU of the first synthesizer to the MIDI INPUT of a second synthesizer. Set that synthesizer to play a piano - like sound and set its midi receive channel to 2.

4. Set your audio mixer so that the MPC60's drums, the bass synthesizer and the piano synthesizer are all at the desired volume.

5. The PLAY/RECORD screen should be showing. if not, press MAIN SCREEN.

6. The upper line of the screen should display:

"====== Play/Record (Record ready) ======"

If not, press either the RECORD or OVERDUB key once. This will make the current sequence ready for recording.

Note: The MIDI SOFT THRU field, accessed by pressing the MIDI key and described in section 9.2, should be set to "ON". However, if you are using a single integrated keyboard synthesizer for this recording example, it should be set to "OFF". If, while recording the keyboard parts in this example, your synthesizer isn't receiving the keyboard notes, or it receives two notes for each note played, the

MIDI SOFT THRU field may be set incorrectly. If so, please read section 9.2 to learn more about this field.
Next, create the new sequence format of 4 bars of 4/4 time:

1. Move the cursor to the SQNC field and select 80 (ENTER) or any other sequence which is currently empty.

2. Press the EDIT key. The following screen will appear:

```
============== Edit Sequence ==============
1)View time sign     2)Create sequence
3)Insert blank bars 4)Delete bars
5)Copy all tracks    6)Copy/merge a track
7)Copy a sequence    8)Convert song
9)Change bar length 0)Change veloc/dur

Select option:
```

3. Select option 2: "Create sequence". The following screen will appear:

```
========= Create new sequence ==========
Time sig: 4/ 4        Number of bars:   4
Loop:TO BAR  1         Tempo:120.0 BPM
Midi channel for track  1 (0=unused):0A


==========================================
<Execute>
```

4. Enter the data fields as shown in the above screen.

5. Press <Execute> (SOFT KEY 1). This will erase the existing contents of the sequence and create a new format of 4 bars of 4/4 time. Once finished, the previous EDIT screen will be redisplayed.

6. Press MAIN SCREEN to return to the PLAY/R.ECORD screen.

Note: Whenever you start recording in an empty sequence, the settings in this screen are used to create the default format of time signature and number of bars for that new sequence. Now that you have changed these settings to "4 bars of 4/4, looped", all newly recorded sequences will default to this format, instead of the factory set default of "2 bars of 4/4, looped". Also, these settings, as well as the contents of most other data fields in the MPC60, are remembered with the power off, so this new default will remain active until changed, even if you turn the power off and on again.

Now, record the drums on track 1:

1. Move the cursor to the TRAK field and select 1 (Enter) to make track number 1 active. We are going to record the drums on track 1.

2. Move the cursor to the upper CH field (5th line) and select "16" (ENTER), then select "A" in the field immediately to the right, to assign the output of track 1 to midi channel 16 (the channel of the internal drums) and to midi output jack 1. (It doesn't really matter which output jack we assign it to because it this case we are not using any additional external drum generator. Regardless of the output jack selection, by assigning this track to channel 16, it is now a "drums" track.)

3. While holding OVERDUB, press PLAY START. The OVERDUB and PLAY lights should go on, and the metronome should be heard through the stereo outputs. The metronome will play on 1/4 notes, with a louder sound at the start of each bar. Also, the NOW display will be constantly changing to reflect the current position within the sequence.

4. Record the drum part by playing the drum pads in time to the metronome. Every time the four bar pattern loops back to the start, any drums recorded on the last pass will be heard at the position they were recorded, except that any timing errors will have been corrected. Keep adding drums until your drum part is complete.

5. If you accidently played one or two wrong notes, you may erase them without affecting any other notes just recorded by following these steps:

      A) While still in OVERDUB mode, hold down the ERASE key.
      B) Just before the wrong notes are about to play, hold that drum's pad down, then quickly release it when the wrong notes have passed.
      C) Release the ERASE key. The wrong notes have now been permanently erased from the sequence.

6. Press STOP.

Next, overdub the percussion part on track 2:

1. Move the cursor to the TRAK field and type 2 (ENTER) to make track 2 active.

2. Move the cursor to the upper CH field (5th line) and type "16" (ENTER), then select "A" in the field immediately to the right, to select midi channel 16A as the output channel for track 2. By assigning this track to channel 16, it is now a "drums" track.

3. Enter OVERDUB mode again by holding OVERDUB and
   pressing PLAY START.

4. Record the percussion part by playing the PERC1 through PERC4 pads
   in time to the drums already recorded on track 1. Keep adding drums
   until your percussion part is complete.

5. If any mistakes were made, use either of the two erase methods
   described above. Don't worry - they won't erase information on other
   tracks - they only erase notes from the active track unless you specify
   otherwise.

Next, overdub the bass part on track 3:

1. Press MAIN SCREEN to return to the PLAY/RECORD screen.

2. Move the cursor to the TRAK field and type "3" (ENTER) to make
   track 3 active.

3. Move the cursor to the CH field and type "1"(ENTER), then select "A"
   in the field immediately to the right, to select midi channel lA as the
   output channel for track 3. Because a channel other than 16 has been
   selected, this track is now a "non-drums" track.

4. If you play the midi keyboard now, the bass synthesizer should sound. If
   not, check the midi connections, check the setting of the MIDI SOFT
   THRU field, and re-check the previous three steps.

5. Press the COUNT IN key - the light will go on. This will cause the
   metronome to play one bar before the sequence plays to cue you to start
   playing.

6. Enter OVERDUB mode by holding OVERDUB and pressing
   PLAY START.

7. Once the COUNT IN bar has passed, record your bass part in time to the
   drums and percussion parts.

8. Press STOP and press COUNT IN again to turn it off.

9. If you make a mistake while recording, you may correct it by
   "punching-in" the new note:

        A) Hold the "<" key (rewind) until the NOW field shows a
           location about one bar before the mistake.
        B) Press PLAY. The sequence will start playing from the
           position shown in the NOW display.
        C) Just before the wrong note plays, press RECORD and PLAY
           simultaneously to enter RECORD mode (existing notes are
           erased while new notes are recorded) then

quickly play the correct note. You may now either "punchout" by pressing RECORD again or continue recording from that point. Don't worry- when the sequence loops back to bar 1, it will automatically switch from RECORD to OVERDUB modes so that those notes in the earlier part of the sequence won't be erased.

Now, overdub the piano chords part on track 4:

1. Move the cursor to the TRAK field and type "4" (ENTER) to make track 4 active.

2. Move the cursor to the upper CH field (5th line) and type "2" (ENTER), then select "A" in the field immediately to the right, to select midi channel 2A as the output channel for track 4.

3. If you play the midi keyboard now, the piano synthesizer should sound. If not, check the midi connections, check the setting of the MIDI SOFT THRU field, and re-check the previous three steps.

4. Enter OVERDUB mode by holding OVERDUB and pressing PLAY START.

5. Record your piano chords part in time to the drums, percussion and bass parts.

6. Press STOP.

Finally, overdub the piano melody part on track 5:

1. Move the cursor to the TRAK field and type "5" (ENTER) to make track 5 active.

2. Move the cursor to the upper CH field (5th line) and type "2" (ENTER), then select "A" in the field immediately to the right, to select midi channel 2A as the output channel for track 5. Notice that both tracks 4 and 5 are playing into midi channel 2A, the piano synthesizer.

3. If you play the midi keyboard now, the piano synthesizer should sound. If not, check the midi connections, check the setting of the MIDI SOFT THRU field, and re-check the previous three steps.

4. Enter OVERDUB mode by holding OVERDUB and pressing PLAY START.

5. Record your piano melody part in time to the drums, percussion, bass and piano chord parts.

6. Press STOP.

3.8 The TIMING CORRECT key

The TIMING CORRECT function has many uses:

• It can correct timing errors made while recording.
• It can add a shuffle or swing timing to your performance.
• It can shift notes earlier or later in the sequence to compensate for synthesizer delays, etc.
• It is used to set the STEP SIZE, used in STEP EDIT
• It can assist in the recording of repeating notes, such as rolls and repeated 1/16 notes or 1/32 notes.

3.8.1 Correcting timing errors

The MPC60 corrects any timing errors made while recording by moving those errors onto the nearest 1/16 note. If a note is played a little too early, it is moved later onto the nearest 1/16 note; if a note is played a little too late, it is moved earlier onto the nearest 1/16 note (A value of 1/16 notes is most often used, although this may be changed to one of six values, or timing correction may be defeated entirely). This correction of errors is done in real time as the notes are recorded, so playback of corrected notes is instantaneous. Also, it is possible to correct the timing of notes which were previously recorded.

One of the problems with timing correction (sometimes called "quantizing") is that on many sequencers it has the effect of truncating, deleting or elongating notes, making the feature impractical to use. The MPC60 avoids this problem by only correcting the attacks of a note, then moving the end of the note along with the attack - the note duration is not changed. This allows the corrected notes to sound much closer to the original performance, but without the timing errors.

Another problem with timing correction on most sequencers is that all events are corrected along with the notes. This can have the undesirable effect of converting pitch bends into pitched "stair steps". The MPC60 avoids this problem by only correcting the notes, while recording the continuous events such as pitch bends exactly as played. This allows, for example, the notes of a keyboard solo to be corrected but the pitch bends to be recorded exactly as played.

To inspect or change the timing correction settings, press TIMING CORRECT while the MPC60 is not playing, and the following screen will be displayed:

```
====== Timing Correct / Step Size ======
Note Value:1/16          Shuffle(%):50
Shift Timing:LATER       Shift Amount: 0
========= Move Existing Notes ==========
Track(0=All): 1
From:001.01.00           To:001.01.00

<Move Existing>
```

This screen presents various parameters relevant to the timing correct function. A description of each of the fields follows:

• The NOTE VALUE field: Timing correction works by moving your recorded notes to a preset note value. This field is used to select that note value. The options are:

> l.l/8 NOTE: All notes are moved to the nearest 1/8 note
> 2.1/8 TRPLT: All notes are moved to the nearest 1/8 note triplet
> 3.1/16 NOTE: All notes are moved to the nearest 1/16 note
> 4.1/16 TRPLT: All notes are moved to the nearest 1/6 note triplet
> 5.1/32 NOTE: All notes are moved to the nearest 1/32 note
> 6. 1/32 TRPLT: All notes are moved to the nearest 1/32 note triplet
> 7. OFF(1/384): No timing correction- in this setting, the highest resolution of the MPC60 is used- 96 divisions per 1/4 note.

This value also affects two other functions in the MPC60:
> 1. It sets the NOTE REPEAT value, described later in this section.
> 2. It sets the amount by which the current sequence position changes when either the "<" or ">" (rewind, fast forward) keys are pressed.

• The SHUFFLE field: This is the shuffle setting, described in the section below entitled "The shuffle function". This only has an effect if the setting of the NOTE VALUE field is either 1/8 or 1/16 notes - for all other settings, it has no effect. The input range is from 50% (no shuffle effect) to 75% (maximum shuffle effect).

• The SHIFT TIMING and SHIFT AMOUNT fields: These two fields comprise the shift timing function, described below in the section entitled "Shift Timing". There are two fields: The SHIFT TIMING field specifies the direction of the shift - the options are EARLIER and LATER. The SHIFT AMOUNT field specifies the amount of shift in clocks (1/96 of a 1/4 note).

The FROM and TO fields:
These 2 fields are used to specify the region of the sequence which will be altered when the <Move existing> soft key is pressed. These are BAR.BEAT.CLOCK fields - the region starts at the location entered in the FROM field and ends one clock before the location entered in the TO field.

• The TRACK(0=ALL) field:
This field is only used in conjunction with the <Move existing> soft key. It is used to specify the track number which is to be altered -entering a "0" indicates all tracks.

• SOFT KEY 1 - <Move existing:
Normally, the timing correct function operates in real time, correcting notes before they are recorded into the sequence. It is also possible to correct the timing of an existing sequence (or shuffle it, or shift timing). Pressing this soft key will cause the region of the active sequence specified by the TO, FROM and TRACK fields to be corrected according to the settings of the NOTE VALUE, SHUFFLE, SHIFT TIMING and AMOUNT fields.

3.8.2 The "Shuffle" feature

The shuffle feature is a variation of timing correction. Whereas the timing correction feature moves your notes onto perfect note intervals, the shuffle feature moves your notes onto shuffled (swing time) note intervals, but only operates on either 1/8 or 1/16 notes. The amount of shuffle is measured as a percentage of the odd numbered note lengths to the even numbered note lengths. The range of values is from 50% to 75%. For example:

> • A shuffle setting of 50% indicates no shuffle effect - the odd and even notes have equal value;
> • A shuffle setting of 66% indicates a technically perfect shuffle - the odd numbered notes have a length of twice that of the even numbered notes, giving the effect of triplets where the second note of each triplet is tied to the first;
> • A shuffle setting of 75% is the highest shuffle setting - the odd numbered notes have a length of three times that of the even numbered notes.

A very important result of using the shuffle feature is to add a "human" rhythm feel to the timing of your music. Here are a couple of very useful settings to experiment with:

• NOTE VALUE = 1/16, SHUFFLE = 54% to 58%, Tempo = 100 BPM: This removes the "stiffness" from 1/16 notes and is especially useful on drum sequences using 1/16 note hihats.
• NOTE VALUE = 1/8, SHUFFLE = 60%, Tempo = 100BPM: This creates an 1/8 note shuffle which could be described as more relaxed than a perfect shuffle (66%).

As with timing correction, shuffle moves your notes in real time as they are recorded into the sequence, so your notes are instantly played back with the specified shift. Also, as with timing correction, this effect can be used on existing sequence data by using SOFT KEY 1 - <Move existing>.

3.8.3 The SHIFT TIMING feature

It is sometimes desirable to shift your notes earlier or later in time by a consistent value. For example, if a given track is to play through a synthesizer with a slow attack, the slow attack can be compensated for by shifting the notes in the track earlier by an amount equal to the length of the slow attack. The shift timing feature works in conjunction with the timing correct feature to move notes forward or backward in time.

As with timing correction, "shift timing" moves your notes in real time as they are recorded into the sequence, so your notes are instantly played back with the specified amount and direction of shift. Also, as with timing correction, this effect can be used on existing sequence data by using the <Move Existing> SOFT KEY.

NOTE: It is important to note that the this function only operates in conjunction with the TIMING CORRECT function. This means that it is not possible for this function to shift the timing of notes without also correcting their timing. This also means that the range of shift depends on the current NOTE VALUE setting. For example, if the NOTE VALUE field is set to 1/16 notes, the maximum SHIFT AMOUNT is 11 clocks, or less than 1/2 of one 1/16 note; if the NOTE VALUE field is set to 1/32 notes, the maximum SHIFT AMOUNT is 5 clocks, or less than 1/2 of one 1/32 note; and if the NOTE VALUE field is set to OFF(1/384), the SHIFT AMOUNT is fixed at 0, meaning that no shift; is possible since timing correction is not being used. If you wish to shift the timing of a track independently of the timing correction function, then use the COPY/MERGE A TRACK function, described in section 4.3.6.

NOTE 2: If the SHIFT TIMING function is set to shift notes early and one or more notes exist at the start of the sequence, these starting notes will be deleted when the <Move existing> operation is

performed, because there is no space before the start of the sequence for them to be moved to. To avoid this problem, insert a blank bar before bar 1 of the sequence before performing the shift operation, then be sure to include this extra bar within the range of bars to be shifted. This way, the notes which would have been lost will now be moved earlier onto this newly inserted bar.

3.8.4 The NOTE REPEAT feature

Another very useful feature of the TIMING CORRECT key is the ability to automatically repeat either drum or keyboard notes at a preset note interval. This is useful in creating:

• Drum rolls
• Repeating note drum patterns, such as 1/16 note hihat patterns
• Repeating keyboard notes, such as a repeated 1J16 note bass part

The NOTE REPEAT feature is used in real time while recording. To use this feature, press and hold TIMING CORRECT while in OVERDUB or RECORD mode, and the top line of the PLAY/RECORD screen will change:

```
=== (Hold drums or notes to repeat) ====
Sqnc: 1-Ultimate_hipness  Tmpo: 90.9 BPM
TSig: 4/ 4    Bars:   4      Loop:TO BAR   1
=============== Track data ===============
Trak: 1-TRK01              Ch:16A-Drums
Vol%:100     Prog:  0    Ch: 0A-(off)
===== Now:001.01.00 (00:00:00:00) =====
<Trak=ON ><Solo=OFF><Tmpo=SEQ><SortTrks>
```

If any drum pads (if the active track is a "drums" track) or keys (if the active track is a "non-drums" track) are held while TIMING CORRECT is being held, they will be automatically repeated at the TIMING CORRECT note value setting. Further, the velocity level of each repeating note is set by the current pressure setting of the drum pad or key being played (if your midi keyboard has CHANNEL PRESSURE capability). To demonstrate this effect:

1. Set up a sequence for recording a two bar repeating drum pattern (be sure to set the upper CH field to "16A").
2. Press TIMING CORRECT and select "1/16 NOTE" in the NOTE VALUE field.
3. Press MAIN SCREEN to return to the PLAY/RECORD screen.
4. Enter OVERDUB mode by holding OVERDUB and pressing PLAY START.
5. While holding TIMING CORRECT, also hold the WHAT pad, varying the pressure as you hold it. You should hear repeating 1/16 note hihats.

6. Press STOP to stop playing.

7. Press TIMING CORRECT and select "1/32 TRPLT" in the NOTE field.

8. Press MAIN SCREEN to return to the PLAY/RECORD screen.

9. Enter OVERDUB mode again.

10. While holding TIMING CORRECT, also hold the SNAREI pad, varying the pressure as you hold it. You should hear a snare drum roll.

This same procedure can be used in exactly the same way when recording keyboard sequences. In this case, hold TIMING CORRECT while holding the key on the midi keyboard. In order to use the varying pressure technique, you will need to use a keyboard which sends "channel pressure" messages.

3.9 Tempo

There are many functions in the MPC60 associated with tempo. First, there is the TMPO field in the PLAY/R,ECORD screen:

```
=============== Play/record ==============
Sqnc: 1-Ultimate_hipness Tmpo: 90.9 BPM
TSig: 4/ 4   Bars:   4      Loop:TO BAR   1
=============== Track data ===============
Trak: 1-TRK01          Ch:16A-Drums
Vol%:100     Prog:  0    Ch: 0A-(off)
===== Now:001.01.00 (00:00:00:00) =====
<Trak=ON ><Solo=OFF><Tmpo=SEQ><SortTrks>
```

To change the tempo at any time while playing or recording, move the cursor to the TMPO field and change it.

Another way to quickly change the tempo is using the <Tmpo=MAS> soft key in the PLAY/RECORD screen. When pressed, it instantly switches between two preset tempo settings, the MASTER and SEQUENCE tempo. These two tempo settings will be described later in the "Tempo screen" section. This feature is useful, for example, to quickly switch between the normal playing tempo and a slower tempo for recording.

3.9.1 The TEMPO screen

To display the TEMPO screen, press the TEMPO/SYNC key, and the following screen will appear:

```
================ Tempo ==================
Tempo Source Select:SEQUENCE
Sequence: 90.9        Master:120.0
============== Display Mode ==============
BPM/FPB:BPM            Frames/Sec:30
================= Other ==================
Tap Averaging:3
<SyncScreen><TempoChanges>
```

This screen presents most parameters associated with tempo. A detailed description of the individual screen fields and soft keys follows:

• The TEMPO SOURCE SELECT field:
There are two tempo settings, SEQUENCE and MASTER, only one of which may be active at a time. This field is used to select which one is active:

> SEQUENCE:
> The SEQUENCE tempo is the tempo setting which is stored within each sequence. If SEQUENCE mode is currently active, then whenever the sequence number is changed, the newly selected sequence's tempo will become active. This is useful when playing sequences, for example, if you want each newly selected sequence to play at its own preset tempo. Also, only the SEQUENCE tempo is saved to disk when a sequence is saved.

> MASTER:
> The MASTER tempo is a single tempo setting for all sequences which is not stored within any sequence, that applies to all sequences. This is useful when playing sequences, for example, if you want each newly selected sequence to always play at the same tempo.

• The SEQUENCE TEMPO field:
This is the current value of the sequence tempo, described above.

• The MASTER TEMPO field:
This is the current value of the master tempo, described above.

• The BPM/FPB field:
This field selects one of two display methods for the tempo readouts:

> BPM (Beats Per Minute):
> This is the most common method in use to specify a tempo setting. Using BPM, the range of tempo settings in the MPC60 is from 30 BPM to 300 BPM. Beats Per Minute is also sometimes referred to as "metronome marking" or "MM".

> FPB (Frames Per Beat):
> This is another way of specifying tempo settings and is often used in the making of music for film or video sound tracks, because the tempo is referenced to the number of film or video frames which pass for every beat of music. Frames Per Beat is also sometimes referred to as "click". If the FPB setting is in use, the digit to the right of the decimal point in any of the numeric tempo settings indicates 1/8s- its range is from 0 to 7. There are four different types of FPB tempo, described in the FRAMES/SEC field below.

This field has the same function as the "tempo display method" field in the PLAY/RECORD screen.

• The FRAMES/SEC field:
This field selects one of four FRAMES PER SECOND standards, used to calculate the current FPB (frames per beat) setting. The four options are:

"30" (30 frames per second, non-drop): This is the standard for black and white television in the United States. Using this mode, the tempo range of the MPC60 is from 60.0 to 6.0 FPB. This mode is the most common standard in use today for music production in the United States and Japan.

"30 DROP" (30 frames per second, drop frame):
This is the standard for NTSC color television in the United States. Using this mode, the tempo range of the MPC60 is from 59.7 to 6.0 FPB.

"25" (25 frames per second):
This is the standard for European television (PAL /SECAM standard). Using this mode, the tempo range of the MPC60 is from 50.0 to 5.0 FPB. This mode is the most common standard in use today for music production in the United Kingdom and Europe.

"24" (24 frames per second):
This is the standard for film. However, since film is usually transferred to video for scoring, the composer still works with the video standard frame rates. Using this mode, the tempo range of the MPC60 is from 48.0 to 5.0 FPB.

• The TAP AVERAGING field
This parameter is used in conjunction with the TAP TEMPO key. The TAP TEMPO key is used for quick setting of the playing tempo by tapping the key repeatedly in the time of 1/4 notes of the desired tempo, described further in the section "The tap tempo key". This field sets the number of repeated "taps" which must be played in sequence before the tempo is recalculated, so that successive taps are averaged to reduce any timing errors. The options are:

2 taps:
The tempo is recalculated after only two taps. This should be used if your timing is very good, or if you want to only roughly set the new tempo.

3 taps:
Initially, the tempo is recalculated after the first two taps. If you continue to tap successive 1/4 notes, the tempo is continuously recalculated by averaging the last three successive tap intervals. This is a good average setting.

4 taps:
Initially, the tempo is recalculated after the first two taps. If you tap a third time, the tempo will be recalculated using an average of the three taps. If you continue to tap successive 1/4 notes, the tempo is continuously recalculated on each successive tap by averaging the last four successive tap intervals. This is very useful if your timing is not very accurate, because it smooths out your timing errors.

• SOFT KEY 1 - <Sync Screen>:
This screen is described in the section entitled "Syncing to tape and other devices".

• SOFT KEY 2 - <Tempo changes:
The function of this soft key is described in the following section.

3.9.2 Mid-sequence tempo changes

This feature allows the tempo to automatically change at preset locations within a sequence. To insert tempo changes into the active sequence or to view existing tempo changes, press the TEMPO/SYNC key, then press the <Tempo Changes> soft key, and the following screen will appear:

```
====== Mid-sequence tempo changes ======
Tempo changes:ON
Location for inserted change:001.01.00

Change#: Bar#:      %Change: =Tempo:
   2      002.03.00  150.000  180.0 BPM
-------------------------------------------
<Insert new> <Delete> <Previous> <Next>
```

In the center of the screen is a group of fields, labeled CHANGE#, BAR#, %CHANGE and "=TEMPO". In this case, the labels are located directly above the actual data fields. These four fields work together to allow you to view or change any tempo changes existing in the sequence.

There may be many tempo changes in the sequence. These 4 fields show one of these changes at a time. The CHANGE# field shows the number of the currently displayed tempo change within the list of changes, and the other fields show the contents of that tempo change. For example, the above screen shows that tempo change number 2 will occur at bar 2, beat 3 and will change the tempo by 150% to 180 beats per minute.

The following is a description of each of these 4 fields:

> • CHANGE#:
> This field displays the number of the tempo change currently displayed. There may be many tempo changes within the sequence, but only one may be viewed at a time. By changing this number, each of the existing tempo changes may be viewed. The <Previous> and <Next> soft keys may also be used to decrement or increment this field.
>
> • BAR#:
> This field shows the location within the sequence where the currently displayed tempo change will occur. This is a "bar.beat.clock" field.
>
> • %CHANGE:
> This field shows the amount of tempo change which the currently displayed tempo will produce, as a percentage of the main starting tempo (either master or sequence). Tempo changes are always specified as a percentage of the main starting tempo setting, (not the previous tempo change) regardless of whether the SEQUENCE or MASTER tempo setting is currently active. This way, all tempo changes are automatically re-scaled when the main tempo setting (either sequence or master) is changed.
>
> • "=TEMPO":
> This field displays the actual tempo which will play once the tempo change is active, in addition to the percentage. This number is automatically computed from the displayed percentage of change times the main playing tempo (either master or sequence).

So, to view the entire list of tempo changes, simply change the CHANGE# field and notice the different settings of the other 3 fields as you change it. Even if no changes have been entered, every sequence has one change- to 100% at bar 1. This is because the current tempo setting is always returned to when the sequence plays bar 1, whether it does so by playing from the start or by looping back to the start.

To insert a new tempo change, first enter the location within the sequence where you want the change to occur into the LOCATION FOR INSERTED CHANGE field, which is a bar.beat.clock field. Then, press the <Insert new> soft key. Immediately, a new tempo change will be inserted into the list and will be displayed on the screen with a default value in the %CHANGE field of 100%. You must now enter a percentage of the main starting tempo. However, as you enter the percentage, the "=TEMPO" field will show the actual tempo. For example, to insert a tempo change to 60 BPM at bar 5 from a main starting tempo setting of 120 BPM, you must insert a

tempo change with a value of 50% at bar 5 (120 BPM X 50% = 60 BPM).

To delete the currently displayed tempo change, press the <Delete> soft key.

The field at the top of the screen, TEMPO CHANGES, is a choice field with 2 options: ON and OFF. If set to ON, tempo changes are used; if set to OFF, all tempo changes within the sequence are ignored.

3.9.3 The TAP TEMPO key

The TAP TEMPO key allows the tempo to be quickly set by tapping 2 beats (1/4 notes) on the TAP TEMPO key. After two taps, the MPC60 automatically assumes the two taps to be 1/4 notes and recalculates a new tempo to match those 1/4 notes.

For example, to quickly change to a tempo of 80 BPM, tap two 1/4 notes at a tempo of approximately 80 BPM on the TAP TEMPO key. After the second tap, the new tempo will appear in the TMPO field of the main PLAY/RECORD screen. This may also be done while the sequence is playing.

Normally, only two taps are required before the MPC60 recalculates the new tempo. However, it is possible to set this feature so that it recalculates the tempo by averaging the last 3 (or 4) successive tap intervals. This is set in the TAP AVERAGING field, located in the TEMPO screen, and is explained further in that section of the manual.

3.9.4 Sequencer speed limitations at fast tempos

If many notes exist at exactly the same location within a sequence and that sequence is played at a fast tempo, some of the notes may be slightly delayed when played back. For example, if 20 notes all play exactly at position 002.01.00 within the sequence and the playing tempo is 200 BPM, some of these 20 notes occurring at the same time may be delayed as much as 10 to 20 milliseconds when played back. This condition exists to some degree in all sequencers, and is due to the fact that there is a finite number of notes which the internal computer can process at one time. However, this will NOT cause the

sequence to slip out of sync when syncing to an external sync source.

If you have one of these complex sequences and notice these occassional timing irregularities when playing at a fast tempo, the problem may be caused by having too many unused "channel pressure" events (sometimes called "after touch") in your sequence. For example, many keyboards, such as the Yamaha DX-7, commonly send out large amounts of channel pressure messages while playing, which are recorded into your tracks. If you are not using these messages, removing them from the tracks will improve the playback timing. To do this, press the ERASE key and use the ERASE FILTER to only erase channel pressure events from each of your tracks (see section 4.2: the ERASE key). If you rarely use channel pressure capability, it is best to disable recording these events in the MIDI INPUT FILTER (see section 9.2).

If you have erased all unnessary events from all tracks of your sequence and the timing is still not accurate enough, there is another alternative which can be used when syncing to tape: record the sequence to tape a few tracks at a time, and turn off the tracks you are not recording for each pass by using the <Trak=ON> soft key (in the PLAY/R,ECORD screen). Since the unrecorded tracks are turned off, the computer does not have to use as much time to process them, and can use all of its time to play the tracks which are being played, avoiding the delay when all tracks play. Note that this delay is not affected by the number of tracks which playing, but rather only by the number of notes or events which are playing at the same exact location within the sequence, and the playing tempo.

Here's another hint: the MPC60 must work slightly harder when in "Record ready" mode. Therefore, a slight improvement in timing accuracy while playing (not recording) complex sequences may be obtained by disabling the "Record ready" status (by selecting a different sequence, then re-selecting the intended sequence).

Finally, the setting of the MIDI DRUM DATA SENT OUT field (accessed by pressing the MIDI key and selecting option `2') has a significant effect on how many internal computations the MPC60 must do while playing drum tracks. Normally, this field is set to "NONE", which requires the least internal computations and therefore gives the highest timing efficiency. Any other setting will make the MPC60 work much harder while playing drum tracks. This field is explained in section 9.3 "External drum triggering, the midi `drums' channel".

3.10 The WAIT FOIL KEY key

This function is useful in the recording of keyboard sequences when your keyboard is not located close to the MPC60 console. If `PLAY, RECORD` or `OVERDUB` mode is entered while the WATT `FOR KEY` function is on, the sequence will not begin to play until a key - any key - is played on the midi keyboard. This acts as a remote play switch to start the sequence. However, this first key which is played to start the sequence is NOT recorded into the sequence- it only starts the sequence, and any keys played afterwards are recorded into the sequence.

