

MIDI Data Filer
Lecteur de Disquette MIDI
MIDI Data Filer

MDF2



YAMAHA

Operation Manual
Manuel d'utilisation
Bedienungsanleitung

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This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

2. **IMPORTANT:** When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

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CONGRATULATIONS!

You are now the proud owner of a Yamaha MDF2 MIDI Data Filer. This compact data storage unit is capable of storing bulk data from nearly any MIDI-equipped synthesizer, tone generator, or sequencer on convenient 3.5" 2DD floppy disks. The MDF2 is also able to record and playback sequencer data in realtime, a feature which makes it handy for use as a portable sequencer.

To put the MDF2 to work, you will need to connect it to at least one other MIDI device. If you own the Yamaha SY99 music synthesizer or a MIDI-equipped personal computer with a 3.5" disk drive, the MDF2 will also be able to read the data from disks you create with these devices, for maximum flexibility and convenience in data management.

This Operation Manual has been written for easy reference, and includes helpful advice for a wide range of applications. In order to take full advantage of the many capabilities of your MDF2, we urge you to read through the manual carefully first, then keep it on hand for future reference.

FEATURES

• MIDI data recorder capability

The MDF2 is able to receive, store, and re-transmit MIDI System Exclusive data from nearly any MIDI instrument with bulk data transmission capability, including devices made by manufacturers other than Yamaha. The MDF2 can also read and transmit bulk data files created by the Yamaha QX3 sequencer in that device's MDR mode.

• Sequencer capability

The MDF2 is capable of recording sequence data to disk, and playing back this data in realtime. It can also play back data files written by other MIDI devices using Standard MIDI File format 0, as well as ESEQ sequence files created by the Yamaha SY99, SY77, or QX3. Other convenient playback functions allow you to play a program of up to 99 sequence data files in a specified order, and to play back files repeatedly in an endless loop.

• Ample data storage capacity

The MDF2 can store a total of 112 files—including as many as 99 bulk or sequence files—on each 2DD floppy disk. If necessary, a single bulk or sequence data file can occupy the disk's total capacity of roughly 600 kilobytes of data. In sequencer mode, this corresponds to approximately 80,000 notes' worth of sequence data.

• Portability

Since the MDF2 can be powered by batteries as well as by an optional AC adapter, you can use it anywhere, anytime. Six "AA" size batteries will give you approximately four hours of continuous operation.

ABOUT THIS MANUAL

This Operation Manual introduces the MDF2's functions in an order close to that in which you are most likely to be using them. As you read through the manual, you will soon learn how the MDF2 works; and you will find, in addition, a number of hints on how you can put its features to use.

Nearly every operation in this manual is described as a series of simple steps, often including diagrams that make the procedure easy to follow. Supplementary information about the operation will be preceded by the words "Note", "Hint", or "Caution". Hints and notes serve as clues to details about the operation that you will not want to overlook.

For further information regarding the operation of the MDF2, you can refer to the following sections:

■ ***MDF2 Mode Overview (page 16)***

This map summarizes the MDF2's major functions, and serves as a convenient guide to common operations.

■ ***What Error Messages Tell You (page 58)***

If an error message appears in the LCD while you are using the MDF2, refer to this appendix for an explanation of the problem and advice on how to solve it.

This manual is accompanied by the following supplementary documentation:

■ ***Quick Guide cards***

In addition to a handy MDF2 Function Map, the Quick Guide cards give examples of typical data transfer methods featuring the Yamaha QY10, RY30, SY55, and TG77.

■ ***MIDI Implementation Chart***

This chart summarizes the MDF2's MIDI capabilities, and helps you to determine whether the MDF2 is compatible with the other equipment you are using.

■ ***MIDI Data Format***

Advanced MIDI users who do their own programming will want to refer to this document for a detailed description of the MIDI Data Formats used by the MDF2.

TABLE OF CONTENTS

About This Manual	4
Basic Terms and Keywords	6
Introducing the MDF2	8
Preparing to Use the MDF2	10
Supplying Power	10
Connecting a MIDI Device	11
Turning the Power On	11
Formatting a Floppy Disk	12
Handling Floppy Disks	14
MDF2 Mode Overview	16
MDR Mode	19
Receiving Bulk Data	20
Transmitting Bulk Data	23
Notes on MDR Data Reception and Transmission	25
SEQ Mode	27
Recording Sequence Data	28
Playing Back Sequence Data	31
Notes on SEQ Data Recording and Playback	34
JOB Mode	35
Repeating Playback	36
Creating a Playback Program	37
Changing the Record Tempo	39
Selecting a MIDI Sync Mode	40
Enabling MIDI Control Messages	41
Notes on MIDI Synchronization	42

UTILITY mode	43
File Names in UTILITY mode	44
Renaming Files	45
Deleting Files	47
Copying or Appending Files	48
Copying Disks	50
Formatting Disks	52
Displaying Disk Information	53
The Standard MIDI File and ESEQ Formats	54
Advanced File Management Techniques	55
Reading MDF2 Disks with a Computer	55
Changing MDF2 Filename Extensions	56
Applications	58
A Portable MIDI Playback System	58
An Extended MIDI System	58
What Error Messages Tell You	59
About the MIDI Implementation Chart	61
Specifications	62
Index	63

MDR

SEQ

JOB

UTIL

BASIC TERMS AND KEYWORDS

MIDI-related terminology

Here we define several basic terms used in this manual. These terms are frequently used in describing the functions of MIDI equipment.

MIDI

An abbreviation for Musical Instrument Digital Interface, which is the name of an international standard providing for the communication of data between electronic musical instruments. MIDI allows musical instruments such as synthesizers and drum machines to communicate with each other, and to be controlled by sequencers or computers.

MIDI device

Any piece of electronic equipment capable of receiving or sending data in a manner that complies with the MIDI standard. This term is often applied to synthesizers, tone generators, rhythm machines, and sequencers; however, it also includes a variety of peripheral devices including signal processors and patch bays, not to mention MIDI data recorders such as the MDF2.

MIDI data

Data in a format that complies with the MIDI standard. MIDI data can be divided between two broad categories: sequence data and bulk data.

sequence data

The data used to record and play back music. Generally speaking, sequence data consists of note on and off messages, control change messages, and program change messages. In special cases, however, it may also include certain types of system exclusive data.

bulk data

Data transmitted in units known as blocks, usually for the purpose of storage or retrieval. Each MIDI device usually transmits bulk data in a unique format that distinguishes it from the bulk data of other devices; thus, it is also known by the name "system exclusive data". Bulk data is usually not directly related to a musical performance; rather, it is used as a means for transferring large blocks of data, such as voice data, samples, or system setup data, between two MIDI devices.

bulk dump

A transmission of bulk data from one MIDI device to another.

Keywords for MDF2 operation

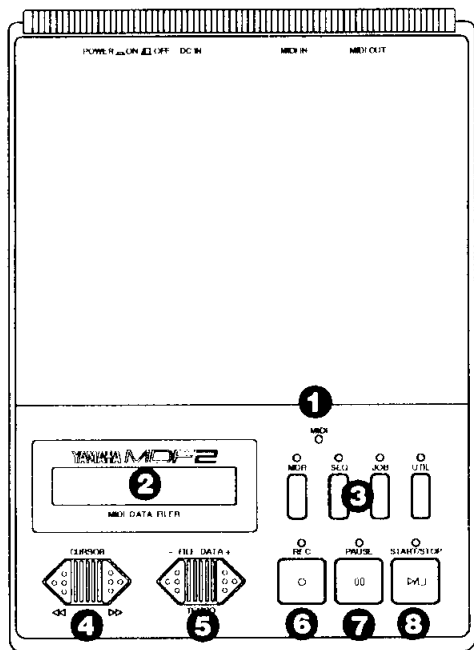
The terms defined below are used throughout the manual to describe functions peculiar to the MDF2. The same words are frequently used in describing other MIDI devices, as well; but keep in mind that in many cases the actual function in question may differ considerably from that performed by the MDF2.

file	A position on a disk where data is stored and assigned a name. The MDF2 is capable of managing up to 99 files on a single disk. The number of files that can be created on any given disk is physically limited by the size of the files and the disk's capacity of approximately 600 kilobytes.
MDR mode	The mode of operation in which the MDF2 is used to receive and transmit MIDI bulk data.
MDR data	The contents of the data file that is created when the MDF2 receives bulk data from another MIDI device.
reception	Generally, the receiving by one MIDI device of MIDI data from another. In this manual, "reception" refers specifically to the MDF2's reception of bulk data. The MDF2 automatically writes the bulk data it receives to disk as an MDR data file.
transmission	Generally speaking, the sending of data from one MIDI device to another. In this manual, "transmission" means specifically the transmission of MDR data by the MDF2. When the MDF2 transmits the contents of an MDR data file, it simultaneously reads data from the disk and outputs it via the MIDI OUT jack.

SEQ mode	The mode of operation in which the MDF2 is used to record and play back sequence data.
SEQ data	The contents of the file that is created when the MDF2 records sequence data. Such data is often referred to as "song data". Strictly speaking, however, such a file can contain as many as several songs, or as little as a single phrase.
recording	The reception of MIDI sequence data. Recording is different from the reception of bulk data in that the data is received in realtime. The MDF2 automatically writes the sequence data it receives to disk as a SEQ data file.
playback	The transmission of sequence data from one MIDI device to another. Playback differs from the transmission of bulk data in that the sequence data is transmitted in realtime. When the MDF2 plays back a SEQ data file, it simultaneously reads data from the disk and outputs it via the MIDI OUT jack.

