YAMAHA

DIGITAL SEQUENCE RECORDER

ENREGISTREUR DE SEQUENCES NUMERIQUES

DIGITAL-SEQUENZER

OPERATIONS DIRECTORY
MANUEL DE REFERENCE
ANHANG

HOW TO USE THIS OPERATIONS DIRECTORY

We suggest that you first read the QX1 Owner's Manual, before reading this Operations Directory. The Owner's Manual, though not a complete guide to the QX1, takes you step by step through the main functions of the QX1, so that you can familiarize yourself with it at your own pace without getting bogged down in too much theory or technical talk.

The aim of this operations Directory is to explain in detail the functions of every control on the QX1, and the uses of each mode and sub-mode. You will, of course, discover new applications for many of the sophisticated features of this powerful digital music device, and this directory can only acquaint you thoroughly with all the tools at your disposal, and offer some suggestions on how they can be used in the creation and manipulation of digital music.

The FRONT PANEL GUIDE explains the use of all the control mounted on the front panel of the QX1 – the Data Keyboard, the Mode/Function Keyboard, and the Tempo Controller. The Owner's Manual explains the functions of the LCD and LED displays, and also describes the use of all the input and output terminals on the rear of the QX1.

CONFIRMATIONS AND WARNINGS explains all the LCD messages that appear when you need to be informed of a process that is taking place in the QX1, or an operational error or malfunctions. This is an important section and you can refer to it whenever an unexpected message (usually flashing) appears on the LCD.

The CONVENTIONS section should be read before reading the main text of this directory.

We then explain all the Job Commands (submodes) listed under the four main modes: PLAY, RECORD, EDIT, and UTILITY, with the Main Job of each mode explained first. We recommend that you enjoy trying out all the Job Commands in detail, to thoroughly inform yourself of the vast potential of this unit.

This directory also includes MIDI SPECIFICATIONS, and a MIDI IMPLEMENTATION CHART for the more computer-minded user. The purpose of the INDEX is to list alternate references to the modes and functions of the QX1, in case you wish to find, say, a job command but are not sure which one performs the function you have in mind. For example, MIDI Channel setting refers to the OUTPUT ASSIGN job command. If you know the job command name, look for it in the CONTENTS. The job commands that are not listed on the QX1's Job Command Table are listed in the index.

Some of the technical terms used in this manual may be unfamiliar to you, so we have provided a GLOSSARY to explain these.

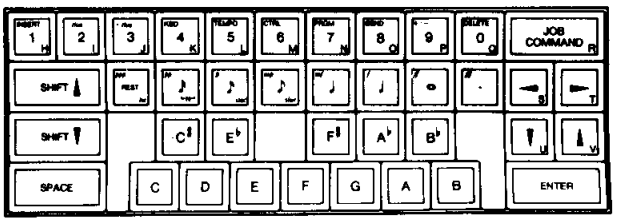
CONTENTS

FRONT PANEL GUIDE

We'll explain here the functions of each control on the front panel of the QX1. The Job Command Table, LCD Message/Data Panel, Mode/Function LED's and Data Track LED's are explained in the O.M.

The Data Keyboard

For entry of all data in all modes.



NOTE:

Many of these keys have 2 or 3 functions.

To use the function printed on the upper section of a key, press the key while holding the [SHIFT ↑] key.

To use the function printed on the lower section of a key, press the key while holding the [SHIFT ↓] key.

The [PITCH] keys must also be pressed while holding the [SHIFT ↓] key, if you are using them to enter alphabetical characters.
This is NOT needed if you are using them to enter pitches.

[SHIFT ↑]

Press this key when using the functions printed on the upper section of multifunction keys.

[SHIFT ↓]

Press this key when using the functions printed on the lower section of multifunction keys.

[SPACE]

Enters spaces in ID's and Name Set displays.
In the Insert Edit mode, enters note without advancing the clock.

[ENTER]

Enters data and activates main modes. In the Insert Edit mode, enters note data and advances the clock by the length of the note entered.

[JOB COMMAND R]

Calls up job commands.

Calls out the immediately previous data, in the Edit mode or in any directory display.

Calls out the immediately following data, in the Edit mode or in any directory display.

Moves the cursor to the left data entry position. Hold for continuous cursor movement. If you hold down SHIFT it moves the cursor by a single place.

Moves the cursor to the right data entry position. Hold for continuous cursor movement. If you hold down SHIFT it moves the cursor by a single place.

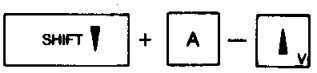
C – B

The PITCH keys.

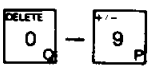
NOTE:

You need only hold down SHIFT when using these keys (excluding sharps and flats) to enter alphabetical characters.

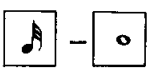
They are also used to enter pitches in the Edit mode. See the relevant section in this manual.



For entry of alphabetical data.



For entry of numerical data.

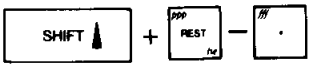


For entry of note lengths in the Edit mode. The note length of each key can be altered using job command 13 in the Edit mode.

For entry of rests in the Edit mode.

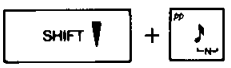
For entry of dotted notes in the Edit mode. Press a NOTE LENGTH key before pressing this key.

This key adds 50% to the length of any note. A + will appear next to the note length display. Pressing it again adds another 25% to the note length, and another + to the display. Further pressings add an amount equal to half the amount added on the previous pressing, down to a minimum of 1 clock. The note length display disappears on the second or third pressing, but the clock count and gate time will continue to change.



Dynamic marking keys, to set the level of notes in the Edit mode.

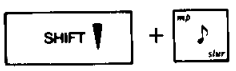
To tie two or more notes together, press a NOTE LENGTH key to set the length of the first note. Then press this key before pressing a NOTE LENGTH key to set the length of the second note. Enter further notes in the same way if needed, then press ENTER or SPACE to tie the notes together.



The NOTE FRACTION key.

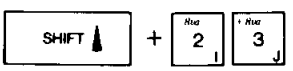
For entry of triplets, quintuplets, and other fractional note lengths in the edit mode. Press a NOTE LENGTH key before pressing this key. Press a number (2 – 9) after pressing this key, to select the fraction.

Pressing the staccato key after pressing a NOTE LENGTH key halves the gate time of the note. Successive pressings continue to halve the gate time, to a minimum of 1 clock.

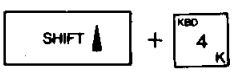


Pressing the slur key after pressing a NOTE LENGTH key increases the gate time of a note to that of a tenuto note (i.e. 100%).

In the Edit mode, switches between the Change mode (for altering existing data) and the Insert mode (for insertion of new data). Is also used for insertion of new steps into a chain in the Chain Edit job command.



Pressing these keys lowers or raises the PITCH keys by one octave. Press them before pressing a PITCH key. Successive pressings of these keys lowers or raises the pitch by further octaves.



When entering note pitches in the Edit mode, the external MIDI keyboard may be used. This key calls out the last pitches that were entered on the keyboard, even if the keyboard has been disconnected from the QX1.

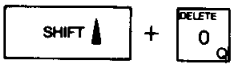
In the Insert mode, pressing this key calls up the TEMPO CHANGE display.

In the Insert mode, pressing this key calls up the CONTROL CHANGE display.

In the Insert mode, pressing this key calls up the PROGRAM CHANGE display.

In the Insert mode, pressing this key calls up the PITCH BEND display.

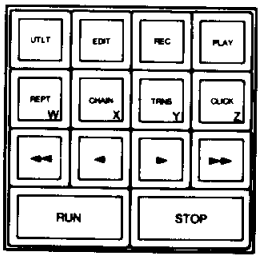
Selects plus or minus when entering numerical data.

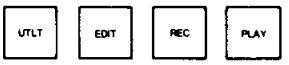


Deletes any note or CTRL, etc, displayed in the Edit mode. Also deletes a step of a chain in the Chain Edit job command.

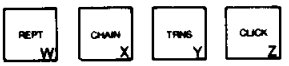
The MODE/Function Keyboard

For selection of modes and function switching.





Pressing these keys selects the four main modes.



For selection of the Repeat, Chain Play, Transpose and Click functions.

For entry of alphabetical data.

These keys are used to move the measure in the Edit, Record, or Play modes. They function in a similar way to transport controls on the tape deck. The ◄ and ► keys allow single measure movement if pressed once, and continuous movement

if held. The ◄◄ and ►► keys allow rapid continuous movement, which stops when reaching either the end of a track or when the STOP key is pressed.

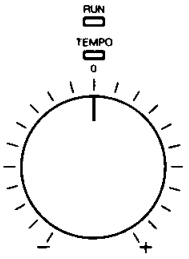
RUN

Pressing this key starts or continues playback or recording, or two-measure monitoring in the Edit mode.

STOP

Stops playback, record or edit monitoring. Also stops continuous measure movement activated by the ◄◄ and ►► keys.

The Tempo Controller



Changes the tempo during playback or record. This change is temporary and does not affect the programmed tempo. The new tempo setting is indicated on the LCD.

CONFIRMATIONS AND WARNINGS

The following confirmation and warning displays appear on the QX1's LCD.

CONFIRMATION DISPLAYS

Display	Meaning
EXECUTING NOW !!	Internal processing is being executed at the moment. Please wait (Time depends on amount of data).
SURE? YES (Y)/NO (N)	Shall the function be executed? Press the Y key for YES, and N key for NO.
WAITING !!	Input standby mode for reception of MIDI data.

WARNING DISPLAYS

NOTE:

Warning displays appear in the upper part of the LCD when you insert an incorrect amount of data, or operate the QX1 wrongly. Further operation will not be possible until you reset the QX1, which in most cases is done by pressing any key except the [REPT] , [CHAIN] , [TRNS] , or [CLICK] keys.

Display	Meaning	Possible causes		Cure
CONFLICT DISC! !	The floppy disk being used is not appropriate.	• The floppy disk being used has not been initialized for the QX1.	→	• Initialize the floppy disk.
		• The floppy disk has been damaged, so that its data cannot be read out.	→	• Replace the old floppy disk with a new one.
BANK PROTECTED !!	The memory protect function is ON for that particular BANK.	• You were trying to write data into a BANK that was memory-protected.	→	• Enter the data after first cancelling the memory protect function for that particular BANK.
DISK FULL !!	The memory space of the floppy disk is full. Data can no longer be entered.	• There is more data than can be contained on the floppy disk.	→	• Delete BANKs that are not required, to open up new memory space. • Replace the floppy disk.
DISK PROTECTED!!	The memory protect function has been set for that particular floppy disk.	• You have been trying to write data onto a floppy disk that has its protect seal in place.	→	• Enter the data after first removing the protect seal or change the disk.
EXTRA INPUT !!	The value entered is not appropriate as data.	• You have designated BANKs, TRACKs, CHAINs, MEASUREs or JOB COMMANDs that do not exist.	→	• Enter the correct data.
ILLEGAL INPUT !!	The characters entered are not appropriate as data.	• Alphabetical characters were entered where numerals should have been entered. • Numerals were entered where alphabetical characters should have been entered. • Meaningless characters were entered.	→	• Enter the correct data.

Display	Meaning	Possible causes	Cure
ILLEGAL ID !!	The floppy disk being used is inappropriate, as the ID is illegal.	• The two floppy disks being used for the BACK UP procedure have identical IDs.	→ • Change the ID of either floppy disk.
		• You attempted to create a BACK UP within the same floppy disk.	→ • Create a BACK UP on another floppy disk with a different ID.
MIDI DATA ERROR !!	An error has occurred during the reception of MIDI signals.	• The MIDI cable is incorrectly connected.	→ • Reconnect the MIDI cable properly, and check to see that the power of the respective MIDI instruments are on.
		• The power of the MIDI instrument connected is not turned on.	
NO DATA !!	The BANK or TRACK being used is blank, and does not contain the data required to carry out the desired functions.	• You tried to playback a blank BANK or CHAIN.	→ • Check to see whether data has been entered, and re-designate the correct BANK, CHAIN or BULK.
		• You tried to copy a blank BANK or TRACK.	
		• You tried to transmit a blank BULK.	
TOO MUCH DATA !!	The amount of data entered exceeds the rated limits, and therefore cannot be processed.	• You tried to make a COPY MEASURE of an excessive amount of data.	→ • Carry out the COPY MEASURE function in several steps.
		• You tried to monitor an excessive amount of data during the EDIT function.	→ • Switch to the PLAYMODE first before attempting monitoring.
ERROR DATA !!	The data being entered are wrong, and therefore cannot be processed.	• You tried to carry out a TRACK MIX operation on two TRACKs with different time signatures.	
		• You tried to enter a time signature that was different from the remaining TRACKs during the EDIT function.	
		• Since you tried to minimize the number of beats for the time signature, you generated performance data that exceeded the limits of the MEASURE.	→ • First delete the excessive data, and then change the time signature.

CONVENTIONS

The following conventions have been used to make this Operations Directory clear and concise. We also include here certain items of general information, to save repeating them throughout this directory. Please also consult the CONVENTIONS section of the Owner's Manual.

1. Entering Data

Whenever an LCD Message indicates that data can be entered, you must move the cursor under the appropriate section of the LCD before typing in data. This is done using the [←S] and [→T] keys. After typing in data, you must press [ENTER] to enter the data. Assume that these operations are necessary whenever data entry is mentioned.

2. Entering Job Commands

Enter a Job Command by pressing [JOB COMMAND], typing in the desired number and pressing [ENTER] . You can return to a main mode by entering 00 on the JOB COMMAND SELECT display.

3. Alphabetical Data

Any alphabetical data is entered by pressing the desired letter key while holding down the [SHIFT ⇑] key. If you press a multi-purpose key without holding down [SHIFT ⇑] , you may type in unwanted data. NOTE: When you use the PITCH keys for entering pitches rather than alphabetical data, you do NOT need to use the [SHIFT ⇑] key.