To turn WAIT `FOR KEY` mode on, press the `WAIT FOR KEY` key once and the light goes on to indicate it has been activated. To turn WAIT `FOR KEY` mode off, press the WAIT `FOR KEY` key again and the light will go off to indicate it has been deactivated. If set to ON, it will automatically go `OFF` after it has been used once (for playback, recording or overdubbing a sequence) - you must turn it on again each time you want to use it.

3.11 The AUTO PUNCH key

The auto punch function, when set to `ON`, enables `OVERDUB` or `RECORD` modes to be automatically entered and exited at preset times while playing. This can be very useful when it is desired to execute a very tight punch-in and there isn't enough time to get from the console keys to the keyboard to play the new notes after the punch-in. The AUTO `PUNCH` function punches in automatically for you, allowing you to concentrate on playing the new part. Pressing AUTO `PUNCH` displays the following screen:

```
=============== Auto Punch ===============
On/Off:OFF
Auto Punch: In=120.01.000 Out=120.01.000
Last Punch: In=120.01.000 Out=120.01.000


==========================================
<Use'Last'>
```

The following is a detailed description of each of the fields and the single soft key:

• The `ON/OFF` field:
This field is used to select whether the AUTO `PUNCH` function is ON or `OFF`. If set to on, the AUTO `PUNCH` light goes on.

• The AUTO `PUNCH IN` and AUTO `PUNCH OUT` fields:
These two fields are used to specify the locations within the sequence at which the punch-in and punch-out will occur. To enter a number into either of these two fields, type the bar number, a period, the beat number, a period, and the clock number, then `ENTER`. If the number you wish to enter is at the start of a bar, simply enter the bar number followed by `ENTER`, and the beat and clock numbers will automatically be reset.

• The LAST `PUNCH` IN and LAST `PUNCH OUT` fields:
These two fields are indicators only - they cannot be manually changed. They are used to indicate the exact locations of the punchin and punch-out which was last performed manually .

• The <Use last> soft key:
Pressing this soft key causes the contents of the LAST `PUNCH` IN/OUT fields to be copied into the AUTO `PUNCH` IN/OUT fields. This is useful when you want to repeat the last manual punch using the AUTO `PUNCH` function.

To perform the AUTO PUNCH:

Once you have entered the punch-in and punch-out locations, and you have turned AUTO PUNCH mode on, locate to a position within the sequence which is a few bars before the punch-in point. Then enter `RECORD` mode as usual by pressing PLAY and `RECORD` simultaneously. However, since the AUTO PUNCH function is on, `RECORD` mode cannot yet be entered. Instead, the `RECORD` light blinks until the PUNCH-IN point is reached. When it is reached, `RECORD` mode is automatically entered and the `RECORD` light stops blinking and stays on continuously. When the PUNCH-OUT point is reached, `RECORD` mode is automatically exited and the `RECORD` light goes off, but play continues.

It is also possible to use AUTO PUNCH to automatically enter and exit `OVERDUB` mode. To do this, follow the example given above, but instead of pressing `RECORD`, press `OVERDUB`. The mode which is entered is determined by which key is pressed - RECORD or `OVERDUB`.

3.12 The 2ND SEQUENCE key

This function allows the MPC60 to play an additional sequence while simultaneously playing or recording the active sequence. For example, you could use the active sequence to linearly record all of your keyboard tracks while simultaneously using the 2ND SEQUENCE to play a looped drum sequence. The 2ND SEQUENCE may also play simultaneously with the active song, if SONG MODE is selected.

To use this feature, press the 2ND SEQUENCE key, and the following screen will appear:

```
=============== 2nd Sequence =============
On/off:ON    Sequence:23-A_funny_sequence
(This sequence will play simultaneously
 with the active sequence or song.)


-------------------------------------------
```

To turn the second sequence on, first select the sequence number which you would like to play simultaneously with the active sequence in the SEQUENCE field. The name of the selected sequence is displayed to the right of the number for convenience. Next, move the cursor to the ON/OFF field and select "ON" by turning the DATA CONTROL one notch to the right. The light above the 2ND SEQUENCE key will turn on as an indicator. Now, when you play the active sequence or song, the sequence you selected in the 2ND SEQUENCE screen will also play. To turn the feature off, return to the 2ND SEQUENCE screen and select "OFF" in the ON/OFF field.

3.13 The COUNT IN key

This function causes a single bar of metronome clicks to play before the sequence starts playing or recording, acting as a count in or count down before the sequence starts playing, to help you to adjust to the sequence tempo.

To turn COUNT IN on, press the COUNT IN key (the light will go on); to turn it off, press COUNT IN again (the light will go off).

NOTE: If the current position within the sequence is not at the start of a bar, and PLAY is pressed (with or without RECORD or OVERDUB) while COUNT IN is on, the sequence will start playing from the start of the current bar (after the count in has passed). If not for this, the sequence would begin playing in the middle of the bar after one bar of count in, which would not make musical sense.

NOTE 2: Any keys played on the input midi keyboard while the COUNT IN bar is playing will not be output through midi (by the MIDI SOFT THRU function) until the COUNT IN bar has finished. For example, if you were to play a chord towards the end of the COUNT IN bar, just slightly before bar 1 of the sequence, the chord would sound when bar 1 started playing, which could be easily misunderstood as a processing delay. This is normal operation and serves as a reminder that no notes may be recorded during the COUNT IN bar, and that any notes played during that time will be held and recorded at the start of the sequence.

NOTE 3: The metronome normally plays on 1/4 notes. However, this note value may be changed in the RATE field, accessed by pressing the OTHER key.

3.14 The recording metronome

Whenever RECORD or OVERDUB mode is entered, a click sound is heard through the stereo mix outputs on every U4 note, with a louder click at the start of each bar. This is the recording metronome. There are two metronome adjustments, both of which are accessed by pressing the OTHER key, which displays the following screen:

```
=============== Metronome ===============
Volume:14     Rate:1/4 NOTE    In play:NO
=============== Foot switches ============
Foot1:PLAY-STRT/STP Foot2:RCRD IN/OUT
================= Other =================
Free sequence memory%:100

<Defaults><Record 16 chs>
```

The three metronome adjustments are:

• The METRONOME field:
This field controls the volume of the metronome, both to the stereo mix and the to the metronome output jack. The range is 0 (off) to 14 (full volume).

• The RATE field:
This field controls the note value of the metronome. Normally, the metronome plays 1/4 notes. In this field it is possible to change that value to one of eight options:

1/4 notes	1/4 triplets	1/8 notes	1/8 triplets
1/16 notes	1/16 triplets	1/32 notes	1/32 triplets

• The IN PLAY field:
This is a choice field which has two options:
1. "NO": The metronome is only heard during RECORD or OVERDUB modes, but not while in PLAY mode.
2. "YES": The metronone is heard in PLAY, as well as in RECORD and OVERDUB modes.

The rear panel metronome output jack

The output of the metronome is routed to its own individual jack on the rear panel, the METRO OUT jack. The output level at this jack is also controlled by the metronome VOLUME field, above. If a plug is inserted into this jack, the metronome will no longer be heard in the stereo mix. When the plug is removed, the metronome will once again be heard in the mix.

3.15 The two Foot switch inputs

There are two foot switch inputs on the rear of the MPC60. Each of the two foot switch inputs may be independently assigned to one of a number of different purposes. To assign the foot switches, press the OTHER key, and the following screen will appear:

```
============= Metronome =============
Volume:14    Rate:1/4 NOTE   In play:NO
============= Foot switches ============
Foot1:PLAY-STRT/STP Foot2:RCRD IN/OUT
============= Other =============
Free sequence memory%:100

<Defaults><Record 16 chs>
```

The FOOT1 and FOOT2 fields are used to assign the functions of the two foot switches. Each may be independently assigned to one of the following functions:

• PLAY/STOP:
Press once for PLAY, again for STOP.

• PLAY-STRT / STP (Play start / stop):
Press once for PLAY START, again for STOP.

• ERASE:
Press to duplicate the function of pressing ERASE. This is very useful for hands-free use of the real-time erase function.

*TIMING CORECT (Timing correct):
Press to duplicate the function of pressing TIMING CORRECT. This is very useful for hands-free use of the NOTE REPEAT function.

• "+":
Press to duplicate the function of turning the DATA CONTROL to the right one step.
 "-":
Press to duplicate the function of turning the DATA CONTROL to the left one step.

• RECORD IN/OUT:
Press once to duplicate the function of punching in to RECORD mode while playing; press again to duplicate the

function of punching out of RECORD mode back into PLAY mode.

• OVRDUB IN/OUT (Overdub in/out):
Press once to duplicate the function of punching in to OVERDUB mode while playing; press again to duplicate the function of punching out of OVERDUB mode back into PLAY mode.

• "<":
Press to duplicate the function of pressing the "<" key. This is very useful for stepping backwards through the sequence while STEP EDIT is on.

• ">":
Press to duplicate the function of pressing the ">" key. This is very useful for stepping forwards through the sequence while STEP EDIT is on.

• TAP TEMPO:
Press to duplicate the function of pressing the TAP TEMPO key.

3.16 The "Free sequence memory" display

To see how much memory is currently available for sequence recording, press the OTHER key:

```
=============== Metronome ===============
Volume:14     Rate:1/4 NOTE    In play:NO
=============== Foot switches ============
Foot1:PLAY-STRT/STP Foot2:RCRD IN/OUT
================= Other =================
Free sequence memory%:100

<Defaults><Record 16 chs>
```

The FREE SEQUENCE MEMORY field displays the percentage of total sequence memory which is available for new recording.

3.17 Recording Midi System Exclusive data

The MPC60 has the capability to record patch library data or any other Midi System Exclusive messages directly into tracks. To do this, simply send the System Exclusive message to the MPC60 while in RECORD or OVERDUB modes, or while in STEP EDIT mode, and it will be recorded into the active track, just like any other midi data. The only limitation is that the message must be less than 1000 bytes. If an attempt is made to record a message which is larger than this, the entire message will be rejected. This will easily accomodate single voice patch data dumps from any synthesizer, but is not large enough for many voice bank data dumps (large files containing an entire bank of single voice data dumps).

One way of using this feature is to insert a blank bar at the beginning of your sequence and record the voice data dumps for each track into that first bar. When the sequence is played from the start, each external synthesizer will immediately receive the voice data in the first bar and is then ready to play the sequence's note data starting in the second bar.

There is one problem with playing System Exclusive messages from sequences: there is no standard method for identifying the midi channel number within the message, and therefore the MPC60 cannot assign the output midi channel over which the message will be sent. This means, for example, that a System Exclusive message sent over midi channel 3 while recording into the MPC60 will always be played out of the MPC60 on midi channel 3, regardless of the track's output midi channel. To overcome this problem, you must send the System Exclusive message on the desired midi channel while recording it into the MPC60. Most synthesizers allow you to select the transmit channel. However, the Yamaha DX-7 (original model) always transmits on midi channel 1.

There is a way to change the midi channel of a System Exclusive message while it is in the MPC60- by using STEP EDIT. The midi channel is assigned to a single byte within the message and the Step Edit function allows you to change the contents of any byte within the message. If you know which byte a particular manufacturer uses for the channel number, you can change the contents of that byte to the desired midi channel number. For example, the Yamaha DX-7 System Exclusive messages contain the midi channel in byte number 3, so whatever number you put into byte number 3 of the message will be the new output midi channel number. To learn more about editing in step edit mode, read section 4.4: "The STEP EDIT key".

3.18 Transferring sequences to and from other sequencers

Transferring sequences from the MPC60 to an external sequences:

Some sequencers are able to record data from all 16 midi channels independently and simultaneously onto one track. To transfer a sequence from the MPC60 to a sequences of this type:

> 1. Set the MPC60 to generate MIDI CLOCK (explained in section 8 of this manual),
> 2. Set the external sequences to receive MIDI CLOCK,
> 3. Set the external sequences ready to start recording as soon as a MIDI START message is received from the MPC60,
> 4. Play the MPC60.

If the external sequences does not allow the recording of all 16 midi channels simultaneously, you must transfer one track at a time.

Transferring sequences from an external sequences to the MPC60:

Normally, the MPC60 may only record one track at a time. However, there is a special mode of recording which allows you to record all 16 channels at once, which is very useful when transferring sequences from other sequencers. This feature works by recording the 16 incoming channels onto the first 16 tracks of a newly created empty sequence, with each track is assigned to the same numbered midi channel. For example, track 1 assigns to channel 1, track 2 assigns to channel 2, up through track 16 which assigns to channel 16. The track setup is done automatically for you when you select the new sequence to be recorded into.

NOTE: It is not possible to overdub or record into an existing sequence while using this special mode.

To record all 16 channels from an external sequences, follow these steps:

1. Connect the external sequencer's MIDI OUT to the MPC60's MIDI IN 1. (You may alternatively use input 2 - both inputs merge together.) Also, set the external sequences to send MIDI CLOCK signals (with or without song position pointer).

2. Go to the SYNC screen and set the MPC60 to sync to "MIDI CLOCK W/SONG POSITION POINTER". Also, set the MIDI field to "1" (if the external sequences was connected to midi input 1).

3. Press the OTHER key, then select SOFT KEY 2, <Record 16 chs>, which causes the following screen to be displayed:

```
======== Record all 16 channels ========
Sqnc: 1-XXXXXXXXXXXXXXXX   Time sig: 4/ 4
Enter data, then press <Proceed>.
WARNING: THE EXISTING SEQUENCE CONTENTS
WILL BE ERASED! Timing correct is forced
to 'OFF(1/384)' during record.
=========================================
<Proceed>
```

This screen allows you to select the sequence to be recorded into, and the time signature of the new sequence which will be created. As the screen states, pressing <Proceed> will completely erase the contents of the selected sequence.

4. Enter the desired data into these fields and when finished, press the <Proceed> soft key. The following screen will appear:

```
======== Record all 16 channels ========
Sqnc: 1-XXXXXXXXXXXXXXXX Tmpo:120.0 BPM
TSig: 4/ 4   Bars:   1      Loop:OFF
 (Hold RECORD & play ext sequencer. The
  16 channels will record into tracks
  1 through 16, with drums on 16.)
===== Bar:001.01.00 (00:00:00.00) ======
```

This is the screen from which the actual recording will take place. You have now created a new sequence containing one bar of the time signature you entered in the previous screen.

The first 16 tracks have been assigned to midi channels 1 through 16 as described above. Assuming channel 16 is the assigned "drums" channel, track 16 is therefore assigned as the only "drums" track. Because of this, you should transfer any drum data on channel 16 and check to see that the note-to-drum assignments of the external sequence match the assignments in the MPC60. These can be changed by pressing the MIDI key and selecting option 2.

The tempo value is taken from the current master tempo if MASTER tempo mode is active, or from the tempo setting in the CREATE SEQUENCE screen if SEQUENCE tempo mode is currently active. This tempo setting may be changed.

The LOOP field is forced to "OFF" and cannot be changed while in this screen. This is necessary because loop recording is not permitted during 16 channel record mode. As is normal when

LOOP is set to "OFF" in the PLAY/RECORD screen, additional bars are added to the end of the sequence as it is recorded past the last bar. This way, the sequence will continue to add bars as you record, even though the display initially shows "Bars: 1".

As the screen states, the NOTE VALUE setting in the TIMING CORRECT screen is forced to "OFF(1/384)" during 16 channel recording.

5. While holding the RECORD key on the MPC60, start the external sequences playing from the beginning of its sequence. As soon as the MPC60 receives the sync signals, it will enter RECORD mode and begin recording the data from the other sequences in real time. Once the transfer is finished, stop the external sequences and the MPC60 will stop automatically, or manually stop the MPC60.

NOTE: The OVERDUB key is disabled during this mode.

6. The MPC60 now contains the transferred sequence and may be played using the PLAY, PLAY START, «, <, LOCATE, >, and » keys. Play the sequence- it the transfer was successful, press MAIN SCREEN to return to the PLAY/RECORD screen to edit the sequence as usual. If the transfer didn't come out as intended, simply try again by repeating step 4 above.

3.19 The "Analyzing sequence. Please wait..." message

Occasionally, and very infrequently, you will see the "Analyzing sequence. Please wait..." message on the lowest line of the screen, requiring you to wait briefly while the MPC60 does some "thinking". This occurs only under the following conditions:

1. When you first select a sequence which is very long, then play it, then press STOP.
2. When you first select a sequence which is very long, then press any of the FAST FORWARD, REWIND, or LOCATE keys.
3. After you perform one of the EDIT operations.
4. In SONG mode, after you change any parameters in the song, but only if the song contains many different sequences.

This waiting time is normal and is necessary in order for the MPC60 to create what programmers call an "index table" for the newly selected sequence. Once this process is done, all subsequent FAST FORWARD, REWIND, and LOCATE operations will be immediate, as will be all responses to incoming SMPTE, SONG POSITION POINTER, or MIDI TIME CODE sync signals.

Section 4:
Editing Sequences

4.1 Overview

This section of the manual describes the functions which relate to the editing of sequence data. In this section, you will learn to:

• Erase drums or notes in real time while in overdub mode.
• Erase selected drums, notes, or other midi events while stopped.
• View a list of the sequence's time signature changes and number of bars for each change.
• Create a new format of time signature / number of bars .
• Insert blank bars into a sequence.
• Delete selected bars from a sequence.
• Copy a selected range of bars from a sequence and insert them elsewhere into the same or another sequence.
• Copy a range of bars from one track to another track.
• Merge two tracks together.
• Copy one sequence over another.
• Convert a song (song mode) into one long sequence for more detailed editing.
• Shorten or lengthen a bar by changing its time signature.
• Change the velocity or duration values of a group of notes after recording.

4.2 The ERASE key

There are two main areas of the erase function:

• Erasing notes while in overdub mode ("Live erase" mode)
• Erasing specific events while stopped

Each is described in detail in the following sections.

4.2.1 Erasing notes while overdubbing ("Live erase" mode)

One of the ways to erase notes is called "live erase" mode. If the ERASE key is pressed and held during OVERDUB mode, the top line of the main screen changes for as long as ERASE is held:

```
==== (Hold drums or notes to erase) ====
Sqnc: 1-Ultimate_hipness Tmpo: 90.9 BPM
TSig: 4/ 4    Bars:   4     Loop:TO BAR  1
============== Track data ==============
Trak: 1-TRK01            Ch:16A-Drums
Vol%:100     Prog:   0    Ch: 0A-(off)
===== Now:001.01.00 (00:00:00:00) ======
<Trak-ON ><Solo-OFF><Tmpo-SEQ><SortTrks>
```

If, during this time, you press a drum pad (if the active track is a "drums" track) or hold a key on the midi keyboard (if the active track is a "non-drums" track), any occurrences of that drum or key on the selected track while both (the ERASE key and the appropriate pad or key) are held down will be erased.

4.2.2 The ERASE screen

If the ERASE key is pressed while the MPC60 is not playing, one of the following two screens will appear:

```
(If the active track is a "non-drums" track)
================= Erase ================
Track(0=all): 1
From:001.01.00         To:001.01.00
============= Erase filter =============
Erase:ONLY ERASE NOTES
==== Play 2 keys to set note range =====
Lowest:F#-2            Highest:C#.3
<Erase it><All bars><All notes>
```

```
(If the active track is a "drums" track)
================= Erase =================
Track(0=all): 1
From:001.01.00        To:001.01.00
============== Erase filter ==============
Erase:ONLY ERASE C1-MODULATION WHEEL
======= Press drums to be erased =======

<Erase it><All bars><All drums>
```

These two screens allow a specified selection of either drums or keyboard notes to be erased from a single track while the MPC60 is not playing. To erase the notes, enter the appropriate data in each of the data fields, then press SOFT KEY1: <Erase it>. Each of the screen fields and soft keys is described below:

• The TRACK(0=ALL) field: This field specifies the track from which the data will be erased. The active track is automatically inserted here. To erase all tracks, enter a "0" here, and the screen will change to the following:

```
================= Erase =================
Track(0=all): 1
From:001.01.00         To:001.01.00
============== Erase filter ==============
Erase:ONLY ERASE C1-MODULATION WHEEL
    (All notes/drums will be erased)

<Erase it><All bars>
```

In this case, it is not possible to select specific notes or drums for erasure. Instead, all notes and drums will be erased (if the erase filter is set to ONLY ERASE NOTES or ALL EVENTS).

• The FROM and TO fields: These two fields set the region to be erased, starting with the location specified in the FROM field, up to *one clock before* the location specified in the TO field. They are both "BAR.BEAT.CLOCK" type fields, allowing you to set the region to be erased in increments as small as one clock.

• The ERASE FILTER section: This section of the screen allows you to very quickly select a particular midi event type for erasure. The ERASE field is a choice field and has 3 options:
> 1. ALL EVENTS: If this option is selected, all possible midi event types will be erased.
> 2. ONLY ERASE: If this option is selected, only one event type will be erased, and the type of event to be erased appears in a choice field appearing directly to the right on the same line. In this rightmost field, all event types are listed, including all 128 midi controllers, each

individually named as listed in the "Midi 1.0 Detailed Specification, Document Revision 4.0".

3. ALL EXCEPT: If this option is selected, all midi event type EXCEPT one will be erased, and the type of event which will NOT be erased appears in a "choice" field appearing directly to the right on the same line. In this rightmost field, all event types are listed, including all 128 midi controllers, each individually named as listed in the "Midi 1.0 Detailed Specification, Document Revision 4.0".

• The LOWEST and HIGHEST fields ("Non-drums" tracks only): In this screen, the notes to be erased are specified by entering a range of keys on the midi keyboard, from LOWEST to HIGHEST. These may be set in the normal way by scrolling through all 127 options using the data wheel, but there is a much faster way: both fields may be instantly entered by pressing two keys on the input midi keyboard - the lower of the two notes will be entered into the LOWEST field and the higher of the two will be entered into the HIGHEST field. The lowest and highest possible note values are automatically entered into these fields when the screen is first displayed.

• The PRESS DRUMS TO BE ERASED area ("Drums" tracks only):
To specify the drums to be erased, press each of the drum pads you want to be erased and the 4 character names of each of the drums entered will be listed in this area. If more than 8 drum pads are pressed, only the first 8 are displayed followed by a "+".

• SOFT KEY 1- <Erase>:
Pressing this soft key performs the above erase specified by the data in the screen fields. After the erasure has been performed, the PLAY/RECORD screen is re-displayed.

• SOFT KEY 2 - <All bars>:
Pressing this soft key instantly sets the FROM and TO fields to the start and end of the active sequence, respectively. This is useful when it is desired to erase the entire length of the track.

• SOFT KEY 3 - <All drums> ("Drums" screen only):
Pressing this soft key selects all 32 drums for erasure. Since only 8 drum names will fit in the PRESS DRUMS TO BE ERASED area of the screen, the first 8 drums are displayed there, followed by a "+".

• SOFT KEY 3 - <All notes> ("Non-drums" screen only):
Pressing this soft key sets the LOWEST field to the lowest possible midi note number, and the HIGHEST field to the highest possible midi note number. This is a quick way of specifying that all notes must be erased.

4.3 The EDIT key

The EDIT key encompasses the following functions related to editing of the active sequence:

• Viewing all time signature changes
• Creating a new sequence
• Inserting blank bars into a sequence
• Deleting specified bars from a sequence
• Copying a section and inserting it elsewhere within the same or another sequence
• Copying a single track to another area or merging it with other data
• Copying an entire sequence to another sequence
• Converting a song to one long sequence
• Lengthening or shortening a bar by changing the time signature
• Changing the velocity or duration values of a group of notes after recording

When the EDIT key is pressed, the following screen is displayed:

```
============== Edit Sequence ==============
1)View time sign    2)Create sequence
3)Insert blank bars 4)Delete bars
5)Copy all tracks   6)Copy/merge a track
7)Copy a sequence   8)Convert song
9)Change bar length 0)Change veloc/dur

Select option:
```

Pressing a single number key will cause the screen for the selected function to be displayed.

4.3.1 Viewing time signature changes

This function displays the time signature and number of bars in the active sequence, and any time signature changes, but does not allow any changes to be made. To use this function, select option 1 from the EDIT screen and the following screen will be displayed:

```
========== View Time Signature ==========
Bar  1 -  3: 4/ 4




------------------------------------------
<NextPage><PreviousPage>
```

This screen displays all time signature changes within the active sequence, and the number of bars for each change. If no time signature changes exist, the existing single time signature and the total number of bars in the sequence will be displayed. Space is given for 10 time signature changes with 2 changes per line. If more exist, the <Next Page> soft key is used to view further pages of changes, and the <Previous Page> soft key is used to re-display earlier pages.

4.3.2 Creating a new sequence

This function is used to create an entirely new sequence format for the active sequence. However, this erases the entire contents of the active sequence! To use this function, press option 2 from the EDIT screen and the following screen will be displayed:

```
========= Create new sequence ==========
Time sig: 4/ 4        Number of bars:  2
Loop:TO BAR  1        Tempo:120.0 BPM
Midi channel for track  1 (0=unused):16A


------------------------------------------
<Execute>
```

The following is a description of the on-screen fields:

• The TIME SIG field (time signature):
This is the time signature of the bars which will be created. This is actually two fields- one for each part of the time signature.

• The NUMBER OF BARS field:
This is the number of bars which will be created.

• The LOOP field:
This field is a choice field with 2 options: OFF and TO BAR, 1. If set to OFF, the newly created sequence will automatically stop when it plays to the end (or if in RECORD mode, it will continue to add bars

onto the end). If set to TO BAR 1, the newly created sequence will loop back to bar 1 when it plays to the end; or if you want the sequence to loop to a bar other than 1, move the cursor to the number 1 and change it to the number of the bar you want the sequence to loop to.

• The TEMPO field:
This sets the "sequence" tempo for the newly created sequence (not the "master" tempo).

• The "MIDI CHANNEL FOR TRACK 1 (0=UNUSED)" field:
This is actually 3 fields which allow a single output midi channel to be assigned to each of the 99 tracks. To set the output midi channel assignment for each track:

> 1. Move the cursor to the number which appears to the right of the word "track" (this is a data field) and select the number of the track you want to assign. Now, the current assignment for that track will appear to the right of the colon (":").
> 2. Move the cursor to the number directly to the right of the colon and enter the number of the midi channel you want the selected track to play through (1 - 16). If you don't want that track to be active at all, enter a "0" here.
> 3. Move the cursor one position to the right and use the DATA CONTROL to select the output port you want the selected track to play through (A, B, C, or D).

• SOFT KEY 1- <Execute>:
Pressing this soft key causes the existing sequence to be completely erased and a new sequence format to be created using the data entered in the screen fields.

NOTE: If you select an empty sequence (a sequence with the name "unused"), then press RECORD or OVERDUB, the sequence will immediately be created using the settings in this screen.

4.3.3 Inserting blank bars within a sequence

This function inserts a specified number of blank bars into the current sequence. To use this function, select option 3 from the EDIT screen, and the following screen will appear:

```
========== Insert Blank Bars ==========

Number of bars: 2          Time sign: 4/4
Insert before bar:3


=========================================
<Execute>
```

The on-screen fields are:

• The NUMBER OF BARS field:
This is the number of blank bars to be inserted.

• The TIME SIGN field (time signature):
This is the time signature of the bars to be inserted. This is actually two fields- one for each part of the time signature. The range of the first part is from 1 to 31; the second part is a "choice" field with 4 selections: 4, 8, 16, and 32.

• The INSERT BEFORE BAR field:
This field specifies the bar number which the new bars will be inserted before. To insert bars after the end of the sequence, enter here the number of the bar which is one higher than the last bar of the sequence.

• SOFT KEY 1- <Execute>:
Pressing this soft key performs the insertion according to the above displayed parameters.

NOTE: If the sequence is set to loop to an earlier bar (in the time signature / ending status screen) and the new bars are inserted before the loop bar, causing the sequence to now loop to a different place, the bar number specified in the LOOP field will automatically be adjusted to compensate for the insertion.

4.3.4 Deleting bars from within a sequence

This function allows you to delete a specified number of bars from the active sequence. To use this function, press option 4 from the EDIT screen and the following screen will be displayed:

```
============== Delete Bars ==============

   From bar:1                To bar:3



==========================================
<Execute>
```

The on-screen fields are:

• The FROM BAR, field:
This is the 1st bar to be deleted.

• The TO BAR field:
This field specifies the end of the region to be deleted (the bar number
following the last bar to be deleted). For example, to delete bars 3 and 4,
you would enter a 3 in the FROM BAR field and a 5 in the TO BAR field,
because bar 5 is the *end* of the region to be deleted. This field cannot accept
a value less than that of the FROM BAR, field.

• SOFT KEY 1- <Execute>:
Pressing this soft key performs the above specified deletion.

NOTE: If the sequence is set to loop to an earlier bar (in the time signature
/ ending status screen) and the deleted bars are before the loop point,
causing the sequence to now loop to a different place, the bar number
specified in the LOOP field will be automatically changed to compensate
for the insertion.

4.3.5 Copying a section, including al! tracks, and inserting it elsewhere

This function allows you to copy a specified range of bars from one
sequence and insert it into any other point within the same sequence or any
other sequence. In this form of the copy function, all tracks are copied, and
this data is inserted into the new location. In this mode of copying, the
overall length of the sequence will always be increased by the copy. To use
this function, select option 5 from the EDIT screen, and the following
screen will appear:

```
========= Copy all tracks from =========
Sequence: 1
From bar:  1      To bar:   3
========= Copy all tracks to ==========
Sequence: 1
Copies:  1          Insert before bar:   3
==================================================
<Execute>
```

The on-screen fields are described below:

• The SEQUENCE field (in the COPY ALL TRACKS FROM section):
This field is used to specify the sequence number to be copied from.

• The FROM BAR and TO BAR fields:
These fields set the range of bars to be copied from. FROM BAR sets
the 1st bar which is to be copied, and TO BAR sets the *end* of the region
to be copied (the bar number following the last bar to be copied).

• The SEQUENCE field (in the COPY ALL TRACKS TO section):
This field is used to specify the sequence number to be copied to.

• The COPIES field:
This field specifies the number of copies of the specified data will be
inserted into the insertion point. Normally, this would be set to 1.

• The INSERT BEFORE BAR field:
This field specifies the bar number which the copied data will be inserted
before. To insert the bars after the end of the sequence, enter here the
number of the bar which is one higher than the last bar of the sequence.