INTRODUCING THE MDF2

Front panel



1 MIDI LED

This LED lights when the MDF2 is receiving MIDI data. Note that it does not light when data is being transmitted, however.

2 LCD

The LCD displays a variety of information to assist you in operating the MDF2.

3 Mode keys

These keys allow you to switch between the MDF2's four operating modes. The MDF2's modes — MDR mode, SEQ mode, JOB mode, and UTILITY mode — are outlined in the MDF2 Mode Overview on page 16.

4 CURSOR keys

These keys move the cursor in the LCD to the left or right. They can also be used to fast forward or rewind a file during playback in SEQ mode.

5 FILE DATA keys

These keys are used to select a file (in the MDR and SEQ modes) or a function (in the JOB and UTILITY modes). They can also be used to change the tempo during playback in SEQ mode.

6 REC key

This key is used in combination with the **START/STOP** key to begin the reception/recording of data in MDR and SEQ modes.

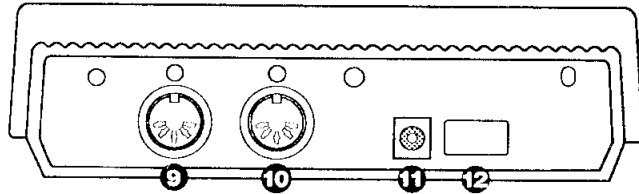
7 PAUSE key

This key pauses the recording or playback of a file in progress in SEQ mode. It can also be used in combination with the **REC** key to tell the MDF2 to standby for recording in this mode.

8 START/STOP key

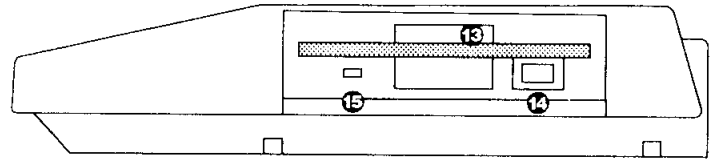
This key is used to start and stop reception/recording or transmission/playback in MDR and SEQ modes. It is also used to execute functions in the JOB and UTILITY modes.

Rear Panel



- 9 MIDI OUT** This jack outputs MIDI data.
- 10 MIDI IN** Received MIDI data is input via this jack.
- 11 DC IN** The DC plug of an optional AC power adapter (Yamaha PA-3, PA-4, or PA-40) can be connected here.
- 12 POWER** This switch turns the power to the MDF2 on and off.

Side Panel



- 13 Disk Drive** This 3.5" disk drive is capable of accepting only 2DD floppy disks.
- 14 Eject button** This button ejects the floppy disk from the disk drive.
- 15 Disk Access LED** This LED lights when data is being written to or read from a disk. Never attempt to remove a disk from the disk drive while this lamp is lit.

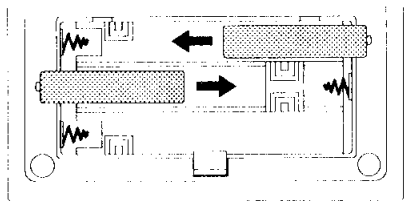
PREPARING TO USE THE MDF2

Supplying Power

Using Batteries

Under normal operating conditions, the MDF2 can be operated continuously for approximately four hours using a fresh set of batteries.

Before you begin to insert the batteries, check to make sure that the POWER switch on the rear panel is turned off. Then, place six size "AA" alkaline batteries in the battery compartment located on the underside of the unit.



Make sure that the batteries are oriented properly. The correct orientation is indicated by the markings on the inside of the compartment.

Caution: When the batteries run down, replace them with a complete set of six new batteries. NEVER mix old and new batteries.

Do not use different types of batteries (e.g. alkaline and manganese) at the same time.

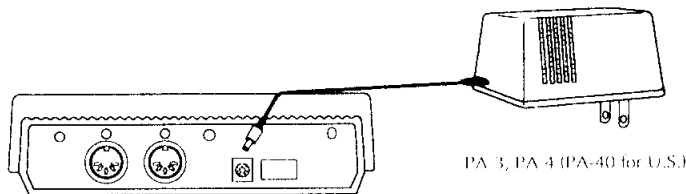
Be sure to remove the batteries from the MDF2 when you will not be using it for an extended period of time. If you leave batteries in the unit during extended periods of disuse, you run the risk of damage due to corrosion.

Using an Optional AC adaptor

If you use the MDF2 often, you will probably want to power it with an AC power adaptor. The MDF2 can be powered by the Yamaha PA-3, PA-4 (PA-40 for U.S.) power adaptors, each of which is available for purchase separately.

Before you connect the adaptor, check to make sure that the POWER switch on the rear panel is turned off.

Plug the round end of the adaptor cord into the DC IN jack on the back panel of the MDF2, then plug the adaptor itself into an AC outlet.



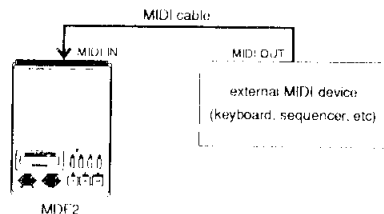
Caution: Be sure to use a power adaptor that is suited to the voltage in your locale. Do not use an adaptor other than those listed above. (Never use a PA-3B.) Any other AC adaptor using different voltage can damage the MDF2.

When you will not be using the MDF2 for an extended period of time, be sure to remove the adaptor from the AC outlet.

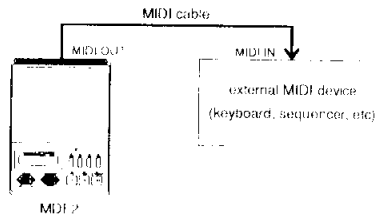
Connecting a MIDI Device

You need only one MIDI cable to connect the MDF2 to another MIDI device.

When you will be using the MDF2 to receive or record data, plug one end of the cable into the MIDI IN jack on the MDF2 back panel, and the other end into the MIDI OUT jack of the other device.



To transmit or play back data from the MDF2, simply reverse these connections.

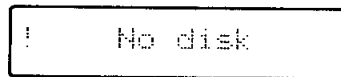


If you have two MIDI cables, you can connect the MIDI IN jack of each device to the MIDI OUT jack of the other. This convenient arrangement will allow you to avoid the repeated changing of MIDI cable connections.

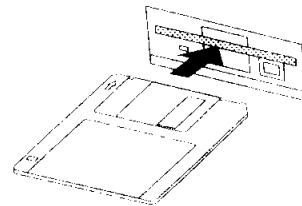
Turning the Power On

To turn on the MDF2, simply press the POWER switch on the rear panel.

The message "YAMAHA MDF2" will appear in the LCD for a few moments. Then, if there is no disk in the disk drive, this message will be replaced by the following display:



Insert the 3.5" 2DD floppy disk that came with your MDF2 in the disk drive. Be sure to insert the disk with the label side facing up and the arrow pointing toward the disk drive.



Push the disk in gently, until you hear it settle into the drive with a click.

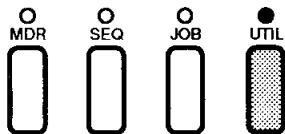
Note: The MDF2 is only capable of using 3.5" 2DD floppy disks. Please do not try to use any other type of disk.

Formatting a Floppy Disk

Before the MDF2 can create files on a new disk, it must prepare the disk to accept the data using a procedure known as "formatting". Follow the steps below to format the floppy disk that came with your MDF2.

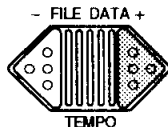
1. Enter the UTILITY mode.

Press the **UTIL** key. The LED above the key will light.



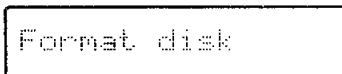
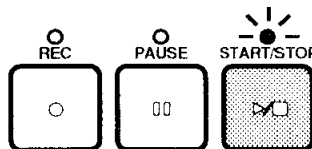
2. Select "05: Format".

Press the **FILE DATA [+]** key four times. The following message will appear in the LCD:



3. Press the START/STOP key.

The LED above the key will flash, and the following message will appear in the LCD:



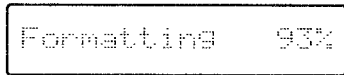
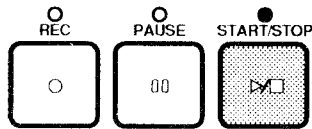
4. Insert a disk.

If you have not already done so, insert the 2DD disk to be formatted in the disk drive.

Caution: If you format a disk that has been used before, any data it contains will be erased. Make absolutely sure that a disk does not contain any important data before you format it.

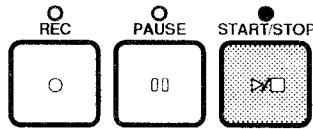
5. Press the START/STOP key.

The LED above the key will light steadily, and the LCD will display a message telling you what percentage of the disk has been formatted.



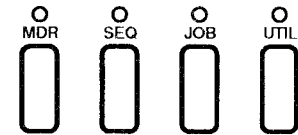
6. Format another disk.

If you wish to format another disk at this point, eject the disk and insert a new one. Then press the **START/STOP** key to begin formatting once more.



7. Exit the function.

When you're done formatting disks, press any mode key (**MDR**, **SEQ**, **JOB**, or **UTIL**) to exit the "Format" function.



It should take approximately 70 seconds to format a single floppy disk. When the disk has been completely formatted, the START/STOP LED will begin to flash again, and the "Format disk" message will reappear.