4. The QX1 Owner's Manual will be referred to as the O.M.

PLAY MODE–Main Job

The Play Mode has 4 main jobs: Bank Directory, Bank Play, Chain Directory, and Chain Play.

1. BANK DIRECTORY

Press [PLAY], and see.

```
PLAY MODE              PROT:p    USE:uuuK
BANK nn   BBBBBBBB  TEMPO:ttt TIME:aa/bb
```

Press [↑U] or [↓V] to select bank number for playback (range 1 ~ 32).

The LCD gives the following information:

* PROT:p

Indicates if the Bank Memory Protect is on. 0 is off, 1 is on. Turn this function on or off by using Utility Mode Job Command 07.

* USE:uuu

Shows how much memory space has been used, in kilobyte units.

* BANK:nn

Bank Number.

* BBBBBBBB

Bank Name, up to 8 characters. Unused banks will show ********.

* TEMPO:ttt

Tempo in quarter notes per minute. Unused banks will show ***.
"MD" will be displayed when external MIDI clock sync is being used, and "TP" will appear when tape sync is being used.

* TIME:aa/bb

Time signature of the bank. Unused banks will show **/**.

2. BANK PLAY

After selecting bank number, press [ENTER] to see.

```
BANK PLAY READY     MEASURE:mmm
BANK nn   BBBBBBBB  TEMPO:ttt TIME:aa/bb
```

Press [RUN] to play.

You will see

```
BANK PLAYING        MEASURE:mmm
BANK nn   BBBBBBBB  TEMPO:ttt TIME:aa/bb
```

Press [STOP] if you wish to stop playback before the end of a composition. The LCD will revert to "BANK PLAY READY". Press [RUN] to continue play. You can also use an optional footswitch for the [RUN] and [STOP] functions.

The following data can be entered:

* MEASURE:mmm

The measure from which playback starts. Type in a measure number (range 001 ~ 999) and press [ENTER] . The LCD will run on to the new measure number. Then press [RUN] to play. You can also set a measure number by pressing [►] or [◄] (moves back or forward) or [►►] or [◄◄] (moves rapidly through measures - stop by pressing [STOP]).

If you press [STOP] during playback the measure number will be indicated.

* TEMPO:ttt

Playback tempo can be temporarily changed by entering a new tempo (range 040 ~ 280). You can also change tempo before or during playback by using the TEMPO CONTROLLER.

3. CHAIN DIRECTORY

Press [PLAY] then [CHAIN] (CHAIN LED must light) to see.

```
PLAY MODE
CHAIN n   CCCCCCCC  TEMPO:ttt TIME:aa/bb
```

Press [▲U] or [▼V] to select chain number for playback (range 1 ~ 8).

* CHAIN:n

Chain number.

* CCCCCCCC

Chain name. Unused chains show ********.

4. CHAIN PLAY

After selecting chain number, press [ENTER] to see.

```
CHAIN PLAY READY     MEASURE:mmm
BANK nn   BBBBBBBB  TEMPO:ttt TIME:aa/bb
```

Press [RUN] to play; you will see.

```
CHAIN PLAYING        MEASURE:mmm
BANK nn   BBBBBBBB  TEMPO:ttt TIME:aa/bb
```

Press [STOP] to halt playback. Press [RUN] to continue.

The measure from which play commences can be set, as in the Bank play mode, except that you must also select the bank number.

PLAY MODE–Job Commands

All Play Mode Job Commands can be entered at any time except during RUN or ⇤ , ⇥ from the Bank Directory i.e., after pressing [PLAY] .

However, Job command I can only be accessed from the BANK/CHAIN Directory.
Job Commands 2 & 3 may also be entered from the Bank Play mode i.e., after pressing [PLAY] then [ENTER] .
Entering 00 in the JOB Command Display will cause the LCD to return to the Bank Directory display.

01 DISK CHANGE

To change a floppy disk when the QX power is turned on.

This function is the same for all four main modes.

When you see

```
DISK CHANGE
SET DISK & HIT ENTER KEY !
```

the disk drive LED will go out. Unlock the disk drive, slide in another disk (or the same disk, if you've mistakenly entered this mode) and press [ENTER] . The LCD will return to "PLAY MODE" after a few seconds, and the disk drive LED will light.

02 STATUS / SWITCH

Indicates tracks containing data.
To select the synchronization clock for playback.

```
                    SYNC:s
PLAY TRK:abcdefgh   FREE:ffffK BYTES
```

* SYNC:s

The synchronization clock signal.

Enter I for the built-in clock (when the QX1 is the master and other MIDI devices are sync'd to it).

Enter M for an external MIDI clock (when the QX1 is the slave and is sync'd to other MIDI devices).

Enter T for tape sync (when the QX1 is sync'd to a sync signal recorded on tape, and input through the QX1's Tape Sync In jack. The tape sync signal can be output from the Tape Sync Out jack during play or record).

* PLAY TRK: a b c d e f g h

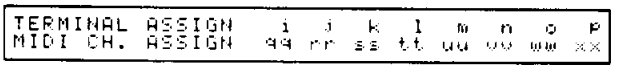
Indicates which tracks contain data. The corresponding track number (1 ~ 8) is displayed for tracks which contain data. Unused tracks are indicated by a *.

* FREE:fff

Displays the remaining memory space on the floppy disk, in kilobyte units.

03 OUTPUT ASSIGN

To select the output terminal for each track.
To set the MIDI Channel for each track.



*** TERMINAL ASSIGN: i j k l m n o p**

Indicates to which MIDI OUT terminals tracks are allocated. i thru p correspond to tracks 1 thru 8. When the QX1 power is turned on, tracks 1 thru 8 are assigned to terminals 1 thru 8 respectively. You can freely assign any track to any terminal, by moving the cursor to the appropriate track and entering a number from 1 to 8.

NOTE:

A maximum of four tracks can be assigned to one terminal, and if these tracks have the same MIDI Channel number, the receiving MIDI device will not be able to distinguish between them.

*** MIDI CH. ASSIGN: qq rr ss tt uu**
vv ww xx

Indicates to which MIDI Channel tracks are assigned. You can freely assign any track to any MIDI Channel (range 01 ~ 16). Entering a space turns that track OFF.

Additional Functions

1. REPEAT

Press [REPT] (the REPEAT LED will light) for endlessly repeating Bank Play or Chain Play. The [STOP] and [RUN] keys can be used for pause and continue as usual.
Press [REPT] again to cancel the Repeat function. If Repeat is turned off during playback, the QX1 will play on to the end of BANK or CHAIN and stop.

2. TRANSPOSE

Press [TRNS] to activate the Transpose function (the TRANSPOSE LED will light). After pressing [RUN] to start play, you can transpose by using the PITCH keys on the Data keyboard. When you press any key the music is transposed according to the following chart, see next page.

Transposition interval	Keys to be pressed
UP	
1 oct + 3rd	E ⇨ E
1 oct + Aug 2nd	E♭ ⇨ E♭
1 oct + 2nd	D ⇨ D
1 oct + Aug 1st	C♯ ⇨ C♯
1 oct	C ⇨ C
3rd	E
Aug 2nd	E♭
2nd	D
Aug 1st	C♯
0 (Reset)	C
Dim 1st	SHIFT + B
2nd	SHIFT + B♭
Dim 2nd	SHIFT + A
3rd	SHIFT + A♭
1 oct	SHIFT + C
1 oct + Dim 1st	SHIFT + B ⇨ SHIFT + B
1 oct + 2nd	SHIFT + B♭ ⇨ SHIFT + B♭
1 oct + Dim 2nd	SHIFT + A ⇨ SHIFT + A
1 oct + 3rd	SHIFT + A♭ ⇨ SHIFT + A♭
DOWN	

Transposition starts from the next measure after pressing [TRNS]. Pressing a PITCH key a second time raises the pitch an octave, and subsequent pressings continue to raise the pitch by an octave. Holding down the [SHIFT] key while pressing a PITCH key has the reverse effect—it lowers the pitch in octaves. Return to the original pitch by pressing [TRNS] or [C].

3. CLICK

Press [CLICK] to turn on the Click function (the CLICK LED will light). This outputs a click signal (electronic metronome) from the CLICK OUT jack during playback. The first beat of every bar is accented.

RECORD MODE–Main Job

The Record Mode has 4 main jobs: Bank Directory, Bank Name Set, Real Time Record, and Punch In Record. We will describe in concise form the procedures for recording, overdubbing, etc. The O.M.'s RECORD MODE and RECORDING–FURTHER OPTIONS chapters contain more detailed descriptions of these procedures.

1. BANK DIRECTORY

Press [REC], and see

```
RECORD MODE          PROT:0    USE:000K
BANK 01    ********  TEMPO:*** TIME:**/**
```

Press [TU] or [TV] to select bank number for recording (range 1 ~32).

The LCD gives the identical information to the play Mode's Bank Directory display.

2. BANK NAME SET

If you have selected an unused bank from the Bank Directory, pressing [ENTER] will give this LCD message.

```
BANK NAME SET        PROT:0    USE:000K
BANK nn    BBBBBBBB  TEMPO:ttt TIME:aa/bb
```

You can now enter the following data. Do NOT press [ENTER] until you have typed in at least the TEMPO and TIME settings.

*** BANK NAME BBBBBBBB**

Up to 8 characters (letters, numbers, or spaces). You can omit this operation if you wish.

*** TEMPO:ttt**

Sets the tempo of the recording in quarter notes per minute. Range 040 ~ 280.

*** TIME:aa/bb**

The time signature of the recording is entered, within the following ranges.

aa (number of beats per measure) 01 ~ 32

bb (length of each beat) 01, 02, 04, 08, 16, 32, indicating whole notes through thirty-second notes.

3-1. REAL TIME RECORD – Basic Operations

NOTE:

When you record on the QX1, any voice changes will be recorded. However, the QX1 cannot memorize which voice you started the recording with. So to playback the recording as it was performed, you will have to set your MIDI instrument to the original voice. Better still, enter a voice command at the beginning of the finished recording by using the Edit Mode.

To set the QX1 to its RECORD READY mode, press [ENTER] after either (a) typing in data in the Bank Name Set mode, or (b) selecting a bank that already contains music data, in the Bank Directory mode. In the latter case, the LCD will show the

"EXECUTING NOW!"message first.

You will now see

```
RECORD READY          MEASURE:mmm
BANK nn    BBBBBBBB   TEMPO:ttt TIME:aa/bb
```

Unless otherwise set, the QX1 will now be ready to record onto track 1. If you wish to record onto another track, use Job Command 02 (see the relevant section for details).

To start recording, press [RUN], or the footswitch. The LCD will change, after a two measure count-in (which you can hear if you use the Click Function described at the end of the RECORD MODE–Job Commands section) to

```
RECORDING             MEASURE:mmm
BANK nn    BBBBBBBB   TEMPO:ttt TIME:aa/bb
```

Press [STOP] or the footswitch, to halt the recording. The LCD will return to"RECORD READY". If you wish to continue recording from this point, press [RUN] again. You will be given a two-bar count-in once more.

3-2. REAL TIME RECORD – Further Options

You now also have the following options. (See also the RECORDING–FURTHER OPTIONS chapter in the O.M.)

A. Completing the Recording

The music data is not stored onto the floppy disk yet. This only happens when you press [UTLT], [EDIT], [REC] or [PLAY]. The"EXECUTING NOW!!"message will appear during the loading process, and then the LCD will show the display corresponding to the main mode you have selected.

NOTE:

If you turn the power off before pressing one of these keys, the recording will be lost.

B. Recording onto Another Track

Press [REC] then select another track by using Job Command 02. See the relevant section in the O.D. for details.

Then press [ENTER] to set the QX1 to RECORD READY. Press [RUN] to record.

C. Correcting the Recording

Having pressed [STOP] to halt a recording, you can erase all or part of it from the end backwards, in three ways:

(1) Type in a measure number and press [ENTER]. The recording will "rewind" to the selected measure, erasing data as it goes, and you can record from the selected measure by pressing [RUN].

(2) Use the [◄] key to rewind one measure at a time.

(3) Use the [◄◄] key to rewind rapidly. This can be stopped by pressing [STOP].

NOTE:

If an OFF command relating to an effect such as Sustain is erased, the effect will remain ON. Care should be taken when erasing such data.

D. Recording From the Middle of a Track

As with the previous operation, a measure can be selected (this time LATER than the one you have stopped at) by entering a measure number or using the [►] or [►►] keys. Data will NOT be erased when "winding forward" in this manner.

You can record from the selected measure by pressing [RUN] .

This is useful if you wish to overdub onto part of a track.

E. Overdubbing

Virtually unlimited overdubbing can be done on the QX1. The only limitation is your playback equipment, e.g., if you drive the DX7 with the QX1, it has a limit of 16 note polyphonic play. Any further overdubs will not be played on the DX7. The actual limit on the QX1 is 127 (monophonic) overdubs.

To overdub, press [REC] . You'll see"**EXECUTING NOW!!**" followed by "XXXXXXXXXXXX". Press [ENTER] . You can now overdub on the same track by pressing [RUN] .

NOTE:

Any effects such as Sustain, Modulation, Pitch Bend, Portamento, etc. will be recorded and will affect the entire track.

F. Changing the Recording Tempo

This is done by simply turning the TEMPO CONTROLLER at any time, or by entering a tempo setting in the Record Ready mode. In either case, the programmed tempo is not affected. To change the programmed tempo, use the Utility Mode, Job Command 07.

4. PUNCH IN RECORD

Functions in the same way as tape recording, for correction or alteration of part of a track.

The options described in section 3-2 above also apply to Punch In recording, except for the overdubbing facility.

NOTE:

You can also use a footswitch to carry out the [RUN] , [ENTER] and [STOP] functions described below. Particularly useful if you don't have an engineer at your disposal!

Set the QX1 to Punch In Record by using Job Command 02 when the LCD shows "**RECORD MODE**". See the relevant section in the RECORD MODE–Job Commands chapter.

Press [ENTER] to see

```
PUNCH REC. READY     MEASURE:mmm
BANK nn   BBBBBBBB  TEMPO:ttt TIME:aa/bb
```

The QX1 is now standing by for Punch In recording.