• SOFT KEY 1- <Execute>:
Pressing this soft key performs the copy according to the entered
parameters.

NOTE: If the sequence is set to loop to an earlier bar (in the time
signature / ending status screen) and the copied bars are inserted before
the loop bar, causing the sequence to now loop to a different bar, the bar
number specified in the LOOP field will automatically be adjusted to
compensate for the insertion.

4.3.6 Copying a single track to another area or merging it with other data

This function permits the copying of all events within a specified
region on a single track to a different point on the same or another

track. In this function, only the events from the source track are copied- no time signature or tempo data is copied. Unlike the COPY ALL TRACKS function which inserts the copied data into the sequence, increasing the overall length, this form of the copy function either replaces the existing events or merges with the existing events, without adding any additional bars. Therefore, in this function, the overall length is unchanged after the copy. Common uses of this function are:

• Copying one track to another
 • Merging (bouncing) two tracks together
 • Shifting a track earlier or later in increments as small as one clock

To use this function, select option 6 from the EDIT screen, and the following screen will be displayed:

```
======= Copy/merge a track from ========
Sequence: 1       Track: 1
From:001.01.00   To:001.01.00
======= Copy/merge a track to ========
Sequence: 1       Track: 1      Copies:  1
Start copy at:001.01.00       Mode:REPLACE
==========================================
<Execute>
```

A description of the on-screen fields follows:

• The SEQUENCE field (the COPY/MERGE A TRACK FROM section): This is the sequence from which the data will be copied. The active sequence number is automatically inserted here when this screen is entered.

• The TRACK field (the COPY/MERGE A TRACK FROM section): This is the track from which the data will be copied. The active track is automatically inserted here when this screen is entered.

• The FROM and TO fields: These fields are used to set the region of the track which will be copied from, starting at the clock location specified in the FROM field and including all data up to but not including the clock specified in the TO field. These are BAR.BEAT.CLOCK type fields, enabling you to specify the region in units as small as one clock.

• The SEQUENCE field (the COPY/MERGE A TRACK TO section): This is the sequence to be copied into. The active sequence number is automatically inserted here when this screen is entered.

• The TRACK field (the COPY/MERGE A TRACK TO section): This is the track to be copied into. The active track number is automatically inserted here when this screen is entered.

• The COPIES field:
This field specifies the number of copies, end onto end, which are to be added into the new sequence. This is normally "1".

• The START COPY AT field:
The copied data may be added into the destination sequence and track starting at any location. This field specifies the starting location for the copied data to be placed. This is a BAR.BEAT.CLOCK type field, allowing the copied data to be placed at any location, in increments as small as one clock.

• The MODE field:
This is a choice field with 2 options:

> 1. REPLACE:
> In this mode, all existing events in the destination track are replaced by the newly copied data - the existing events are overwritten.

> 2. MERGE:
> In this mode, the copied data is merged, or added, into the existing events.

• SOFT KEY 1- <Execute>:
Pressing this soft key performs the copy as specified in the above fields.

NOTE 1: This function provides a way to shift the timing of tracks forward or backward by any amount. To do this, simply copy a track to itself, but slightly earlier or later. This provides an advantage over the "Shift timing" function (in the TIMING CORRECT screen) which cannot be used without simultaneously applying timing correction to the track.

NOTE 2: If an attempt is made to copy events from a "drums" track to a "non-drums" track (or vice versa), the following warning screen will appear, informing you that it cannot be done:

```
=============== Attention! ===============
The copy cannot be done because the data
from a"drums" track cannot be copied to
a "non-drums" track (or vice versa).



<Cancel>
```

Pressing the <Cancel> soft key will return to the "Edit Sequence" menu screen.

NOTE 3: If the copied data is longer than the sequence to be copied into, the portion of the copied data which extends past the end will not be copied. If an attempt is made to copy past the end of the destination sequence, the following warning screen will appear when <Execute> is pressed:

```
=============== Attention ===============
The sequence you are copying into may
not be long enough to accept the entire
copy. Do you want to proceed anyway,
even though no notes will be copied past
the end?

<Proceed>
```

At this point, you may either press <Proceed> to copy it anyway, or press MAIN SCREEN to cancel the copy.

NOTE 4: If the destination track is unused, the contents of the CH fields (in the PLAY/RECORD screen) of the source track will be copied to the corresponding fields of the destination track.

4.3.7 Copying an entire sequence to another sequence

This function is useful if you want to make a perfect copy of a sequence, including all parameters, into another sequence number, replacing all data and parameters previously contained in that sequence number. To use this function, select option 7 from the EDIT screen, and the following screen will be displayed:

```
===== Copy One Sequence To Another =====

   Copy contents of sequence: 1
   into sequence: 2
   (The existing contents of the des-
   tination sequence will be erased!)
=========================================
<Execute>
```

A description of the on-screen fields follows:

• The COPY CONTENTS OF SEQUENCE field:
This is the sequence to be copied from. The active sequence number is automatically inserted here when this screen is entered.

• The INTO SEQUENCE field:
This is the sequence whose contents will be replaced by the contents of the above specified sequence number. The lowest numbered empty sequence is automatically inserted here when this screen is entered.

• SOFT KEY 1- <Execute>:
Pressing this soft key performs the above specified copy.

4.3.8 Converting a song into a single long sequence

"Song mode" is useful in creating the format of a song quickly. However, it is very cumbersome compared to sequence mode when fine tuning the details of a complex song. It is therefore useful to initially create a song using song mode, then convert that song into a long sequence, using the more versatile sequence editing features to complete the song. This function does that conversion. All the sequences in the song, including the repetitions, are copied end onto end to the specified sequence number. Additionally, the songs loop status is used for the sequence's loop status. Also, the track names, midi output channel assignments, midi program change assignments, stereo mixer settings, echo mixer settings, tuning settings, and tempo settings for the newly created sequence are taken from the first sequence in the song only. To use this function, select option 8 from the EDIT screen, and the following screen will appear:

```
======= Convert song to sequence =======

  Convert song: 1      Into Sequence: 2

(The existing contents of the
 destination sequence will be erased!)
=========================================
<Execute>
```

The fields are:

• The CONVERT SONG field:
This is the song which will be converted in a sequence. The current song is always defaulted to.

• The INTO SEQUENCE field:
This is the sequence which will contain the converted song. The lowest numbered empty sequence is inserted here by default.

• SOFT KEY 1- <Execute>:
Pressing this soft key performs the copy as specified. This may take as much as 30 seconds or more.

NOTE: ALWAYS BE SURE THAT EACH OF THE SEQUENCES IN THE SONG HAVE IDENTICAL MIDI CHANNEL ASSIGNMENTS FOR THEIR TRACKS. When playing a song in song mode, it is possible for each of the sequences within a song to have different midi channel assignments from sequence to sequence because each sequence uses its own set of assignments. For example, track 5 could be assigned to midi channel 16 (drums) in one sequence; it could then be followed by a different sequence in which track 5 contains keyboard notes and plays through midi channel 3. However, once a song to sequence conversion is done, only the assignments from the first sequence in the song are used in the newly created long sequence: For this reason, before converting a song to a sequence, be certain that the midi channel assignments for each of the sequences match from sequence to sequence. It is especially important that "drums" (channel 16) or "non-drums" (channel 1-15) status of each track match from sequence to sequence within the song. If an attempt is made to convert a song which has a mismatch in midi assignments, the following error screen will be displayed and the conversion is aborted:

```
============== Attention! ==============
The conversion cannot be done because
a "drums" track cannot be appended onto
a "non-drums" track (or vice versa):
Track XX is mismatched between sequence
XX and YY. Please RE-ORDER the tracks of
one of these sequences, then try again.
<Cancel>
```

To correct the problem, you must use either change the midi channel assignment of one of the mismatched tracks, or use the <SortTrks> soft key from the PLAY/RECORD screen to change the track order of one of the two mismatched sequences before attempting the conversion again.

4.3.9 Shortening/lengthening a single bar

This function allows you to change the length of a particular bar within a sequence by changing its time signature. It works like this: if the new time signature you change to is shorter than the existing one, the unused end of the bar is truncated; if the new time signature is longer than the existing one, a small amount of blank space is added onto the end of the bar. For example, if you need to

remove one 1/8 note from the end of a 4/4 bar, you would change its time signature to 7/8.

To use this function, press the EDIT key and select option 9 from the menu, and the following screen will appear:

```
====== Shorten / lengthen a bar ========
Change the time signature of bar:  1
from  4/ 4 to  4/ 4.
(If the new time sig is shorter, the end
of the bar is truncated; if longer,
blank space is added to the end.)
==========================================
<Execute>
```

First, select the bar number to be changed in the BAR field in the top line. The existing time signature for that bar will be displayed in the FROM field in the second line. Next, enter the time signature you wish to change to in the TO field in the second line. To perform the change, press the <Execute> soft key.

4.3.10 Changing the velocity or duration of a group of notes after recording

This new feature allows you to globally modify the duration or velocity values of a group of notes within a track. You may set them to a fixed value, add or subtract an amount from them, or multiply them by a selected percentage:

```
======= Change velocity/duration =======
Track: 1    From:001.01.00   To:001.01.00
Change:VELOCITY                 Value:127
Action:SUBTRACT "VALUE" FROM EACH


==========================================
<Execute>
```

The fields are:

   • The TRACK field:
   This sets the track number which will be modified.

   • The FROM and TO fields:
   These 2 fields set the region within the track which will be
   affected. These are both BAR.BEAT.CLOCK type fields.

   ₒThe CHANGE field:

This is a choice field with 2 options: VELOCITY and DURATION. It is used to select which of these 2 parameters the function will affect.

• The VALUE field:
This field works in conjunction with the ACTION field and sets the number which will be used to change the velocities or durations.

• The ACTION field:
This is a choice field and has 4 options:

> 1. ADD "VALUE" TO EACH: This selection adds the number in the VALUE field to each note in the range.
> 2. SUBTRACT "VALUE" FROM EACH: This selection subtracts the number in the VALUE field from each note in the range.
> 3. MULTIPLY EACH BY "VALUE" %: This selection multiplies each note in the range by the number in the VALUE field. A value of 100% = no change; values of 101 to 200% proportionally increase each note's velocity; values of 0 to 99% proportionally decrease each note's velocity value.
> 4. SET EACH TO "VALUE": This selection changes each note in the range to the number in the VALUE field.

• SOFT KEY 1- <Execute>:
After you have entered the correct data in each of the above fields, pressing this soft key performs the actual function.

Example: To reduce the velocity values of all notes in a track by half, set the screen fields to the following values:
> 1. Set the TRACK field to the track you wish to change;
> 2. Set the FROM field to the start of the sequence;
> 3. Set the TO field to the end of the sequence;
> 4. Set the CHANGE field to VELOCITY;
> 5. Set the VALUE field to 50;
> 6. Set the ACTION field to MULTIPLY EACH BY `VALUE' %
> 7. Press <Execute>

4.4 The STEP EDIT key

The STEP EDIT function allows the contents of the active track to be edited in precise detail. When the STEP EDIT key is pressed, any notes or events which exist in the active track at the current sequence position are displayed on the screen as a series of data fields, which may then be edited. Also, any notes played at this time are recorded into the active track at the current sequence position.

STEP EDIT can also be thought of as "note edit" mode. We use the term "step edit" because "step mode" in sequencers traditionally refers to the ability to record or edit sequences while stopped, which is what this function does.

4.4.1 The STEP EDIT screen

To enter step edit mode, press the STEP EDIT key. The following screen will appear, displaying any notes or events which exist in the active track at the current sequence position:

```
=============== Step Edit ===============
>01-CONTRL>C1-MODULATION WHEEL   Val:   54
 02-Note> C.3     Vel:083/064       Dur: 142
 03-Note> F#-2    Vel:076/064       Dur:  91
 04-Note> G.-1    Vel:102/064       Dur:  99
 05-Note> G#6     Vel:094/064       Dur:  63
===== Now:001.01.00 (00:00:00:00) ======
<Insert> <Delete> <PlayEvent> <Options>
```

A description of the fields and soft keys follows:

• The event display area (lines 2 through 6 of the LCD screen): This area of the screen displays up to five events, one per line, existing in the active track at the location within the sequence displayed in the NOW field. These events are most commonly notes (either drum or keyboard notes, depending on whether the active track is a drums or non-drums track), but may also be one of a number of special midi control events. The format of each of the various event types is described in detail later in this section.

• The NOW field: The field shows the current position within the sequence exactly as in the PLAY/RECORD screen. As in the PLAY/RECORD screen, this value is changed by using the "<<", "<", ">", ">>", and

LOCATE keys. As this value changes, the event display area is constantly updated to display the events contained at this displayed location. As in the PLAY/RECORD screen, the distance moved by pressing the "<" or ">" keys is set in the NOTE VALUE field in the TIMING CORRECT screen.

• SOFT KEY 1- <Insert>:
Pressing this soft key causes a new event to be inserted at the current sequence position. The type of event inserted is determined by the EVENT TO INSERT field in the STEP EDIT OPTIONS screen.

• SOFT KEY 2 - <Delete>:
Pressing this soft key causes the active event to be deleted from the track. The active event is the event at the uppermost line of the screen (preceded by the ">").

• SOFT KEY 3 - <PIayEvent>:
Pressing this soft key causes the active event to be played. The active event is the event at the uppermost line of the screen (preceded by the u>n).

• SOFT KEY 4 - <Options>:
Pressing this soft key displays the following screen:

```
=========== Step Edit Options ===========
Event to insert:C5-PORTAMENTO TIME
Auto step increment on key release:YES
Duration of recorded notes:AS PLAYED
======= Step Edit Display Filter =======
View:ALL EXCEPT C1-MODULATION WHEEL
```

This screen presents a number of options related to step editing:

• The EVENT TO INSERT field:
This parameter selects which type of midi event will be inserted when the <Insert> soft key is pressed from the STEP EDIT screen. The options include all the available midi event types, including all 128 midi controllers. If one of these controllers is selected, the name assigned to the that controller is also displayed, as assigned in the "Midi 1.0 Detailed Specification, Document Revision 4.0".

• The AUTO STEP INCREMENT ON KEY RELEASE field:
If set to YES, the ">" key (fast forward) will automatically be pressed internally by the MPC60 after each key from the midi keyboard is released, or if a chord was played, after the last key from the chord is released. This allows, for example, the recording of a series of notes or chords, one 1/16 note for each, without having to manually advance to the

next 1/16 after playing each key. If this field is set to NO, this effect is defeated.

• The DURATION OF RECORDED NOTES field: This field is used to determine the method by which durations are assigned to notes recorded from the midi keyboard while in STEP EDIT mode. This is a choice field and has 2 options: SAME AS STEP and AS PLAYED:
>   1. If set to SAME AS STEP, durations are always four clocks less than the current step size (the current NOTE VALUE field setting in the TIMING CORRECT screen).
>   2. If set to AS PLAYED, the actual time the note is held (relative to the current tempo) is used for the duration value, even though the sequence is not playing. To guide your timing, if a key is held down more than one 1/4 note, a metronome click plays exactly one 1/4 note after the key is depressed, and plays again for each additional 1/4 note the key is held down. For example, if you wanted to record a note with a duration of one 1/2 note, you would play the key and release it after 2 clicks were heard.

• The STEP EDIT DISPLAY FILTER section: This is a "filter" similar to the erase filter or the midi input filter, except this one controls which types of midi events existing in the track get displayed in the step edit screen. For example, if the only events you wanted to edit were pitch bend messages, it would be bothersome to have to view all the other events. Another example would be to filter out all continuous controller data to make it easier to view only the notes.

To use the display filter, move the cursor to the VIEW field. This is a choice field with 3 options:

>   1. ALL EVENTS: If this option is selected, all possible event types will be displayed.
>   2. ONLY VIEW: If this option is selected, only one event type may be displayed, and the type of event to be displayed is selected in a new field appearing directly to the right on the same line. In this rightmost field, all event types are listed, including all 128 midi controllers, each individually named as listed in the "Midi 1.0 Detailed Specification, Document Revision 4.0".
>   3. ALL EXCEPT: This option is similar to ONLY VIEW, above, except that all event types except the event displayed to the right of the words ALL EXCEPT are displayed.

4.4.2 Using STEP EDIT

Using STEP EDIT is simple:

1. Use the FAST FORWARD, REWIND, or LOCATE functions to find the desired approximate location (or just play the sequence until you hear the desired location, then press STOP);
2. Press STEP EDIT. The NOW field will change to the nearest timing correct location (usually the nearest 1J16 note), and any notes existing in the active track at that location will be displayed on the screen.
3. You can now edit any of the data fields for any of the displayed notes by moving the cursor to the desired field and editing it. Also, any notes played will be recorded at this location and immediately displayed on the screen.
4. To view other locations within the sequence, use the FAST FORWARD, REWIND, or LOCATE functions, just as you would while the PLAY/RECORD screen is displayed.
5. Once you're finished, press MAIN SCREEN to return to the PLAY/RECORD screen.

NOTE 1: The "<" and ">" keys cause the current position of the sequence to move backward or forward one 1/16 note (one "step"). To change this distance, change the NOTE VALUE field in the TIMING CORRECT screen.

NOTE 2: The STEP EDIT screen only displays notes which exist at the the exact location displayed in the NOW field. This can sometimes cause confusion. For example, in a sequence containing a series of 1/32 notes playing a major scale, if you are stepping through the sequence one 1/16 note at a time by repeatedly pressing the ">" key, you will hear only the odd numbered notes in the scale with each new key press- the even numbered 1/32 notes will be *hidden* between the 1/16 notes. In order to view all of the 1/32 notes, you must change the NOTE VALUE field in the TIMING CORRECT screen to "1/32". Then you will view each successive 1/32 note in the scale as you repeatedly press the ">" key.

NOTE 3: If the current SHUFFLE setting is other than 50%, pressing the "<" and ">" keys will move to locations which fall on *shuffled* 1/16 notes. If at this time you are editing a sequence which contains 1/16 notes recorded at a shuffle setting of 50%, the even numbered 1/16 notes will NOT be heard as you step through the sequence, because only notes existing in shuffled 1/16 note locations will be viewed. This same rule applies to the SHIFT TIMING function- if the SHIFT AMOUNT field is set to "0" and you are editing a sequence which was recorded while the SHIFT AMOUNT field was set to any amount other than "0", none of the notes will be seen as you step through the sequence, because these notes fall on *shifted*

locations, and you are currently viewing notes falling on *nonshifted* locations.

Here's more details about STEP EDIT:

The step edit screen may display up to five events, one on each line, which exist at the current sequence position, or "step". The format of the event line is different for each type of event, but the first two fields of each event type are the same:


```
          ┌────── The event number within the step
          │   ┌──── The event type
          │   │   ┌─Data fields for this event ─┐
          ▼   ▼   
>01-Note> C#3   Vel:083/064          Dur: 142
```
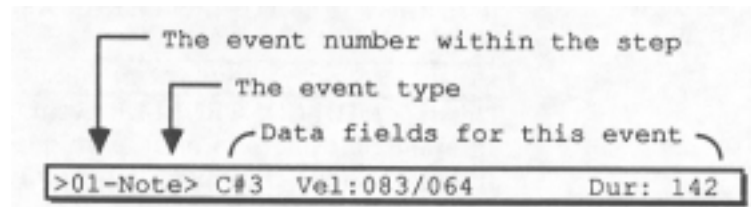
At the left edge of the screen is the event number within the current step. There can be many events at this step, and this field indicates the number of the event within the step. For example, if a three note chord existed at this step, this field would show the number of each note within the chord. To the right of the event number is an untitled choice field, containing the type of event displayed. Examples of midi events are: notes, pitch bend, program change, etc. The other fields to the right are unique for each type of event. The available types of events and their associated data fields are:

```
>01-NOte> C#3    Vel:083/064          Dur:0142
```
This is a NOTE event. The fields are:
      1. PITCH (untitled): This choice field has no title, but contains the pitch of the note, showing the note name (C through B; sharps are indicated by a "#"), followed by the octave (-2 through 8). The range is from C-2 to G8.
      2. VEL (velocity): This is actually two fields: the initial velocity and the release velocity. The range for both is from 0 to 127.
      3. DUR (duration): This field shows the duration from the "note on" to the "note off", measured in clocks (1/384 notes). The range is 1 - 9999.

```
>01-Note> TOM1 Vel:064 Tun:       0 Dur:   93
```
This is a DRUM NOTE event. The fields are:
      1. DRUM NAME (untitled): This choice field indicates which of the 32 internal drum names this event applies to.
      2. VEL (velocity): This is the velocity of the drum note.
      3. TUN (tuning): This field sets the tuning for the displayed note only, and is added to the tuning

settings in the TUNE DRUMS screen and the EDIT A
SOUND screen. The range is from -120 to +60, in
increments of 1/10 of 1 semitone.

   4. DUR (duration): This field shows the duration from the
      "note on" to the "note off", measured in clocks (1J384
      notes). The range is 1 - 9999.

```
1>01-NOte> HIHT Vel:064 Dcy:064 Dur: 931
```
This is a special case drum note event for the hihat. The difference is that
the TUN field is replaced by the DCY field, indicating the decay time
of the hihat. The range is from 0 to 127). There is no TUN field for the
hihat.

```
>O1-CONTRL>C1-MODULATION WHEEL Val: 64
```
This is a MIDI CONTROLLER event. There are 128 different
controllers in midi, each one assigned to a different controller number.
To the right of the selected controller is displayed the name of that
controller, as assigned in the document "Midi 1.0 Detailed
Specification, Document Revision 4.0". The VAL field contains the
numeric value of the displayed controller event.

```
>O1-Program Change>              Val:   64
```
This is a PROGRAM CHANGE event. The single field is VAL,
with a range of 0 - 127, used to select the program number.

```
>O1-Channel Pres>               Val:   64
```
This is a CHANNEL PRESSURE event. This is also called "after
touch" and applies to all notes played on this channel. The only field is
VAL (value), with a range of 0 - 127.

```
>O1-Poly Pressure> Note:C.l         Val:   64
```
This is a POLYPHONIC PRESSURE event. It is a
continuous controller event which allows each note played
on the keyboard to send its own key pressure information.
There are very few keyboards which send this information.
The fields are: NOTE (the note to which the pressure
message applies) and VAL (the pressure value, from 0 to
127).

```
>O1-Pitch Bend>                 Val:   23
```
This is the PITCH BEND event. The VAL field contains the actual
numeric value of the pitch bend event. It is a signed field and the range
is from -8192 to 8191.

```
1>O1-Mix Volume> Drum:TOM3        Val: 127
```
This is a MIX VOLUME event, and is used to change the
stereo mixer volume setting of a particular drum in mid
sequence. When the RECORD LIVE CHANGES feature is

used (described in section 6.9), many of these events are recorded
into the active track to simulate a smooth and continuous mixer
volume change. There are two fields: DRUM (which of the 32
drums this event applies to) and VAL (the new mixer setting, 0 -
127).

```
1>O1-Mix Pan> Drum:TOM4              Val: 127
```
This is a MIX PAN event, and is used to change the stereo
mixer pan setting of a particular drum in mid-sequence.
When the RECORD LIVE CHANGES feature is used
(described in section 6.9), many of these events are recorded
into the active track to simulate a smooth and continuous
mixer pan change. There are two fields: DRUM (which of
the 32 drums this event applies to) and VAL, the new mix pan
setting, from 0 (fully left) to 127 (fully right).

```
>O1-Echo Volume> Drum:PRC2           Val: 127
```
This is an ECHO VOLUME event, and is used to change the echo
mixer volume setting of a particular drum in midsequence. When
the RECORD LIVE CHANGES feature is used (described in
section 6.9), many of these events are recorded into the active track
to simulate a smooth and continuous echo mixer change. There are
two fields: DRUM (which of the 32 drums this event applies to)
and VAL (the new echo mix setting, 0 - 127).

```
1>01-SysEx>   Size:999   Byte:999   Val: 127
```
This is a SYSTEM EXCLUSIVE event. It represents any system
exclusive message. There are three fields: SIZE (the total number
of data bytes), BYTE (the number of the byte whose contents are
currently displayed in the Val field) and VAL (the current value of
the byte number displayed in the BYTE field). The maximum size
of a system exclusive event is 999 bytes.

Of the five on-screen events, only the uppermost line may be edited, and is
edited by moving the cursor to the desired field within the line and editing
the field contents. This uppermost line is called the "active event" and is
preceded by a ">". To edit an event, it must be moved up to the active event
line using the CURSOR UP and CURSOR DOWN keys. This procedure is
described below.

To move to different locations within the sequence, use the "<" or ">"
keys to move backward or forward one step, and the "<<" or ">>" keys
to move backward or forward one bar, just as in the PLAY/RECORD
screen. As with the PLAY/RECORD screen, the size of the step is
determined by the NOTE VALUE field in the TIMING CORRECT
screen. It is most commonly set to a 1/16 note.

As you move through the sequence to each new step (usually one 1/16
note) by pressing the "<" and ">" keys, any events at the new

current step will be played (output through midi), just as though the sequence had been played at that step only. If you don't want to hear a particular track, turn that track OFF from the PLAY/RECORD screen. As you step through the sequence step by step, the screen is updated by placing the first event within that step at the "active event" line. To edit any of the fields in the line, move the cursor left or right to the desired field and change the contents as desired. If there are multiple events at that step, they will be displayed on the other on-screen event lines. Use the CURSOR UP or CURSOR DOWN keys to access different events by scrolling the screen's 5 line "window" UP or DOWN, and thereby moving higher or lower numbered events to the "active event" line. As an example, using the "<" and ">" keys would move from step to step to access a chord at each step; and the CURSOR UP and CURSOR DOWN keys would access the individual notes in each chord.

NOTE: All mid-sequence control changes, including the 128 CONTROLLERS, PITCH BEND, PROGRAM CHANGE, MIXER VOLUME, MIXER PAN, and ECHO MIX VOLUME, only take effect when played in a sequence. This means if you play a section of a sequence containing a specific controller event, the last played value of that controller will remain until another occurrence of the same controller is played, even if you stop the sequence and start playing it from another location. Because of this, whenever you use one of these events within a sequence, it is important to insert another event of the same type at the beginning of the sequence to set the controller to an initial value.

4.4.3 Step recording

Step edit also makes possible the recording of new notes from the midi keyboard using a step-by-step method. To record a note while in step mode, move to the desired position within the sequence, then play and release the desired note from the midi keyboard. This note will then appear as the new current event, with its pitch, velocity, release velocity and duration displayed numerically. The duration of the note is taken from the actual duration played, relative to the current tempo. However, if the DURATION OF RECORDED NOTES field in the STEP EDIT OPTIONS screen is set to SAME AS STEP, The duration always defaults to the current NOTE VALUE setting in the TIMING CORRECT screen.

If the AUTO STEP INCREMENT ON KEY RELEASE field in the STEP EDIT OPTIONS screen is set to YES, the current position within the sequence will automatically advance one step forward when the newly recorded note (or chord) is released. This will allow you to, for example, record a series of notes (or chords) one at a time

while stopped, and automatically play them back as perfect 1/16 notes. To
do this:

1. Set up your sequence and track for recording from your midi
   keyboard as you would to record in real time;
2. Rewind to the start of the sequence;
3. Press STEP EDIT;
4. Press SOFT KEY 4, <Options>;
5. Set the AUTO STEP INCREMENT ON KEY RELEASE field to
   YES;
6. Press STEP EDIT again;
7. Play a series of notes (or chords), one at a time;
8. Press PLAY START- the notes you have just entered will play back
   as a series of perfect 1/16 notes.

4.5 The EDIT LOOP key

This function allows a specified number of bars within a sequence to repeat in a loop while playing or overdubbing. This allows for quick recording or editing of the looped section. Pressing EDIT LOOP displays the following screen:

```
=============== Edit Loop ===============
Number of Bars:2      1st Bar:54



-------------------------------------------------
<Turn Loop On>
```

The screen fields and soft keys are:

• The NUMBER OF BARS field:
This field specifies the number of bars which will be looped when the edit loop is created.

• The 1ST BAR field:
This field specifies the starting bar of the work loop. The current bar number is automatically inserted here.

• SOFT KEY 1 - <Turn loop on>:
Pressing this soft key turns the edit loop on. It also causes the PLAY/RECORD screen to be re-displayed and the EDIT LOOP light to go on, indicating that an edit loop is active.

If EDIT LOOP is again pressed while an edit loop is active, the same screen will appear, with two changes:

1. The first two fields are displayed, but all changes are locked out. 2. The bottom line changes to:

```
<Turn it Off><Turn Off-ignore changes>
```

If SOFT KEY 1, <Turn it Off>, is pressed at this time, the edit loop will be turned off, returning the sequence to its normal operation. However, if SOFT KEY 2, <Turn Off- ignore changes>, is pressed, the loop is turned off, but all changes made while the loop was on are not used and the sequence returns to its status before the loop was turned on. In either case, the EDIT LOOP light is turned off and the PLAY/RECORD screen is returned to.

4.5.1 Using EDIT LOOP as an "UNDO" function

Because the EDIT LOOP function allows you the option to ignore all recording and editing which was done while the EDIT LOOP was on, it serves very well as an UNDO function.

For example, if you want to record a drum fill on bar 4 of a 4 bar sequence, but you aren't sure if you want to keep it, simply following these steps will allow you to try it first, then restore the sequence back to its original state if you don't like it:

1. Fast forward to bar 4;
2. Press EDIT LOOP;
3. Set the NUMBER OF BARS field to 1;
4. Press SOFT KEY 1, <Turn Loop On>, which will turn the EDIT LOOP on- now bar 4 will repeatedly play in a loop;
5. Overdub your drum fill;
6. Press EDIT LOOP again;
7. If you didn't like how the fill sounded, press SOFT KEY 2, <Turn it off - ignore changes, and the sequence will return to its original state. If you want to keep it, press <Turn it off> (soft key 1) and the sequence will now contain the new drum fill.