Handling Floppy Disks

The 3.5" 2DD floppy disk is a reliable and convenient medium for data storage, capable of holding large amounts of data in a small package. The disk itself is a delicate piece of magnetic film, which is protected from dust and dirt by a hard plastic cover and a shutter. This design is capable of preserving your data against most contingencies. However, for the greatest reliability, you should observe a few basic cautions when handling your disks.

- Use only 2DD disks. The MDF2 is not designed to handle disks meeting other specifications.
- Never remove a disk from the disk drive while the disk access LED is lit. Doing so can damage the floppy disk or the disk drive.
- Avoid touching the shutter of a disk. Never open the shutter and touch the actual disk surface.
- Avoid placing disks close to speakers, televisions, magnets, or other objects with magnetic fields. Even weak magnetic fields can damage or erase the data on a disk.
- Do not leave your disks in cars or other locations where they may be exposed to extreme heat or cold.
- Do not leave your disks in places where they may be exposed to condensation or extremely high humidity.
- Avoid using or storing disks in places where they may be exposed to large amounts of dust or dirt.

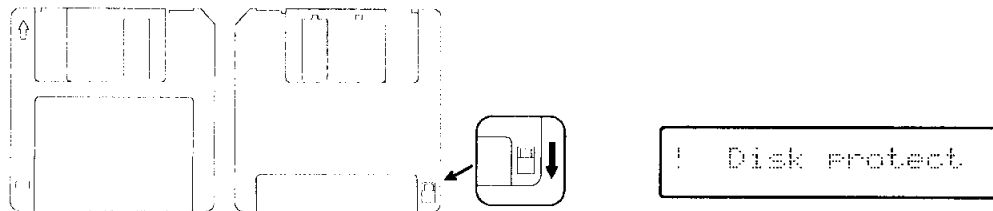
Follow these cautions scrupulously. Improper handling can render a disk useless, and may cause damage to the MDF2's disk drive as well.

Protecting the data on a disk

If you turn a disk face down, you will find a small plastic tab in the lower right corner. This tab is a write-protect switch that you can use to prevent the accidental loss of valuable data. When this tab is in the up position (so the window is closed), the MDF2 will be able to read and write data to the disk normally.

To protect the data on a disk, push the tab down so that the window is open. The MDF2 will be able to read the data on the disk as usual. However, if you try to receive or record data using the disk, the MDF2 will display an error message telling you that the disk is write-protected.

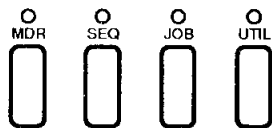
You will see the same message if you try to format a write-protected disk or change the data it contains using one of the UTILITY mode functions.



Note: To protect disks against accidental erasure, it is a good idea to set the protect tab down and keep the disk in a safe place. You also might consider making a backup copy of the disk using the UTILITY mode "Backup" function. Finally, clear labeling of disk contents is a simple but effective way to prevent the accidental loss of valuable data.

MDF2 MODE OVERVIEW

Now that you've formatted a floppy disk, you're ready to start using the MDF2. The overview below summarizes the use of each of the MDF2's four modes, and shows you how to access the JOB and UTILITY mode functions.



MDR mode (page 19)

This mode lets you receive bulk data from a MIDI device and save it to disk as an MDR data file. In this mode the MDF2 can also transmit the contents of MDR files it creates, as well as bulk data files created by the Yamaha QX3 in MDR mode.

SEQ mode (page 27)

This mode lets you record sequence data as standard MIDI files. In this mode, the MDF2 can also play back the SEQ data files it creates, as well as Yamaha ESEQ data files and standard MIDI files created by other devices.

JOB mode (page 35)

This mode lets you play back SEQ data files repeatedly, or in a programmed order. It also allows you to set the sequence data recording tempo, and to enable or disable the transmission and reception of MIDI sync and system control messages.

UTILITY mode (page 43)

The UTILITY mode lets you rename, delete, copy, and append files. It also allows you to format or copy disks, and to check the amount of space remaining on a disk.

Hint: In the JOB and UTILITY modes, you can use the **FILE DATA** keys to select a function, and the **START/STOP** key to execute the function you've selected.

JOB mode functions



01: Repeat play

This function lets you repeatedly play back one or more SEQ data files in an endless loop. (page 36)

02: Prog play

This function lets you create a program of SEQ data files to played back in a specified order. (page 37)

03: Record tempo

This function allows you to change the playback tempo that is recorded for a sequence data file. (page 39)

04: Sync mode

This function determines whether the MDF2 runs on its internal clock, or in sync with an external MIDI clock. (page 40)

05: MIDI control

This function enables or disables the transmission and reception of MIDI realtime control messages (i.e., START, CONTINUE, and STOP messages), as well as the transmission of MIDI clock signals. (page 41)



UTILITY mode functions



01: Rename

This function lets you change the names of MDR or SEQ data files which have been saved to disk. (page 45)

02: Delete

This function lets you delete unneeded MDR or SEQ data files from a disk. (page 47)

03: Append

This function creates a copy of a file, or appends the data of one file to the end of another file. (page 48)

04: Backup

This function lets you copy the entire contents of one disk to another disk. (page 50)

05: Format

This function is used to format new floppy disks for use by the MDF2. (page 52)

06: Disk info.

This function displays information about a disk, including the amount of disk space that has been used, the amount of available space remaining, the number of files that have been used, and their respective sizes. (page 53)



17

18

MDR MODE

In its MIDI data recorder (MDR) mode, the MDF2 is capable of receiving MIDI bulk data from nearly any MIDI device and saving it to disk as an MDR data file. It can then transmit this data back to the device that originated it, or to any other device capable of accepting the data, at any time.

Receiving bulk data

The bulk data reception function is used to receive bulk data sent from another MIDI device. The MDF2 automatically writes the bulk data it receives to disk as an MDR data file using Standard MIDI File format 0. You can save up to 99 MDR data files on a single disk.

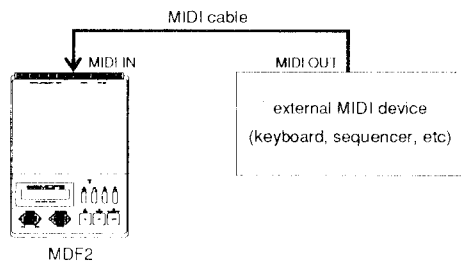
Transmitting bulk data

The bulk data transmission function lets the MDF2 output the data which it has previously saved as an MDR data file to a MIDI device capable of receiving it. The MDF2 is also able to transmit the data from files created by the Yamaha QX3 in that device's MDR mode.

Receiving Bulk Data

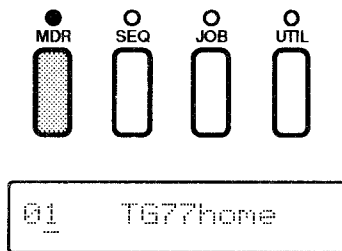
1. Check your MIDI connections.

The MIDI IN jack of the MDF2 should be connected to the MIDI OUT jack of the sending device.



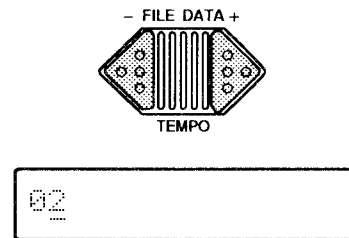
2. Enter MDR mode.

Press the **MDR** key. The LED above the key will light, and the name of the currently selected MDR data file will appear in the LCD.



3. Select an empty file.

Using the **FILE DATA** keys, select the number of the empty file where you want to save the data. (The names of empty files will be blank.)



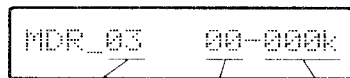
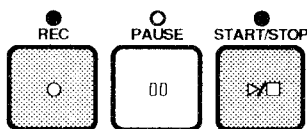
If you have not done so already, place a formatted disk in the MDF2 disk drive.

Caution: If you select a file which already contains data, that data will be erased when the incoming data is received. If you choose such a file, make sure it does not contain data that you want to keep.

4. Prepare the MDF2 for reception.

While pressing the **REC** key, press the **START/STOP** key.

The LEDs above these keys will light, and the following display will appear in the LCD.



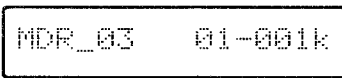
default file name current block number total data received (kilobytes)

This display indicates that the MDF2 is ready to begin receiving block data.

5. Send the bulk data.

Execute the sending device's bulk dump procedure to begin sending data. Refer to the appropriate operation manual for a description of the correct procedure. (Procedures for the Yamaha QY10, RY30, SY55, and TG77 are included on the Quick Guide cards that accompany this manual.)

As soon as the MDF2 begins receiving data, the MIDI LED will light and the display will begin changing to indicate the amount of data received.



The MIDI LED will go out when all of the bulk data has been received.

Hint: To stop reception temporarily, press the **PAUSE** key. The LED above the key will blink, and the MDF2 will complete the reception of the current data block. Once the block has been received, the **PAUSE** key LED will light steadily to indicate that the MDF2 has paused. Pressing the **PAUSE** key again will cause the MDF2 to resume reception.

You can cancel reception immediately by pressing the **START/STOP** key. If you do so, the MDF2 will not create an MDR data file.

6. Send additional data, if any.

You can create MDR data files containing two or more sets of bulk data by executing consecutive bulk dumps. Just repeat step 5 as needed. All of the data you send will be recorded in sequence to the file you selected in step 3.

7. End MDF2 reception.

When you've finished sending data to the MDF2, make sure that all the data you sent has been received, then press the **START/STOP** key.



