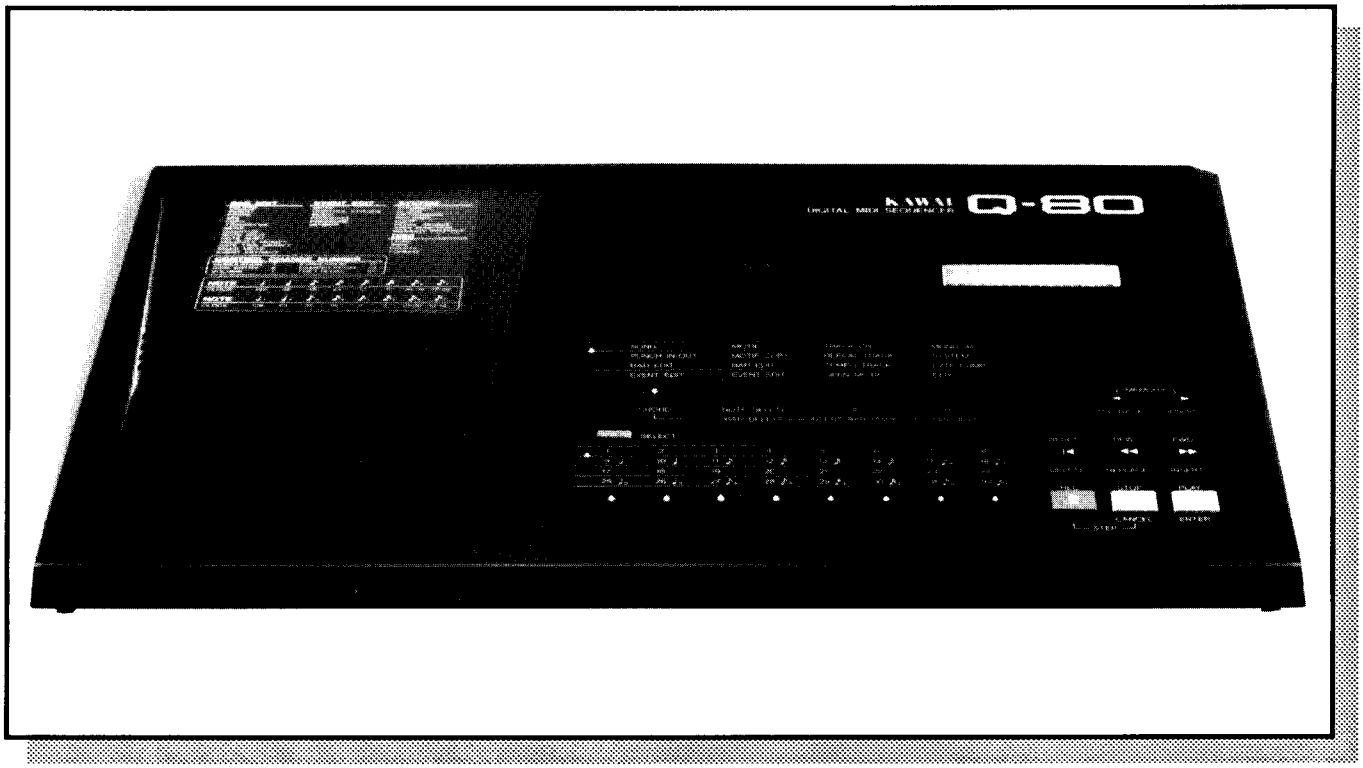
KAWAI

Q-80

DIGITAL MIDI SEQUENCER

OWNER'S MANUAL



WRITTEN BY DAN WALKER • PREPARED BY ALEXANDER PUBLISHING
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WARNING: This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instruction manual, it can cause interference to radio communications. The rules with which it must comply afford reasonable protection against interference when used in most locations. However, there can be no guarantee that such interference will not occur in a particular installation. If this equipment does cause interference to radio or related equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- reorient the receiving antenna.
- move the receiver away from the instrument.
- plug the instrument into a different outlet so that it and receiver are on different branch circuits.
- consult the dealer or a qualified service personnel.

Table Of Contents

Stage 1

Getting Started

The first section of this manual introduces you to the Q-80 and many of its functions. Basic operations are discussed to familiarize you with the working environment the Q-80 provides and hook up suggestions are offered for a variety of studio arrangements, which you can apply to your own situation.

If MIDI and its recording possibilities are a new world for you, you'll find fundamental information about MIDI and its capabilities following the preface material. This material covers basic issues about MIDI data - how it's used and manipulated by the sequencer to create a MIDI recording.

Following the introductory discussion on MIDI in Chapter One, the Q-80 itself is looked at in detail with regard to its physical environment (the controls on the front panel) and its operational environment (the software modes and menus). Understanding these concepts fully enables you to work fluently on the machine and thereby create music as the inspiration guides you.

The first section wraps up with a simple Recording Tutorial just to get you going. Detailed Real Time and Step Time recording functions are discussed in Stage 2 and advanced editing and recording techniques are covered in the final section, Stage 3.

Preface

The Kawai Q-80 MIDI sequencer allows you to record, play back and edit MIDI performances. The sequencer plays back the performance through any MIDI equipped sound module including synthesizers, drum machines and other sound sources.

Features

32 Tracks and 100 Motifs

The Q-80 supports up to 32 tracks per song and holds up to 10 songs in its internal memory. This enables the machine to record on *all 16 channels at once and play back up to 32 tracks.*

Each Song has storage space for 100 motifs. Motifs are separate memory areas which hold performance data just like tracks. The difference is once the data is recorded into a motif, it can be repeated over and over again without using up a lot of valuable memory. Recording data into a motif uses memory, but repeating it does not. Prudent use of motifs greatly reduces the amount of memory required to store a song that involves repetition.

Storage

The Q-80 has enough S-RAM inside to hold approximately 26,000 notes. A backup battery maintains this data when the sequencer is turned off.

Each 3.5" floppy disk holds up to 112 songs - 150,000 notes.

Active Quantization

This function goes way beyond the purely mechanical quantization of other sequencers. For example, it allows you to quantize only those notes that are far off the mark and leave subtle differences as they are, for a more natural sound. Other possibilities include selective quantization of specific pitches and the *deliberate* shifting of note timing out of alignment.

Real Time and Step Time Recording

Using Real Time, the Q-80 records data as you play it. Step Time is the electronic equivalent of writing sheet music - one note at a time. Real Time offers active quantization to adjust timing details, Step Time lets you specify quintuplets and septuplets as well as simple triplets.

Punch In/Punch Out

The Q-80 lets you define individual bars for automatic punch in/out recording. You can also use a switch pedal to engage and disengage the record function for manual punch in/out. The sequencer also allows you to rehearse the changes before actually recording.

MIDI Patch Data Storage

In addition to its capabilities as a sequencer, the Q-80 supports a 64k memory bank specially created for system - exclusive data such as synthesizer patches or drum machine patterns. This memory is divided into 10 data files, each capable of holding up to 999 MIDI system - exclusive messages.

Care and Maintenance

Location

Avoid continued use or storage in the presence of the following environmental factors, as they may contribute to faulty operation or breakdowns:

- Exposure to direct sunlight
- Excessive heat or humidity
- Sand or dust
- Excessive vibration

Power Supply

- The AC adapter that came with your Q-80 is the only adapter compatible with the sequencer.

- Before connecting or disconnecting the power supply, make sure that the POWER switch on the Q-80 is turned off.
- Avoid circuits connected to large electrical loads or equipment that generates line noise.

Electrical Interference

Keep the sequencer away from radios, televisions and other electrical equipment that can induce noise in its digital circuits.

Cleaning

Wipe with a clean, dry cloth. Under no circumstances use benzene, paint thinner or any other organic solvents.

Battery Backup

The sequencer contains a lithium battery that maintains memory contents even after the main power supply is turned off. The battery is good for five years. For a replacement battery, contact your authorized Kawai dealer.

MIDI Cables

- Use only cables meeting the MIDI standard. Don't use ordinary 5-pin DIN cables because these aren't shielded properly. Buy only cables that are sold as "MIDI cables."
- Avoid cables longer than 15m as signal quality deteriorates beyond that length.

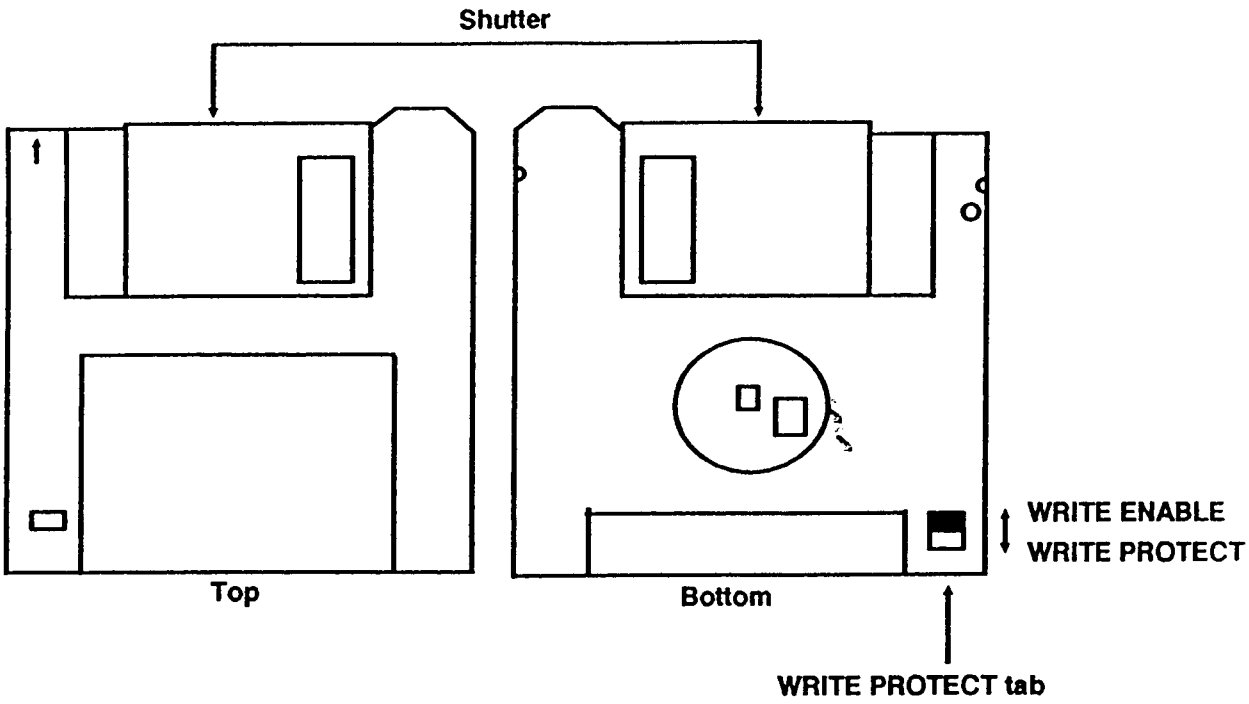
Data Backup Before Servicing

Although service personnel make every effort to preserve memory contents during servicing and testing, there is no guarantee against data loss. You are therefore strongly advised to save your valuable data on a floppy disk before submitting the sequencer for servicing.

Handling of Floppy Disks

This sequencer uses standard double-density (2DD) 3.5 inch floppy disks as its external storage medium. Each new disk must be "formatted" or prepared for use specifically with this sequencer (see Data Management/Disk Storage).

The disk consists of a hard plastic case with a thin film inside. The magnetic coating on this film supports the high-density data recording when it's transferred from the internal memory of the Q-80 sequencer.



The disk itself is very delicate and so precautions must be taken to insure its effectiveness and long life:

- Never open the protective shutter manually. Fingerprints, dirt and other foreign matter that enters the case will damage the magnetic coating, leading to irrevocable loss of data.
- To prevent accidental erasures, make it a practice to leave the WRITE PROTECT tab in its PROTECT position and shift to the ENABLE position only when you specifically want to alter the contents.
- Don't use or store in dust environments.
- Keep away from speakers, screwdrivers, televisions and other sources of strong magnetic fields. These can alter and destroy the data saved on your disks.
- Avoid temperatures outside a range of 10C - 60C. In particular, don't leave disks in direct sunlight, such as on the dashboard of a car.
- Don't remove a disk or turn off the Q-80 power while the disk drive is in operation (while the indicator light is lit).
- Disks can wear out with repeated use. Poor storage conditions and improper handling - especially touching the disk surface - only accelerate the process. For maximum security, make multiple copies of your valuable data and store them in separate locations.

- Another source of read errors is a dirty head in the sequencer itself. You can clean it with a cleaning diskette, available from any computer products dealer.

Background MIDI Information

Read this first chapter if you've never worked with a sequencer before. If you have, you might want to skim over it quickly to review some of the basics. We concern ourselves with fundamental principles here, necessary in understanding the workings of a sequencer and the manipulation of MIDI data.

What's MIDI?

MIDI is an acronym for Musical Instrument Digital Interface. Specifically, MIDI is a language by which electronic keyboards, drum machines, sequencers and a whole world of musical machines talk to each other.

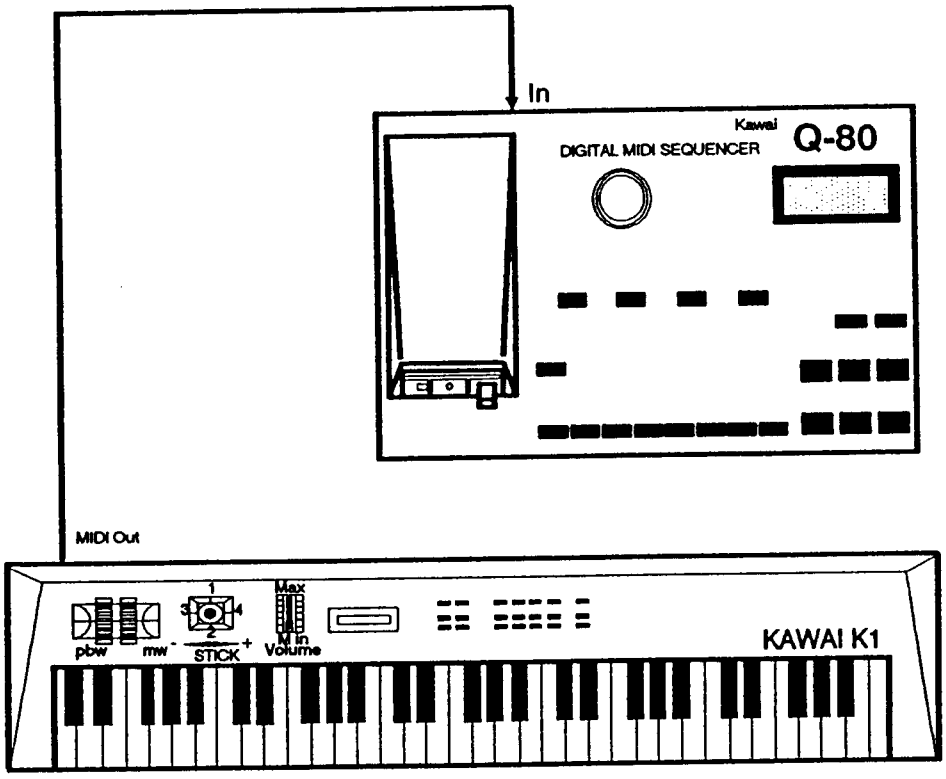
Originally MIDI was developed so a player could "trigger" the sounds of two or more keyboards from one "Master" keyboard. In this way, the player could set one keyboard to play a string sound, another to play a brass sound, another to play a piano sound, and then control *all of them*, literally a full "orchestra," with only two hands. Drum machines and other electronic instruments soon became interactive and, before you knew it, MIDI became the catch phrase of the music industry.

The MIDI language is an industry standard, so you can connect instruments made by various manufacturers and they'll communicate. In fact, any machine equipped with MIDI, be it old or new, made in Japan, America or on Saturn, can communicate with any other MIDI device. If a machine has the two basic IN and OUT MIDI ports, then it can transmit and receive MIDI.

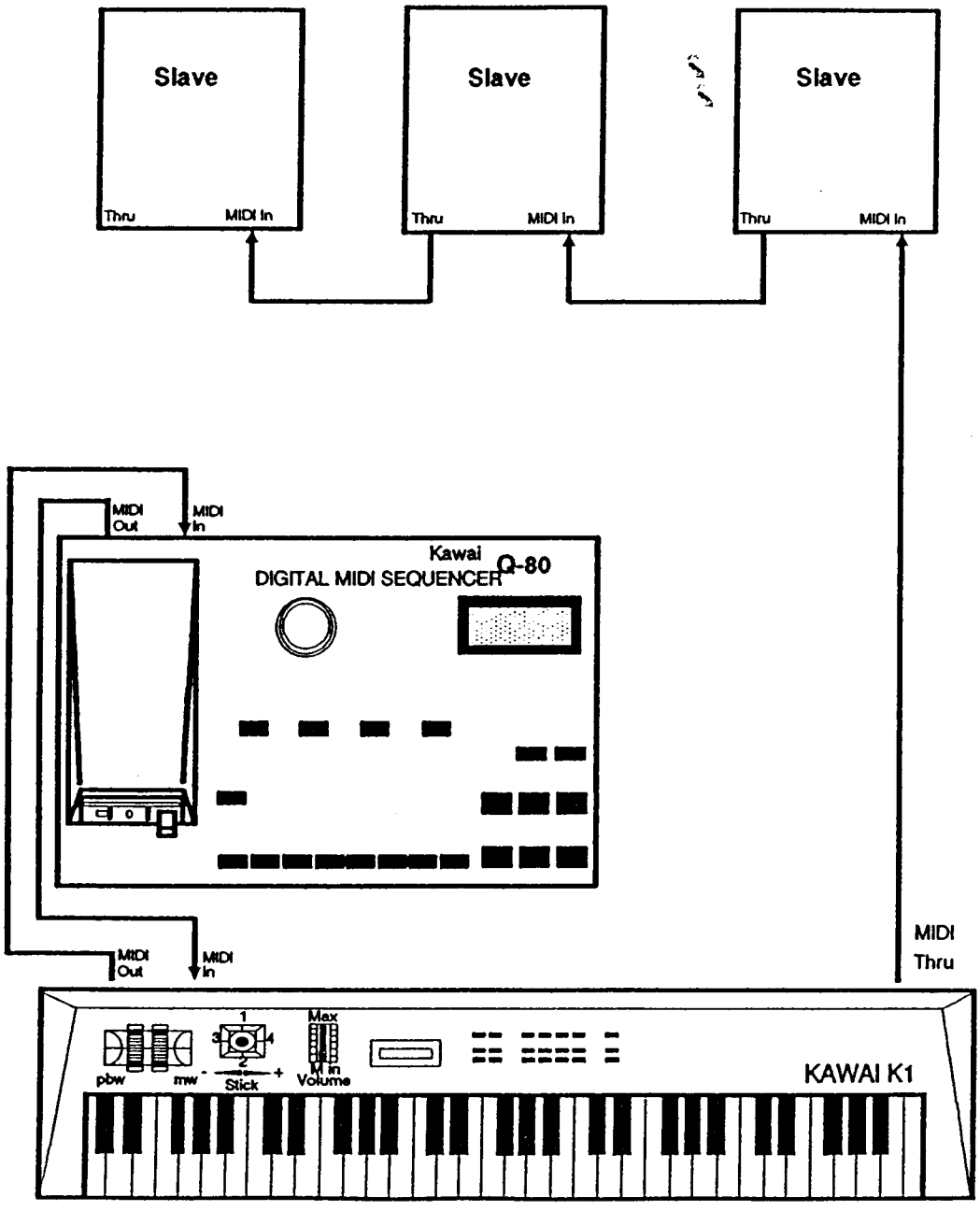
The new MIDI technology proved so effective in triggering sound-producing machines like keyboards and drum machines, it was soon being used to communicate to computers. Since computers can store information, or "data", it became possible to actually record a performance played on a MIDI keyboard.

The Sequencer

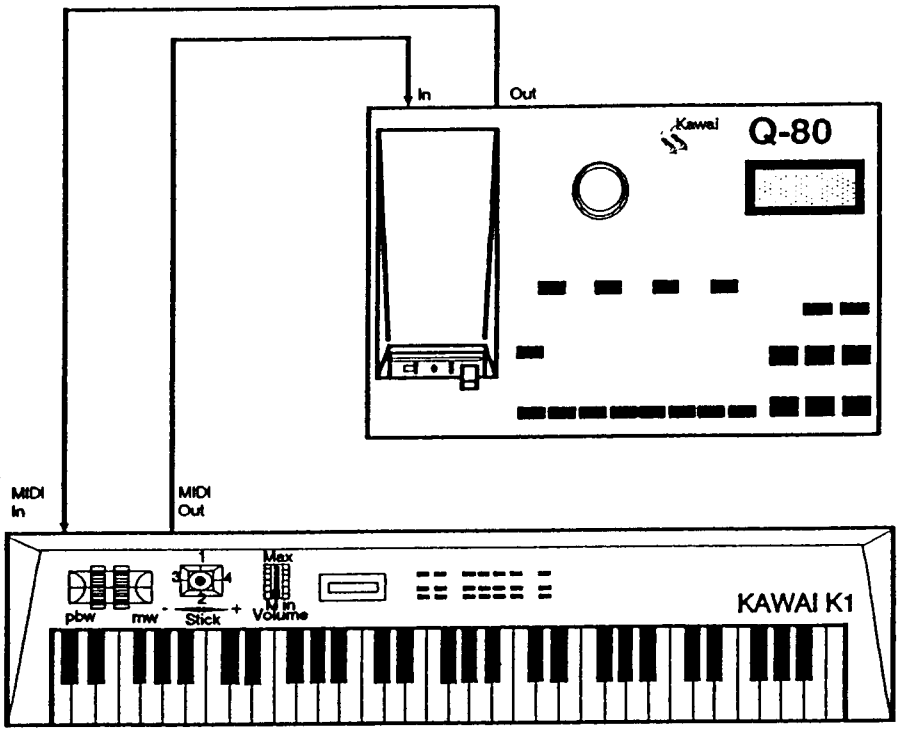
By definition, the sequencer records MIDI data transmitted by a MIDI controller like a keyboard, MIDI guitar or MIDI drum pads.



During playback the sequencer transmits the data back to a "sound module," which can be anything thàt receives MIDI information and produces a sound, like keyboards or rack-mounted synthesizers, samplers and drum machines.



In the simplest setup, the controller keyboard is also the sound module receiving the playback.



There are *two types of sequencers* on the market today. The most common type is in the form of software written for the disparate brands of personal computers on the market. The other type is in the form of hardware dedicated to sequencing music, like your Q-80.

But your Q-80 is more than just a sequencer, it's a patch librarian for your synthesizer patches and drum machine patterns as well!

What type of MIDI data does the sequencer record?

The same performance MIDI messages transmitted from one keyboard to another can be transmitted to a sequencer and then played back. These types of messages are:

- **Key information** - What key is played, how hard it's struck and how long it's held.

- **Program changes** - What sound is called up from the memory of the instrument.
- **Controller information** - Various control messages, like volume pedal changes, pitch bends, modulation or the sustain pedal.

When using two keyboards, this type of information is passed from the master keyboard to its slave, so when you play a C on the master, you're also playing a C on the slave. When you depress the sustain pedal on the master, you also engage sustain on the slave, and so on.

The sequencer records these messages and stores them to be played back later.

What a Sequencer Can and Cannot Do

The MIDI recorder, or sequencer, operates much like a tape recorder. They both perform similar functions by recording and storing musical performances, yet there are some radical differences.

What a Sequencer Cannot Do

- *It cannot record sound.*

The sequencer records MIDI performance events, NOT SOUND. You cannot use a sequencer in place of a tape recorder to record your voice or an acoustic instrument. To input data into a sequencer, you must use an instrument that transmits MIDI information, like a MIDI-equipped keyboard (such as the Kawai K5 or K1 keyboards).

- *The sequencer cannot play music back without a sound-producing device like a keyboard or rack-mounted sound module or drum machine.*

The modern sequencer is very similar to the piano rolls used with old player pianos. The piano roll, like a computer sequence, is a recording of performance events, but you can't hear the music on a piano roll until you put it into a player piano. The sequencer works exactly the same way. It stores only the performance; to hear it, you'll need to connect the sequencer to a MIDI sound module.

A MIDI sound module is *any device that receives MIDI information and produces a sound.*

What a Sequencer Can Do

- *Music can be recorded at any tempo.*

Unlike a tape recorder where playback is an exact duplicate of the performance, you can play a difficult passage at a slower tempo and then speed it up to hear how it is supposed to sound at the correct tempo.

- *Performances can be edited after they're recorded.*

The sequencer can alter your performance in a wide variety of ways. Some of the more common editing capabilities include auto-correcting the rhythm (quantizing), transposing all or part of the recording and changing the sound of the instrument playing the part.

All this can be done AFTER you record the performance!

- *The performance can be stored in the form of MIDI data on floppy disk.*

All the recordings you make using the sequencer can be stored in the form of data on a standard 3.5" double-density floppy disk.

Unlike most computer sequencers, the Q-80 retains its memory after being powered down.

The Three Basic Components of a MIDI Studio

In describing the strengths and limitations of sequencers, I've begun to define the basic components needed to accomplish a MIDI recording.

The sequencer itself is the central feature, receiving the performance messages, editing and storing them and then playing them back.

A controller like a MIDI keyboard, a guitar or wind controller, or MIDI drum pads, is needed to transmit the performance messages to the sequen-

cer. Often - times, all types of controllers are used throughout a sequencing session.

Finally, a sound module or modules is necessary to actually play the recorded MIDI performance transmitted by the sequencer during playback.

The Kawai K5 and K1 synthesizers can both operate as controller and sound modules.

- The K5 synthesizer keyboard can transmit all standard forms of MIDI data and can receive up to 15 separate MIDI channels of information and thereby produce 15 different sounds at the same time. The K5M sound module maintains the same capabilities as a multitimbral sound module.
- The Kawai K1 synthesizer transmits all standard forms of MIDI data and can receive eight channels of MIDI information and produce eight sounds at once.

The Q-80 can operate with any MIDI - equipped sound module from any manufacturer.

Tracks vs Channels

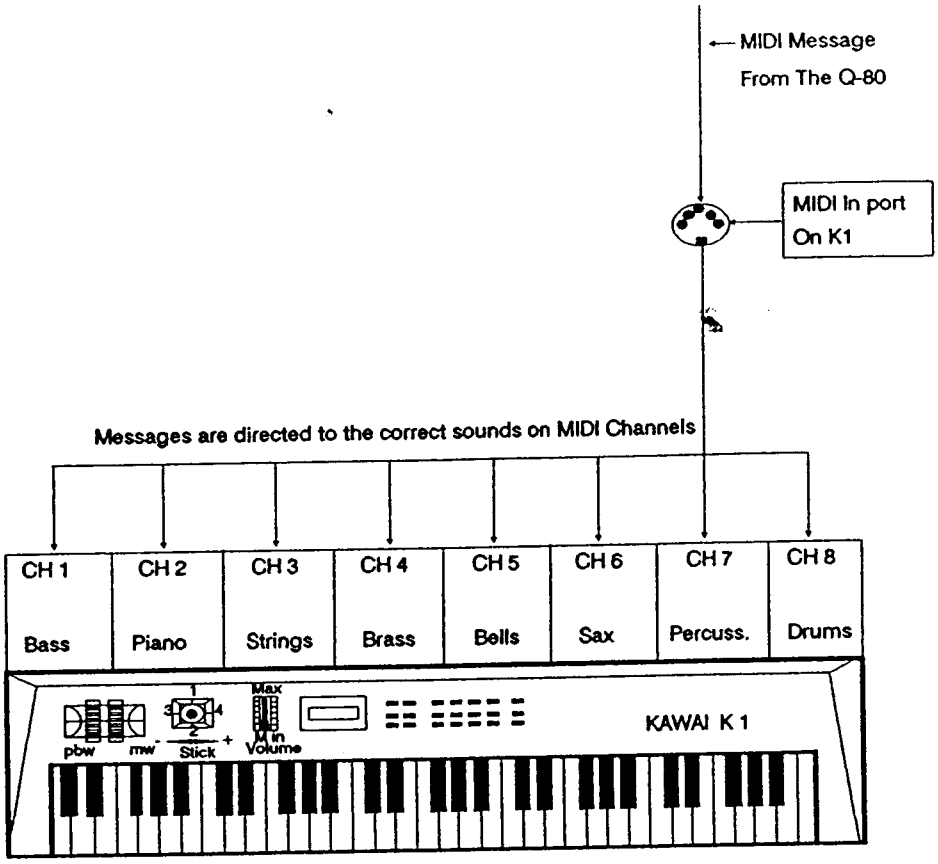
The concept of tracks versus MIDI channels -- how they're different and also alike -- can prove confusing to the beginning MIDI recordist. If you've never used a sequencer before, read this next section carefully.

MIDI Channels

MIDI information is transmitted and received on channels, similar to the way your television set receives signals that are broadcast on different channels. The television receives the channel you set it to and ignores the rest. In MIDI, a slave device set to receive a particular channel responds to that one channel and ignores messages on all others. MIDI channels serve to *direct the information* from the transmitter to the proper receivers.

It's best to think of multitimbral sound modules such as the K5, K5M and K1 synthesizers as having separate receivers built into the same casing.

Take the K1 for instance. It can receive up to eight separate channels of MIDI information. Each channel is assigned to a different sound inside the K1 synthesizer to create an eight part multitimbral combination. *See next pg*



Information received on the different channels triggers different sounds inside the keyboard. Each part of the combination receives its own set of MIDI information because it's directed to the separate parts on the MIDI channels.

Tracks

A Track on the Q-80 is the *Recording Area* providing the space to record your data. This is exactly like tracks on a multi-track tape machine; you must always record on an empty track or you'll replace the current data with new data.

In summary, the difference between Tracks and Channels on the Q-80 is this:

- **Tracks** are used for the recording process. All recording is done on Tracks 1 through 32.
- **MIDI Channels** assign data to the receiving sound modules or sound patches inside a multitimbral sound module.

Summary

I've tried to include as much basic information on the subject of MIDI as is necessary for you to get the most out of your Q-80 sequencer. This, of course, isn't the summation of all such information available. So, if you find yourself challenged beyond this manual and want to know more about MIDI and how it works, pick up a copy of *Making MIDI Work* by session player Dave Crigger and *The Murphy's Law MIDI Book* by systems expert Jeff Burger, both from Alexander Publishing.

Remember the three basic components of a MIDI studio:

- **The Sequencer** - Receives and stores the MIDI recording.
- **The Controller** - Transmits the MIDI data to the sequencer.
- **The Sound Module** - Receives data from the sequencer and plays back the recording.

The Q-80 Environment

The working environment on the Q-80 can be divided into two fields:

- **The Physical Environment** - comprising all the controls on the front and rear panels of the machine.
- **The Operational Environment** - comprising the various modes and menus of the software in other words, where the different functions lie.

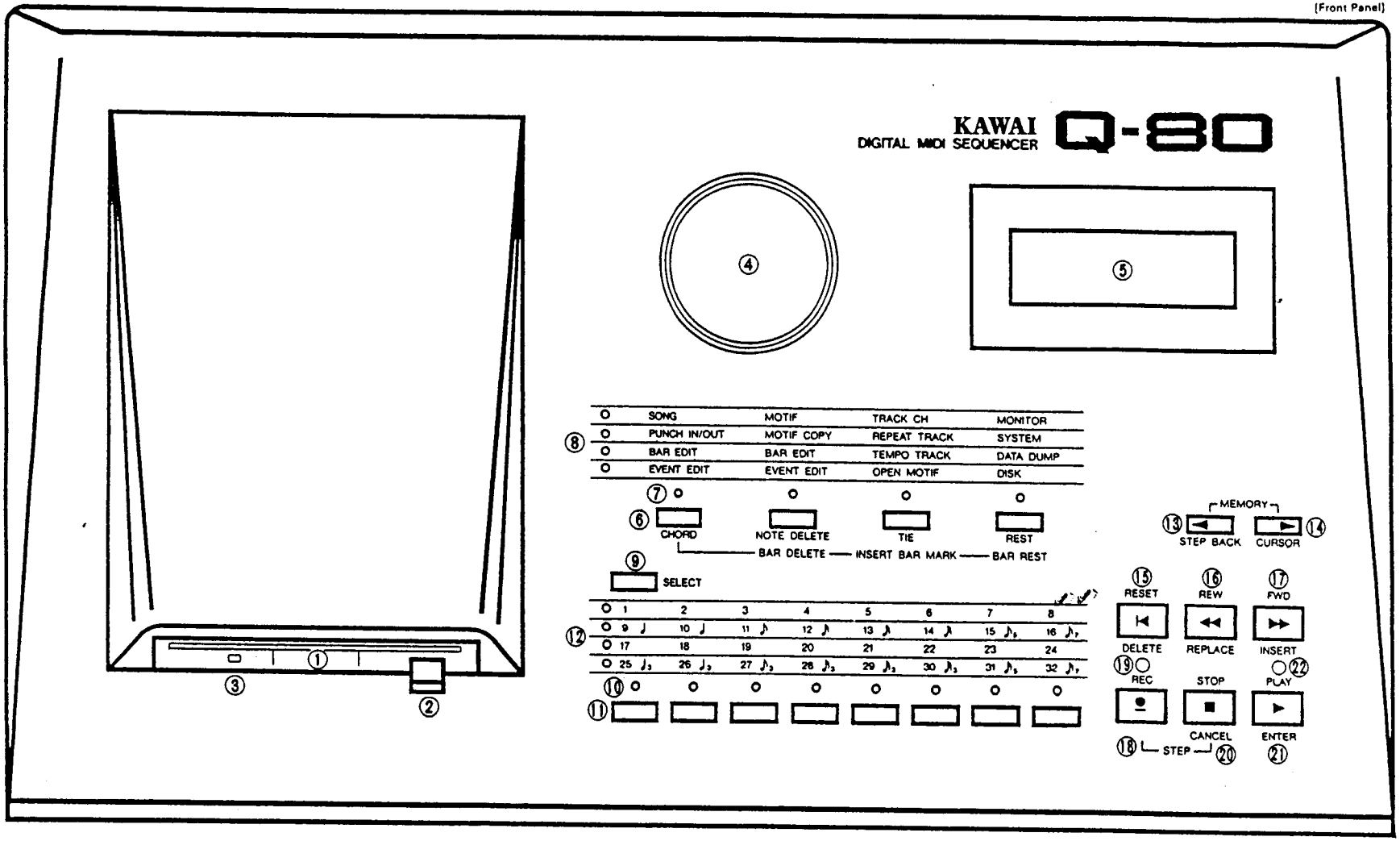
Let's take a good look at each of these environments in an effort to become comfortably familiar with the Q-80 before putting it through its paces.

The Physical Environment

Front Panel

See diagram on next page.

(Front Panel)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REPEAT TRACK
SYSTEM
BAR EDIT
BAR EDIT
TEMPO TRACK
DATA DUMP
EVENT EDIT
EVENT EDIT
OPEN MOTIF
DISK
CHORD
NOTE DELETE
TIE
REST
BAR DELETE
INSERT BAR MARK
BAR REST
SELECT
MEMORY
STEP BACK
CURSOR
RESET
REW
FWD
DELETE
REPLACE
INSERT
REC
STOP
PLAY
CANCEL
ENTER
STEP

1. Disk Slot

Gently slide the floppy disk into the slot, the top of the disk facing up.

2. EJECT button

Press this button to eject the disk.

NOTE: Don't attempt to remove the disk while the drive is in operation (the disk indicator light is lit) or you may damage the disk, the drive or both.

3. Disk Indictor Light

The light remains lit while the drive is in operation. While operating, data is being transferred between the Q-80 internal memory and the disk.

4. Increment Dial

Rotating the dial clockwise increases the value of the parameter that is selected by the cursor on the display. Counter-clockwise rotation decreases the selected parameter's value.

5. LCD display

This backlit LCD displays two lines of 16 characters each. This is where all communication between you and the Q-80 takes place.

6. COMMAND SELECT switches

7. COMMAND SELECT LEDs

8. COMMAND LEDs

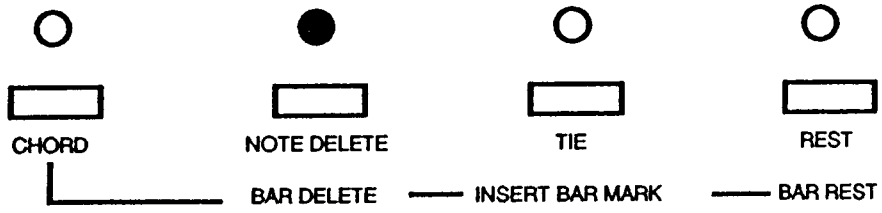
Use the grid printed above the switches to select a function. Each time you press a COMMAND SELECT switch, the COMMAND LED drops by one function above the switch. For example, pressing [Chord] repeatedly scrolls through these functions:

- Song Select
- Punch In/Out
- Bar Edit Menu
- Event Edit

Use the COMMAND SELECT switches to choose a list of functions on the grid and then press the COMMAND SELECT switch repeatedly to select a function within the list.

Example: MOTIF COPY

○	SONG	MOTIF	TRACK CH	MONITOR
●	PUNCH IN/OUT	MOTIF COPY	REPEAT TRACK	SYSTEM
○	BAR EDIT	BAR EDIT	TEMPO TRACK	DATA DUMP
○	EVENT EDIT	EVENT EDIT	OPEN MOTIF	DISK



Press (NOTE DELETE) switch two times to select motif copy.

The above example selects the *Motif Copy* function.

The COMMAND SELECT switches are also used to choose an alternate set of functions while in Step Record Mode:

- **Chord** - Records several notes as a chord
- **Note Delete** - Erases a note.
- **Tie** - Used to record a tie between two notes
- **Rest** - Used to input rests

(9.) **SELECT switch**

Use this switch to move the TRACK LEDs from line to line.

(10.) **TRACK SELECT LEDs**

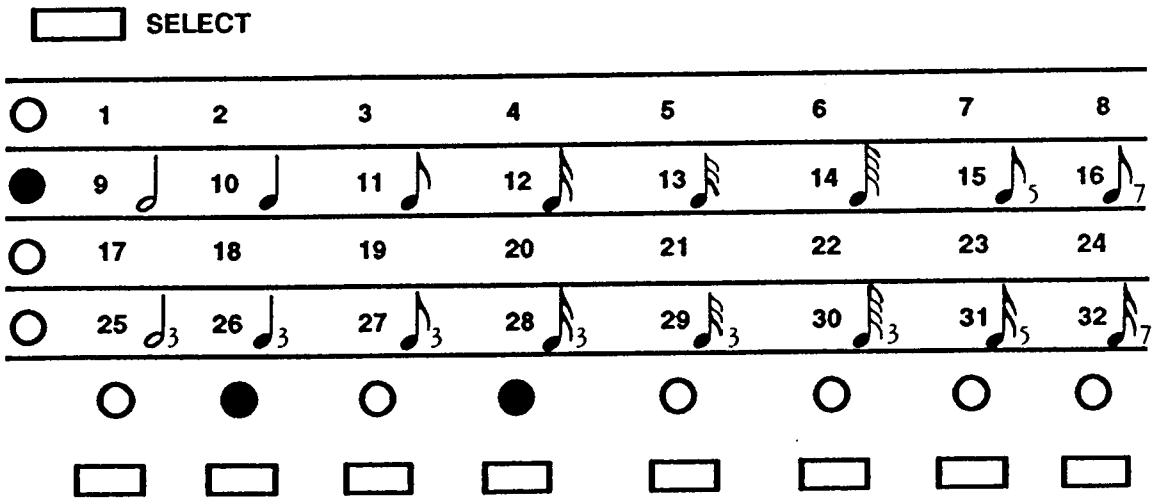
When a TRACK button is selected, the matching TRACK SELECT LED is lit.

(11.) **TRACK/NOTE SELECT switches**

Use these switches to select a list of four track numbers above each switch (the TRACK SELECT switch on the far left selects tracks 1, 9, 17 or 25). Use the SELECT switch to choose a particular track from the list of four.

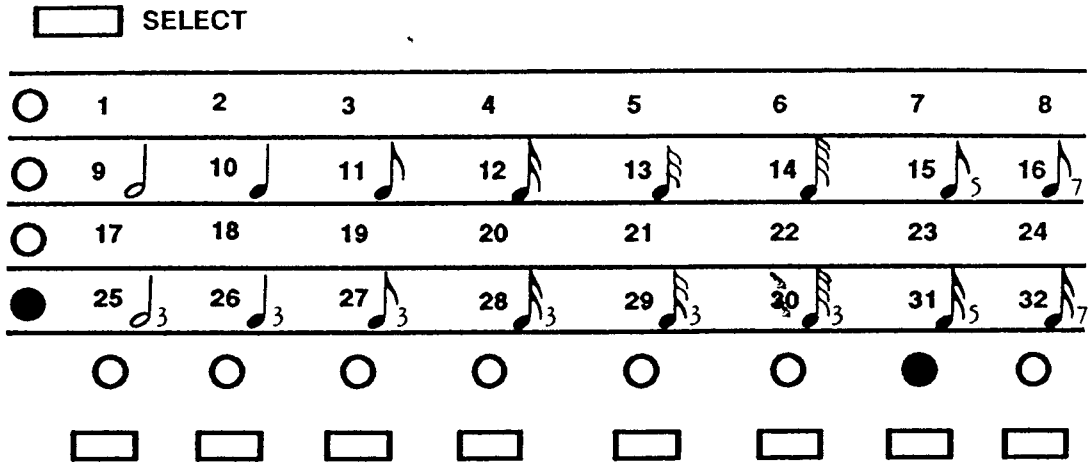
(12.) **TRACK LEDs**

The TRACK LEDs indicate which of the four horizontal lines on the grid is active.



In the above example, tracks 10 and 12 are selected.

The above switches are used to select note values in Step Recording or Editing.



In the above example, a 16th note quintuplet value is selected.

(13.) STEP BACK switch

The switch lets you step backward during Step Recording or Editing. You can only do this once.