Press [RUN] . After a two-bar count-in, the LCD will show.

The track will now be playing back, not recording. To punch in and record, press [ENTER] . At the start of the next measure, the LCD will switch to

and will be recording (and erasing whatever is on the track at this point).

To stop recording, press [STOP] . The LCD will return to "PUNCH REC. READY".

If you want to go back and correct the recording, enter the desired measure number and press [ENTER] or return to the desired measure using the [◄] or [◄◄] keys. The recorded data will be erased up to the measure you have returned to.

NOTE:

The recording will NOT be stored onto the disk unless you press one of the four main mode keys.

To punch in again, press [RUN] to start play, then [ENTER] to punch in. Up to 16 punch ins may be carried out. When you press [STOP] to finish the last punch in, the LCD will switch to "EXECUTING NOW!!" while the data is stored on the disk, then it will return to "PLAY MODE". If you need to make further punch ins, return to the Record Mode and carry out the Punch In procedure again.

To punch in at a specific measure, set the QX1 to "PUNCH. REC READY". You should then "wind" the recording on to a few measure BEFORE your punch in point, by using the [►] or [►►] keys, or by typing in a measure number and pressing [ENTER] . Then press [RUN] to start play, and h it [ENTER] one measure BEFORE the punch-in point.

RECORD MODE–Job Commands

All Record Mode Job Commands can be entered from the Bank Directory i.e., after pressing [REC].

Job Commands 2, 3 & 4 may also be entered from the Record Ready mode i.e., after pressing [REC] then [ENTER]. Entering 00 in the Job Command Select display will cause the LCD to return to the Bank Directory display.

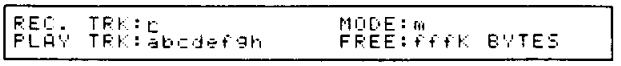
01 DISK CHANGE

To change a floppy disk when the QX power is turned on.

The display and function for this job command are identical to the Disk Change job command in the [PLAY] mode.

02 STATUS/ SWITCH

Indicates tracks containing data.
To select Real Time Record or Punch In Record.
Select record synchronization clock.



*** REC. TRK: r**

Select a track for recording by entering a number from 1 to 8. After you press [ENTER] the corresponding RECORD/EDIT LED will light. This track will remain even if you select another bank for recording. "ILLEGAL INPUT !!" will be displayed if this is attempted during Record Ready.

The QX1 automatically selects track 1 when its power is turned on.

*** MODE: m**

Select Real Time Record or Punch In Record by entering R or P. This data also remains when you select another bank. "ILLEGAL !!" will be displayed when switched during Record Ready.

*** PLAY TRK: a b c d e f g h**

Indicates which tracks contain data. The corresponding track number is displayed for tracks which contain data. Unused tracks are indicated by a *.

*** FREE:fff**

Displays the remaining memory space on the floppy disk, in kilobyte units.

03 OUTPUT ASSIGN

To select the output terminal for each track.
To set the MIDI Channel for each track.

The display and functions of this job command are identical to the Output Assign job command in the Play Mode.

04 RECEIVE CONDITION

To select MIDI reception channel.
On/Off of Control Change signal reception.
On/Off of Program Change signal reception.
On/Off of Pitch Bend signal reception.

```
RECEIVE CONDITION
MIDI:mm   CTRL:c    PRGM:p    BEND:b
```

*** MIDI: mm**

Select a MIDI Channel number (range 01 ~ 16) to match the MIDI Channel of the performance instrument. The QX1 automatically sets this to 01 when the power is turned on. Entering 00 sets the OMNI mode.

*** CTRL: c**

Set to 1 for ON, 0 for OFF.

When switched off, no Control Change signal will be recorded.

Control Change signals carry data for effects such as portamento, sustain, modulation, etc., according to the design of the MIDI instrument. Recording with one instrument and playing back on a different MIDI instrument may result in Control Change signals creating different effects or being ignored. Control Change signals may be altered in the Edit mode.
Initially set to 1 when power is switched ON.

*** PRGM: p**

Set to 1 for ON, 0 for OFF.

When switched off, no Program Change signal will be recorded.

When you change a voice on your performance instrument, a Program Change signal is sent. This signal can be altered in the Edit mode. Initially set to 1 when power is switched ON.

*** BEND: b**

Set to 1 for ON, 0 for OFF.

When switched off, no Pitch Bend signal will be recorded.

When you use a Pitch Bend control on your performance instrument, a Pitch Bend signal is sent. This signal can be altered in the Edit mode.
Initially set to 1 when power is switched ON.

05 RECORD CANCEL

Cancel record mode and return to BANK DIRECTORY display.

```
SURE ?.YES(Y)/NO(N)
RECORD CANCEL
```

Additional Function

CLICK

Press [CLICK] to turn on the Click function (the CLICK LED will light). This outputs a click signal (electronic metronome) from the CLICK OUT jack, during recording. When you press [RUN] to start recording (Real Time or Punch In)the Click signal will give you a two bar count-in before the actual recording starts. The first beat of every bar is accented.

EDIT MODE–Main Job

The Edit Mode has three main jobs: Bank Directory, Bank Name Set and Edit.

1. BANK DIRECTORY

Press [EDIT], and see

```
EDIT MODE              PROT:0    USE:000K
BANK 01    ********    TEMPO:*** TIME:**/**
```

Press [↑U] or [↓V] to select bank number for editing (range 1 ~ 32).

The LCD gives the identical information to the play Mode's Bank Directory display.

2. BANK NAME SET

If you have selected an unused bank from the Bank Directory because you wish to create a new composition by using the Insert function, pressing [ENTER] will give the LCD message

```
BANK NAME SET          PROT:0    USE:000K
BANK 01    ▲.......   TEMPO:...  TIME:../..
```

You can now enter the following data. Do not press [ENTER] until you have typed in at least the TEMPO and TIME settings.

* BANK NAME BBBBBBBB

Up to 8 characters (letters, numbers, or spaces). You can omit this operation if you wish.

* TEMPO: ttt

Sets the tempo of the composition in quarter notes per minute. Range 040 ~ 280.

* TIME: aa/bb

The time signature of the composition is entered, within the following ranges.

aa (number of beats per measure) 01 ~ 32.

bb (length of each beat) 01, 02, 04, 08, 16, 32, indicating whole notes through thirty-second notes.

3-1. EDIT: Initial Displays

Three displays always exist in the Edit mode, even if you have not yet entered any data into a track. These are: INCREASABLE SPACE, TOP OF TRACK, and END OF TRACK.

To set the QX1 for editing, you must select a track for editing after either (a) typing in data in the Bank Name Set mode, or (b) selecting a bank that already contains music data in the Bank Directory mode.

Use Job Command 02 for this purpose. (You can omit this operation if the QX1 is already set to record or edit on your desired track. The QX1 selects track 1 when its power is turned on.)

A. INCREASABLE SPACE display

Press [ENTER]. After the "EXECUTING NOW!!" display, you will see the INCREASABLE SPACE display.

```
INCREASABLE SPACE                nnnK BYTES
TOP OF TRACK
```

The QX1 will now be ready to commence editing. The INCREASABLE SPACE display shows the amount of data that can be entered using Edit functions. If you enter too much data at one time, the entire data will be cancelled. The maximum amount of data that can be entered on one track is 397 kilobytes. This display only appears when you first enter a track for editing. When you return to the beginning of a track, it will show the TOP OF TRACK display instead.

B. TOP OF TRACK display

```
MEASURE:...    STEP:../..  CLK:..../....
TOP OF TRACK
```

This display will appear when you have left the INCREASABLE SPACE display (using [↓V]) and then returned to the beginning of the track (using [↑U]). Data cannot be entered during this display.

C. END OF TRACK display

```
MEASURE:mmm    STEP:01/tt  CLK:0000/dddd
END OF TRACK
```

This display will appear when you have scrolled through an entire track. If the track does not yet contain data, this display will show measure 002.

Data cannot be entered during this display. Also, the Insert function cannot be called up during this display. To insert further data at the end of a track, press [↑U] before pressing [INSERT] .

*** MEASURE: mmm**

Indicates the number of the measure following the last data.

*** STEP: 01/tt**

Indicates the step number per measure.

*** CLK: 0000/dddd**

Indicates the clock number per step.

3-2. EDIT: Data Entry Options

The following data entry options are available in the Edit mode, without using any Job Command. We'll describe how data is entered in both the Change mode and the Insert mode. Each option has a different LCD display.

In the Edit Mode, you are always informed of the data occurring at any point in the track. The following displays may appear: MEASURE BAR, NOTE DATA and function data displays such as TEMPO CHANGE, CONTROL CHANGE, PITCH BEND, and PROGRAM CHANGE.

This section contains all the basic programming instructions for the Edit mode and should be studied carefully and all operations tried out on your QX1.

A. Entering a Time Signature

MEASURE BAR display

The time signature can be changed at any time, however, a "DATA ERROR" will be produced if the new time signature assigned is not large enough to contain the total length of the notes in each measure. A "DATA ERROR" will also be generated at the end of editing if different time signatures are assigned to different tracks.

*** MEASURE: mmm**

Indicates the number of the measure.

*** TIME: aa/bb**

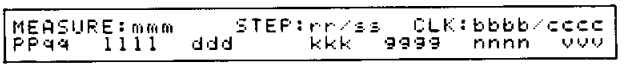
The time signature of the measure is entered, within the following ranges. c **aa** (number of beats per measure) 01 ~ 32.

bb (length of each beat) 01, 02, 04, 08, 16, 32, indicating whole notes through thirty-second notes.

This time signature is common to all tracks, and will apply to all subsequent measures, until a new time signature is entered.

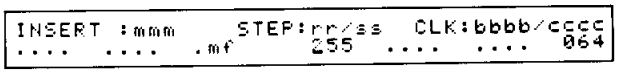
B. Entering Note Data

NOTE DATA display



Indicates the bar number (MEASURE), timing of a note (STEP, CLOCK), pitch of a note (NOTE NAME, KEY NUMBER), voicing length (GATE TIME), note intervals (NOTE LENGTH), and level (VOLUME DYNAMICS).

If you press INSERT to select the Insert mode, the note data display will change to



The following text explains the data relating to both the above displays, and how to alter data or enter new data.

*** MEASURE: mmm**

Indicates which measure the note is in.

CHANGE: To move a note to another measure, enter a different measure number.

INSERT: When programming notes from the blank data state, typing in a measure number will determine the measure destination of the note.

*** STEP: rr/ss**

Indicates which step of a measure the note is in.

rr indicates the number of the step.

CHANGE: To move the note to another step, enter a different step number (range 01 to the value of ss)

INSERT: When programming notes from the blank data state, typing in a step number (range 01 to the value of ss) will determine the step destination of the note.

ss indicates the total number of steps in a measure (range 01 ~ 99). To change this figure, use Job Command 06.

*** CLK: bbbb/cccc**

bbbb indicates which clock of a step the note begins on.

CHANGE: To move the note to a different clock, enter a different clock number (**bbbb** is always less than **cccc**).

INSERT: When programming notes from the blank data state, typing in a clock number will determine the clock destination of the note. bbbb is always less than cccc.

cccc indicates the total number of clocks in a step.

*** PPqq**

Indicates the note name (range C-2 ~ G8). **PP** indicates the alphabetical note name (range A ~ G, including sharps). **qq** indicates the octave (range −2 ~ 8).

CHANGE/INSERT: To change or select the pitch of a note, press a PITCH key on the data keyboard. The first time you press a PITCH key, it gives the note in octave 3. Each time you press the key again, it raises the note one octave. To lower the octave, press the key while holding down [SHIFT ⇑]. Press [ENTER] after selecting a new note.

You can also select a new pitch by pressing a note on your MIDI keyboard, then press [ENTER]. This display will show KBD. The next time you examine this note data, it will show the actual new pitch of the note.

NOTE:

In the Insert mode you can enter chords as follows:

After setting the note length, select a pitch by pressing a PITCH key. Then press [SPACE]. The clock count will not advance. You can now change the note length if you wish, or if you want the next note of the chord to be the same length, simply select another pitch and press [SPACE] again. Continue selecting pitches and pressing [SPACE]. You can layer up to 127 notes in this manner (though the DX7, for example, can only play 16 notes simultaneously).

When you've selected the last note of the chord, press [ENTER] and all the notes will be entered. The clock will advance by an amount equal to the longest note of the chord.

To enter chords even more rapidly, press a chord on your DX7. The Note Name display will show KBD. You can take your hand off the DX7 now. Then press [SPACE]. You can add more notes by pressing another chord on the DX7 and pressing [SPACE] again. When you have selected enough notes, press [ENTER] to enter them.

Since the data from an external keyboard is recorded in the QX1, [KBD] can be used for recall as many times as required. In other words, it is not necessary to press the keyboard a number of times for the same chord.

This display is connected to the MIDI key number display (see **kkk** below).

* 1111

Indicates the length of a note.

When examining recorded music data, this section shows no data, just a row of four dots.

Data ONLY appears here when you press a NOTE LENGTH key on the Data keyboard, in order to set the length of a note. Note lengths are displayed as follows: /1..= whole note, thru to 32. = 32nd note. Dotted notes add + (e.g. dotted quarter note + /4+.). Double dotted notes add ++ (e.g. double dotted quarter note = /4++). Triplets add −3 (e.g. triplet quarter note = /4 − 3). Quintuplets and other fractions are also possible (add −5, −7, or −9).

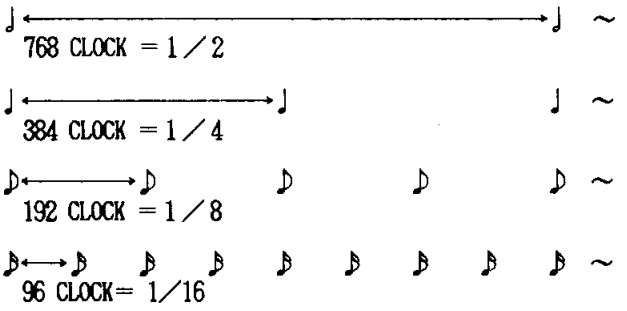
CHANGE: To change the length of a note, press a NOTE LENGTH key and hit [ENTER] .