4.6 The TRANSPOSE key

This function allows you to transpose a track up or down by a specified amount in real time. This function is only a temporary change - the sequence data is not altered, unless SOFT KEY1, <Transpose Permanent, is pressed. Also, the MPC60 knows not to transpose "drums" tracks- only "non-drums" tracks can be transposed.

```
=============== Transpose ===============
Track(0=All): 0            Amount:   0
     (Play synth key to set amount)
========== Transpose Permanent =========
From:001.01.00          To:001.01.00


=========================================
<Transpose Permanent>
```

The following is a description of each of the screen fields and soft keys:

• The TRACK(0=All) field:
The field specifies the track which will be transposed. Enter a "0" here if you want all tracks to be transposed simultaneously.

• The AMOUNT field:
This field sets the amount and direction of transposition. For example, to transpose up a fifth, enter a 7. To transpose down a fourth, turn the DATA CONTROL to the left until "-5" appears. However, a much faster way to set this field is to simply press a key on the midi keyboard-- the amount will be automatically set by the location of the key in relation to middle "C". For example, pressing a key one octave below middle "C" would set the direction field to "12". If the amount field is set to any value other than "0", the transpose light will go ON, indicating that the transpose function is active. It will turn OFF when this field is returned to "0", or if <Transpose permanent> is selected.

• The FROM and TO fields:
These two fields specify the start and end of the region to be permanently transposed when the <Transpose permanent> soft key is pressed. These are BAR.BEAT.CLOCK type fields.

• SOFT KEY 1 - <Transpose Permanent>:
Pressing this soft key causes the above specified transposition to be made permanent by actually changing each of the midi note numbers within the specified region of the sequence. After this operation, the AMOUNT field is reset to "0" and the transpose light goes off.

Transposing in real time while playing

To transpose a sequence in real time while playing, follow these
steps:

 1. Play the sequence;
 2. Press the `TRANSPOSE` key;
 3. Locate middle "C" on the midi keyboard. Pressing any key above middle
    "C" will instantly transpose the sequence up by an amount equal to the
    distance the key is from middle "C". Pressing any key *below* middle "C"
    will instantly transpose the sequence down by the distance the key is
    from middle "C". When you press the key, it will only be used to
    transpose- the note will not sound. Be sure to press the key immediately
    before the instant at which you want the transpose to occur. To remind
    you that your sequence is being transposed, the light above the
    `TRANSPOSE` key will go on.
 4. To return to the original key signature, press middle "C".

Section 5: Song Mode

5.1 Overview

One way to create a song in the MPC60 is to record all the parts in one long sequence, using the copy functions to duplicate repeating sections. Another way is use SONG MODE. In song mode, a number of sequences are entered into a list, each representing a different section of the whole song. Once the entire list is entered, song mode automatically plays the list of sequences in the order they were entered. This is especially useful in creating arrangements with many repeating sections, such as drum parts. Song mode has the following advantages over using a long sequence to record a song:

• The song structure can be created very quickly.
• The content of the sections of the song can be changed very quickly.

Technically, a "song" in the MPC60 consists of up to 256 "steps", each of which contains a sequence number and the number of times it will repeat before going on to the next step in the song. After the last step, the song may either stop playing or loop back to an earlier step. The MPC60 may hold up to 20 songs in memory at one time. Recording is not permitted in song mode. Instead, the individual sequences must be recorded or edited while in PLAY/RECORD mode.

5.2 The Song Mode screen

To enter song mode, press the SONG MODE key. The following screen will appear:

```
=============== Song mode ===============
Song: 1-(unused)            Loop:TO STEP  1
Song starts at SMPTE#:00:00:00:00.00
========= Contents of step:  2 =========
Sqnc: 1-(unused)            Reps(0=end): 1
Bars: 4                     Tempo:120.0 BPM
===== Now:001.01.00 (00:00:00:00) =====
<InsertB4>  <Delete>  <Step-1>  <Step+1>
```

While this screen is showing, the MPC60 is in SONG mode, meaning that if play is entered, the active song will play instead of the active sequence.

All of the PLAY/RECORD keys operate on the active song: PLAY START plays the active song from the start; PLAY plays the active song from the current contents of the NOW field; and "<<", "<", ">", ">>", and LOCATE change the position within the song.

A detailed description of each of the on-screen fields and soft keys is given below:

• The SONG field:
This field selects the current song number (1 - 20). There are 20 songs, each containing a unique list of 256 steps.

• (The song name field - untitled):
This field has no title but exists directly to the right of the song number. It is the 16 character name for the active song. Changing the song name is done in the same way as changing the sequence name in the Play/record screen.

• The LOOP field:
This field indicates what will occur when the current song plays all the way to its end. There are two options:

1. OFF : The song stops playing.
2. LOOP TO STEP 1: The song loops back to the step number shown directly to the right of the word STEP. This step number may be changed by moving the cursor to it and changing it.

• The SONG STARTS AT SMPTE# field:
This 5 part field sets the SMPTE number associated with the exact beginning of the song. Sometimes called "SMPTE offset", this is the

SMPTE number which, when syncing to SMPTE, is assigned to the exact beginning of the song. Normally, this is set to all zeroes.

• The CONTENTS OF STEP field:
This is the current step number (1 - 256) within the current song. The data displayed below this field is the data contained within this step number.

• The SQNC field:
This field indicates the sequence number contained in the current step. To the right is the selected sequence's 16 character name. The name of the sequence may be edited here, and the new name will be displayed when the **PLAY/RECORD screen** is displayed.

• The REPS(0=END) field:
This field indicates the number of the repetitions that the sequence in the current step will play before moving on to the next step. For example, if you want the sequence to play only once in the current step, a "1" should be entered here. If a "0" is entered here, the MPC60 will recognize this step as the end of the song, and either stop playing or loop to a previous step number, depending on the settings of the END and LOOP fields.

• The BARS field:
This field shows the total number of bars in the selected sequence.

• The TEMPO field:
This field shows the sequence tempo (the tempo value stored within the sequence- not the master tempo) of the selected sequence.

• The NOW field:
This has nearly the same effect as in the PLAY/R,ECORD screen, except that in song mode this number refers to the current position within the SONG, not the sequence.

• SOFT KEY 1- <Insert B4>:
Pressing this soft key enables a new step to be inserted immediately before the current step. It copies the contents of the current step and all higher numbered steps up by one step, allowing the current step to be used for the new data without overwriting any existing data.

• SOFT KEY 2 - <Delete>:
Pressing this soft key deletes the contents of the current step and copies all higher numbered steps down by one position to close the gap-

₀SOFT KEY 3 - <Step- 1>:
Pressing this soft key decrements the step field.

• SOFT KEY 4 - <Step+1>:
Pressing this soft key increments the step field.

5.3 An example of creating and playing a song

The following is an example of creating a song in song mode on the MPC60:

1. Load the preset sequences into the MPC60 (the SYSTEM.ALL file).

2. Enter SONG MODE by pressing the SONG MODE key.

3. In the SONG field, select an unused song number. An unused song is indicated by "(unused)" in the song name field.

4. Set the CONTENTS OF STEP field to 1, which sets the current step to 1.

5. Type 2 (ENTER) in the SQNC field, indicating you want sequence 2 to play at the start of the song.

6. Type 4 (ENTER) in the REPS field, indicating you want sequence 2 to repeat 4 times before completing step 1.

7. Press <Step+1> to move on to step 2.

8. Enter a 7 in the SQNC field and a 1 in the REPS field, indicating you want sequence 7 to play only once as the contents of step 2.

9. Press <Step+1> to move on to step 3.

10. Enter a 12 in the SQNC field and a 2 in the REPS field, indicating you want sequence 12 to play twice as the contents of step 3.

11. Press <Step+1> to move on to step 4.

12. Enter a "0" in the REPS field, indicating this is the end of your song. If a "0" already exists here, there is no need to enter it again.

13. Select the TO STEP 1 option in the LOOP field and enter a 2 to the right of the word STEP, indicating that you want the song to loop back to step 2 once it reaches its end.

14. Press PLAY START. The song will play back as entered:

First, it will play 4 repetitions of sequence 2;

next, it will play 1 repetitions of sequence 7; next, it will play 2 repetitions of sequence 12; after that, it will repeat steps 2 and 3 indefinitely.

Notice that the NOW field always indicates the position within the song, not the position within each sequence.

15. To return to the Play/record screen, press the MAIN SCREEN key.

NOTE: Occasionally you may see the "Analyzing sequence. Please wait..." message on the lowest line of the screen, requiring you to wait briefly while the MPC60 does some "thinking". This occurs after you make any changes in the song, but only if the song contains a large number of different sequences. This waiting time is normal and is necessary in order for the MPC60 to create what programmers call an "index table" for the newly edited song. Once this process is done, all subsequent FAST FORWARD, REWIND, and LOCATE operations will be immediate, as well as all responses to incoming SMPTE, SONG POSITION POINTER, or MIDI TIME CODE sync signals.

NOTE 2: If you notice a timing irregularity in your song at the point of transition from one sequence into another, the problem may be due to the assignments of the PROG field (in the PLAY/RECORD screen) for the sequence which plays immediately after the timing irregularity. If a sequence containing these program assignments is played in SONG MODE, the sequence's program assignments are sent out at the moment that the sequence starts to play in the song. This can present a problem because most synthesizers require a brief time delay while changing programs, and this delay time will cause any notes existing at the start of the new sequence to be delayed. This delay is brief in most synthesizers, but is usually enough to cause a timing irregularity at the start of the sequence. To avoid this problem, don't assign any program changes to sequences which you are using in SONG MODE. If you need to use program changes within the song, make sure that no notes exist at the start of the sequences containing the program changes. Another alternative is to insert Midi PROGRAM CHANGE events within sequences in the song at locations where no notes exist. This same problem exists when manually changing sequences while playing (see section 2.9.1 "Changing sequences while playing") and can be corrected in the same way. This problem does not apply to sequences containing only drums tracks.

Converting a song into a long sequence:

While song mode is very useful for quickly creating a song format, it can be very cumbersome for detailed editing, because of the constant switching back to sequence mode, the necessity of copying sequences, and the necessity of remembering which sequence plays at which step. For detailed editing, it is much easier to record your song into one long sequence instead of using song mode, but song mode is very useful for quickly assembling the basic arrangement of a song.

The MPC60 has a feature which allows a song to be automatically converted into one long sequence. This feature actually copies all sequences in each step end-onto-end into one long sequence. This allows you to quickly construct a song using song mode, then convert it to a sequence for detailed editing using the much more versatile sequence editing features. This feature is accessed by pressing the EDIT key and selecting option 8: CONVERT SONG. This is described in detail within the "Editing sequences" section of this manual.

Section 6:
Sampling and Editing Drum Sounds -
The SOUNDS key

6.1 Overview

The MPC60 may hold up to 34 drum sounds in memory at one time, and each may be up to 5.3 seconds in length, as long as the total combined length does not exceed the total sampling time of 13.1 seconds, or 26.2 seconds if your machine has the sound memory expansion option. Each of these drum sounds is referred to as a SOUND. Each of the sounds in memory is assigned to one of the front panel drum pads- 16 in bank 1, and 16 in bank 2, for a total of 32. Each of these drum pads, or locations to assign a sound, is referred to as a DRUM. However, there is one special case- the hihat. As explained earlier in the section about the hihat pad and slider, as the hihat slider is moved, playing the hihat pad will play one of 3 different hihat sounds- one for the closed hihat, one for a medium length hihat and one for an open hihat. So, because there are 3 sounds for the hihat, which is one of the 32 drums, there are actually 34 total sounds in memory at one time.

The above stated sampling times all refer to a sampling rate of 40 KHz. This is the only possible sampling rate in the MPC60, allowing the audio quality to be very high, because all audio circuitry is optimized for lowest noise and highest fidelity at this single sampling rate. Also, all audio outputs operate at the fixed 40 KHz clock rate, regardless of the tunings of the drums. Tuning is performed mathematically, <u>without distortion</u>, by the custom LSI sound chip. Using this method, all tuning, dynamic control, envelope control, and mixing is done in the digital domain, allowing for lowest noise and highest sound quality. The only analog circuitry in the outputs is the final digital to analog conversion.

In this section of the manual, you will learn to:

• Sample a new sound.
• Edit the start, end, envelope, or velocity characteristics of an existing sound.
• Cause two sounds to play when one pad is played, or to play one of two sounds depending on the velocity level.
• Play a sound in reverse.
• Tune the drums.
• Adjust the echo mixer.
• Assign the 8 ASSIGNABLE MIX OUTPUTS.
• Transfer sounds over Midi using MIDI SAMPLE DUMP.
• Select MASTER or SEQUENCE mode for the stereo or echo mixes.
• Set the MPC60 to remember all real time changes made to the stereo mixer and echo mixer, just like an automated mixer.
• Set the hihat decay slider thresholds.
• Trigger a drum from an external audio source.

The SOUNDS key provides access to all functions associated with the creation, editing and tuning of drum sounds. When the SOUNDS key is pressed, this screen appears:

```
=============== Sounds ================
1)Sample new sound  2)Edit a sound
3)Tune drums        4)Echo mixer
5)Assign ind. outs  6)Midi sample dump
7)Audio trigger     8)Mixer/hihat/other


Select option:
```

Press a single number to select one of the displayed options. The screens which follow are described in the following sections.

This section of the manual does not describe the process of loading or saving sounds to disk. To learn how to do these operations, consult the "Disk" section of this manual.

NOTE: As with all samplers, all sounds are lost when the power is removed. This means that you must load in sounds from a sounds disk every time the MPC60 is turned on, and you must save any edited or newly sampled sounds to disk, or the changes will be lost!

6.2 Sampling a new sound

This function is used to sample new sounds into your MPC60.

The SAMPLE NEW SOUND screen:

To access the screen used for sampling new sounds, press the SOUNDS key, then press `f to select the SAMPLE NEW SOUND option. This will cause the following preliminary screen to appear:

```
========== Sample New Sound ============
Drum:SNR1          Name:(Unused)
(All sequence memory and the existing
drum sound for the drum to be sampled
into will be erased! Are you sure you
want to Proceed?)
=========================================
<Proceed>
```

At this point, you must decide which drum you want to sample into, because once <proceed> is pressed, the drum you select <u>and all sequence memory</u> will be erased to provide maximum space for new sampling. If you have sequences or songs in memory which you do not want to lose, press the DISK key and then save them before proceeding. Move the cursor to the DRUM field to select the desired drum, then press <Proceed>, and the main sampling screen will appear:

```
========== Sample New Sound ============
Drum:HIHT-CLSD    Name:SOUND001
Length(sec): 5.3 Pre-Record(msecs):  1
Hear Input:YES    Fadeout (msecs):  100
Record level:99  Threshold%(T): 5
Meter:>>>>T>>>>>>>>>>>>>>>>

<Playback><Ready...>
```

All sampling is done while this screen is showing. A description of screen fields and soft keys follows:

• The DRUM field:
This is the drum you selected to be sampled into. This only exists to display the drum, and cannot be changed from this screen.

• The NAME field:
This is the new name for the sound to be sampled. A default name of "SOUNDXXX", with XXX being a unique 3 digit number, is automatically inserted here. Once a successful sample is recorded,

the new sound should be named in this field. To name it, use the same method of naming as used in naming a sequence:

> 1. Move the cursor to this field.
> 2. Turn the DATA CONTROL one step in either direction to change the keys to their alphabetic functions.
> 3. Type in the new name.
> 4. Press ENTER to enter the name and to return the alphabetic keys to their previous functions.

• The LENGTH(SECS) field:
This field is used to specify the total recording time to be allocated to the new sample, in seconds. When this screen is entered, the value displayed here is always the maximum available sound memory.

NOTE: Even though the MPC60 has a maximum of 13.1 seconds of sampling time (expandable to 26.2 seconds), the maximum for each sound is 5.0 seconds. Therefore, even if all 13.1 seconds of sampling memory is free, the maximum value this field will accept is 5.0.

• The PRE-RECORD(MSECS) field:
This field is used to specify a short duration of time which will be recorded before the record threshold is exceeded, so that the attack will not be truncated. Since this adds time to the beginning of the sample, it will cause the sound to be slightly delayed when played. To trim the start of the sample, use the EDIT A SOUND option from the initial SOUNDS menu screen. A good value for this field is 2 milliseconds.

• The HEAR INPUT field:
The signal from the sampling input is normally heard equally at the left and right stereo outputs, but only if this field is set to ON. If it is set to OFF, the sampling input is not heard at the stereo outputs.

• The FADEOUT(MSECS) field:
There is an envelope generator for each voice which is used to gradually decay the voice before it comes to its end. This field sets the amount of time over which that decay takes place. Since the decay will always end exactly at the end of the recording, this setting actually sets the position within the sound at which the decay will begin.

• The RECORD LEVEL field:
This controls a 99 level digital volume control for the sampling input. There is also a 3 position switch on the rear panel to select from 3 volume ranges.

• The THRESHOLD field:
This sets the threshold above which recording will begin once SOFT KEY 2, <Ready ...> has been pressed. Range is 0-99% of full scale. A good setting to start with is 5%.

• The METER field:

This is a simulation of an analog record level meter. While this screen is present, the meter is constantly displaying the level of the signal at the input. The threshold setting is represented by a "T". If the range is exceeded, "!!" is displayed to the right of the full scale meter to indicate clipping.

• SOFT KEY 1 - <Playback>:

Pressing this soft key causes the sound just sampled to be played at full volume.

• SOFT KEY 2 - <Ready ...>:

Pressing this soft key commands the MPC60 to begin recording as soon as the threshold is exceeded. When <Ready ...> is pressed, the lower two lines change to the following:

```
========== Sample New Sound ============
Drum:HIHT-CLSD    Name:SOUND001
Length(sec): 3.0 Pre-Record(msecs): 1
Hear Input:YES    Fadeout (msecs):   100
Record level:99   Threshold%(T): 5
Meter:
(Record light=ON when thrshold exceeded)
<Cancel>
```

As the seventh line states, the RECORD light will come on to indicate the threshold has been exceeded and recording is now in progress. Once the recording is completed, the previous two lower lines are re-displayed. If the <Cancel> soft key is pressed during this time, the "record ready" status is cancelled and the previous two lower lines are re-displayed.

An example of sampling a new sound:

The following is a step-by-step example of sampling a new drum sound:

1. Press the SOUNDS key, and the following menu will appear:

```
================ Sounds ================
1)Sample new sound  2)Edit a sound
3)Tune drums         4)Echo mixer
5)Assign ind. outs   6)Midi sample dump
7)Audio trigger      8)Mixer/hihat/other


Select option:
```

2. Select option 1, "Sample new sound", and the following screen will appear:

```
========== Sample New Sound =============
Drum:HIHT-CLSD      Name:(Unused)
(All sequence memory and the existing
drum sound for the drum to be sampled
into will be erased! Are you sure you
want to Proceed?)
=========================================
<Proceed>
```

3. You must now decide which of the 34 drums you want to sample the new sound into (31 normal drums plus 3 for the hihat). Use the DATA CONTROL to select one of the 34 drums. As you rotate the knob, the NAME field will display the current sound (if any) which is assigned to the displayed drum. If you select a drum which already contains a sound, that sound will be erased from memory to make room for the new sound you will be sampling.

As the warning states, once you press SOFT KEY 1, <Proceed>, not only will the displayed sound be erased (if one exists), but also THE ENTIRE SEQUENCE MEMORY WILL BE ERASED! This is necessary because the sequence memory is used as a temporary holding area for the newly sampled sound.

Once you have selected the drum to sample into, proceed to the next step by pressing <Proceed>, and the following screen will appear:

```
========== Sample New Sound =============
Drum:HIHT-CLSD      Name:SOUND001
Length(sec): 3.0 Pre-Record(msecs):   1
Hear Input:YES    Fadeout (msecs):  100
Record level:99   Threshold%(T): 5
Meter:

<Playback><Ready...>
```

This is the main sampling screen.

4. Move the cursor to the LENGTH(SEC) field and select the amount of recording time you want to use for your sample. All sampling is done at the full 40 KHz sampling rate- no other sampling rates are permitted (This allows the circuitry to be optimized for full bandwidth recording). The maximum sampling time will be determined by how much memory is currently available. If the maximum available sampling time is not enough for the sound you are sampling, you must first delete some existing sounds from memory. To do this, select the EDIT A SOUND option from the SOUNDS menu.

NOTE: Even though the MPC60 has a maximum total sampling time of 13.1 seconds (or 26.2 seconds if you have the memory expansion option), the maximum sampling time for a single sound is 5.0 seconds. If you are not sure how much time to use, use a little

more than you need, because you can always remove the unused portion later by using the EDIT A SOUND function. A good length for snare drums and toms is 1.0 to 1.5 seconds. A good starting length for cymbals is 1.5 to 3.0 seconds. To learn more about common sampling times for various drums, load one of the preset sounds disks, then inspect the various sampling times using the EDIT A SOUND function.

5. Move the cursor to the PRE-RECORD(MSECS) field and select a pre-record time of 1 millisecond or more. This is the amount of time which will be recorded before the record threshold is exceeded, preventing the attack of the sound from being cut off.

6. Move the cursor to the HEAR INPUT field. This selects whether or not the signal at the sampling input is heard in the stereo outputs. If you are sampling with a microphone in the same room as the speakers, select NO to avoid audio feedback. Otherwise, select YES to hear the incoming signal in the stereo mix.

7. Move the cursor to the FADEOUT(MSECS) field. This sets the amount of time it will take for the sample to fade down at the end of the sampling time. This eliminates the need to manually fade down the level at the end of the sample. Since the fadeout will always end exactly at the end of the sample, this setting actually sets the position within the sound at which the decay will begin. This setting may also be adjusted after sampling, both from this screen and the EDIT A SOUND screen. A good starting value for this field is 1/2 of the sampling time.

8. Move the cursor to the THRESHOLD field. This sets the audio level which must be exceeded before sampling starts. The range is 0 to 100% of the total input signal level. A good setting to start with is 5%. If the input signal has much background noise, you may need to increase this value. However, because of the PRE-RECORD feature, a high record threshold setting will not cause the attack of the sound to be cut off.

9. Connect the audio signal to the REC IN jack on the rear panel. Use a standard 1/4" phone jack here. However, this is a balanced input, so you may optionally connect a balanced signal if you have one. To connect a balanced signal, use a stereo (3 conductor) phone jack wired as follows:
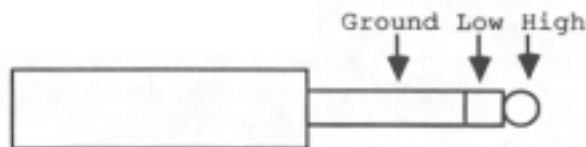
10. Now, let's set the record level. First, set the GAIN switch on the rear panel. For most applications, use the LO setting. Move the cursor to the RECORD LEVEL field and set the record level by adjusting the DATA CONTROL and watching the audio level

meter, displayed to the right of the METER field. Set the record level so that the meter goes as far to the right as possible when the sound plays, but not into the clipping region (indicated by "!!" to the right of the meter, if full level is exceeded). If the meter does not go high enough with a record level of 99, move the GAIN switch to MID or HIGH.

NOTE 1: During the time that the sample is being recorded, the audio meter does not function, so you must set the level before actually taking the sample.

NOTE 2: Tuning in the MPC60 is performed mathematically, <u>without distortion,</u> by the custom LSI sound chip. Although this method provides a substantial increase in functionality and sound quality, it also can cause a very noticeable distortion only if a sound which was <u>over-recorded</u> is tuned, but only at certain tuning settings. For this reason, it is very important to set the record level low enough that <u>no</u> clipping occurs, because even though the distortion may not be noticeable when sampled, it may be very noticeable at a different tuning.

11. Now that all the settings have been entered, you are ready to sample the sound. To do this, press SOFT KEY 2 - <Ready ...>. This will cause the MPC60 to prepare for sampling, and the lower two lines of the screen will change to the following:

```
========== Sample New Sound =============
Drum:HIHT-CLSD    Name:SOUND001
Length(sec): 3.0 Pre-Record(msecs): 1
Hear Input:YES    Fadeout (msecs): 100
Record level:99  Threshold%(T): 5
Meter:
(Record light=ON when thrshold exceeded)
<Cancel>
```

The MPC60 is now waiting for you to play the sound at the audio input.

12. Play the sound into the audio input. Sampling starts once the record threshold is exceeded at the audio input, indicated by the RECORD light turning on (in the PLAY/RECORD keys section). During the time that the sample is being recorded, the audio meter does not function, so you must set the level before actually taking the sample.

13. Now that the sound has been sampled, play it back by pressing the <Playback> soft key. You may want to take another sample, changing some of the above parameters first.

14. Once you are satisfied with your sample, move the cursor to the name field and give it a name. By default, a new name has been given to it: "SOUND001". The 3 digit number in this name is

always one higher than the last sample taken, even if the last sample was taken before the power was last turned off. This is done so that if you don't name your samples before saving them to disk, they will still always have unique names. To name the new sound:

> A) Move the DATA CONTROL either one step to the left or right. This will change the COMMAND keys to their LETTER functions.
> B) Type in the new name, followed by ENTER. The COMMAND keys will return to their normal functions.

15. Test how it sounds when tuned. Tuning in the MPC60 is performed mathematically, <u>without distortion</u>, by the custom LSI sound chip. Although this method provides a substantial increase in functionality and sound quality, it also can cause greater distortion only if a sound which was <u>over-recorded</u> is tuned. Further, this distortion will only occur at certain tuning settings. To test for this, select the tuning screen (SOUNDS key, option 4), and play the sound you have just sampled at various tunings. If you hear distortion, you must re-sample it at a lower level, following the above steps. If no distortion is heard, skip down to the next step.

16. It is a good idea to save your sound to disk now. IF YOU DON'T, THE SOUND WILL BE LOST WHEN YOU TURN THE POWER OFF! To save your sample to disk, first insert a formatted disk in the disk drive with enough space on it to hold your new sound, then press the DISK key, and the following screen will appear:

```
=============== Disk ==================
1)Save a sequence   2)Save all seqs/songs
3)Save a sound      4)Save all sounds
5)Save parameters   6)Load/erase/rename
7)Format disk       8)Copy a disk


Select option:
```

Select 3: SAVE A SOUND and the following screen will appear:

```
============== Save a sound ==============
Select sound to Save:       Drum:SNR1
Name:SOUND001               Size:   88K
Disk space available    (bytes): 324K


================================================
<Save it to disk>
```

The DRUM field will display the drum you have just sampled into, and the NAME field will display the full 16 character name you have just given to your sound. Press <Save it to disk> to save the sound to disk. For more information on saving sounds to disk, read the DISK section of this manual.

6.3 Editing an existing sound

This function is used to edit a drum sound in your MPC60. The available features are:

• Edit the sound name.
• Change the start or end address.
• Adjust the attack time or fadeout time.
• Adjust velocity control of start address, attack time, or volume.
• Cause a drum to automatically play when another is played, or to select between playing 2 sounds depending on the note velocity.
• Set the initial volume and tuning.
• Delete unused start and end portions of the sound.
• Reverse the sound.
• Delete the entire sound from memory. To edit an existing drum sound, press the SOUNDS key, then type 2 to select the EDIT A SOUND option, and the following screen will be displayed:

```
========= Edit a sound (page 1) =========
Drum:HIHT-OPEN       Name:HI_SHELL_TOM
============== Double play ==============
Also plays:HIHT    VelSw:ON  If over: 86
================= Data ==================
Volume%:100         Tuning:+ 60
Start (msec):    0  End(msec):1035
<Cutoff ends><Reverse> <Delete> <Page 2>
```

This is the first of two screens which together present for editing all parameters associated with each of the resident drum sounds. The fields and soft keys are:

• The DRUM field:
This field is used to select the drum (drum pad) which contains the sound to be edited. All other fields display the data for this drum.

• The NAME field:
This is the 16 character name of the sound currently residing in the displayed drum. This may be changed in the same way as sequence names are changed.

• The DOUBLE PLAY section:
This feature allows you to assign one drum to automatically play a second drum whenever the first one plays. Also, they allow a "velocity switch" feature - depending on the note velocity, one of two different sounds may play. Each of the three fields is described below:

• The ALSO PLAYS field:
This is a choice field and any of the 32 drums may be selected here, or "NONE" may be selected. Whatever drum is selected here will automatically play whenever the drum in the DRUM field is played. Normally this field is set to NONE, which defeats the double play feature.

• The VELSW (velocity switch) and IF OVER fields:
VELSW is a choice field with two options: ON and OFF. If set to OFF, the drum in the ALSO PLAYS field will <u>always </u>play when the drum in the DRUM field is played. If set to ON, either the drum's assigned sound of the drum in the ALSO PLAYS field will play, depending on the incoming velocity- if it is less than or equal to the value in the IF OVER field, only the drum's normally assigned sound plays; if it is greater than the value in the IF OVER field, only the drum in the ALSO PLAYS field will play.

Here are a few examples of how to use Double Play mode:

1. Making a snare drum sound fuller: Assign the snare to also play a tom. This will give the snare a deeper sound which could not be achieved with a single snare drum. Another idea is to load two snares into memory and assign one of them to automatically play both of them.

2. Stereo sample playback: DOUBLE PLAY can also be used as a very rudimentary way to play back samples in stereo. For example, here is how you would play a stereo snare drum sample:

    A) Sample the left side of a stereo snare drum recording into SNAREI and pan it left.
    B) Sample the right side of the same recording into SNARE2 and pan it right.
    C) Using Double play, assign the SNAREI to automatically play the SNARE2. Now whenever SNAREI plays, both sounds will play simultaneously in stereo.
    D) It may be necessary to trim the attack of one of the samples to synchronize the two sides.

3. Adding a "chorusing" effect to drums: Chorusing can be a very useful effect on ride and crash cymbals. For example, here is how to add chorusing to a ride cymbal:

    A) Load a ride cymbal sound from disk into RIDE1.
    B) Load the same ride cymbal sound from disk into RIDE2. The MPC60 will automatically recognize that the sound already exists in memory and

won't load it again, but will instead use the existing sound in memory for both drum pads.
C) Using Double play mode, assign RIDE2 to play whenever RIDE1 is played.
D) Using the TUNING field, tune RIDE1 to "+ 0" and tune RIDE2 to "+ 1".
E) Now, whenever you play RIDE1, RIDE1 and RIDE2 will each play the same ride cymbal sound, but at two slightly different pitches, causing a chorus effect.

• The VOLUME field:
This is an "initial volume" for the sound, which affects all outputs. It also serves as a convenient way to mix the assignable mix outputs, and a way to adjust the relative volume of the 3 hihat samples. The range is 1 to 200% and is initially set to 100%.