(14.) CURSOR switches

In all modes except Step Record, these switches move the cursor from parameter to parameter on the display screen. Pressing both simultaneously displays the amount of memory left in the internal memory of the Q-80.

(15.) RESET/DELETE switch

Pressing this resets the location counter to the beginning of the song. During editing, this engages the Delete function.

(16.) REW/REPLACE switch

(17.) FWD/INSERT switch

In SONG PLAY, you can use these instead of rotating the Increment Dial to change the bar number. Holding them down produces a fast forward or rewind effect. In EVENT EDIT, use these switches to Replace and Insert individual MIDI events.

(18.) **REC switch**

This activates the Record function.

(19.) **REC LED**

This lights during recording. It burns continuously during Real Time recording, but lights on the first beat of every bar during Step Time recording.

(20.) **STOP/CANCEL switch**

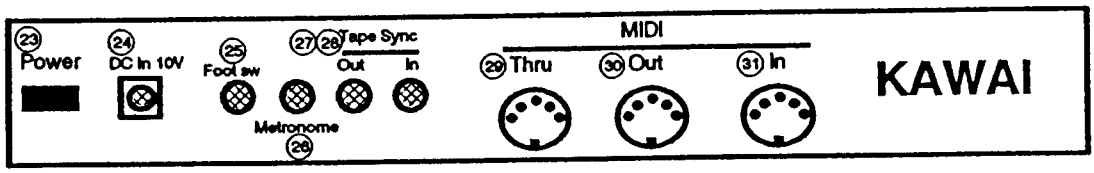
(21.) **PLAY/ENTER switch**

These start and stop playback or recording. For all other modes and functions they serve as YES/NO, PROCEED/CANCEL switches.

(22.) **PLAY LED**

This lights during playback.

Rear Panel



(23.) **POWER switch**

On/Off power.

(24.) **DC IN jack**

Connect the AC adapter to this jack.

(25) **FOOT SW jack**

Connect a switch pedal to this jack for controlling playback, recording and punch in/out functions. These are selected by the Pedal Assign function.

(26) **METRONOME jack**

Provides a metronome signal for a mixer, amplifier.

(27)&(28) **TAPE SYNC IN/OUT jacks**

Connect a cable from the OUT jack to a tape deck to record a sync tone. Connect a cable from a tape deck to the IN jack to receive the recorded sync tone.

(29) **MIDI THRU port**

All data received by the Q-80 is passed through and sent out exactly as it was received via the THRU port.

(30) **MIDI OUT port**

Recorded data is transmitted from the Q-80 via the OUT port.

(31) **MIDI IN port**

Data is received by the Q-80 from an external MIDI controller via the IN port.

Operational Environment

Learning to operate the controls on the front panel of the sequencer is only part of learning the machine. The functions accessed by those controls are arranged into menus and sub menus and it's this arrangement we'll cover next.

Memory Organization

The Q-80 has storage space for approximately 26,000 notes and within that limit, it can store 10 songs. 26,000 notes may sound like a huge amount of storage space (I doubt if there is a fourth that many notes in the entire 5th Symphony by Beethoven), and in fact it *is* a substantial amount, but it's not

as unlimited as it may seem. Note memory is used not only when notes are recorded, but also when you adjust the Pitch Bend Wheel, the Modulation Wheel, the Sustain Pedal, the Volume Pedal or change a program. Any recorded MIDI event uses up note memory so, as you can guess, 26,000 notes is a limited amount of memory and must be monitored.

Each *Song* consists of 32 tracks, 100 motifs and a tempo track. A single song can contain up to 15,000 notes.

To discover the amount of memory remaining for the song currently selected, do this:

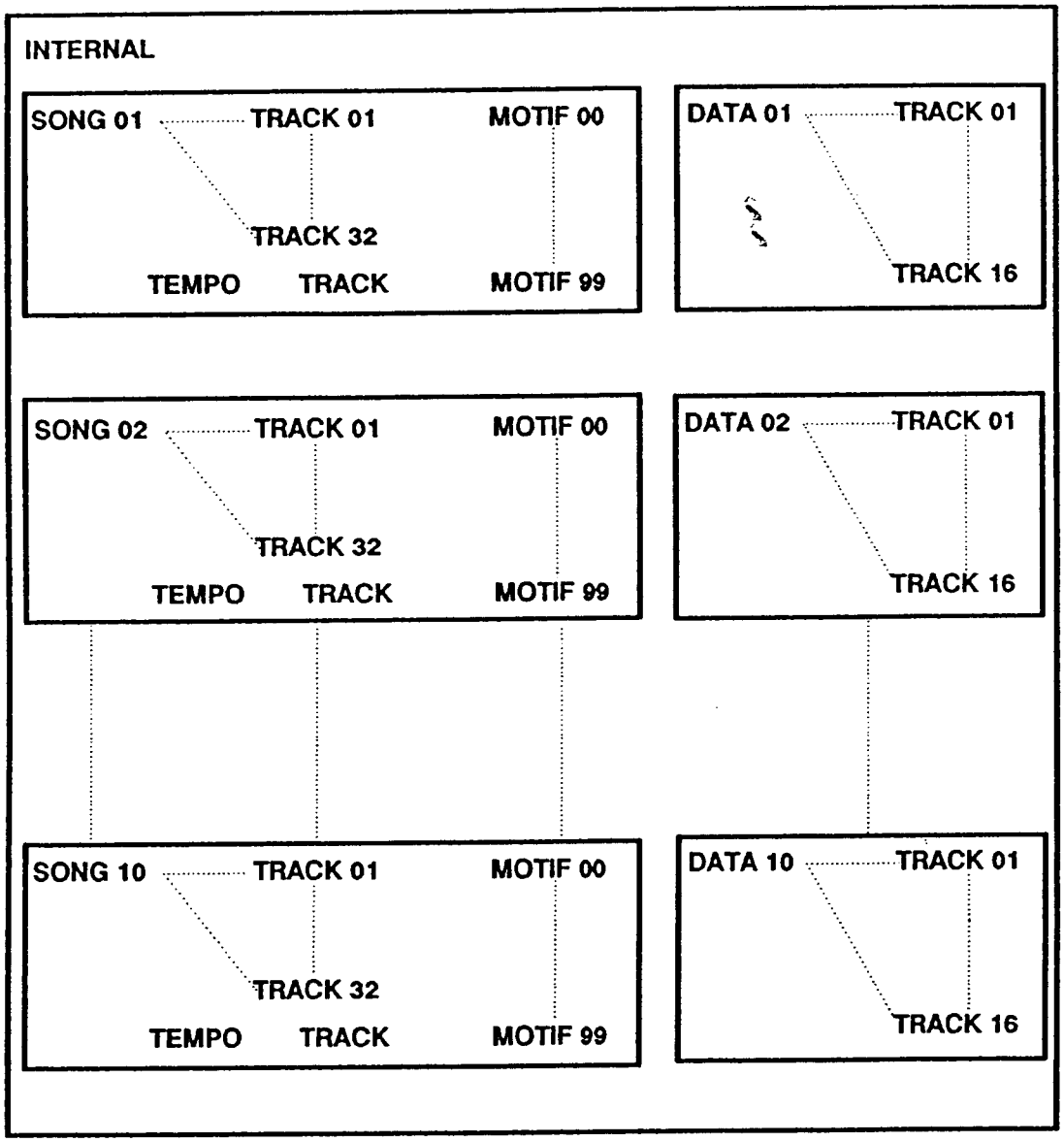
1. Press and *hold* both the [Step Back] and [Cursor] buttons.

2. Each value unit is equal to 60 notes, so multiply the value on the display by 60 to discover the number of notes left for that song.

Select one of the demonstration sequences (Songs 1, 2 & 3) and find out how much memory remains from the 15,000 note limit.

In addition to the 10 songs, the Q-80 also allows up to 64 kilobytes of the internal memory to be used for storing MIDI System Exclusive data in each of 10 data files. Each data file consists of 16 tracks, each of which can hold up to 999 System Exclusive messages.

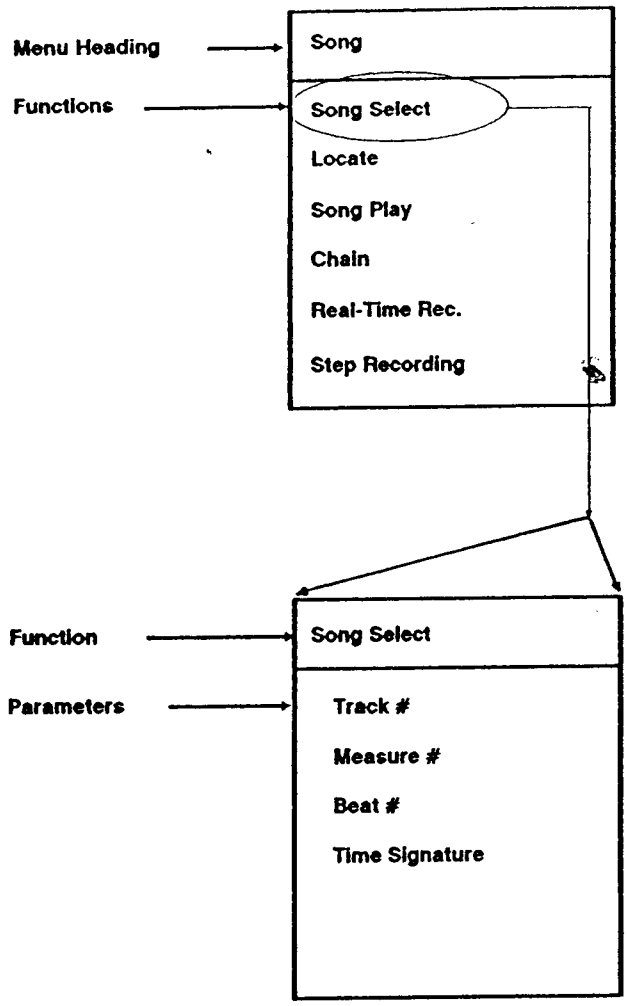
See diagram on next page.



Each floppy disk is capable of storing 150,000 notes in up to 112 songs.

Modes/Menus and Functions

The Q-80 has 16 menus under which all the various functions of the machine are distributed.



Within each function you'll find individual parameters numbering from one to several.

The menus, called *Commands,* must be addressed first before a particular function can be accessed and in turn its parameters. The general procedure is as follows:

1. Use the [Command Select] buttons to select the *Command Menu.*

2. Use the [Increment Dial] to select the *Function.*

3. Use the [Cursor] buttons to select the parameter.

4. Finally, use the [Increment Dial] to change the value of the parameter.

Function Table

COMMANDS	FUNCTIONS (EVENTS)
SONG	1. SONG SELECT 2. LOCATE 3. SONG PLAY 4. CHAIN 5. REAL-TIME RECORDING 6. STEP RECORDING
PINCH IN/OUT	1. REAL-TIME RECORDING PUNCH IN/PUNCH OUT 2. PUNCH IN/PUNCH OUT WITH A FOOTSWITCH 3. STEP RECORDING PUNCH IN/PUNCH OUT
MOTIF	1. MOTIF SELECT 2. PLAY 3. REAL-TIME RECORDING 4. STEP RECORDING
MOTIF COPY	----------
BAR EDIT for a track	1. DELETE 2. INSERT 3. ERASE 4. MIX 5. COPY 6. TRANSPOSE 7. MOVE 8. QUANTIZE 9. NOTE SPLIT 10. NOTE SHIFT 11. VELOCITY MODIFY 12. GATE TIME MODIFY 13. MAKE MOTIF 14. EVENT EXTRACT
BAR EDIT for a motif	1. DELETE 2. INSERT 3. ERASE 4. MIX 5. COPY 6. TRANSPOSE 7. QUANTIZE 8. NOTE SPLIT 9. NOTE SHIFT 10. VELOCITY MODIFY 11. GATE TIME MODIFY 12. EVENT EXTRACT
EVENT EDIT for a track	1. NOTE 2. CONTROL CHANGE 3. MODE 4. PROGRAM CHANGE 5. CHANNEL PRESSURE 6. PITCH BENDER 7. SYSTEM EXCLUSIVE
EVENT EDIT for a motif	1. NOTE 2. CONTROL CHANGE 3. MODE 4. PROGRAM CHANGE 5. CHANNEL PRESSURE 6. PITCH BENDER 7. SYSTEM EXCLUSIVE
TRACK CH	----------
REPEAT TRACK	----------
TEMPO TRACK	----------
OPEN MOTIF	----------
SYSTEM	1. CHANNEL 2. CLOCK 3. METRONOME 4. REC DATA 5. ECHO 6. PEDAL ASSIGN 7. STEP FUNCTION 8. MEMORY PROTECT
DATA DUMP	1. TRANSMIT 2. RECEIVE 3. DELETE
DISK	1. LOAD 2. SAVE 3. DELETE 4. FORMAT
MONITOR	----------

Hook Up

A large percentage of your success with the Q-80 regards how you set up your studio. You'll find a few variations diagrammed here that you can apply to your own situation.

A/C Connections

The Q-80 comes with its own power pack that converts A/C voltage to 10 volts. Plug the power pack into the [DC IN] jack on the rear panel of the machine.

NOTE: The power supply that came with your sequencer is the only *compatible power converter for the Q-80. If you lose it or damage it somehow, don't attempt to use any other type of converter or you might damage the unit. You can order another as a replacement part from your Kawai dealer.*

Surge Control

It's recommended that you invest in a Surge Control Power Strip for the Q-80 and all your electronic instruments. Wall current is constantly fluctuating. Often a surge or *spike* can cause damage to a delicate piece of electronics. Most computer manufacturers advise their products be protected from such spikes by plugging them into a Surge Controller of some kind.

You can pick up a multiple input Surge Control power strip at most hardware stores. Not only will it protect your expensive electronic gear, but it also makes life easier by eliminating all those extension cords.

Chart Your Studio's Capability

If you have a collection of MIDI devices at your disposal, you probably already know that each device is different in its ability to respond to particular MIDI commands. Some devices are more capable than others in both sending and receiving MIDI information and you can discover just what a machine can and can't do by consulting its MIDI Implementation Chart found in all owner's manuals.

You might find it helpful to organize all the information regarding the capabilities of your various machines onto one chart and then use it as a reference in your studio. Just such a chart can be found in the Appendix which you can fill in by consulting the Implementation Charts for each piece you have.

MIDI Connections

You'll always make your MIDI connections correctly when considering the flow of information.

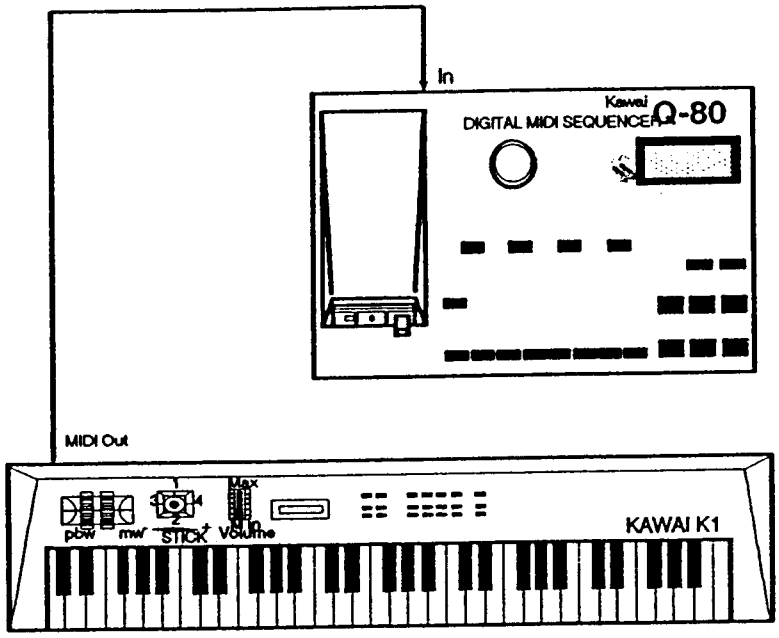
- Information is *transmitted* from a machine through the OUT port.
- Information is *received* by a machine through the IN port.
- Information passes *through unaltered* by way of the THRU port.

To Record

To record information onto the Q-80, the sequencer must receive information from a controller. The controller can be any keyboard in your studio or perhaps a guitar controller, wind controller or MIDI drum pads. Any device that has a MIDI OUT port and can be used to select pitches is a controller.

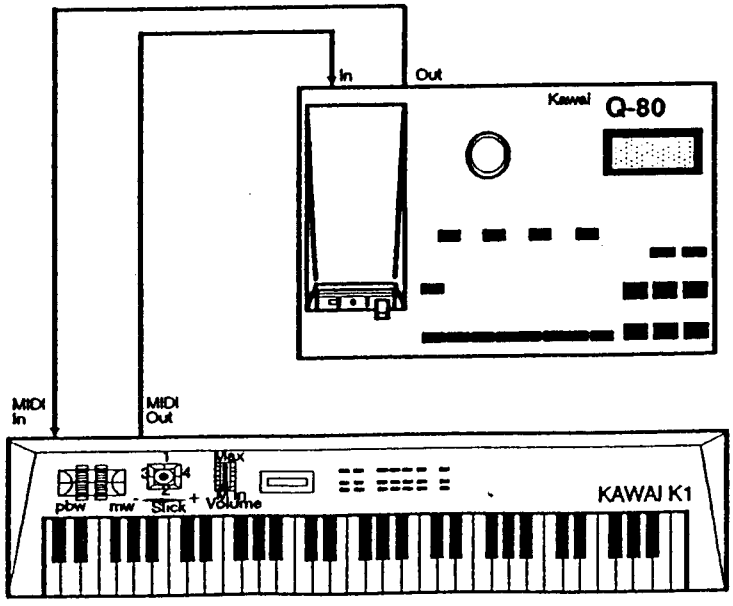
If you have a selection to choose from, you should pick the one that feels the most comfortable to play and has the greatest capability to transmit a variety of MIDI commands. Take a look at the MIDI Implementation Charts for the devices in your studio to determine their capability.

Set up the Q-80 to receive information from your controller:

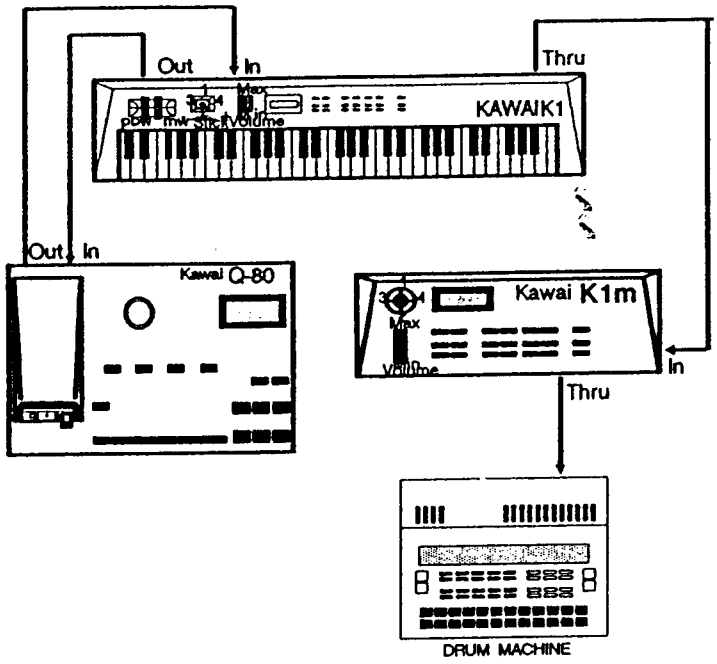


Playback

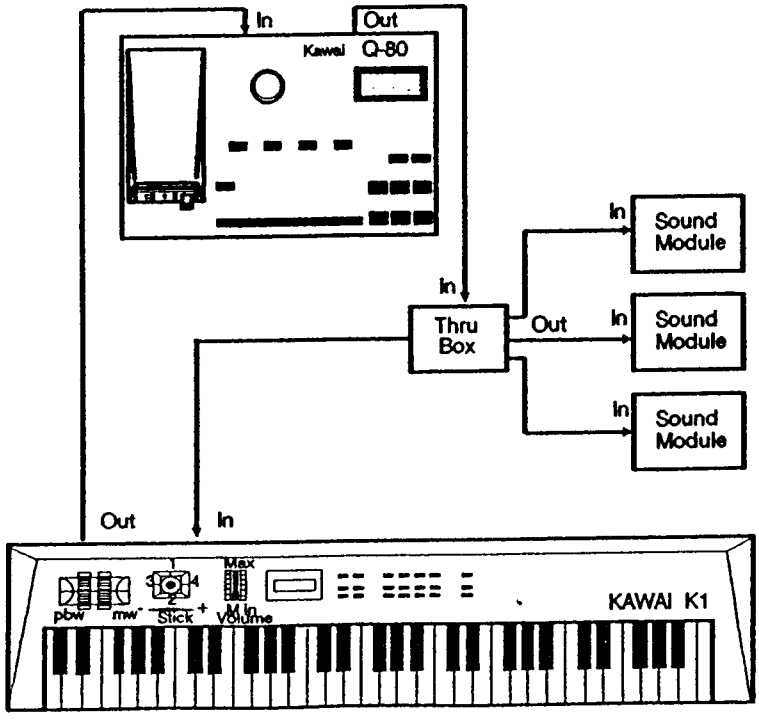
To hear a recording played back, the Q-80 must be connected as the controller and your sound module(s) as the slave. If you're using one keyboard as both the controller and the sound module, you'd hook it up to the Q-80 like this:



If you have additional sound modules in your studio, hook them up this way:



If you have more than three sound modules receiving information from the Q-80, use a *Thru Box* to prevent any MIDI delays:

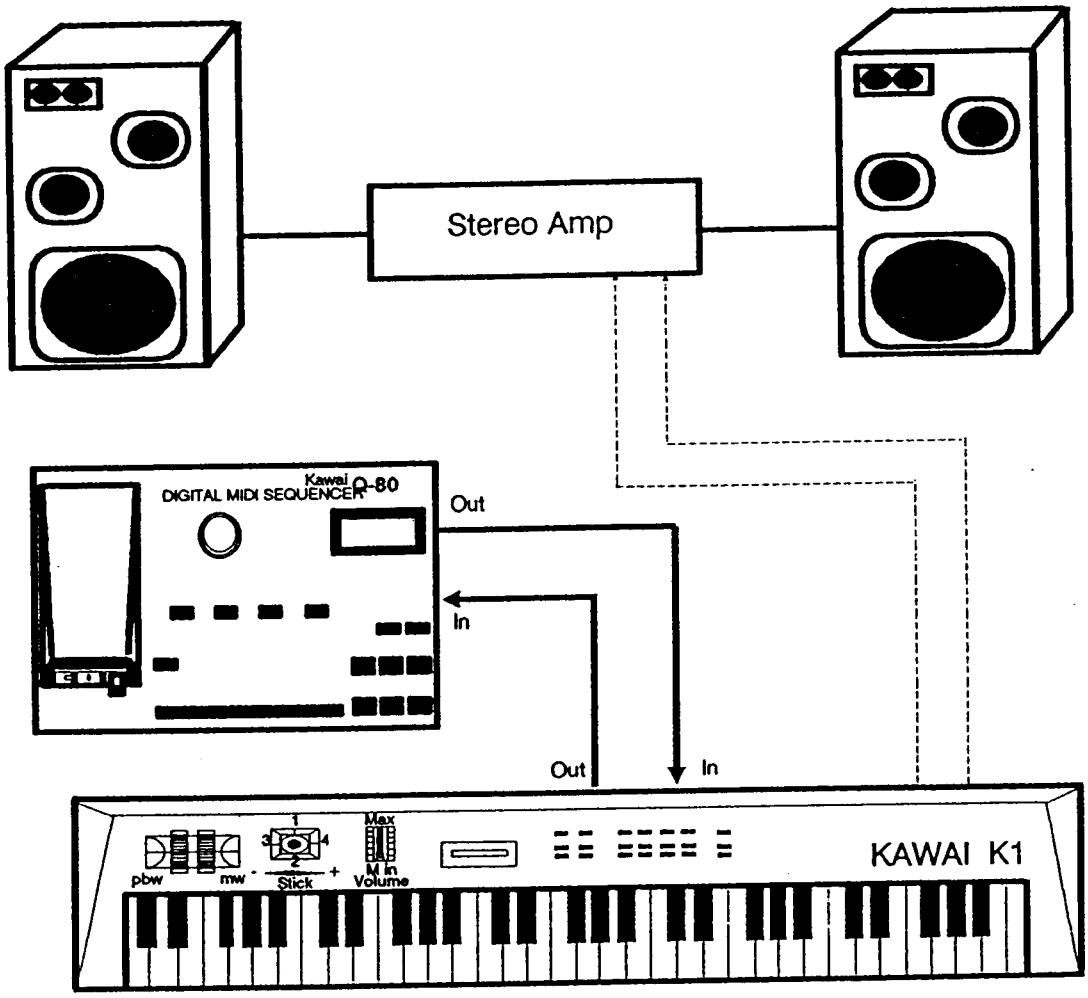


Audio Connections

Although the Q-80 itself doesn't produce an audio signal, with exception to the metronome click, the sound modules in your studio must each be connected to a sound reinforcement system to be heard.

One Keyboard and the Q-80

If you're using one keyboard as both the controller and sound module, you can get by with just a pair of headphones, or your home stereo system.

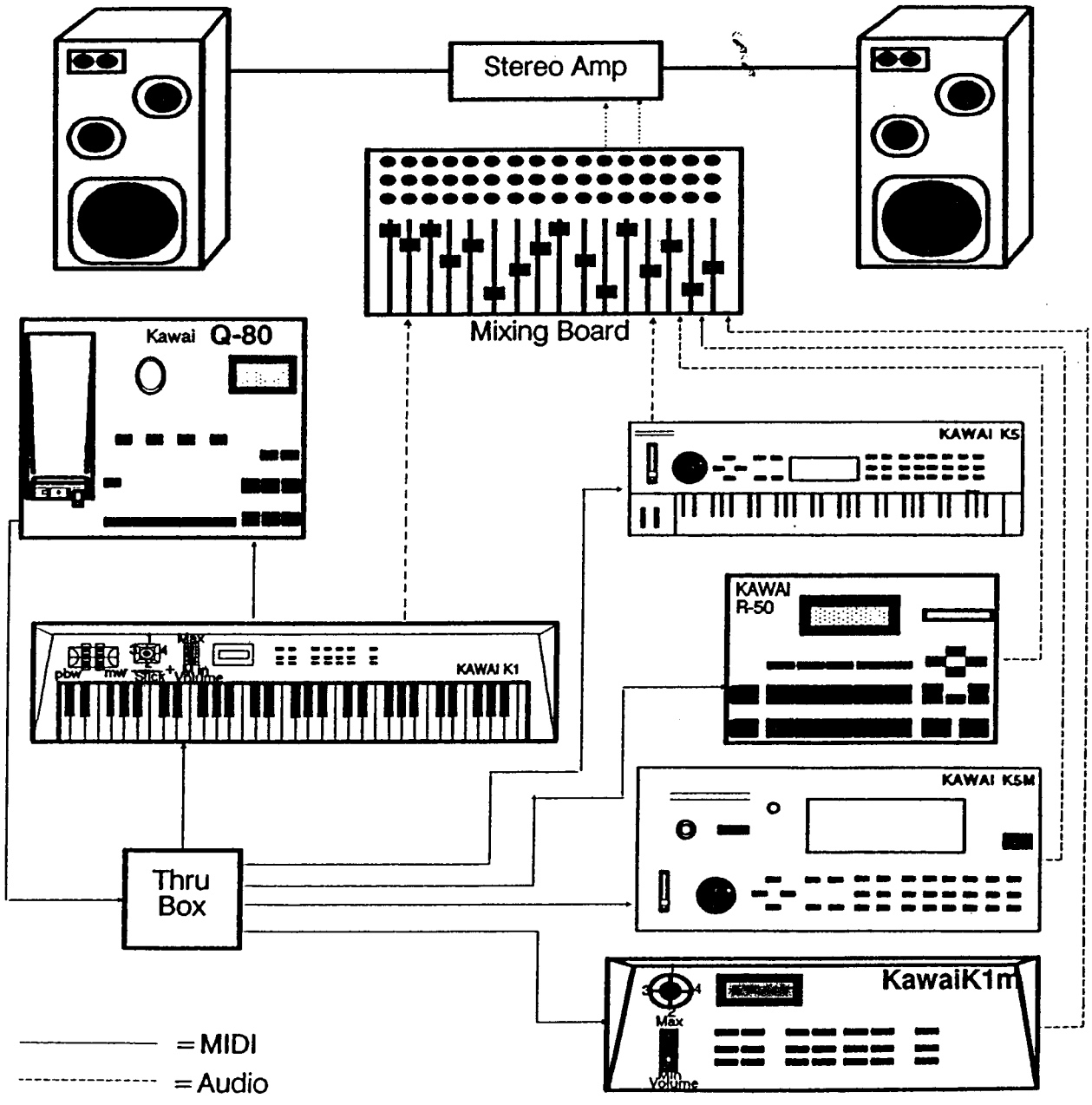


MIDI Signal

Audio Signal

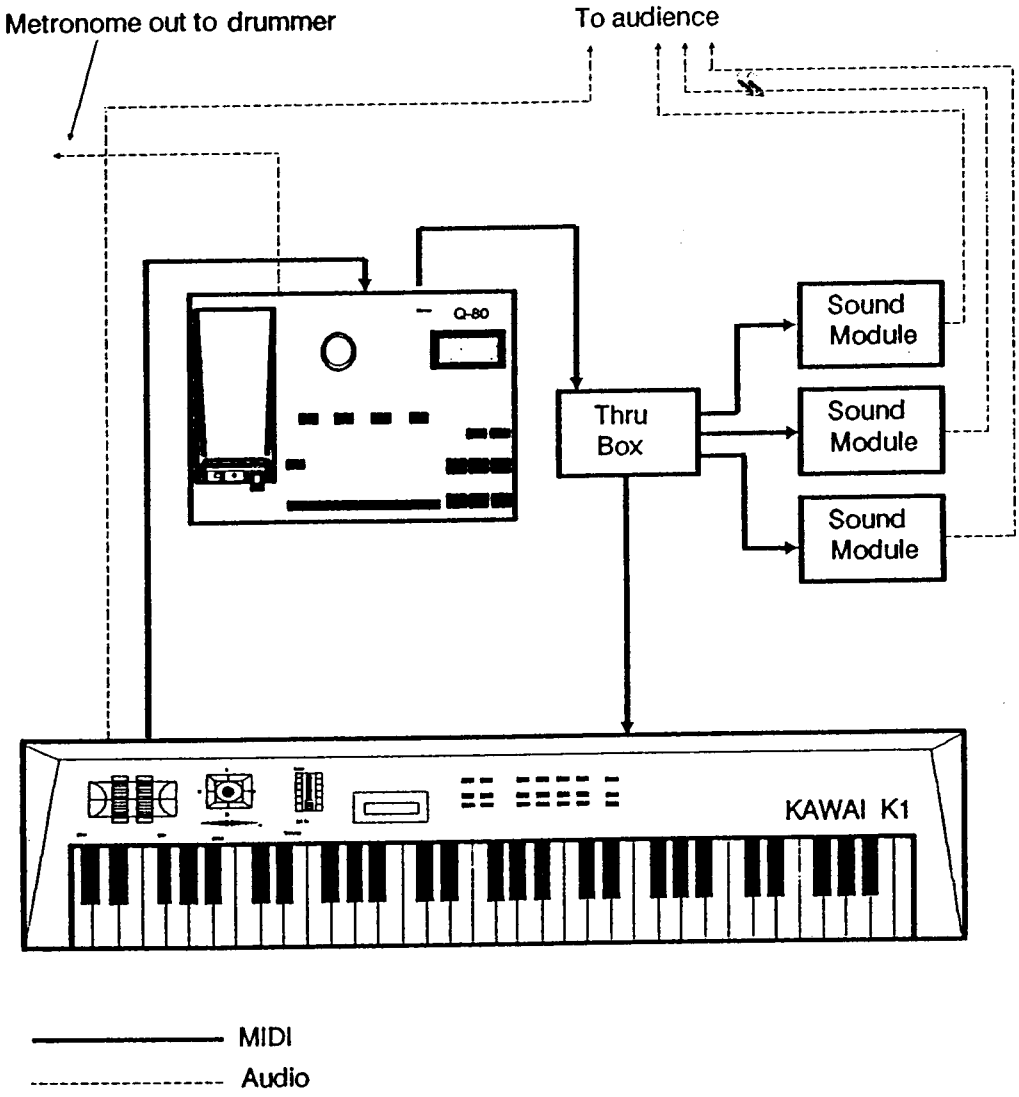
Multiple Sound Modules and the Q-80

If you have more than one sound module, you can still use your home stereo, but you'll need a mixing board to collect all the inputs and then send the mixed signal out to your sound system in stereo.



Live Set Up

In a live situation you may want to send the metronome click to the drummer separately from the sound module mix that an audience hears:



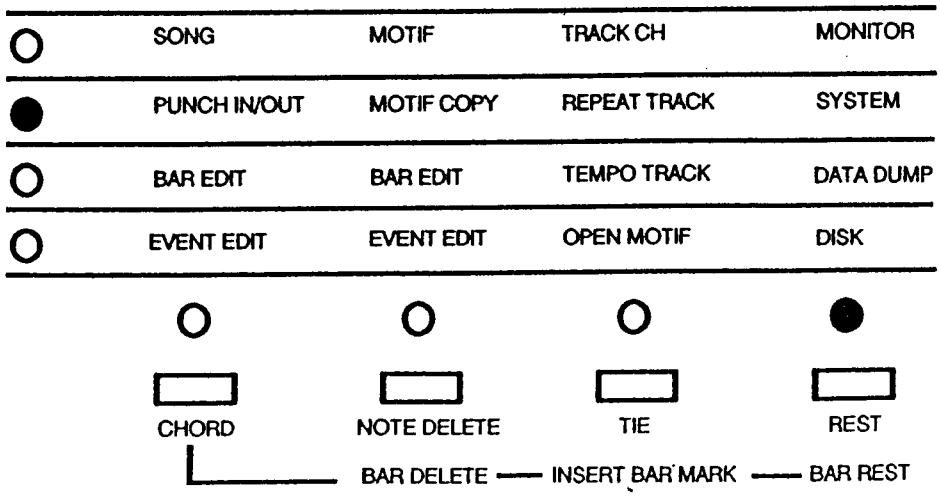
Test Your Studio Set Up

After making the audio and MIDI connections, follow the steps outlined below to test the system and make sure the flow of MIDI information is free of bugs.

Begin by adjusting the MIDI Echo function.

MIDI Echo

The *MIDI Echo* function determines whether MIDI information received by the Q-80 from your controller will pass through the sequencer to the sound modules in your set up. Access *Echo* by selecting the *System* menu:



1. Rotate the [Increment Dial] to select the *System Echo display.* Press [Enter] and you'll see this display.

There are three different ways to set MIDI Echo:

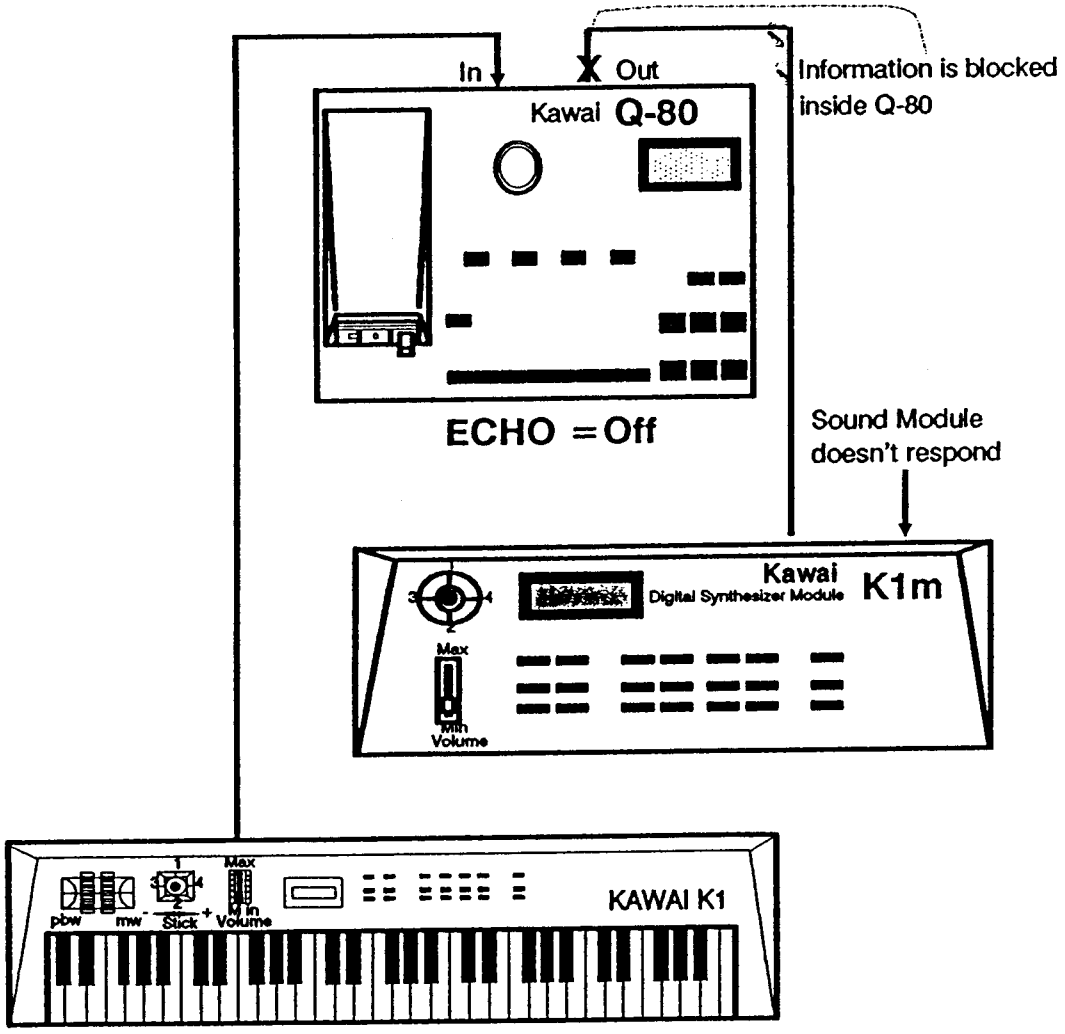
- OFF - MIDI messages sent from the controller to the Q-80 *ARE NOT* allowed to pass through the sequencer to the sound modules.
- THRU - All messages received from the controller *ARE* allowed to pass through the sequencer to the sound modules.
- REC - During the recording process, only the channels being recorded are allowed to pass through the Q-80. At all other times (during playback or editing, etc.) this setting produces the same results as THRU.

When you should set Echo to ON, THRU or REC depends on your studio set up arrangement and particular recording situations.

When to Set Echo to REC

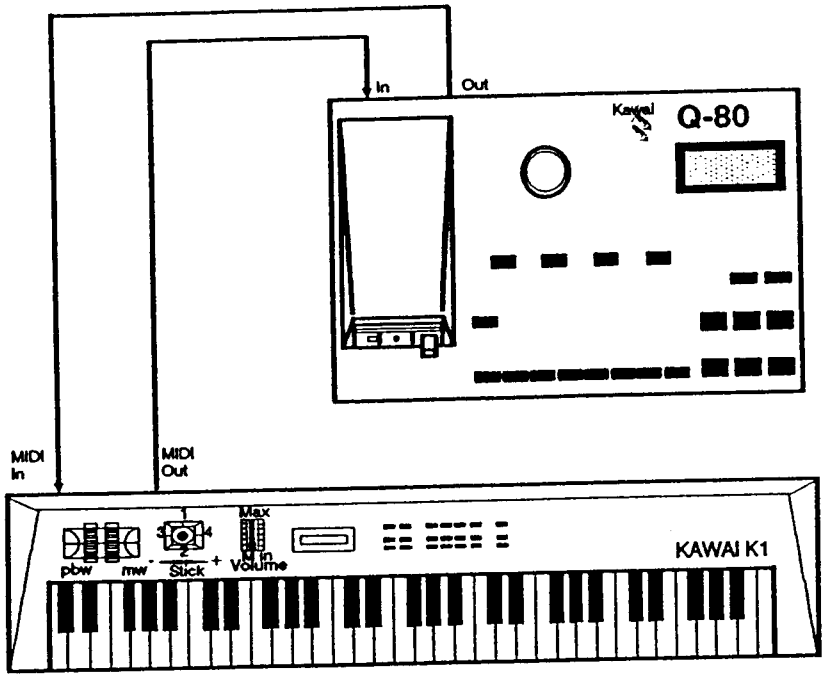
The REC setting is the one you'll use most commonly whenever you're recording data, or just playing the various sound modules from the controller. For special occasions, use THRU and OFF (both discussed below).

It's important that you understand that MIDI commands sent from your controller cannot pass through the Q-80 when Echo is set to OFF. This means your external sound modules do not receive MIDI messages while you play the controller.


In
Out
Kawai Q-80
Information is blocked inside Q-80
ECHO = Off
Sound Module doesn't respond
Kawai
Digital Synthesizer Module
K1m
Max
Min
Volume
pbw
mw
Stick
Max
Min
Volume
KAWAI K1

When to Set Echo to OFF

Set Echo to OFF when your controller and sound module are the same instrument.



In this case, if Echo were set to ON, the sound module would be triggered twice - once by the keyboard directly (as if it weren't hooked up to any other MIDI devices at all) and then again by the MIDI information the keyboard is sending to the Q-80. This can cause an information loop and you'll end up recording a lot of double hits where you play single notes.

NOTE:Even if you have other sound modules in your studio arrangement and normally have Echo set to REC, you need to turn it to OFF whenever you want to trigger the controller itself. This is to prevent a MIDI information loop caused by the controller responding to both its internal commands (direct from its own keyboard) and the MIDI commands it's sending to the Q-80.

When to Set Echo to THRU

The difference between REC and THRU is that all channels received by the Q-80 are passed during the recording process and *NOT JUST THE CHANNELS BEING RECORDED!* At all other times, REC and THRU are the same.