The data you sent will be saved to the MDR data file you selected, using the default file name "MDR ." followed by the file number.

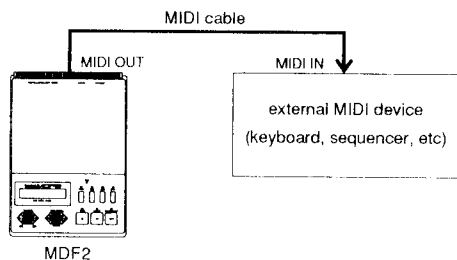
Hint: This technique can be used to store multiple data sets for a single MIDI device. In more complex MIDI systems, you can use the same technique to store data (e.g., the settings you will use during a live performance) for a number of different devices.

Hint: If you would like to give the file another name, you can do so using the "Rename" function (page 45).

Transmitting Bulk Data

1. Check your MIDI connections.

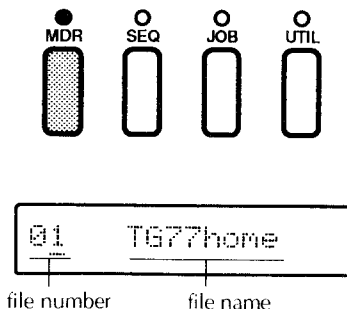
The MIDI OUT jack of the MDF2 should be connected to the MIDI IN jack of the receiving device.



If you have not done already, place a formatted disk in the MDF2 disk drive.

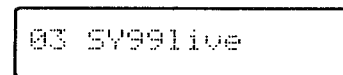
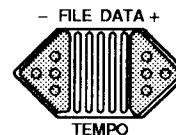
2. Enter MDR mode.

Press the **MDR** key. The LED above the key will light, and the name of the currently selected MDR data file will appear in the LCD.



3. Select a file to transmit.

Using the **FILE DATA** keys, select the file to be transmitted.

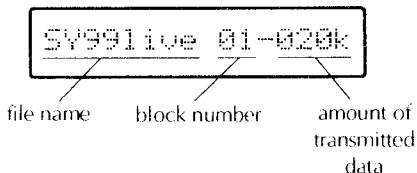
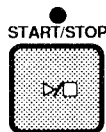


4. Prepare the receiving device.

Prepare the receiving device to receive the bulk data. The preparations to be made vary from device to device, but may include canceling internal memory protection, selecting a MIDI channel, and so on. Refer to the appropriate operation manual to check the correct procedure. (Procedures for the Yamaha QY10, RY30, SY55, and TG77 are included on the Quick Guide cards that accompany this manual.)

5. Transmit the MDR data.

Press the **START/STOP** key to begin transmitting. While the bulk data is being transmitted, the LCD will display the amount of data that has been sent.



The file selection display will reappear when the transmission of MDR data is complete.

Hint: To stop transmission temporarily, press the **PAUSE** key. The LED above the key will blink, and the MDF2 will complete its transmission of the current data block. Once the block has been transmitted, the **PAUSE** key LED will light steadily to indicate that the MDF2 has paused. The MDF2 will resume transmission when you press the **PAUSE** key again.

You can cancel reception by pressing the **START/STOP** key. The MDF2 will end transmission after it has sent the current data block. To end transmission immediately, press the **START/STOP** key twice in quick succession.

Notes on MDR Data Reception and Transmission

Reception

MDR file size: On a newly formatted disk, a single MDR data file can hold up to about 600 kilobytes of data. When using a disk that already contains several files, check the amount of available space on the disk (page 53) before you try to receive the bulk data.

Bulk data blocks: The MDF2 recognizes bulk data blocks by their header (System Exclusive status: F0H) and footer (End of Exclusive: F7H) values.

Block intervals: When the MDF2 creates MDR files, it also records timing data at 10 millisecond intervals. If the interval between any two data blocks exceeds one second, the MDF2 will record it as one second. When receiving data from a MIDI device that will require intervals greater than one second between blocks when you attempt to transmit the data back to the device, record the bulk data in SEQ mode. (Refer to "Recording bulk data" on page 34.)

Transmission

MDR file formats: In addition to its own files, the MDF2 is capable of transmitting bulk data files which other devices save to disk using Standard MIDI File format 0. Moreover, it can transmit MDR bulk data files written by the Yamaha QX3 in that device's MDR mode. It distinguishes between these two types of files by checking the header of each file before it begins transmitting the data in the file.

Transmitting QX3 data: When the MDF2 transmits MDR data files written to a disk by the QX3, it will automatically insert a 100 millisecond interval after every data block, as well as after each kilobyte of data (when a block is longer than one kilobyte).



The following descriptions of the sequence data recording and playback procedures assume that you will be recording data output by a MIDI keyboard. Of course, you can use the same procedures to record sequence data played back by a sequencer, a personal computer, or the like.

Recording Sequence Data

When you record data in SEQ mode, the MDF2 automatically writes this data to disk as a SEQ data file using Standard MIDI File format 0. You can save up to 99 SEQ data files on a single disk.

Playing Back Sequence Data

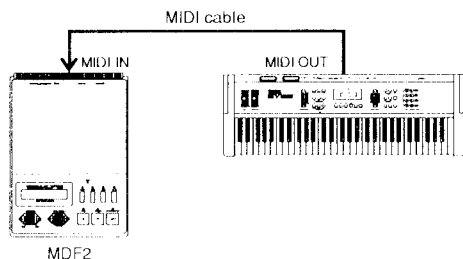
The MDF2 can of course play back the files it records in SEQ mode. It can also play back files written by other devices using Standard MIDI File format 0, as well as sequence files written in the ESEQ format used by the SY99, SY77, QX3, and other Yamaha devices.

Note: *If you will be using the MDF2 to play sequence files written by other devices, be sure to keep these files and your SEQ files on separate disks. If you mix SEQ files with other sequence files on a single disk, the MDF2 will display the names of only the SEQ files. (Please see "The Standard MIDI File and ESEQ Formats" on page 54 for details.)*

Recording Sequence Data

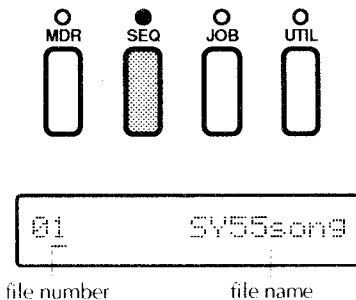
1. Check your MIDI connections.

The MIDI IN jack of the MDF2 should be connected to the MIDI OUT jack of the sending device.



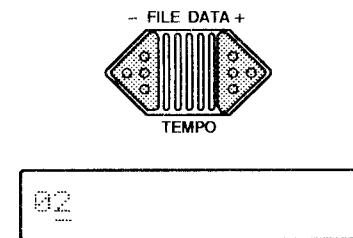
2. Enter SEQ mode.

Press the **SEQ** key. The LED above the key will light, and the name of the currently selected SEQ data file will appear in the LCD.



3. Select an empty file.

Using the **FILE DATA** keys, select the number of the empty file where you want to record the data. (The names of empty files will be blank.)



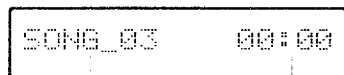
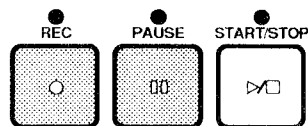
If you have not done so already, place a formatted disk in the MDF2 disk drive.

Caution: If you select a file which already contains data, that data will be erased when the incoming data is received. If you choose such a file, make sure it does not contain data that you want to keep.

4. Prepare the MDF2 for recording.

While pressing the **REC** key, press the **PAUSE** key.

The LEDs above the **REC**, **PAUSE**, and **START/STOP** keys will light, and the following display will appear in the LCD.



default file name

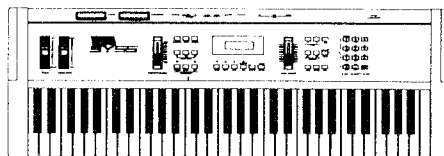
record name

The MDF2 is now in record standby mode.

Hint: If you prefer, you can press the **START/STOP** key instead of the **PAUSE** key to begin recording immediately.

5. Start playing.

Begin playing music on your MIDI keyboard. As soon as the MDF2 receives MIDI data from the keyboard, it will cancel the pause and start recording the data.



Hint: To pause during recording, simply press the **PAUSE** key. The MDF2 will begin recording again as soon as it receives any MIDI data, or if you press the **PAUSE** key once more.

If you press the **START/STOP** key while the recording is paused, the recording will end and the data up to that point will be saved as a SEQ file.

6. End the recording.

When you have finished recording data, press the **START/STOP** key again.

The data you sent will be saved to the SEQ data file you selected, using the default file name "SONG_" followed by the file number:



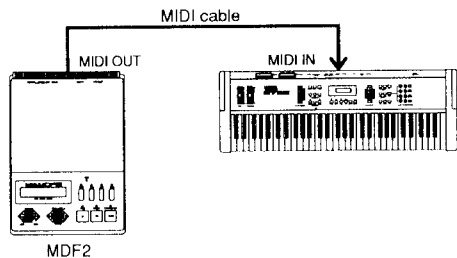
03 SONG_03

Hint: If you would like to give the file another name, you can do so using the "Rename" function (page 45).

Playing Back Sequence Data

1. Check your MIDI connections.

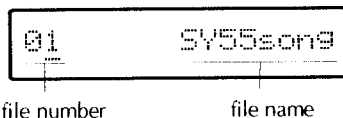
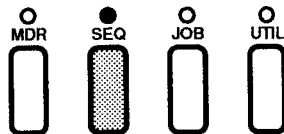
The MIDI OUT jack of the MDF2 should be connected to the MIDI IN jack of the receiving device.