INSERT: If you enter the note length in the Insert mode (having first selected the pitch) and press [ENTER] , THE CLOCK WILL automatically advance by the length entered, so that you can rapidly enter the next note. If you have a string of notes that are the same length, you can enter them by setting pitch and length of the first note, and pressing [ENTER] , then setting only the pitch of subsequent notes and pressing [ENTER] . This can make inserting notes almost as fast as real time recording.

The next time you examine the note, this part of the LCD display will once again show no data (however, the Gate Time of the note will be shown; see below).

This display is connected to the clock note length display (see **nnnn** below). The relationship between note length keys and clocks is as follows.

Note length/clock relationship



* **ddd**

Indicates the dynamic marking of the note, in 8 steps (**ppp** thru **fff**).

CHANGE/INSERT: Set dynamic markings from the Data keyboard (press a NOTE LENGTH key while holding down [SHIFT] . If you do not select a dynamic marking in the Insert mode, the QX1 will automatically select mf.

This display is connected to the Volume display (see **vvv** below).

The relationship between dynamic markings and velocity data is as follows.

Dynamic markings/Velocity relationship

Key	Velocity	Dynamic	Key	Velocity	Dynamic
[ppp] —	001	ppp	[mf] —	064	.mf
	008	ppp		072	.mf
	015	ppp		079	.mf
[pp] —	016	.pp	[f] —	080	..f
	024	.pp		088	..f
	031	.pp		095	..f
[p] —	032	..p	[ff] —	096	.ff
	040	..p		004	.ff
	047	..p		111	.ff
[mp] —	048	.mp	[fff] —	112	fff
	056	.mp		120	fff
	063	.mp		127	fff

*** kkk**

Indicates the MIDI key number of the pitch of the note (range, 000 ~ 127, equivalent to C-2 ~ G8).

CHANGE/INSERT: To change the pitch of a note, enter a new number in the above range.

This display is connected to the Note Name display (see **PPqq** above).

NOTE:

When you change the pitch by selecting a note on your MIDI keyboard, this display will show 128, regardless of the pitch selected. The next time you examine this note data, it will then show the actual MIDI key number.

If you press [REST] to enter a rest instead of a pitch, this display will show 255. Entering a rest instead of a pitch in the Change mode effectively deletes a note. In the Insert mode, pressing [REST] and then [ENTER] after selecting a note length enters a rest, and the clock moves forward an amount equal to the note length selected.

*** gggg**

Indicates the Gate Time of the note, in Clock units.

When you record music in real time, this simply indicates the amount of time a key was held down.

CHANGE: To change the Gate Time of a note enter a new number (range 0001 ~ 9999).

INSERT: To set the Gate Time of a note, once the pitch is set, enter a number from 0001 to 9999. The clock time can be set independently to move you on to the entry point for your next note, once you enter a note.

CHANGE/INSERT: If you enter note lengths by pressing a NOTE LENGTH key, the Gate Time will be a percentage of the note length. When the QX1 is turned on, this is set to 80%. You can change this percentage by using Job Command 05.

This is a quick way of entering irregular note lengths and moving the clock on to the next note when using the Insert mode.

*** nnnn**

Indicates the note length or time interval between notes, in Clock units.

When examining recorded music data, this section shows no data, just a row of four zeros.

Data ONLY appears here when you press a NOTE LENGTH key on the Data keyboard, or enter numerical data.

CHANGE: Change the length of a note ONLY by pressing a NOTE LENGTH key. Entering numerical data does NOT affect note length. INSERT: Entering numerical data here does NOT affect the Gate Time, it merely moves the clock on by the amount set, when you enter the note — a convenient way of moving on to the entry point for your next note. So used in this way it can be considered as a "time interval between notes" function.

Pressing a NOTE LENGTH key changes both this display and the GATE TIME display.

The next time you examine this note data, this display will again show no data.

*** vvv**

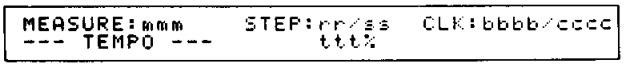
Indicates the volume of a note in terms of note velocity (range 001 ~ 127).

CHANGE: To change the volume of a note, enter a new number in the above range.

INSERT: If you do not enter a volume setting in the Insert mode, the QX1 will automatically select 064. This display is connected to the Dynamic Marking display (see **ddd** above).

C. Entering a Tempo Change

TEMPO CHANGE display



Allows you to change the tempo at any point in a recording.

*** ttt%**

This is the entry space for the tempo change, entered as a percentage of the tempo entered during the Bank Name Set display. The range is 050% ~ 200%.
To insert a tempo change into a recording, or when creating new music data in the Insert mode, press [TEMPO] after pressing [INSERT], to call up the above display. The TEMPO entry space will show **. . .%**.

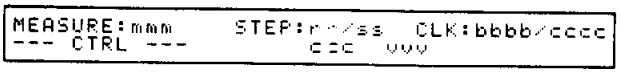
You can program in a gradual tempo increase (accelerando) or decrease (ritardando) by entering several tempo changes at small intervals, with slightly different values.

To return to your original tempo, program in a tempo change setting of 100%.

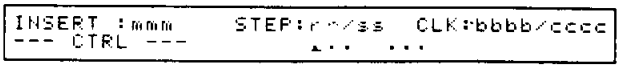
The input point of the tempo change (measure, step, clock) is entered exactly as described in the NOTE DATA display.

D. Entering Effects Data

CONTROL CHANGE display



Indicates the settings, at any moment during a recording, of the effects controllers.



To insert a control change into a recording, or when creating new music data in the Insert mode, press [CTRL] after pressing [INSERT], to call up the above display.

*** ccc**

Indicates the controller number (range 000 ~ 127). In the Insert mode this will be blank, and you can enter any controller number from the table provided in the MIDI SPECIFICATIONS CHAPTER, if using a DX synthesizer. Other MIDI products will use different controller numbers –please consult the relevant O.M.

*** vvv**

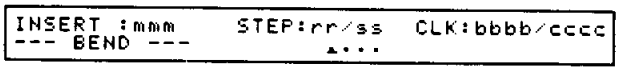
Indicates the depth of the effect (range 000 ~ 127). In the Insert mode, this will be blank. If you enter a Control Change, remember that the same effect depth will be maintained until the end of the track, or until a new Control Change is entered (for example, 000 for OFF). For smooth operation of effects controllers, you can enter several Control Changes at small intervals, each with slightly different depth values.

The input point of the control change (measure, step, clock) is entered exactly as described in the NOTE DATA display.

E. Entering Pitch Bend

PITCH BEND display

Indicates the setting of the Pitch Bend controller at any given moment (NOT the Pitch Bend Range–this is set on your MIDI instrument).



To insert Pitch Bend data into a recording, or when creating new music data in the Insert mode, press [BEND] after pressing [INSERT], to call up the above display.

*** pppp**

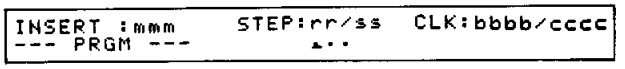
Indicates the depth of Pitch Bend (range –8192 ~ +8191). In the Insert mode, this will be blank. If you enter Pitch Bend data, remember that the same effect depth will be maintained until the end of the track, or until new Pitch Bend data is entered (for example, 0000 for OFF). For smooth Pitch Bend operation, enter several Pitch Bend signals at small intervals, each with slightly different depth values.

The input point of the Pitch Bend data (measure, step, clock) is entered exactly as described in the NOTE DATA display.

F. Entering Voice Change

PROGRAM CHANGE display

Indicates the voice number of the MIDI performance instrument connected to the QX1.



To insert a program change into a recording, or when creating new music data in the Insert mode, press [PRGM] after pressing [INSERT] to call up the above display.

*** ppp**

This is the entry space for the voice number (range 000 ~ 127). In the Insert mode, this part of the LCD display will be blank.

With the Yamaha DX synthesizers and TX FM Tone Generator Systems, this number corresponds to the actual voice number minus 1. This may vary with other manufacturers' MIDI instruments. The best way to find out what numbers correspond to the voice numbers on your MIDI instrument is to record a performance that includes changes to all the voices available on your instrument, then examine the data in the Edit mode to see how the voice numbers appear on the Program Change displays.

NOTE:

The QX1 automatically records program changes entered during a real-time performance. However, it has no way of recording which was the first voice used in a performance. We advise that you make it a common practice to enter a program change at the beginning of a recording, as soon as the recording is completed.

EDIT MODE–Job Commands

Job commands 1 thru 6 and 13 can be entered from the Bank Directory i.e., after pressing [EDIT].

Job Commands 3 thru 16 may be entered from the "Increasable Space" LCD Display i.e., after pressing [EDIT] then [ENTER], or while you are editing a track, and the LCD is showing performance data.

Entering 00 in the Job Command select display will cause the LCD to return to the Bank Directory Display.

01 DISK CHANGE

To change a floppy disk when the QX power is turned on.

The display and functions of this job command are identical to the Disk Change job command in the Play Mode.

02 STATUS / SWITCH

To select a track for editing.

```
EDIT TRK:e
```

```
* EDIT TRK: e
```

Set to the desired track number (range 1 ~ 8). The corresponding RECORD/EDIT LED will light.

This data will remain even when you select another bank for editing. When the QX1 power is turned on, it will automatically select track 1 for editing.

03 OUTPUT ASSIGN

To select the output terminal for each track.
To set the MIDI Channel for each track.

The display and functions of this job command are identical to the Output Assign job command in the Play Mode.

04 RECEIVE CONDITION

To select MIDI reception channel.
On/Off of Control Change signal reception.
On/Off of Program Change signal reception.
On/Off of Pitch Bend signal reception.

The display and functions of this job command are identical to the Receive Condition job command in the Record Mode.

05 GATE TIME RATIO

To set the gate time of note lengths selected by the NOTE LENGTH keys.

```
1/1 :aaa% 1/2 :bbb% 1/4 :ccc% 1/8 :ddd%
1/16:eee% 1/32:fff% 1/N :ggg%
```

The gate time ratio is expressed as a percentage of the note length (range 001% ~ 100%). When the QX1 is turned on, this is automatically set to 80%.

* 1/1 :aaa% ~ 1/32:fff%

Represents the gate time ratio for the NOTE LENGTH keys.

* 1/N :ggg%

Represents the gate time ratio for the NOTE FRACTIONS key, and will apply to all note fractions whatever their value.

06 STEPS PER MEASURE

To set the number of clocks par step, thereby determining the number of steps within a measure.

* ss

Indicates the number of clocks each step has been divided into (range 0000 ~ 9999). A quarter-note step is equivalent to 384 clocks. Steps are a way of dividing up a measure for ease of locating notes when editing. This data will remain when you select other banks for editing. When the QX1 power is turned on, it automatically sets the step clock count to 384 (4 steps/measure).

07 COPY MEASURE

To copy measures to any selected measure.

```
MEASURE COPY  TOP MEAS:▲.. LAST MEAS:...
DEST MEAS:...              COPY:..
```

This function can speed up the editing process by allowing you to copy the data of any number of measures, to a selected measure. You can also copy the data a set number of times, automatically. Copying is done within a selected track.

* TOP MEAS:...

Set the number of the first measure of the passage you wish to copy (range 001 ~ 999).

* LAST MEAS:...

Set the number number of the last measure of the passage you wish to copy (range 001 ~ 999).

* DEST MEAS:...

Set the number of the measure to which you wish to copy the selected passage. NOTE: If the destination measure already contains data, it will be erased when the new data is copied into it.

* COPY:..

Set the number of times you wish to copy the data (range 01 ~ 99). This is useful for quickly creating a reapeated phrase, e.g. a bass part. You simply enter one bar of data, then copy it the desired number of times. You could then transpose some of the copied measures, if desired, using Job Command 08.

NOTE:

If you attempt to copy a large amount of data at one time, the message "TOO MUCH DATA" may appear. When you see this, reset the LCD by pressing any key on the Data keyboard (except [ENTER]), then copy sections of the data in several steps.

08 TRANSPOSE MEASURE

To transpose a selected part of a track.

```
KEY TRANSPOSE
WIDTH: ▲..      TOP MEAS:... LAST MEAS:...
```

* WIDTH: ..

Set the amount of transposition required, in semitone steps (range −99 ~ +99)

NOTE:

If you transpose a passage so that some notes exceed the MIDI note range (MIDI numbers 0 ~ 127) the transpose function will be cancelled.

* TOP MEAS:...

Set the number of the first measure of the passage you wish to transpose (range 001 ~ 999).

* LAST MEAS:...

Set the number of the last measure of the passage you wish to transpose (range 001 ~ 999).

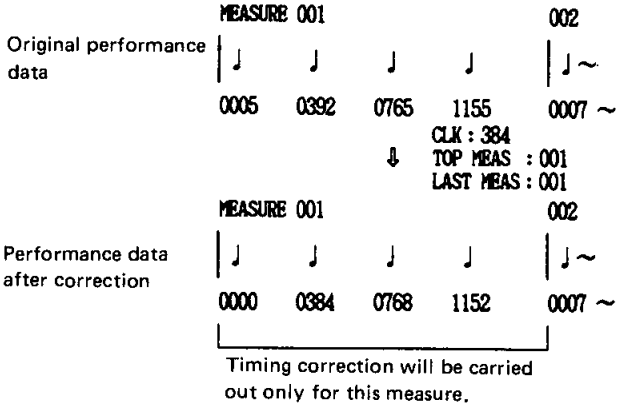
09 TIME QUANTIZING

To correct timing imperfections in performance data, or synchronize notes to a selected primary beat.

```
TIME QUANTIZE
CLK:▲..         TOP MEAS:... LAST MEAS:...
```

The time quantizing function divides measures up into a selected number of steps, and synchronizes each note to the nearest step (the nearest step may be before or after the note).