This setting should be used only if you want to hear a part that's being played and yet not recorded. For instance, when you're transmitting two MIDI channels from a split keyboard controller. The top half of the keyboard is triggering a piano sound and the lower half is triggering a bass sound and you want to play both, but record only the piano. If you set Echo to REC, you hear only the channel you're recording (piano), but set to THRU, you'll hear both.

Transmit Messages From Your Controller

1. Set each of the sound modules in your set up to a different channel beginning with channel 1. If you have one or more multitimbral sound modules, set each Single Patch of the Multi Patch combination to a different channel.

2. Set your controller to transmit channel 1.

3. Set the *Echo* function to REC if the sound module set to respond to channel 1 is NOT THE CONTROLLER ITSELF.

4. Play the controller and the sound module set to receive channel 1 will respond. If you're using a multitimbral sound module, the Single Patch set to receive channel 1 will respond. If not:

   - Re-check your connections
   - Replace the MIDI cable
   - Turn the *Echo* function to REC.

5. Set the controller to transmit channel 2 and play. The sound module set to receive channel 2 (or the Single Patch set to receive channel 2 in a multitimbral sound module) will respond.

6. Continue to select different transmit channels on your controller, checking each corresponding sound module (or Single Patch in a multitimbral sound module).

7. Use the pitch bender, mod wheel, aftertouch, sustain pedal or volume pedal on the controller to transmit these types of commands to the sound modules as well. Compare how you hear them responding to the chart you made up from the Implementation Charts. Revise your chart if necessary.

8. Select programs on your controller to transmit MIDI program change commands to the sound modules. How do they respond? You'll find that the different sound module manufacturers use various numbering schemes for the patches in their machines. Take a look at the program change chart in Appendix F for a comparison listing for four of the major manufacturers.

When you've fully tested your studio arrangement, you're ready to use the Q-80.

Using the Playback Function/Demo Songs

There are three demonstration songs programmed into the internal memory of the Q-80 and on the enclosed diskette. These were designed to be played through a Kawai K1 keyboard (or K1m, or K1r modules) and a Kawai R100 or R50 drum machine. But even if you don't have these two machines in your set up, you can listen to the demos through what you do have.

Prepare Your System

For the K1 and R100/R50 owners:

Song 1 - *SWING* and Song 3 - *SPAZZ* use the K1 (or K1m) and the R100 or R50 drum machine. Song 2 - *MELLO* uses just the K1 (or K1m). The drum parts are played by the K1 in *MELLO*.

For alternate sound modules and drum machines:

Song 1 - *SWING* is the only demo that makes sense to play on an alternate system. The steps outlined below prepare your system to receive the Song 1 recording.

If you have a K1 (or K1m) and an R100 or R50 drum machine, do this:

1. Set the K1:
   - To receive MIDI channel 1.

- To receive EXCLUSIVE = *ON*.
- To receive PROGRAM = *NORMAL*.
- Set Internal PROTECT to *OFF*.

2. Set the R100 or R50 drum machine:

   - To receive MIDI channel 16.
   - Set OMNI *OFF*.

3. Make sure the K1 and the drum machine are connected to receive MIDI commands from the Q-80.

4. Jump past the next bit of material to *Song Select* on the next page.

If you want to play the demos through alternate sound modules and drum machines, do this:

5. Set five sound modules (or if you're using a multitimbral sound module, five sections of a multitimbral combination) to these MIDI channels and these sounds:

   - Channel 1 = Bass
   - Channel 3 = Trumpet
   - Channel 4 = Sax
   - Channel 5 = Rhodes Electric Piano
   - Channel 6 = Brass Ensemble

6. Set all five sound modules (or five sections in a multitimbral sound module) to ignore (filter) MIDI program change commands. Consult your owner's manuals to see if this is possible. Most machines made in the last few years allow you to do this.

7. Set all five sound modules (or your multitimbral sound module) to ignore (filter) System EXCLUSIVE messages. Again, most machines made in the last few years allow you to do this, but check their owner's manuals to be sure.

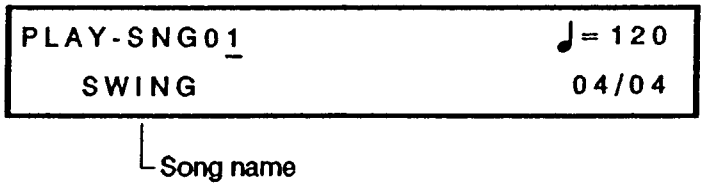
8. Set the sounds in your drum machine to respond to these note numbers:

- Bass Drum - #36
- Snare Drum - #40
- Closed HiHat - #44
- Open HiHat - #46
- Ride Cymbal - #54
- Crash Cymbal - #49
- Lo Tom - #50
- Mid Tom - #47
- Hi Tom - #45

Now you're ready to select a Song to play.

Song Select

9. Turn on the Q-80. You receive a greeting from Kawai and then the display shows the SONG SELECT screen.



10. The cursor is currently under the *Song Number* field on the display which means the [Increment Dial] can be used to change the value of that field and select another song. Select *Song 01 - SWING.*

11. Notice that six of the Track LEDs are lit to indicate that six tracks contain data.

Song Play

12. Press [Play] and the song begins to playback. On the display you can monitor your location in the song:

13. Press [Stop] and the song stops on the current beat (it doesn't wait until the next measure).

14. Press [Play] again and playback begins where it left off.

15. Press [Stop] and then [Reset] and you return to the top of the song and the SONG SELECT display.

Change the Tempo

16. While the Song is playing, you can change the tempo by adjusting the [Increment Dial].

    Pressing [Reset] and [Play] starts the song at the original tempo.

Track On/Off

The [Track Select] and [Select] buttons control the playback of individual tracks. When you first turn on the Q-80, the first Select LED flashes to indicate that the [Track Select] buttons cover tracks 1 - 8.

If a particular track is ON, the LED below the track number lights. You may turn recorded tracks on and off at any time during playback.

If a track is empty, you cannot turn it on.

Locate

17. Use the [Rew] and [Fwd] buttons to move backward and forward in the song by measure numbers. When you press [Fwd] while on the SONG SELECT display you move to the LOCATE display.

18. Press [Play] to start playback from the measure specified with the [Rew] and [Fwd] buttons.

Beginning Recording Tutorial

This tutorial takes you through a beginning recording session quickly, without belaboring many of the details discussed in the next section of this manual. It's a simple A-B-C procedure to get you up and running fast and introduce you to some of the basic concept of MIDI recording on the Q-80 sequencer. There are two types of recording procedures possible on the Q-80 - Real Time (notes are recorded as you play the controller) and Step Time (each note is input one at a time). You'll be working with the Real Time method in this tutorial.

Song Select

1. Select Song 4. If the LOCATE DISPLAY is on the screen, press the [Reset] button and then rotate the [Increment Dial] to select Song 4. It doesn't have a name and you'll notice that none of the Track LEDs are lit to indicate no data is recorded on any track yet.

Set MIDI Channels

You must match MIDI channels on your controller, a sound module and the track you select to record on.

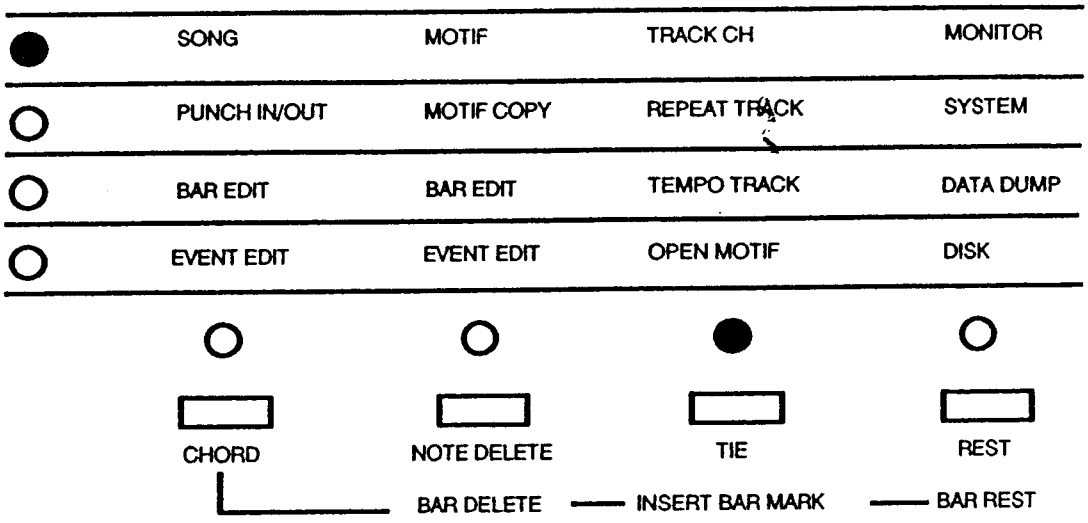
Set Up the Controller and Sound Module

2. Set your controller to transmit channel 1.

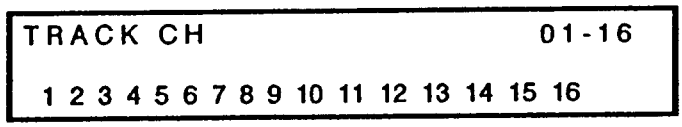
3. Set one of your sound modules to receive channel 1 and select a piano-type sound on that sound module.

Set the Track Channel

4. To select the *Track Channel* function, press the [Tie] button:



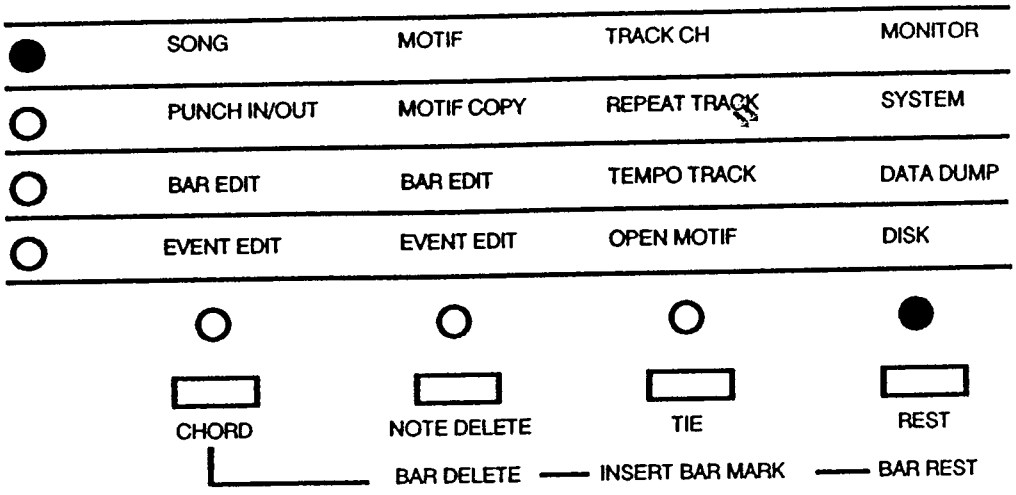
5. The channel assignments for Tracks 1 - 16 are shown on the bottom line of the display:



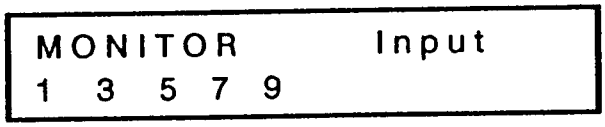
6. As you can see, track 1 is already assigned channel 1 which is also the channel your controller is transmitting. You can verify the channel your controller is transmitting by looking at the *Monitor* screen.

Monitor

7. Select the *Monitor* function by pressing the [Rest] button:



8. The display shows *Monitor Input*:



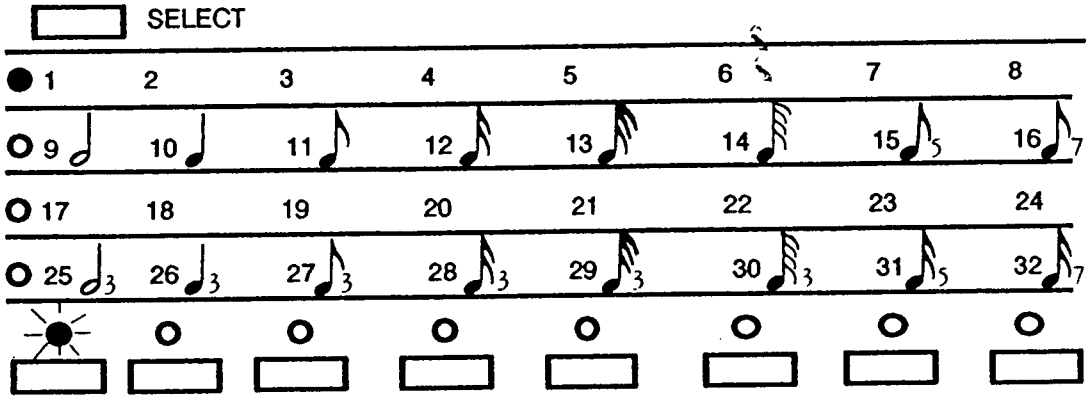
9. Play your controller and you'll see a *1* appear on the left when you strike a key. If you set your controller to transmit channel 2, you'll see a *2* on this screen when you play the controller. Since the Q-80 can receive input data from up to 16 channels at once, all 16 channels can be monitored on this display during recording.

Record on Track 1

10. You've matched the MIDI channel of your controller, sound module and Track 1 to channel 1, and now you're ready to record.

11. Return to the *Song Select* display by pressing the [Chord] button.

12. Press the red [Select] button so the Track LED is on the top line of the grid and then select Track 1 by pressing the far left [Track Select] button.



13. Press the [Rec] button to put the Q-80 in stand-by mode.

14. Press the Track 1 [Track Select] button again to select it for recording. When you do, it confirms your move by flashing.

15. Set the Tempo to 120 by rotating the [Increment Dial].

16. Press [Play] and you'll hear an *8 beat Countdown*. The display counts down from 8 and when you reach the first beat of the first bar, recording begins. The display shows you the LOCATE SCREEN and the metronome produces a higher - pitched beep on the first beat of every bar.

17. Play your controller. All that you play is recorded. If you like, you can select the *Monitor Input* display by pressing the [Rest] button and see the Q-80 is receiving data on channel 1.

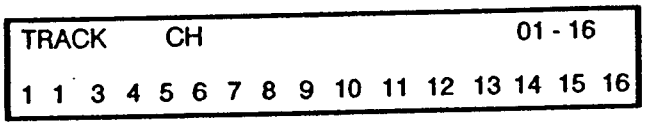
18. Press [Stop] and then press [Reset].

19. Press [Play] and listen to your performance played back.

20. If you'd like to re-record the part you played on track 1, all you do is press [Rec] and select track 1 for recording again (flashing Track LED).

Overdubbing

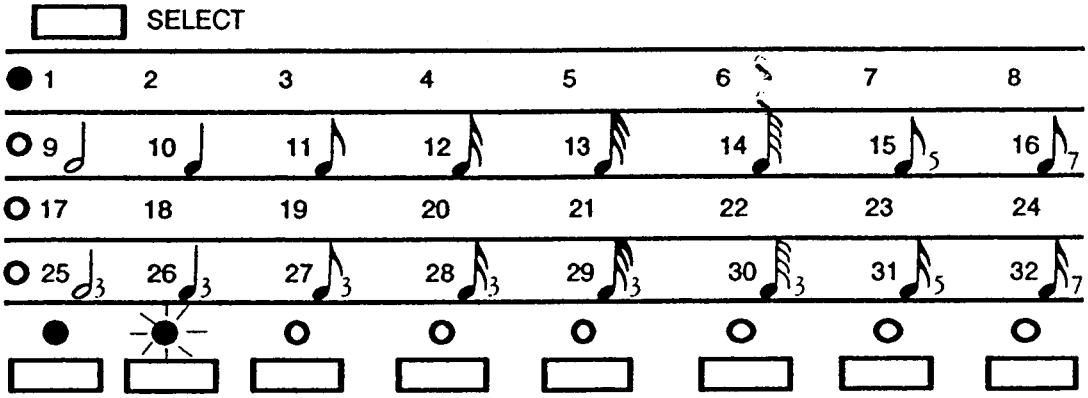
21. Try overdubbing another part on the same channel on track 2. First you must match the Track 2 Channel with the channel on which your controller is transmitting (channel 1). Select the *Track Channel* function (press the [Tie] button). Press the [Cursor] button to move the cursor beneath the track 2 field on the display (2nd from left). Use the [Increment Dial] to change the value to from *2* to *1*.



22. Return to the *Song Select* display and press the [Rec] button.

23. The Track Select LED should still be flashing on the top line of the grid and the far left Track LED should be lit to indicate the data you already recorded on track 1 is still there.

24. Select track 2 for recording by pressing the matching [Track Select] button *twice*:



25. Press [Play] and after the countdown you can play your controller and begin recording on track 2. As you do, you'll hear track 1 playing along with you.

26. Try recording some non-note data messages by adjusting the *pitch bend wheel*, the *Mod wheel* and selecting programs on your controller to record MIDI program changes.

27. Press [Stop] and both tracks 1 and 2 are lit indicating data on both tracks.

28. Press [Reset] and the [Play] to hear both tracks at once. You'll hear the sound module respond to the recorded note and non-note data.

29. If you want to listen to just one of the tracks, press the [Track Select] button for the track *you don't want to hear* until the Track LED goes out. That track is now muted temporarily. You can turn it back on again by pressing the [Track Select] button again.

Section 1 Conclusion

This introduction to the Q-80 has covered a lot of ground in the fundamentals of MIDI and the Q-80 operation system. Refer to the material discussed here as needed while you progress throughout this manual.

The next Section covers Real Time and Step Time recording in detail and introduces you to some of the basic editing functions.

Stage 2

Real Time and Step Recording

This section of the manual details the two recording processes supported by the Q-80 sequencer:

- **Real Time** - The Q-80 records MIDI data as you play it on your controller.
- **Step Time** - Every note and every rest is input, one at a time.

You can choose between Real Time and Step Recording at any time during the recording process, depending on your needs. Both methods can be used to record a single track although not at the same time. Except for this one restriction, you can alternate between the two methods at will.

Real Time Recording

Real Time recording on the Q-80 is very similar to recording a performance on a tape machine. The sequencer records the music exactly as you play it on your controller.

Any MIDI device capable of transmitting a MIDI message can be used as a controller:

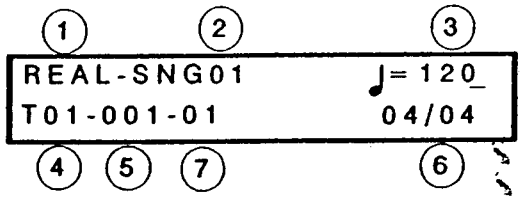
- MIDI Keyboards
- MIDI Guitar Controllers
- MIDI Drum Pads
- MIDI Drum Machines
- Other Sequencers

Whatever you use as a controller, the Q-80 records any and all MIDI messages transmitted from that controller as you play it during *Real Time Recording.*

This can include:

- Notes
- Wheel commands such as pitch bends and modulation wheel adjustments
- Pedal commands such as sustain or volume
- Patch changes
- Touch control such as Velocity and Aftertouch

Reading the Real Time Record Display



1) Indicates Real Time Recording
2) Song Number
3) Tempo (beats per minute)
4) Track Number
5) Measure Number
6) Time Signature
7) Beat Number

Recording Preparations

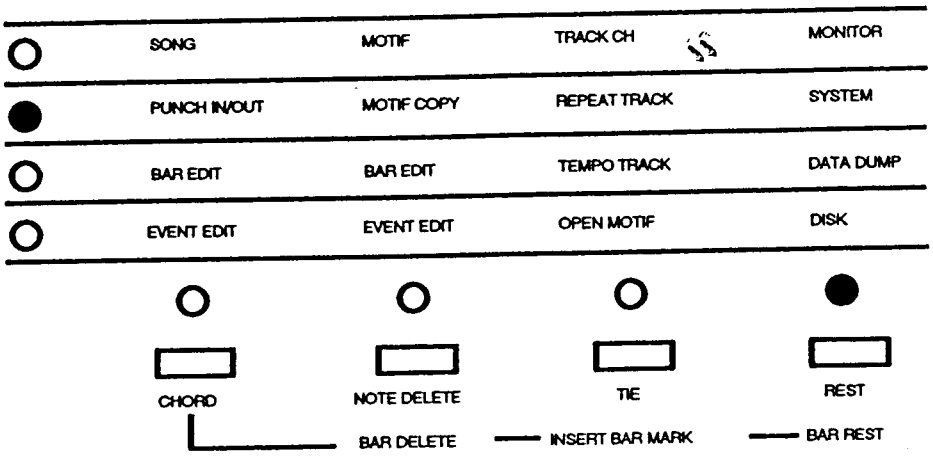
Before actual recording can begin, certain preparations must be made to insure a proper recording environment. These preparations are indeed the most important aspect of the overall procedure and as such should be addressed carefully.

Metronome

The metronome click can be set to sound during Recording only, Record and Playback or not at all. It can be set to click on the 1/4 note, the 1/8th note or 1/16th note.

To Set the Metronome:

1. Select the *System* function menu. Press the [Rest] button until the Command LED selects the second row of functions.



2. The display will show the *System Channel* screen.

3. Use the [Increment Dial] to select the *System Metronome* display.

4. Press the [Enter] button to display the Metronome parameters.

1)Mode - REC, PLAY/REC, OFF
2)Beat Division - 1/04, 1/08, 1/16

5. Select the Metronome *Mode*:

   - **REC** - The metronome is heard during recording only.
   - **PLAY/REC** - The metronome is heard during both playback and record.
   - **OFF** - The metronome isn't heard at all.

6. Press the [Cursor] button to move the cursor to the beat division field on the display. Select the *Beat Division* with the [Increment Dial]:

   - **1/04** - The metronome sounds on the quarter note
   - **1/08** - The metronome sounds on the eighth note
   - **1/16** - The metronome sounds on the sixteenth note

Now you're ready to select a record track.

The Q-80 can record, store and playback 32 tracks of MIDI data. Any of the 32 tracks can be selected as a record track.

A unique feature of the Q-80 is that it can record more than one track at a time, *up to 16 at once.* This means you can record several tracks of data from another sequencer onto separate tracks in the Q-80. It also enables you to record a jam session between two (or more) musicians (see Added Features/Multi-track Recording).

Begin by selecting a record track or tracks in your mind. After you've mentally selected a record track(s), you must address the following parameters before you can make your selection(s) physically.

Track Channel

Match the Record Track Channel to your Controller

The next step in preparing to record on the Q-80 is to match the record track MIDI channel to the channel transmitted from your controller. *If the record track channel and your controller channel are not the same, data cannot recorded onto the Q-80.*

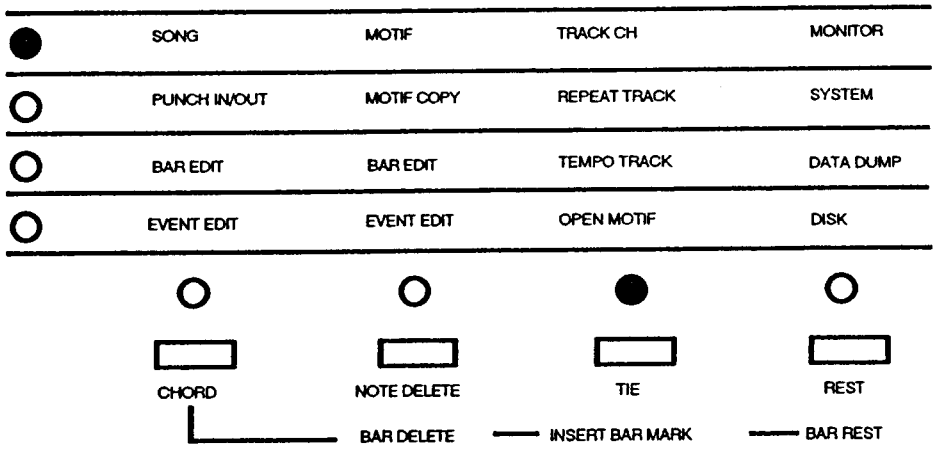
All 32 Track Channels are defaulted this way on empty Songs:

- Tracks 1 - 16 = Channels 1 - 16 respectively
- Tracks 17 - 32 = Channels 1 - 16 (Track 17 - Channel 1 and so on).

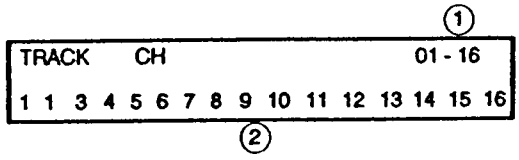
If you don't need to alter the Track Channels from this default arrangement, then it isn't necessary to address this parameter. If you want to record on a channel other than the one already assigned to a particular track, follow the steps below:

To Set the Track Channel:

1. Select the *Track Channel* function by pressing the [Tie] button until the Top Row Command LED lights.



2. The display shows the Track Channel screen (Tracks 01 - 16).



1) Tracks shown on the display (01 - 16 or 17 - 32)

2) MIDI Channel assignments (1 - 16). Each number field on the display represents a track.

3. Use the [Cursor] and [Step Back] buttons to select a number field.

4. Use the [Increment Dial] to change the MIDI channel assignment. Match the Track Channel to the transmit channel of your controller.

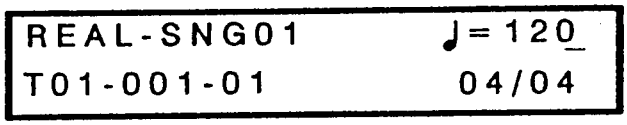
NOTE: You CAN assign more than one track to one channel for playback, but you CANNOT record two or more tracks on the same channel at the same time. If you want to record two or more tracks at the same time, they must all be set to different channels. You can, however, record two or more tracks on the same channel at different times (one after another).

Select a Record Track or Tracks

After adjusting the Track Channel assignments, you can make your record track selection(s). Remember, you can select any number of record tracks up to a maximum number of 16. They don't have to be in any particular numerical order, but you cannot record more than one track on the same MIDI channel *at the same time.*

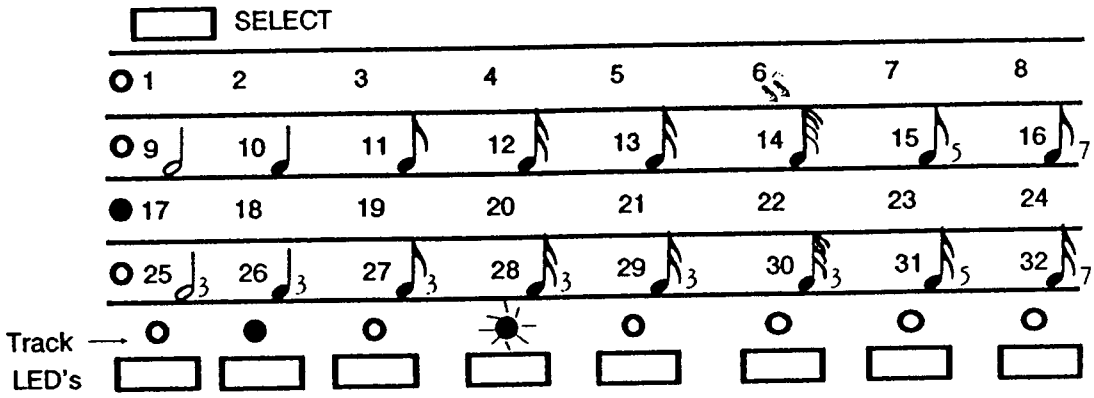
To Select a Record Track or Tracks:

1. Press [Rec] and the Record LED lights to indicate the Q-80 is in Record Stand-By. The display changes to show the Record screen:



2. Now use the [Select] button to choose a Track Row and use the [Track Select] buttons to choose a Record Track(s) from the row.

In the example below track 20 is selected as the record track and track 18 is selected for playback.



- **Track LED lights** - The track is heard on playback (only if there is recorded data on the track).
- **Track LED flashes** - Track is selected for recording
- **Track LED off** - Track is muted

3. Select any pre-recorded tracks for playback while you record.

4. If you want to select another record track or tracks from other track rows, you can do so using the [Select] and [Track Select] buttons.

Set the Time Signature

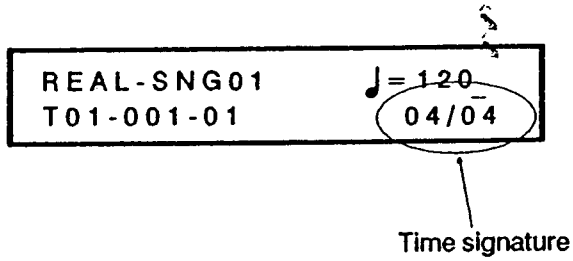
You can choose from a wide variety of Time Signatures for your record track. When recording tracks individually, you can select a different time signature for each one. For example, you can record one track in 4/4 and another in 3/4 and hear them both played back.

When recording more than one track simultaneously, all record tracks must be the same time signature.

To Select a Time Signature:

1. Press [Rec] and then select a record track. (The time signature cannot be chosen until a record track has been selected.)

2. Move the cursor to the time signature field using the [Cursor] button.



3. Use the [Increment Dial] to select a time signature:

   - 1/04 - 16/04
   - 1/08 - 32/08
   - 1/16 - 64/16

Only one time signature can be chosen at one time. If you're recording two or more tracks simultaneously, they are all recorded in the same time signature.

Set the Tempo

Recording can be done at any comfortable tempo (40 - 250 beats per minute) and then played back at the same or any other tempo. It can be changed at any time during record or playback without affecting the recorded data.

Basic starting tempo and tempo changes can be programmed as part of the MIDI recording on the tempo track (see Added Features).

To Select a Comfortable Recording Tempo:

1. After selecting a record track and time signature, press [Play] and as you listen to the metronome beep, set the tempo to a comfortable rate with the increment dial. Play along with the metronome if you want to (everything you play is recorded, but you can record over it).

2. Press [Stop] and then [Reset] to go back to measure 1 - beat 1.

3. Press [Rec] and select your record track(s) again.

Now you're ready to record. Here's a summary of the record preparations you just made:

Record Preparations Summary

- Select a *Song*.
- Set the *Metronome* parameters.
- Mentally choose a *Record Track(s)*.
- Match your record track *Track Channel* assignment to the transmit channel of your controller.
- Select the *Record Track(s)* physically on the Q-80.
- Select the *Playback Tracks*.
- Set the *Time Signature*.
- Set the *Record Tempo*.
- If you started the Q-80 in record to set the tempo, press [Reset] and [Rec] and select your record track(s) again.

Real Time Recording

After the preparations are made, Real Time recording is a snap. Make sure your record track is selected and flashing, press the [Play] button and, after a two measure count-off, the Q-80 begins recording all that you play. Following the count-off, the metronome sounds a higher beep on the first beat of every bar so you know where you are.

When you've finished recording a track, press [Stop] and then [Reset] to hear it played back.

To Begin Recording from the Middle of the Piece

If you'd like to begin recording a track from a measure other than measure 1, you can do so by:

1. Press [Rec] and then press [Stop] to access the Song Locate page.

2. Use the [Fwd] and [Rew] buttons to select the measure number you want to begin recording on.

3. Press [Rec] and select your record and playback tracks.

4. Press [Play] and after the two measure count-off the Q-80 begins recording on the selected measure.

Bar Edit - Function Group #1

Edit functions are what make a MIDI recorder so different from an ordinary tape recorder. Those of you who are familiar with tape recording know that what you play is what you get. If you make a mistake or want to hear something different, you've got to do it again.

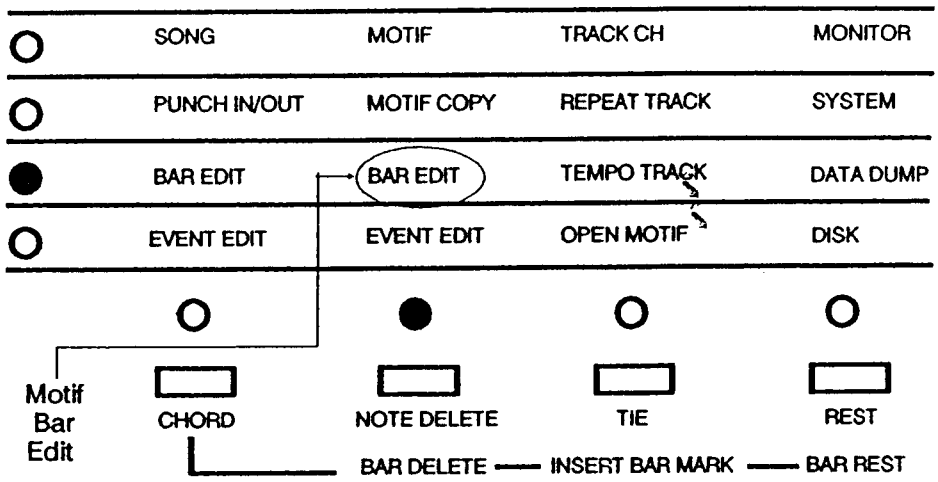
This is not the case with a MIDI sequencer. Numerous editing functions allow you to adjust the performance *after it's been recorded*, changing what you don't like about it while still retaining what you do like.

Bar Edit Menu

All the bar edit functions are found in the *Bar Edit Menu*. For editing tracks, this is selected by pressing [Chord] repeatedly until the third row Command LED lights:

For track editing select the Bar Edit Menu under Song column:

For motif editing, select the Bar Edit Menu under the Motif column:



The following edit functions are available:

- Delete
- Insert
- Erase
- Mix
- Copy
- Transpose
- Move - (track edit only)
- Quantize
- Note Split
- Note Shift
- Velocity Modify
- Gate Time Modify
- Make Motif - (track edit only)
- Event Extract

Every function can be applied to a specified number of bars in a track or motif. The *Editing Region* is defined by you, and can range from a single measure to the entire length of the track.

Basic Bar Editing Procedure

When you select the Bar Edit Menu in either Song or Motif, the display shows the first function in the list above:

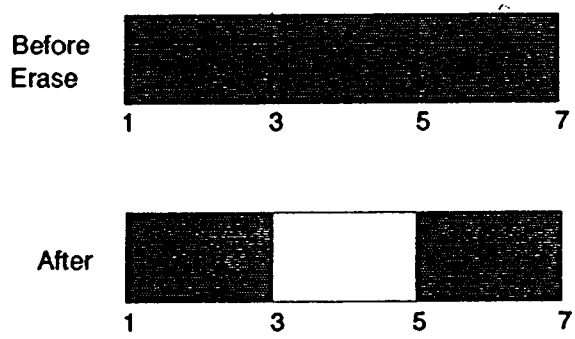
1. Rotate the [Increment Dial] to select a function.
2. Press [Enter].
3. Use the [Cursor] button to select a parameter on the display and the [Increment Dial] to select a parameter value.
4. Press [Enter] to display the prompt - *Sure?*.
5. Press [Enter] again to engage the edit or [Cancel] to cancel the operation.
6. When you press [Enter], the display responds with-*Execute*..When you press [Cancel] the display returns to the last screen you were on.

Editing Functions - Group #1

This section deals with three basic editing functions - *Erase*, *Delete* and *Insert*.

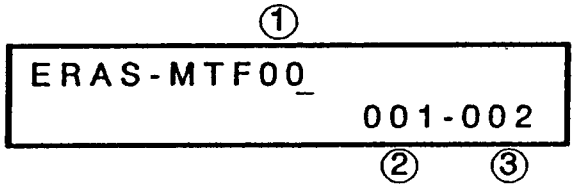
Erase

The Erase function removes data from a specified number of measures and leaves these measures intact but empty. The track or motif remains the same length.



To Erase Data from a Track or Motif:

1. Select the Bar Edit Menu for Song data or Motif data.
2. Use the [Increment Dial] to select the *Erase* function.
3. Press [Enter] to display the erase function parameters.



1) Track/Motif number
2) Start Bar
3) End Bar

4. Select the track or motif number you want with the [Increment Dial].

5. Move the cursor to the *Start Bar* field using the [Cursor] button and choose start bar of the editing region.

6. Move the cursor to the *End Bar* field and select the ending bar of the editing region. This measure is included in the editing region.

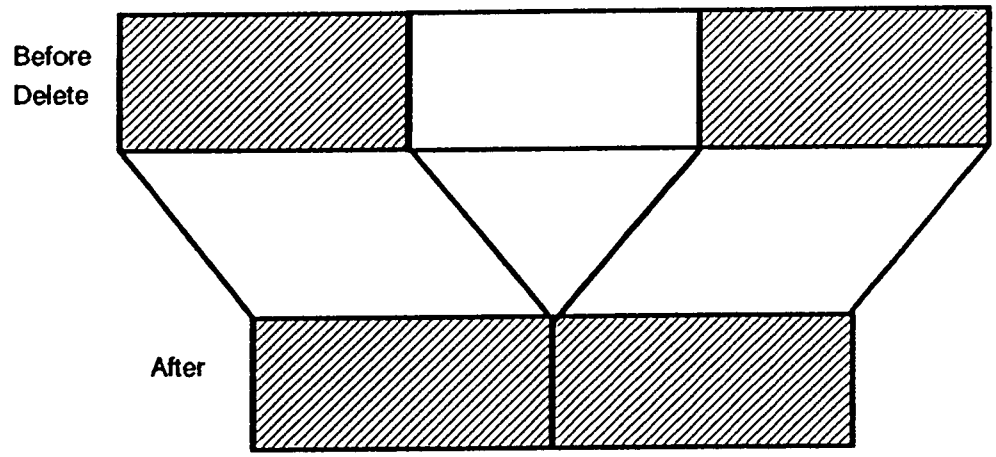
7. Press [Enter] and the display prompts - *Sure?*.

8. Press [Enter] to continue, or [Cancel] to cancel.

All data is erased within the editing region. You cannot select a particular type of MIDI data to erase.

Delete

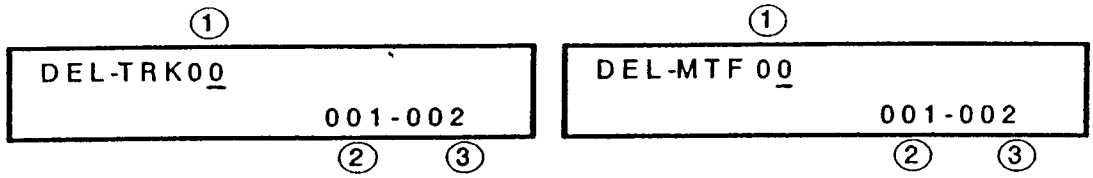
This function removes measures from a track or motif. This differs from erase in that the length is shortened by the specified number of bars.



To Delete Measures from a Track or Motif:

1. Select the Bar Edit Menu for Song data or Motif data. The *Delete* function is automatically selected.

2. Press [Enter] to display the delete function parameters.



1) Track Number (01-32, ** = all tracks) - Motif number (00-99, ** = all motifs)
2) Start Bar
3) End Bar

3. Select the track or motif number you want with the [Increment Dial].

4. Move the cursor to the *Start Bar* field using the [Cursor] button and choose start bar of the editing region.

5. Move the cursor to the *End Bar* field.

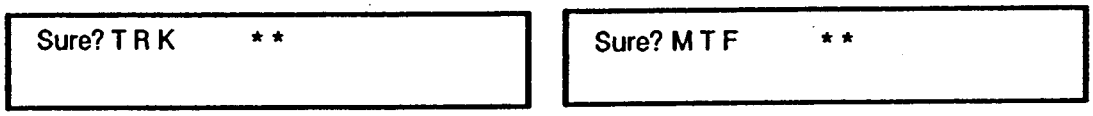
6. Press [Enter] and the display prompts - *Sure?*.

7. Press [Enter] to continue, or [Cancel] to cancel.

Delete All Tracks or Motifs

To delete all track or motif data in one operation:

1. Select the track or motif number field on the delete display and set the value to **. Press [Enter].



2. Press [Enter] to execute the delete or [Cancel] to cancel the operation.

Insert

This function adds bars to a track or motif.

Added bars can be inserted at the beginning...

..at the end...

...or in the middle of the destination track

These bars can be:

- Part of another Track
- Empty bars
- A motif

Inserting Part of Another Track

When inserting part of another track you must define:

- **The Destination Track** - The track accepting the inserted measures.
- **The Source Track** - The track the inserted data is coming from.
- **The Destination Bar** - The measure number of the destination track where the inserted data will be placed.
- **The Source Bars** - The start and end bars which define the source track region to be inserted.

NOTE: The source track data assumes the MIDI channel of the destination track.

NOTE: The source and destination track number must be different.

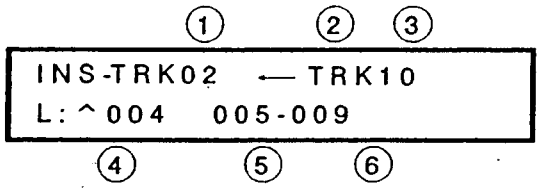
NOTE: Any insert that would result in a track longer than the limit of 999 bars is cancelled. The display responds with "Illegal Input."

To Insert Part of Another Track:

1. Select the Bar Edit Menu for Song data.

2. Use the [Increment Dial] to select the *Insert* function.

3. Press [Enter] to display the insert function parameters.

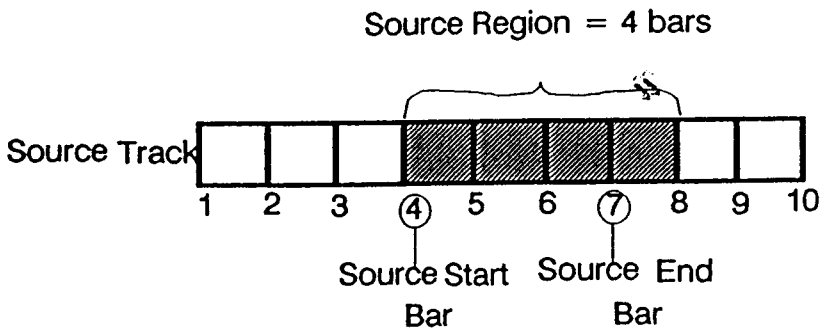


1) Destination Track number (01-32)
2) Source (TRK = Track data, MTF = Motif data, BAR = Empty measures)
3) Track Number
4) Destination Bar
5) Source Start Bar
6) Source End Bar

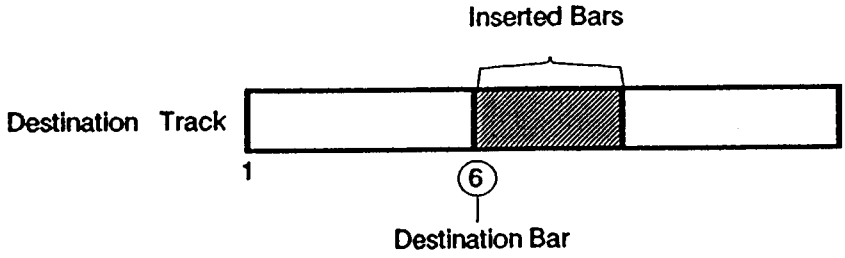
4. The cursor is currently under the Destination Track field. Select a destination track with the [Increment Dial].