If you have not done so already, place a formatted disk in the MDF2 disk drive.

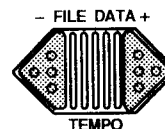
2. Enter SEQ mode.

Press the **SEQ** key. The LED above the key will light, and the name of the currently selected SEQ data file will appear in the LCD.



3. Select a file to transmit.

Using the **FILE DATA** keys, select the file to be played back.

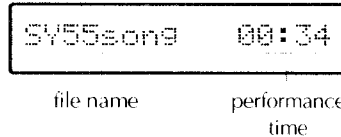


4. Prepare the receiving device.

Prepare your keyboard to receive the sequence data. The preparations to be made vary depending on the instrument, but may include the selection of MIDI channels and sound programs, the adjustment of pitch bend and modulation ranges, and so on.

5. Start the playback.

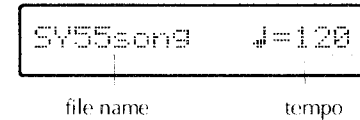
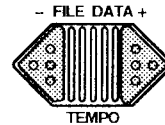
Press the **START/STOP** key. The MDF2 will begin to play back the sequence data file you've selected. While the file is playing, the LCD will indicate the elapsed performance time.



Note: When you press the **START/STOP** key, the MDF2 will hesitate for about one second as it reads data from the disk before it begins to play back the data. If you need to start the playback with greater accuracy, press the **PAUSE** key immediately after pressing the **START/STOP** key. The MDF2 will begin playing the file as soon as you press the **PAUSE** key a second time.

6. Change the tempo.

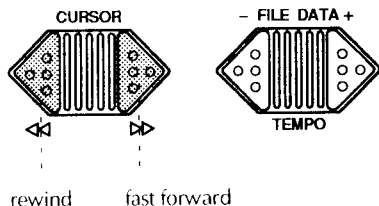
You can use the **FILE DATA** keys to change the playback tempo while the file is playing. When you press one of the **FILE DATA** keys, the following display will appear.



Note: Sequence data files created by devices other than the MDF2 may include tempo change data that will alter the tempo regardless of the changes you make using the **FILE DATA** keys. Since the playback tempo is commonly recorded at the beginning of a file, you may find that the tempo will return to its original value if you play a file from the top after changing the tempo using the **FILE DATA** keys.

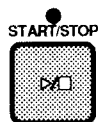
7. Advance, rewind, or pause the file.

While the file is playing, you can use the **CURSOR** keys to fast forward or rewind the file. Also, you can press the **PAUSE** key to pause the playback temporarily.

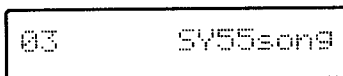


8. Stop the playback.

Playback will stop automatically when the MDF2 reaches the end of the file. If you want to stop the playback before the MDF2 comes to the end of the file, simply press the **START/STOP** key.



When playback ends, the name of the currently selected file will appear.



Hint: Files can be played back repeatedly using the "Repeat play" function (page 36). If a disk contains more than one SEQ data file, the files can be played back in a specified order using the "Prog play" function (page 37).

Notes on SEQ Data Recording and Playback

Recording

Record tempo: A default playback tempo of 120 beats per minute is recorded for each SEQ data file. You can change the tempo before you begin recording using the Record Tempo function (page 39).

Recording bulk data: Since the MDF2 records both bulk and sequence data as standard MIDI files, it is able to record bulk data as well as sequence data in SEQ mode. To record bulk data in SEQ mode, you must start the recording using the **REC** and **START/STOP** keys, rather than the **REC** and **PAUSE** keys. Also, if you pause the recording while the MIDI LED indicates that the MDF2 is receiving data, the **PAUSE** key will blink and the MDF2 will continue recording until it has finished receiving the current block. Finally, you must press the **START/STOP** key to stop recording manually. Otherwise, the MDF2 will continue recording even after the sending device has stopped sending data.

Playback

SEQ file formats: In addition to its own SEQ files, the MDF2 is capable of playing back sequence data files which other devices have written to disk using Standard MIDI File format 0, a format which is supported by a broad range of computer-based MIDI software. It is also capable of playing back ESEQ sequence data files created by the SY99, SY77, QX3, and other Yamaha products.

Using MDR and SEQ data: The SEQ data you record will play back flawlessly if the receiving instrument's settings (such as its MIDI channel and program selections, volume setting, pitch bend and modulation ranges, and so on) are the same as they were when you recorded the data. If these settings are changed, however, the playback might not be quite what you expect. Of course, you could make a note of your settings and restore them manually each time you play back the file; but you can save yourself the trouble and make better use of your MDF2's capabilities by sending them as a bulk dump to the MDF2, then transmitting this data back to the instrument before you play back the sequence data.

JOB MODE

The five JOB mode functions are related to the recording and playback of sequence data files. They allow you to play back SEQ data files repeatedly, or in a programmed order; to change the playback tempo that is recorded to sequence data files; and to control how the MDF2 synchronizes recording and playback with other MIDI sequencers.

Selecting a JOB mode function

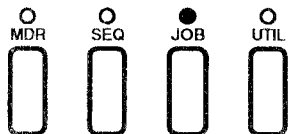
To use a JOB mode function, first press the **JOB** key, then use the **FILE DATA** keys to select the function. When the name of the desired function is displayed in the LCD, press the **START/STOP** key.



Note that you must place a disk in the disk drive before you select "Repeat play" or "Prog play" in order to use these functions.

Exiting a JOB mode function

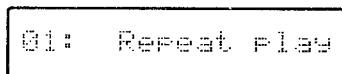
When you have finished making settings using one of the JOB mode functions, you can exit the function by pressing any of the mode selection keys.



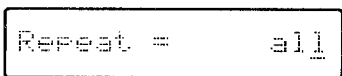
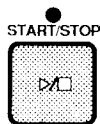
Repeating Playback

The “Repeat play” function lets you play back one or more SEQ files repeatedly. This function could be used to practice a single song several times, or to create an endless loop of background music.

1. InJOB mode, select “01: Repeat play”.



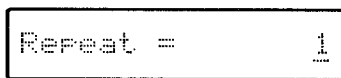
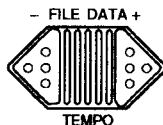
When you press the **START/STOP** key, the current repeat play setting will appear in the LCD.



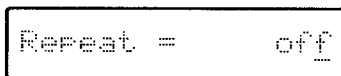
Note: The “Repeat play” function is automatically set to “all” whenever you turn on power to the MDF2. When you play files with this setting, the MDF2 repeatedly plays all of the SEQ data files on the disk in numerical order.

2. Select the desired setting.

Use the **FILE DATA** keys to select one of the three possible repeat settings.



When you select “1”, the MDF2 will play the SEQ data file you select repeatedly.

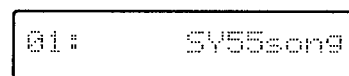
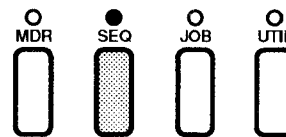


This setting turns the repeat function off.

Hint: You can change the order in which “Repeat = all” plays songs by changing the SEQ file name extensions (see page 55 for details.)

3. Start playback.

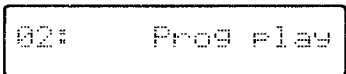
Press the SEQ mode key and start playback. The MDF2 will repeatedly play a single song or all of the songs on the disk, depending on the setting you selected.



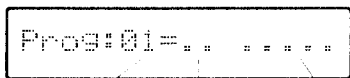
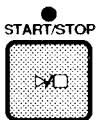
Creating a Playback Program

The "Prog play" function lets you create a program of up to 99 SEQ files to be played back in a specified order.

1. In JOB mode, select "02: Prog play".



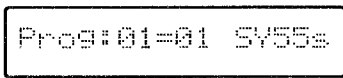
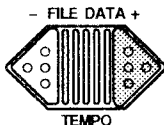
When you press the **START/STOP** key, the following display will appear in the LCD.



program step file number file name

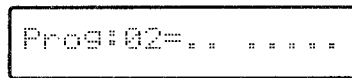
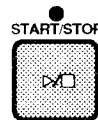
2. Select a file.

Using the **FILE DATA** keys, select the song to be played for the currently displayed program step.



3. Press the **START/STOP** key.

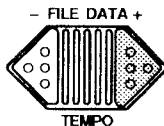
Your setting for the step will be registered, and the display will change to the next step.



JOB

4. Program other steps.

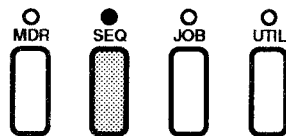
Repeat steps 2 and 3 as needed to program additional steps. Your program may contain up to 99 steps.



Prog:02=07 99fun

5. Start playback.

When you've finished creating your program, press the SEQ mode key and start playback. The MDF2 will play the songs you selected in the programmed order.



01: 5V55song

Hint: If you want to change a step once you've programmed it, press the **CURSOR** [<<] key to move the cursor to the step number area, then select the step you want to change using the **FILE DATA** keys. Then press the **CURSOR** [>>] key and select a different file.

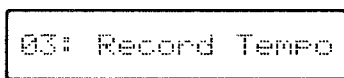
Hint: If you set the "Repeat play" function to either "1" or "all", your entire program of songs will be repeated indefinitely in the programmed order. If the "Repeat play" function is set to "off", however, the program will be played only once.