Example of TIME QUANTIZING input



The above illustration shows a simple example, where notes are sync'd to a quarter beat step, created by entering a clock count of 384 (the QX1 clock runs at 384 clocks per quarter note).

* CLK:...

Set the length of the step in clock units (range 002 ~ 999). This should be set to the shortest step required. If in doubt, set it to a lower number, e.g. one-half or one-quarter of the shortest note length. You can always quantize again to a longer step. If you quantize first to a step that is too long, it is impossible to reset the data to its original timing. To be really safe, you could copy a track to another track (Utility mode, job command 14), and try quantizing the copy, so that the original track is retained.

* TOP MEAS:...

Set the number of the first measure or the passage you wish to quantize (range 001 ~ 999).

* LAST MEAS:...

Set the number of the last measure of the passage you wish to quantize (range 001 ~ 999).

10 CLOCK MOVE

To move a selected part of a track by a selected number of clocks.

This can be used for fine adjustment of the overall timing of a measure or group of measures. One interesting application of this is the creation of echoes. If you copy the same performance onto more than one track (see UTILITY MODE Job Command 14) you can create echo effects by "delaying" each track by a different number of clocks (you will also need to adjust the overall level of each track, using Job Command 12). A natural effect would be created by lowering the level of each track by an amount proportional to the amount of clocks by which it has been moved. You can experiment widely with this function.

* CLK:...

Set the length of the clock move in clock units (range −999 ~ +999).

NOTE:

You cannot move any data back to before measure 001. The clock move function stops at clock 000 of step 01 in measure 001, so you may find several notes moved to that clock if you have tried to move them back too far.

* TOP MEAS:...

Set the number of the first measure of the passage you wish to move (range 001 ~ 999).

* LAST MEAS:...

Set the number of the last measure of the passage you wish to move (range 001 ~ 999).

11 GATE TIME MODIFY

To modify the gate time of all data in a selected passage.

```
GATE TIME MODIFY
MOD:...%        TOP MEAS:...  LAST MEAS:...
```

This modifies, by a percentage function, the gate time of all notes in a selected group of measures. This is useful for rapidly creating a staccato or legato passage in a track, without having to adjust the gate time of individual notes.

* MOD:...%

Set the percentage modification of the gate time (range 050% ~ 200%). The gate time that has already been entered is always considered as 100%.

NOTE:

Gate time cannot be increased to more than 9999 clocks.

* TOP MEAS:...

Set the number of the first measure of the passage for which you wish to modify the gate time (range 001 ~ 999).

* LAST MEAS:...

Set the number of the last measure of the passage for which you wish to modify the gate time (range 001 ~ 999).

12 VELOCITY MODIFY

To modify the overall velocity level of a selected passage.

```
VELOCITY MODIFY
MOD:          TOP MEAS:...  LAST MEAS:...
```

The velocity level sets the output level of the signal. This function allows you to adjust the overall level of a passage without losing any level variations that may occur within the passage. Entering several velocity modifications with slightly different values can produce a fade-in (or crescendo) or fade-out (diminuendo).

* MOD:...%

Set the velocity modification value (range −99 ~ +99)

NOTE:

The velocity data cannot exceed the MIDI range (1 ~ 127).

cannot exceed the MIDI range (1 ~ 127).

* TOP MEAS:...

Set the number of the first measure of the passage for which you wish to modify the velocity (range 001 ~ 999).

* LAST MEAS:...

Set the number of the last measure of the passage for which you wish to modify the velocity (range 001 ~ 999).

13 NOTE LENGTH SET

To set the note length corresponding to the NOTE LENGTH keys.

```
1/1 :aaaa   1/2 :bbbb   1/4 :cccc
1/8 :dddd   1/16:eeee   1/32:ffff
```

Although the NOTE LENGTH keys are marked with values ranging from a whole note to a 32nd note, you can set them to any note length with this function. This can be useful, for example, if you are using a lot of triplets in a composition. You can set the length of an infrequently used NOTE LENGTH key to equal a triplet, so that they can be entered without using the NOTE FRACTION key.

NOTE:

When the QX1 power is turned on, the note lengths are set to their initial settings (quarter note = 384 clocks, etc.).

* 1/1 :aaaa ~ 1/32:ffff

Set the length of any NOTE LENGTH key in clocks (range 0000 ~ 9999).

14 BEND DELETE

To remove any Pitch Bend data from a selected passage.

```
BEND DELETE
                TOP MEAS:▲... LAST MEAS:...
```

You can use this function to delete any Pitch Bend data from a selected group of measures without having to delete individual Pitch Bend entries (thus avoiding what could prove to be a time-consuming process, as the QX1 automatically enters numerous Pitch Bend commands at small time intervals, when you use the Pitch Bend on your performance instrument).

NOTE:

Having carried out this function, you can enter new Pitch Bend data by recording onto the same track (overdubbing—see Record Mode) and simply operating your Pitch Bend wheel.

* TOP MEAS:...

Set the number of the first measure of the passage for which you wish to delete Pitch Bend (range 001 ~ 999).

* LAST MEAS:...

Set the number of the last measure of the passage for which you wish to delete Pitch Bend (range 001 ~ 999).

15 CONTROL DELETE

To remove any Control Change data from a selected passage.

```
CTRL DELETE
CTRL:▲..        TOP MEAS:... LAST MEAS:...
```

You can use this function to delete any Control Change data from a selected group of measures without having to delete individual Control Change entries (thus avoiding what could prove to be a time-consuming process, as the QX1 automatically enters numerous Control Change commands at small time intervals, when you use the effects controllers on your performance instrument).

NOTE:

Having carried out this function, you can enter new Control Change data by recording onto the same track (overdubbing–see Record Mode) and simply operating your effects controllers.

* CTRL: ...

This is used to input the number of the effect controller you wish to delete.

* TOP MEAS:...

Set the number of the first measure of the passage for which you wish to delete Pitch Bend (range 001 ~ 999).

* LAST MEAS:...

Set the number of the last measure of the passage for which you wish to delete Pitch Bend (range 001 ~ 999).

16 EDIT CANCEL

To delete all data chages made during an editing session.

```
SURE ? YES(Y)/NO(N)
EDIT CANCEL
```

Edits are not stored onto the disk until you press one of the four main mode keys. Prior to this, you can cancel all new data that you have entered, by using the Edit Cancel function. This is useful if you have been examining data and trying out some edits, and wish to return to the original data.

To cancel the edit, press [Y] while holding down [SHIFT↑] . The LCD will return to the Edit Mode Bank Directory display.

If you do not wish to cancel the edit, press [N] while holding down [SHIFT↑] . The LCD will return to the performance data display.

17 MEASURE ERASE

Erases (deletes) all data between specified measures.

```
MEASURE ERASE
              TOP MEAS:... LAST MEAS:...
```

This function may be called during a playback data display. Specification of the range of measures to be deleted is carried out in the same way as for BEND DELETE. MEASURE ERASE only functions for the currently selected edit track.

UTILITY MODE–Main Job

The Utility Mode has one main job: Bank Directory.

BANK DIRECTORY

Press [UTLT], and see

```
UTILITY MODE          PROT:0     USE:000K
BANK 01    ********   TEMPO:***  TIME:**/**
```

Press [↑U] or [↓V] to select bank number (range 1 ~ 32) for any Utility Mode Job Commands that include a bank number (you can also select a bank when in a Job Command).

The LCD gives the identical information to the Play mode's Bank Directory display.

UTILITY MODE–Job Commands

All 27 Job Commands are entered directly after pressing [UTLT] .

Entering 00 in the Job Command Select display will cause the LCD to return to the Bank Directory display.

01 DISK CHANGE

To change a floppy disk when the QX1 power is turned on.

The display and function for this job command is identical to the Disk Change job command in the PLAY mode.

02 STATUS

Indicates the amount of used and available memory space, and the number of used and available Banks, Chains, and Bulk Data.

```
CHAIN:a BANK:cc BULK:ee 999K BYTES USED.
CHAIN:b BANK:dd BULK:ff hhhK BYTES FREE.
```

* CHAIN: a

* CHAIN: b

Indicates how may of the 8 chains contain data (a) and how many are unused (b).

* BANK: cc

* BANK: dd

Indicates how many of the 32 banks contain data (cc) and how many are unused (dd).

* BULK: ee

* BULK: ff

Indicates how many of the 16 bulk data contain data (ee) and how many are unused (ff).

* gggK BYTES USED.

* hhhK BYTES FREE.

Indicates in kilobytes how much of the floppy disk (total capacity 795 kilobytes on faultless disks) contains data (ggg) and how much is unused (hhh).

03 CHAIN EDIT

To assemble chains for chain playback of banks.

The chain name, the order of banks, and the number of repetitions of each bank may be set. Existing chains may be modified.

CHAIN SELECT

```
CHAIN EDIT
CHAIN n
```

* **CHAIN n**

Set the chain number (range 1 ~ 8). When you press [ENTER] the LCD will switch to CHAIN NAME SET if you have selected a blank chain, and to CHAIN STEP if you have selected a chain that contains data.

CHAIN NAME SET

```
CHAIN NAME SET
CHAIN n   ▲.......
```

Enter a chain name of up to 8 characters. This operation may be left out by simply pressing [ENTER].

CHAIN STEP

```
STEP  ss
BANK nn   BBBBBBBB          PLAY:pp
```

* **STEP ss**

The number of the chain step (range 01 ~ 32) indicating the order in which banks are played.

* **BANK nn**

The bank number range (01 ~ 32) for each respective chain step.

* **BBBBBBBB**

The bank name for each respective chain step. Data cannot be entered here; the bank name is automatically entered when you enter the bank number. If the step or bank contains no data, this will show ********.

* **PLAY:pp**

Indicates the number of repetitions of the bank (range 01 ~ 32) for each respective chain step. This will be set to 01 for a blank chain step.

There are three possible operations in this mode:

1. Creating a new Chain

From the CHAIN STEP display, enter the BANK number and PLAY number. When you press [ENTER] the LCD will switch to the next step, so that you can enter the data for the next step. At any time, you can scroll backwards or forwards through the chain using the [↑U] and [↓V] keys.

2. Inserting Data into a Chain

To insert data into an existing chain scroll through to the required step, then press [INSERT]. The LCD will switch to

```
INSERT ss
BANK ▲.   ********          PLAY:01
```

You can now enter the BANK and PLAY numbers. When you press [ENTER] the LCD will switch to the next step, remaining in the Insert mode, so that you can insert further steps. If you do not wish to insert further steps, pressing [INSERT] again will return the LCD to the CHAIN STEP display.

Inserting a step moves all subsequent steps forwards by one step. You cannot insert steps if the chain contains 32 steps.

3. Deleting a Chain Step

Scroll through to the desired step then press [DELETE]. All subsequent steps will be moved backwards by one step.

04 CHAIN NAME CHANGE

To change the name of a selected chain.

CHAIN SELECT display

```
CHAIN NAME CHANGE
CHAIN n
```

* CHAIN n

Enter the number of the chain. The LCD will switch to the CHAIN NAME SET display.

CHAIN NAME SET display

```
CHAIN NAME CHANGE
CHAIN n   CCCCCCCC
```

* CHAIN n

Indicates the chain number. Data cannot be entered here.

* CCCCCCCC

Enter a name of up to eight characters. If the new name is shorter than the old name, erase the extra letters by pressing [SPACE].

When you hit [ENTER], the LCD will return to the Bank Directory display.

05 CHAIN DIRECTORY

Data cannot be entered in this mode. It is simply a directory of the chains, which can be scrolled through by using the [↑U] and [↓V] keys.

```
CHAIN DIRECTORY
CHAIN n   CCCCCCCC
```

* CHAIN n

Indicates the chain number.

* CCCCCCCC

Indicates the chain name, blank chains will show ********.

06 CHAIN DELETE

To delete an entire selected chain.

NOTE:

When you delete a chain, the music data contained in its banks remains untouched.

CHAIN SELECT display

```
CHAIN DELETE
CHAIN n
```

* CHAIN n

Enter the number of the chain (range 1 ~ 8). The LCD will switch to the CHAIN DELETE display.

CHAIN DELETE display

```
SURE ? YES(Y)/NO(N)
CHAIN n
```

To delete the chain, press [Y] while holding down [SHIFT]. If you do not wish to delete the chain, press [N] while holding down [SHIFT].

In both cases, the LCD will return to the Utility Mode Bank Directory display.

07 BANK NAME CHANGE

To change the name of a bank.
To change the tempo of a bank.
On/Off of Bank Memory Protect.

BANK SELECT display

```
BANK NAME CHANGE
BANK nn
```

* BANK nn

Enter the number of the bank (range 1 ~ 32). When you press [ENTER], the LCD will switch to the BANK NAME CHANGE display.

BANK NAME CHANGE display

```
BANK NAME CHANGE    PROT:p    USE:000
BANK nn   BBBBBBBB  TEMPO:ttt TIME:aa/bb
```

During this diplay you can change the bank name, and bank tempo, and switch on/off the bank memory protect. Once you press [ENTER] the LCD will return to the bank directory display.

* PROT: p

Indicates whether the bank memory protect is on or off.

Enter 0 to turn the bank memeory protect OFF.

Enter 1 to turn the bank memory protect ON. This will protect the bank data from accidental changes, as data cannot be entered when this is on.

* BBBBBBBB

Enter a name of up to eight characters. If the new name is shorter than the old name, erase the extra letters by pressing [SPACE].

* TEMPO: ttt

Enter a new tempo (range 040 ~ 280 quarter notes per minute).

The rest of the BANK NAME CHANGE display is identical to the Bank Directory display.

08 BANK BACKUP

To copy the data of a bank from one floppy disk to another floppy disk.

This function lets you copy the entire data of a bank to another floppy disk. This prevents loss of data due to damage, operational errors or equipment malfunctions, and is highly recommended, particularly for important bank data.

To prevent accidental copying of a bank onto the same floppy disk, this operation only works for disks with two different ID's.