5. Move the cursor to the Source Track number field and select a track number. The data on the source track will be inserted into the destination track.

6. Move to the *Source Start Bar* field and select the first bar in the region (on the source track) you want to insert. Define the length of the source region by selecting the *Source End Bar*.



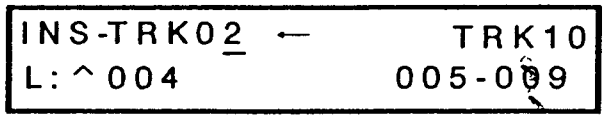
7. Move to the Destination Bar field and define the measure number on the destination track where the source region will be inserted.

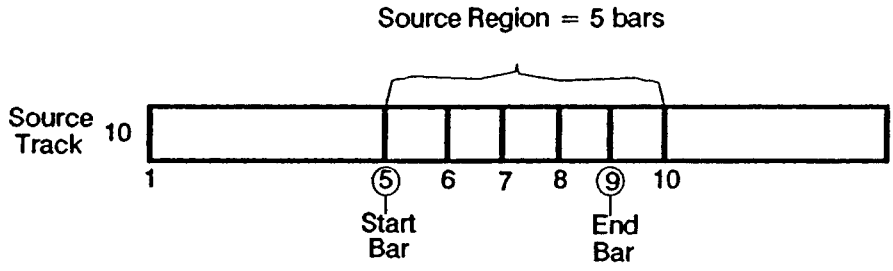


8. Press [Enter] and at the prompt - *Sure?*, press [Enter] to continue, or [Cancel] to cancel the operation.

Example

The following display shows measures 5 - 9 of Track 10 to be inserted on bar 4 of track 2.





Inserting Empty Bars into a Track

When inserting empty measures into a track you must define:

- Destination Track
- Source = BAR
- Number of bars to insert
- Destination bar where the insert is placed in the destination track
- Time Signature of the added bars

Measures of any time signature can be added to a track. The time signature of the inserted measures does not need to match the time signature of the destination track.

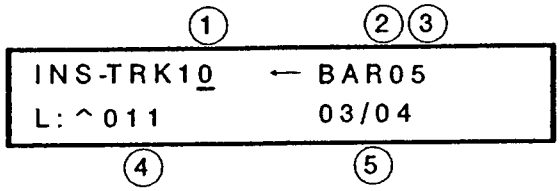
To Insert Empty Bars into a Track:

1. Select the Bar Edit Menu for Song data.

2. Use the [Increment Dial] to select the *Insert* function.

3. Press [Enter] to display the insert function parameters.

4. Move the cursor to the *Source* field and select BAR. The display shows you these parameters:



1) Destination Track Number (01-32)
2) Source BAR = Empty measures
3) Number of Bars to insert
4) Destination Bar
5) Time Signature

5. Move the cursor to the *Number of Bars* field and define the number of measures you want to insert.

6. Move the cursor to the *Destination Track* field and select the destination track.

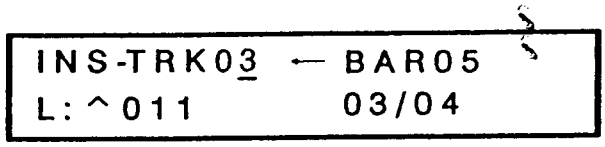
7. Move to the *Destination Bar* field and define the measure number where the added bars will be inserted.

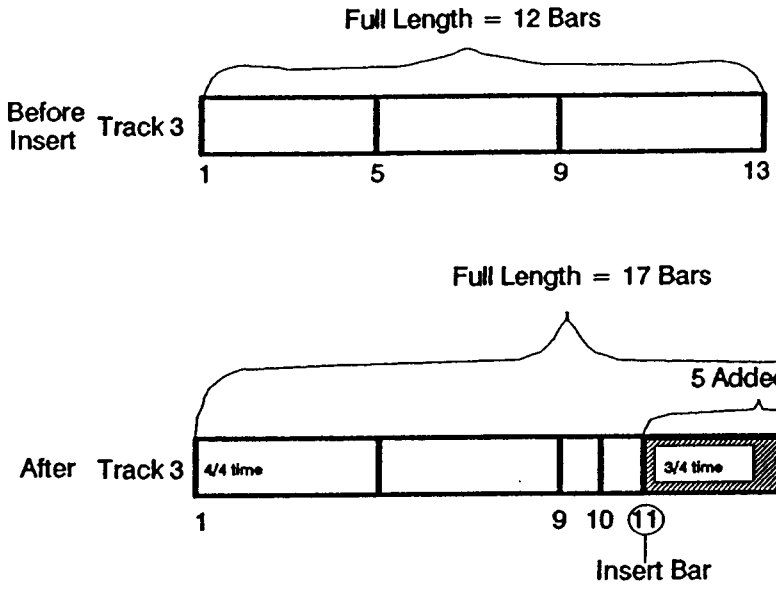
8. Move to the *Time Signature* field and select a time signature for the added measures.

9. Press [Enter] and at the prompt - *Sure?*, press [Enter] to continue, or [Cancel] to cancel.

Example

The following display shows five bars added with 3/4 time to track 3 beginning with bar 11.





Inserting a Motif into a Track

This function, although similar to the insert functions already discussed, relates to another subject not yet covered - Motifs.

For details regarding how to insert a motif into a track or how to insert measures from one motif to another, see the material devoted strictly to motifs in section three of this manual.

Punch In/Out Recording

Punch In/Out is a technique for re-recording specific portions of a previously recorded track. The Q-80 allows you to specify the bar region to re-record in two ways:

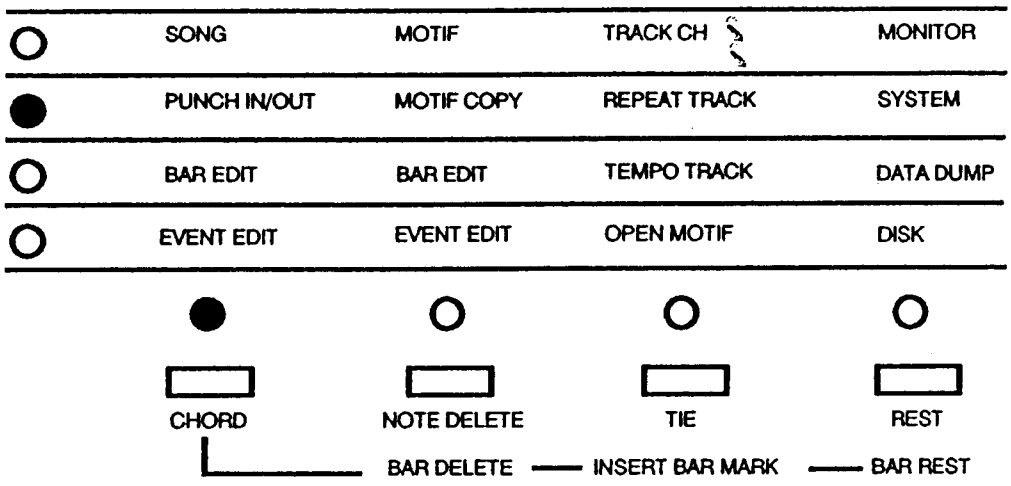
- **Manually** - With a foot pedal control.
- **Automatically** - By defining the start and end bars of the punch in/out region.

In both cases, the *Rehearsal Feature* allows you to practice your punch in until you feel comfortable enough with it to actually record it.

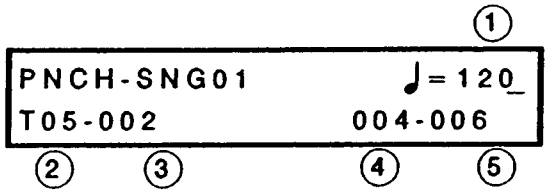
You can record your Punch In using Real Time or Step Recording. This section deals strictly with the Real Time recording method.

Enter the Punch In/Out Function

Enter Punch In/Out by pressing [Chord] repeatedly until the second row Command LED lights:

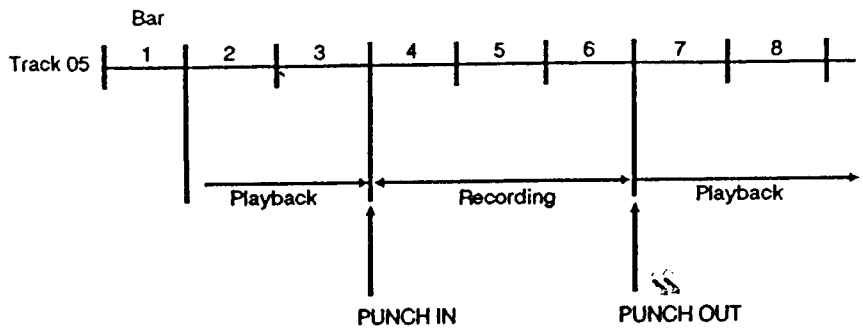


Reading the Punch In/Out Display



1) Tempo (40 - 250)
2) Track Number (01 - 32)
3) Starting Bar - this is where the Q-80 begins playback.
4) Punch In Bar (000-999, *** = Foot Pedal control)
5) Punch Out Bar (000-999, *** = Foot Pedal control)

The display shown above defines that recording is done on track 5, that playback starts on bar 2 and the recording region starts on bar 4 and stops on bar 6:



Automatic Punch In/Out Recording

Preparations

1. Decide which track you want to make the punch in on and check to see what MIDI channel it's assigned to. Do this by selecting the *Track Channel* function.

2. Set your controller to transmit on the same MIDI channel.

3. Select the Punch In/Out function ([Chord] button).

4. Move the cursor to the *Track number* field and select the track you decided on. The record track LED will flash.

NOTE: You cannot select an empty track (EMP) for punch in recording.

5. All other tracks that are lit will be heard during playback. Mute any that you don't want to hear by pressing the corresponding [Track Select] button.

Define the Punch In/Out Recording Region

1. Move the cursor to the *Punch In Bar* field and select the measure number where you want to begin recording.

2. Move to the *Punch Out Bar* field and select the measure where you want recording to stop.

3. Move to the *Start Bar* field and specify where you want playback to begin. It's a good idea to give yourself at least two measures of lead in, just to get the feel of the music.

4. Finally, set the tempo.

Rehearsal Feature

The Q-80 supports a rehearsal feature that allows you to practice your punch in before committing it to the recording.

The rehearsal feature simulates actual punch in recording by silencing the record track in the punch in region during playback. The original data is not erased or recorded over, however; it's simply muted so you can practice your new material without hearing the old.

To Use the Rehearsal Feature:

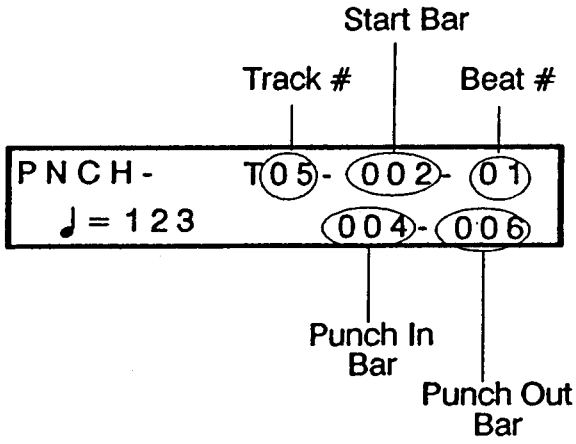
1. Make the Punch In preparations listed above and then press [Play].

2. The Q-80 starts playback at your specified *Start Bar*. When the *Punch In Bar* is reached, the record track is silenced. When the *Punch Out Bar* is reached the data on the record track is heard again.

Punch In Recording

The only difference between using rehearsal feature and actual recording is you press [Rec] before pressing [Play] to engage the record function.

Pressing the [Rec] button lights the Record LED, indicating that the Q-80 is standing by to record. The display changes:



Pressing the [Play] button starts playback from the defined *Start Bar*. The Record LED goes out until the *Punch In Bar* is reached at which point it relights to indicate that the sequencer is recording. The new data replaces

the old in the record region. At the end of the *Punch Out Bar*, the Record LED goes out again and the Q-80 resumes playback.

NOTE: While in record, the only parameter you can change is the tempo.

NOTE: If you attempt to record at a track position that is inside a motif, pressing [Rec] causes the Q-80 to cancel the operation and display the message "Motif Exist." You must first open the motif before recording (see the Motif section for further details).

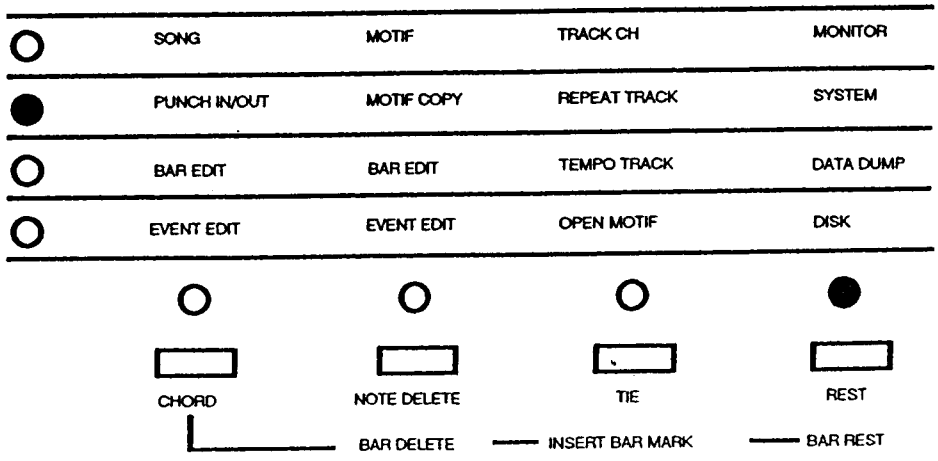
```
PNCH-SNG01  ♩= 120
MOTIF exist     TR05
```

Manual Punch In/Out Recording

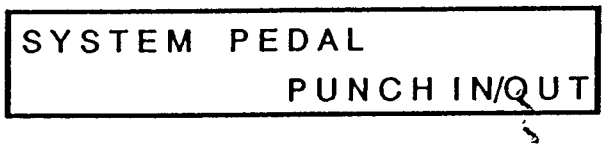
Manual Punch In/Out recording is done with a foot switch controlling the Punch In and Punch Out points. When you depress the pedal, the Q-80 starts punch in recording, and continues until you press the pedal a second time; the pedal stops recording, but playback continues.

To Use Foot Switch Control Punch In/Out Recording:

1. Plug a Switch Pedal into the *Foot SW* jack on the rear panel of the Q-80.

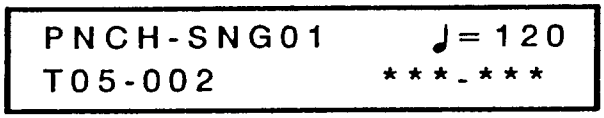


3. Use the [Increment Dial] to select the *System Pedal* function and press [Enter].



4. Set the Pedal Function to *Punch In/Out* using the [Increment Dial].

5. Select the Punch In/Out function ([Chord] button). The *Punch In Bar* and *Punch Out Bar* fields show this symbol - ***, instead of measure numbers.



When the Punch In Bar and Punch Out Bar parameters are set this way, the Q-80 allows you to select the starting and ending points with the foot switch.

6. Select the Track number you want to record on. Make sure you match the transmit channel on your controller to the Track Channel assignment for your record track.

NOTE: You cannot select an empty track (EMP) for punch in recording.

7. Choose a *Start Bar* to define where you want playback to begin.

Rehearsal

1. Press [Play] and the Q-80 begins playback from your start bar.

2. As the Q-80 plays, depress the foot switch to mark the beginning of the recording region. The record track is silenced for as long as you hold the pedal down. Release the pedal to hear playback again.

The data in the record region is not erased or replaced during rehearsal.

Manual Punch In/Out Recording

After you've practiced your punch in using the rehearsal feature:

1. Press [Rec] and the Record LED lights to tell you that the Q-80 is in record stand-by.

2. Press [Play] and the Record LED goes out and the Q-80 begins playback from your defined start bar.

3. Depress the pedal to begin recording; release it to stop recording. Playback continues until you press [Stop].

NOTE: As with Automatic Punch In recording, you cannot record at a track position that is inside a motif. When using the foot switch open all motifs on the track (if any exist) before recording (see Motif section/Stage 3).

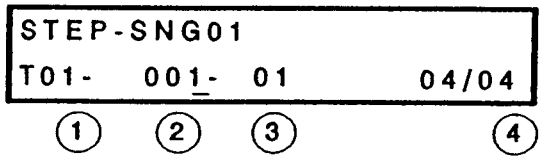
Step Record

The Step Record method was first employed by the early analog sequencers and remains a viable technique because it allows the user the most control of his/her music.

This type of recording involves programming a performance onto a track one note (and rest) at a time, from the Q-80 front panel.

Enter Step Record Mode

1. Press and hold the [Stop] button and press [Rec]. You'll see the stand by display:



1) Record Track Number
2) Measure Number
3) Beat Number
4) Time Signature

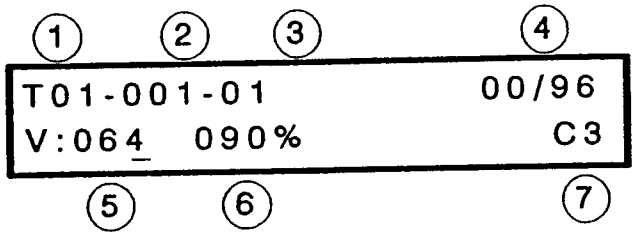
NOTE: In Step Record, only one track can be recorded at a time.

2. Press [Play] to start Step recording. The [Command Select] buttons change to their - *Chord, Note Delete, Tie and Rest* functions.

NOTE: If you attempt to record at a track position that is inside a motif, the display responds with the message "Motif Exist" and cancels the operation. You must first open the motif before recording (see the Motif section/Stage 3 for further details).

Reading the Step Record Display

When you press [Play] and start Step recording, the display shows several important information fields:



1) Record Track Number
2) Measure Number
3) Beat Number
4) Clock Pulse Value

} Location Indicator

5) Velocity
6) Gate Time
7) Note Number

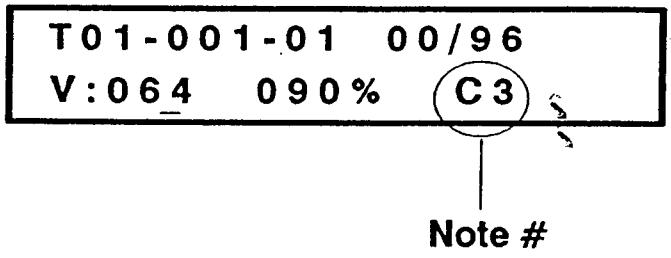
Before we get into Step recording, we'll look at some basic issues.

In step-time recording, there are four basic elements you must address.

The first one is Pitch.

Pitch

The Note Number parameter displays the note's pitch.

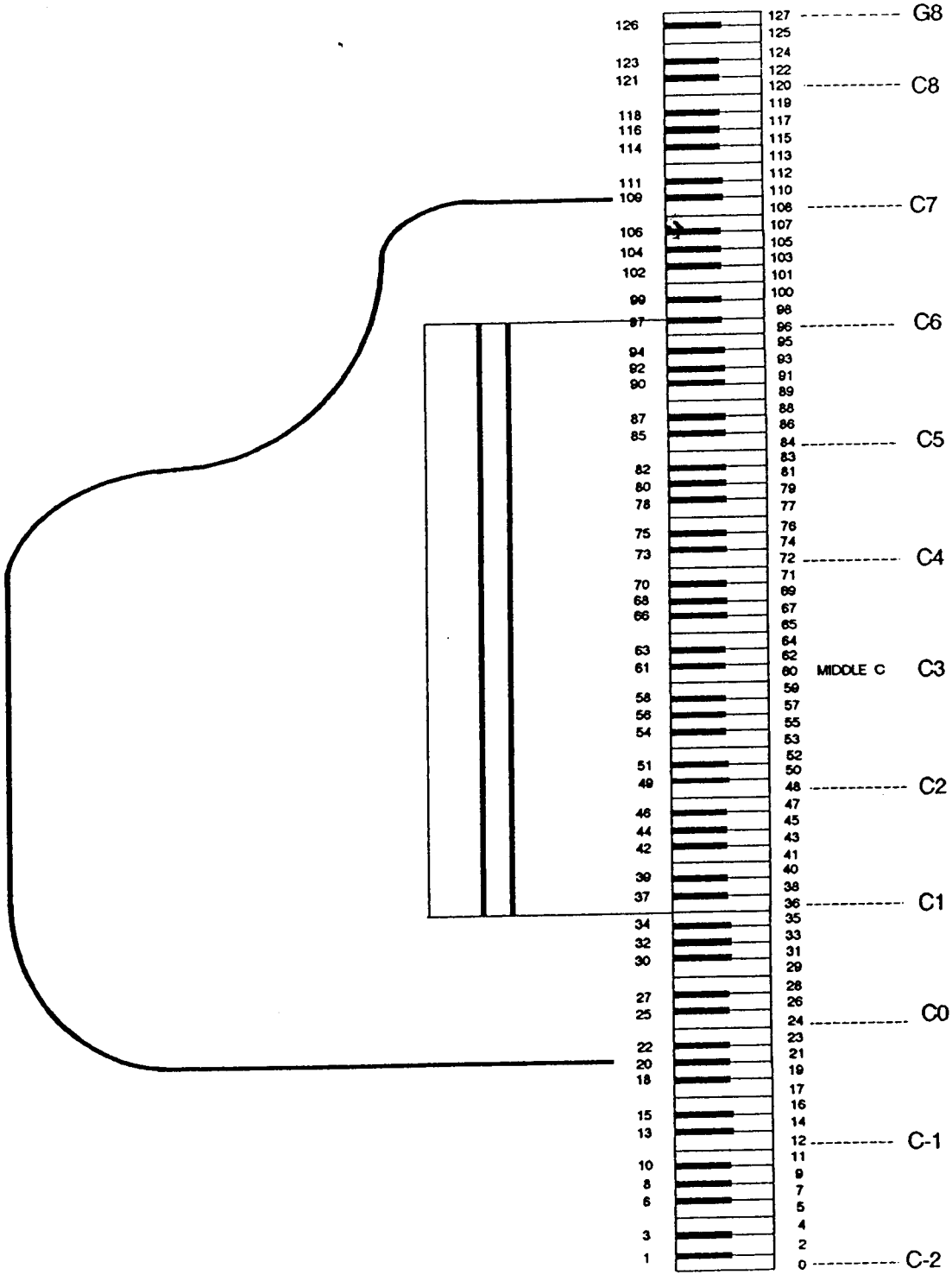


- Note Number (C-2 to G8)

In MIDI, pitches are labeled by the chromatic pitch name and the octave the pitch is in. For example, middle C is called *C3*.

The range of pitches in MIDI is considerably greater than the standard five octave synthesizer keyboard and even greater than the 88 note piano range. It includes 128 notes from C-2 to G8:

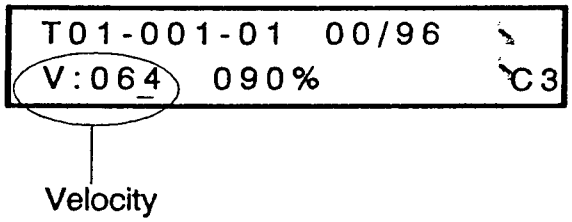
Please see next page


G8
C8
C7
C6
C5
C4
MIDDLE C
C3
C2
C1
C0
C-1
C-2

You record pitch by playing keys on your controller or by selecting them from the front panel of the Q-80 using the [Increment Dial].

Velocity

The Velocity value reflects the amount of force used to play a note.



- Velocity (0-127, KBD)

A light touch is represented by a lower value while higher values equate to a forceful touch.

A value of *KBD* allows the Q-80 to receive velocity values from the controller. If your controller has a touch sensitive keyboard, the velocity values are recorded automatically with every note you play. If you play hard, higher values are recorded and the sound module responds by getting louder. When you play softer, the opposite occurs.

You can use the numerical values to input velocity from the front panel of the Q-80.

Velocity Dynamics Chart

Strength	MIDI Velocity Value
ppp	20
pp	40
p	50
mp	64
mf	70
f	80
ff	90
fff	115

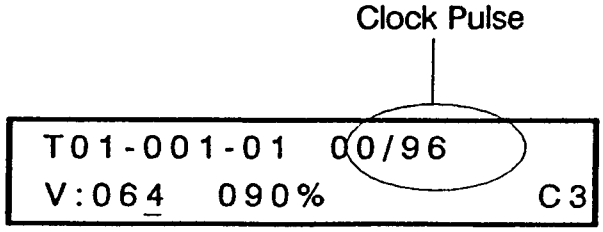
By setting *Velocity* to a numerical value, all notes played on your controller are recorded at that value, regardless of how you play them. This technique produces a machine-like effect to the performance.

NOTE: The various patches in your sound modules often respond differently to velocity control with respect to the way they're programmed. Some may not respond at all (such as many organ sounds, which ordinarily don't have touch control), while others may respond in radical extremes.

Clock Pulses

Each quarter note is divided into 96 divisions. These are called *Clock Pulses* and they represent the smallest beat division possible on the Q-80. With a 96 pulse per quarter note resolution, the Q-80 can accurately record exactly what you play.

The clock pulse field in the Step Record display...



...tells you where you're at within each beat. The rhythmic beat divisions are represented as a fraction of 96. For example, eighth notes are half the length of quarter notes so each eighth note takes up 48 clock pulses (48 x 2 = 96). It's represented on the step record display as 48/96.

Here's a chart that shows you the number of clock pulses each rhythmic beat division equates to:

Note Lengths in Clock Cycles

Note	Clock
𝅗𝅥	192
♩	96
♪	48
𝅘𝅥𝅯	24
𝅘𝅥𝅰	12
𝅘𝅥𝅱	6
5	38 or 39
7	27 or 28

Note	Clock
3	128
3	64
3	32
3	16
3	8
3	4
5	19 or 20
7	13 or 14

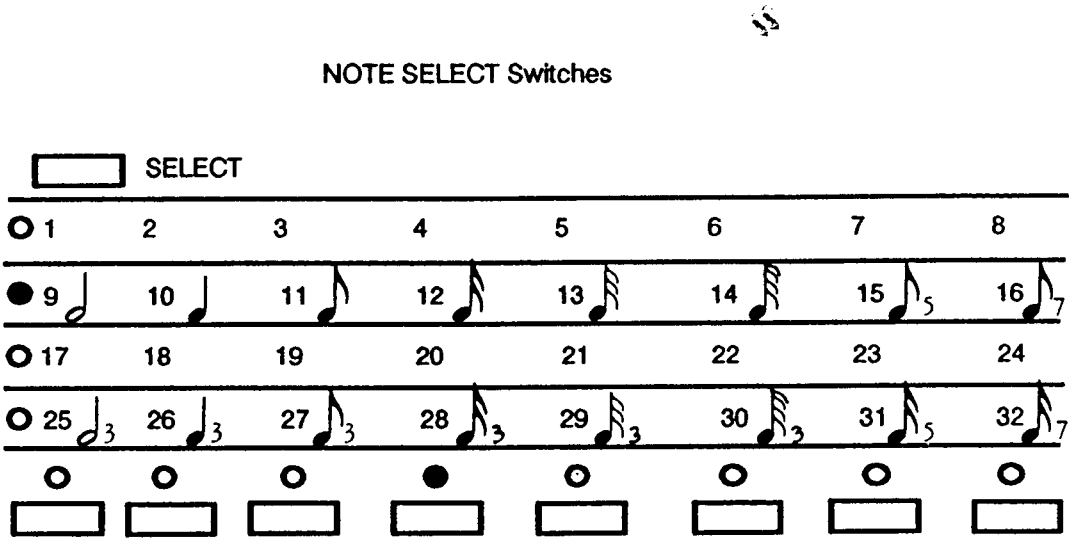
NOTE: The eighth note and sixteenth note quintuplets and septuplets vary by one clock pulse because they are not even multiples of 96.

Each time you input a note during Step Record, the Clock Pulse field advances the matching number of clock pulses.

The Clock Pulse value cannot be adjusted from the front panel of the sequencer. The Clock Pulse field is on the display just so you can monitor your position within a beat.

Rhythmic Value

The rhythmic value of a note is chosen on the Track Select Grid. When you enter Step Record, the Select and Track buttons operate as Note Select buttons. The rhythmic values are printed on rows 2 and 4 of the grid and they are selected in the same way you select tracks - the [Select] button chooses the row and the [Note Select] buttons choose individual rhythmic values in that row.

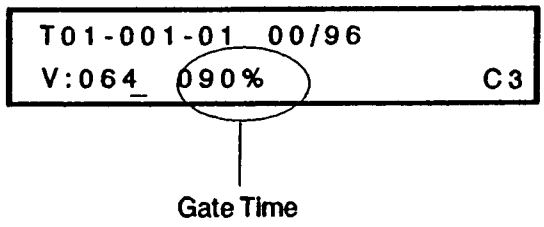


By selecting a sixteenth note rhythmic value as in the above example, every time you strike a key on your controller, a sixteenth note is recorded and the *Clock Pulse* field advances by 24 clock pulses.

Selecting an eighth note rhythmic value allows you to input eighth notes and so on.

Gate Time

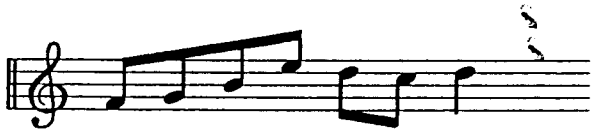
The *Gate Time* percentage value represents the duration of a note.



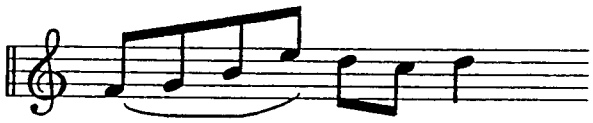
- Gate Time (10% - 120%)

A gate time value of 80% sets the duration to just under full value. This is a normal duration for notes that are connected sounding. A 100% value produces a smooth legato effect and a 50% value produces a staccato sound.

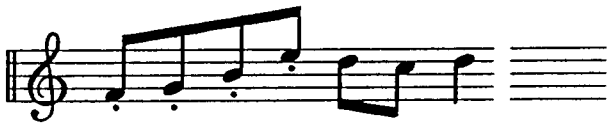
80% Gate Time:



100% Gate Time:



50% Gate Time:



Step Recording from a Controller

You can use your controller as the input device for Step Record.

1. Match the Track Channel of your selected record Track to the transmit channel of your controller.

2. Press and hold [Stop] and press [Rec].

3. Select the record track on the display using the [Increment Dial]. *You cannot use the Track Select buttons to choose a track because they function as Note Select buttons in Step Record.*

4. Select the Time Signature.

5. Press [Play] and you'll see the Step Record display.

6. Set the *Velocity* value to KBD to input touch control from your controller.

7. Adjust the *Gate Time* to suit.

8. Choose the rhythmic value for your first note from the grid using the [Select] and [Note Select] buttons.

9. Play your controller. As you play, the pitches are shown on the display screen in the note number field. This indicates that the Q-80 is recording what you're playing on your controller.

Step Recording from the Front Panel of the Q-80

You can record a full Step Record performance from the front panel of the Q-80.

1. Press and hold [Stop] and press [Rec].

2. Select the record track on the display using the [Increment Dial].

3. Select the Time Signature.

4. Press [Play] and you'll see the Step Record display.

5. Set the *Velocity* value for your first note (00-127).

6. Adjust the *Gate Time* to suit.

7. Choose the rhythmic value for your first note from the grid using the [Select] and [Note Select] buttons.

8. Move the cursor to the *Note Number* field of the display and use the [Increment Dial] to select the pitch.

Other Step Record Functions

Recording Chords

There are two ways to record chords on the Q-80.

First you can play two or more notes simultaneously on your controller and the Q-80 records those notes as a chord.

Second, using the [Chord] button allows you to record a chord without having to press all the notes simultaneously.

1. Press and hold the [Chord] button.

2. All notes played while the [Chord] button is held are recorded on the same step as a chord.

3. When you release the [Chord] button, the location indicator advances to the next step.

Rests

A rest is recorded instead of a note at the selected rhythmic value by simply pressing the [Rest] button. For example, to record an eighth note rest:

1. Select the eighth note rhythmic value from the grid using the [Select] and [Note Select] buttons.

2. Press the [Rest] button. The Clock Pulse field on the display advances 48 clock pulses.

Ties

Pressing the [Tie] button between one note or chord and the next ties the two together. For example, to record an eighth note tied to a quarter:

1. Select the quarter note rhythmic value with the [Select] and [Note Select] buttons.

2. Input the note from your controller or the front panel of the Q-80.

3. Select the eighth note rhythmic value.

4. Press the [Tie] button. The *Clock Pulse* field advances 48 clock pulses when you press [Tie] to indicate that an eighth note has been added.

5. If you continue to press [Tie], eighth notes are added with each press.

Step Back

Press the [Step Back] button to move back one step (the rhythmic value of the last note that was input). You cannot continue to move backward by pressing [Step Back] repeatedly. You can only move back one step.

NOTE:If you step back and input another note, the new note is added to the former. New notes do not replace already recorded notes.

Note Delete

Pressing the [Note Delete] button erases the immediately preceding note and returns the location display back one.

Pressing [Note Delete] repeatedly does not continue to erase previous notes, moving you backward through the sequence. It only erases one previous note and then the Q-80 waits for you to input another note or rest.

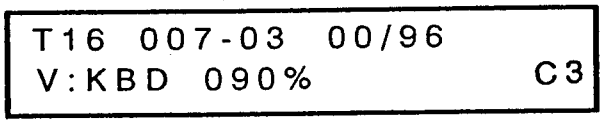
Bar Delete

Holding the [Chord] button and pressing [Note Delete] erases the current bar and returns the location display to the beginning of that bar. If you are currently at the beginning of a bar, this function erases the immediately preceding bar and shifts the location back one bar.

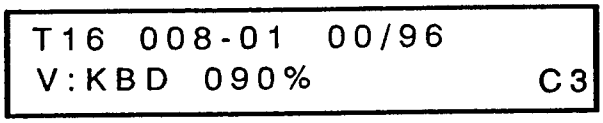
Insert Bar Mark

You can create short bars by inserting a *Bar Mark* at any point within a measure as long as the location is on an even beat (00/96). The Bar Mark represents the end of the current bar. For example, if you inserted a Bar Mark on beat 3 of a 4/4 measure, the second two beats would be cut off and the measure would become a 2/4 measure. To insert a Bar Mark, simply hold down the [Chord] button and press [Tie]. *You can only insert Bar Markers on even beats (display reads 00/96) and not in between beats.*

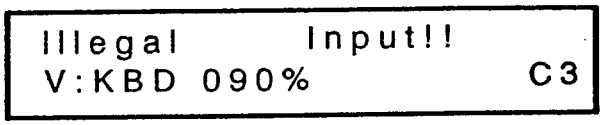
The example below cuts the 7th bar of a track short by placing the Bar Mark on beat 3:



The 7th bar becomes a 2/4 measure and the location advances to the beginning of the 8th bar:



If you attempt to insert a Bar Mark at a location other than an even beat (00/96), you receive an error message:



Bar Rest

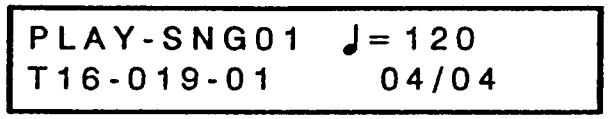
Press and hold the [Chqrd] button and press the [Rest] button to fill the remainder of the current bar with rests. The location advances to the beginning of the following bar.

To do this, press and hold the [Chord] button and press the [Tie] button.

Exit Step Record/Playback

When you're finished recording, press [Stop] and the display returns to the *Locate* function.

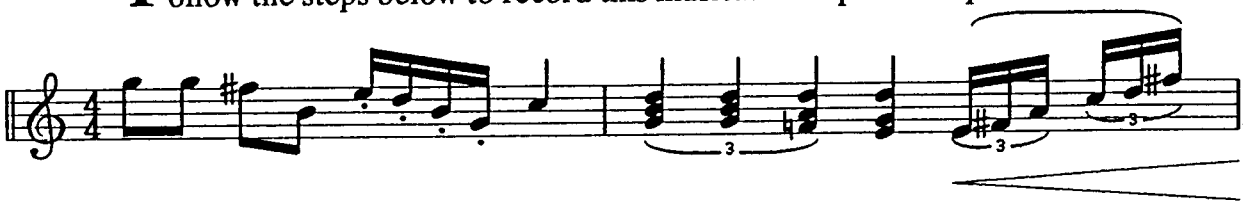
For example, if you press [Stop] after recording 18 bars:

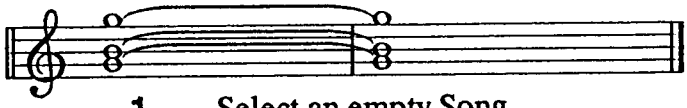


Press [Reset] to return to bar 1.

Step Record Tutorial

Follow the steps below to record this musical example in Step Record:





1. Select an empty Song.
2. Begin by matching the transmit channel of your controller to the track you'll select as your record track.
3. Choose a nice ensemble brass sound on your sound module.
4. Enter Step Record on the Q-80 by pressing and holding [Stop] and pressing [Rec].
5. Select your record track on the display.
6. Since the time signature of the musical example is 4/4, you don't have to change it on the display.
7. Press [Play].
8. Set the Velocity Value to *KBD* and the Gate Time to *80%*.

NOTE:You cannot use the [Step Back] button to move the cursor on the display in Step Record as you can in many of the Editing and Record displays. In Step Record the [Step Back] button moves you back one step in your recording. Use the [Cursor] button to move from parameter to parameter on the display.

9. The first four notes in the example are eighth notes, so select the eighth note rhythmic value from the Grid using the [Select] and [Note Select] buttons.

10. Play and release the first G with medium hard force. The location advances 48 clock pulses and reads *001-01 48/96.*

11. Play the next note the same way. The location reads *001-02 00/96.* The Q-80 is ready to record beat two of bar one.

12. Play the next two notes (F# and B) with a little less force. Make sure you release the first note completely before playing the next one or they will be recorded as a chord. After you've recorded these two notes the location reads *001-03- 00/96.*

13. The next four notes are 16ths so select the 16th note rhythmic value with the [Note Select] buttons.

14. These notes are staccato so set the Gate Time to *50%.*

15. Play all four notes with medium force and again make sure you release each note completely before playing the next one. When you're finished the location reads *001-04 00/96.*

16. The last note in the first measure is a quarter note, so select the quarter note rhythmic value with the [Note Select] buttons.

17. This note is not staccato, so set the Gate Time back to *80%.*

18. Play the note medium force. The location now reads *002-01 00/96,* indicating that you're now on measure two.

19. The first three chords in bar two are quarter note triplets. Select the quarter note triplet rhythmic value with the [Select] and [Note Select] buttons (♩3).

20. To record the first chord, press *and hold* the [Chord] button and then play the three notes in the chord separately (G, B and D). Use some force when you play so the notes are a bit louder. Release the [Chord] button and the location reads *002-01 64/96.*

21. Leave the rhythmic value where it's at and record the next two chords the same way. Make sure you release the [Chord] button after you input the three notes in each chord. When you're finished, the location reads *002-03 00/96.*

22. The next chord is a simple quarter note, so select that rhythmic value with the [Select] and [Note Select] buttons.

23. Press the [Chord] button and input the three notes in this chord with force in your playing.

24. The next six notes are triplet 16th notes. Select the triplet 16th note rhythmic value on the Grid ( 3).

25. These notes are connected under a slur marking, so set the Gate Time to *100%.*

26. The triplet 16ths need to start soft and get louder. You can play the first one with a light touch and use progressively more force as you go up, or you can set the Velocity values manually (remember to use the [Cursor] button, not the [Step Back] button, to select the Velocity field on the display):

- Note 1/(E) - Velocity = 30
- Note 2/(F#) - Velocity = 40
- Note 3/(A) - Velocity = 50
- Note 4/(C) - Velocity = 65
- Note 5/(D) - Velocity = 80
- Note 6/(F#) - Velocity = 95

27. The last Chord is a whole note tied to a whole note. You won't find a whole note rhythmic value on the Grid so you'll have to use the half note value.

28. The Gate Time can be left where it's at because the notes will be tied together. Set the Velocity value to *80*.

29. Press and hold the [Chord] button and play the three notes in the last chord. Release the [Chord] button and the location reads *003-03 00/96*.

30. Press the [Tie] button once to add a half note to the one you just recorded to create a whole note. Press the [Tie] button twice more to add another whole note.

31. Press [Stop] and then [Reset] to listen back.

If you hear these problems:

Notes sounding together that were supposed to be apart:

This happens when you don't completely release a note before playing the next one. Remember, you don't have to play the notes in rhythm during Step Record. You can't wait as long as you want between inputting one step and the next one. Have a snack or go see a movie and the Q-80 will still be waiting for you to input the next step when you get back.

Notes are not in rhythm:

All rhythm is defined by the rhythmic values that are selected from the grid using the [Select] and [Note Select] buttons. You don't need to re-select a rhythmic value for each note in a passage of identical rhythmic values (4 eighth notes in a row for instance), but you do need to remember to select any new rhythmic value that comes along in the music.

Notes connected or disconnected:

Keep an eye on the Gate Time value. If you change it to input staccato notes, for instance, remember to change it back or your whole track will be staccato.