• The TUNING field:
This is an "initial tuning" setting for the sound. This setting is added to the setting in the TUNE DRUMS screen and the new TUN field in the STEP EDIT screen. For example, a TUNING setting of "+10", a TUNE DRUMS setting of "-6", and a Step edit TUN setting of "-20" would produce a final tuning for the note of -16 ("+10" plus "6" plus "-20" _ "-16"). This also provides a way to tune the three individual hihat sounds (CLSD, MEDM, and OPEN).

• The START field:
This is the address within the sound at which play starts, adjustable in one millisecond increments. Increasing this value will start the sound later into the sample, but will not delete the unused beginning of the sound from memory. However, the beginning may be deleted from memory by using the <Cutoff ends> soft key, described below.

• The END field:
This is the address within the sound at which play stops, adjustable in one millisecond increments. Decreasing this value will cause the sample to stop playing sooner, but will not delete the unused end of the sound from memory. However, the end may be deleted from memory by using the <Cutoff ends> soft key, described below.

• SOFT KEY 1- <Cutoff ends>:
Normally, the START and END settings are saved with each sound independently of the actually start and end addresses of the sample, allowing those unused ends to be used again later. The disadvantage of this feature is that these unused ends use extra memory. This soft key allows the unused start and end portions of the sample to be permanently deleted, thereby reducing the total size of the sample. To use this feature, press <Cutoff ends> and the following screen will appear:

```
============== Cutoff ends ==============
Press <Execute> to delete the unused
portion of the sound before the start or
after the end (if any exists) to save
memory. Press <Cancel> to cancel the
deletion and return to the previous
screen.
<Execute>   <Cancel>
```

As the screen warns, pressing <Execute> will permanently delete the
unused ends of the sound. To cancel the deletion, press <Cancel>.

NOTE: If a sound is currently loaded into more than one drum (for
example, a tom-tom is loaded into both TOM3 and TOM4 at two different
tunings) and you press the <Cutoff Ends> soft key, the truncation will not
occur. This is because the other drum which is also using this sound may
need the ends of the sound which you want to cut off. If this occurs and
you are still certain you want to cut off the ends, you must first delete the
sound from the other drums) which are using it.

• SOFT KEY 2- <Reverse>:
This function allows a sound to be reversed in memory, front to back.
Pressing this soft key causes the following screen to be displayed:

```
============ Reverse a sound ============
Drum:TOM1          Sound:HI_SHELL_TOM
Press <Execute> to reverse the sound in
memory. (This will affect all other
drums which use this sound.) Press
<Cancel> to return to the previous
screen.
<Execute>   <Cancel>
```

Pressing <Execute> will cause the sound to be reversed, front to back.
When complete, the previous screen is re-displayed. This is not an
irreversible operation- if you decide that you do not like the reversed
sound, you can re-reverse it back to the original sound.

NOTE: The reverse function does not change any of the other settings in
the EDIT A SOUND screen. For example, the contents of the START and
END fields are not exchanged after a <Reverse> operation.

NOTE 2: As the screen warns, a reverse operation will affect all drums
which are currently using this sound. This is because the actually sample
memory is being reversed. For example, if a single "tom tom" sound is
simultaneously loaded into TOM1, TOM2, TOMS, and TOM4 (at different
tunings) and you reverse the sound in the drum TOM1, then the reversed
sound will play in all four

drums because all four drums used that same sound, which is now reversed.

• SOFT KEY 3- <Delete>:
This soft key allows you to delete the currently displayed sound from memory. Pressing this soft key causes the following screen to appear:

```
============== Delete a sound ==============
Drum:TOM1              Name:HI_SHELL_TOM
Press <Execute> to delete the above
sound. The sound won't be deleted if it
is also loaded into another drum.


<Execute>   <Cancel>
```

Press <Execute> causes the sound to be deleted from memory. To cancel this function, press <Cancel>.

NOTE: If a sound is currently loaded into more than one drum (for example, a tom-tom is loaded into both TOMS and TOM4 at two different tunings) and you press the <Execute> soft key, the drum will no longer be assigned to this sound, but the sound will not be deleted from memory. This is because the other drum is still using the sound. To delete the sound from memory you must delete it from all other drums) which are using it.

• SOFT KEY 4- <Page 2>:
This soft key changes the screen to display the second page of parameters, which control envelope and velocity parameters. The DRUM and NAME fields, and the 4 soft keys, are the same as in page 1:

```
========= Edit a sound (page 2) =========
Drum:HIHT-OPEN       Name:HI_SHELL_TOM
================= Envelope ================
Attack(ms):    5     Fadeout(ms):    5
================= Velocity ================
Vel>start(ms):   5  Vel>attack(ms):   5
Vel>vol(0-100):127
<Cutoff ends><Reverse> <Delete> <Page 1>
```

The fields are:

• The ATTACK(MSECS) field:
This field controls the amount of time over which the sound will rise from silence to each note's velocity level, measured in milliseconds.

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• The `FADEOUT(MSECS)` field:
This field sets the amount of time over which the sound fades down to silence at its end, measured in milliseconds. This is different than common "initial decay" or "release" envelope parameters since the decay will always end exactly at the end of the sample, this setting actually sets the position within the sound at which the decay will begin. This field is identical to the field of the same name in the `SAMPLE NEW SOUND` screen.

• The `VEL>START(MS)` field:
This field allows the incoming note velocity to modulate the start address of the sound. This is very useful for simulating dynamics on drums because a drum sound played from a position after its start sounds very much like the same drum played softly. The contents of this field sets the maximum time (in milliseconds) which will be added to the contents of the `START` field. If the incoming velocity is 1, the entire contents of this field is added to the `START` field, causing the sound to start playing from a position after its initial attack; if the incoming velocity is 127, nothing is added to the `START` field, causing a faster attack time; and for velocities between l and 127, a proportional amount of the contents of this field is added to the `START` field.

• The `VEL>ATTACK(MS)` field:
This field allows the incoming note velocity to modulate the attack time of the sound. This is very useful for simulating dynamics on drums because a drum sound played with a soft attack time sounds very much like the same drum played softly. The contents of the field sets the maximum time (in milliseconds) which will be added to the `ATTACK` field. If the incoming velocity is 1, the entire contents of this field is added to the `ATTACK` field, causing a slower attack time; if the incoming velocity is 127, nothing is added to the `ATTACK` field, causing a faster attack time; and for velocities between 1 and 127, a proportional amount of the contents of this field is added to the `ATTACK` field.

NOTE: The `ATTACK, FADEOUT, VEL>START,` and `VEL>ATTACK` fields have maximum values which depend on the value of the sample length and the values set in the other fields.

• The `VEL>VOL(0-100)` field:
This field allows the incoming note velocity to modulate the volume level of the sound. A maximum setting of 100 is normal and produces full control of volume by the incoming note velocity setting. At the other extreme, a setting of 0 will cause the drum to play at full volume regardless of the note velocity.

NOTE: All of the parameters in the `EDIT A SOUND` screens are saved with the individual sound file except the `DOUBLE PLAY` parameters, which are saved within `SET` files.

6.4 Tuning the drums

Each of the 32 drums may be independently tuned over a 1 1/2 octave range, in .1 semitone increments. In addition to being very useful in adjusting the tone of a drum, some spectacular special effects can be created by tuning a sound by a large amount.

To tune the drums, press the SOUNDS key, then type 3 to select the TUNE DRUMS option, and the following screen will appear:

```
============= Tune Drums ===============
PRC1:+   0 PRC2:+   0 PRC3:+   0 PRC4:+   0
RID1:+   0 RID2:+   0 CRS1:+   0 CRS2:+   0
TOM1:+   0 TOM2:+   0 TOM3:+   0 TOM4:+   0
HIHT:+   0 SNR1:+   0 SNR2:+   0 BASS:+   0
Mode:SEQUENCE
=============================================
 <All=0>
```

This screen is used to adjust the tuning of any of the drums. The range is from "-120" (one octave down) to "+60" (one half octave up), adjustable in increments of. 1 semitone. No tuning change is indicated by +0. If the BANK 2 light is ON, the 2nd bank of drums is displayed. A description of each of the screen fields and soft keys follows:

• The PRC1 through BASS fields:
These are the current tuning settings for the first 16 drums. If the BANK 2 light is ON, the second bank of drums, DRO1 - DR16, is displayed. To change the tuning, press the desired drum's pad or move the cursor to the desired drum field and change the setting using the DATA CONTROL or NUMERIC KEYPAD. To change from + to -, turn the DATA CONTROL to the left until negative numbers appear; to change from - to +, turn the DATA CONTROL to the right until positive numbers appear.

• The MODE field:
This field has two options: SEQUENCE and MASTER. described below:

> 1. SEQUENCE:
> Each of the 99 sequences has its own set of tuning settings which is saved when the sequence is saved to disk. If SEQUENCE is selected here, this set of sequence tunings is used. This is useful if you want the tuning settings of all drums to automatically change as you select different sequences.

2.   MASTER:
In addition to the sequence tunings described above, there is also a single set of "master" tunings, which are not stored within any one sequence, and apply to all sequences. If MASTER is selected here, this single master set of tunings is used. It is better to use MASTER mode if you'd prefer the tunings to always stay where you last set them, even after changing sequences. This set of tunings is stored to disk when a ".SET" file is saved to disk, and therefore whenever a ".SET" file is loaded, the tuning settings from the disk file are loaded into the MASTER settings.

• SOFT KEY 1 - <All=0>:
Pressing this soft key resets all tunings to 0.

NOTE: The settings in this screen are added to the other tuning settings in the EDIT A SOUND and the STEP EDIT screens. For example, a TUNING setting of "+ 10" (in the EDIT A SOUND screen), a TUNE DRUMS setting of "-6", and a Step edit TUN setting of "-20" would produce a final tuning for the note of -16 ("+10" plus "-6" plus "-20" _ "-16"). However, the MPC60 automatically prevents the final added tuning from being higher than +6 semitones (+60) or below -12 semitones (-120). If the added tuning exceeds +60, the sound plays at +60; if the added tuning is lower than -120, the MPC60 plays -120.

6.5 The Echo Mixer

This function provides an additional 32 input mono mixer specifically intended as a send signal to a reverberation device. However, it may be used as an auxiliary mono mix for any purpose, or as a 9th individual mix output.

To adjust the echo mixer settings, press the SOUNDS key, then type 4 to select the ECHO MIXER option, and the following screen will be displayed:

```
============== Echo Mixer ==============
H  S  S  B  T  T  T  T  R  R  C  C  P  P  P  P
I  N  N  A  O  O  O  O  I  I  R  R  R  R  R  R
H  R  R  S  M  M  M  M  D  D  S  S  C  C  C  C
T  1  2  S  1  2  3  4  1  2  1  2  1  2  3  4
```

Changing the echo mixer setting is done in the same way as with the main stereo mixer, except without the pans - press the drum pad and turn the DATA CONTROL. As with the stereo mixer, if SOFT KEY 1 is pressed, the mixer changes to a mode in which the settings for all drums are changed simultaneously. Also, If the BANK 2 light is ON, the second bank of drums is displayed for adjustment.

The output of this mix appears at the rear panel ECHO MIX OUT jack. There is a OUTPUT LEVEL control next to the jack to adjust the overall level to accommodate different echo devices.

There are two echo return jacks (left and right) on the rear panel. These are intended to be used with the stereo outputs of the echo device. These two inputs are actually general purpose inputs to the left and right sides of the main stereo mixer, and therefore could be used to add any two signals to the stereo mix.

6.6 Assigning the 8 assignable mix outputs

There are 8 assignable mix outputs on the rear panel. Each may be assigned to output a single drum or any combination of the 32 drums. For those users who may at first consider eight individual outputs to be not enough for certain purposes, the following comments should help in getting the most usefulness from these outputs:

• These are not individual voice outputs (the MPC60 is a 16 simultaneous voice sampler), but rather individual mix outputs -each can contain <u>any combination </u>of the 32 drums, regardless of the tuning settings of the drums.
• One of the reasons for taking each drum into its own input on the console is to set a different echo send level for each drum. The MPC60's built-in echo mixer performs this task internally, and echo mixer changes can be set to occur automatically within a sequence.
• If the echo mixer is not being used, it may be used as a ninth individual mix output.
• Another reason for taking each drum into its own input on the console is to set a different EQ for each drum. Many will find that the 18 KHz bandwidth and low noise of the MPC60 will reduce the need for external EQ.

To assign which drums are sent to each of the 8 individual mix outputs, press the SOUNDS key, then type 5 to select the ASSIGN MIX OUTS option, and the following screen will appear:

```
======== Assignable Mix Outputs ========
PRC1:8      PRC2:8      PRC3:8      PRC4:8
RID1:6      RID2:6      CRS1:7      CRS2:7
TOM1:4      TOM2:4      TOM3:5      TOM4:5
HIHT:1      SNR1:2      SNR2:2      BASS:3
       (0 = no output assignment)
=============================================
```

To assign a drum to one of the outputs, move the cursor to the field of the desired drum and enter a number from 1 through 8 (to select output 1 through 8), or "0" if no assignment is desired for that drum. If the BANK 2 light is ON, the second bank of drums is displayed.

NOTE: The assignments of these 8 outputs are saved to disk when any SET file is saved, and when any SET file is loaded from disk, the existing settings are replaced by the settings contained in the SET file. Also, the assignments of these 8 outputs have no effect on the stereo mix or echo mix.

6.7 Transferring sounds over midi: Midi Sample Dump

The Midi Sample Dump standard is a format which manufacturers agree upon for transferring samples between sampling devices over midi. To use this feature, you must first connect the MPC60 to the external sampler using 2 midi cables ("closed loop" mode)- the MPC60 will not allow midi sample dump transfers using a single midi cable ("open loop" mode). To connect the MPC60 to the external sampler:

1. Connect one midi cable from one of the MPC60's MIDI OUT jacks to the external sampler's MIDI IN jack. It doesn't matter which one - you can select any one in the MIDI OUTPUT field described below.

2. Connect a second midi cable from the external sampler's MIDI OUT jack to the one of the MPC60's MIDI IN jacks (it doesn't matter which one - you can select either in one the MIDI INPUT field, described below).

Receiving and sending Midi sample dumps are individually described in the following two sections.

Receiving a Midi sample dump from an external sampler

To receive a Midi sample dump, press the SOUNDS key, then type 6 to select the MIDI SAMPLE DUMP option, and the following screen will appear:

```
======= Midi sample dump (Receive) =====
Midi input:2        Midi output:4
Format:STANDARD     Free mem(smpls): 412K
Drum:HIHT-OPEN      Name:Rock_hihats
  (Press <Receive> or start ext sampler)
======= Select sound to <Receive> ======
Request chan: 1     Request sound:32
<Receive> <Send/recv>
```

This is the "Receive sample dump" screen. The screen fields and soft keys are described below:

• The MIDI INPUT field:
This is the Midi input jack number (1 or 2) through which the sound data will be received. Set this field to the number of the midi input jack you used to connect to the external sampler.

• The MIDI OUTPUT field:
This is the Midi output jack number (1 - 4) through which the sound data
will be sent. Set this field to the number of the midi output jack you used
to connect to the external sampler.

• The FORMAT field:
This is a choice field and has 2 options: STANDARD and 5900. Select 5900
if you are transferring to or from an Akai 5900 sampler; use STANDARD
for any other sampler which supports the Midi Sample Dump standard.

NOTE: The MPC60 can not transfer samples to or from the Akai 5700
or 57000 samplers.

• The FREE MEM(SMPLS) field:
This field is not changeable- it displays the amount of memory, in
kilosamples, which is currently available to load new sounds into. You may
notice that this number is different than the number shown in the SOUND
MEMORY AVAILABLE field in the LOAD/ERASE/RENAME FILES
screen. This is because this screen shows the available memory in SAMPLES
(12 bits each) and the disk screen shows free memory in BYTES (8 bits
each). The number of available bytes is always 1 1/2 times the number of
available samples.

• The DRUM and NAME fields:
The DRUM field is used to select which drum (drum pad) the transferred
sound will load into. The NAME field shows the name of the sound which
is currently assigned to that drum. If a name appears in the NAME field,
the selected drum is currently in use, and will be overwritten when the
transfer is executed. If the name "unused" appears, the selected drum is
currently empty.

• The SELECT SOUND TO <RECEIVE> section:
When <Receive> is pressed, the MPC60 sends out a signal over midi to
request that the connected sampler start transmitting sample data. This
request contains two numbers, used to identify to the other sampler which
sample to transmit:

> • The REQUEST CHANNEL field:
> Since many samplers may be connected via midi at once, it is
> necessary to request only one sampler to send its data at a time. To
> select which sampler receives the "dump request" signal, set this
> field to the same midi channel number as the receive channel of the
> sampler you want to receive data from.
>
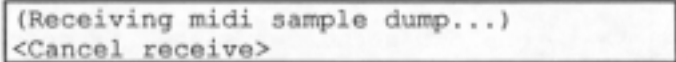> • The REQUEST SAMPLE field:
> Since a sampler normally holds many samples at one time, it is
> necessary to select which sample will be sent. The number in this
> field is used to tell the sampler which sample

to send. The range is 0 to 9999, although most samplers
contain only up to 128 samples.

• SOFT KEY 1 - <Receive> soft key:
Pressing this soft key starts the process of receiving an incoming sample
dump. At this point, the MPC60 sends out a "dump request" signal to the
external sampler to start sending the sample indicated by the setting of the
REQUEST CHAN field. If it receives a reply, it starts receiving the data,
and the 2 lower lines change to:

```
(Receiving midi sample dump...)
<Cancel receive>
```

The transfer may take as long as a few minutes. When finished, the
previous screen status will be re-displayed. If a transmission error occurs, or
if the sample dump is cancelled by the other sampler, the dump will be
cancelled and the previous screen will be re-displayed. If you wish to cancel
the sample dump, press the <Cancel receive> soft key.

NOTE: It is not necessary to press <Receive> to initiate an incoming
sample dump. If the MPC60 receives a sample dump at any time, it will
immediately display the "Receiving midi sample dump" message and load the
incoming sample dump into the drum selected in the DRUM field. In this
case, the REQUEST CHAN and REQUEST CHAN fields have no effect.
Further, if a sample dump is received while the SEND MIDI SAMPLE
DUMP screen is showing (described in the next section), the screen will
immediately change to the RECEIVE MIDI SAMPLE DUMP screen and
begin receiving the data. Also, the MPC60 responds to incoming sample
dumps on all channels- it doesn't matter what channel the incoming data is
sent on.

• SOFT KEY 2 - <Send/recv>:
Pressing this soft key causes the SEND MIDI SAMPLE DUMP
screen to be displayed, described in the next section. Pressing it again
returns to the RECEIVE screen.

Sending a Midi sample dump to an external sampler

To send a Midi sample dump to an external sampler, press the SOUNDS key, then type 6, then press SOFT KEY 2, <Send/recv>, and the following screen will appear:

```
======= Midi sample dump (Send) ========
Midi input:2        Midi output:4
Format:STANDARD     Send channel:16
(Start external sampler or press <Send>)

======= Select sound for <Send> ========
Drum:SNR1      ( 2) Name:Bright_crash_14"
<Send>     <Send/recv>
```
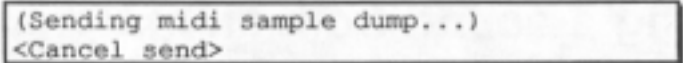
This is the "Send sample dump" screen. The screen fields and soft keys are described below:

• The MIDI INPUT, MIDI OUTPUT, and FORMAT fields:
These fields operate exactly as in the "receive" screen, described in the previous section.

• The SEND CHANNEL field:
When the sample dump is sent from the MPC60, it is sent over the midi channel specified in this field. For this reason, it is important to set this field to the same channel as the external sampler's midi receive channel.

NOTE: When an incoming "dump request" message is received, this field is automatically changed to the channel of the dump request message, and the dump is sent out on that channel.

• The SELECT SOUND TO <SEND> section:
The two fields in this section are only used if the send is initiated by pressing the <Send> soft key- if the send is initiated by an externally generated "dump request" message, the external sampler determines which sound will be sent. The DRUM field is used to select the sound to be sent. As you change the DRUM field, the NAME field changes to show the sound currently loaded into that drum. Also, to the right of the contents of the DRUM field is a number, used to indicate the internal sample number of the selected sound. When initiating the transfer from the external sampler, use these fields to view the number of the sound you wish to externally instruct the MPC60 to send.

• SOFT KEY 1- <Send>:
After the on-screen fields have been set as desired, pressing this soft key will cause the MPC60 to start sending the sample dump. At this point, the lower two lines of the screen will change to:

```
(Sending midi sample dump...)
<Cancel send>
```

The transfer may take as long as a few minutes. When finished, the previous screen status will be re-displayed. If a transmission error occurs, or if the sample dump is cancelled by the other sampler, the dump will be cancelled and the previous screen will be re-displayed. If you wish to cancel the sample dump, press the <Cancel send> soft key.

NOTE: It is not necessary to press <Send> to initiate the outgoing midi sample dump. If the MPC60 receives a "dump request" message from the external sampler at any time, it will immediately display the "Sending midi sample dump" message and begin sending the requested sound to the external sampler. (The DRUM field will immediately change to display the requested drum.) Further, if a sample dump is received while the "Receive midi sample dump" screen is showing (described in the previous section), the screen will immediately change to the "Send midi sample dump" screen and begin sending the data. Also, the MPC60 responds to incoming "dump request" messages on all channels- it doesn't matter what channel the incoming message is sent on.

• SOFT KEY 2 - <Send/recv>:
Pressing this soft key causes the "Receive midi sample dump" screen to be displayed, described in the previous section. Pressing it again returns to the "Send" screen.

6.8 Triggering a sound from an external signal-the Audio trigger

This feature of the MPC60 allows one of the internal drums to be triggered by an external audio signal. The triggering is nondynamic. If dynamic triggering, or triggering of more than one drum is needed, you must use a trigger to midi converter, available from many manufacturers, and trigger the drums over midi.

To select this feature, choose option 7, AUDIO TRIGGER, from the SOUNDS screen, and the following screen will be displayed:

```
==== Audio trigger (Use Sync input) ====

Plays drum:HIHT

(Triggering is only active while this
 screen is displayed)
------------------------------------------------
```

To use this feature, connect the triggering signal to the SYNC INPUT on the rear panel of the MPC60. The triggering signal can be any percussive sound, but best results will be achieved by using a signal of consistent dynamics and no background noise. The SYNC INPUT LEVEL control on the rear panel should be used to set the triggering threshold. The only field on this screen is the PLAYS DRUM field. This is used to select which of the 32 drums will play when the signal is received. Since the triggering is non-dynamic, the drum will always play at full volume.

NOTE: Triggering can only be done while this screen is showing, and therefore sequences can not be played while triggering is being done.

6.9 Mixer modes, What decay thresholds, muitipitch mode

Option 8 from the SOUNDS screen, "Mixer/hihat/other", displays a single screen which provides access to the following functions related to drum sounds:

• Setting the stereo mixer mode (SEQUENCE or MASTER).
• Setting the echo mixer mode (SEQUENCE or MASTER).
• Using the stereo mixer as an automated mixer, remembering all changes made while recording.
• Using the echo mixer as an automated mixer, remembering all changes made while recording.
• Setting the point at which the hihat decay slider switches to each of the 3 hihat sounds.
• Setting the midi controller number for the hihat decay.
• Setting the 16 LEVELS key to provide either 16 volume levels or 16 tunings ("mufti-pitch" mode).

To view this screen, press the SOUNDS key, and type an 8 to select the "Mixer/hihat /other" option, and the following screen will be displayed:

```
=============== Mixer modes ===============
Stereo mix:SEQUENCE   Rcrd live chngs:YES
Echo   mix:SEQUENCE   Rcrd live chngs:YES
==== Hihat decay switch thresholds =====
Closed/medium:43       Medium/open:110
=============== Other ================
Controller number for hihat decay:20
Function of "16 levels":16 TUNINGS
```

There are three sections to this screen:

The MIXER MODES section:

This section contains four fields:

• The STEREO MIX field:
The stereo mixer may be set in this field to one of two main modes:

1. SEQUENCE:
2. There is a set of stereo mix settings stored within each sequence. If the stereo mix mode is set to SEQUENCE, these internal settings are used. In this mode, all mixer settings and changes are stored to disk with the sequence, and when a new sequence number is selected, these settings are automatically loaded into the SEQUENCE mix settings.

3.   MASTER:
There is a single set of stereo mix settings which is not stored in
any sequence. If the stereo mix mode is set to MASTER, this
single set of mix settings is used instead of the sequence settings.
In this mode, mix settings and changes are not stored to disk
with the sequence, and if the sequence number is changed, the
mix settings remain unchanged. In this mode, any mid-sequence
mix changes (see RECORD LIVE CHANGES field, below), are
ignored. This option is preferable if you only want the stereo mix
to change when you manually change it, and not otherwise.
Further, the master settings are saved to disk whenever a SET file
is saved, and therefore whenever a SET file is loaded, the stereo
mix settings from that file are automatically loaded into the
master stereo mix settings.

• The ECHO MIX field:
The echo mixer may be set in this field to one of two main modes:
SEQUENCE and MASTER. The function of these two modes is
identical to that described above in the "Stereo mix mode" field.

• The RECORD LIVE CHANGES fields (2 fields):
There are two of these fields- one each for the stereo mixer and the echo
mixer. They will only appear on the screen if the corresponding MIX field
on the same line (STEREO MIX or ECHO MIX) is set to SEQUENCE.
RCRD LIVE CHNGS is an abbreviation for "record live changes" and these
are choice fields which have 2 options: NO and YES. If set to YES, all
changes made to the stereo mixer (or echo mixer) while in RECORD or
OVERDUB modes are recorded into the active track in real time, just like an
automated mixer. When played back, the mixer settings will change exactly
as they did while recording. Further, if either the stereo mixer or echo mixer
screens are displayed during playback, the graphic mixers will move in real
time to indicate the live changes. These movements are stored like any
continuous controllers- as a series of many discrete events (in this case,
MIXER VOL, MIXER PAN, or ECHO MIX VOL events), and these
discrete events can be edited in detail in Step edit mode.

NOTE 1: If you use OVERDUB mode to add mix changes to a region of
the track where previous mix changes exist, the old changes are not erased,
but rather the new changes will be added in between the old ones,
producing unpredictable results. For this reason, it is a good idea to record
your automated mix data on its own separate "drums" track, then always
use RECORD mode (not OVERDUB mode) to "punch-in" any mix
changes. This will automatically erase the old changes throughout the
punch-in region, but since the mix changes are on a separate track, any
drum notes are not erased.

NOTE 2: A large number of these mix change events can cause minor slowing of playback due to the large processing requirement. To reduce the number of these events, increase the MINIMUM CHANGE field's setting for these event types (in the MIDI INPUT FILTER screen) to as high a number as acceptable before recording mix changes. This will "thin-out" the mix data, lessening the processing requirement.

NOTE 3: As with any other mid-sequence control changes, these mix changes only take effect when played in a sequence. This means if you play a section of a sequence containing a specific controller event, the last played value of that controller will remain until another occurrence of the same controller is played, even if you stop the sequence and start playing it from another location. Because of this, whenever you use one of these events within a sequence, it is important to insert another event of the same type at the beginning of the sequence to set the controller to an initial value.

NOTE 4: The RCRD LIVE CHNGS field for the stereo mix will only appear if the STEREO MIX field is set to SEQUENCE. If set to MASTER, the field disappears is internally forced to NO. The same rule applies to the echo mixer.

The HIHAT DECAY SWITCH THRESHOLDS section:

The HIHAT is unique among the other drums in that one of three sounds is played depending on the setting of the HIHAT DECAY slider:
>   1. A closed hihat sound;
>   2. A medium decay sound; and
>   3. An open hihat sound.

These two fields determine the thresholds which separate the three regions. The range for each is 0 to 127, since this is the output range of the hihat decay slider. The default setting for CLOSED/MEDIUM is 42; the default setting for MEDIUM/OPEN is 110.

The "OTHER" section:

There are two fields in this section:

• The CONTROLLER NUMBER FOR HIHAT DECAY field: This field is used to assign which of the 127 midi controller numbers is used to transmit and receive hihat decay data. For example, to controller the hihat decay from a keyboard modulation wheel, set it

to 1; to control the decay from a midi keyboard's foot controller, set it to 4. Normally, this field is set to 20.

• The FUNCTION OF `16 LEVELS' field:
This field is used to determine the function of the front panel 16 LEVELS key. It is a choice field and has two options: 16 VOLUMES and 16 TUNINGS:

1. : If 16 VOLUMES is selected, the 16 LEVELS key will cause a single sound to play from all 16 pads, but at 16 fixed dynamic levels with the softest level on the lower leftmost pad and the loudest level on the upper rightmost pad.
2. If 16 TUNINGS is selected, the front panel key allows a specific drum to play at 16 chromatic tunings- one for each of the 16 pads, from -120 to +30, in increments of 1 semitone. If this mode is active and the pads are played while recording, these tunings are remembered within the sequence. After recording, the tuning of each note may be adjusted in Step edit mode. This is explained further in the Step edit section of this document.

NOTE 1: The 16 TUNINGS feature does not operate on the hihat.

NOTE 2: As explained in the section of the manual about sampling, the MPC60 performs its tuning all digitally without any distortion, but substantial distortion may be heard if a drum is tuned which was recorded at too high a level. This new mufti-pitch mode will make it more noticeable on many of your sounds because it instantly plays the drum at any of 16 tunings. The only solution to eliminate this distortion is to re-sample the problem sound at a lower level.

Section 7: Saving to and loading from disk

7.1 Overview

The MPC60 has a built-in 3 1/2" disk drive for storage of sequences and drum sounds. This section describes the procedure for saving and loading all of the various types of files. Since the MPC60 loses all sequence and sound data when the power is removed, it is important to always save any changes to disk before turning the power off.

The five different file types:

All sounds and sequences are stored to disk in things called "Files". All disks files used on the MPC60 use a 16 character file name, which you assign to the file when it is saved to disk. In addition, there is a three letter "file extension" which is used to differentiate file types. The five types of files (and file name extensions) are:

1.   "SAMPLE FILE_NAME.SEQ": This file contains a single sequence.
2.   "SAMPLE FILE NAME.ALL": This file contains all 99 sequences and all 20 songs.
3.   "SAMPLE_FILE_NAME.SND": This file contains a single drum sound.
4.   "SAMPLE-FILE-NAME. SET": This file contains all 32 drum sounds.
5.   "SAMPLE-FILE-NAME. PAR: This file contains all settings which are normally retained with power removed but which are not saved within any other file.