BANK BACKUP display

```
BANK BACKUP
FROM BANK nn              TO BANK nn
```

* FROM BANK nn

Enter the number of the bank you wish to copy (source bank).

* TO BANK nn

Enter the number of the bank you wish to copy to (destination bank).

When you press [ENTER] the LCD will switch to the next display.

SET ORIGINAL DISK display

```
BANK BACKUP
SET ORIGINAL DISK & HIT ENTER KEY !
```

When you see this display, insert into the disk drive the disk containing the source bank, and press [ENTER]. If the QX1 already contains the appropriate disk, simply press [ENTER].

The LCD will show the "EXECUTING NOW!!" display while the QX1 reads the data of the bank, then it will switch to the next display.

SET DUPLICATE DISK display

```
BANK BACKUP
SET DUPLICATE DISK & HIT ENTER KEY !
```

When you see this display, insert the disk containing the destination bank, and press [ENTER].

NOTE:

If you have not inserted a new disk, or if the new disk has the same ID as the old one, the flashing "ILLEGALID"message will appear. This can be reset by pressing [ENTER]. Then you can insert another disk, and press [ENTER], to start the data copying process.

If the destination bank contains data, the LCD will switch to

```
SURE ? YES(Y)/NO(N)
BANK nn EXISTS.
```

If you still wish to copy the bank, press [Y] while holding down [SHIFT!].

If you do not wish to copy the bank, press [N] while holding down [SHIFT!]. The LCD will return to the bank directory display, and you can select job command 08 again and copy the data into another bank.

The LCD will show the "EXECUTING NOW!!" display while the QX1 copies the data onto the new disk, then it will switch to the next display.

NOTE:

Up to 30 kilobytes of data may be copied in a single operation. If the bank data is larger than this, the LCD will return to the SET ORIGINAL DISK display. Repeat the same operation until all the data has been copied.

BANK BACKUP FINISHED display

```
BANK BACKUP FINISHED
SET DISK & HIT ENTER KEY !
```

Indicates that the data has been copied. You can insert your original disk and hit [ENTER], or if you wish to use the disk that is currently in the QX1, press [ENTER].

The LCD will return to the bank directory display.

09 BANK COPY

To copy the entire data of a bank to another bank on the same disk.

```
BANK COPY
FROM BANK nn          TO BANK nn
```

* FROM BANK nn

Enter the number of the bank you wish to copy (source bank).

* TO BANK nn

Enter the number of the bank you wish to copy to (destination bank).

When you press [ENTER] the bank will be copied. During this process the LCD will show "EXECUTING NOW!!" followed by the bank directory display.

If the destination bank already contains data, the LCD will switch to

```
SURE ? YES(Y)/NO(N)
BANK nn EXISTS.
```

If you still wish to copy the bank, press [Y] while holding down [SHIFT ↑].

If you do not wish to copy the bank, press [N] while holding down [SHIFT ↑]. The LCD will return to the bank directory display, and you can select job command 09 again and copy the data into another bank.

10 BANK DELETE

To delete entire data of a bank.

BANK DELETE display

```
BANK DELETE
BANK 01
```

* BANK nn

Enter the number of the bank you wish to delete. The LCD will switch to

```
SURE ? YES(Y)/NO(N)
BANK nn
```

If you wish to delete the bank, press [Y] while holding down [SHIFT ↑]. The LCD will show "EXECUTING NOW!!" while deleting, then return to the bank directory display.

If you do not wish to delete the bank, press [N] while holding down [SHIFT ↑]. The LCD will return to the bank directory display, and you can select job command 10 again if you wish to delete another bank.

11 DISK INITIALIZE

To initialize new floppy disks or disks that have been used with equipment other than the QX1.

The O.M. contains a highly detailed explanation of this important operation, in the SETTING UP chapter, and we recommend reading it thoroughly.

NOTE:

This function can also be used to clear all performance data from a disk.

DISK INITIALIZE display

```
DISK INITIALIZE
SET DISK & HIT ENTER KEY !
```

When you see this display, insert the disk that you wish to initialize, and press [ENTER]. The LCD will switch to

```
SURE ? YES(Y)/NO(N)
```

To initialize the disk, press [Y] while holding down [SHIFT ↑]. The LCD will show "EXECUTING NOW!!" while initializing, then it will switch to DISK ID SET display (Job Command 12) so that you can give the newly-initialized disk an ID. The initializing process takes about 3 minutes.

If you do not wish to initialize the disk, press [N] while holding down [SHIFT ↑]. The LCD will return to the bank directory display, and you can select job command 11 again if you wish to initialize another disk.

12 DISK ID SET

To name or rename a floppy disk.

```
DISK ID SET
▲.....................................
```

This display appears when you select Job Command 12, or after initializing a floppy disk (Job Command 11).

Enter an ID up to 40 characters long. The LCD will then return to the bank directory display.

NOTE:

We recommend that you give all disks different ID's. Their ID's will be checked during the BANK BACKUP function (job command 08) and the DISK BACKUP function (job command 13), both of which will NOT operate if the two disks used have the same ID.

13 DISK BACKUP

To copy the entire data of a floppy disk to another floppy disk.

This prevents loss of data due to damage, operational errors or equipment malfunctions, and is highly recommended, particularly for important data.

This operation only works for disks with two different ID's.

SET ORIGINAL DISK display

```
DISK BACKUP
SET ORIGINAL DISK & HIT ENTER KEY !
```

When you see this display, insert into the disk drive the disk you wish to copy, and press [ENTER]. If the original disk is already in the QX1, simply press [ENTER]. The LCD will show the "EXECUTING NOW!!" display while the QX1 reads the data on the disk, then it will switch to the next display.

SET DUPLICATE DISK display

```
DISK BACKUP
SET DUPLICATE DISK & HIT ENTER KEY !
```

When you see this display, insert the copy disk and press [ENTER].

NOTE:

If you have not inserted a new disk, or if the new disk has the same ID as the old one, the flashing "ILLEGAL ID" message will appear. Insert another disk, and press [ENTER], to start the data copying process.

If the copy disk contains data, the LCD will switch to

```
SURE ?.YES(Y)/NO(N)
BANK    EXISTS.
```

If you still wish to copy the disk, press [Y] while holding down [SHIFT].

If you do not wish to copy the disk, press [N] while holding down [SHIFT]. The LCD will return to the SET ORIGINAL DISK display, and you can insert your original disk again and copy it onto another disk.

The LCD will show the"EXECUTING NOW!!"display while the QX1 copies the data onto the new disk, then it will switch to the next display.

NOTE:

Up to 30 kilobytes of data may be copied in a single operation. If the data is larger than this (which is quite usual – the disk can hold up to 795 kilobytes), the LCD will return to the SET ORIGINAL DISK display. Repeat the same operation until all the data has been copied.

DISK BACKUP FINISHED

```
DISK BACKUP FINISHED
SET DISK & HIT ENTER KEY !
```

Indicates that the data has been copied. You can insert your original disk and hit [ENTER], or if you wish to use the disk that is currently in the QX1, press [ENTER].

The LCD will return to the bank directory display.

14 TRACK MIX

To copy the data of a track to another track.

```
TRACK MIX
FROM BANK nn TRACK .  TO BANK nn TRACK .
```

This function copies the data of a track to another track. If the destination track contains data, it is not deleted, and the two tracks are mixed together and cannot be separated afterwards. You can mix as many times as you wish (the actual limit on the QX1 is when you have 127 notes on the same clock--so it's virtually unlimited).

The following conditions should be noted:

Tempo change data will NOT be copied.

You CANNOT mix two tracks that have different time signatures.

All effects data (control changes) will also be copied. For example, if you mix track 1 (with sustain) with track 2 (without sustain) all the data on track 2 will now have sustain.

*** FROM BANK nn TRACK .**

Enter the bank and track number of the track you wish to copy.

*** TO BANK nn TRACK .**

Enter the bank and track number of the destination track.

When you press [ENTER] the LCD will switch to

```
SURE ? YES(Y)/NO(N)
FROM BANK aa TRACK b  TO BANK cc TRACK d
```

To copy the track, press [Y] while holding down [SHIFT↑].

If you do not wish to copy the track, press [N] while holding down [SHIFT↑]. The LCD will return to the bank directory display.

The LCD will show the "EXECUTING NOW!!" display while the QX1 copies the data onto the new track, then it will return to the bank directory display.

15 TRACK DELETE

To delete the entire data of a selected track.

```
TRACK DELETE
BANK nn TRACK .
```

*** BANK nn TRACK .**

Enter the bank and track number of the track you wish to delete. When you press [ENTER] the LCD will switch to

```
SURE ? YES(Y)/NO(N)
BANK aa TRACK b
```

To delete the track, press [Y] while holding down [SHIFT↑].

If you do not wish to delete the track, press [N] while holding down [SHIFT↑]. The LCD will return to the bank directory display.

The LCD will show the "EXECUTING NOW!!" display while the QX1 deletes the data, then it will return to the bank directory display.

If only one track contains data, only the music data will be deleted while the MEASURE, BANK NAME, TIME SIGNATURE and TEMPO data will remain.

16 DATA IN

To receive the data of an entire bank from another QX1 or external computer.

```
DATA IN
BANK nn
```

The data must conform to the System Exclusive messages of the MIDI system. Connect the appropriate MIDI OUT of the other QX1 or other MIDI device to the MIDI IN of your QX1. Set the MIDI reception channel of the QX1 to match the MIDI transmission channel of the other MIDI device (use Record mode, job command 04).

*** BANK nn**

Enter the number of the bank that is to receive the data.
When you press [ENTER] the LCD will switch to

```
SURE ? YES(Y)/NO(N)
BANK nn EXISTS.
```

or to

```
SURE ? YES(Y)/NO(N)
BANK nn
```

If the selected bank contains data.

To set the QX1 in its standby mode so that it can receive the data, press [Y] while holding down [SHIFT↑]. The LCD will switch to the "WAITING!!" display. You can then transmit the data from the other MIDI DEVICE. If it is another QX1, you will use Job Command 17, DATA OUT.

The LCD will switch to "EXECUTING NOW!!" while the data is being transferred, then return to the bank directory display when the transfer is complete.

If you do not wish to receive the data, press [N] while holding down [SHIFT !]. The LCD will return to the bank directory display.

17 DATA OUT

To transmit the data of an entire bank to another QX1 or external computer.

```
DATA OUT
BANK on  TERMINAL:. MIDI CH:.. WAIT:0
```

Connect one of the QX1's MIDI OUT terminals to the MIDI IN of the other QX1 or other MIDI device.

*** BANK nn**

Enter the number of the bank from which you wish to transmit the data.

*** TERMINAL:.**

Enter the number of the QX1 MIDI OUT terminal from which data will be sent.

*** MIDI CH:..**

Enter the number of the MIDI transmission channel, to match the MIDI reception channel of the other QX1 or MIDI device.

*** WAIT: 0**

The data is sent in blocks of 1 kilobyte.

You can enter the waiting time, in seconds, between blocks, for instruments that cannot receive large amounts of data at high speed. The range is 0 ~ 9 seconds.

When you press [ENTER], the LCD will switch to

```
SURE ? YES(Y)/NO(N)
BANK on  TERMINAL:t MIDI CH:mm WAIT:w
```

To transmit the data (once the receiving equipment is in its standby mode), press [Y] while holding down [SHIFT !]. The LCD will switch to "**EXECUTING NOW !!**" while the data is being transferred, then return to the bank directory display when the transfer is complete.

If you do not wish to transmit the data, press [N] while holding down [SHIFT !]. The LCD will return to the bank directory display.

18 TIME DISPLAY

To check the timing of a bank or part of a bank.

You can choose which part of the bank to time, by setting the first and last measures, and you can also check the timing of the bank when set to any tempo.

BANK/MEASURE SELECT display

```
TIME DISPLAY
BANK:on        TOP MEAS:... LAST MEAS:...
```

*** BANK: nn**

Enter the bank number.

* TOP MEAS:...

Enter the measure number (range 001 ~ 999) for the beginning of the section you wish to time.

* LAST MEAS:...

Enter the measure number (range 001 ~ 999) for the end of the section you wish to time.

When you press [ENTER] the LCD will show "EXECUTING NOW!!" then switch to the TIME display.

TIME display

```
BANK nn        TOP MEAS:aaa LAST MEAS:zzz
cc MIN dd.d SEC              BY TEMPO:ttt
```

Indicates the data entered in the previous display, plus the following information:

* cc MIN dd.d SEC

Indicates the time of the selected passage, in minutes, seconds, and 1/10th seconds.

* BY TEMPO:ttt

Indicates the programmed tempo of the bank. If you alter the tempo setting using the TEMPO CONTROLLER, the timing will change accordingly. You can also type in a tempo setting. Then press [ENTER] to read the new timing.

To leave the TIME display, press any of the main mode keys, or [JOB COMMAND] if you wish to select another job command.

19 MEASURE INSERT

To insert blank measures into a given bank.

```
MEASURE INSERT
BANK:nn TOP MEAS:... SIZE:... TIME:../..
```

You can extend any bank using the function. When measures are inserted, all subsequent measures will be moved forward accordingly. Measures will be inserted simultaneously into all tracks of the selected bank.

* BANK nn

Enter the bank number.

* TOP MEAS:...

Enter the measure number of the point at which you wish to insert measures (range 001 ~ 999).

* SIZE:...

Enter the number of blank measures you wish to insert.

* TIME:../..

Enter the time signature of the measures to be inserted.

When you press [ENTER] the LCD will switch to

```
SURE ? YES(Y)/NO(N)
BANK:nn TOP MEAS:mmm SIZE:sss TIME:aa/bb
```

To insert the measures, press [Y] while holding down [SHIFT]. The LCD will switch to "EXECUTING NOW!!" while the measures are being inserted, then return to the bank directory display.

If you do not wish to insert measures, press [N] while holding down [SHIFT]. The LCD will return to the bank directory display.