Radical changes in dynamics:

If you're using the *KBD* Velocity value, you have to get used to controlling the dynamics with your touch control. Needless to say, it's quite different

playing dynamics in Step Record than in Real Time. This is something that takes practice.

More Step Record Functions

This chapter details Punch In/Out in Step Record and using MIDI controllers to input Rests, Ties and Velocity and Gate Time values.

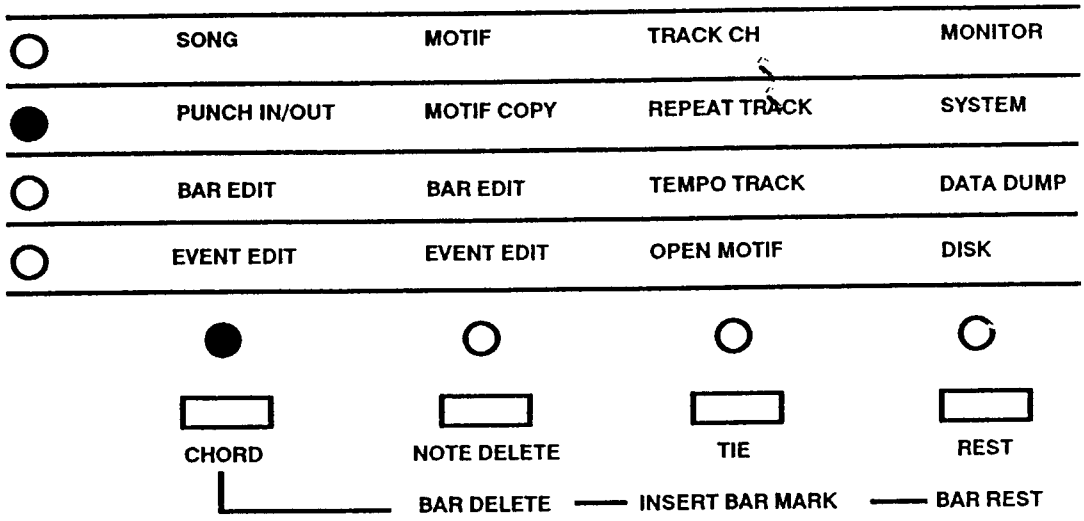
Step Recording Punch In/Out

The Punch In/Out function supports Step Record as well as Real Time recording.

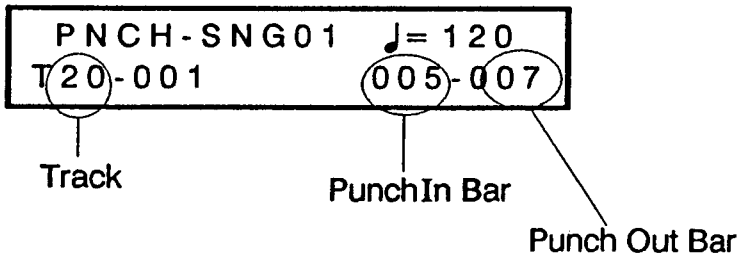
The preparatory steps are identical to that of Real Time Step record including defining the Punch In and Punch Out bars. Naturally, the Start Bar is moot, as there is no need for a running start to get into the recording region; the rehearsal feature does not operate in Step Record, either.

To Punch In/Out in Step Record:

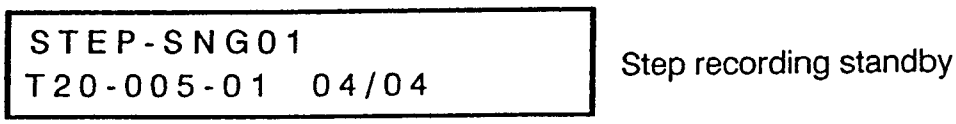
1. Select the Punch In/Out function with the [Chord] button.



2. Select the record track, the Punch In Bar and the Punch Out Bar



3. Press and hold [Stop] and press [Rec]. You'll see the Step Record Standby display:



Notice that the location is at the defined Punch In Bar.

4. Press [Play] and the Step Record display appears. The location is on the Punch In Bar.

5. Input data in the same manner as normal step recording. When you reach the end of the Punch Out Bar, the Q-80 will automatically exit Step Record and return to the Punch In/Out function display.

6. To listen back, select the Song Select function using the [Chord] button and press [Play].

MIDI Step Function

This function assigns MIDI control change numbers to four functions used in Step Recording. The four functions are:

- Inputting Rests.
- Inputting Ties.
- Setting Velocity values.
- Setting Gate Time values.

When these functions are assigned MIDI control, you can access them from your controller keyboard. This means you can accomplish most of a step recording without having to reach back and forth between your controller and the Q-80. Your recording takes less time.

Rests and Ties

The Rest and Tie functions can be assigned to any control change numbers from 64 - 121. On most keyboards, these three controllers fall into this category:

- Sustain Pedal = #64
- Data Increment button = #96
- Data Decrement button = #97

This means, if you assign the Rest function to control change number 64, then each time you depress the sustain pedal on your keyboard, you input a rest on the Q-80.

Likewise, if you have data increment and decrement buttons on your keyboard (these are usually labeled [Yes/No] or [+/-] buttons), you can input rests and/or ties when you assign these functions to control change numbers 96 and 97.

Check the Implementation Chart of you controller keyboard to see what control change numbers are transmitted and how.

Velocity and Gate Time Values

The Velocity and Gate Time value functions can be assigned to any control change numbers from 00 - 63. The controllers that fall into this category on most keyboards are:

- Modulation Wheel = #1
- Data Entry Dial = #6
- Volume Pedal = #7
- Expression Pedal = #11

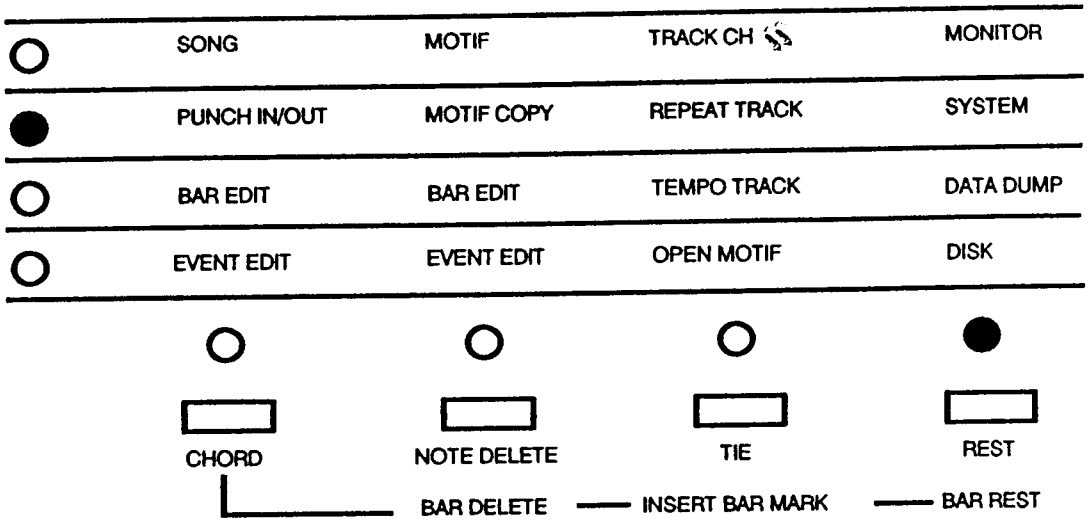
For example, if you assign the Velocity value function to control change number 1, you can set the value with the Modulation Wheel on your keyboard controller. If you set Gate Time to control number 7, you can adjust the Gate Time value with a volume pedal plugged into the expression pedal jack on your keyboard.

Again, check the MIDI Implementation Chart for your particular controller.

To Assign Control Numbers to Step Functions

The Step Function is found in the *System Menu*:

1. Access the System menu by pressing the [Rest] button.

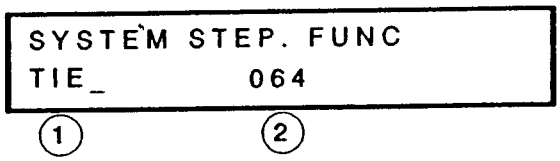


2. The display shows the first function in the System menu:

3. Use the [Increment Dial] to select the System Step Function.

4. Press [Enter] and you see this display:

See diagram on next page



1) Function (TIE, REST, VELO or GATE)
2) Control Change Number (64-121 for Rest and Tie, 00-63 for Velocity and Gate Time)

5. Select the Function and then assign a control change number.

The settings you make are automatically stored in the Q-80 memory. You don't have to press [Enter] to engage the assignments.

Stage 3

Power User Operations

The third and final section of this manual details advanced application functions.

The previous two sections simply laid the groundwork for the following material, where the real essence of the Q-80 sequencer is addressed. When you've finished reading *Stage 3* you'll find that the Q-80 is a versatile and flexible machine capable of responding to every demand.

Motifs

Motifs are recording areas like tracks, but differ from tracks in several distinct ways:

- Each Song holds 100 Motifs (there are 32 tracks).
- Motifs can be up to 99 bars long (tracks are up to 999 bars long).
- Like tracks, Motifs are empty storage spaces until data is recorded into them.
- A Motif that holds recorded data must be inserted into a track to be heard as part of a Song.
- A Motif can be used (inserted into a track, or tracks) as many times as you want.
- A Track can contain both track data (data recorded directly onto the track) and Motif data, but not simultaneously. They can exist side by side.
- Since Motifs don't include their own MIDI channel numbers, the motif data goes out on the same channel as the other track data.
- While recording a Motif, you can overdub onto existing data without erasing it. The new data is simply added to the old.

The most significant difference between Motifs and Tracks is using motif data over and over again requires no more memory than it took to record the data in the first place. Initially, recording data into a motif takes up as much memory as it would on any track, but to hear that data repeated several times in a song requires *no additional memory.*

The reason is this:

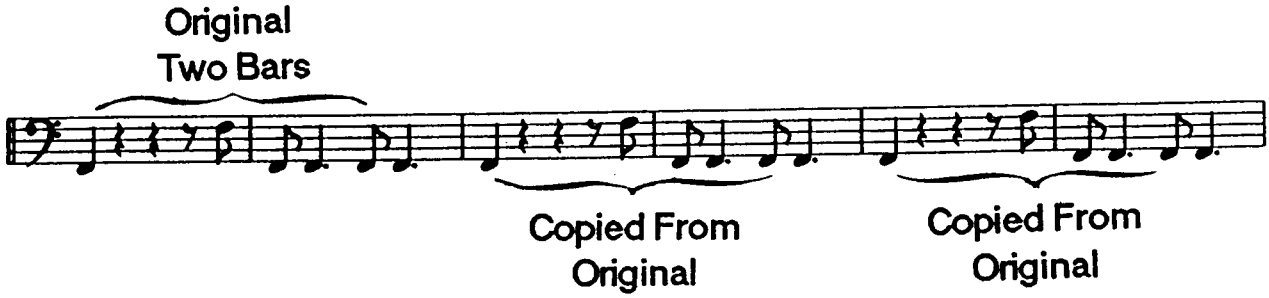
To hear a motif as part of a song, it must be inserted into one of the 32 Tracks. When you insert a motif into a track, the Q-80 doesn't make a duplicate copy of the motif data (which would use twice the memory space) but instead inserts a command to simply play the motif at the point you inserted it. You can insert such a command as many times as you want in any track throughout the song.

How to Use Motifs

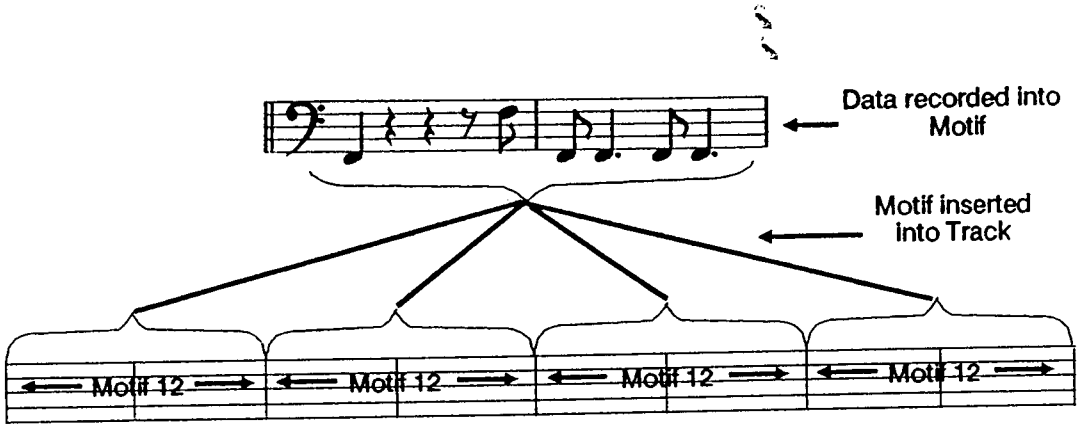
If a segment of music repeats many times throughout a song, such as a 4 bar bass line or a 2 bar drum pattern, you have three choices in recording this data on the Q-80. Let's take the bass line for example:

1. You can select a record track and record the whole bass line manually from your controller, from the beginning all the way through to the end of the piece. This is the method you must use when recording onto a tape.

2. You can select a record track and record the 2 bar bass line once and then copy the data (using the Bar Edit Copy function) as many times as necessary to fill up the remainder of the part. This method can save you some time, but it does require as much memory space as if you recorded the whole thing manually.



3. You can record the 2 bar phrase into a Motif and then simply insert it into a track as many times as needed. Since inserting the motif is really just inserting the command to play the motif, no additional memory is required because no actual MIDI data is inserted or copied. The motif is simply played again and again, like playing the same record more than once on your stereo.

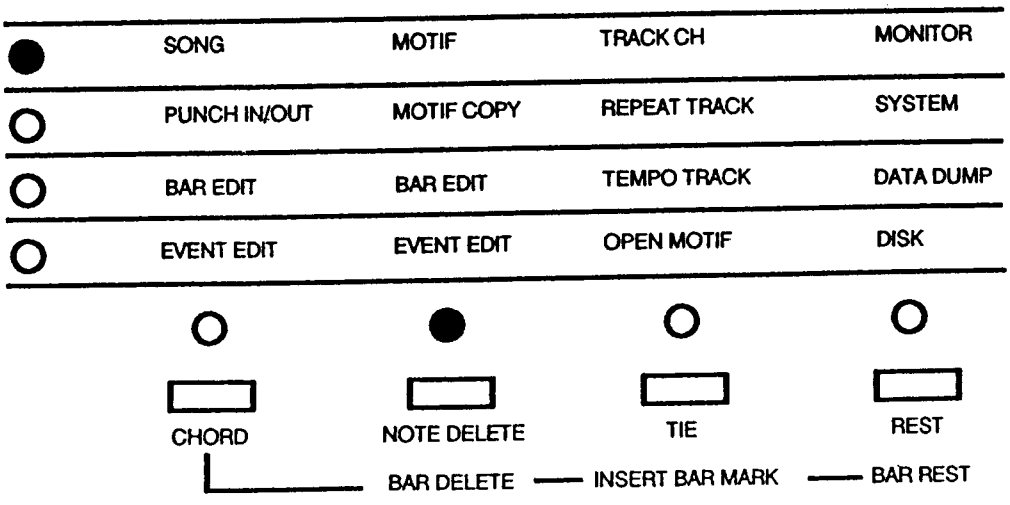


Selecting and Playing Motifs

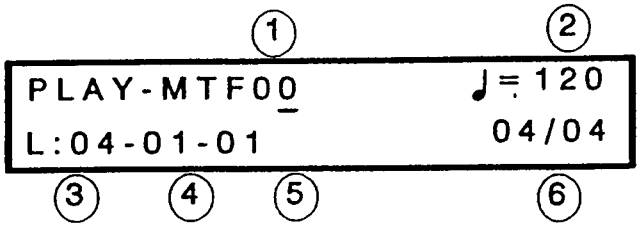
Select a Motif

This function selects a motif for recording or playback.

1. Use the [Note Delete] button to select the Motif function.



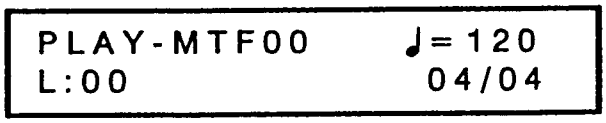
2. The motif display is shown on the screen. If there is data currently in the motif the display looks like this:



A motif containing data

1)Motif Number (00-99)
2)Tempo (40-250)
3)Motif Length - total number of bars in the motif (01-99)
4)Current Bar Number
5)Current Beat Number } Location Indicator
6)Time Signature

If the motif is empty, the display looks like this:

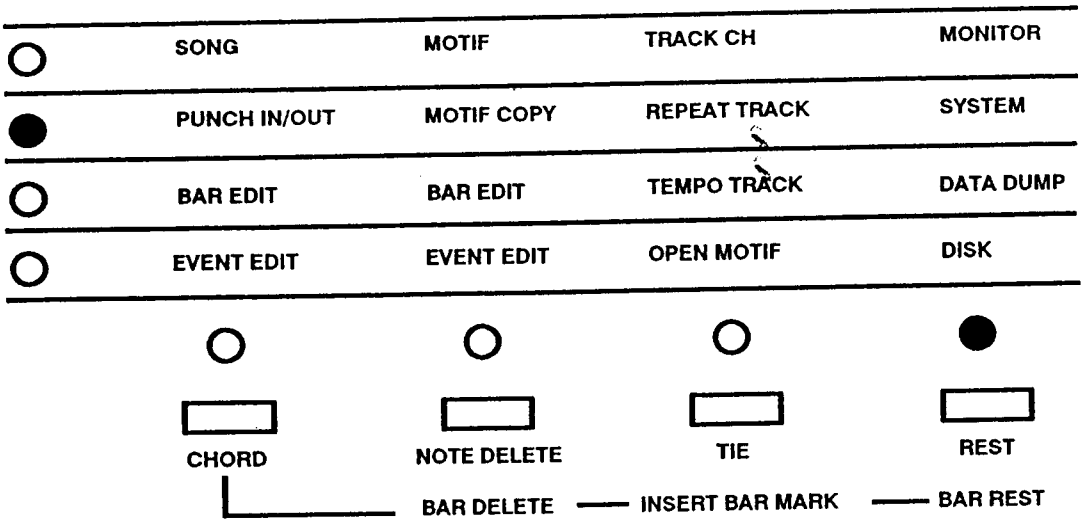


A motif without data

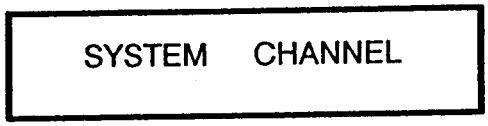
Motif Play

Motif data is not recorded or stored on a particular MIDI channel. As mentioned above, when a motif is inserted into a track it's played back on the assigned Track Channel. Motifs themselves are recorded and played back on the *System Channel.* Before a motif can be heard through your sound module, you must match the Q-80 System Channel with the receiving channel on your sound module.

1. Select the *System* function menu using the [Rest] button:



2. The first display that appears is the *System Channel* display.



3. Press [Enter] to see the current System Channel. If you want to change the channel, use the [Increment Dial].

4. Select the *Motif* function and choose a Motif Number with the [Increment Dial].

5. After selecting a motif, pressing [Play] starts continuous playback of the motif. The location indicator fields monitor the position in bars and beats. Playback repeats until you press [Stop].

You cannot play back more than one motif at a time - either simultaneously or in succession - until you insert them into a track or tracks.

Creating Motifs

There are three ways to create a Motif.

Motifs can be recorded from scratch using both the *Real Time* and *Step Record* methods.

Also, data that's already recorded can be transferred from a track to a motif using a function called *Make Motif*. With this function, you can copy a particular number of bars of track data into a motif location (you're not limited to copying the whole track). *This is a very easy way to insert a phrase that you've already recorded into a motif and then place wherever you want in your piece of music!!*

Real Time Record

Real Time motif recording is very similar to track recording with three notable exceptions:

- The length of the motif must be defined before recording begins. Once defined this cannot be changed.
- The motif repeats continuously during record. The two bar countoff repeats also.
- New data can be overdubbed without replacing existing data. This means you can build the motif layer by layer, by adding notes on successive passes as the motif repeats continuously. This is ideal for building drum patterns.

To Record Motifs in Real Time:

1. First you must match the *System Channel* to the transmit channel on your controller.

a. Select the *System* function menu using the [Rest] button.

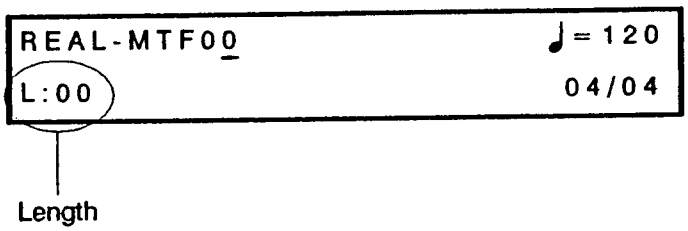
b. The first display that appears is the *System Channel* display.

c. Press [Enter] to see the current System Channel. If you want to change the channel, use the [Increment Dial].

2. Select the *Motif* function and choose a Motif Number with the [Increment Dial].

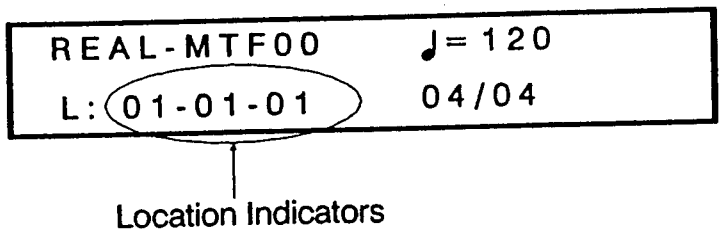
3. Press [Rec] and the Q-80 enters record stand-by. If the motif is empty, you must begin by defining the length of the motif.

4. Move the cursor to the *Length* field and use the [Increment Dial] to set the Length value.



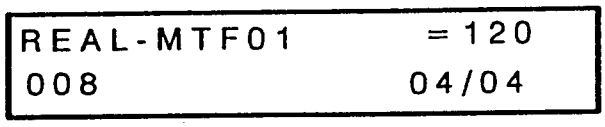
NOTE:Once recording begins, you cannot change the length from this function display. To shorten or lengthen a motif you must use the Delete or Insert functions in the Bar Edit Menu.

5. When you set the length above 00, the location indicator fields appear:



6. Set the Time Signature.

7. Press [Play] and the Q-80 counts down for two bars:



COUNTDOWN DISPLAY

...then recording begins:

8. Since the motif loops continuously during record, you can begin recording right away or wait. This is a good time to set the *Tempo* to a comfortable rate.

9. As the motif loops, you can overdub layers with each successive pass. If you're recording a drum pattern, you may want to begin with the bass drum and then add the snare drum, then the hihat part and so on.

10. Press [Stop] to end recording.

NOTE:If you think of something you want to add to the motif later, you can select it and overdub existing data without replacing any of the pre-recorded data.

Step Record

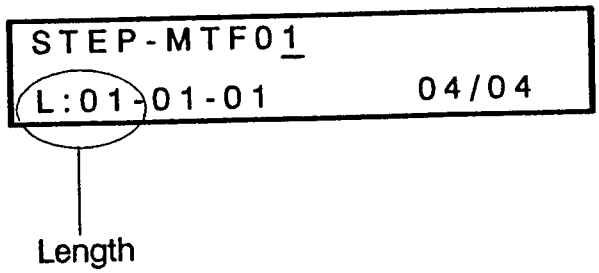
The Step Record procedure is the same for recording motifs as with track record with just two exceptions:

- The motif length must be defined before recording begins (just as with Real Time motif record).

- The motif repeats continuously, allowing you to overdub data on successive passes.

To Record Motifs in Step Record:

1. First you must match the *System Channel* to the transmit channel on your controller.
2. Select the *System* function menu using the [Rest] button.
3. The first display that appears is the *System Channel* display.
4. Press [Enter] to see the current System Channel. If you want to change the channel, use the [Increment Dial].
5. Select the *Motif* function and choose a Motif Number with the [Increment Dial].
6. Press and hold [Stop] and then [Rec], and the Q-80 enters record stand-by. If the motif is empty, you must define the length of the motif before recording can begin.
7. Move the cursor to the *Length* field and use the [Increment Dial] to set the Length value.

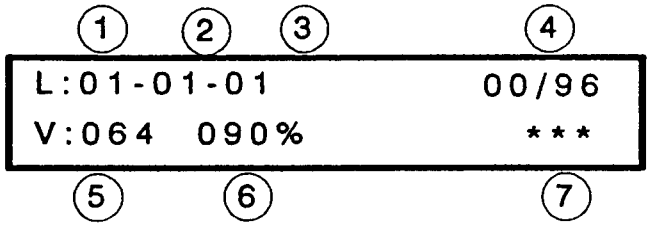


NOTE: Once recording begins, you cannot change the length from this function display. To shorten or lengthen a motif you must use the Delete or Insert functions in the Bar Edit Menu.

8. When you set the length above 00, the location indicator fields appear:

9. Set the Time Signature.

10. Press [Play] and the Q-80 enters Step Record. The display changes to show the Step Record fields.



1)Length
2)Measure Number
3)Beat Number } Location Indicators
4)Clock Pulse
5)Velocity
6)Gate Time
7)Data Type

11. Proceed with the Step Record in the same manner as in track record (see pg 83-96).

12. When you're finished, press [Stop].

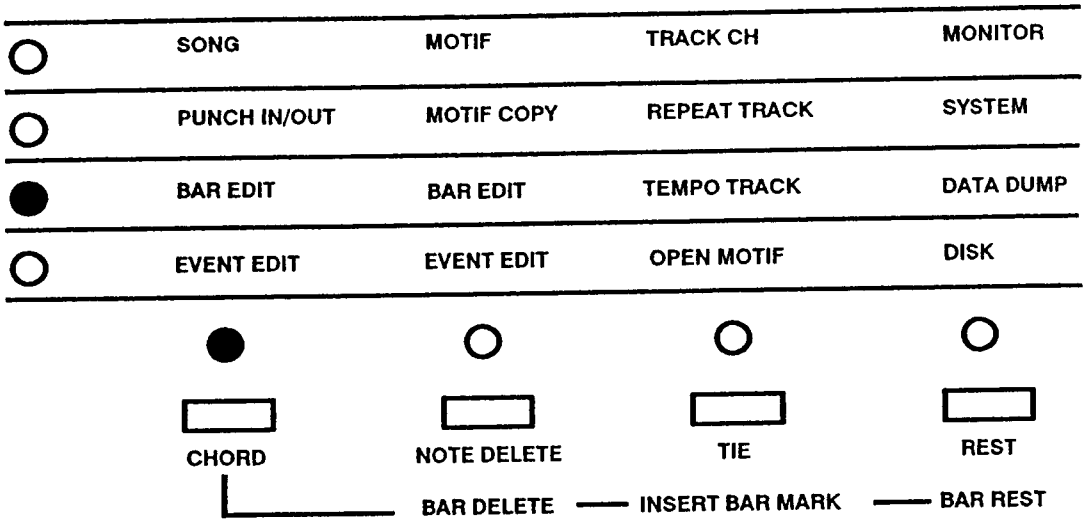
Make Motif

This is a great way to create a motif, because the recording is already done. This function copies a section of Track data to a motif, making it a very handy feature when you want to repeat a segment of music that you've already recorded onto a track.

This function is found in the Song/Bar Edit Menu.

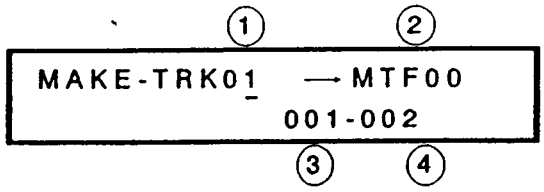
To Make a Motif:

1. Select the Song/Bar Edit Menu using the [Chord] button:



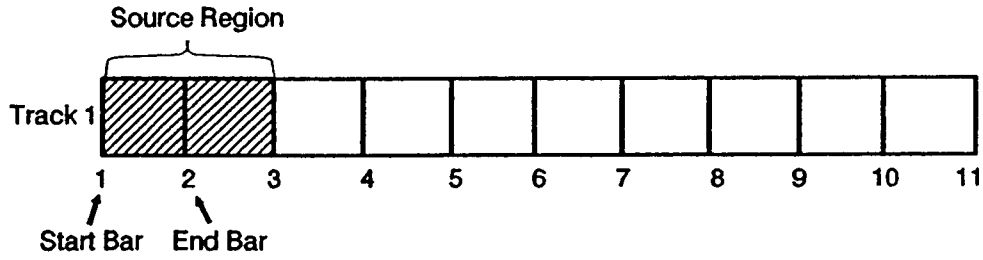
2. Use the [Increment Dial] to select the *Make Motif* function.

3. Press [Enter] and the Make Motif display appears:



1)Source Track Number
2)Destination Motif Number
3)Source Start Bar
4)Source End Bar

The segment of data taken from the source track is specified by the Source Start Bar and Source End Bar. This is called the *Source Region*. Note that the region includes the Source End Bar, so the above display defines the source region as Bars 1 *and* 2 of Track 1:



NOTE:You cannot make the Source Region more than 99 bars long. Motifs hold a maximum of 99 bars.

4. Define the Source Track and Source Region.

5. Select a Destination Motif.

NOTE:Any current data in the destination motif will be replaced by the new data by this procedure. If the destination motif contains data, and is longer or shorter than the specified Source Region in length, the motif will become the length of the Source Region. In other words, you cannot add track data to pre-recorded motif data by this procedure.

6. Press [Enter] to engage the function.

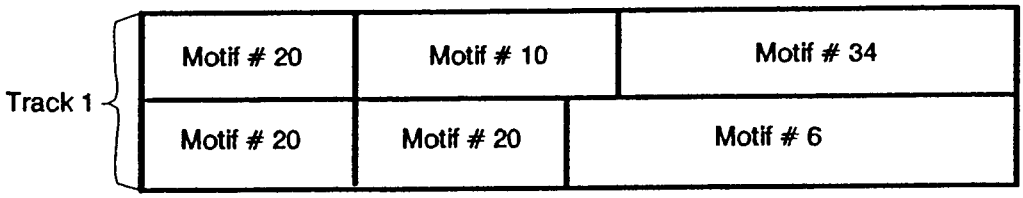
Inserting Motifs into Tracks

By inserting a Motif into a Track, you are actually inserting the command to play the motif data at a specified measure. When a motif is inserted on a track, the data is transmitted to the sound modules on the track's assigned Track Channel.

More than one motif can be inserted onto a track in succession, but not simultaneously:

This is possible:

This is not:



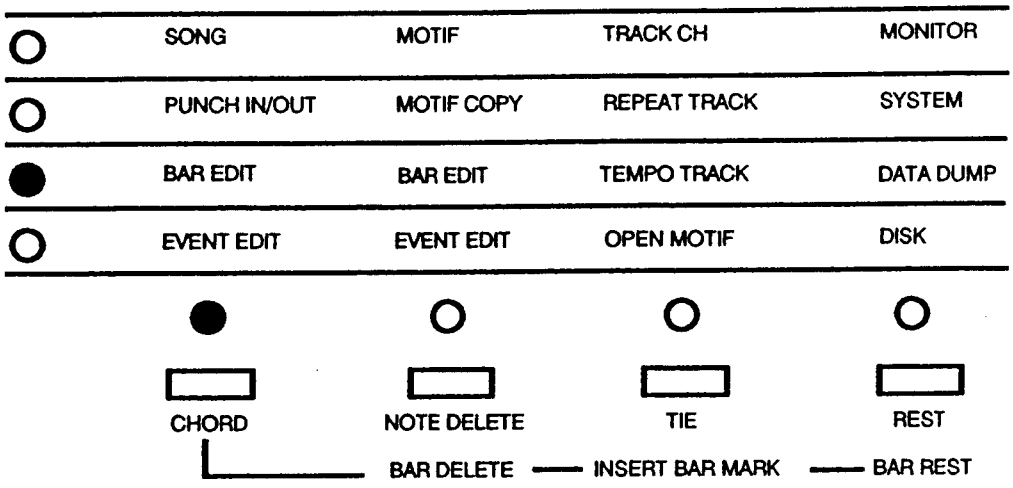
If the destination track contains track data (data recorded on the track itself), a motif can be inserted before, after or in the middle of the existing data:

NOTE:Remember that inserting a Motif ADDS BARS to the track. The motif is not inserted over into bars that already exist, the motif is added to the track.

The Motif Insert function is found in the Song/Bar Edit Menu.

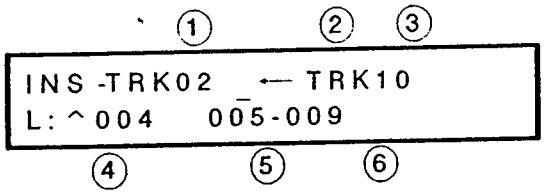
To Insert a Motif into a Track:

1. Select the Song/Bar Edit Menu using the [Chord] button:



2. Use the [Increment Dial] to select the *Insert* function.

3. Press [Enter]. The insert display is shown:

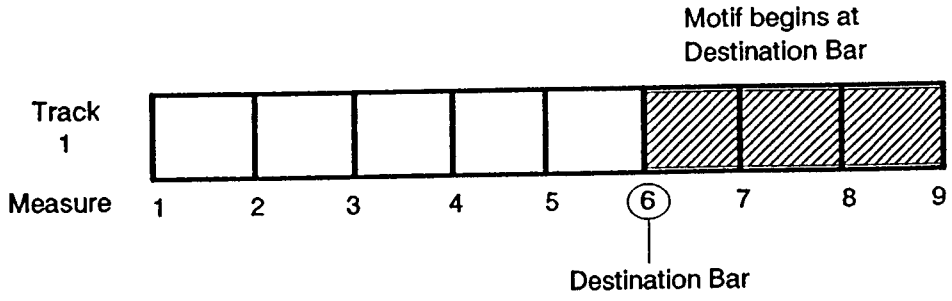


1)Destination Track
2)Source (Track, Motif, Bar)
3)Track or Motif Number
4)Destination Bar
5)Source Start Bar (when Source is a Track)
6)Source End Bar (when Source is a Track)

4. Move the cursor to the Source field and use the [Increment Dial] to select *MTF* to define the source as a motif. The display changes,and you no longer need the Source Start and End bar parameters because you cannot insert just a segment of a motif.

5. Move the cursor to the Motif Number field and specify which motif you want to insert.

6. Move the cursor to the Destination Bar field and define the measure number where you want the motif to begin.



Limitations

When you insert a motif in a track, there are certain limitations that arise regarding what you can and cannot do with several of the edit and record functions.

- No more than one motif can exist on a track simultaneously. Many motifs can be inserted on one track in succession, but they cannot overlap each other. In other words, you cannot attempt to insert a motif on a destination bar that exists inside another motif.
- Motifs and track data (data recorded onto the track itself) can exist on the same track, but cannot overlap each other.
- You cannot perform any Song/Bar Edit function in a region that includes all or part of a motif. You must limit your editing regions to track data only. You can, however, perform many of the editing funtions within a Motif itself using the Motif/Bar Edit menu.

Open Motif

Inserting a motif onto a track inserts a command to play the motif, but it doesn't insert the recorded data itself. The Open Motif function copies the actual data from a motif onto a track. This function is just the opposite of *Make Motif*, which copies track data to a motif location.

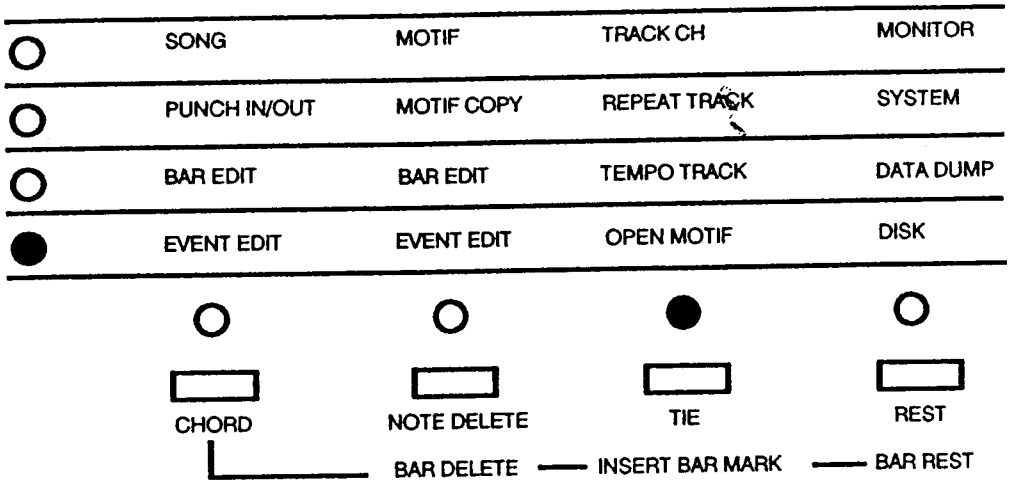
This function works by replacing the motif number (already inserted on a track) with the actual notes of the motif.

NOTE:You cannot copy just any motif data to any track at any location. The motif you want to open (copy) must have already been inserted into a track. Motifs can be opened ONLY WHERE THEY'VE ALREADY BEEN INSERTED INTO A TRACK and nowhere else.

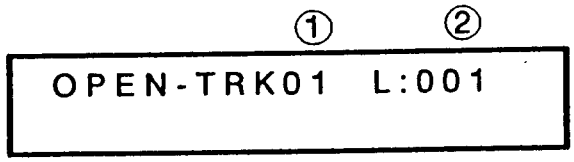
Open Motif is useful when you want a repeated section to change slightly throughout the music, or when it's necessary to perform Punch In/Out to the motif data (which can only be done to track data).

To Perform Open Motif:

1. Select the *Open Motif* function using the [Tie] button:



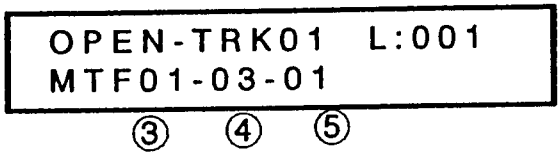
2. The display shows track number *01*, bar number *001* on the top line. If there is no motif inserted in Track 1, Bar 1, you'll see this:



No motif at start of track

1)Track Number
2)Bar Number

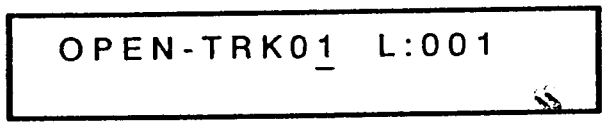
If there is a motif inserted in Track 1, Bar 1, you'll see this:



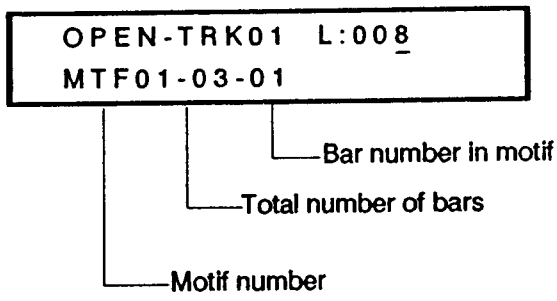
Motif at start of track

3)Motif Number
4)Number of Bars in the Motif
5)Current Location Bar in the Motif

3. To open a motif, you must first select the Track where the motif has been inserted.



4. Next, select the bar number where the motif has been inserted. Move the cursor to the *Bar Number* field and use the [Increment Dial] to scroll through the track. When you reach a bar where a motif has been inserted, the bottom line of the display shows you - the Motif Number, Number of Bars and the Current Bar Number within the motif.



The example above shows that Motif #01, a three bar motif, starts on bar 008 of Track 1.

5. Press [Enter] to copy the motif data to the track. You can press [Enter] from anywhere within the motif (you don't have to be on bar #1 of the motif itself).

6. Press [Cancel] to cancel the procedure.

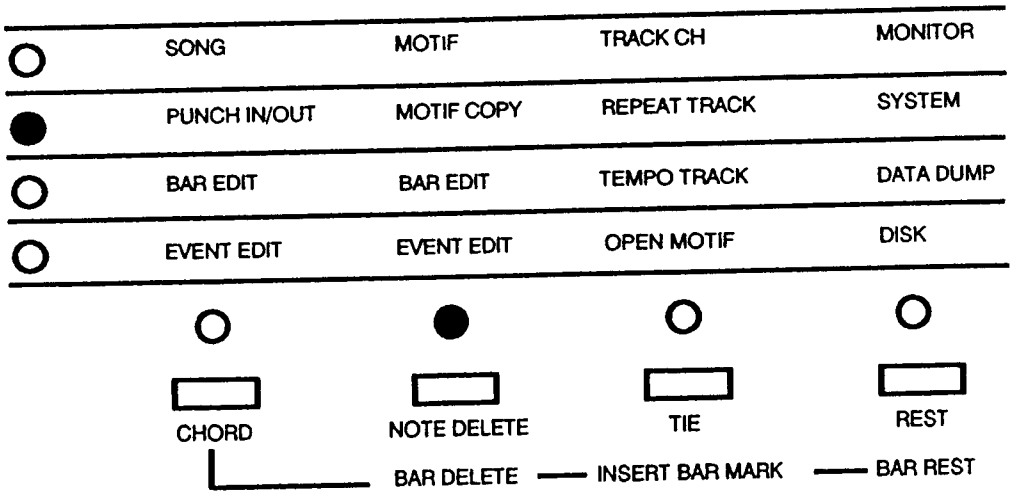
Motif Copy

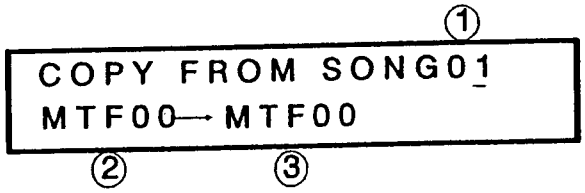
This function allows you to copy a motif from another song to a motif location in the currently selected song. You can also copy motifs from one location to another within the same song.

This function can save you a lot of recording time when you want several different versions of the same basic motif.