Note: The program setting is temporary. It will be erased when the MDF2 is turned off, or when you remove the disk from the disk drive.

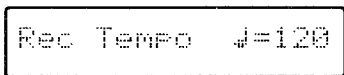
Changing the Record Tempo

The MDF2 automatically records sequence data at a default tempo of 120 beats per minute. The SEQ data files that you record will be played back at this default tempo unless you change the playback tempo using the **FILE DATA** keys. If you wish, you can use the "Record Tempo" function to set the tempo setting of a file before you start recording it.

1. In **JOB** mode, select "03: Record Tempo".

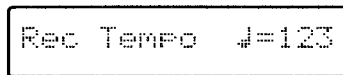
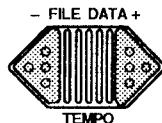


When you press the **START/STOP** key, the current record tempo setting will appear in the LCD.



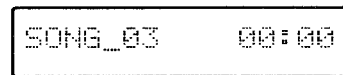
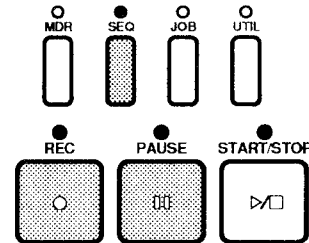
2. Select the desired tempo.

To increase the tempo, press the **FILE DATA** [+] key. To decrease it, press the **FILE DATA** [-] key. The tempo can be changed within a range from 30 to 250 beats per minute.



3. Start recording

When you begin recording data in SEQ mode, the tempo you set here will be recorded at the start of the file as the SEQ file's playback tempo.



Note: Whenever the MDF2's power is turned on, the record tempo value is automatically set to the default value of 120 beats per minute.

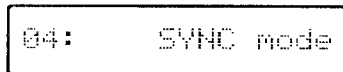
Hint: When you record sequence data played back by a sequencer, you should set the record tempo to a value equal to that used by the sequencer.

When recording data from a keyboard or other digital instrument, you can use this function to record fast musical phrases that would otherwise be difficult or impossible to play. This can be done by setting a faster playback tempo.

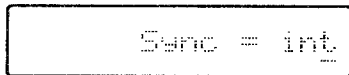
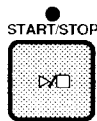
Selecting a MIDI Sync Mode

To synchronize the playback of the MDF2 with that of another MIDI sequencer, rhythm machine, or personal computer, it is not enough to merely set the same playback value for the two devices. One device must be set to function as the master, while the other functions as a slave, synchronizing playback to the MIDI clock signal output by the master rather than its own internal clock. You can change the synchronization setting using the "Sync mode" function.

1. In JOB mode, select "04: Sync mode".



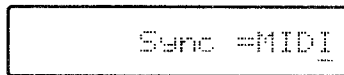
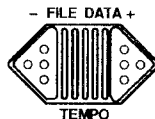
When you press the **START/STOP** key, the current sync mode setting will appear in the LCD.



Note: Whenever the MDF2's power is turned on, the sync mode is automatically set to the internal clock.

2. Select the desired setting.

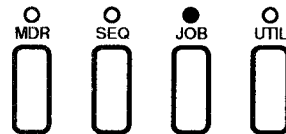
Using the **FILE DATA** keys, select either setting.



If you set the sync mode to "int.", the MDF2 will ignore any clock signals output by other devices and run at the tempo set by its internal clock. If you select "MIDI", the MDF2 will synchronize to an external clock signal, and ignore any tempo settings you have made.

3. Exit the function.

Press any mode key (**MDR**, **SEQ**, **JOB**, or **UTIL**) to exit the function.

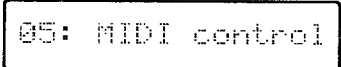


When you next begin recording or playback, the MDF2 will use the sync mode setting you have selected.

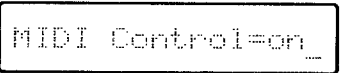
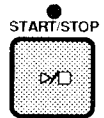
Enabling MIDI Control Messages

The "MIDI control" function lets you enable or disable the MDF2's transmission and reception of MIDI realtime system control (Start, Continue, and Stop) messages. The setting you make here combines with the sync mode setting described on the previous page to determine how MIDI devices control each other during playback.

1. In JOB mode, select "05: MIDI control".



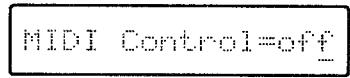
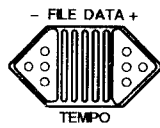
When you press the START/STOP key, the current MIDI control setting will appear in the LCD.



Note: Whenever the MDF2's power is turned on, the MIDI control function will automatically be set to "on".

2. Select the desired setting.

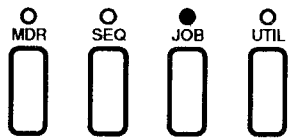
Using the FILE DATA keys, select either setting.



When the MIDI control function is turned on, the MDF2 will transmit and receive Start, Continue, and Stop messages. It will also transmit MIDI clock signals. When this function is turned off, the MDF2 will neither transmit nor receive the MIDI Start, Continue, or Stop messages; nor will it transmit MIDI clock signals.

3. Exit the function.

Press any mode key (MDR, SEQ, JOB, or UTIL) to exit the function.



When you next begin recording or playback, the MDF2 will use the MIDI control setting you have selected.

JOB

Notes on MIDI Synchronization

The MIDI clock of a sequencing device to be synchronized with the MDF2 must normally be set to a value opposite that of the MDF2. If you want the MDF2 to control the playback tempo, select the "int." sync mode and set the other device to use the MIDI clock. If the other device is to be the master, reverse these settings. In either case, you should also use the "MIDI control" function to enable the MDF2's transmission and reception of MIDI system control messages. When synchronizing the MDF2 to another device, both the "Sync mode" and "MIDI control" functions must be set to appropriate values.

The possibilities for combining these settings are summarized in the table below.

04: Sync mode	05: MIDI control	MDF2 operation
MIDI	on	Functions as a slave device.
int.	on	Functions as a master device.
MIDI	off	Cannot be used.
int.	off	Manual playback; no MIDI synchronization.

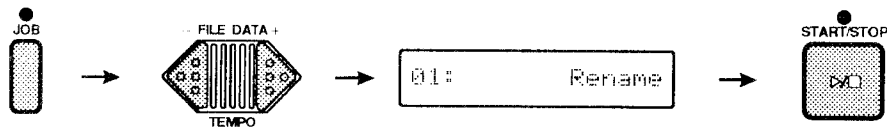
Caution: If an external sequencer or other device connected to the MDF2 retransmits the MIDI data it receives (using a MIDI echo function), avoid a looped MIDI connection or set the MDF2's MIDI control function to "off". Otherwise, the MDF2 may malfunction.

UTILITY MODE

The *UTILITY* mode functions let you rename, delete, or copy the files on a disk; append files to one another; or copy the entire contents of one disk to another.

Selecting a *UTILITY* mode function

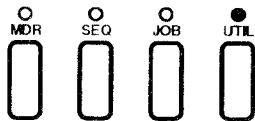
To use a *UTILITY* mode function, first press the **UTIL** key, then use the **FILE DATA** keys to select the function. When the name of the desired function is displayed in the LCD, press the **START/STOP** key.



Note: You must place a disk in the disk drive in order to use the “*UTILITY* mode” functions.

Exiting a *JOB* mode function

When you have finished using a *UTILITY* mode function, you can exit the function by pressing any of the mode selection keys.



Filenames in UTILITY mode

In UTILITY mode, filenames appear differently than in other modes. The letter "M" will appear before the file numbers of MDR data files:

```
Nam:M01 QV10 Snc
```

file number

file name

SEQ data files, on the other hand, will be indicated by the letter "S":

```
Nam:S01 QV10 Snc
```

The files will be displayed in numerical order. The MDR files will appear first, and SEQ files will follow.

If there are no files on a disk, the following display will appear when you select a UTILITY mode function.

```
Nam:*** *****
```

Selected function

Indicates there is no file

When this display appears, you can not utilize any of the UTILITY mode functions.

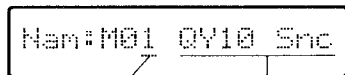
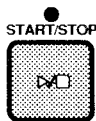
Renaming Files

You can give each MDR or SEQ file you create a unique name of up to eight characters. Doing so will make it much easier for you to select a desired file.

1. In UTILITY mode, select "01:Rename".



When you press the **START/STOP** key, the name of the first file on the disk will appear in the LCD.

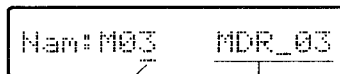
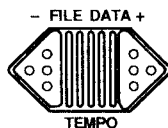


cursor

file data

2. Select a file.

Using the **FILE DATA** keys, select a file to rename.

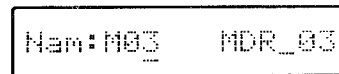
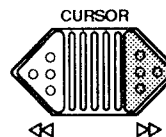


cursor

file data

3. Move the cursor to the filename.

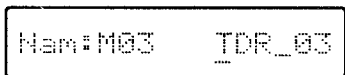
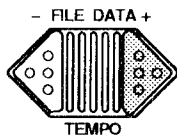
Press the **CURSOR** [>>] key to move the cursor to the filename area.



Hint: In addition to MDF2 files, you can also rename ESEQ MDR files created by the QX3, and Standard MIDI files created by the SY99. Other files cannot be renamed.