20 MEASURE DELETE

To delete any selected measures in a bank.

```
MEASURE DELETE
BANK:nn        TOP MEAS:... LAST MEAS:...
```

This function deletes measures from all tracks in a bank simultaneously, and all subsequent measures will be moved backward accordingly.

* BANK: nn

Enter the bank number.

* TOP MEAS:...

Enter the number of the first measure of the section you wish to delete (001 ~ 999).

* LAST MEAS:...

Enter the number of the last measure of the section you wish to delete (001 ~ 999).

When you press [ENTER] the LCD will switch to

```
SURE ? YES(Y)/NO(N)
BANK:nn        TOP MEAS:aaa LAST MEAS:zzz
```

To delete the measures, press [Y] while holding down [SHIFT]. The LCD will switch to "EXECUTING NOW!!" while the measures are being deleted, then return to the bank directory display.

If you do not wish to delete measures, press [N] while holding down [SHIFT]. The LCD will return to the bank directory display.

21 BULK IN

To load onto the floppy disk bulk data (memory data) from external MIDI devices.

This function allows you to store large amounts of MIDI memory data, including the following.

* **The voice data of DX synthesizers.**
* **The performance data of the DX1.**
* **The voice and function data of the TX FM Tone Generator systems.**
* **The parameter data and pattern data of the RX11 Digital Rhythm Programmer.**

The floppy disk contains 16 separate bulk data memories. These are capable of storing, for example, the entire voice and function data of the TX816 (8 voice data plus 8 function data).

IMPORTANT: The data is loaded in the QX1 by connecting its MIDI IN terminal to the MIDI OUT terminal of the external MIDI device. You must also connect one of the QX1's MIDI OUT terminals to the MIDI IN terminal of the external MIDI device, so that the device can receive the QX1's DUMP REQUEST signal. This will command it to transmit the data to the QX1.

BULK IN display

```
BULK IN
BULK nn TERMINAL:. MIDI CH:.. FORMAT:...
```

* BULK nn

Enter the bulk number (range 01 ~ 16).

* TERMINAL:.

Enter the number of the MIDI OUT terminal which will output the DUMP REQUEST signal.

* MIDI CH:..

Enter the number of the MIDI Channel through which the DUMP REQUEST signal will be sent (the same number as the external MIDI device is set to).

* FORMAT:...

Enter the format number corresponding to that of the BULK DATA transmission source (range 000 ~ 127). The format numbers for Yamaha MIDI instruments are as follows.

FORMAT NO.	BULK DATA	
000	1 VOICE BULK	DX1, TX
001	1 PERFORMANCE BULK	DX1, TX
002	64 (32) PERFORMANCE BULK	DX1, TX
009	32 VOICE BULK	DX1, TX
011	PARAMETER BULK	RX11
126	PATTERN /SONG BULK	RX11

NOTE:

For other external MIDI devices, see the note in the WAITING display section below.

When you press [ENTER] the LCD will switch to the BULK NAME SET display.

However, if the selected bulk already contains data, the LCD will switch to

```
SURE ? YES(Y)/NO(N)
BULK nn TERMINAL:. MIDI CH:.. FORMAT:...
```

If you wish to store the new data, thereby deleting the data already in the bulk, press [Y] while holding down [SHIFT↑]. The LCD will switch to BULK NAME SET. If you do not wish to store new data, press [N] while holding down [SHIFT↑]. The LCD will return to the bank directory display.

BULK NAME SET display

```
BULK NAME SET
BULK nn    ▲........
```

* **BULK nn**

Indicates the selected bulk number. Data cannot be entered here.

* **........**

Enter the bulk name, using up to 8 characters.

NOTE:

This operation may be omitted. Simply press [ENTER] to call up the next display. (Read the NOTE following the next display).

WAITING display

```
WAITING !!
```

Indicates that the QX1 is in the standby mode, ready to receive data.

NOTE:

If data transmission has been activated by using a BULK REQUEST signal (according to the above table of format numbers) the LCD will not show the WAITING display, but will switch straight to "EXECUTING NOW !!".

However, for external units that do not receive BULK REQUEST signals, data transmission is carried out as follows:

During the BULK IN display, enter the following data: TERMINAL" 0, MIDI CH.: 00, FORMAT: 000. Press [ENTER]; enter a bulk name; then press [ENTER] again to call up the WAITING display.

You can then transmit the bulk data from your external MIDI device according to its O.M.

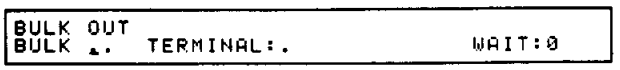
When data transmission commences, the LCD will switch to "EXECUTING NOW !!".

After all data has been sent, the LCD will return to the bank directory display.

To input data from all TX816 slots in one operation, use JOB COMMAND 25, TX VOICE IN.

22 BULK OUT

To transmit memory data stored on the floppy disk to external MIDI devices.



This function only transmits data that was stored on the disk by using the BULK IN function.

Connect one of the QX1's MIDI OUT terminals to the MIDI IN of the other MIDI device.

* BULK nn

Enter the bulk number (range 01 ~ 16).

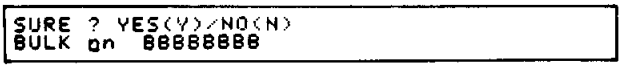
* TERMINAL:.

Enter the number of the QX1 MIDI OUT terminal from which data will be sent.

* WAIT: 0

The data is sent in blocks of 1 kilobyte. You can enter the waiting time, between blocks, in seconds, for instruments that cannot receive large amounts of data at high speed. The range is 0 ~ 9 seconds.

When you press [ENTER], the LCD will switch to



To transmit the data (once the receiving equipment is in its standby mode), press [Y] while holding down [SHIFT ⇑]. The LCD will switch to "EXECUTING NOW!!" while the data is being transferred, then return to the bank directory display when the transfer is complete.

If you do not wish to transmit the data, press [N] while holding down [SHIFT ⇑]. The LCD will return to the bank directory display.

23 BULK DIRECTORY

This function simply lists the 16 bulks and the amount of data stored in each bulk. No data may be entered.

It can be scrolled through by using the [⇑U] and [⇓V] keys.

* BULK nn

Indicates the bulk number.

* BBBBBBBB

Indicates the bulk name. Unused bulks will show ******.

* USE: uuuK

Indicates the amount of data stored in a bulk, in kilobytes.

Exit from this display by pressing [JOB COMMAND] or one of the four main mode keys.

24 BULK DELETE

Deletes bulk data.

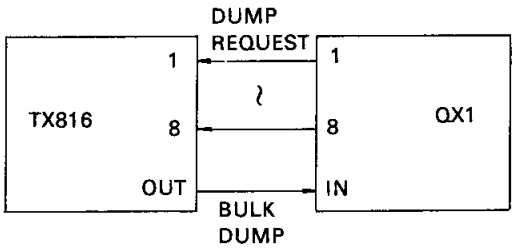
```
BULK DELETE
BULK bb
```

This function deletes data stored in a bulk through the BULK IN or TX VOICE IN functions. Enter the bulk number then press [ENTER] . Answer YES (Y) to the "Are you sure?" prompt to execute the BULK DELETE function.

25 TX VOICE IN

Loads all voice and function data from all slots of the TX816 into one bulk memory.

```
TX VOICE IN
BULK bb                    SLOT:ssssssss
```



With your system set up as shown in the above diagram, specify the bulk number and slot number, then press [ENTER] . Then, following the QX1 prompts, set the OUT SLOT on the TX816, then press [ENTER] on the QX1. This will initiate bulk data transmission from the TX816 to the QX1. This operation is repeated for each slot, following the slot numbers displayed by the QX1.

Always be certain that the TX816 OUT SLOT number is matched to the slot number displayed on the QX1 before pressing [ENTER] .

26 TX VOICE OUT

Transmits bulk data loaded using the TX VOICE IN function to the TX816.

```
TX VOICE OUT
BULK bb     nnnnnnnn    SLOT:ssssssss
```

Specify the bulk number then press [ENTER] . Answer YES (Y) in response to the "Are you sure?" prompt to begin bulk data transmission.

27 TIME SIGN MODIFY

Changes the time signature of a specified range of measures.

```
TIME SIGN. MODIFY
BANK on TOP MEAS:... LAST:... TIME:../..
```

Specify the bank number, TOP and LAST measures, time signature, then press [ENTER] . Answer YES (Y) in response to the "Are you sure?" prompt to execute the TIME SIGN. MODIFY function.

If measures are lengthened using this function the extra space will be filled with rests. If shortened, the excess data will be deleted.

MIDI SPECIFICATIONS

Signal Format

- **TYPE: Non-synchronous serial**
- **BAUD RATE: 31.25 kbaud ±1%**
- **HARDWARE: 5 mA CURRENT LOOP, "0" = CURRENT ON**

Transmission and Reception Data

- **CHANNEL INFORMATION**

Signal	Byte			Data
KEY OFF	STATUS	1000nnnn	n=MIDI channel	0 ~ 15
	DATA 1	0kkkkkkk	k=key no.	0 ~ 127
	DATA 2	0vvvvvvv	v=velocity	0 ~ 127
KEY ON	STATUS	1001nnnn	n=MIDI channel	0 ~ 15
	DATA 1	0kkkkkkk	k=key no.	0 ~ 127
	DATA 2	0vvvvvvv	v=velocity	1 ~ 127
CONTROL CHANGE	STATUS	1011nnnn	n=MIDI channel	0 ~ 15
	DATA 1	0ccccccc *	k=control no.	0 ~ 127
	DATA 2	0vvvvvvv	v=value	0 ~ 127
PROGRAM CHANGE	STATUS	1100nnnn	n=MIDI channel	0 ~ 15
	DATA 1	0ppppppp	p=program no.	0 ~ 127
PITCH BEND	STATUS	1100nnnn	n=MIDI channel	0 ~ 15
	DATA 1**	0vvvvvvv	v=value	0 ~ 127
	DATA 2	0vvvvvvv	v=value	0 ~ 127

* Example of CONTROL NOs. (DX Synthesizer Series): see table below

** DATA BYTE 2 is only used for a 14 bit data type.

0ccccccc	CONTROLLER
00000001 (=1)	MODULATION WHEEL
00000010 (=2)	BREATH CONTROLLER
00000100(=4)	FOOT CONTROLLER
00000101(=5)	PORTAMENTO SLIDER
00000110(=6)	DATA ENTRY SLIDER
00000111(=7)	VOLUME
01000000(=64)	SUSTAIN SW
01000001(=65)	PORTAMENTO SW
01100000(=96)	DATA INCREMENT (+1) SW
01100001(=97)	DATA DECREMENT (−1) SW
01111100(=124)	OMNI MODE OFF
01111101(=125)	OMNI MODE ON
01111110 (=126)	MONO MODE
01111111(=127)	POLY MODE

• SYSTEM REALTIME MESSAGE

Signal	Byte	Reception	Transmission
MIDI CLOCK	11111000	During ON PLAYING	Always*
START	11111010	During MEASURE 001 while ON PLAYING	When RUN key has been pressed during MEASURE 001*
CONTINUE	11111011	During ON PLAYING	When RUN key has been pressed*
STOP	11111101	During ON PLAYING	When STOP key has been pressed*
ACTIVE SENSING	11111110	x	Received every 240 msec.

* Transmitted from MID OUT 8.

• SYSTEM EXCLUSIVE MESSAGE (For DX Synthesizer series)

Signal	Byte			Data
ONE VOICE BULK	STATUS	11110000		
	MAKER ID	01000011		
	SUB STATUS	0000nnnn	n=MIDI channel	0 ~ 15
	FORMAT	0fffffff	f=format no.	0
	BYTE COUNT 1,2			
	DATA 1 ~ 155			
	CHECK SUM			
	END OF EXCLUSIVE			
ONE PERFORMANCE BULK	STATUS	11110000		
	MAKER ID	01000011		
	SUBSTATUS	0000nnnn	n=MIDI channel	0 ~ 15
	FORMAT	0fffffff	f=format no.	1
	BYTE COUNT 1, 2			
	DATA 1 ~ 94			
	CHECK SUM			
	END OF EXCLUSIVE			
VOICE BULK	STATUS	11110000		
	MAKER ID	01000011		
	SUB STATUS	0000nnnn	n=MIDI channel	0 ~ 15
	FORMAT	0fffffff	f=format no.	9
	BYTE COUNT 1,2			
	DATA 1 ~ 4096			
	CHECK SUM			
	END OF EXCLUSIVE			
PERFOR-MANCE	STATUS	11110000		
	MAKER ID	01000011		
	SUB STATUS	0000nnnn	n=MIDI channel	0 ~ 15
	FORMAT	0fffffff	f=format no.	2
	BYTE COUNT 1,2			
	DATA 1 ~ 4096			
	CHECK SUM			
	END OF EXCLUSIVE			
REQUEST	STATUS	11110000		
	MAKER ID	01000011		
	SUB STATUS	0010nnnn	n=MIDI channel	0 ~ 15
	FORMAT	0fffffff	f=format no.	0 ~ 127
	END OF EXCLUSIVE			

(Digital Sequence Recorder)
Model QX1 MIDI Implementation Chart

Date : 10/1, 1984
Version : 1.0

Function ...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	1 1-16	1 1-16	
Mode Default Messages	POLY, MONO OMNI on, OMNI off	POLY, MONO % OMNI on, OMNI off %	
Note Number : True voice	0-127 **********	0-127 %	
Velocity Note ON Note OFF	o 9nH V=1-127 x 8nH V=64	o % x	
After Key's Touch Ch's	x x	x x	
Pitch Bender	o	o * %	* ON/OFF
0- 63 64-121 Control Change	o o	o * % o %	* ON/OFF
Prog Change : True #	o **********	o 0-127 %	
System Exclusive	o	o %	
System : Song Pos : Song Sel Common : Tune	x x x	x x x	
System : Clock Real Time : Commands	o ** o **	o o	** only from #8
Aux : Local ON/OFF : All Notes OFF Mes- : Active Sense sages : Reset	o o o x	o % x x x	
Notes	% Recognized and transmitted as record data.		