To Copy a Motif:

1. Select the *Motif Copy* function:





1)Source Song Number (01-10)
2)Source Motif Number (00-99)
3)Destination Motif Number (00-99)

2. Select the Source Song Number. If you want to copy a motif from one location to another in the same song, select the current song number.

3. Select the Source Motif Number. This is the motif you want to copy.

4. Select the Destination Motif Number. All data currently in the destination motif will be replaced by the copied data by this operation.

5. Press [Enter] and the display prompts you *Sure?*.

6. Press [Enter] to complete the copy or [Cancel] to cancel.

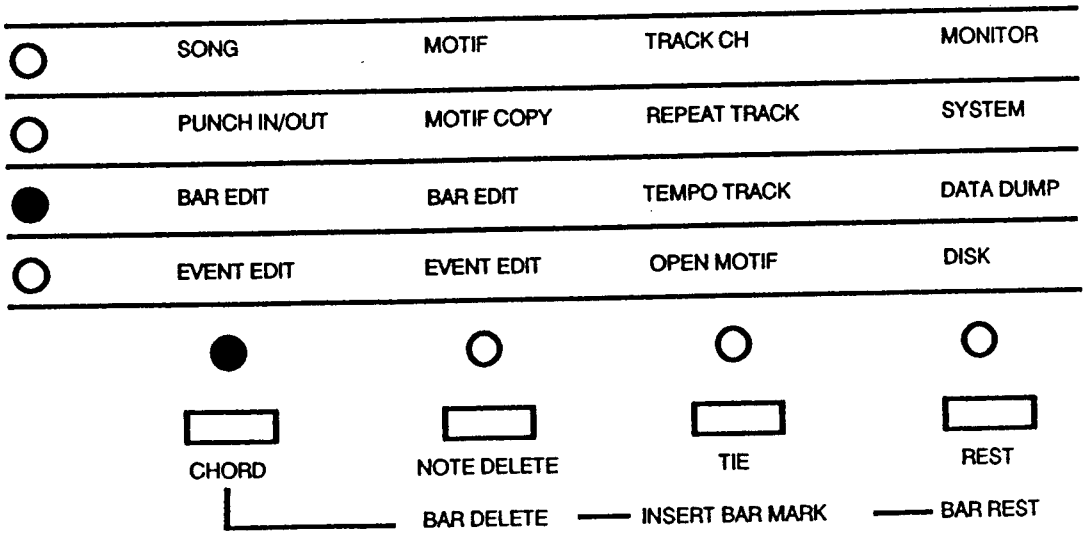
Bar Editing - Function Group #2

This section continues where Basic Bar Edit left off in Stage 2. In that section, the Erase, Delete and Insert functions are covered. Here, all other Bar Edit functions are discussed.

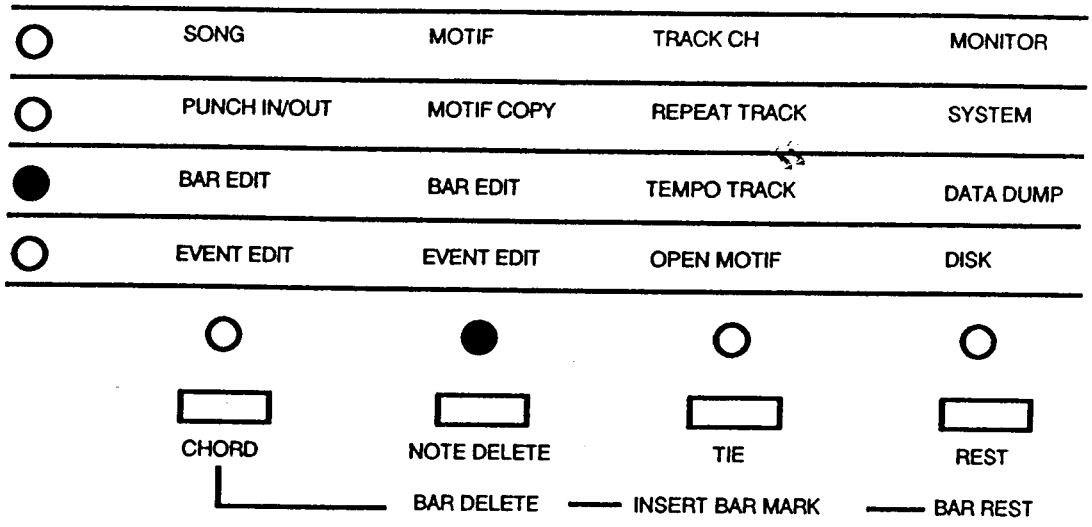
Song Bar Edit and Motif Bar Edit

With the exception of the *Make Motif* function, all other editing functions are available in *both Song and Motif Modes.*

The Bar Edit Menu for Song data (all data recorded directly onto the tracks themselves) is accessed with the [Chord] button:



The Bar Edit Menu for Motif data is accessed with the [Note Delete] button:



Basic Procedure

Access all functions listed under the Bar Edit Menu this way:

1. Select the Song/Bar Edit Menu for track data or the Motif Bar Edit Menu for motif data.

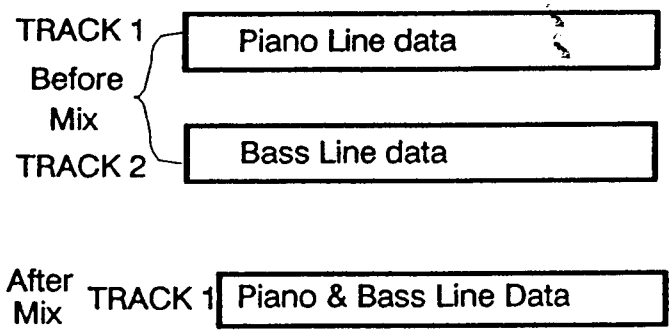
2. Use the [Increment Dial] to select the function.

3. Press [Enter] to confirm the selection and display the editing parameters.

4. Move from parameter to parameter on the display with the [Cursor] button and make value changes with the [Increment Dial].

Mix

This function combines data from one track to another, or from one motif to another. This differs from the Insert function because it layers the source data on top of the destination data:



This function *copies* the source data from the source track/motif. Data is not removed from the source track/motif.

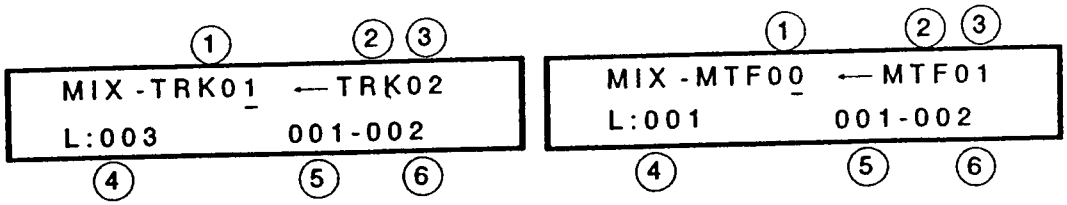
NOTE:When mixing data from two tracks with different MIDI channel assignments - the combined data on the destination track is played back on the destination track's MIDI channel.

NOTE:You cannot mix tracks and motifs together.

NOTE:It is not possible to mix tracks or motifs with different time signatures.

To Mix Tracks/Motifs:

1. Select the Mix function and press [Enter].



1)Destination Track Number
2)Source Track or Motif (TRK, MTF)
3)Source Track Number (01-32) or Motif Number (00-99)
4)Destination Bar
5)Source Start Bar
6)Source End Bar

2. Select the Source and Destination Track/Motif Numbers. Remember, the destination is where the combined data will end up.

3. Define the region to be copied from the source with the Source Start Bar and Source End Bar.

NOTE:The region includes the full End Bar.

4. Select the Destination bar where the copied data will be placed

5. Press [Enter].

6. At the prompt, press [Enter] again to complete the operation, or [Cancel] to cancel it.

Copy

The Copy function duplicates a specified number of bars from a location in one track/motif to another location in either the same track/motif or another track/motif.

This is great for making back-up copies of tracks you want to edit. This way you can still return to the original version of the track if you're not happy with the way the edited version turned out.

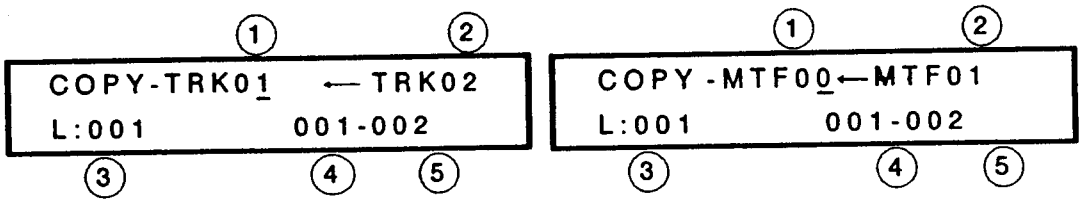
The Copy function can also save you time when you want two versions of the same section of music. Instead of re-recording the segment, just copy it and make changes if necessary, to the duplicate.

This function differs from *Insert* and *Mix* in that:

- The operation destroys data already in the destination.
- The Source and Destination track/motif can be the same.

To Copy a Region of Data in a Track/Motif:

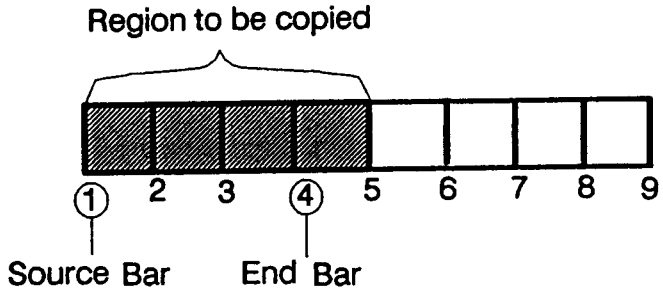
1. Select the Copy function and press [Enter].



1)Destination Track (01-32), or Motif Number (00-99)
2)Source Track (01-32), or Motif Number (00-99)
3)Destination Bar
4)Source Start Bar
5)Source End Bar

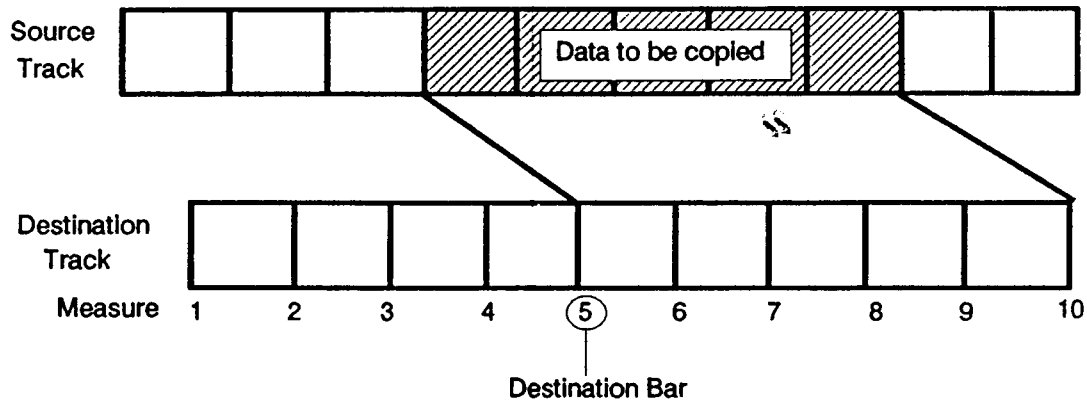
2. Select the Destination Track/Motif.

3. Specify the region you want to copy by selecting the Source Start Bar and Source End Bar. Remember, the full End Bar is included in the region.



4. Select the Destination Track/Motif.

5. Specify where the copied data is to be placed within the destination track/motif by selecting the Destination Bar.



6. After defining the parameters, press [Enter]. The display prompts *Sure?*.

7. Press [Enter] to copy, [Cancel] to cancel.

Data that already exists within the destination region on the destination track/motif is replaced by the copied source data.

NOTE:You cannot copy data from one song to another. You cannot copy track data to a motif or vice versa.

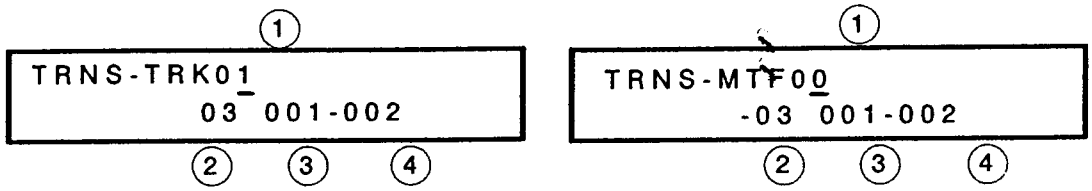
Transpose

This function shifts the pitch of a specified number of bars up or down by half-step degrees.

The range of value for this function is quite vast (+/-99) which makes it possible to actually exceed the 128 note MIDI register. If any transposed notes end up outside the maximum MIDI range (C-2 to G8), the display responds with *Illegal Input*.

To Transpose a section of data on a Track/Motif:

1. Select the Transpose function and press [Enter]:



1)Track (01-32), or Motif Number (00-99)
2)Transpose Value (-99 to 99 half steps)
3)Start Bar
4)End bar

2. Select the track or motif number.

3. Define the region to be transposed by selecting the Start and End Bars.

4. Select the transpose value. This parameter specifies the number of half steps the defined region will be transposed. If the music is currently in the key of F and you set the transpose value to 05, the music is transposed up 5 half steps to Bb.

5. Press [Enter]. The display prompts *Sure?*.

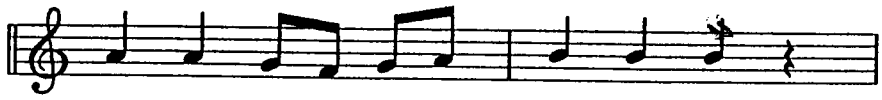
6. At the prompt, press [Enter] to transpose, or [Cancel].

Move

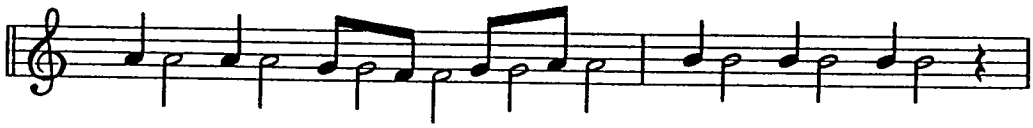
This function shifts the timing of an entire track either forward or backward by a specified number of Clock Pulses (there are 96 pulses per quarter note or 384 pulses in a 4/4 measure). Use this function to offset a track so it's heard playing behind or ahead of the beat. This is great for creating aggressive or laid back "feels" on drums.

Another neat application for *Move* is to create a MIDI delay. You can do this by making a copy of a track and then moving the duplicate either forward or backward. What you hear is a mixture of both the original and the *Moved data*, producing a delay effect.

Original Track



This is what you hear after copying the original and the moving the duplicate track.

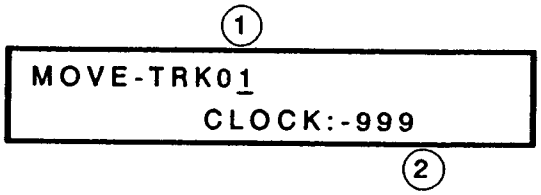


(Moved data sounds like a delay!!)

NOTE:This function is available for track data only. You won't find Move in the Motif/Bar Edit Menu.

To Move a Track:

1. Select the Move function in the Song/Bar Edit Menu and press [Enter].



1)Track Number (01-32)
2)Shift Value (-999 to 999 clock pulses)

2. Select the track number you want to Move.

3. Define the number of clock pulses. To move the track to a particular rhythmic note division, such as on the 32nd, 16th or 8th note, see the chart below:

Note Lengths in Clock Cycles

Note	Clock
	192
	96
	48
	24
	12
	6
5	38 or 39
7	27 or 28

Note	Clock
3	128
3	64
3	32
3	16
3	8
3	4
5	19 or 20
7	13 or 14

4. Press [Enter] and the display prompts *Sure?*.

5. At the prompt, press [Enter] to create a moved copy of the track data which mixes with the original. Press [Cancel] to quit.

Quantize

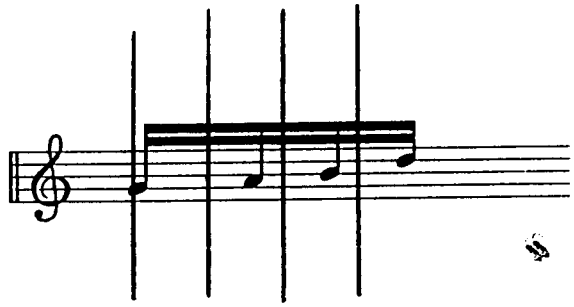
Before discussing the specific Quantize function on the Q-80, we've included this brief description of quantizing in general.

The Quantize function on most sequencers and drum machines traditionally moves all notes within the edit region to the nearest selected quantize value. The quantize value is a rhythmic beat division, commonly between a quarter note up to a 64th note triplet.

For example, if you selected an 8th note as the quantize value, then all notes within the edit region are moved to the nearest 8th note beat division. This produces a perfectly precise rhythmic performance:

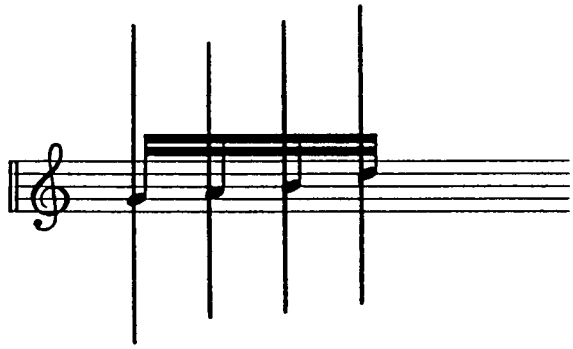
This...

Notes are not in line.



16th note beat divisions

...becomes this:



The quantize value defines the *smallest beat division* possible for the edit region. For instance, 16th notes are changed to 8ths when all notes are moved to the nearest 8th note. This means you must select the smallest beat division present in your edit region as the quantize value. If there are 16ths, but no smaller divisions, then select a 16th note quantize value and so on.

So far we've been describing the traditional quantize function found on most sequencers.

The Q-80 offers you much more control and flexibility!

A common criticism of quantize is that it makes music too perfect, too inhumanly precise. This is an unfortunate side effect to the function, which is often necessary to help bring together several tracks of data into a tight performance. To solve this problem, Kawai installed two extra parameters on the Q-80 called *Tolerances*.

Tolerances

The Tolerance parameters let you align the notes in an edit region to *either side of a quantize value*, instead of perfect alignment to the *exact value*. This results in a more human sounding performance. One Tolerance value addresses notes that fall behind the quantize value and the other addresses notes ahead of it.

For example, you can select a 16th note quantize value and then set the tolerances so that all notes behind the 16th note are aligned to just a fraction behind the beat and all notes ahead of the 16th note are aligned to right on the beat. This creates a performance with small imperfections, yet still rhythmically precise enough to sound tight.

It's possible to set the tolerances so that all notes behind the 16th note are aligned to the exact quantize value while the notes ahead aren't changed at all. You can also use this function to deliberately shift the note alignment away from the beat - such as a snare drum track - to one side or the other for effect.

The Tolerance parameter values range from -95 to 96 clock pulses. The maximum range changes with regard to the quantize value you select. The maximum possible tolerance value is equal to half the selected quantize value. For instance, if you selected a quarter note quantize value, the maximum tolerance range is +/-48 (96 clock pulses per quarter - 1/2 of 96 = 48).

NOTE:Selecting a maximum tolerance value disables the quantize function. In other words, when a maximum tolerance value is selected, the note alignment is not changed.

Edit Region

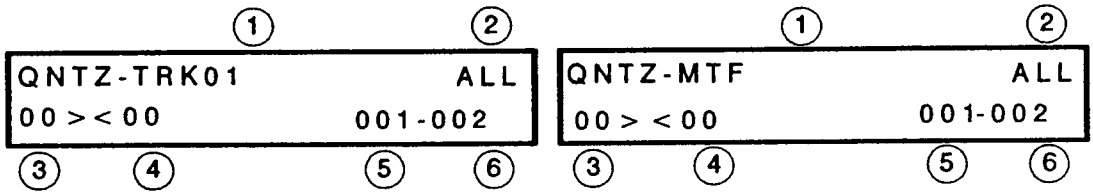
Like most of the functions in the Bar Edit Menu, the edit region can be restricted to a specified number of bars within a track or motif. The edit region for the quantize function can further be defined with respect to *Note Number*. There are two basic values possible for the Note Number parameter - *ALL* or a note number between *C-2 and G8*.

When you select *All*, all notes within the edit region (as specified by the measure boundaries) are affected by quantize. If you select a particular note number, then only that note is affected by quantize and all others are

unaffected. This is a very handy feature for adjusting drum tracks, because you can restrict the quantize function to just the snare or the bass drum, without affecting all other instruments on the track.

To Quantize:

1. Select the Quantize function in the Bar Edit Menu and press [Enter].



1)Track (01-32), or Motif Number (00-99)
2)Note Number (ALL, C-2 to G8)
3)Tolerance for notes behind the Quantize Value
4)Tolerance for notes ahead of the Quantize Value
5)Start Bar
6)End Bar

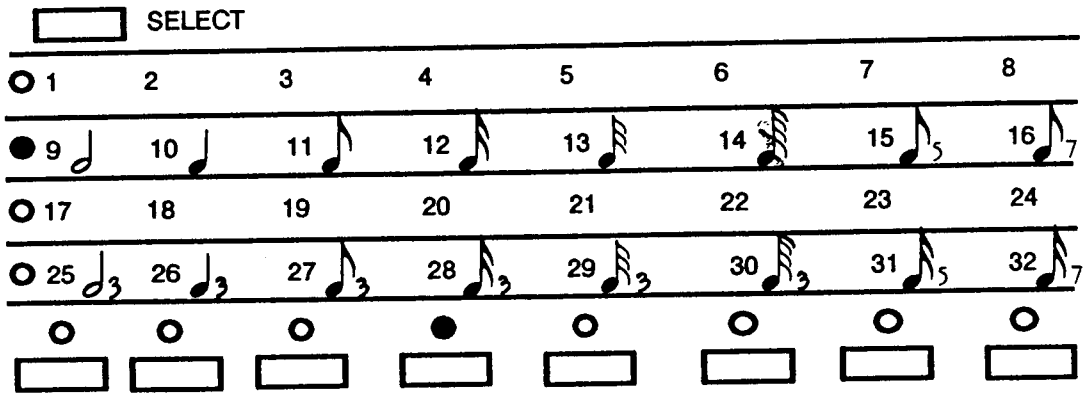
2. Select the Track or Motif you want to Quantize.

3. Define the Edit Region by selecting the Start and End bars.

4. Define the Note Number parameter. If you want to quantize all the notes in the region, select ALL. If you want to quantize just one particular note in the region, specify the note number (C-2 to G8).

5. Select the Quantize value for the region with the [Select] and [Note Select] buttons (as in Step Record, these are the same as the Track Select buttons).

16th Note Quantize value selected:



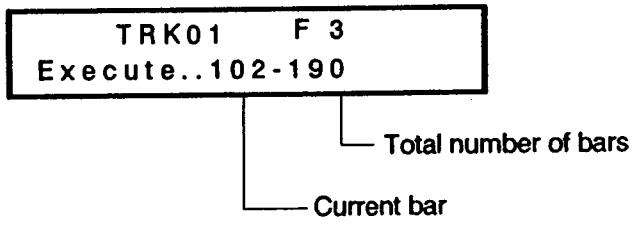
Remember, select the smallest note division that exists in the edit region as your quantize value. If there are 16th notes, select a 16th note quantize value, if there are 32nd notes, select a 32nd value etc.

6. Set the Tolerance parameters. You can achieve a tight yet not "machine-like" result with a tolerance of up to 15 degrees either way (plus or minus).

7. Press [Enter] and the display prompts *Sure?*.

8. Press [Enter] to engage quantize or [Cancel] to quit.

NOTE:If a track/motif contains a large amount of data, this function may take some time to complete. The display provides a running tally of the progress:



NOTE:If a single bar contains more than 600 MIDI events (which is not too likely), you'll receive an error message "Illegal Input."

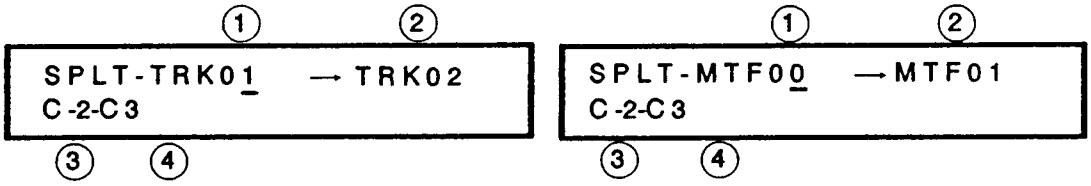
Note Split

This function moves all notes within a specified pitch range from one track/motif to another. This allows you to split a track, for example, into bass and treble parts.

When the operation is complete, the specified range of notes is copied to the destination and deleted from the source. The original data is split and placed onto two tracks/motifs.

To Note Split:

1. Select the Note Split function in the Bar Edit Menu and press [Enter]:



1)Source Track (01-32), or Motif Number (00-99)
2)Destination Track or Motif Number
3)Lower Note Limit (C-2 to G8)
4)Upper Note Limit (C-2 to G8)

2. Select the Source track or motif.

3. Select the Upper and Lower note limits to define the range to notes to be split. The range includes both the boundary notes.

4. Select the Destination Track or Motif. If there is data currently on the track/motif, it will be replaced by the new data in this operation.

5. Press [Enter] and the display responds with the prompt, *Sure?*.

6. Press [Enter] to continue, or [Cancel] to quit.

Note Shift

This function changes the pitch of all notes of a selected pitch within the edit region. For example, you can change all C3s (middle C) to C#3s.

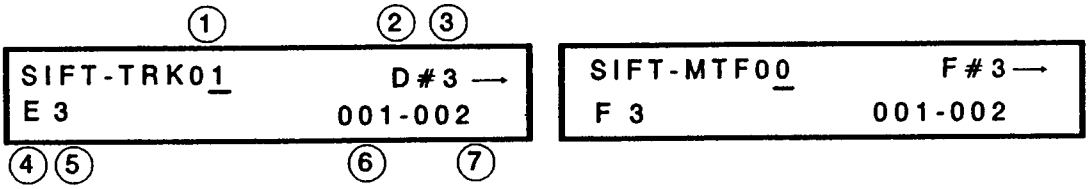
If you use the value, **, instead of an octave number,(*C*** instead of , for example,) then the Note Shift function applies to all octaves of the selected pitch (in this case C).

Examples:

- *C** - F*** This means that all Cs are shifted up 5 half steps to the nearest F.
- *C** - C#3* This means all Cs are shifted to the same note - C#3.
- *C3 - D#4* This means all C3s (and only C3s) within the edit region are shifted up an octave and a minor third to D#4.
- *C3 - E**** This is not possible.

To Note Shift:

1. Select the Note Shift function in the Bar Edit Menu and press [Enter]:



1)Track (01-32), or Motif Number (00-99)
2)Pitch to be shifted (C, C#, D, D# up to B)
3)Octave Number for note to be shifted (-2 to 8, or ** for all octaves)
4)Pitch after Shift (C - B)
5)Octave Number for note after Shift (-2 to 8, or **)
6)Start Bar
7)End Bar

2. Select the Track or Motif number.

3. Define the pitch you want to change by selecting the pitch letter (C - B)

4. Further define the pitch you want to change by selecting the octave number. If you want to change all octaves of the pitch, select **.

5. Now select the resulting pitch - the pitch you want to shift *TO* - by choosing the pitch letter (C - B) in parameter number 4.

6. Further define the resulting pitch by selecting the octave number. Remember, if the Source pitch is not set to all octaves (**), then the destination pitch cannot be.

7. Define the edit region by selecting the Start and End Bars.

8. Press [Enter] and you'll receive a prompt - *Sure?*.

9. Press [Enter] to continue, or [Cancel].

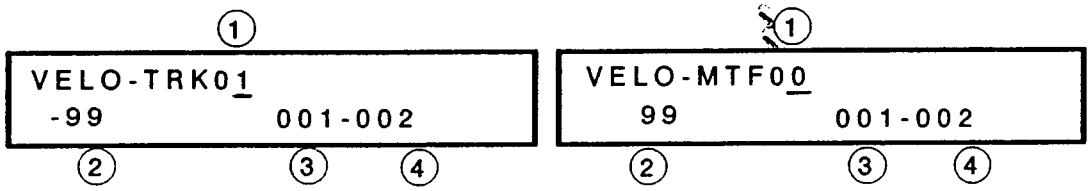
Velocity Modify

This function changes the Velocity value for all notes within the edit region by the same amount. Selecting a negative Velocity Modify value *lowers the Velocity* within the edit region and selecting a positive Velocity Modify value *raises the Velocity.*

NOTE: This function cannot alter a velocity value outside the maximum range of 0 - 127. If there are notes within your edit region with recorded velocity values of 120, and you select a Velocity Modify value of 30 (raises velocity by 30 degrees), those notes will be raised to the maximum velocity of 127 and no further.

To Velocity Modify:

1. Select the Velocity Modify function in the Bar Edit Menu and press [Enter]:



1)Track (01-32), or Motif Number (00-99)
2)Velocity Modify Value (-99 to 99)
3)Start Bar
4)End Bar

2. Select the Track or Motif number.

3. Define the edit region by selecting the Start and End Bars.

4. Select the Velocity modify value. If you want the performance within the edit region to be louder, select a positive value - if you want it softer, select a negative value.

NOTE:The relationship between louder and softer notes in the region doesn't change.

5. Press [Enter] and at the prompt - *Sure?*, press [Enter] again to continue, or [Cancel] to quit.

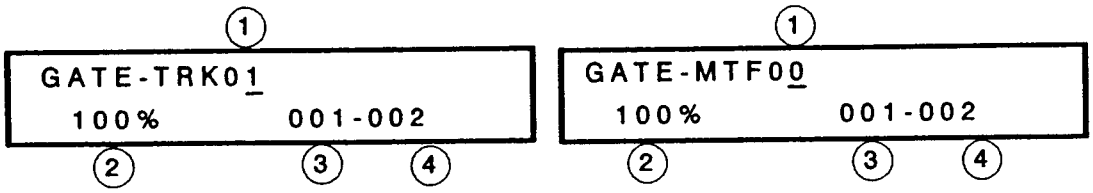
Gate Time Modify

This function changes the Gate Times for all notes within the edit region by a selected percentage. The Gate Time controls the duration of a note. Selecting a 50% Gate Time Modify value halves the duration of all the notes in the edit region. Choosing a 100% Gate Time Modify value will restore all the notes to their original duration.

Use this function to alter the articulation of a passage of notes. By selecting a value below 100% you can change a legato performance into a disconnected performance. Depending on the percentage you choose, you can make the articulation slightly disconnected or staccato. If you select a value above 100%, you can change a disconnected passage into a legato one.

To Gate Time Modify:

1. Select the Gate Time modify function in the Bar Edit Menu and press [Enter].



1)Track (01-32), or Motif number (00-99)
2)Gate Time Percentage (00 - 300%)
3)Start Bar
4)End Bar

2. Select the Track or Motif you want to edit.

3. Define the edit region by selecting the Start and End Bars.

4. Select the Gate Time Modify value. Values below 100% shorten the duration of all notes within the edit region, and values above 100% lengthen the duration.

5. Press [Enter] and at the prompt - *Sure?*, press [Enter] again to engage the edit, or [Cancel] to quit.

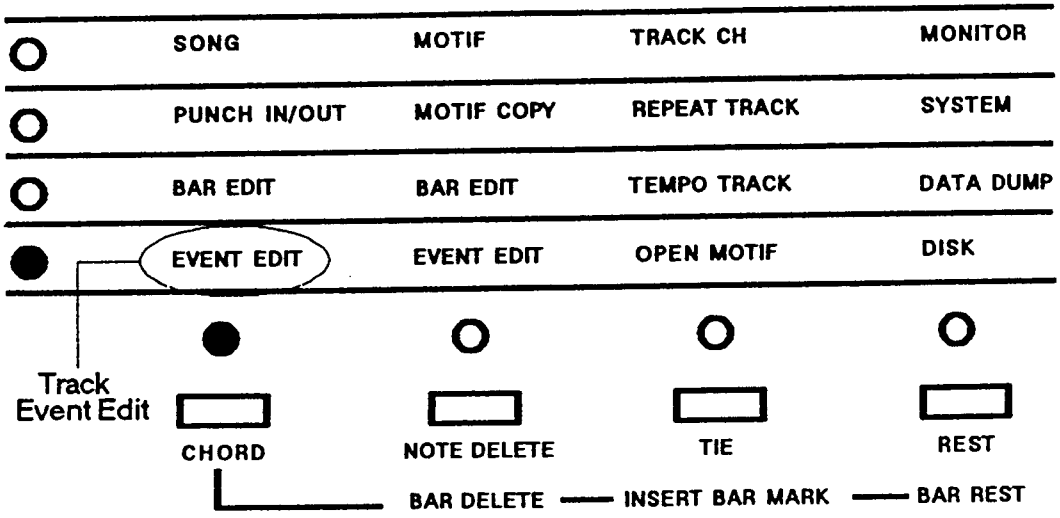
Event Edit

The Event Edit function allows you to monitor and adjust individual MIDI events. Using Event Edit, you can add, replace or edit the value of any MIDI event including pitches, velocity values and all non-note data types such as aftertouch, pitch bends, sustain pedal, MIDI volume changes, program changes, etc.

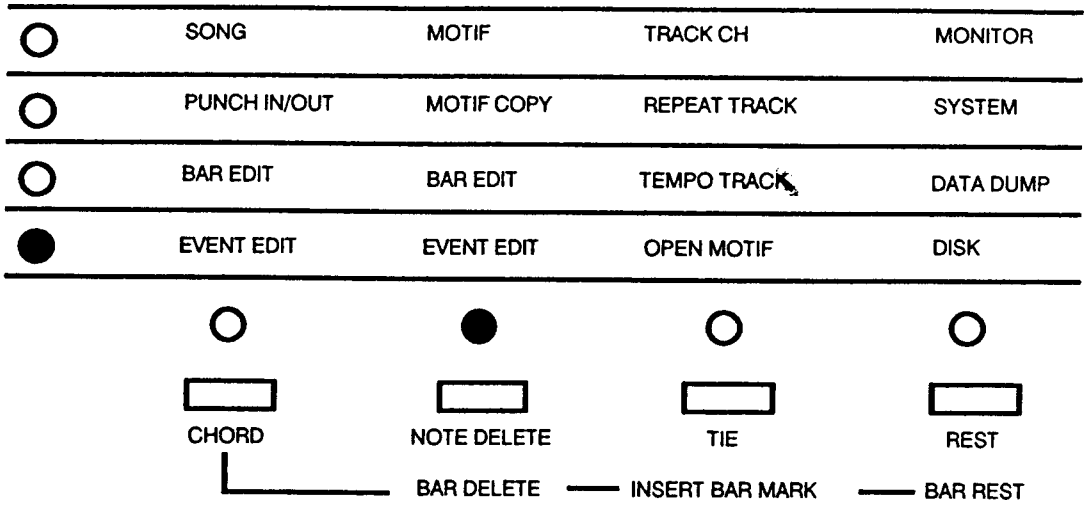
There are separate Event Edit functions for both Track and Motif data. They are both the same in operation and function.

Working in Event Edit Mode

1. Enter Event Edit by selecting the function using the [Chord] button for Song/Event Edit (track data):



...or the [Note Delete] button for Motif/Event Edit:

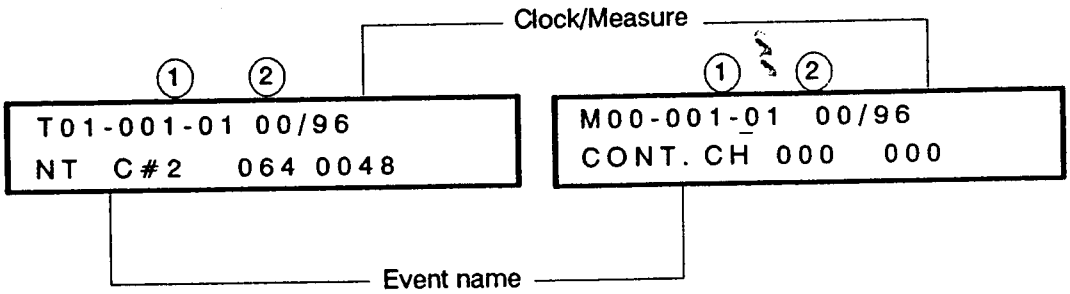


This display confirms your selection:

Event Search

Once in Event Edit, you can monitor and search for specific events:

1. Press [Enter] and the Event Search display appears:



1)Track/motif Number
2)Bar Number
3)Beat Number } Location Indicators
4)Clock Pulse Time

If the Track is empty the display shows:

You cannot gain access to an empty track in Event Edit.

2. Use the [Increment Dial] to advance forward or backward one event at a time through the track or motif.

As you rotate the Dial, event names appear on the lower row of the display. Note events sound briefly in passing to help you audibly monitor your position.

NOTE: Chord data sounds as chords when searching forward. In reverse direction, the sequencer breaks up the chord so that you can edit the notes individually.

3. Follow the location indicators on the display that show you the bar, beat and clock pulse number.

The clock pulse number shows you where the event is within a quarter note beat. For example, an event on clock pulse 48/96, falls on an eighth note beat division (48 is 1/2 of 96 - an eighth note is 1/2 of a quarter note).

Therefore an event at this location: T 02 - 004 - 03 24/96 is on:

- Track 2
- Bar 4
- Beat 3
- Second 16th note beat division of the beat (24 = 1/4 of 96, a 16th note is 1/4 of a quarter note).

The Chart below shows you the number of clock pulses in each rhythmic beat division:

Note Lengths in Clock Cycles

Note	Clock
𝅗𝅥	192
♩	96
♪	48
𝅘𝅥𝅯	24
𝅘𝅥𝅰	12
𝅘𝅥𝅱	6
quintuplet	38 or 39
septuplet	27 or 28

Note	Clock
3	128
3	64
3	32
3	16
3	8
3	4
5	19 or 20
7	13 or 14

The MIDI event types are shown on the display according to their function.

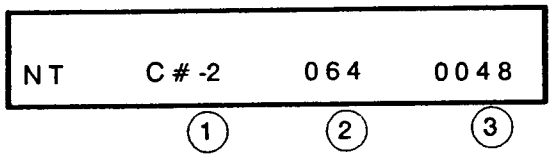
Event Types

The Q-80 display lists the event types by these abbreviations:

NT = Note Data
CONTROL = All Control Change Functions
MODE = Receive Mode
PROGRAM = Program Change message
PRESS = Aftertouch message
BENDER = Pitch Bend message
EXCL = System Exclusive

We discuss each event type individually below.

Note Data



1)Note Number (C-2 to G8)
2)Velocity Value (00 - 127)
3)Gate Time (0001 - 9999)

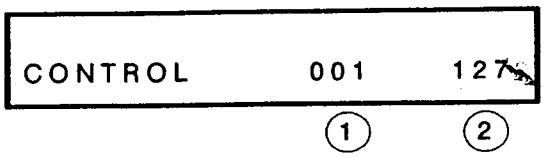
Pitches are labeled by their *pitch name* and *octave number*. Middle C is labeled *C3* for example, pitch = C, 3rd octave. There are 11 octaves in the MIDI register, including 127 chromatic pitches from C-2 to G8.

The force with which a key is played is represented by the *Velocity* value. Your playing style can trigger a number of responses from sound module to sound module and even from patch to patch, but the most common response to Velocity is volume changes. Playing harder produces a louder, brighter sound and playing softer produces a mellower, softer sound. You can adjust the loudness/softness of a note by editing the Velocity value (Range = 0 - 127).

The Gate Time defines the duration of a note. The value is in Clock Pulses (96 per beat). You can lengthen or shorten a note by adjusting its Gate

Time. To add one beat to a note's duration, increase the Gate Time value by 96.

Control - Control Change Functions



1)Control Change Number (000 - 121)
2)Function Value (00- 127)

There are several different MIDI functions grouped together under the general heading *Control Change*. These functions range from Pitch Modulation (vibrato control) to Volume changes to Sustain Pedal commands. Each function is identified by its own *Control Change Number* and it's this identification number that you see on the display of the Q-80 when you're working with the Control Change Functions. The chart below lists all the MIDI functions currently assigned to Control Change numbers.

No instrument responds to all the control change functions listed below. Most MIDI devices send and receive the basics, such as Sustain Pedal and Modulation Wheel, but every machine is different, so check the MIDI Implementation Charts for your instruments to see what they can and cannot respond to.

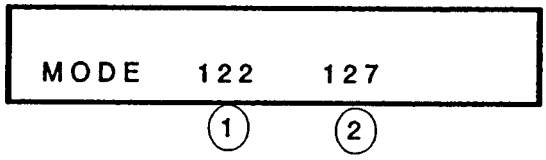
Table --- Control Commands

0	Undefined	67	SOFT PEDAL
1	MODULATION	68	Undefined
2	BREATH CONTROLLER	69	HOLD 2
3	Undefined	70 ~79	Undefined
4	FOOT CONTROLLER	80~ 83	GENERAL PURPOSE CONTROLLERS
5	PORTAMENTO TIME	84 ~90	Undefined
6	DATA ENTRY MSB	91	EXTERNAL EFFECT DEPTH
7	MAIN VOLUME	92	TREMOLO DEPTH
8	BALANCE	93	CHORUS DEPTH
9	Undefined	94	CELESTE DEPTH
10	PANPOT	95	PHASER DEPTH
11	EXPRESSION CONTROLLER	96	DATA INCREMENT
12~15	Undefined	97	DATA DECREMENT
16 ~19	GENERAL PURPOSE CONTROLLERS	98	Non-Registered Parameter Number LSB
20~31	Undefined	99	Non-Registered Parameter Number MSB
32~63	LSB for values 0 ~31	100	Registered Parameter Number LSB
64	DAMPER PEDAL	101	Registered Parameter Number MSB
65	PORTAMENTO	102 ~121	Undefined
66	SOSTENUTO		

The number that appears in the Function Value field on the display is the value of the control change function shown on the display.