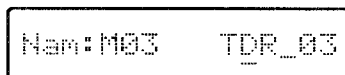
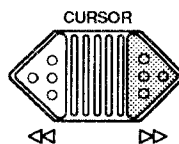
4. Change a character.

Using the **FILE DATA** keys, change the character where the cursor is located.



5. Move to the next character.

When the desired character appears, press a **CURSOR** key to move to the next letter.



6. Press the START/STOP key.

When you've finished changing the name, press the **START/STOP** key. The MDF2 will write the new name to disk.



Available characters:

[space] ! " # \$ % & ' () * + , - . /
0 1 2 3 4 5 6 7 8 9 : ; < = > ? @ A B
C D E F G H I J K L M N O P Q R S T U
V W X Y Z [\] ^ _ ` a b c d e f g h
i j k l m n o p q r s t u v w x y z {
| } . ,

Hint: You can run through the options rapidly by holding down the **FILE DATA** keys.

Repeat steps 4 and 5 as needed until you have changed the entire name.

You can now press the **CURSOR** [<<] key to move the cursor back to the file number area and select a new file to rename; or press any of the mode keys (**MDR**, **SEQ**, **JOB**, or **UTIL**) to exit the function.

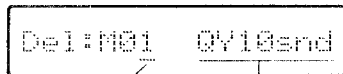
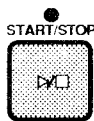
Deleting Files

The "Delete" function lets you remove unnecessary files from a floppy disk.

1. In **UTILITY** mode, select "02: Delete".



When you press the **START/STOP** key, the name of the first file on the disk will appear in the LCD.

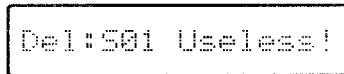
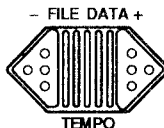


cursor

file data

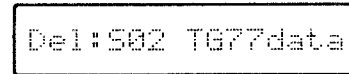
2. Select a file.

Using the **FILE DATA** keys, select a file to delete.



3. Press the **START/STOP** key.

When you are sure of your selection, press the **START/STOP** key. The MDF2 will delete the file, and the name of the next file in order will appear in the LCD.



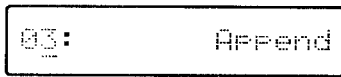
Note: You can only delete files created on the MDF2.

Caution: If you press the **START/STOP** key at this time, the MDF2 will delete that file as well. Be very careful not to delete important files! If you want, you can now select a new file to delete; or press any of the mode keys (**MDR**, **SEQ**, **JOB**, or **UTIL**) to exit the function.

Copying or Appending Files

The "Append" function lets you copy files, or append files to each other. If you select two files which contain data as the source and destination files, the data from the source file will be appended to the end of the destination file. If you select an unused file as the destination file, the source file will be copied. (The copied file will be given the same name as the source file.)

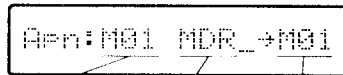
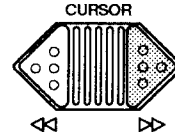
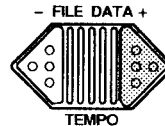
1. In **UTILITY mode**, select "03:Append".



2. Select a source file.

Using the **FILE DATA** keys, select the file to be copied or appended.

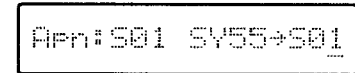
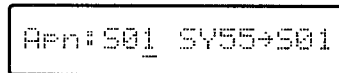
When you press the **START/STOP** key, the following display will appear in the LCD.



source
filenumber

source
filename

destination
file number

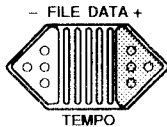


3. Move the cursor to the right.

Press the **CURSOR** [>>] key to move the cursor to the destination file number.

4. Select a destination file.

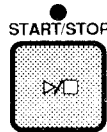
Using the **FILE DATA** keys, select the destination file number.



```
APn: S01 SY55+S01_
```

5. Press the START/STOP key.

The MDF2 will append or copy the source file to the destination you specified.



```
APn: S01 SY55+S01_
```

Note: When appending files, the destination file you select must be of the same type (i.e., MDR or SEQ) as the source file. You will not be allowed to append an MDR file to a SEQ file, or vice-versa.

You can now press the **CURSOR** [<<] key to move the cursor back to the source file number area and select a new source files to copy or append; or press any of the mode keys (**MDR**, **SEQ**, **JOB**, or **UTIL**) to exit the function.

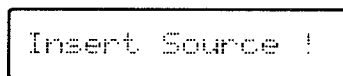
Copying Disks

It is always a good idea to make backup copies of disks containing valuable data. The "Backup" function helps you do this by copying all the data on one disk (which is known as the "source" disk) to another disk (which is called the "target").

1. In UTILITY mode, select "04: Backup".

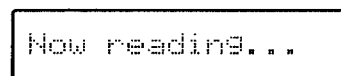
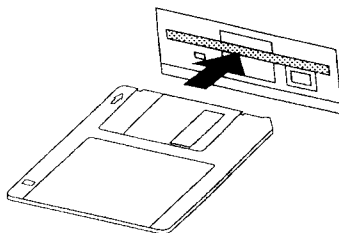


When you press the **START/STOP** key, the following message will appear in the LCD.



2. Insert the source disk.

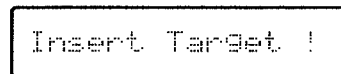
Place the disk to be copied in the disk drive.



3. Press the START/STOP key.

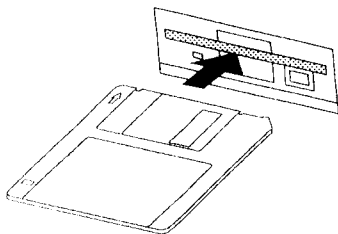
The following display will appear as the MDF2 reads data from the source disk.

After a few moments, the following message will appear.



4. Insert the target disk.

Remove the source disk from the disk drive, and insert a newly formatted disk.



5. Press the START/STOP key.

The following display will appear as the MDF2 writes data to the target disk.



Now writing...

After a few moments, the "Insert Source!" message will reappear. Repeat steps 2 through 5 until the completed message appears.

Completed !

6. Back up other disks.

If you want to copy another disk, press the **START/STOP** button; or press the mode keys (**MDR**, **SEQ**, **JOB**, or **UTIL**) to exit the function.

***Hint:** The MDF2 can copy approximately 20 kilobytes of data at one time. When you copy a disk containing a large amount of data, you will have to repeat steps 2 through 5 several times.*

If you want to estimate the number of times you will have to exchange disks to complete the backup process, use the "Disk Info" function to check how much of the source disk has been used before you execute the function.

If you have a personal computer with two disk drives capable of handling 3.5" 2DD floppy disks, you may find it easier to back up your MDF2 data disks using the computer!

Formatting Disks

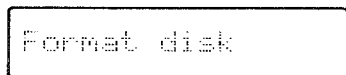
As we explained earlier in this manual, a new floppy disk must be formatted before the MDR2 can use it to save data.

1. In **UTILITY** mode, select "05: Format".



05: Format

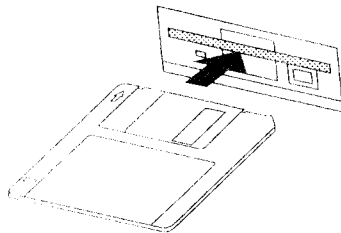
When you press the **START/STOP** key, the following message will appear in the LCD.



Format disk

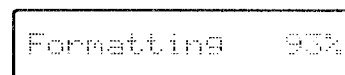
2. **Insert a disk.**

Insert the disk to be formatted in the disk drive.



3. **Press the START/STOP key.**

The LED above the key will light steadily, and the LCD will display a message telling you what percentage of the disk has been formatted. It should take approximately 70 seconds to format a single floppy disk.



Formatting 95%

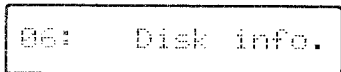
Caution: If you format a disk that has been used before, any data it contains will be erased. Make absolutely sure that a disk does not contain any important data before you format it.

When the disk has been formatted, the **START/STOP** LED will begin to flash again, and the "Format disk" message will reappear. You can repeat the process again to format another disk, or press any mode key (**MDR**, **SEQ**, **JOB**, or **UTIL**) to exit the function.

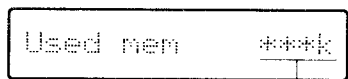
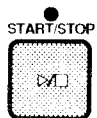
Displaying Disk Information

The "Disk info." function lets you check the amount of available space remaining on a disk. It also displays other information such as the amount of disk space which has already been used, the number of files on the disk, and their respective sizes.

1. In **UTILITY** mode, select "06: Disk info."



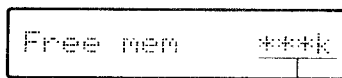
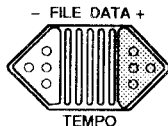
When you press the **START/STOP** key, a display showing the amount of disk space which has been used will appear in the LCD.



total amount of disk memory used (KB)

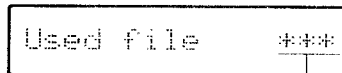
2. **View other disk information.**

Press the **FILE DATA [+]** key once to display the amount of available memory space remaining on the disk.



available disk space (KB)

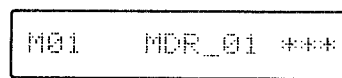
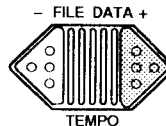
Press the **FILE DATA [+]** key a second time to display the total number of files on the disk.