Before proceeding, here are a few important points to be aware of:

• When new disks are purchased, they are not formatted. Before using the disks, you MUST format each one using the FORMAT DISK option from the disk menu.
• The 3 1/2" disks used in the MPC60 should be DOUBLE SIDED only, as SINGLE SIDED disks may cause disk errors.
• NEVER REMOVE A DISK FROM THE DISK DRIVE WHILE THE LIGHT ON THE FRONT OF THE DISK DRIVE IS ON!

To access the disk functions, press the DISK key and the following screen will appear:

```
================= Disk =================
1)Save a sequence   2)Save all seqs/songs
3)Save a sound      4)Save all sounds
5)Save parameters   6)Load/erase/rename
7)Format disk       8)Copy a disk


Select option:
```

This screen displays a list of disk options. To select one, type the number of the desired option. Each of the options are described in detail in the following sections.

7.2 Saving a sequence

This function saves a single sequence to a disk file, called a "sequence" file (the 3 letter file extension is "SEW"). From the disk menu screen, type 1 to select SAVE SEQUENCE and the following screen will appear:

```
============ Save Sequence =============
Select Sequence to Save:
00-ROGER's_SONG              Size:    1K
Disk space available  (bytes):    24K


------------------------------------------
<Save it to disk>
```

To save a sequence file:

1. Select the sequence number to be saved using the SELECT SEQUENCE TO SAVE field. The active sequence is automatically inserted here when this screen is first displayed. This may be changed with the numeric keypad or the DATA CONTROL. The disk file name will be created from the sequence name. There are two on-screen fields to determine whether there is enough space on disk to save the file: SIZE and DISK SPACE AVAILABLE. SIZE displays the size (in bytes) of the selected sequence; DISK SPACE AVAILABLE displays the available space (in bytes) on the disk currently inserted in the disk drive. The sequence size should be smaller than the disk space available for the file to fit on the disk.

2. Press SOFT KEY 1, <Save it to disk>, to save the sequence file to disk. The file extension of sequence files is "SEQ". After the file is saved, the "Save Sequence" screen remains so that you can save another sequence.

NOTE: If you attempt to save a file to a disk which already contains a file of the same name, the lowest 2 lines of the screen will change to the following:

```
FILE ALREADY EXISTS. OVERWRITE IT?
<Yes>        <No>
```

If you press SOFT KEY 1, <Yes>, the existing disk file will be overwritten by the file you are saving. If you press SOFT KEY 2, <No>, the save operation is cancelled and the previous screen is redisplayed.

7.3 Saving all sequences and songs

This function saves all 99 sequences and all 20 "songs" to disk in one file, called an "All" file (the 3 letter file extension is ".ALL"). From the disk menu screen, type 2 to select "SAVE ALL SEAS/SONGS" and the following screen will appear:

```
====== Save All Sequences & Songs ======
Name "ALL" file to Save:
ALL_SEQS                    Size:    1K
Disk space available  (bytes):   24K


------------------------------------------
<Save it to disk>
```

To save an "All" file:

1. Assign the 16 character name for the "All" file to be saved. To name the file, use the same method as used to name sequences:

      A) Rotate the DATA CONTROL one step in either direction to change the alphabetic keys to their letter functions.
      B) Type in the new name, followed by ENTER.

There are two on-screen fields to determine whether there is enough space on disk to save the file: SIZE and DISK SPACE AVAILABLE. SIZE displays the size (in bytes) of the "All" file; DISK SPACE AVAILABLE displays the available space (in bytes) on the disk currently inserted in the disk drive. The "All" file should be smaller than the disk space available for the file to fit on the disk.

2. Press SOFT KEY 1, <Save it to disk>, to save the sequence file to disk. The file extension of "All" files is ".ALL". After the file is saved, the "Save all sequences & songs" screen remains so that you can save another file.

NOTE: If you attempt to save a file to a disk which already contains a file of the same name, the lowest 2 lines of the screen will change to the following:

```
FILE ALREADY EXISTS. OVERWRITE IT?
<Yes>      <No>
```

If you press SOFT KEY 1, <Yes>, the existing disk file will be overwritten by the file you are saving. If you press SOFT KEY 2, <No>, the save operation is cancelled and the previous screen is redisplayed.

7.4 Saving a drum sound

This function saves a single drum sound to a disk file, called a "sound" file (the 3 letter file extension is "SND"). From the disk menu screen, type 3 to select SAVE A SOUND and the following screen will appear:

```
============= Save a Sound =============
Select sound to Save:      Drum:HIHT-CLSD
Name:ROCK_HIHAT_THICK        Size:   23K
Disk space available     (bytes):   24K


=========================================
<Save it to disk>
```

To save a drum sound:

1. Select the sound to be saved using the DRUM field. As you change the drum, the NAME field will change to reflect the sound contained in the selected drum. The disk file name will be created from the sound name.

There are two on-screen fields to determine whether there is enough space on disk to save the file: SIZE and DISK SPACE AVAILABLE. SIZE displays the size (in bytes) of the selected sound; DISK SPACE AVAILABLE displays the available space (in bytes) on the disk currently inserted in the disk drive. The sound size should be smaller than the disk space available for the file to fit on the disk.

2. Press SOFT KEY 1, <Save it to disk>, to save the sound file to disk. The file extension of sound files is "SND". After the file is saved, the "Save a Sound" screen remains so that you can save another sound.

NOTE: If you attempt to save a file to a disk which already contains a file of the same name, the lowest 2 lines of the screen will change to the following:

```
FILE ALREADY EXISTS. OVERWRITE IT?
<Yes>      <No>
```

If you press SOFT KEY 1, <Yes>, the existing disk file will be overwritten by the file you are saving. If you press SOFT KEY 2, <No>, the save operation is cancelled and the previous screen is redisplayed.

7.5 Saving all drum sounds

This function saves all 34 drum sounds to disk in one file, called a "SET" file (the 3 letter file extension is "SET").

NOTE: If your MPC60 has the standard amount of sound memory (13.1 seconds), saving a SET file when the sound memory is 100% full will require nearly all of one disk! For this reason, it is a good idea to use empty disks when saving very large SET files. If your MPC60 contains the sound memory expansion option, be sure to read the section below entitled "If your MPC60 has the sound memory expansion option".

From the disk menu screen, type 4 to select SAVE ALL SOUNDS and the following screen will appear:

```
============ Save All Sounds =============
Name "SET" file to Save:
ALL_SNDS                    Size: 711K
Disk space available (bytes): 724K


==========================================
<Save it to disk>
```

To save a SET file:

1. Assign the 16 character name for the SET file to be saved. To name the file, use the same method as used to name sequences:

> A) Rotate the DATA CONTROL one step in either direction to change the alphabetic keys to their letter functions.
> B) Type in the new name, followed by ENTER.

There are two on-screen fields to determine whether there is enough space on disk to save the file: SIZE and DISK SPACE AVAILABLE. SIZE displays the size (in bytes) of the SET file; DISK SPACE AVAILABLE displays the available space (in bytes) on the disk currently inserted in the disk drive. The SET file should be smaller than the disk space available for the file to fit on the disk.

2. Press SOFT KEY 1, <Save it to disk>, to save the sequence file to disk. The file extension of SET files is "SET". After the file is saved, the "Save All Sounds" screen remains so that you can save another file.

NOTE: If you attempt to save a file to a disk which already contains a file of the same name, the lowest 2 lines of the screen will change to the following:

```
FILE ALREADY EXISTS. OVERWRITE IT?
<Yes>      <No>
```

If you press SOFT KEY 1, <Yes>, the existing disk file will be
overwritten by the file you are saving. If you press SOFT KEY 2,
<No>, the save operation is cancelled and the previous screen is
redisplayed.

If your MPC60 has the sound memory expansion option:

Normally, your MPC60 may contain up to 13.1 seconds of sampling time at
full bandwidth. If you have the SAMPLING MEMORY EXPANSION
OPTION, the maximum sampling time is 26.2 seconds at full bandwidth. If
your MPC60 contains this sound memory expansion board, it will be
possible to have a SET file which is much larger than will fit on one disk. In
fact, if your expanded memory is 100% full with drum sounds, it will require
nearly all of two disks to save a single SET file! If you are attempting to save
a very large SET file to disk, it must be split between two files, one on each
disk. The first file will have the extension "ST1" and the second file will have
the extension "ST2". To save one of these large SET files, use the following
procedure:

1. Prepare two blank formatted disks and insert the first disk in the drive.
2. Follow the steps for saving a SET file, even though the SIZE field is
    greater than the DISK SPACE AVAILABLE field. The first of two
    files will be created using the file extension "ST1".
3. Once the first disk has been filled, a message will appear on the screen
    asking you to insert the second disk in the drive. Press SOFT KEY 1,
    <Save 2nd part. The second file will be created using the extension
    "ST2".
4. Keep these two disks together, because they will always be loaded
    together.

7.6 Saving a Parameter file

The settings of most of the MPC60's data fields which are not normally saved to disk are retained after power is removed, so that you don't have to set them again every time you turn the power on. This function allows you to save a special file called a "Parameter file" (file extension: "PAR") which contains the current settings of these data fields.

The following is a list of the data fields which are retained after power is removed, and which are saved within parameter files:

(Play/record screen)
• Solo mode on/off
• 8 character names for all 64 midi channels

(Locate screen)
• Markers A, B, and C

(Tempo screen)
• Tempo source select
• Master tempo
• BPM/FPB
• Frames/sec
• Tap averaging

(Sync screen)
• Sync input mode
• Shift sync early
• Midi input select
• 1/4 note click sync starts at current bar / bar 1
• Sync output mode FSK24/PULSE96
• Midi clock output 1/2/3/4/off

(Generate SMPTE screen)
• Starting SMPTE number

(Mid-sequence tempo changes)
• Tempo changes on/off

(Create new sequence screen)
• Time signature
• Number of bars
• Loop on/off
• Loop bar
• Tempo
• Midi channel, output port assignments for 99 tracks

(Step edit options screen)
• Event to be inserted
• Auto step increment on key release on/off
• Duration of recorded notes
• Display filter settings for all midi events and all 128 midi controllers

(Midi key, screen 1)
• Midi input filter: "Pass event" and "Min change" settings for all midi events and controllers
• Velocity mode normal/fixed
• Fixed velocity
• Midi soft thru on/off
• Default channel
• Sustain pedal processing on/off

(Midi key, screen 2)
• Incoming notes play drums on/off
• 128 assignments for incoming note numbers to drums
• Drum data sent out: none / notes only / notes,mix,tune
• 128 assignments for outgoing drums to note numbers
• Midi drums channel

(Midi key, screen 3)
• Midi in, out
• Unit
• Unit channel (for each of 2 units)
• "Plays" (for each of 16 trigger inputs)
• Sensitivity (for each of 16 trigger inputs)
• Trigger (for each of 16 trigger inputs)
• Capture time (for each of 16 trigger inputs)
• Recovery time (for each of 16 trigger inputs)
• "On" time (for each of 16 trigger inputs)
• Velocity curve (for each of 16 trigger inputs)
• Midi channel (for each of 16 trigger inputs)

("Other" screen)
• Click volume, rate, click in play on/off
• Foot switch 1 and 2 assignments

(2nd sequence screen)
• 2nd sequence number

(Auto punch screen)
• Auto punch in, out
• Last punch in, out

(Erase screen)
• Erase filter settings for all midi events and all 128 midi controllers

(Timing correction screen)
• Note value
• Shuffle
• Shift timing (later/earlier)
• Shift amount

(Drum mix screen)
• Master stereo mix settings (32)

(Sample new sound screen)
• Default drum to sample into or edit
• Default 3 digit number for new samples
• Sample length
• Pre-record time
• Default fadeout time
• Hear input on/off
• Record level
• Record threshold

(Tune drum screen)
• Master tuning settings (32)
• Tuning mode master/sequence

(Echo mix screen)
• Master echo mix settings (32)

(Assignable mix outs screen)
• Assignable mix outs settings (32)

(Midi sample dump screen)
• Midi input port
• Midi output port
• Dump format standard/5900
• Dump request sample number
• Dump request channel number

(Drum trigger screen)
• Select drum

(Auto mix, etc. screen)
• Stereo mixer mode: master/sequence
• Stereo mixer record live changes on/off
• Echo mixer mode: master/sequence
• Echo mixer record live changes on/off
• Hihat decay closed/medium switch threshold
• Hihat decay medium/open switch threshold
• Controller number for hihat decay
• Function of "16 levels"

Select option 5 from the disk screen to display the SAVE
PARAMETER FILE screen:

```
============ Save Parameters ============
Name "PAR" file to save:
PARAMS                     Size:2K
Disk space available (bytes):701K



========================================
<Save it to disk>
```

To save a parameter file:

1. Assign the 16 character name for the parameter file to be saved. To name the file, use the same method as used to name sequences:

      A) Rotate the DATA CONTROL one step in either direction to change the alphabetic keys to their letter functions.
      B) Type in the new name, followed by ENTER.

There are two on-screen fields to determine whether there is enough space on disk to save the file: SIZE and DISK SPACE AVAILABLE. SIZE displays the size (in bytes) of the file; DISK SPACE AVAILABLE displays the available space (in bytes) on the disk currently inserted in the disk drive. The parameter file should be smaller than the disk space available for the file to fit on the disk.

2. Press SOFT KEY 1, <Save it to disk>, to save the sequence file to disk. The file extension of parameter files is "PAR". After the file is saved, the "Save Parameters" screen remains so that you can save another parameter file if desired.

NOTE: If you attempt to save a file to a disk which already contains a file of the same name, the lowest 2 lines of the screen will change to the following:

```
FILE ALREADY EXISTS. OVERWRITE IT?
<Yes>      <No>
```

If you press SOFT KEY 1, <Yes>, the existing disk file will be overwritten by the file you are saving. If you press SOFT KEY 2, <No>, the save operation is cancelled and the previous screen is redisplayed.

7.7 Loading, erasing or renaming files

This function is used to either load, erase or rename any files on the currently inserted disk. In the case of a load, depending on the file extension, subsequent screens will guide you to load the file into the proper place.

From the disk screen, type **6** to select LOAD/ERASE/RENAME and the following screen will be displayed:

```
===== Load/view/erase/rename files =====
Select file, then press <Load file>:
File:SYSTEM.ALL          Size:   26K
----------------------------------------
Sequence memory available (bytes):   3K
Sound memory available    (bytes):   3K
----------------------------------------
<Load it><Erase it><Rename it>
```

To select a file for either loading, erasing or renaming, use the DATA CONTROL. For every click of the DATA CONTROL, a different file from an alphabetical list of files on the disk will be displayed in the FILE field, with its size (in bytes) displayed in the SIZE field. In the lower half of the screen are two fields showing the available memory in both the sequence memory and the sound memory. By comparing the file size to the available memory, you will be able to see if there is enough space available to load the selected file.

Loading files:

• If a SEQ file is selected and <Load it> is pressed, the following screen will be displayed, asking you to select the sequence number to load the file into:

```
====== Load a sequence file (.SEQ) =====

Sequence number to load into: 1




<Load file>
```

Select the sequence number to load the file into, then press <Load file>. The lowest numbered empty sequence is selected by default. After the file is loaded, the previous screen is re-displayed.

• If an ALL file is selected and <Load it> is pressed, the following screen will be displayed, warning you that all sequences and songs currently in memory will be erased:

```
==== Load all seqs and songs (.ALL) ====

This will erase all sequences and songs
currently in memory!




<Load file>
```

Press <Load file> to load it. Once finished, the previous screen will be re-displayed.

• If a SND file is selected and <Load it> is pressed, the following screen will be displayed, asking you to select the drum to load the sound into:

```
======= Load a sound file (.SND) =======

Drum to load into:BASS




<Load file>
```

Select the drum to be loaded into, then press <Load file>. Once loaded, the previous screen will be re-displayed.

NOTE: If the sound file you are loading already exists in memory (assigned to a different drum), the MPC60 recognizes that it is already in memory and doesn't load it. Instead, it internally assigns the existing sound to the two drum pads to save memory. This is very useful, for example, if you want to play a single tomtom sound from four pads at different pitches, without wasting memory by loading the same tom-tom sound four times.

• If a SET file is selected and <Load it> is pressed, the following screen will be displayed, asking you if you want to load the entire file or only a single sound from it:

```
============== Load SET file ============
1) Load entire file. (This will erase all
   sounds currently in memory!)
2) Load one sound from the set file.



Select option:
```

If 1 is selected, the entire file is loaded, and the bottom line changes to "Loading files...". However, if 2 is selected, the following screen appears:

```
===== Load one sound from set file =====
Select drum to load from file:HIHT-OPEN
Sound:FLATULANT_DRUM      Size:   35K

Select drum to load into:HIHT-OPEN
Sound memory available (bytes): 241K
========================================
<Load it>
```

Use the DATA CONTROL in the SELECT DRUM TO LOAD FROM FILE field to select the drum (within the SET file) containing the sound you wish to load. As you change this field, the sound which is assigned to that drum in the disk file will appear in the SOUND field. Then use the SELECT DRUM TO LOAD INTO field to select the drum (in the MPC60) to load the sound into. Once the fields have been set, press <Load it> and the selected sound will be loaded into the selected drum.

NOTE: If the SET file contains a sound loaded into more than one drum, the same sound will appear if either drum is selected. For example, "FLOOR TOM" could be loaded into both TOMS and TOM4, but the settings from the EDIT A SOUND screen (including tuning, envelope parameters, etc.) for TOM3 and TOM4 are different. In this case, selecting TOMS in the SELECT SOUND TO BE LOADED field will load the sound "FLOOR TOM #3", but with the EDIT A SOUND settings which were originally set for TOM3.

After the file has been loaded, the LOAD/ERASE/RENAME screen will be re-displayed.

If a parameter file is selected and <Load it> is pressed, the following screen will be displayed,

```
===== Load a Parameter File (.PAR) =====

This will replace all existing system
parameters! (These are the parameters
which are normally retained while power
is off.)
================================================
<Load file>
```

As the screen warns, loading this file will replace all existing system parameters with the newly loaded file's settings. To load the file, press <Load it>. After loading, the previous screen will be redisplayed.

Erasing files

• If <Erase it> is pressed, the following warning screen is presented, asking you to verify that you want to erase the selected file:

```
=============== Erase a file   =============

Erase the file:MY_SONG.SEQ ?




<Erase it>
```

If you are sure, press <Erase it>, and the file will be erased permanently from the disk. Once erased, the previous screen is redisplayed.

Renaming files

• If <Rename> is pressed, the following screen is displayed:

```
               Rename a file

Rename the file:MY_FAVORITE_SONG.SEQ
to the new name:MY SONG            .SEQ



<Rename it>
```

The upper line shows the current name of the file. The cursor rests in the lower line, waiting for you to enter the new name. To enter the new name, use the same method as in naming a sequence:

      1. Turn the DATA CONTROL one step to change the
         alphabetic keys to their letter functions.
      2. Type in the new 16 character name, followed by ENTER.

Once the new name has been entered, press <Rename it>. The file name
on the disk will be changed to the newly entered name. Once complete,
the previous screen is re-displayed.

NOTE: If you rename a "SEQ" file, then load it into one of the 99
sequences, the original sequence name (in the sequence name field) will
NOT have changed. Only the disk *file* name is changed by the rename
process- the internal sequence name remains unchanged. The same rule
holds true for "SND" files- if you rename a "SND" file, then load it into
one of the 32 drums, the original sound name will NOT have changed. For
this reason, if you want to rename a sequence or sound file, it is better to
load the file into memory then change its name while in memory (using the
sequence name or sound name fields), then save the renamed sequence or
sound back to disk.

7.7.1 Files which automatically load on power-up

It is possible to create an "ALL" file or a ".SET" file (all sequences or all
sounds) which automatically loads into memory when the power is turned
on. For example, each of the four disks included with your MPC60
automatically load a set of sounds and a collection of demonstration
sequences if inserted into the disk drive before the power is turned on.
There are two types of files which can auto-load on power-up:

1.   SET files:
To auto-load a SET file, just place the disk containing it into the disk
drive before turning the power on. The MPC60 will automatically load a
SET file on the currently inserted disk when the power is turned on.

Note: If more than one SET file exists on the currently inserted disk when
power is turned on, the MPC60 will load the first one it finds.

2.   ALL files:
To auto-load a ALL file, you must change its name to "SYSTEM.ALL",
then insert the disk containing this file into the drive before turning the
power on. When power is applied, the MPC60 searches the inserted disk
for a file of this name and if it finds it, it loads only this SYSTEM.ALL
file.

7.8 Formatting a disk

This function is used to format a new disk or to completely erase an existing disk. ALL DISKS MUST BE FORMATTED BEFORE THEY CAN BE USED IN THE MPC60! To use this function, from the disk screen, type a 7 to select the FORMAT DISK option, and the following screen will appear:

```
=============== Format disk ==============

(This will erase the entire disk!)



==============================================
<Format it>
```

To format the disk currently in the drive, press <Format it>. This will take about 1 1/2 minutes. Once complete, the previous screen will be re-displayed. It is a good idea to format a large number of disks and set them aside to have them ready when you need them. Otherwise, every time you want to save a file to a new disk, you must first take the time to format the disk.

7.9 Copying an entire disk

This feature permits an entire MPC60 disk to be copied. This provides an easy way to backup your data disks. To copy a disk, have both your original disk and a blank formatted disk available and select option 8 from the disk menu. The following screen will appear:

```
=============== Copy a disk ===============
THIS WILL ERASE ALL SEQUENCES IN MEMORY!
Are you sure you want to copy a disk?



==========================================
<Yes, proceed>
```

The disk copy function requires the use of the sequence memory and therefore will erase all existing sequences before making the copy. Press <Yes, proceed> to proceed with the copy and the following screen will appear:

```
=============== Copy a disk ===============
Insert disk to be copied FROM, then
press <Proceed>.



==========================================
<Proceed>
```

When you see this screen, insert the original disk in the disk drive and press <Proceed>. The bottom line will then display the message "Copying source disk. Please wait...". When it has copied as much as it can fit in memory, it says:

```
=============== Copy a disk ===============
Insert disk to be copied TO, then
press <Proceed>.



==========================================
<Proceed>
```

Now, remove the original disk and insert the blank formatted disk, then press <Proceed>. The bottom line will change to "Writing to destination disk. Please wait...". If all the disk data has not been copied, the cycle of inserting the source, then the destination disks will be repeated until all data is copied. When finished, the DISK menu will be re-displayed.

7.10 "Attention" messages encountered during disk operations:

There are a number of special "Attention" screens which will appear during disk operations if either the operator is doing something incorrect, or an error is detected on the disk. Here is an example:

```
=============== Attention! ===============

  This disk is either not formatted or
  is bad. Either format it or use a
  different disk. (Error# 30CD)


<Abort>
```

When an "Attention" screen such as this is displayed, the current operation is suspended, awaiting an action from the operator. In each case, the problem is described, a suggested solution is given, and a special technical error code is given (This is to help the service technician over the phone, should a problem arise). Also, one soft key usually exists to allow a path to proceed.

7.11 The "Save warning" light (above the DISK key)

Whenever you sample a new sound, or record a new sequence or song, or edit any of the above, the light above the DISK key will go on to warn you that if you don't save these changes to disk before turning the power off, you will lose them.

Once you save to disk whatever you have changed, the DISK light will automatically go off, indicating that the changes have been safely saved to disk.

NOTE: If you would like to manually turn the light off without saving the changes, press the DISK key and type a 9. This will turn the light off, even though this option is not printed in the disk menu.

Section 8:
Syncing to tape and other devices

8.1 Overview

This section encompasses all functions in the MPC60 which are related to syncing to tape or other devices. In this section, you will learn to:

• Use the SYNC screen.
• Write and sync to SMPTE time code.
• Sync to Midi Clock signals.
• Sync to Midi Time Code.
• Sync to FSK and PULSE sync codes.
• Sync to 1/4 note clicks.

8.2 The SYNC screen

To access the SYNC screen, press the TEMPO/SYNC key, then press the <SyncScreen> soft key. The following screen will be displayed:

```
========= Sync input settings ==========
Mode:OFF



========= Sync output settings =========
Mode:FSK24              Midi clock:OUT4
<GenSMPTE>
```

This screen presents all parameters related to syncing to tape or external devices. However, additional data fields will appear in the SYNC INPUT SETTINGS section depending on the selected sync input mode (the MODE field in the second line of the screen). In the above example, the MODE field is set to OFF, indicating that the MPC60 is ignoring all types of incoming sync signals. This field is a choice field and has 7 options besides OFF, and each one presents additional on-screen fields. The 7 options are FSK24, PULSE96, MIDI CLOCK, MIDI CLOCK WITH SONG POINTER, MIDI TIME CODE, SMPTE, and U4 NOTE CLICKS.

Here is the screen which is displayed when the MODE field is set to SMPTE:

```
========= Sync input settings ==========
Mode:SMPTE
Sequence starts at SMPTE#:00:00:00:00.00
SMPTE accuracy:EXACT

========= Sync output settings =========
Mode:FSK24              Midi clock:OUT4
<GenSMPTE>
```

The following screen is displayed if MIDI TIME CODE is selected in the MODE field:

```
========= Sync input settings ===========
Mode:MIDI TIME CODE
Sequence starts at SMPTE#:00:00:00:00.00
SMPTE accuracy:BEFORE V2.0      Midi in:2

========= Sync output settings =========
Mode:FSK24              Midi clock:OUT4
<GenSMPTE>
```

If MIDI CLOCK is selected in the MODE field, the following screen is displayed:

```
========= Sync input settings ===========
Mode:MIDI CLOCK
Shift sync early(ms): 0  Midi in:2


========= Sync output settings =========
Mode:FSK24                Midi clock:OUT4
<GenSMPTE>
```

If MIDI CLOCK W/SONG POINTER is selected in the MODE field, the following screen is displayed:

```
========= Sync input settings ===========
Mode:MIDI CLOCK W/SONG PNTR
Shift sync early(ms): 0  Midi in:2


========= Sync output settings =========
Mode:FSK24                Midi clock:OUT4
<GenSMPTE>
```

If FSK24 is selected in the MODE field, the following screen is displayed:

```
========= Sync input settings ===========
Mode:FSK24
Shift sync early(ms): 0


========= Sync output settings =========
Mode:FSK24                Midi clock:OUT4
<GenSMPTE>
```

If PULSE96 is selected in the MODE field, the following screen is displayed:

```
========= Sync input settings ===========
Mode:PULSE96
Shift sync early(ms): 0


========= Sync output settings =========
Mode:FSK24                Midi clock:OUT4
<GenSMPTE>
```

Finally, if 1/4 NOTE CLICKS is selected in the MODE field, the following screen is displayed:

```
========= Sync input settings ==========
Mode:1/4 CLICKS
Shift sync early(ms): 0
1/4 click sync starts at:CURRENT BAR


========= Sync output settings =========
Mode:FSK24                  Midi clock:OUT4
<GenSMPTE>
```

All of the data fields in each of the screens are described below:

• The MODE field (in the SYNC INPUT SETTINGS section of the screen): This field is used to select the type of sync signal for the MPC60 to receive sync from an external device or tape. There are seven possible types of sync which the MPC60 will accept, but only one may be active at one time.

Further, whichever type of sync is selected, the MPC60 always stands ready to receive sync- it does not need to be switched into a "sync ready" mode. As soon as it receives a sync signal from the selected source, it automatically enters play mode. The only time that it ignores external sync signals is when play mode has been manually entered by pressing PLAY on the front panel, but once STOP is manually pressed, the MPC60 once again stands ready to receive sync.

The seven possible types of sync which the MPC60 may accept are listed below. This field is used to select which one of these signals is currently active:

> 1. FSK24:
> This is a standard general purpose tape sync code commonly used in drum machines and sequencers. It stands for "Frequency Shift Keying at 24 2400 Hz/1200 Hz transitions per U4 note". This code contains no location information, so when syncing to it, you must start both devices from the beginning of the song in order for them to play in sync. Because of this, the MPC60 always plays from bar 1 when sync is first received, if this sync setting is selected. This code does contain tempo information, so the MPC60's tempo settings are not used when syncing to FSK.
>
> 2. PULSE96:
> This signal is not very common and is used when syncing to other devices only - not for tape sync. It stands for "Pulse sync at 96 high/low transitions per 1/4 note". This is the internal clock resolution of the MPC60. This code contains no location information, so when syncing to it, you must start both devices from the beginning of the song in order for

them to play in sync. Because of this, the MPC60 always plays from bar 1 when sync is first received, if this sync setting is selected. This code does contain tempo information, so the MPC60's tempo settings are not used when syncing to PULSE96.

3. SMPTE:

This is SMPTE time code. It may be sent from tape or from other devices. SMPTE time code is a standard sync code used both in video/film and music. It has the advantage over FSK24 of containing location information in the code. That means, for example, that when you play your tape recorder starting at the third verse of a song, the MPC60 will automatically start playing from the third verse in perfect sync- it does not need to start at the beginning to play in sync. Also, SMPTE time code contains no tempo information, so when syncing to SMPTE, the MPC60's tempo settings are used- the difference is that when syncing to SMPTE, the MPC60's tempo setting is synced to the incoming SMPTE code, instead of being synced to the internal crystal clock as when manually played. So when syncing to SMPTE, always use the same tempo setting on each pass. To make this easier, use the SEQUENCE tempo mode which is stored with the sequence disk file.

4. MIDI TIME CODE:

Midi Time Code is SMPTE time code sent and received over midi. This is a new code which is becoming very popular because it allows the advantages of SMPTE without the cost of SMPTE hardware. Incoming Midi Time Code is treated exactly the same as SMPTE. The only difference is that Midi Time Code cannot be recorded on tape, so it is only useful for syncing to other devices. However, there are conversion boxes available which convert SMPTE to Midi Time Code and vice versa.