NOTE:Control Change Numbers that are "Undefined" are numbers that will be assigned to new MIDI functions as they are developed.

Mode



1)Mode Number (122 - 127)
2)Mode Value (000 - 127)

Table --- Function Commands

Number	Message	Value
122	LOCAL CONTROL	000 or 127
124	OMNI OFF	000 only
125	OMNI ON	
126	MONO MODE ON	
127	MONO MODE OFF	

The word *Mode* in MIDI refers to the transmitting or receiving mode of a MIDI device. There is one transmitting mode (Local On/Off) and four receiving modes.

The Transmitting mode is:

- Local On/Off - This mode is pertinent when your controller is also a sound module (such as any ordinary MIDI keyboard that can produce its own sounds). When Local is ON, the keyboard triggers the internal sounds of the controller. When Local is OFF the internal sounds don't respond to the keyboard (effectively disconnecting the keyboard from the internal sounds). This is useful when you're controlling an external sound module with the keyboard and the Q-80 is playing the controller's internal sounds at the same time.

The Receiving modes are:

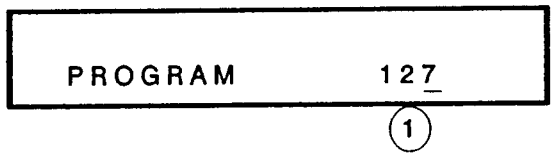
- Omni OFF - The sound module receives messages only on its assigned MIDI channel or channels. You can assign the channel for the sound module to receive messages on. When Omni Mode is OFF, it ignores messages on all other channels.
- Omni ON - The sound module receives *all messages on all channels*. In a MIDI studio, sound modules should always be set to Omni OFF. If a sound module were set to Omni ON, it would try to play all the data on all the tracks of your Q-80.

- Mono ON - The sound module receives as many different MIDI channels as it has available voices (if the sound module is an 8 voice instrument, it can receive 8 different MIDI channels). Each MIDI channel can be assigned a separate sound (much like a multitimbral sound module) but each sound can play only one voice at a time (monophonically).
- Mono OFF - The sound module receives messages on all 16 channels but only plays *one sound* monophonically.

The command to change to one of the above receiving modes can be transmitted from a controller and recorded onto your Q-80 sequencer. If your controller cannot transmit such a command, you can insert it in Event Edit Mode right on the sequencer itself.

NOTE:It's beyond the scope of this manual to describe MIDI Modes in detail. Most commonly you set your sound modules to Omni OFF and then leave them alone. Rarely will you use the MIDI commands to change the modes once they're set, but it is possible.

Program Change



1)Program Change Number (000-127)

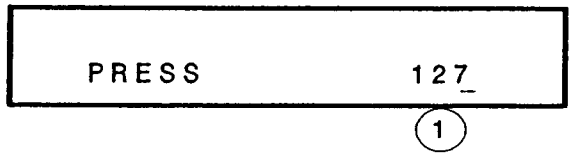
MIDI program change numbers range from 000-127. These are used to command the sound modules to select patches from their banks of sounds as they are needed during a sequence playback.

The various manufacturers of MIDI sound modules use different numbering schemes in arranging their patches. These rarely (if ever) match the MIDI numbering index, but this inconsistency doesn't prevent the system from working. All you do is translate the MIDI numbers to the arrangement on your sound module. It's easy to do; just translate the numbers from the bottom and go up, like this:

- MIDI Program Change #00 = the first patch on the sound module (the one with the lowest location number).

Create a chart for all the sound modules in your studio, so you won't have to do the figuring more than once.

Pressure



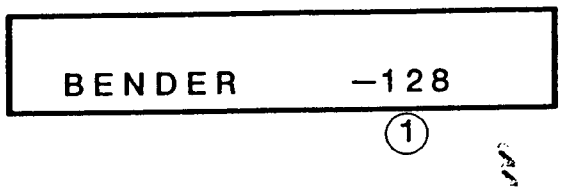
1)Pressure value (00-127)

Pressure, or aftertouch, is a form of touch control that many MIDI keyboards are equipped with today. Pressure, which is activated by pressing down on the keys *after they've initially been struck,* is a control function that can trigger a variety of responses from a sound module. It can make a sound louder, brighter or perhaps engage a vibrato effect with pressure.

Whatever the response, the value of pressure shown on this display controls the intensity of the response. Higher values increase the response.

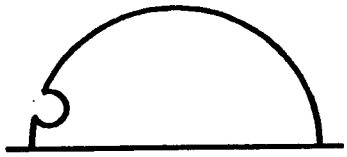
NOTE:When you press down on the keys of your controller, the Q-80 records hundreds and sometimes thousands of pressure events. Every movement you make transmits a host of events from the controller keyboard. For this reason, editing pressure events in Event Edit Mode is rarely done. In addition, so many events require a lot of memory to store that pressure is commonly filtered from ever being recorded until it's expressly needed (see Filtering MIDI Messages, pg 163).

Bender

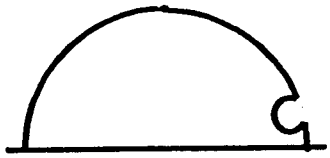


1)Pitch Bender Value (-128 to 127)

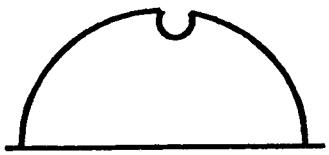
Adjusting the Pitch Bender on your controller transmits bender messages. Lowering the pitch to the maximum amount is equal to a bender event value of-*128*.



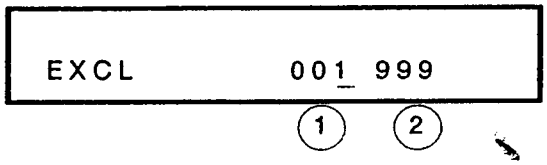
Raising the pitch all the way up is a value of *127*.



A value of 0 is equal to no pitch adjustment:



System Exclusive



1)Data Byte Number (001-999)
2)Byte Value

System Exclusive messages carry all the patch parameters for a synthesizer sound. They are exclusive to each individual make and model of synthesizer on the market and can be communicated *only between two like machines.* These messages can be recorded onto a track of the Q-80 and then played back through either the same machine that recorded them or a machine of the same make and model.

Use this capability to store the exact patches used in your sequence as part of the sequence. This differs from simple program changes in this way:

- Program changes call up a patch location number. Whatever sound is stored in that location number is called up and played. If you edit or replace a patch in one of your sound modules, the new patch is heard when you call up its location number.
- System Exclusive messages carry the parameters and values that make up the sound itself. Recording the System Exclusive messages for a patch onto the Q-80 stores the actual patch itself on a track of the sequencer.

NOTE:The method for transmitting system - exclusive messages varies from machine to machine. Check the owner's manuals for the keyboards and sound modules in your studio for details.

It's very uncommon to edit system - exclusive messages, although it is possible (Only to Delete) when the Q-80 is in this mode. You'll use this mode just as a monitor for system - exclusive messages to see where they are located on the track.

Adjusting Event Data

Once you've found the desired event, you can adjust it in one of three ways.

Delete It

To Delete an Event:

1. Find the Event you want to delete using the [Increment Dial].
2. Press the [Delete] button (same as [Reset]).
3. The display prompts - *OK?*.

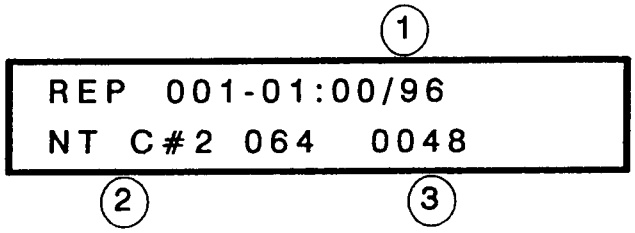
```
DELETE  ok?  00/96
BENDER          128
```

4. Press [Enter] to delete the event, or [Cancel] to escape.

Replace It

To Replace an Event:

1. Press the [Replace] button (same as [Rew]). The cursor moves to the clock pulse field.



1)Clock pulse
2)Event Type
3)Event Value

2. Select a new clock pulse number location for your event if you want to.

3. Move the cursor to the Event Type field and select a new event type if necessary.

4. Move the cursor to the Event Value field(s) and change the event value.

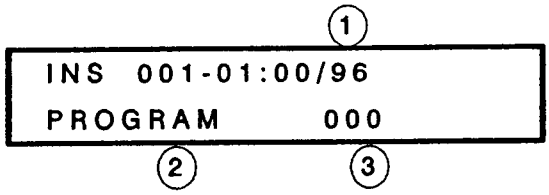
5. Press [Enter] and the original event is replaced by the new event. The display returns to search mode.

Insert It

To Insert an Event:

1. Select the Bar and Beat number where you want to insert the event.

2. Press the [Insert] button (same as [Fwd]). The cursor moves to the Clock Pulse field:



3. Select the position within the beat where you want to insert the event by adjusting the Clock pulse value.

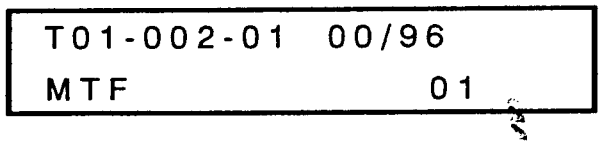
4. Move the cursor to the Event Type field and select the event type you want to insert.

5. Move the cursor to the Event Value field(s) and select the event value.

6. Press [Enter] and the original event is replaced by the new event. The display returns to search mode.

Motifs Inserted in Track Data

A motif inserted in a track is shown on the Event Edit display as:



The recorded data in the motif is not shown because it doesn't exist on the track. All you see is the command to play back a particular Motif at the current location.

If you press [Delete], [Replace] or [Insert], the event edit display prompts - *Open Motif Sure?*. The Q-80 is asking you if you want to transfer the motif data to the track so you can adjust the MIDI events. If you do this the data is copied from the motif to the track and the events appear on the display.

Since it's possible to edit MIDI events in Motif Event Edit mode, this operation is available so you can make adjustments without altering the Motif itself, which may be used in other parts of the song or other songs.

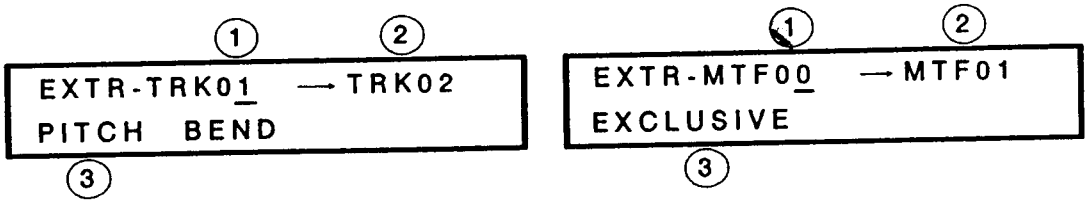
Event Extract

This function is found in *Bar Edit Mode* for both Song and Motif data. It allows you to extract a particular MIDI Event Type from one track or motif to another. In this way you can hear the track without the event type, such as pitch bends or sustain pedal commands.

You can then edit the extracted events separately or erase them altogether while they're on a separate track. If you want to re-insert them into the track they came from, use the MIX function.

To Extract MIDI Events from a Track or Motif:

1. Select the Event Extract function in the Bar Edit Menu and press [Enter].



1)Source Track (01-32), or Motif number (00-99)
2)Destination Track or Motif number
3)Event Name: Control All = All 121 control change functions
Program Change
Channel Pressure = Aftertouch
Pitch Bends
Exclusive
Control Each (000-121) = Individual Control Change functions

2. Select the Source and Destination Track or Motif numbers. *The Source and Destination numbers must be different.*

3. Select the Event Type you want to extract. If you selected *Control Each* also specify which control change function by choosing its number (see chart on page 153).

4. Press [Enter] and at the prompt - *Sure?*, press [Enter] again to engage the edit, or [Cancel] to quit.

Added Features

Included in this section are features found in a variety of Menus that are more or less added accessories to the fundamental functions already covered.

Filtering MIDI Messages

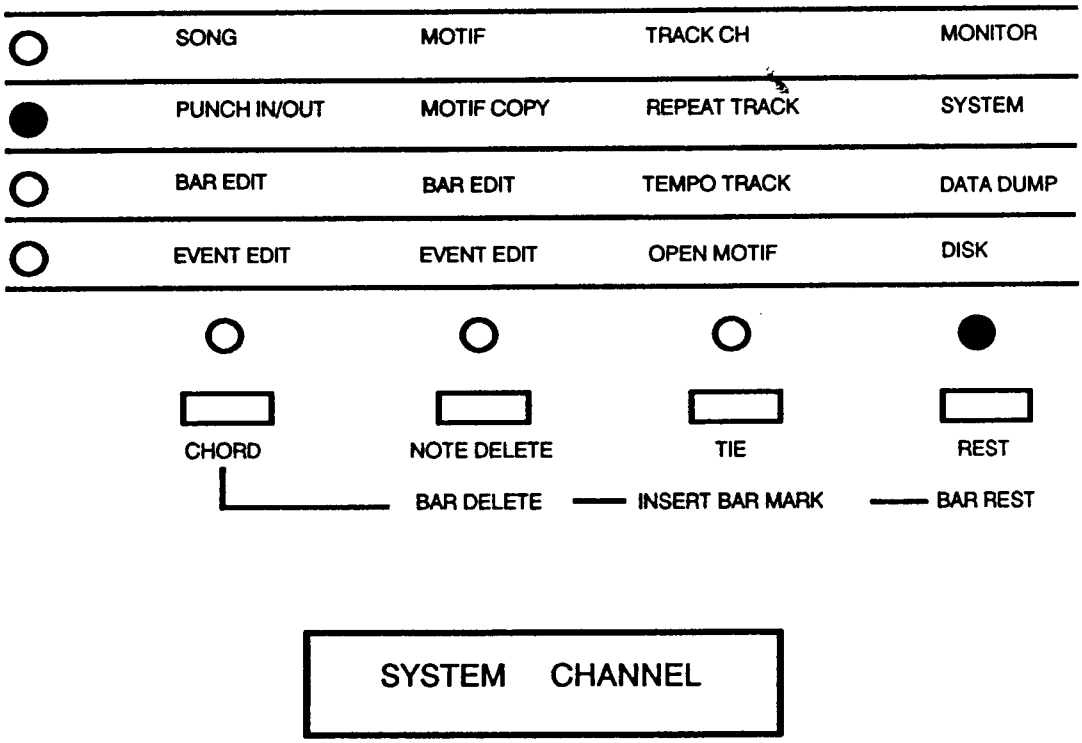
The *Record Data* function allows you to selectively filter out specific types of incoming MIDI data to conserve memory space.

Many keyboard controllers transmit control messages such as pressure and velocity automatically whenever you play the keys. If the sound (patch) you're triggering responds to such commands, then this is a desired condition, but many patches are programmed *not to respond to touch control commands.* If the patch can't respond, then the control command is in effect wasted. This is not a problem when you're just playing the instruments, but when you're recording MIDI data onto a sequencer, a lot of memory space is used up needlessly.

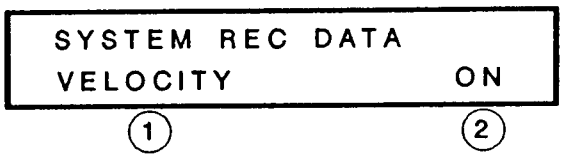
To save memory space whenever possible, make it a practice to filter surplus command messages.

To Filter MIDI Data:

1. Select the System Menu using the [Rest] button:



2. Use the [Increment Dial] to select the Record Data (REC Data) function. Press [Enter].



1)MIDI Data Type:
Velocity
Pressure
Bender--------(pitch bend)
Control All---(all 121 control change functions)
Exclusive-----(patch data)
Control Each-(individual control change functions)
2)ON/OFF - or for *Control Each*- 000-121/OFF

3. Select each data type and turn the filter On/Off. When ON, the Q-80 records the selected data type.

4. For Control Each, you can select one control change function to pass through and be recorded. This is only pertinent when *Control All* is set to OFF.

If Velocity is set to OFF, the Q-80 records all notes at the median value of 64.

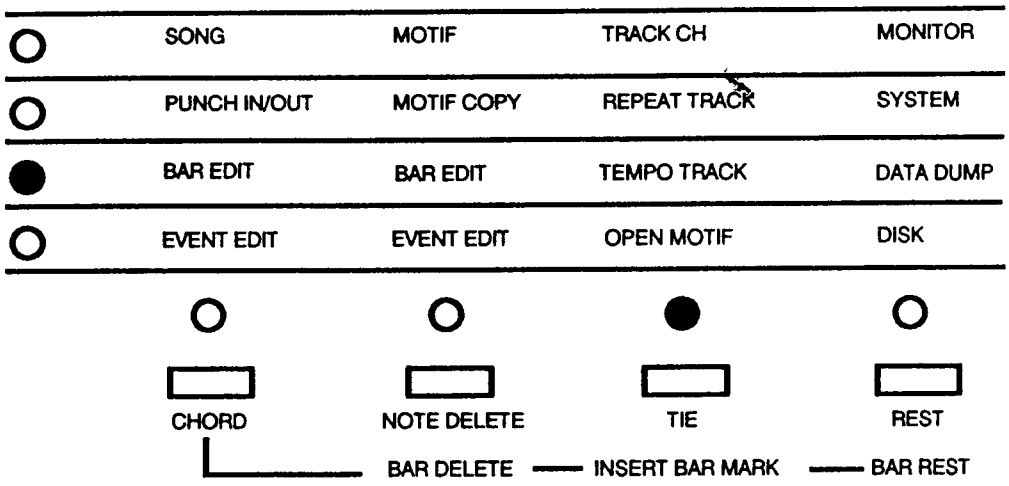
Tempo Track

This function allows you to program Tempo changes as part of a Song. When the Tempo Track function is turned on, the song accepts its tempo control from the Tempo Track instead of the [Increment Dial]. Using the Tempo Track you can set the basic starting tempo for each of your songs and input changes throughout the song for smooth ritards and accellerandos.

Tempo changes can be input at any position within a song - on any bar, beat or clock pulse.

To Use the Tempo Track:

1. Select the Tempo Track Function using the [Tie] button:



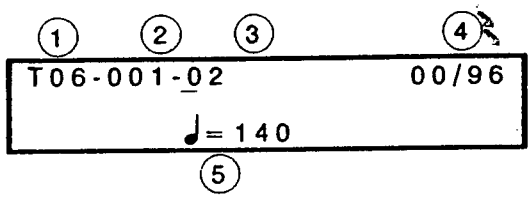
1)On/Off toggle
2)Track Number 01-32 (to be assigned as the Tempo Track)

2. Turn the Tempo Track function ON using the [Increment Dial].

3. Begin by assigning a track (01-32) as the Tempo Track. You must select a track containing recorded data, you cannot input tempo commands onto an empty track. The tempo commands are added to the current data, which remains unaffected.

Changing the Tempo Track assignment while the Tempo Track function is ON automatically clears all tempo change commands on the former tempo track.

4. After you've chosen the track assignment, press [Enter]. The edit display is shown:



1)Track Number
2)Bar Number } Location Indicators
3)Beat Number
4)Clock Pulse
5)Tempo

5. Specify the location and tempo value using the [Cursor] and [Step Back] buttons to move about the display. You can use the [Fwd] and [Rew] buttons to change the Bar Number parameter to save time. Change the tempo as many times as you want.

6. When you're finished, press [Enter] to return to the main Tempo Track display. Select the Song for playback with the [Chord] button and listen to your work. Return to the Tempo Track display to make any adjustments if necessary.

Tips

To create natural ritardandos and accellerandos, it's best to input tempo changes on every 16th note division (24 clock pulses) or even more often as the tempo is already quite slow.

If you've slowed the tempo at the end of a phrase and then want to speed it back up again, don't just jump back to the original tempo, speed it up quickly over a couple of beats or so. This will make the tempo changes seem more natural.

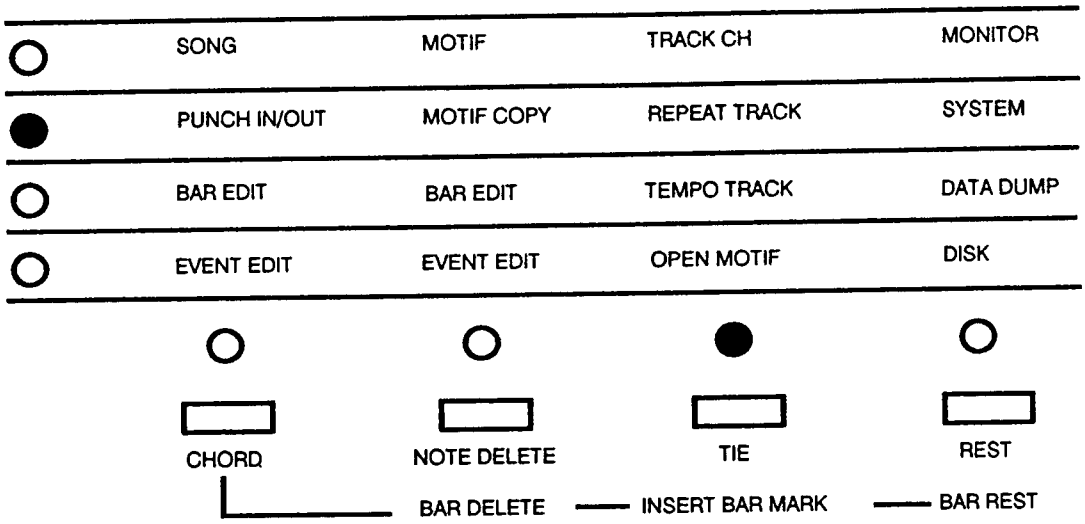
Experimentation is the key. Try several ideas.

Repeat Track

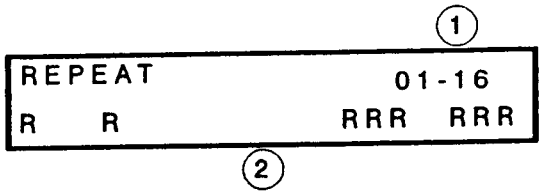
The Repeat Track function lets you specify a track or tracks to be repeated. When you select a track to be repeated, it is looped continuously during playback. Tracks that are not selected play back normally, stopping when the end of the track is reached.

To Use the Repeat Track:

1. Select the Repeat Track function with the [Tie] button:



2. The Repeat Track display appears. If no tracks are selected to repeat, the bottom row of the display is blank. When a track is selected to repeat, an *R* replaces the blank space in its corresponding display field:



1)Track Range (01-16 or 17-32)
2)Track Fields (R = track is selected for repeat, blank space = track is not selected for repeat)

3. Use the [Cursor] button to access the 16 display fields on the bottom row which correspond to tracks 1-16. Use the [Increment Dial] to select *R* for repeat or a blank space for no repeat.

4. To access tracks 17-32, change the Track Range parameter.

Tips

Use this function for all repeated material in your song. This can save you memory and recording time.

During record, this feature can be handy in providing a repeated drum part just to play along with.

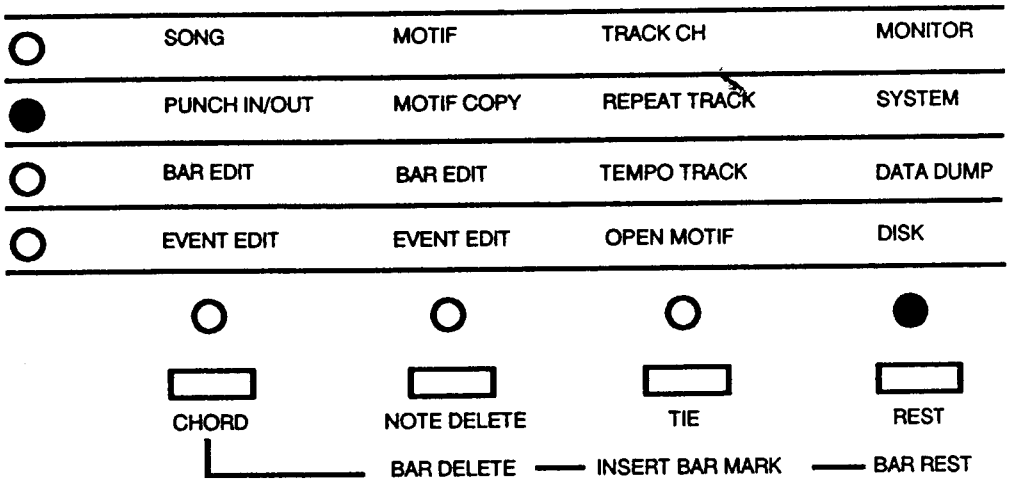
Memory Protect

The Memory Protect function determines whether the data in internal memory can be replaced or altered. When set to ON, the internal memory cannot be changed, which means you cannot edit existing data, record new data or load data from the disk. If you try, the display responds with *Memory Protected.*

Set the Memory Protect to OFF whenever you record, edit or load data from the disk.

To Adjust the Memory Protect function:

1. Select the System Menu with the [Rest] button:



2. Use the [Increment Dial] to select the System Protect function page. Press [Enter]:

1)On/Off Toggle

3. Use the [Increment Dial] to set the function On/Off.

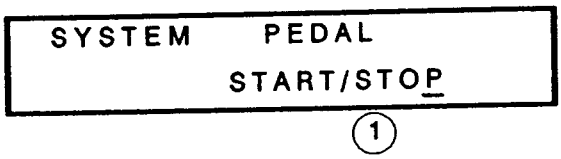
Pedal Assign

This function lets you transfer control of Start/Stop and Punch In/Out operations to a switch pedal connected to the *FOOT SW* jack on the rear panel of the sequencer. (The Punch In/Out capabilities are covered in the section devoted to Punch In/Out earlier in this manual).

To Assign Pedal Operation:

1. Select the System Menu with the [Rest] button.

2. Use the [Increment Dial] to select the Pedal Assign function. Press [Enter]:



1)Pedal Assign Operation:

Start/Stop - Playback/recording resumes from the beginning of the current song
Cont/Stop - Playback/recording resumes from the current position in the bar
Punch In/Out - Rerecording starts and stops (see pg.80)

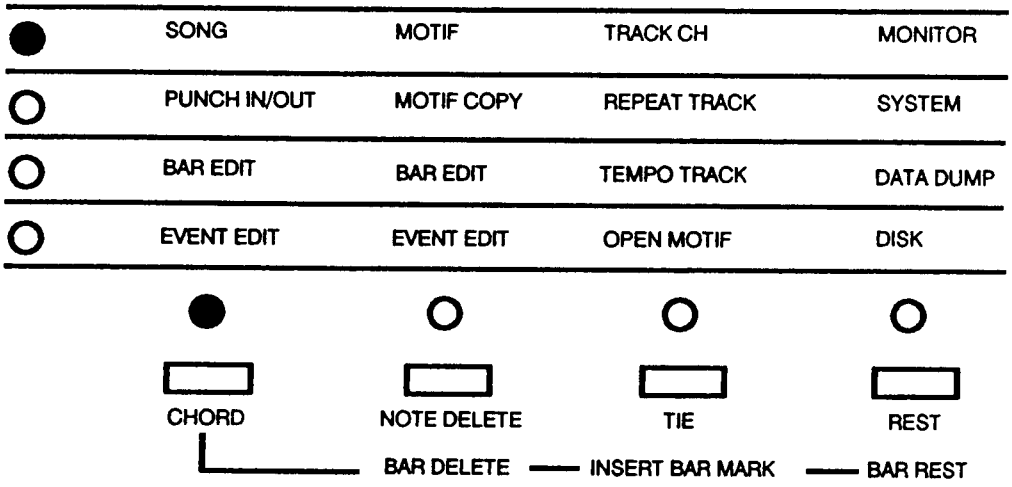
3. Select the Pedal Assign function you want. Only one at a time can be chosen.

Song Chain

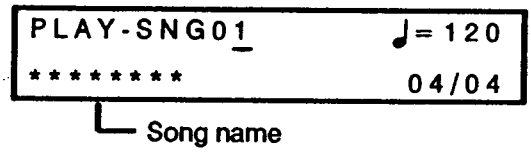
This function allows you to link up to ten songs together to play as a sequence. The sequence of songs can be played just once through (REP = **) or as a continuous cycle (REP = ON).

To Use Song Chain:

1. Access the Song Select function with the [Chord] button:

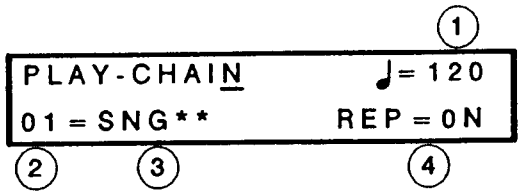


2. Make sure the cursor is under the *Song Number* field on the display:



3. Rotate the [Increment Dial] to the left until the *Song Chain* display appears:

See display on next page



1)Tempo
2)Chain Counter (01-10) - position in the chain
3)Song Number (01-10, ** = indicates the end of the sequence)
4)Repeat Function (** = Off, ON = continuous play)

4. Move the cursor to the Song Number field and use the [Increment Dial] to select the first song in the chain. It can be any song currently in the internal memory from 01 to 10. *You cannot access songs on the disk for the song chain.*

5. Move the cursor to the Chain Counter field and select position number 02.

6. Move to the Song Number field again and select the next song in the chain.

7. Continue selecting songs in the same manner until you've selected as many as you want (up to 10).

If the chain contains less than 10 songs, select the Chain Counter position that is one greater than the last song in your chain. If your chain fills up 6 positions, then select position number 07. Assign the value ** to the Song Number field to indicate the end of the chain.

8. Set the Repeat function to ON if you want the chain to play continuously, or to ** if you want playback to stop at the end of the last song of the chain.

9. Press [Play] to begin playback from the beginning of the song whose number appears on the display (not necessarily the Song in Chain Counter position number 01).

Play stops when you press [Stop] or, if the Repeat function is off (**), the sequencer reaches the end of the last song. If the Repeat function is ON, the Q-80 automatically restarts from the beginning until you press [Stop].

Multitrack Recording

The Q-80 is one of a select group of sequencers that supports simultaneous multitrack recording. You can record up to 16 tracks at once, providing they are each assigned to a different MIDI channel.

The most common use for this feature is in transferring MIDI data from another sequencer to the Q-80 in Real Time. Real Time, as you know, means *as you play it*, and this method of transfer is necessary between two sequencers of different make and model. Without the multitrack recording feature, you'd have to play each track one at a time from the source sequencer to the Q-80, which could result in several passes, depending on how many tracks you have. The Q-80 receives up to 16 channels of data at once and can assign each channel to a specific track.

To Transfer Data from Another Sequencer to the Q-80:

1. Connect a MIDI cord from the OUT port on the transmitting sequencer to the IN port on the Q-80.

2. Select a Song number and then access the *Track Channel* function ([Tie] button).

3. Using the [Cursor] buttons and the [Increment Dial], assign each track you intend to record on to a *different MIDI channel!* Match the MIDI channels you'll be transmitting from the Source sequencer to tracks on the Q-80.

4. Select the *System* page ([Rest] button) and use the [Increment Dial] to select the *Clock* function. Press [Enter] and set the value to MIDI. (This enables the Q-80 to receive tempo commands from the Source sequencer - more on this in the next chapter on Syncing).

5. Go back to the *Song Select* page ([Chord] button) and press [REC].

6. Select your *Record Tracks*.

7. Make sure you're sending a MIDI Clock signal from the Source sequencer (see its owner's manual).

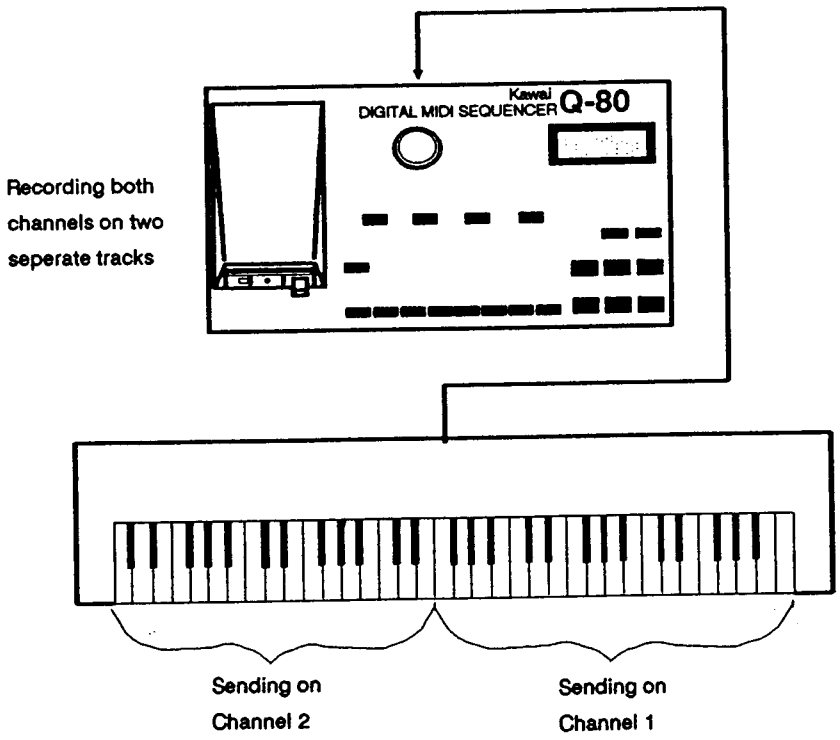
8. Start the Source sequencer and the Q-80 starts as well. As the data is played, the Q-80 records on all tracks selected as *record tracks*.

9. To listen back, set the Clock function on the Q-80 back to *INT* and then play back the data.

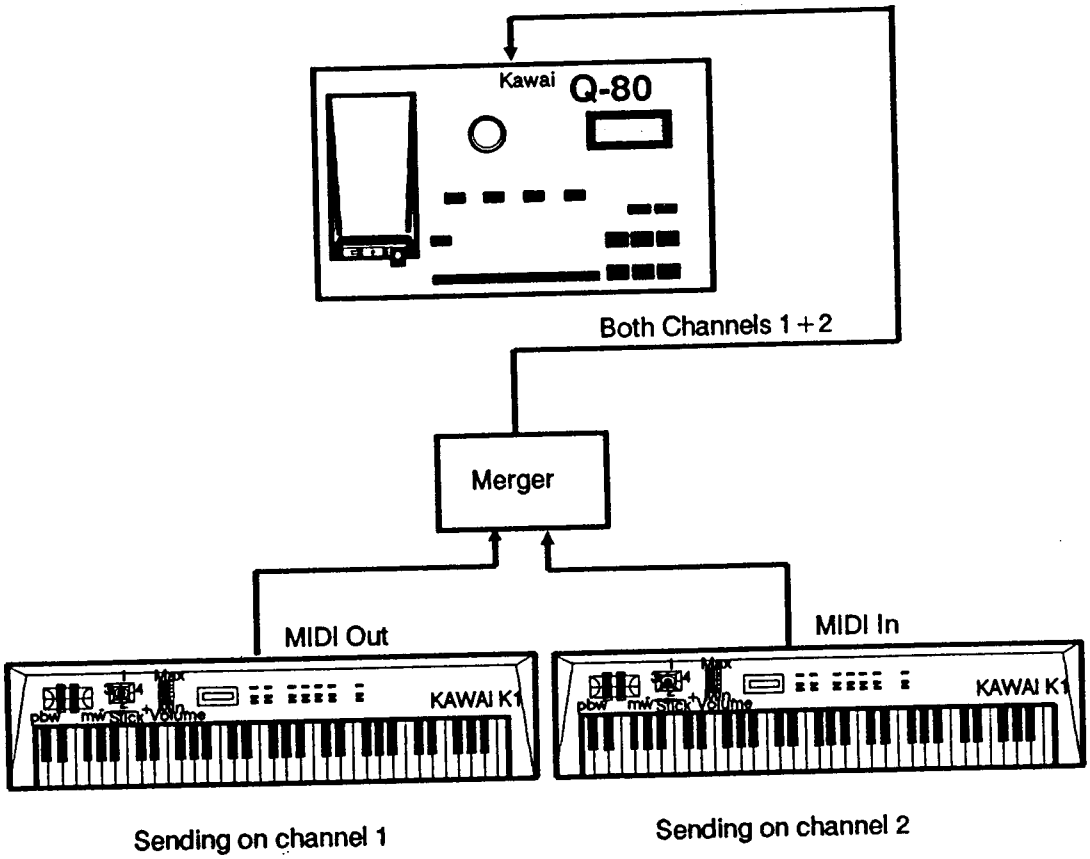
Jam Session

The Multitrack recording feature can also be used to record data played by more than one instrumentalist.

If you have a split keyboard controller that transmits more than one channel, you can play the upper half while a friend plays the lower half and both parts can be recorded onto separate tracks of the Q-80. To do this, simply match the *Track Channel* assignments of your Record Tracks to those being transmitted from the controller. For instance:



If you want to include more than one MIDI controller in the session, you'll need another piece of hardware called a *MIDI Merger*. These vary in price depending on the number of channels they can merge into one output. Hook up the device this way:



Now, simply match the Track Channel assignments for your Record Tracks to the channels being transmitted from the controllers.

Syncing

When two or more machines are controlled by a common tempo, they are said to be in *Sync*. The controlling tempo is produced by one of the machines in the set up - called the Master, and the others accepting tempo commands from the master are called Slaves.

There are two forms of syncing available on the Q-80:

- MIDI Sync
- Tape Sync

MIDI sync allows you to connect the Q-80 to a drum machine or another sequencer and control the tempo of the connected machine(s). Conversely, the Q-80 can also accept tempo commands as the Slave.

The Tape Sync feature lets you sync the Q-80 to a multitrack tape machine and play along with live instrument and vocal tracks.

MIDI Sync

The Q-80 can operate as either the Master and transmit tempo commands, or as the Slave and receive them.

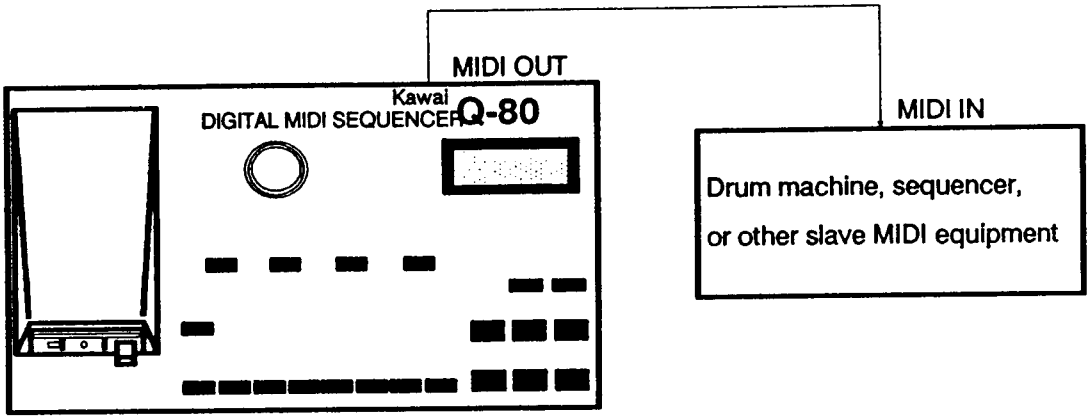
The Q-80 as the Master

As the master, the Q-80 transmits all Start, Stop and Continue commands as well as the tempo. All tempo changes are transmitted which the slave device follows. This is true even if the slave has no variable tempo feature as part of its own internal system. Any changes in tempo that you

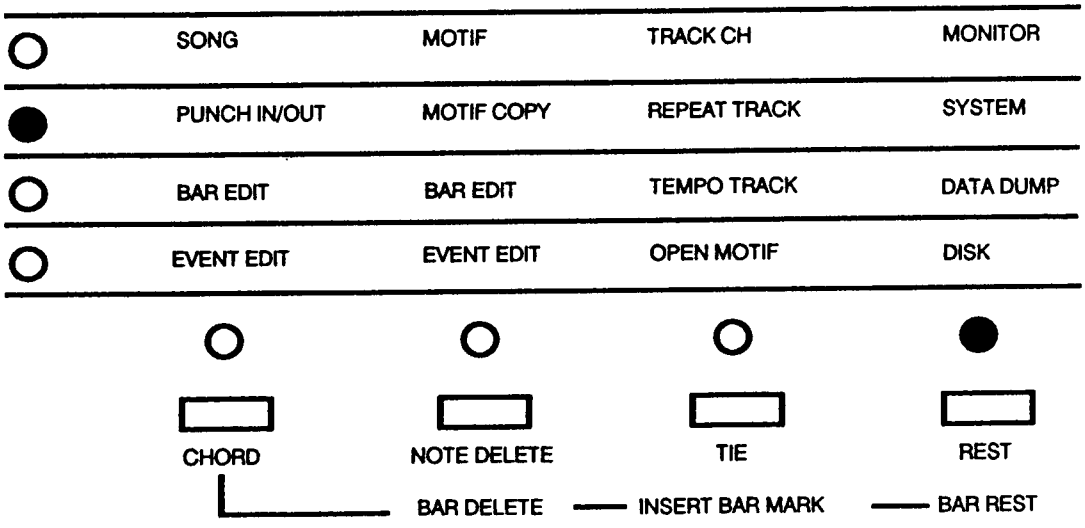
programmed on the Tempo Track of the Q-80 are transmitted from the sequencer and received by the slave device.

To Set Up the Q-80 as the Master:

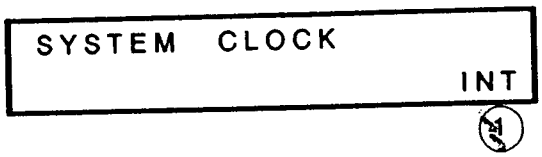
1. Hook up your machines from the MIDI Out of the Q-80 to the MIDI In of your slave device:



2. You must make sure that the Q-80 is set to Internal Clock. Select the System Menu using the [Rest] button:



3. Use the [Increment Dial] to select the System Clock function. Press [Enter]:



1)Clock Source - INTERNAL - the internal clock governs tempo

MIDI - an external MIDI device controls tempo

TAPE - The Q-80 receives tempo from a tape source

4. Set the parameter to INT (Internal). In this mode the Q-80 internal clock controls the sequencer's tempo and automatically sends MIDI clock commands to a slave device.