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO

o : Yes
x : No

INDEX

NOTE:

None of the listings in the CONTENTS are included in this index. Its purpose is to list alternate references to the modes and functions of the QX1, in case you wish to find, say, a job command but are not sure which one performs the function you have in mind. For example, MIDI Channel setting refers to the OUTPUT ASSIGN job command.

GLOSSARY

NOTE:

The definitions in this glossary explain the use of each term when applied to the QX1 or other Yamaha digital music instrument, although some general definitions are included. Any terms referring to parameters or functions of the DX7 are explained in the Owner's Manual (e.g. portamento, glissando, etc.) and are not included in this glossary.

Backup

Refers to any "safety copy" so that you are covered in case the original is damaged or lost. In the Utility mode, you can use the BANK BACKUP function to copy the data of a bank onto another floppy disk. You can also copy an entire disk to a second floppy disk by using the DISK BACKUP function. "Back Up" (two words) is used when you scroll backwards through music data in the Edit, Play, or Record mode -- it means the same as "Rewind," which is more appropriately applied to magnetic tape.

Bit

The smallest unit of computer information that can be sent. For example, the binary number 1100 is a "4-bit" number. It's first (from the left) bit is 1, corresponding to 'Pulse'. It's third bit is 0, corresponding to 'No Pulse'. See the HOW THE MIDI SYSTEM WORKS chapter in the O.M.

Binary

Refers to numbers based on powers of 2, as opposed to the normal Decimal numbers based on powers of 10. The Binary system enables a computer to send any numerical information. See the HOW THE MIDI SYSTEM WORKS chapter in the O.M.

Bulk

Describes a large amount of data, which may be transferred (dumped) in one operation. For example, in the Utility mode you can dump all the voice and function data of a TX816 into the QX1.

Byte

A group of bits. In the MIDI system, most simple commands are sent as an 8-bit byte. For example, among the first MIDI signals that are transmitted when you play back a track is the Status byte 1100nnnn. The first part of this byte, 1100, means "here comes the MIDI channel number": nnnn indicates the MIDI channel number, which can range from 0000 for channel 1 to 1111 for channel 16. See the HOW THE MIDI SYSTEM WORKS chapter in the O.M. for more explanation.

Command

Another word for instruction, as applied to computers. You can command the QX1 to enter a certain mode, or to transmit data, for example.

Cursor

A small horizontal mark on the LCD that indicates where you can type in alphabetical or numerical data. Once you type in a character, the cursor usually moves on to the next space. It can also be moved by using the [←S] and [←T] keys on the Data Keyboard.

Daisy Chaining

A term used in the MIDI system, to describe the connecting up of two or more MIDI devices so that the same MIDI signal controls them all. For example, a single DX7 could control any number of other DX7's using the following daisy-chain

procedure: Connect MIDI OUT of DX7 no.1 to MIDI IN of DX7 no.2 Connect MIDI THRU of DX7 no.2 to the MIDI IN of DX7 no.3. This sends DX7 no.1's MIDI signals to DX7 no.3. Further daisy-chaining is done by connecting MIDI THRU of DX7 no.3 to MIDI IN of DX7 no.4, and so on.

Data

Another word for computer information, of any kind. This can apply to parameters of voices, functions of voices, musical pitches or intervals, note lengths, tempos, etc. The Data IN/Data OUT functions in the Utility mode enable you to send or receive data in units of one bank, when the QX1 is connected to a second QX1 or similar MIDI device.

Digital

In essence, anything expressed in numbers. Digital instruments function by reducing all the elements of sound to numbers, which can be handled, and even created, by computer technology. Digital music functions in the same way, reducing all elements of music (timing, volume, pitch, etc.) to numbers. Digital recording also reduces musical signals to numbers, so that what is stored on tape is pure information rather than audio signals, and hence is completely distortion-free.

Disk

See floppy disk.

Dump

Transfer a large amount of data from one MIDI device to another. For example, the Dump All Voices and Functions sub-mode on the TX816 allows you to dump its entire voice data into the QX1, where it can be permanently stored on floppy disks.

Enter

To record data onto the floppy disk. When you type in data, and it appears on the LCD, this does not necessarily mean that it has been entered. Pressing the (ENTER) key will record it permanently onto the floppy disk. You can also enter a performance you have just recorded, by pressing any of the four main mode keys. Prior to that, (i.e. if the LCD shows "RECORD READY") it will NOT be entered onto the disk.

Floppy Disk

A compact means of storing data. Originally, computer data was stored on large reel-to-reel tapes (it still is, with large computers). With the introduction of personal computers, it was possible to store data onto regular cassette tapes. In both these cases, finding specified data on tape meant winding through the whole tape until you reached the desired point. This is a rather slow process. Floppy disks, which are made from the same magnetic material as recording tape, allow you to find data much more quickly, by scanning across the disk in the same way that a tone arm moves across a phonograph record. Floppy disks are now the accepted way of storing data for personal computers, and come in various sizes. The QX1 uses 5 1/4" minidisks that can store a whole album's worth of music data.

FM

Frequency modulation. A term often applied to radio broadcasting, where a "carrier" wave (with a frequency higher than the human ear can hear) has its frequency modulated by a "modulator" wave to produce audible sound in listenable frequencies. Yamaha's FM Tone Generation System, incorporated into the TF1 modules and DX synthesizers, uses a similar system to produce sounds. Up to now, most synthesizers created sounds either by filtering frequencies out of a square or sawtooth wave (analog synthesizers) or by combining sine waves at harmonic frequencies (additive synthesis). In both cases, it is difficult to create acoustic type sounds because this requires that the timbre change during the duration of a single note.

The Yamaha FM Tone Generator uses six "operators" -- sine wave generators that can act as carriers or modulators--that interact with each other to produce highly

complex, changing sounds, that are simple to create and control. This unique system enables you to create incredibly realistic acoustic type voices. For a full explanation of FM, read a DX synthesizer Owner's Manual.

Format

See Initializing.

Function Data

Parameters that affect the performance of an FM voice, rather than its actual sound. For example, Pitch Bend, Glissando, Breath Control are all functions, and can be programmed for the DX7 and TX816, and stored on the QX1's floppy disk, using the Bulk In function (Utility Mode, Job Command 21). See the DX7 Owner's Manual for more information on function data.

Gate Time

The length of time a key is held down, which is usually shorter than the overall length of a note, because when you release the key, the sound usually continues and fades. It's as if you open a gate when you press a key, allowing a signal to pass, and when you release the key the gate takes a little time to close and cut off the signal. Gate Time can be expressed as a ratio of the overall note length. When you use the NOTE LENGTH keys on the QX1, the Gate Time is automatically set at 80% (though this can be altered). The Gate Time of, for example, an electric organ would be 100%, as the note stops instantly when you release a key.

ID

In the QX1, ID's (or filenames, or codenames) can be given to individual banks, chains, or bulk data, and may be changed at any time. These ID's can consist of up to 8 characters (numerical or alphabetical). You can also give the floppy disk an ID of up to 40 characters.

Individual

In the INDIVIDUAL mode a TF1 module is controlled by MIDI signals sent to its INDIVIDUAL MIDI IN terminal, and is completely independent from the other TF1 modules. SW1 must be pressed to set the TF1 to INDIVIDUAL, and the corresponding LED will light up.

Initializing (floppy disks)

During the initialization process of a floppy disk, the disk is electronically "divided up" into sectors which will be consecutively filled with data as it is entered. If a batch of data (for example, a track recorded on the QX1) contains more data than one sector of the disk can hold, it uses further sectors, and MIDI signals are automatically created to command the QX1 to move from one sector to the next when playing back or editing the track. This arrangement of sectors is called the format, and varies from one computer to another.

Kilobaud

A unit of measurement of the rate at which computer data is transmitted. One kilobaud is equivalent to 1000 bits per second. The standard MIDI rate is 31.25 kilobaud.

LCD

An abbreviation for Liquid Crystal Display. The QX, DX synthesizers and RX Digital Rhythm programmers all have LCD's to indicate modes, functions, data, etc. LCD's operate by using chemicals that change their light polarization characteristics when a voltage is applied to them. In combination with a constant polarized layer, the voltage-altered crystal cancels out the light completely, forming the black dots which create the alphabetical and numerical symbols in the display. You can test this effect by looking at an LCD with polarized sunglasses -- at a certain angle the display will be completely black.

LED

An abbreviation for Light Emitting Diode, a compact illumination device frequently used as indicators on many electronic equipment. The diode glows when a voltage is applied to it. On the QX1's front panel there are a total of 26 LED's, to indicate modes and functions in use, tracks containing data, and tempo.

Memory Protect

A safety device which prevents music data stored on the QX1's floppy disk from being inadvertantly deleted or altered. Each bank has a separate Memory Protect, which is switched on and off by using Job Command 07 in the Utility mode. In the "PROT" section of the LCD Display you should enter "0" for OFF or "1" for ON.

MIDI

An abbreviation for Musical Instrument Digital Interface. Essentially, a means for digital devices to control each other. This system has revolutionized electronic music and made possible the simplicity and sophistication of Yamaha's digital music instruments. See the HOW THE MIDI SYSTEM WORKS chapter in the O.M.

Mode

Computer controlled instruments contain numerous microcircuits that can be used for a variety of purposes. Switching to a mode instructs the instrument to perform a specified set of functions, usually related to each other. For example, the QX1's Edit mode allows you to examine, create and alter music data in a variety of different ways, while the Utility mode lets you manipulate and organize the same data. The QX1 has four different modes.

Overdub

Generally, to record a musical performance "on top" of an existing recording. On tape, this can be done by mixing the existing recording and the live performance together onto a single track ("sound-on-sound") or recording onto another track separate from the original track (multi-track recording).
With the QX1, it works differently. When you have recorded music data onto a track, you can overdub a subsequent performance directly onto the same track without affecting the original recording. The two performances will now be mixed together and cannot be separated afterwards. See the RECORD MODE--FURTHER OPTIONS chapter. This is a virtually unlimited function--you can continue overdubbing until a maximum of 127 notes are played simultaneously.

Parameter

An individual characteristic of an FM voice, which can be edited and stored. Each FM voice is created by setting the value of 145 editing parameters (voice data) and 23 function parameters (function data). See the DX7 Owner's Manual for more information. When applied to mixing consoles, "parametric EQ" describes equalizers (filters) whose frequency and bandwidth can be changed as well as their level setting.

Program

A verb meaning to enter or create data in a computer. Computers are ideally machines that are capable of doing anything that they are told to do--by themselves they can do nothing. The QX1 is not a computer, it is a computer controlled MIDI instrument that functions in a similar manner--you need to tell it exactly what to do, every step of the way, by programming it in the Record or Edit (Insert) mode. Program can also be a noun; for example, the Yamaha FM Music Composer Program (a ROM cartridge) contains all the information needed to tell the CX5M Music Computer how to organize music data.

Protect

See Memory Protect

RAM

An abbreviation for Random Access Memory. In a computer, the main memory is a RAM, where programs are stored and are always available, prior to being permanently stored on tape or floppy disk. Applied to the DX7, RAM does not refer to the internal memory (although it is, in fact, a RAM). It refers to the RAM cartridges which are purchased separately from the DX7. These cartridges hold the voice data for 32 voices, and are truly random access because each voice can be loaded into or read from the cartridge separately from the others. DX7 RAM cartridges differ from conventional RAM's in that they retain their memory after power is turned off, without the use of a backup battery. This is due to their special EEPROM (Electrically Erasable Programmable Read Only Memory) technology. RAM cartridges cannot store function data. However, DX7 or TX816 function data may be stored on the QX1's floppy disk using the Bulk In function (Utility mode, Job Command 21).

Real Time

Indicates the reception of data at the same speed at which it is created. With the QX1, real time refers to the fact that the QX1 can accept the data created by a live performance on a MIDI instrument, no matter how rapid or complex the music may be.

ROM

An abbreviation for Read Only Memory. Data cannot be entered into this kind of memory; it can only be read from it. The DX synthesizers and KX remote keyboards contain ROM's (not user-accessible). The DX7 and DX1 are supplied with 2 preprogrammed ROM cartridges containing 64 voices each; the DX1 is also supplied with a Performance ROM cartridge containing 64 voice data/function data combinations. These cartridges are not user-programmable--they have fixed memories.

Save

A word meaning the transfer of data from a temporary store to a permanent store. For example, you can "save" DX7 voice data on a RAM cartridge, or if you are using the CX5M Music Computer with the FM Music Composer program cartridge, you can "save" the music data onto a standard cassette tape.

Sequencer

A device that records data in a specific order, so that it can be recalled in its original sequence, and edited or rearranged. The Yamaha QX1 Digital Sequence Recorder is a sophisticated sequencer. It can convert a live (real time) performance on a MIDI instrument into data which is stored in sequence and can be played back at any tempo or in any key, and may be edited to any degree. It can also accept music data one note at a time from its own computer-type keyboard, so that music may be programmed by users who cannot play a music keyboard.

Sub-mode

Computer-controlled instruments such as the QX1 usually have various modes in which they function. Each mode contains several sub-modes which enable the instrument to carry out a specific function. For example, the Copy Measure submode in the Edit mode of the QX1 lets you copy once or up to 99 times, any measure or group of measures, to any destination within a recorded track.

System Exclusive Information

Applies to formats or commands that function only within a given system. For example, the TX816 can be played by virtually any MIDI instrument, but its voices can only be edited by DX synthesizers, due to the System Exclusive Information (specific MIDI commands) that is required to alter voice and function data. A DX keyboard can be switched between SYS INFO UNAVAIL (System Exclusive Information Unavailable--functions like any basic MIDI instrument) to SYS INFO AVAIL (System Exclusive Information Available--can transmit MIDI commands exclusive to Yamaha digital instruments) for editing purposes.

Voice Data

Refers to the parameters that created the sound of a FM voice, as opposed to Function data (see above in glossary), which controls the performance characteristics of a voice. Each voice is created by setting 145 parameters on the DX7 or DX1. Consult a DX Owner's Manual for details.