5. MIDI CLOCK W/SONG PNTR:

This is an abbreviation for "Midi Clock with Song Position Pointer". This is a sync signal sent over midi which is very common with drum machines and sequencers. Since it is sent over midi, it cannot be used with tape, but is very useful in syncing to other sequencing devices. Since this signal contains location information, you don't need to start both devices from the beginning of the song in order for them to play in sync. For example, when you play your external drum machine starting at the third verse, the MPC60 will automatically start playing from the third verse in perfect sync. Of course, in order for the MPC60 to receive the Song Position Pointer messages, the external sequencing device must be sending them. When using this sync mode, please check to see that the external device is capable of sending these messages, and is enabled to do so.

6.   MIDI CLOCK:
This is the same as "MIDI CLOCK W/SONG PNTR° above,
except that the "Song position pointer" signals are ignored. This
setting would be rarely used.

7.   1/4 NOTE CLICKS:
In the event that no sync signal exists on tape, this feature allows
the MPC60 to sync to standard 1/4 note metronome clicks. To
smooth out any variations in tempo, the playback is averaged over
time. It is possible for the MPC60 to follow slight tempo changes,
but larger changes will cause it to temporarily lag behind or lead. It
is possible to use any clean signal instead of metronome clicks, but
the signal used must be very distinct and short, such as a cowbell or
closed hihat, and there must be a minimum of background noise.
Adjusting the sync input level control will help to minimize
triggering from background noise. Since 1/4 note clicks contain no
position information, the first click received will cause the MPC60
to immediately start playing from the start of the sequence.
However, it is also possible to set the MPC60 so that the first click
received starts the sequence from a predetermined bar number.
This is described in the description of the 1/4 CLICKS START AT
field.

There is an eighth setting, OFF, which disables all syncing to external
sources.

• The SEQUENCE STARTS AT SMPTE# field (appears in SMPTE and
MIDI TIME CODE modes only): This field is used to set the incoming
SMPTE time number which must be received in order for bar 1 of the
sequence to start playing. Once the MPC60 knows which incoming SMPTE
number plays bar 1, it will automatically calculate the proper point within
the sequence to start playing when higher SMPTE numbers are received,
and it will know not to play anything if a SMPTE number is received which
is before or after the song. This field has five parts, separated by colons
(":"). The parts are:

HOURS:MINUTES:SECONDS:FRAMES.SUBFRAMES

"Frames" are the individual film or video frames. Depending on which of
the four types of SMPTE code is being received, there are either 24, 25 or
30 frames per second. "Subframes" are subdivisions of 1/100 frame, used
for very fine adjustment. At 30 frames per second, each subframe is equal
to 1/3 of one millisecond.

NOTE: This setting applies only to the active sequence - if you change
the active sequence and return to this screen, the newly selected
sequence's SMPTE start number will now appear in this

field. This setting is stored with the active sequence when it is saved to disk.

• The SHIFT SYNC EARLY(MSECS) field (appears in all modes except SMPTE and MIDI TIME CODE): This field is used to compensate for any sync delays or delays produced by slow synthesizer attacks. It accomplishes this by shifting the MPC60's playback earlier by a specified number of milliseconds. If the sync playback appears to be late, adjust this field until the sync playback is exactly on time. This field does not appear when either SMPTE or MIDI TIME CODE is selected because these sync modes use the SEQUENCE STARTS AT SMPTE# field for the same purpose.

• The MIDI IN field (appears in MIDI TIME CODE, MIDI CLOCK, and MIDI CLOCK W/SONG PNTR modes only): This field is used to select which of the two midi inputs will be used to receive the midi sync signals, input 1 or input 2. Normally, input 2 is used so that input 1 may be used simultaneously to receive midi keyboard data.

• The 1/4 CLICKS START AT field (appears in 1/4 NOTE CLICK mode only):
This field is a choice field and has two selections: BAR 1 and CURRENT BAR. It is only used when the sync input mode is set to 1/4 NOTE CLICKS and is used to determine whether the sequence will start playing from the start or from the start of the current bar when the first click is received. The two choices are:

1. BAR 1: The first incoming click will start the sequence playing from the start of the sequence (this is the default setting).
2. CURRENT BAR: The first incoming click will start the sequence playing the from the start of the current bar.

• The SMPTE ACCURACY field (appears in SMPTE and MIDI TIME CODE modes only): This is a choice field and has 2 options:

1. EXACT: For all future recordings, use this setting. It provides exact conversion of incoming SMPTE or MIDI TIME CODE numbers into the tempo settings used internally in the MPC60.

2. BEFORE VERS 2.0: Before version 2.0 software for the MPC60, the internal SMPTE to tempo conversion was inaccurate by as much as

40 milliseconds after 5 minutes. This caused no problem when using only the MPC60 for all sequenced overdubs to a recording. However, when using the MPC60 for some overdubs to SMPTE, and a different SMPTE to MIDI CLOCK converter for other overdubs to SMPTE <u>on the same recording</u> in (all at the same tempo), an inaccuracy would exist between the 2 units, causing them to gradually slip out of sync.

This inaccuracy problem has been corrected in version 2.0 software. However, it is necessary to be able to select the older inaccurate conversion method when working with older recordings in which an MPC60 running software before version 2.0 was used to record parts in sync to SMPTE. If not, the new parts will gradually slip out of sync with the existing parts. For this reason, when adding parts to a recording in which existing tracks were already recorded by an MPC60 running software before version 2.0 in sync to SMPTE, set the "SMPTE accuracy" field to "BEFORE VERS 2.0".

NOTE 1: Some existing devices which convert SMPTE to MIDI CLOCK signals have internal accuracy problems, including the Roland SBX-80. For this reason, when adding MPC60 parts in sync to SMPTE to a recording in which existing tracks were already recorded using a different SMPTE to MIDI CLOCK converter (all at the same tempo), it is still possible that the MPC60 parts will gradually slip out of sync with the existing parts, due to inaccuracy problems in the other converter. For this reason, it is a good rule to only use one SMPTE to MIDI CLOCK converter for all tracks of a recording. For example, if the SBX-80 was used on some tracks, use it for all tracks; if the MPC60 was used for some tracks, use it for all tracks.

NOTE 2: The setting of this field only affects reading SMPTE- it has no effect on SMPTE generation. Further, the above stated inaccuracy problem never had any affect on SMPTE generation. Therefore, any SMPTE code generated by the MPC60 at any time, regardless of software version, is perfect.

• The MODE field in the SYNC OUTPUT SETTINGS section (appears in all sync input modes):
This field is used to select which of two types of sync signals will be output through the SYNC OUT jack while the MPC60 is playing. SMPTE time code is not output while the MPC60 is playing, but rather only while stopped - this is explained further under the <GenSMPTE> soft key, below. There are two options for this field:

1.   FSK24:
This is a standard general purpose tape sync code commonly used in drum machines and sequencers. It

stands for "Frequency Shift Keying at 24 2400 Hz/1200 Hz transitions per 1/4 note". This code contains only timing clocks. It does not contain positioning information, so when syncing back from tape, you must start the MPC60 from the beginning of the song in order for it to play in sync. This code does contain tempo information, so be sure the MPC60 is set to the intended tempo when recording this signal onto tape.

2.   PULSE96:
This signal is not very common and is used for sync to other devices only - not for tape sync. It stands for "Pulse sync at 96 high/low transitions per 1/4 note". This is the internal clock resolution of the MPC60. This code contains no location information, so you must set both the MPC60 and the receiving device to the start of their sequences in order for both to play in sync. When an external device is syncing to the MPC60, the tempo is controlled by the MPC60.

• The MIDI CLOCK field (appears in all modes): The "Midi clock with song position pointer" signal is output while the MPC60 is playing. This field selects which of the four Midi outputs it will be output through. There are five options:

• OUT1:
It is output through midi output jack 1.
• OUT2:
It is output through midi output jack 2.
• OUTS: It is output through midi output
jack 3.
• OUT4:
It is output through midi output jack 4.
• OFF:
The midi clock signal is not generated at all.

• SOFT KEY 1 - <GenSMPTE> (All sync input modes):
Pressing this soft key displays the following screen, which is used to generate SMPTE time code:

```
============ Generate SMPTE ==============
Start=00:00:00:00      Frames/Sec:30




<Start>   <Stop>
```
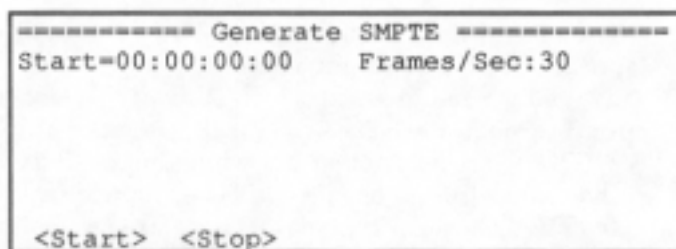
SMPTE time code is only generated while this screen is showing. It is not generated while the MPC60 is playing. The actual code is

output through the SYNC OUT jack. The fields and soft keys are described hereunder:

• The "START=" field:
This is the SMPTE time code number at which the generated time code will start. This is a HOURS:MINUTES:SECONDS:FRAMES field. Normally, this should be set to 00:00:00:00. While the SMPTE code is being generated (when <Start> is pressed), this field will continuously update to show the current time code number being output. When <Stop> is pressed, this field will re-display its starting value.

• The FRAMES/SEC field:
This field is used to select one of four types of SMPTE time code to generate.

> • "30" (30 frames per second, non-drop): This is the standard for NTSC black and white television. Using this mode, the tempo range of the MPC60 is from 60.0 to 6.0 FPB. This is the most popular standard for SMPTE based music production in the U.S. and Japan, so to assure widest compatibility for your recordings, use this standard if you live in those areas.

> • "30 DROP" (30 frames per second, drop frame):
> This is the standard for NTSC color television. Using this mode, the tempo range of the MPC60 is from 59.7 to 6.0 FPB.

> • "24" (24 frames per second):
> This is the standard for film. However, since film is usually transferred to video for scoring, the composer still works with 30 DROP. Using this mode, the tempo range of the MPC60 is from 48.0 to 5.0 FPB.

> • "25" (25 frames per second):
> This is the standard for European television (PAL /SECAM standard). Using this mode, the tempo range of the MPC60 is from 50.0 to 5.0 FPB. This is the most popular standard for SMPTE based music production in Europe and the U.K., so to assure widest compatibility for your recordings, use this standard if you live in those areas.

This field has the same function exactly as the similarly labeled field in the tempo screen.

• SOFT KEY 1- <Start>:
Pressing this soft key starts SMPTE generation.

• SOFT KEY 2 - <Stop>:
Pressing this soft key stops SMPTE generation.

8.3 Syncing to SMPTE

Of the seven types of signals which the MPC60 can sync to, only three are used to sync to tape: SMPTE, FSK24 and 1/4 NOTE CLICKS. Of these, SMPTE has the greatest advantages and should therefore be used as the standard method of tape sync for all new recordings using the MPC60.

SMPTE time code may only be generated by the MPC60 when it is not playing. Before recording your song to tape, record SMPTE time code onto one channel of the multi-track tape recorder.

To record the SMPTE track:

1. Connect the SYNC OUT jack of the MPC60 to the input of a track of your multi-track tape recorder.
2. To access the GENERATE SMPTE screen, press TEMPO/SYNC, then the <Sync Screen> soft key, then the <GenSMPTE> soft key and the following screen will appear:

```
============ Generate SMPTE =============
Start=00:00:00:00     Frames/Sec:30



=========================================
 <Start>   <Stop>
```

3. Set the START fields to 00:00:00:00.
4. Set the FRAMES/SEC field to "30" (U.S. and Japan) or "25" (Europe and U.K). The other types of SMPTE are used for specific purposes. If you are unsure of which type to use, check the above descriptions of each type to match it to your application.
5. To set the recording level, press <Start> (this will start the SMPTE generation), then set the recording level of the tape recorder to -3 dB.
6. Press <Stop> (this will stop the SMPTE generation).
7. Place the tape recorder in record mode.
8. Press <Start> to start generating SMPTE time code.
9. Wait until enough time has passed to allow for the total duration of your song, then press <Stop> (this will stop SMPTE generation) and stop the tape recorder.
10. Your tape now contains the SMPTE code.

To play back a sequence in sync to SMPTE:

1. Connect the output of the tape recorder track you have just recorded to the SYNC INPUT of the MPC60.
2. From the PLAY/R,ECORD screen, select the sequence which you intend to record to tape.
3. Press the TEMPO/SYNC key and the tempo screen will appear:

```
================= Tempo =================
Tempo Source Select:SEQUENCE
Sequence:90.9          Master:120.0
=========== Display Mode ==============
BPM/FPB:BPM              Frames/Sec:30
================ Other ================
Tap Averaging:3
<SyncScreen><TempoChngs>
```

4. Set the TEMPO SOURCE SELECT field to SEQUENCE. This causes the MPC60 to use the tempo setting stored within the sequence, so that it will always be remembered even if the sequence is saved to disk and later recalled. It is important for the MPC60 to remember the tempo setting because the SMPTE time code does not provide its own tempo.
5. Set the FRAMES/SEC field to the same frame rate as the SMPTE time code which is going to be received. If set to a different frame rate, the playing tempo will be inaccurate.
6. Press the <Sync Screen> soft key, and the sync screen will appear:

```
========= Sync input settings ==========
Mode:SMPTE
Sequence starts at SMPTE#:00:00:00.00.00
SMPTE accuracy:EXACT

========= Sync output settings =========
Mode:FSK24              Midi clock:OUT4
<GenSMPTE>
```

7. Move the cursor to the upper left field, MODE and select the option SMPTE.
8. Move the cursor to the SEQUENCE STARTS AT SMPTE# field and enter the number of the incoming SMPTE location you want your sequence to start at. If you don't know, use 00:00:10:00.00. This will cause your sequence to start at a location 10 seconds after the start of the SMPTE code you recorded in the example above. This will allow you to record some additional parts to that first 10 seconds if you later decide to. This setting only applies to the active sequence, so be sure that the sequence you intend to use is selected before setting this parameter.
9. Press the MAIN SCREEN key.
10. Set all levels to record the MPC60 to tape.
11. Start the tape recorder recording from a point just before the beginning of the SMPTE time code. Once the time code has

played for 10 seconds (if the SEQUENCE STARTS AT SMFTE# field has been set to 10 seconds), the MPC60 will automatically start playing from the beginning and will not stop until the sequence has completed. To stop it early, press the STOP key on the MPC60. 12. Now, to overdub further parts onto the tape in sync, just play the tape recorder at any point within the sequence and the MPC60 will automatically start playing from the correct location within the sequence in perfect sync. 13. To shift the playback earlier or later by any amount, adjust the SEQUENCE STARTS AT SMPTE# field to an earlier or later location.

NOTE 1: If the MPC60 doesn't respond to the sync signal, try adjusting the SYNC INPUT LEVEL control on the rear panel. Find the lowest setting at which the MPC60 responds, then increase the level by about 1/2 turn.

NOTE 2: When playing a sequence from bar 1 in response to incoming SMPTE, the timing of the first note in bar 1 may be slightly late. To get around this problem, insert a blank bar at the start of the sequence (or song). This will cause the late timing to occur within the initial blank bar, so that the timing is stable well before the notes (starting in the second bar) start playing.

NOTE 3: The MPC60's SMPTE reader automatically corrects for minor tape dropouts.

To play back a "Song" (Song mode) in sync to the SMPTE time code on tape:

To play back a "Song" in sync to the SMPTE signal, follow the above instructions, except select the SONG MODE screen before receiving the SMPTE signal. This way, the active song will play instead of the active sequence. To set the starting SMPTE number for the song, use the SONG STARTS AT SMPTE# field in the Song screen.

8.4 Syncing to FSK24

The ability to sync to FSK24 is provided to allow the MPC60 to sync to recordings using sync signals created by machines using the FSK method, such as drum machines and simple sequencers. It is not recommended to use this method for new recordings because of its inferiority to SMPTE time code.

FSK24 sync code is generated in real time as the MPC60 plays. FSK24 sync code contains tempo information and therefore it is important that the tempo be set to the desired setting BEFORE the sync tone is recorded to tape.

To record the sync tone to tape:

1. Connect the SYNC OUT jack of the MPC60 to the input of a track on your multi-track tape recorder.
2. Press the TEMPO/SYNC key, then press the <Sync Screen> soft key, and the sync screen will appear:

```
========= Sync input settings ==========
Mode:FSK24
Shift sync early(ms): 0


========= Sync output settings =========
Mode:FSK24                    Midi clock:OUT4
<GenSMPTE>
```

3. Set the MODE field (Sync output section) to FSK24.
4. Press the MAIN SCREEN key.
5. Compose the basic structure of your song, including the correct tempo and any tempo changes.
6. Once the basic structure is completed, set up all track assignments and set all levels to record the sync tone and the first musical parts to tape. Record the sync tone at -3 dB.
7. Start the tape recorder into record mode and wait about 5 seconds.
8. Press the PLAY START key on the MPC60 to start recording the sync tone and the first parts of your sequence to tape.
9. Once the sequence is complete, stop the MPC60 and stop the tape recorder.

To play back the MPC60 in sync to the tape:

1. Connect the output of the tape track containing the FSK24 signal to the SYNC INPUT of the MPC60.

2. Set the SYNC INPUT LEVEL control on the rear panel to about halfway.
3. Press the TEMPO/SYNC key, then press the <Sync Screen> soft key, and the sync screen will appear:

```
========= Sync input settings ==========
Mode:FSK24
Shift sync early(ms): 0


========= Sync output settings =========
Mode:FSK24                    Midi clock:OUT4
<GenSMPTE>
```

4. Set the MODE field (Sync input section) to FSK24. 5. Press the MAIN SCREEN key. 6. Record the parts to be overdubbed into the MPC60. 7. Rewind the tape to the point at which you started recording the sync tone. 8. Play the tape. Once the tape reaches the point at which you started playing the MPC60 while recording the sync tone, the MPC60 will start playing its new parts in perfect sync. The current tempo setting is not used - tempo is provided from the sync tone on tape. To use FSK24, you must always start the tape from the beginning of the recording as in this example.

NOTE: If the MPC60 doesn't respond to the sync signal, try adjusting the SYNC INPUT LEVEL control on the rear panel. Find the lowest setting at which the MPC60 responds, then increase the level by about 1/4 turn.

To play back a "Song" (Song mode) in sync to the FSK24 signal:

To play back a "Song" in sync to the FSK24 signal, follow the above instructions, except select the SONG MODE screen before receiving the FSK24 signal. This way, the active song will play instead of the active sequence.

8.5 Syncing to 1/4 note clicks

This method of syncing uses 1/4 note metronome clicks or any cleanly recorded percussive audio signal as a sync source. Using this method of sync, the playing tempo is provided from the external 1/4 note clicks.

To play the ASQ10 in sync to 1/4 note clicks:

1. Connect the output of the tape track containing the 1/4 note click signal (or other percussive audio source) into the SYNC INPUT.
2. Set the rear panel SYNC IN LEVEL control to 1/2 of its full range.
3. Press the TEMPO/SYNC key, then press the <Sync Screen> soft key and the sync screen will appear:

```
========= Sync input settings ===========
Mode:1/4 CLICKS
Shift sync early(ms): 0
1/4 click sync starts at:CURRENT BAR


========= Sync output settings =========
Mode:FSK24              Midi clock:OUT4
<GenSMPTE>
```

4. Set the MODE field (Sync input section) to 1/4 NOTE CLICKS.
5. If you want the sequence to start at the beginning when the clicks are first received, set the 1/4 CLICKS START AT field to BAR 1. If you set it to CURRENT BAR, the sequence will start playing from the start of the current bar when the clicks are first received.
6. Press the MAIN SCREEN key.
7. Record the parts to be overdubbed into the MPC60.
8. Rewind the tape to the point at which the 1/4 note clicks start.
9. Set the tempo of the MPC60 as close as possible to the tempo of the 1/4 note clicks. This setting will be used to provide the initial tempo, after which the subsequent clicks will provide their own tempo.
10. Play the tape. Once the tape reaches the point at which the 1/4 note clicks start, the MPC60 will instantly start playing in sync.

To play back a "Song" (Song mode) in sync to the 1/4 note click signal:

To play back a "Song" in sync to the 1/4 note click signal, follow the above instructions, except select the SONG MODE screen before receiving the 1/4 note click signal. This way, the active song will play instead of the active sequence.

8.6 Syncing to Midi Clock and Song Position Pointer

Midi Clock is a standard sync signal which is transmitted over Midi. It is not used for tape sync, but rather for syncing drum machines, sequencers and other devices together. Midi Clock only contains tempo information, but no song position information. Song position information is provided by a different signal, Midi Song Position Pointer, which is mixed in with the Midi Clock signal.

To set the MPC60 to generate Midi Clock and Song Position Pointer:

1. Press the TEMPO/SYNC key, then press the <Sync Screen> soft key, and the sync screen will appear:

```
========= Sync input settings ==========
Mode:MIDI CLOCK W/SONG PNTR
Shift sync early(ms): 0   Midi in:2



========= Sync output settings =========
Mode:FSK24                  Midi clock:OUT4
<GenSMPTE>
```

2. Move the cursor to the MIDI CLOCK field. This field has five options: OFF, MIDI1, MIDI2, MIDI3, and MIDI4. OFF turns generation of Midi Clock off. The other four options are used to select whether the signal is output from Midi output jacks 1, 2, 3 or 4. Both Midi Clock and Song Position Pointer are generated simultaneously. Set this field so that the desired midi output jack outputs the midi clock signal.

3. Now, whenever the MPC60 is played, Midi Clock and Song Position Pointer will be output through the Midi output jack you have selected.

To sync from an external device sending Midi Clock with or without Song Position Pointer:

1. Connect the MIDI OUTPUT of the sending device to the MIDI INPUT 2 of the MPC60. (You may alternatively use input 1- if so, set the MIDI IN field to 1.)

2. Press the TEMPO/SYNC key, then press the <Sync Screen> soft key, and the sync screen will appear:

```
========= Sync input settings ==========
Mode:MIDI CLOCK W/SONG PNTR
Shift sync early(ms): 0   Midi in:2


========= Sync output settings =========
Mode:FSK24                 Midi clock:OUT4
<GenSMPTE>
```

3.Set the MODE field (Sync input section) to MIDI CLOCK W/SONG POINTER if you want to receive midi clock and song pointer messages. If you want to ignore any incoming song pointer messages, set it to MIDI CLOCK
4.Set the MIDI INPUT field to 2.
5.Press the MAIN SCREEN key.
6.Create your sequence on the MPC60.
 7. Now, start the external device and the ASQ10 will automatically play in sync. If Song Position Pointer messages are not being used, you must position each device at its start before playing the master.

To play back a "Song" (Song mode) in sync to the Midi Clock:

To play back a "Song" in sync to the Midi Clock signal, follow the above instructions, except select the SONG MODE screen before receiving the Midi Clock signal. This way, the active song will play instead of the active sequence.

8.7 Syncing to Midi Time Code

Midi Time Code is basically SMPTE time code encoded over Midi. Since it is a Midi signal, it cannot be recorded on tape, but it is used rather to sync to devices such as drum machines and sequencers. The MPC60 does not generate Midi Time Code, but does sync to it when generated from an external source.

To play back a sequence in sync to Midi Time Code:

1. Connect a Midi cable from the output of the device sending the Midi Time Code to the Midi input 2 of the MPC60. (You may alternatively use input 1- if so, set the MIDI IN field to l.)
2. From the PLAY/R,ECORD screen, select the sequence which you intend to record to tape.
3. Press the TEMPO/SYNC key and the tempo screen will appear:

```
=============== Tempo ================
Tempo Source Select:SEQUENCE
Sequence: 90.9          Master:120.0
============ Display Mode ============
BPM/FPB:BPM             Frames/Sec:30
=============== Other ===============
Tap Averaging:3
<SyncScreen><TempoChngs>
```

4. Set the TEMPO SOURCE SELECT field to SEQUENCE. This causes the MPC60 to use the tempo setting stored within the sequence, so that it will always be remembered even if the sequence is saved to disk and later recalled. It is important for the MPC60 to remember the tempo setting because the Midi Time Code does not provide its own tempo.
5. Set the FRAMES/SEC field to the same frame rate as the Midi Time Code which is going to be received. This will be usually be "30" for the U.S. and Japan, and "25" for Europe and the U.K.
6. Press the <Sync Screen> soft key, and the sync screen will appear:

```
========= Sync input settings ==========
Mode:MIDI TIME CODE
Sequence starts at SMPTE#:00:00:00:00.00
SMPTE accuracy:BEFORE V2.0      Midi in:2

========= Sync output settings =========
Mode:FSK24              Midi clock:OUT4
<GenSMPTE>
```

7. Move the cursor to the upper left field, MODE and select the option MIDI TIME CODE.

8. Move the cursor to the SEQUENCE STARTS AT SMPTE# field and enter the number of the incoming Midi Time Code location you want your sequence to start at. If you don't know, use 00:00:10:00.00. This will cause your sequence to start at a location 10 seconds after the start of the incoming Midi Time Code signal. This will allow you to record some additional parts to that first 10 seconds if you later decide to. This setting only applies to the active sequence, so be sure that the sequence you intend to use is selected before setting this parameter.

9. Press the MAIN SCREEN key.

10. Set all levels to record the MPC60 to tape.

11. Start the external device generating the Midi Time Code. Once the time code has played for 10 seconds (if the SEQUENCE STARTS AT SMPTE# has been set to 10 seconds), the MPC60 will automatically start playing from the beginning and will not stop until the sequence has completed. To stop it early, press the STOP key on the MPC60.

12. To shift the playback earlier or later by any amount, adjust the SEQUENCE STARTS AT SMPTE# field to an earlier or later location.

NOTE: When playing a sequence from bar 1 in response to incoming Midi Time Code, the timing of the first note in bar 1 may be slightly late. To get around this problem, insert a blank bar at the start of the sequence (or song). This will cause the late timing to occur within the initial blank bar, so that the timing is stable well before the notes (starting in the second bar) start playing.

To play back a "Song" (Song mode) in sync to the Midi Time Code signal:

To play back a "Song" in sync to the MIDI TIME CODE signal, follow the above instructions, except select the SONG MODE screen before receiving the SMPTE signal. This way, the active song will play instead of the active sequence. To set the starting SMPTE number for the song, use the SONG STARTS AT SMPTE# field in the Song screen.

Section 9:
Midi Functions

9.1 Overview

The MIDI key provides access to a number of parameters related to Midi. In this section you will learn to:

• Remove or "thin out" selected event types from the Midi input data
• Remove velocity data from the incoming Midi input data
• Set the MIDI SOFT THROUGH feature
• Select or defeat the MPC60's special sustain pedal processing
• Assign incoming Midi note numbers to the internal drums
• Assign outgoing drums to Midi note numbers
• Select the Midi channel which the internal drums play from
• Remotely control the Akai ME-35T Audio/Midi Trigger interface And more.

When the MIDI key is pressed, the following screen appears:

```
================= Midi =================
1)Midi input filter, soft thru, other
2)External drum triggering, drum chan
3)Akai ME-35T audio/midi interface
4)All notes off


Select option:
```

There are four options. The fourth option, ALL NOTES OFF, causes a midi "All notes off" command to be sent out on all channels, forcing any notes currently playing to be immediately turned off. Sometimes, because of slight midi incompatibilities between instruments, a note may erroneously stay on. Selecting this option should cause any notes which are on to be turned off.

The functions of the first three selections are described in detail in the following sections.

9.2 The midi input filter, midi soft through, sustain pedal processing

If option 1 is selected from the MIDI screen, the following screen appears:

```
============= Midi input filter ===========
Event:C1-MODULATION WHEEL
Pass event?:YES       Minimum change:   5
Velocity mode:NORMAL Fixed velocity: 86
============== Other midi ==============
Midi soft thru:ON    Default chan:16A
Special sustain pedal processing:ON
<All notes off>
```

This screen has two main sections: MIDI INPUT FILTER and OTHER MIDI. Each is described in the following sections:

The MIDI INPUT FILTER section:

This portion of the screen allows you to selectively remove parts of the incoming MIDI data, so as not to take up excess memory recording them, and to reduce the processing requirements on playback. The fields are:

• The EVENT and PASS EVENT? fields: The EVENT field is a choice field and may be set to any one of the following event types:

    Pitch bend (BEND)
    Program change (PRGM CHNG)
    Channel pressure (CHAN PRES)
    Poly pressure (POLY PRES)
    System Exclusive (SYS EXCL)
    Drum mixer volume (MIXER VOL)
    Drum mixer pan (MIXER PAN)
    Drum tuning (DRUM TUNE)
    Echo mixer volume (ECHO VOL)
    Midi controller 0 (C0-UNDEFINED)
    Midi controller 1 (C1-MODULATION WHEEL)
    Midi controller 2 (C2-BREATH CONT)

    Midi controller 127 (C127-POLY MODE ON)

While one of these event types is selected, the PASS EVENT? field displays either a YES indicating that event will be recorded into sequences or a NO indicating that event type will be removed from the midi input data stream when encountered. This status may be changed using the DATA CONTROL.

An example of a good use of this function is to prevent "channel pressure" data (also called "aftertouch") from being recorded into your tracks. If you are using a keyboard which produces channel pressure messages, all of these continuous messages will normally be recorded into the track, whether your synthesizer uses these messages or not. This will cause much extra sequence memory to be used and will cause the sequences to work much harder to play all of these messages, possibly causing note delays, if the sequence contains many notes. To avoid this, turn off the recording of continuous controller messages unless your synthesizer is using them. To do this, select CHAN PRES in the EVENT field, then select NO in the PASS EVENT? field.

• The MINIMUM CHANGE field: There is another field called MINIMUM CHANGE which only appears if the EVENT field is set to BEND, CHAN PRES, MIXER VOL, MIXER PAN, ECHO VOL, or controllers 0 through 31. These are all "continuous data" event types, meaning that large numbers of these events are used to simulate a gradual change in the specified parameter. For example, when you move a pitch bend wheel on a keyboard, a large number of pitch bend events are output from the keyboard, and all of them would be recorded into the active track. The problem with recording all of these events is that they use a large amount of memory and they cause the internal computer to work very hard, causing possible timing delays if large amounts of these events exist in a sequence. In many cases, however, many more of these events are output from the keyboard than is necessary to produce the desired effect.