5. Set the slave device to External Clock. (The procedures vary from machine to machine, so check the owner's manual for the slave device.)

6. Now when you press [Play] on the Q-80, the slave device starts and continues at the tempo set by the Q-80. If you change the tempo on the Q-80, the slave follows.

7. Press [Stop] on the Q-80 and the slave stops.

NOTE:The Q-80 is equipped with Song Position Pointer, which means that it can send and receive messages that define exact measure numbers. If the slave device is also equipped with Song Position Pointer, you can stop the Q-80, select a particular measure from which to begin playback and the slave will start from that measure also.

NOTE:The slave will respond to MIDI Clock commands during both playback and recording.

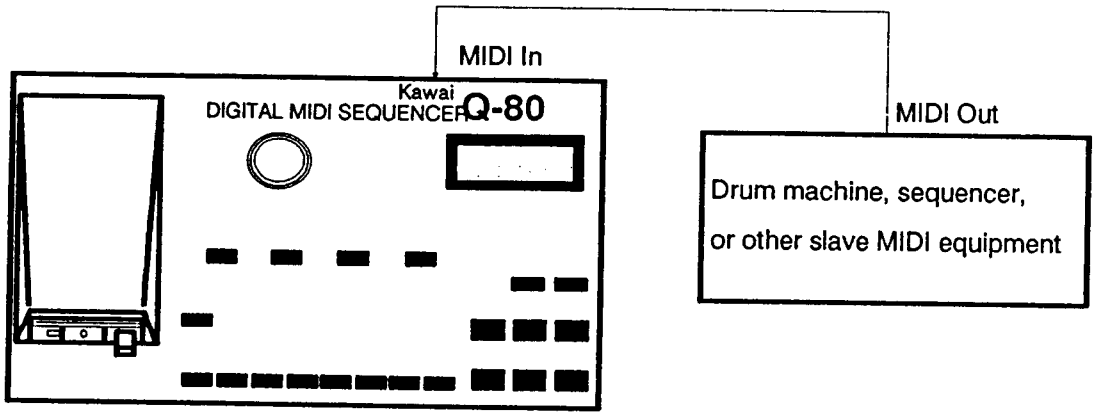
The Q-80 as the Slave

As the slave, the Q-80 responds to all Start, Stop and Continue commands from an external MIDI device such as a drum machine or another sequencer. All tempo changes transmitted from the master are followed by the Q-80.

If the master is equipped with Song Position Pointer, you can select particular measures from which to playback and the Q-80 will start from the same measure number. The Q-80 also responds to Song Select commands.

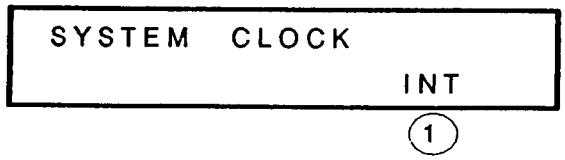
To Set Up the Q-80 as the Slave:

1. Hook up your machines from the MIDI Out of the external device to the MIDI In of the Q-80:



2. You must set the Q-80 to receive a MIDI Clock from the master. Select the System Menu using the [Rest] button.

3. Use the [Increment Dial] to select the System Clock function. Press [Enter]:



4. Set the parameter to MIDI (External Clock Source). In this mode the Q-80 does not respond to the tempo set by its own internal clock but responds only to MIDI Clock commands from an external device.

5. Set the external master device to Internal Clock. Check the owner's manual for the master device for details.

6. The Q-80 will not start when you press [Play], but waits for a start command from the master device. Start the master device and the Q-80 starts also.

NOTE:The Q-80 can operate as a slave during both playback and recording.

Tape Sync

The Tape Sync feature allows you to sync the Q-80 to a track on a multitrack tape deck. When the Q-80 is synced to the tape machine, it plays back its recorded data in time with the live tracks on tape. In this way you can reserve the tape tracks specially for non-MIDI instruments.

Using the Tape Sync function requires 2 steps:

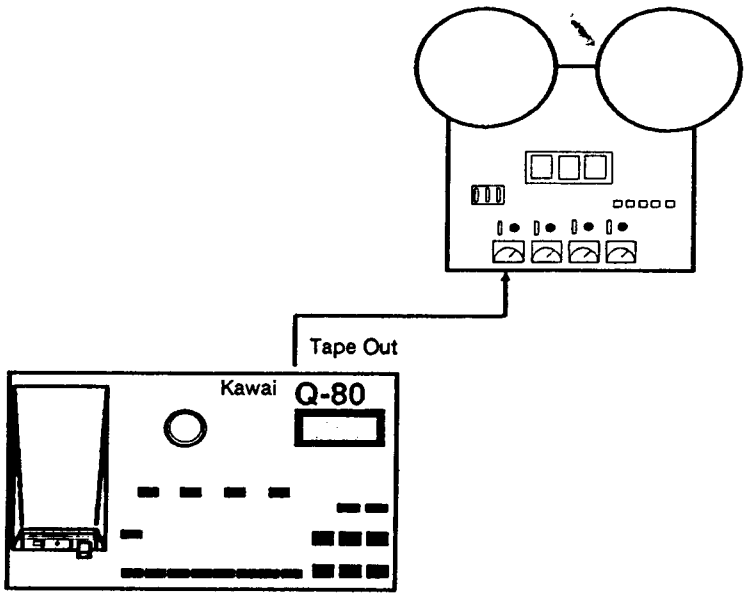
- Recording the Tape Sync Tone
- Receiving and syncing to the tone you recorded

Recording the Tape Sync Tone

This procedure lays down a Tape Sync Tone which the Q-80 will later follow as its tempo controlling message. The tempo you record onto tape cannot be changed once it's recorded unless you record it again. For this reason, you must record the tone AFTER you've recorded your MIDI data on the Q-80 (or at least after you've decided on a tempo and programmed the Tempo Track).

You must also record the sync tone BEFORE you lay down any live tracks. All the live tracks must follow the tempo of the Q-80 (the Q-80 cannot follow live tracks that are already recorded).

1. Connect an audio cable from the Tape Sync Out jack on the Q-80 to a track input on your multitrack tape machine. Choose an outside track (1 or 4 on a four track deck, 1 or 8 on an eight track, etc.). Selecting an outside track gives you the minimum frequency interference from adjoining tracks (an outside track has only one adjoining track).



2. Don't use any processing equipment such as reverb, delay or equalization on the tape sync track.

3. Select the Song you want to record, but don't start the Q-80 yet.

4. Set the Tape machine into Record Standby and you'll hear the high-pitched tone.

5. Adjust the record level on the tape deck to between 0 and -3 db.

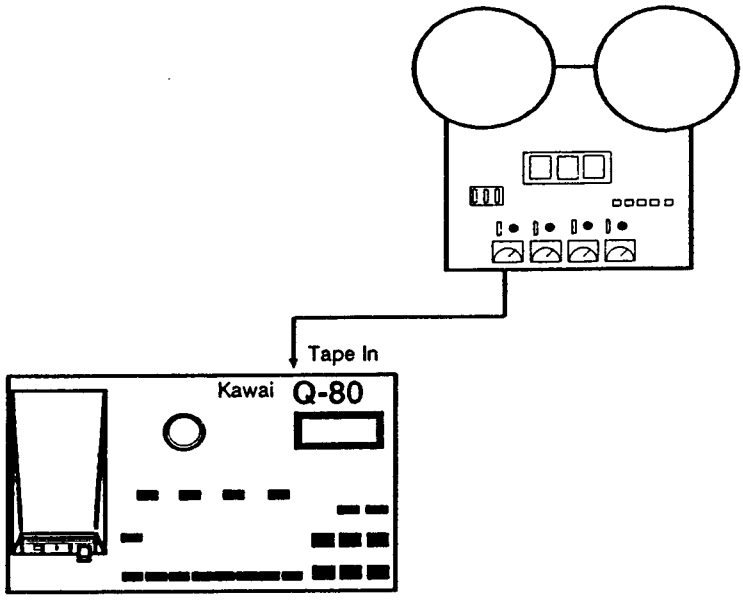
6. Start the tape recorder and then start the sequencer. The tone changes when you press [Play] on the Q-80. This is the actual Tape Sync Tone.

7. When the song is finished, stop the sequencer and then stop the tape deck.

NOTE:You may wish to lay down a scratch metronome or drum pattern onto another track of the tape at the same time. This scratch track can be used to define the tempo as you lay down the subsequent live instrument and vocal tracks.

Syncing to the Tape Sync Tone

1. After you've recorded the sync tone onto tape, connect an audio cable from the Line Out on the tape machine to the Tape Sync In jack on the rear panel of the Q-80. Make sure the Line Out channel matches the track the sync tone was recorded on:



2. Select the System menu on the Q-80 using the [Rest] button.

3. Select the System Clock function and press [Enter].

4. Set the Clock value to *Tape*.

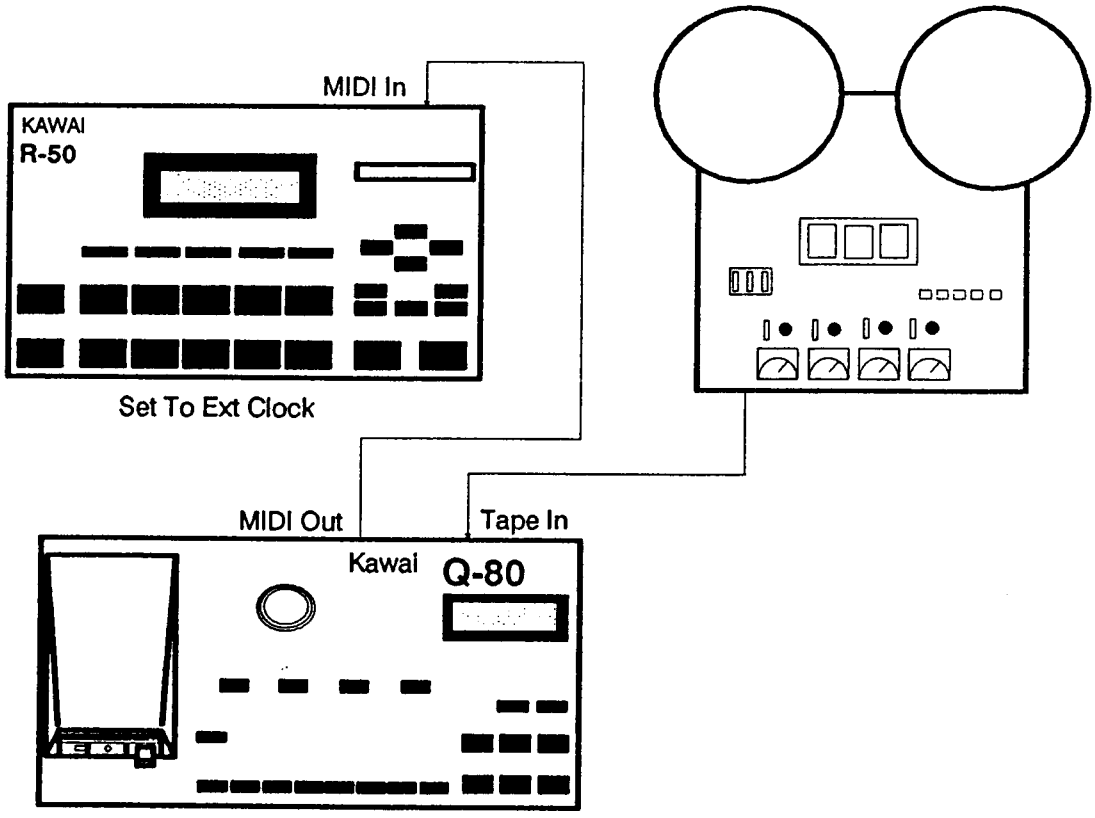
5. Select the Song on the Q-80.

6. Start the tape recorder from just before where the actual Tape Sync Tone starts.

7. When the Tape Sync Tone is reached, the Q-80 begins playback.

NOTE:You can Real Time record onto the Q-80 while it's synced to tape.

The sequencer automatically transmits MIDI Clock commands while synced to tape, so you can connect a drum machine or another sequencer as MIDI slave and it will follow the tape recorder as well.



Data Management/Disk Operations

All data transfer operations are covered in this section, from transferring system exclusive data using the Data Dump function to saving/loading the internal Song and Data Files to disk.

Data Dump

In addition to its internal memory area for Songs and Motifs, your sequencer has 64 kilobytes for storing 10 data files of system exclusive data. You can use the Data Files to store, among other things, synthesizer patches and drum machine patterns. This feature acts as a librarian program for the various machines in your studio, relieving you from having to store all your sounds and patterns on expensive cartridges.

Each of the 10 files is divided into 16 tracks (storage areas) and each track holds up to 999 System Exclusive messages. A System Exclusive message is one full transmission from beginning to end. It can be small (one patch), or large (a whole bank of patches), so the maximum number of messages allowed per track (999) is relative to the size of the messages you're storing.

System Exclusive Limitation

System Exclusive messages are so named because they are transmitted and received only by machines of the same make and model. You can transmit patch parameter data between two alike synthesizers or pattern data between two alike drum machines.

This data can also be transmitted and stored in the Q-80 Data storage files, but you can only retrieve it with a machine of the same make and model as the one that transmitted it. In other words, if you stored data from a Kawai K5 synthesizer, the only machine that can retrieve that data is a Kawai K5 (or K5M).

Not all machines equipped with MIDI are capable of transmitting and receiving system exclusive messages (even from alike machines), so check the MIDI Implementation Chart for each device in your studio. If a device can transmit and receive system exclusive, then you can save its data in a Data File on the Q-80.

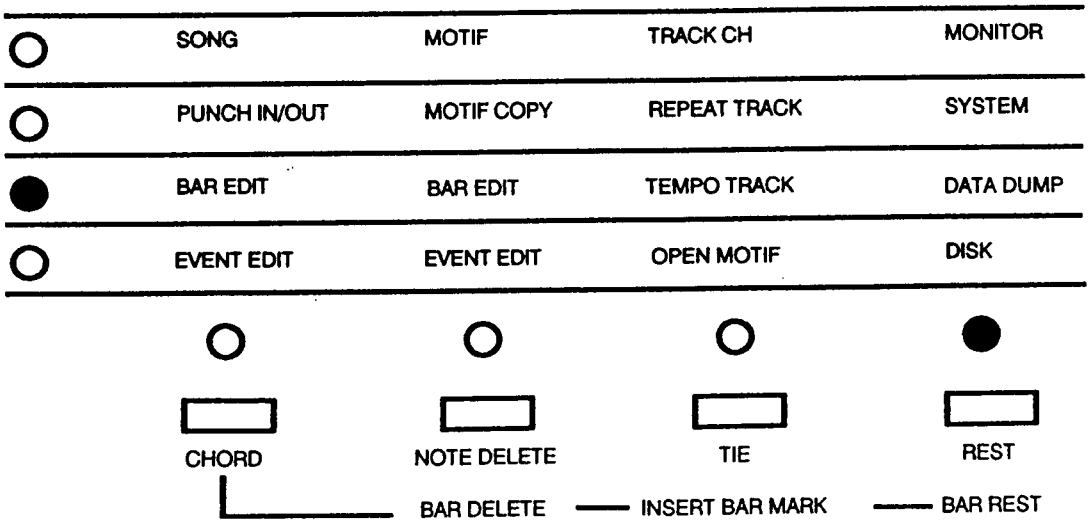
NOTE: System Exclusive data received by the Q-80 is stored in the INTERNAL memory of the sequencer. To transfer this data to disk, use the functions in the Disk menu.

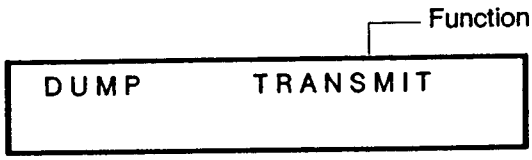
Select the Data Dump Menu

The Data Dump Menu includes three functions:

- Transmit - The Q-80 transmits stored data to external MIDI devices
- Receive - The Q-80 receives and stores data from an external MIDI device
- Delete - Data stored in the Data Files is deleted

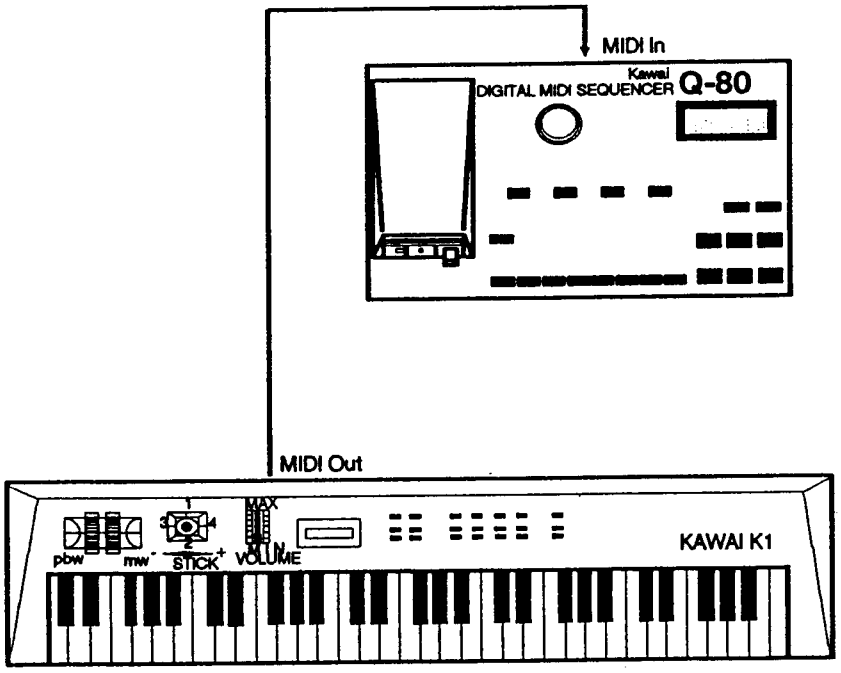
These are accessed in the Data Dump Menu using the [Rest] button:





Receiving Data

This function allows the Q-80 to receive and store data sent from other MIDI devices. Hook up the Q-80 this way:



1. After selecting the Data Dump Menu, use the [Increment Dial] to select the Receive function.

2. After selecting the Dump Receive function press [Enter] and the Data, Track and Block parameters appear on the display:

1)Data File Number (01-10)
2)Track Number (01-16)
3)Block Number (001-999)

NOTE:The sequencer automatically skips blocks already containing data.

3. Select the Data File number, Track Number and Block number you want to save your data to.

4. Press [Enter] and the word *Dump* in the upper left corner of the display changes to read *Ready*:

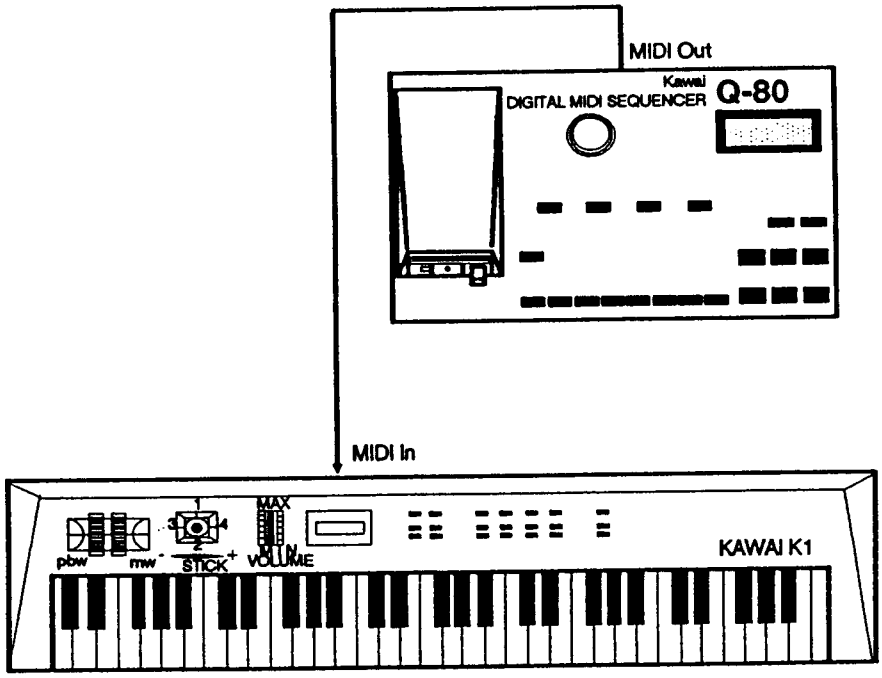
5. Begin transmitting data from your external instrument. The word *Ready disappears:*

6. When the transmission ends, *Ready reappears and the block number in the lower right corner increases by one:*

7. Continue transmitting data from your external MIDI instrument until all the data you want to store has been sent.

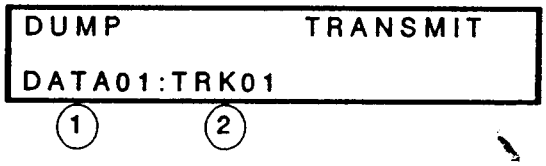
Transmit

This function transmits all data on the specified track to an external MIDI device. Hook up your machines this way:



Remember, the device receiving the data MUST be the same make and model machine as the one that sent the data to the Q-80 in the first place.

1. After selecting the Data Transmit function, press [Enter]:



1)Data File Number (01-10)
2)Track Number (01-16)

2. Select a File and Track Number. All data on the selected track will be transmitted to the external MIDI device by this procedure.

3. Prepare your receiving machine to accept incoming system exclusive data, according to its owner's manual.

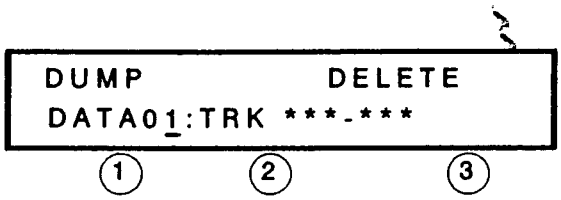
4. Press [Enter]. The word *Dump* disappears from the upper left corner of the display screen and the Block number 001 appears in the lower right corner:

The Block number increases until the sequencer reaches the last data block (END) on the track.

Delete

This function deletes a Data Block or Blocks from the specified Track in the specified Data File.

1. After selecting the Data Dump menu, use the [Increment Dial] to select the Data Delete function. Press [Enter]:



1)Data File number (01-10)
2)Track number (01-16, or ** meaning all tracks)
3)Data Block number (001-999, or *** meaning all blocks on the specified track)

2. Select the Data File, Track and Block numbers. To delete all tracks use **. To delete all blocks in the specified track, use ***.

3. Press [Enter] and the display prompts *Sure?*:

4. Press [Enter] to delete the data, or [Cancel] to quit the operation.

Storage Capacity

The Q-80 stores up to 64 kilobytes of system exclusive data in its internal memory. There is no limit to the size of individual Data Files, Tracks or Data Blocks as long as the total falls within the 64k limit.

The chart below lists the number of bytes each of the System Exclusive messages requires for major Kawai products. Each of the entries in the System Exclusive Message column is one message.

		(Bytes)
SYNTHESIZER		
K1	1 SINGLE patch	88
	1 Block of SINGLE patches	5,632
	1 MULTI patch	75
	1 Block of MULTI patches (32 patches)	2,400
K5	1 SINGLE patch	991
	Internal SINGLE patches	47,568
	1 MULTI patch	359
	Internal MULTI patches	17,232
K3	1 tone patch	77
	50 tone patches	3,507
	User defined Waveforms	137
DRUM MACHINE		
R-100	Patterns/Songs/Chain Data	32 K
R-50/R-50e	Patterns/Songs Data	16 K

Data Save/Load

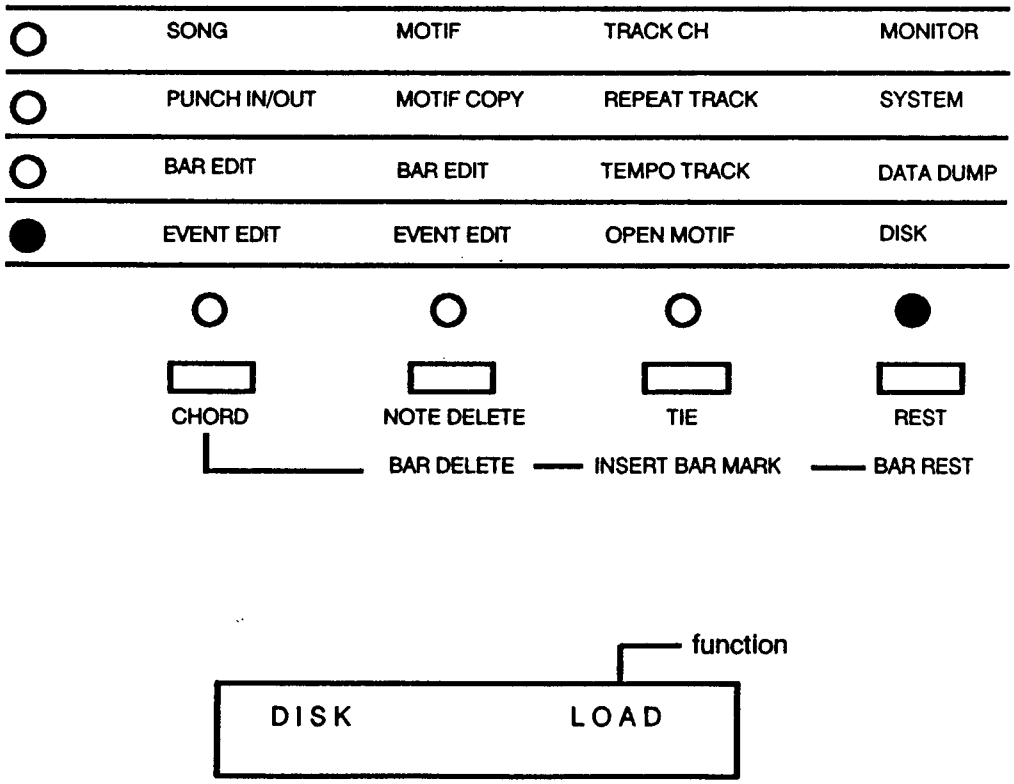
All Song and Data Files can be saved to floppy disk. Each disk can hold up to 112 song or data files, with a maximum combined data amount of 150,000 notes (640 kilobytes).

The maximum internal Song File memory capacity of the Q-80 is 10 Songs - 26,000 notes.

Basic Procedure

Listed below is the basic procedure to follow for all three data transfer operations Load, Save and Delete:

1. Select the Disk function using the [Rest] button:



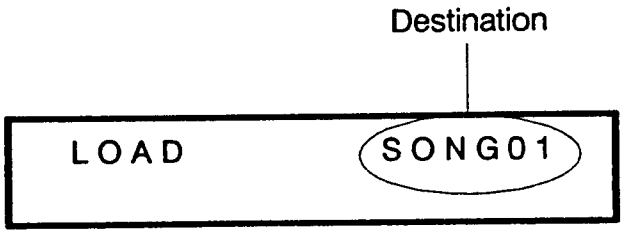
2. Use the [Increment Dial] to select the function:

- LOAD - Transfers data from the disk to the internal memory of the Q-80.
- SAVE - Transfers data from the internal memory to the disk.
- DELETE - Deletes a Song or Data file from the disk.

Data LOAD

This procedure loads one song or data file from the disk to an internal memory song location.

1. Select the Disk Load function and press [Enter]:



2. Select the destination location (in the internal memory) for the data to be transferred from disk. *Any data currently in the destination location will be replaced by the new data.*

3. Press [Enter] and the display shows *Wait...* followed by the first file name on the disk:

The number in parentheses to the left of the file name is the amount of memory the song requires. Each degree is equal to about 60 notes.

4. Select the Song or Data file you want to load by turning the increment dial. If you're loading a Song file, check the memory requirement to the left of the file name and then press both the [Cursor] and [Step Back] buttons at the same time to see how much memory is left in your destination location.

If there is not enough memory available:

- Press [Cancel] and select another destination location.

If there is not enough memory in any destination location:

- Leave the Disk function and access the Song Select function.
- Select the original destination location you chose and enter the Song/Bar Edit Menu.
- Select Erase and erase All Tracks (see pg 67).
- Re-enter the Disk function and go back to step 1 of this procedure.
- After selecting a destination location and the Song File on disk and confirming you have the memory requirements available, Press [Enter]. The display shows *Execute*.

5. When the procedure is complete, the display returns to the Disk Load screen.

Data SAVE

The procedure transfers one Song or Data file from the internal memory to the disk.

1. Select the Disk Save function and press [Enter]. Song 01 in the internal memory appears on the display:

SAVE	SONG01
(081)	SWING

The number in parentheses to the left of the file name is the amount of memory included in the song or data file. Each unit is equal to about 60 notes.

For Song Files Only:

If there is no data in Song 01 or any other Song file you select, the display shows Empty:

2. If a file has not been previously named (you see a memory number but no name), press [Enter] and use the [increment Dial] to select characters and the [Cursor] and [Step Back] buttons to move from space to space. Press [Enter] when you're finished naming the file.

NOTE:A file must be named to be saved from the internal memory to the disk.

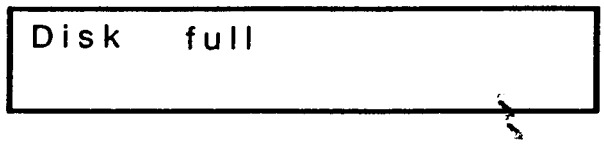
3. After selecting the internal file you want to save to disk, press [Enter]. The display asks *Sure?*.

4. Press [Enter] again.

If there is already a Song file on disk with the same name as the file you're saving, the display asks if you want to replace the existing file with the new file:

5. If you want to replace the file on disk with the new file, press [Enter]. If you don't, press [Cancel] and the cursor is below the first letter in the file name. Change the name (one letter will do) and then press [Enter].

6. If there is not enough room on the disk for the file transfer, the display reads:



Data DELETE

This procedure deletes a song or data file on the disk.

1. Select the Disk Delete function and then press [Enter].

2. You can choose between Song files or Data files using the [increment Dial]. Select the type of file you want to delete and then press [Enter].

3. The display shows the first file on screen:

4. Use the [Increment Dial] to select the file you want to delete. Press [Enter].

5. The display prompts *Sure?*. Press [Enter] to delete the file or [Cancel] to stop the operation.

Appendix A/MIDI DATA FORMAT

1. TRANSMITTED DATA

1st	2nd	3rd	Description	
1 0 0 1 n n n n	0 k k k k k k k	0 0 0 0 0 0 0 0	Note off	k k k k k k k = 0~127
1 0 0 1 n n n n	0 k k k k k k k	0 v v v v v v v	Note on	k k k k k k k = 0~127 v v v v v v v = 1~127
1 0 1 1 n n n n	0 c c c c c c c	0 v v v v v v v	Control change	c c c c c c c = 0~121 v v v v v v v = 0~127
1 0 1 1 n n n n	0 1 1 1 1 1 0 1 0	0 v v v v v v v	Local on/off	v v v v v v v = 0 or 127
1 0 1 1 n n n n	0 v v v v v v v	0 0 0 0 0 0 0 0	Mode message	v v v v v v v = 124~127 Created by only event edit
1 1 0 0 n n n n	0 p p p p p p p	- - - - - - - -	Program change	p p p p p p p = 0~127
1 1 0 1 n n n n	0 v v v v v v v	- - - - - - - -	Ch Pressure	v v v v v v v = 0~127
1 1 1 0 n n n n	0 1 1 1 1 1 1 1	0 h h h h h h h	Pitch Bender	l l l l l l l = 0~127 h h h h h h h = 0~127
1 1 1 1 0 0 0 0	(N bytes)	1 1 1 1 0 1 1 1	System Exclusive	
1 1 1 1 0 0 1 0	0 1 1 1 1 1 1 1	0 h h h h h h h	Song position pointer	l l l l l l l = 0~127 h h h h h h h = 0~127
1 1 1 1 0 0 1 1	0 s s s s s s s	- - - - - - - -	Song select	s s s s s s s = 0~9
1 1 1 1 1 0 0 0	- - - - - - - -	- - - - - - - -	Timing Clock	
1 1 1 1 1 0 1 0	- - - - - - - -	- - - - - - - -	Start	
1 1 1 1 1 0 1 1	- - - - - - - -	- - - - - - - -	Continue	
1 1 1 1 1 1 0 0	- - - - - - - -	- - - - - - - -	Stop	

2. RECOGNIZED RECEIVE DATA

1st	2nd	3rd	Description	
1 0 0 0 n n n n	0 k k k k k k k	0 x x x x x x x	Note off	k k k k k k k = 0~127 x x x x x x x : recognized as 0
1 0 0 1 n n n n	0 k k k k k k k	0 0 0 0 0 0 0 0	Note off	k k k k k k k = 0~127
1 0 0 1 n n n n	0 k k k k k k k	0 v v v v v v v	Note on	k k k k k k k = 0~127 v v v v v v v = 1~127
1 0 1 1 n n n n	0 c c c c c c c	0 v v v v v v v	Control change	c c c c c c c = 0~121 v v v v v v v = 0~127
1 0 1 1 n n n n	0 1 1 1 1 0 1 1	0 0 0 0 0 0 0 0	All notes off	Not memorized as sequence data
1 0 1 1 n n n n	0 v v v v v v v	0 0 0 0 0 0 0 0	Mode message	v v v v v v v = 124~127 Not memorized as sequence data, so recognized only all notes off function.
1 1 0 0 n n n n	0 p p p p p p p	- - - - - - - -	Program change	p p p p p p p = 0~127
1 1 0 1 n n n n	0 v v v v v v v	- - - - - - - -	Ch Pressure	v v v v v v v = 0~127
1 1 1 0 n n n n	0 1 1 1 1 1 1 1	0 h h h h h h h	Pitch Bender	l l l l l l l = 0~127 h h h h h h h = 0~127
1 1 1 1 0 0 0 0	(N bytes)	1 1 1 1 0 1 1 1	System Exclusive	
1 1 1 1 0 0 1 0	0 1 1 1 1 1 1 1	0 h h h h h h h	Song position pointer	l l l l l l l = 0~127 h h h h h h h = 0~127 Recognized only when clock is set to MIDI.
1 1 1 1 0 0 1 1	0 s s s s s s s	- - - - - - - -	Song select	s s s s s s s = 0~127
1 1 1 1 0 0 1 1	0 s s s s s s s	- - - - - - - -	Timing Clock	* Recognized only when clock is set to MIDI
1 1 1 1 1 0 1 0	- - - - - - - -	- - - - - - - -	Start	
1 1 1 1 1 0 1 1	- - - - - - - -	- - - - - - - -	Continue	
1 1 1 1 1 1 0 0	- - - - - - - -	- - - - - - - -	Stop	

3. ECHO DATA

1st	2nd	3rd	Description	
1 0 0 0 n n n n	0 k k k k k k k	0 v v v v v v v	Note off	k k k k k k k = 0~127 v v v v v v v = 0~127
1 0 0 1 n n n n	0 k k k k k k k	0 0 0 0 0 0 0 0	Note off	k k k k k k k = 0~127
1 0 0 1 n n n n	0 k k k k k k k	0 v v v v v v v	Note on	k k k k k k k = 0~127 v v v v v v v = 1~127
1 0 1 0 n n n n	0 k k k k k k k	0 v v v v v v v	Key pressure	k k k k k k k = 0~127 v v v v v v v = 0~127
1 0 1 1 n n n n	0 c c c c c c c	0 v v v v v v v	Control change	c c c c c c c = 0~121 v v v v v v v = 0~127
1 0 1 1 n n n n	0 1 1 1 1 0 1 0	0 v v v v v v v	Local on/off	v v v v v v v = 0 or 127
1 1 0 0 n n n n	0 p p p p p p p	- - - - - - - -	Program change	p p p p p p p = 0~127
1 1 0 1 n n n n	0 v v v v v v v	- - - - - - - -	Ch Pressure	v v v v v v v = 0~127
1 1 1 0 n n n n	0 1 1 1 1 1 1 1	0 h h h h h h h	Pitch Bender	l l l l l l l = 0~127 h h h h h h h = 0~127

Appendix B/MIDI Implementation Chart

Function ...		Transmistted	Recognized	Remarks
Basic Channel	Default	1—16	1—16	Memorized
	Changed	1—16	1—16	
Mode	Default		×	
	Messages	OMNI ON/OFF·POLY·MONO	×	created by
	Altered	*****		even edit
Note Number	: True voice	0—127	0—127	
		*****	0—127	
Velocity	Note ON	○	○*	
	Note OFF	×9n V = 0	×	
After Touch	Key's	○	×	ECHO only
	Ch's	○	○*	
Pitch Bender		○	○*	
Control Change	0 ~ 63	○	○*	
	64 ~ 121		○*	
Prog Change	: True #	○	○*	
		*****	0—127	
SystemExclusive		○	○*	
System Common	: Song Pos	○	○	
	: Song Sel	○	○	
	: Tune	×	×	
System Real Time	: Clock	○	○**	
	: Commands	○	○**	
Aux Messages	: Local ON/OFF	○	×	Created by even edit
	: All Notes OFF	×	○ (123~127)	
	: Active Sense	×	×	
	: Reset	×	×	
Notes		* : Can be set to ○ or × memorized. ** : Recognized only when clock is set to MIDI		

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO ○ : Y
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO × : N

Appendix C/Specifications

GENERAL	INTERNAL MEMORY: 10 songs, 26,000 notes (up to 15,000 notes for each song) Battery backup maintains data when power is off. DISC STORAGE: 3.5" diskette, double sided. Stores 112 songs 150,000 notes per diskette. DISPLAY: 16 characters × 2 line backlit LCD TEMPO RANGE: 40-250 bpm MAXIMUM POLYPHONY: 32 voices RESOLUTION: 96 ppq SYNCHRONIZATION: Internal, Tape Sync, MIDI (Including Song Pointer)
SONG ORGANIZATION	32 tracks, one MIDI channel per track. Repeat track 1 Tempo track 100 Motifs Chain play (up to 10 songs in succession)
RECORD/EDIT	RECORD FUNCTIONS: Real Time (up to 16 tracks can be recorded at once), Step Time (from Keyboard or Front Panel), Punch In/Out (auto or with footswitch). BAR EDIT FUNCTIONS: Delete, Insert, Erase, Mix, Copy, Transpose, Move, Quantize, Note Split, Note Shift, Velocity Modify, Gate Time Modify, Make Motif, Event Extract EVENT EDIT FUNCTIONS: Note, Control Change, Mode, Program Change, Channel Pressure, Pitch Bender, System Exclusive
DATA FILER	10 Files, each with 16 tracks, each track can contain up to 999 system-exclusive messages.
SYSTEM	Channel, Clock, Metronome, Rec Data, Echo Back, Pedal Assign, Step Function, Memory Protect, Monitor
PHYSICAL SPECIFICATION	390 mm × 232 mm × 68 mm (W × D × H), 2.2 kg 15.5" × 9.2" × 2.6" (W × D × H), 4.9 lbs.

Appendix D/Menu Headings and Their Functions

Song

1. Song Select - See page 43.
2. Locate - See page 45.
3. Song Play - See page 44.
4. Real Time Record - See pages 54 - 63.
5. Step Record - See pages 83 - 107.
6. Song Chain - See page 172.

Punch In/Out

See pages 76 - 82.

Bar Edit

1. Delete - See page 68.
2. Insert - See pages 71,121.
3. Erase - See page 67.
4. Mix - See page 131.
5. Copy - See page 132.
6. Transpose - See page 134.
7. Move - See page 135.
8. Quantize - See page 137.
9. Note Split - See page 142.
10. Note Shift - See page 143.
11. Velocity Modify - See page 144.

12. Gate Time Modify - See page 145.

13. Make Motif - See page 119.

14. Event Extract - See page 161.

Event Edit
See pages 147 - 162

Motif
1. Motif Select/Play - See page 111-114.

2. Real Time Record - See page 114.

3. Step Record - See page 116.

Motif Copy
See page 127.

Track Channel
See pages 47,57.

Repeat Track
See page 168.

Tempo Track
See page 165.

Open Motif
See page 124.

Monitor
See page 48.

System

1. Channel - See pages 113,114,117.
2. Clock - See pages 177 - 184.
3. Metronome - See page 55.
4. Record Data - See page 163.
5. Echo - See page 35.
6. Pedal Assign - See page 171.
7. Step Function - See page 104.
8. Protect - See page 169.

Data Dump

1. Transmit - See page 189.
2. Receive - See page 187.
3. Delete - See page 191.

Disk

1. Load - See page 194.
2. Save - See page 195.
3. Delete - See page 196.

Appendix E/Studio Implementation Chart

MIDI FUNCTION		Sound Module	Sound Module	Sound Module
Mode	1. Omni on, Poly 2. Omni on, Mono 3. Omni off, Poly 4. Omni off, Mono			
Velocity				
Aftertouch	1. Key 2. Channel			
Pitch Bend				
CONTROL CHANGES	1 Modulation			
	2 Breath Controller			
	4 Foot Controller			
	5 Port Time			
	6 Data Entry			
	7 Main Volume			
	8 Balance			
	10 Pan Pot			
	11 Expression			
	64 Damper			
	65 Portamento			
	66 Sostenuto			
	67 Soft Pedal			
	69 Hold 2			
	91 Ext. Effect Depth			
	92 Tremolo Depth			
	93 Chorus Depth			
	94 Celeste Depth			
	95 Phaser Depth			
	96 Data Increment			
	97 Data Decrement			
System Exclusive				
Sys. Common	1. Song Pos 2. Song Sel 3. Tune			
Sys. Real Time	1. Clock 2. Commends			
Aux. Messages	1. Local On/Off 2. All Notes Off 3. Active Sense 4. Reset			

Appendix F/Program Change Chart

MIDI #	ROLAND/KORG	YAMAHA	K-1
0-7	11-18	1-8	IA-1-8
8-15	21-28	9-16	IB-1-8
16-23	31-38	17-24	IC-1-8
24-31	41-48	25-32	ID-1-8
32-39	51-58	cart.1-8	ia-1-8
40-47	61-68	9-16	ib-1-8
48-55	71-78	17-24	ic-1-8
56-63	81-88	25-32	id-1-8

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