The MINIMUM CHANGE field is used to "thin out" the event data for the above specified event types, thereby reducing the total number of events which will be recorded into tracks. It works by only recording events which have changed more than a specified amount since the last received event of the same type, and the amount is set in the MINIMUM CHANGE field. As with the PASS EVENT? field, the MINIMUM CHANGE field shows the value associated with the event type shown in the EVENT field. For example, to "thin out" incoming channel pressure events:

> 1. Set the EVENT field to CHAN PRES.
> 2. Set the PASS EVENT? field to YES.
> 3. Set the MINIMUM CHANGE field to 5.

This means that an incoming channel pressure message could only be recorded if its value had changed by more than 5 from the last

value received. The range of this field is 0 - 127, with 127 being the full range of the controller. (Pitch bend is an exception- even though the pitch bend messages actually have a range of ± 8191, 0 to 127 represents the full range here. For example, to specify that only a change of 10% or more in the total range of the bend wheel may be recorded, enter a 12 here, because 12 is approximately 10% of 127, which here represents the full range of the bend wheel.) If this value is set too high, a definite "step" effect will be heard as the continuous controller is moved. If you want a continuous controller effect, try to pick a value which is low enough so that the "stepping" is not noticeable. Of course, you may wish to implement this "stepped" effect in order to generate glissando-like effects.

• The VELOCITY MODE and FIXED VELOCITY fields: Incoming midi note events are normally recorded into the sequence with their velocity values intact, permitting the recording of dynamics. These two fields permit the incoming velocity data to be ignored, if desired, and a fixed value substituted for each incoming note. The VELOCITY MODE field has two options: NORMAL and FIXED. If set to FIXED, all incoming velocity values are replaced by the value specified in the FIXED VELOCITY field (1 - 127).

The OTHER MIDI section:

• The MIDI SOFT THRU field: If set to ON, any incoming Midi data is routed in real time to the selected track's output Midi channel. If set to OFF, it isn't. If you are using a single keyboard synthesizer (the keyboard and sound generator are together in one unit), this field should be set to OFF. In this case, there is no need for incoming midi notes to be immediately sent out to the synthesizer's sound generator because it is already receiving notes directly from its keyboard. If you are using a midi master keyboard and separate synthesizer modules, set this field to ON. This way, the notes played on the keyboard will play the synthesizer modules in real time.

NOTE: When MIDI THRU is set to ON, be careful to avoid a midi "feedback" loop in your external midi cables and devices. A midi feedback loop occurs when an output midi message, because of some incorrect external midi connection, is immediately sent back to the input, then it is immediately sent back out (because MIDI THRU is ON), then back in, then back out, etc. If this occurs, the MPC60 could "freeze" until one of the midi cables is disconnected. To avoid this, be very careful in connecting your external midi cables and devices to prevent a direct signal path from the MPC60's midi output to its midi input.

• The DEFAULT CHAN field: Each track within a sequence must be assigned to one of the 64 midi channels. If none is selected, a default channel is automatically inserted by the MPC60. This field determines which channel is automatically inserted when a new track is selected. This is actually two fields: the channel number (1 - 16), and the output jack selection (A, B, C, or D).

• The SPECIAL SUSTAIN PEDAL PROCESSING field: This is a choice field with 2 options: ON and OFF. The purpose of this field is to selectively defeat the MPC60's special processing of sustain pedal messages, explained below.

In all other sequencers, sustain pedal messages (midi controller 64) are recorded as received into the sequence along with the notes. This presents the following problems:

1. If you start playing a sequence from a specific point at which the sustain pedal is held, but which is after the point at which it was pressed, the notes will not be sustained because the "sustain pedal on" message has not been recognized.
2. If you delete or erase a section of the sequence which contained a "sustain pedal off" message, all notes after that location will be sustained.
3. If you play 2 or more tracks into the same midi output channel and only one track has sustain pedal information, the notes on the other tracks will also be sustained.
4. If you merge a track with sustain pedal information into a track without sustain pedal information, all notes on the resultant track will be sustained.
5. If you overdub notes into a track containing sustain pedal information, the new notes will be sustained.

The MPC60 eliminates these problems by specially processing the sustain pedal messages. When the MPC60 receives a "sustain pedal on" message during record, it does NOT record it. Instead, any notes which are currently pressed are internally "held down", even after they are released, until a "sustain pedal off message is received. The result is that the individual durations of notes are lengthened, so unwanted transferring of sustain information to other notes on the same midi channel is impossible. This has the added advantage of allowing you to individually adjust durations of sustained notes in Step Edit.

There are some situations in which this special feature is undesirable:

1. On some synthesizers, this special sustain method will cause the synthesizer to ignore any new notes played after

all available voices are used, because the synthesizer "thinks" the keys are still held.

2. Some synthesizers have the ability to use midi controller 64 for other purposes than sustain, so it is desirable to record it into the sequence.

For these reasons, the MPC60's special sustain processing may be defeated. To defeat this special feature and record midi sustain messages (controller 64) into sequences, set the SPECIAL SUSTAIN PEDAL PROCESSING field to OFF. Normally, keep this field set to ON.

• SOFT KEY 1 - <All notes off>:
Pressing this soft key has exactly the same effect as selecting option 4 from the MIDI screen- it turns all notes off on all midi channels.

9.3 External drum triggering, the midi "drums" channel

If option 2 is selected from the MIDI screen, the following screen appears:

```
==== Assign incoming notes to drums ====
Incoming notes play drums:ON
Note: 66(F#3 )       Plays:SNR1
==== Assign outgoing drums to notes ====
Drum data sent out:NOTES/MIX/TUNE
Drum:SNR1            Plays note: 66(F#3 )
================= Other =================
Midi drums chan:16
```

This screen has three main sections:

The **ASSIGN INCOMING NOTES TO DRUMS** section:

In the MPC60, it is possible to play the internal drums from an external Midi keyboard. This section of the screen is used to assign each of the keys on the incoming keyboard to one of the 32 internal drums. To turn this feature on or off, select ON or OFF in the INCOMING NOTES PLAY DRUMS field. To view or change an assignment, select the desired incoming midi note in the NOTE field (you can also play a key on the midi keyboard to set the value), then view or change its drum assignment in the PLAYS field. The default assignment for all incoming notes is NONE, except:

36 = BASS	37 = SNR2	38 = SNR1	39 = SNR2
40 = SNR1	41 = TOM4	42 = HIHT	43 = TOM4
44 = HIHT	45 = TOM3	46 = HIHT	47 = TOM2
48 = TOM1	49 = CRS1	50 = TOM1	51 = CRS2
52 = PRC1	53 = PRC2	54 = RID1	55 = PRC3
56 = RID2	57 = PRC4	60= DR01	61= DR02
62= DR03	63= DR04	64= DR05	65= DR06
66= DR07	67= DR08	68= DR09	69= DR10
70= DR11	71= DR12	72= DR13	73= DR14
74= DR15	75= DR16		

NOTE: When playing the internal drums from an external source over midi, it is possible to either respond to incoming notes on all 16 midi channels (omni mode) or to respond to incoming notes on the "drums" channel only (normally channel 16, set in the "midi drums than" field). Here's how:

1. To set the MPC60 to play its drums in response to incoming notes on the "drums" channel only (normally channel 16), select a "non-drums" track in the PLAY/RECORD screen (or set both CH fields to any channel other than 16). This works because the internal drum generator always responds to incoming notes on the drums channel, even if the active track is routing all incoming channels to the active track's assigned channel.

2. To set the MPC60 to play its drums in response to incoming notes on all 16 midi channels, select a "drums" track (any track assigned to midi channel 16) in the PLAY/RECORD screen (or simply set one of the CH fields to 16). This occurs because all incoming channels are routed to the active track's assigned channel, which is 16 if the track is a drums track.

The ASSIGN OUTGOING NOTES TO DRUMS section:

This section encompasses three fields. The uppermost field, MIDI DRUM DATA SENT OUT is used to determine what midi data is sent out when the internal drums play. It is a choice field with three selections:

1. NONE: If this option is selected, no drum related data is sent out over midi when drums play. If no external drum generator is used in addition to the MPC60's internal drums, this option could be used in order to reduce the amount of work the internal computer must perform, and therefore allowing the MPC60 to operate at highest timing efficiency. This is the default setting.

2. DRUM NOTES: If this option is selected, a midi note command is sent out whenever one of the internal drums plays. This should be used if an external drum generator (such as the Akai XE8) is being triggered by the MPC60. This setting requires the MPC60 to perform more computations internally than the "NONE" setting and therefore may slightly reduce timing efficiency in complex sequences playing at fast tempos.

3. NOTES/MIX/TUNE: If this option is selected, a midi note command is sent out whenever one of the internal drums plays, and also a special system exclusive command is sent out whenever a change in the stereo mix, echo mix, or tuning occurs. At time of writing, no products respond to these system exclusive messages from the MPC60 (other than another MPC60). This setting requires the MPC60 to perform more computations internally than the "NONE" setting and therefore may slightly reduce timing efficiency in complex sequences playing at fast tempos.

NOTE: Because "NONE" is the default setting (for highest timing efficiency), it is normal that no "note on" messages will be sent out over midi when drum tracks play. If you are using an external drum generator in addition to the MPC60's internal sounds and therefore want these messages to be sent out while drum tracks play, you must select "DRUM NOTES" in this field.

The two remaining fields in this section are together used to determine which midi note numbers are sent out when each of the internal drums play. To view or change the assignments, select the desired drum in the DRUM field, then view or change its note number assignment in the PLAYS NOTE field (you can also set the note number by playing a key on the midi keyboard). The default settings are the same as for the ASSIGN INCOMING NOTES TO DRUMS section, except in reverse.

The "OTHER" section:

This third section of the screen contains only one field, MIDI DRUMS CHAN, an abbreviation for "Midi drums channel". This field selects the midi channel over which the internal drum generator receives its "play note" commands from the internal sequences (or from another midi source- see note below).

The setting of this field is very important because THE ONLY WAY OF DETERMINING WHETHER OR NOT A TRACK IS A "DRUMS" TRACK OR A "NON-DRUMS" TRACK IS WHETHER OR NOT THE TRACK'S MIDI CHANNEL MATCHES THE NUMBER IN THIS FIELD! Also, any track assigned to this channel is a drums track, regardless of the track's output jack selection (A, B, C, or D). For further information on this subject, read the section entitled "How to assign "drums" and "non-drums" tracks" in the "Recording sequences" section of the manual.

9.4 The ME-35T interface screen

This screen is specifically used to remotely control the Akai ME35T Audio/Midi Trigger unit. This product accepts 8 inputs from electronic drum trigger pads or other input devices and converts them to midi "note on" messages to remotely trigger drum sound generators. The fast response and wide range of controls on this device make it particularly well suited to the needs of the
professional drummer. This screen simplifies the process of interfacing the ME-35T to the MPC60, and the settings on this screen may be saved in MPC60 parameter files.

Selecting option 3 from the MIDI menu presents the following screen:

```
====== ME-35T trigger interface =========
Midi in:2    Out:4      Unit:1     Unit ch: 1
======= Settings for input: 1 ===========
Note:127(HIHT-OPEN)   Sensitivity:127
Trigger:127           Capture time:31
Recovery time :31     'On' time:4095
Velocity curve:8      Midi channel:16
<Read from> <Send to>
```

The MPC60 stores all settings for each of the eight inputs of two ME35T units in its internal memory. These settings are retained with the power removed and may also be saved in "Parameter" type disk files. When the above screen is first selected, the screen data fields contain these internal settings. To view the ME-35T's settings for the selected input on the screen, press <Load from>, and this action will overwrite the MPC60's internal settings for the selected input. To change any settings, first make the change in the data field, then press <Send to> - this will send all data for the selected input out to the ME-35T. The following is a description of the data fields:

- MIDI IN: This field sets which of the 2 midi input jacks, 1 or 2, is currently used to connect to the midi output of the ME-35T.

- OUT: This field sets which of the 4 midi output jacks, 1 - 4, is currently used to connect to the midi input of the ME35T.

- UNIT: There may be either one or two ME-35T units connected, providing a maximum of 16 trigger inputs (8 inputs per unit). This field selects which unit is currently being adjusted or viewed (1 or 2). All lower data fields on this screen refer to unit 1 or 2, depending on the selection

of this field. If only one ME-35T is being used, this should be set to "1".

• UNIT CH: This field selects the midi channel over which the selected ME-35T (unit 1 or 2) receives its data. This should be set to the same midi channel as the selected ME35T unit is set to receive on. Because the ME-35T is set to receive on channel 1 when shipped from the factory, this field would normally be set also to 1.

• INPUT: This field selects which of the 8 trigger inputs of the selected unit is currently active for editing. The settings of the 8 fields below refer only to the input number displayed in this field.

• NOTE: This field selects the note number which will be output when the displayed input is triggered. The MPC60 drum which is currently assigned to that note number (in the ASSIGN INCOMING NOTES TO DRUMS screen) is displayed to the right of the note number in parentheses.

SENSITIVITY: This is the input sensitivity. Adjust this until only the hardest strike of the pad causes the overload LED on the front of the ME-35T to flash on. The range is from 0 to 127.

TRIGGER: This is the trigger threshold. Only notes with velocity values above this threshold will be sent from the ME-35T. The range is from 0 to 127.

CAPTURE TIME: This parameter sets the amount of time the ME-35T uses to determine the note velocity, in milliseconds. This setting is a compromise between response time and accuracy of dynamics- the faster the response, the less accurate the dynamics. The range is from 0 to 31.

RECOVERY TIME: This is the amount of time, in milliseconds, following a trigger during which further triggers are prevented. It prevents false double triggering because of bounce of the stick on the pad. Too long a time will limit the maximum rate of drum roll. The range is from 0 to 31.

`ON' TIME: This sets the delay between sending the "Note on" and the subsequent "Note off" command, in increments of 1/100 second. For the MPC60, this should be set to "0". The range is from 0 to 4095.

CURVE: This parameter selects one of 8 dynamic curves that relate strike dynamics to midi velocity. Curves 1 through 4 work best with synthesizers using logarithmic

velocity coding and curves 5 through 8 work best with synthesizers using linear velocity coding. The MPC60 uses linear coding, so curves 5 through 8 should work best.

• MIDI CHANNEL: This parameter is used to set the midi channel over which the selected input will send its notes. Since the MPC60's internal drums may be externally triggered from only a single midi channel (the "Drums" channel), this field should always be set to the same channel as the "Drums" channel (normally channel 16).

There are also two soft keys:

• SOFT KEY 1- <Read from>: When this soft key is pressed, all of the settings for the selected input number will be loaded from the externally connected ME-35T into the MPC60, and the data fields will change to show the newly loaded settings. These new settings will replace the MPC60's internal settings for the selected input.

• SOFT KEY 2- <Send to>: When this soft key is pressed, all of the settings for the selected input number will be sent from the MPC60 to the externally connected ME-35T. Pressing this key is the only method by which data is sent to the externally connected ME-35T. For this reason, you must always press this soft key after making an adjustment to one of the data fields before the the change will take effect in the ME-35T.

NOTE: The ME-35T has an automatic "Midi soft through" feature which routes all data received at its midi input immediately to its midi output. This can cause a problem with the MPC60 because if the MPC60's MIDI SOFT THRU feature is set to ON, a midi feedback loop could occur. (Midi feedback loops are explained in the description of the MIDI SOFT THRU field.) To prevent a feedback loop when you use the ME-35T, set the MIDI DRUM DATA SENT OUT field (in the "External drum triggering, drums channel" screen) to NONE. This will prevent the MPC60 from sending out midi "note on" messages when the internal drums play, which will prevent a midi feedback loop with the ME-35T.

9. 5 The Midi implementation charts

This section contains the Midi implementation charts for the MPC60. There are two charts- one for the drum sampler section, and one for the sequences section. These charts are useful to determine if any incompatibilities exist between the MPC60 and your other Midi instruments.

Model: MPC60 (Drums sampler section)   Midi Implementation Chart Version: 2.0

Function		Transmitted	Recognized	Remarks
Basic	Default	16	16	
Channel	Channel	1-16	1-16	
	Default	3	3	
Mode	Messages	X	X	
	Altered	X	X	
Note		0-127	0-127	
Number	True Voice	0-127	0-127	
Velocity	Note ON	O	O	
	Note OFF	O (Always=64)	X	
After	Key's	X	O	Used in "Note
Touch	Ch's	X	O	repeat" feature
Pitch Bender		X	X	
Control	20	O	O	Hihat decay cont.
Change				
Prog		X	X	
Change	True#	X	X	
System Exclusive		O	O	See note 2
System	:Song Pos	X	X	
	:Song Sel	X	X	
Common	:Tune	X	X	
System	:Clock	X	X	
Real Time	:Commands	X	X	
Aux	:Local ON/OFF	X	X	
Mes-	:All Notes Off	X	O (When stop p	ressed)
sages	:Active Sense	X	X	
	:Reset	X	X	

Mode 1: OMNI ON, POLY   Mode 2: OMNI ON, MONO   O : Yes
Mode 3: OMNI OFF, POLY Mode 4: OMNI OFF, MONO   X : No

Model: MPC60 (Sequencer section) Midi Implementation Chart   Version: 2.0

Function		Transmitted	Recognized	Remarks
Basic	Default	1-16	1-16	
Channel	Channel	1-16	1-16	
	Default	3	1	
Mode	Messages	X	X	
	Altered	X	X	
Note		0-127	0-127	
Number	True Voice	0-127	0-127	
Velocity	Note ON	O	O	
	Note OFF	O	O	
After	Key's	O	O	
Touch	Ch's	O	O	
Pitch Bender		O	O	
Control	0-127	O	O	See note 1
Change				
Prog		O	O	
Change	True#	0-127	0-127	
System Exclusive		O	O	See note 2
System	:Song Pos	O	O	
	:Song Sel	X	O	
Common	:Tune	X	X	
System	:Clock	O	O	
Real Time	:Commands	O	O	
Aux	:Local ON/OFF	X	X	
Mes-	:All Notes Off	O		
sages	:Active Sense	X	X	
	:Reset	X	X	

Mode 1: OMNI ON, POLY   Mode 2: OMNI ON, MONO
Mode 3: OMNI OFF, POLY   Mode 4: OMNI OFF, MONO

O : Yes
X : No

Note 1:
When the control code 64 (damper or sustain pedal) is received while recording, it is not recorded. Instead, all keys held down at that time are held on until the sustain pedal is released, even if the individual keys are released. This allows multiple overdubs on the same track to have different and independent sustain pedal times.

Note 2:
The follow system exclusive messages, unique to the MPC60, are sent and received:

Drum mixer volume change:
      11110000   System exclusive header

01000111	Akai ID (47H)
0000xxxx	Unit number (midi channel # 1-16)
01000100	44H
01000xxx	Akai product ID (MPC60 = 45H, ASQ10=46H)
00000001	Parameter ID: 01 = Drum mix volume
000xxxxx	Drum number (0-31)
0xxxxxxx	Data: 0 (off) - 127 (full volume)

Drum mixer pan change:

11110000	System exclusive header
01000111	Akai ID (47H)
0000xxxx	Unit number (midi channel # 1-16)
01000100	44H
01000xxx	Akai product ID (MPC60 = 45H, ASQ10=46H)
00000010	Parameter ID: 02 = Drum mix pan
000xxxxx	Drum number (0-31)
0000xxxx	Data: 0 (full left) - 14 (full right)

Echo mixer volume change:

11110000	System exclusive header
01000111	Akai ID (47H)
0000xxxx	Unit number (midi channel # 1-16)
01000100	44H
01000xxx	Akai product ID (MPC60 = 45H, ASQ10=46H)
00000011	Parameter ID: 03 = Drum mix volume
000xxxxx	Drum number (0-31)
0xxxxxxx	Data: 0 (off) - 127 (full volume)

Drum tuning change:

11110000	System exclusive header
01000111	Akai ID (47H)
0000xxxx	Unit number (midi channel # 1-16)
01000100	44H
01000xxx	Akai product ID (MPC60 = 45H, ASQ10=46H)
00000100	Parameter ID: 04= Drum mix volume
000xxxxx	Drum number (0-31)
0xxxxxxx	Pitch data MSB
0xxxxxxx	Pitch data LSB
	The above two bytes comprise a 14 bit pitch change word. Range = 0 - 4000H in increments of 1/2 cent (2000H = no change).

SECTION 10: APPENDEX

10.1 Features

Here is a list of some of the advanced features of the MPC60:

General:

• Small, portable design - fits easily under your arm.
• Large 320 character LCD display (8 lines by 40 characters) with graphics.
• Built-in 3 1/2" disk drive stores both sequence and sound data.
• Fast, easy to understand operation provided by large screen and logical, intuitive design.
• Interactive "Help" function, providing a full paragraph of explanation for each data field of every function screen.
• 4 "soft keys" provide one button execution of many functions without additional dedicated buttons.
• The contents of all data fields and other minor settings are retained while the power is turned off, so there is no need to reset commonly used parameters each time the power is turned on.
• Large memory capacity: 512K bytes sequence RAM, 768K bytes sampling RAM (expandable to 1.5 megabytes sampling RAM), 256K bytes program ROM.
• Very fast internal 10 MHz 80186 16 bit microprocessor.

Sequences section:

• Both linear and pattern style (song mode) recording are supported.
• Both "drum machine" style features and sequences-oriented features are integrated into one universal, easy to use operating system.
• 60,000 note sequences capacity
• 99 sequences may be held in memory at once. Each sequence contains 99 individual tracks, each of which may be output to any one or two midi channels.
• The "2nd Sequence" feature allows two sequences to play simultaneously. For example, you play a short, looped drum sequence while simultaneously recording your long multi-track keyboard sequence.
• 4 independent midi output ports permit 64 output midi channels.
• 7 sync modes, including SMPTE, Midi Time Code, midi clock, midi song pointer, FSK, pulse wave, and sync to 1/4 note metronome clicks.
• SMPTE chase operates without any delays.
• 2 record modes: "Record" (erasing while recording) and "Overdub" (add notes to existing track) may be switched between at any time.

• Sequences may be looped, and recording is possible with real-time timing correction while loop is on. Also, a sequence may be set to loop back to any bar once the end is reached, not just the beginning of the sequence.

• "Step edit" feature allows very fast viewing, recording, editing or deletion of any event within a sequence.

• Versatile editing system allows copying, merging, inserting, deleting of any sequence data.

• Each track has an output level adjustment, allowing the output velocities to be scaled in real time while playing.

• The velocity or duration values of a group of notes within a track may now be changed globally.

• All 16 midi channels may be recorded simultaneously, allowing sequences to be transferred into the MPC60 in one pass.

• Sequence data may be shifted forward or backward in time.

• "Edit loop" feature allows a portion of a sequence to be looped while overdubbing for fast editing, and allows changes to be "undone".

• Sequences may be transposed, either in real time while playing or by altering note data.

• "Tap tempo" key allows playing tempo to be set by tapping a key in the time of 2 1/4 notes.

• Programmable tempo changes, in mid-sequence or mid-song, are supported.

• Time signature changes, in mid-sequence or mid-song, are supported.

• "Auto punch" feature allows automatic punch-in and punch-out at preset times within the sequence.

• 2 foot switch inputs allow functions such as PLAY/STOP and PUNCH IN/OUT to be remotely controlled.

• Current position within sequence is always displayed in both bar.beat.clock and SMPTE position.

• 2 mergeable midi inputs.

• Timing correction feature maintains original note duration, providing faithful reproduction of original performance, but without timing errors.

• "Shuffle" feature provides a useful method of adjusting the "feel" of the timing of your tracks.

• Timing correction only affects notes- pitch bend and other controllers are recorded as played.

• "Note repeat" feature allows for easy programming of rolls and repeated notes.

• Midi "sustain pedal" messages are specially processed so that multiple overdubs on the same track of a sequence may have independent uses of the sustain pedal without interaction.

• A specific Midi PROGRAM CHANGE event may be assigned to any track, and is automatically sent out when the sequence is selected.

• System exclusive messages, including patch data dumps, may be recorded into sequences.

Sampler section:

• 32 drums may be held in memory at one time.
• 16 velocity and pressure sensitive front panel drum pads.
• Very high sound quality - 40 khz sampling rate for 18 khz frequency response on all drum sounds. 16 bit A/D and D/A converters are used and samples are compressed into exclusive non-linear 12 bit format, providing much lower noise than standard 12 bit linear systems.
• Long sample time - maximum of 13.1 seconds of sampling time at full 18 khz frequency response, expandable to 26.2 seconds at full frequency response.
• 16 voice polyphony - a maximum of 16 drums may play simultaneously.
• Repeated strikes of a drum play simultaneously; earlier strikes are not cut off.
• "Pre-record" feature prevents attacks of sounds from being truncated during sampling.
• Stereo mix is achieved graphically on the large LCD display, allowing programmed mix changes to automatically update the mixer settings without the need for motorized faders.
• Built-in echo send and return - there is a separate 32 input mono programmable echo mixer and echo return inputs, to be used with an external digital reverb.
• Stereo and echo mixers are automated: any changes made while recording will be automatically repeated on playback.
• Each of the individual mix outputs may contain one or any mix of the 32 drums.
• Sounds may be reversed.
• A "multi-pitch" mode is supported, allowing a single drum to be play (and recorded) at 16 chromatic pitches by playing the 16 pads.
• Hihat decay control on front panel varies decay time of hihat while selecting between 3 different samples- one each for closed, medium and open hihat.
• Envelope controls include a special drum-related "fadeout" parameter, which allows the sound to be automatically faded down starting at a pre-determined start point and ending exactly at its end, preventing samples from sounding "chopped off".
• Extensive dynamic controls: note velocity may be used to control sound start address, envelope attack, volume, and sound selection (velocity switch).
• "Double play" feature allows 2 drum sounds to play when one occurs in a sequence.
• Midi sample dump allows samples to transferred between samplers.
• A special screen exists to remotely control the Akai ME-35T trigger to midi converter.

10.2 Technical specifications

General:

• 320 character LCD display with graphics
• Disk drive: 3.5 inch 2DD (793K bytes formatted capacity)
• Computer: 80186 (10 MHz)
• Dimensions: 495(VV) X 127(H) X 471(D) mm
• Weight: 10.5 kg
• Power consumed: 30 W at AC 100V (50/60 Hz); 32 W at AC 120V (60 Hz), AC220V (50 Hz), or AC240V (50 Hz)

Sampler section:

• 40 KHz fixed sampling rate
• Sampling time (at 40 KHz): 13.1 seconds standard (750K bytes), or 26.2 seconds with sound memory expansion option (EXM003, 750K bytes)
• Frequency response: 20 Hz ~ 18 KHz
• 16 bit A/D and D/A converters; samples stored in special non-linear 12 bit format for much lower noise than 12 linear systems
• Tuning range: + 1/2 octave, - 1 octave
• Maximum number of drum sounds in memory: 32
• Maximum number of voices which may play simultaneously: 16
• Custom LSI sound processing chip

Sequencer section:

• Note capacity (not event capacity): 60,000 (512K bytes)
• Timing resolution: 96 divisions per 1/4 note
• Maximum number of sequences in memory: 99
• Number of simultaneous tracks per sequence: 99
• Output midi channels: 64
• Song mode: 20 songs, 256 steps per song
• Drum pads: 16 (velocity and pressure sensitive)
• Sync modes: SMPTE, Midi Time Code, Midi Clock, Midi Song Position Pointer, FSK24, Pulse, 1/4 note clicks

Rear panel inputs/outputs:

• Record input: 1
• Record input gain switch (HI, MID, LO): 1
• Record input level (balanced):
        • HI: -65 kBm, Imp. 45K
        • MID: -45 dBm, Imp. 45K
        • LO: -27 dBm, Imp. 45K

• Assignable mix outputs: 8
• Assignable mix output level: 0 dBv (standard), Imp. 600

• Stereo outputs: 2 (left and right)
• Stereo outputs level: -3 dBv (standard), Imp. 600

• Echo send mixer output: 1
• Echo send mixer output level control: 1
• Echo send mixer output level: -1.5 dBv (standard), Imp. 600
• Echo return inputs: 2 (left and right)
• Echo return input level: -3 dBv (standard), Imp. lO

• Sync input (dual function - also trigger input, balanced): 1
• Sync input level control: 1
• Sync input level: 0.5V p-p ~ 1V p-p
• Sync output: 1
• Sync output level: 1Vp-p, Imp. 220

• Metro output (clocks): 1
• MIDI inputs: 1
• MIDI outputs: 4 (fully independent and simultaneous)
• Foot switch inputs: 2 (independent assignable)
• RS-232C computer port: 1

Note: For improvement purposes, specifications and design are
subject to change without notice.

10.3 What to do if your MPC60 isn't working properly

If you discover a problem in your MPC60, please follow these steps:

1. Unless the problem is major and obvious, please read the section of the manual related to that function THOROUGHLY AND SLOWLY. The MPC60 is a very complex product, and sometimes it's possible to think that something is not working correctly if you don't fully understand how it is supposed to operate.

2. If after reading the manual you're still convinced that your MPC60 has a problem, please write down <u>as many details as you can</u> about the problem, then call your dealer, service center, or your Akai distributor, and read this information to them. They will try to solve your problem over the phone. If they can't, they'll give you instructions on how to get your unit repaired.

Software "bugs"

The problem could be caused by a software "bug" - a design fault in the internal computer's operating program, which will occur on any MPC60 if the exact same procedure is followed. Although we have tested the MPC60's software extremely thoroughly before release, there are literally thousands of ways to use the machine, and therefore a "bug" could have gone undiscovered. Further, because of the high complexity of the MPC60, some of these bugs can be extremely difficult to duplicate, and our software engineers must be able to first duplicate the problem before they can correct it. For this reason, it is very important for us to know exactly what steps you performed which caused the problem to occur. So, if your problem appears to be a software bug, we would very much appreciate it if you would attempt to find the exact series of steps necessary to repeat the problem. If you can't repeat it, it would still help us greatly if you can write down exactly what you did which caused the problem to occur, in as much detail as you can remember, then send these notes to your local Akai distributor.

We will periodically release software updates to correct any software bugs which were found and to add new features. These software updates require only a simple installation in your machine. To find out if your machine contains the latest software update, contact your dealer or service center.

SECTION 11:
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FRONT PANEL

AKAI *professional*

MIDI PRODUCTION CENTER MPC60

REAR PANEL

AKAI

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