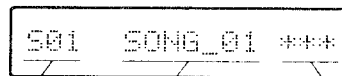
total files on the disk

3. **Display file information.**

Pressing the **FILE DATA [+]** key additional times will display the name of each file, and its length in kilobytes.



:



file number

file type

file length (KB)



THE STANDARD MIDI FILE AND ESEQ FORMATS

The **Standard MIDI File format** is a sequence data file format which has been adopted by a number of sequencing software products for the IBM® PC/AT™ and compatibles, the Apple® Macintosh™, and a variety of other computers. There are actually two Standard MIDI File formats: Format 0 records all sequencer data for channels 1 through 16 as a single track, whereas format 1 provides for an unlimited number of tracks, each including data for one or more channels.

The **ESEQ format** is a sequence file format particular to Yamaha products. This format is used by a number of popular Yamaha sequencing devices, such as the QX3 and the built-in sequencers of the SY99 and SY77 Music Synthesizers.

The MDF2 writes its SEQ data files using Standard MIDI File format 0. It is capable of playing back files written by other devices in this format, as long as they are stored on a disk which the MDF2 is capable of reading.

Moreover, the MDF2 can play ESEQ sequence files while in SEQ mode. It distinguishes between standard MIDI files and ESEQ files by checking the file header. No conversion process is required to play back ESEQ files.

If you will use the MDF2 to play sequence files recorded by other devices, be sure to keep these files and your MDF2 SEQ files on separate disks. (There is one exception to this rule: the SY99 can use your MDF2 data disks to record songs in the Standard MIDI File format. The MDF2 will treat such files as if they were SEQ files it had recorded itself.)

When you place a disk containing only non-SEQ files in the MDF2, it will display the full filename (including the extension) of each file. Should you mix SEQ files together with other sequence files on a single disk, however, the MDF2 will display the names of the SEQ files only, making it impossible to play the other files. Hence the need to keep SEQ files and non-SEQ files on separate disks.

If you have a personal computer, you can trick the MDF2 into playing back ESEQ files (or standard MIDI files created by devices other than the SY99) which you have saved on disks containing SEQ files. To do so, you must use your computer to change the filename extensions of the non-SEQ files. The method for accomplishing this is described in the following pages.

ADVANCED FILE MANAGEMENT TECHNIQUES

Reading MDF2 Disks with a Computer

The disks you format for use with the MDF2 are compatible with MS-DOS™ or PC-DOS™. This means that you can read the data from your MDF2 disks using an IBM® PC/AT™-compatible computer. Conversely, the MDF2 will be capable of reading data from 3.5" 2DD disks formatted by an IBM PC/AT.

Hint: The Atari® ST™ and Apple® Macintosh™ are also capable of reading data from disks formatted by the MDF2. If you own a Macintosh, use a utility program such as Apple File Exchange or DOS Mounter™ to read the data from your MDF2 disks.

Try inserting an MDF2 disk into the disk drive of your PC, then display a directory of the disk's contents. You will see a display something like the following:

```
a>dir b:
BE-BOP .X01      412      00-00-80 12:00
ROLLING .X02      533      00-00-80 12:00
SY99HOME.B01     256      00-00-80 12:00
SY99LIVE.B02     256      00-00-80 12:00
```

As you can see, each of the MDF2 filenames is followed by a three-character "extension". The MDF2 uses these extensions to organize the files on its disks.

Extensions beginning with the letter "B" indicate that the file in question contains MDR data, whereas files bearing extensions beginning with the letter "X" contain SEQ data.

The second two characters of each extension indicates the file number by which the MDF2 refers to the file. Thus, MDR data file number 01 would have the extension ".B01", whereas SEQ data file number 01 would have the extension ".X01".

If you desire, you can use your computer to change these extensions. Doing so will make possible some "tricky" applications that you normally could not achieve using the MDF2 alone. Some examples are given on the next page.

Changing MDF2 Filename Extensions

Here are a few examples of advanced techniques that become possible when you use a computer to change the extensions of your MDF2 files. If you are using a DOS-based system, you can change extension using the "rename" (or "ren") function.

Reordering songs

You will recall that when set you the "Repeat play" function to "all", the MDF2 will play back each of the SEQ data files on a disk in order. Now, imagine that you have recorded a number of SEQ files to a disk, and suddenly decide you want to play the first and second files in the opposite order.

You could change their order using the "Append" and "Delete" functions; but this would be pretty troublesome. It would be much easier to simply insert the disk in your computer, change the extension of file 01 to ".X02", and then change that of file 02 to ".X01". When you put the disk back in the MDF2, the songs will have changed place just as if you had gone through the trouble of moving them.

Caution: When you are renaming files, be careful not to give two or more files the same extension. If you do so, the MDF2 will only be able to read one of the files.

Changing MDR files to SEQ files

The MDF2's "Prog play" function is handy, so long as the synthesizer or tone generator that plays the data can use the same data setup for all of the songs. But you may find yourself in a situation where you wish you could transmit some bulk data to change the setup between files.

Of course, you can record the bulk data in SEQ mode; but you'd just as soon avoid the trouble this entails. Here's good news: you can!

Sure, the MDF2 uses extensions to distinguish between MDR and SEQ data files; but this is only done as a matter of convenience. Since both types of data are recorded using Standard MIDI File format 0, there's nothing wrong with changing the extension of an MDR file to ".X??" and playing it (or even appending it to another SEQ file) as though it were a song.

Mixing SEQ files and other files

The MDF2 will display the names of ESEQ files or standard MIDI files written by devices other than the SY99 only when the disk they are on does not contain any files bearing the ".X??" extension. This makes it difficult, for example, to play a mixture of SEQ files and ESEQ files which have been saved on the same disk.

Fortunately, the MDF2 does not need the extensions to check the file format: it is capable of recognizing standard MIDI files and ESEQ files by checking their file headers. This means that you can fool the MDF2 into displaying the names of non-SEQ files in SEQ mode by changing their filename extensions to ".X??". Remember, when you attempt this, that the second and third characters of the extension must be numbers, and that the extension must be different from those of all other SEQ files.

There's another way to trick the MDF2 into playing a mixture of SEQ files and other sequence files: you can rename all the SEQ files on the disk so that they have extensions other than ".X??". The MDF2 will then treat the disk as though it contained no SEQ files, displaying the full filename of every file.

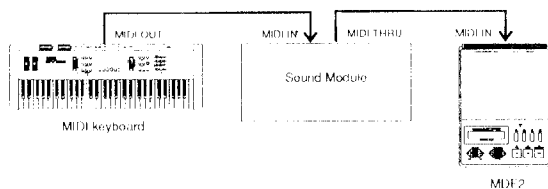
***Note:** If you rename ESEQ files using the former method, you will be able to rename, copy, or delete them just as though they were SEQ files. If you try to use the "Append" function with such files, however, the MDF2 will display an error message.*

A Portable MIDI Playback System

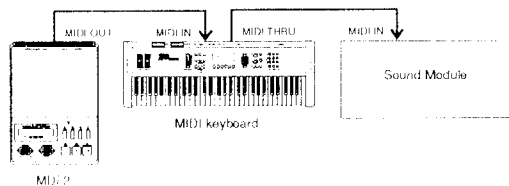
The MDF2, when used in combination with a compact MIDI tone generator module, can form the heart of a portable MIDI playback system. In such a system, you would slave the tone generator to the MDF2 in order to play back SEQ data files which you had recorded previously.

By adding a portable MIDI keyboard to this arrangement, you can add on-the-spot recording to the playback function of the basic system. Make your MIDI connections as seen in the diagrams below.

For recording



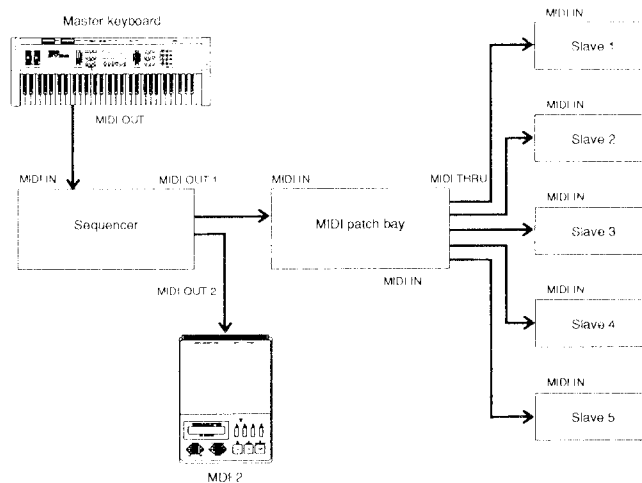
For playback



An Extended MIDI System

In a complete MIDI system which already includes a personal computer or a sequencer. In such a system, you would normally use the master keyboard and the sequencer to record parts for each of the slave tone generators, then play the data back all at once. If you connect the MDF2 to the system as shown in the illustration above, you can use it to "capture" the completed performance as SEQ data in Standard MIDI File format.

To do this, set the MDF2's sync mode to "MIDI" and the MIDI control function to "on". Then, press the **REC** and **PAUSE** keys. The MDF2 will wait for incoming sequence data to begin recording, then stop recording as soon as the sequencer transmits a MIDI Stop message.



WHAT ERROR MESSAGES TELL YOU

This appendix describes the error messages that can occur while you're using the MDF2, and give you advice on how to solve problems as they occur.

Disk access errors:

! Play only disk

You have tried to record SEQ data to a disk containing only files created by other devices. As a result, the MDF2 has determined that the disk can only be used for playing back sequence data.

Replace the disk with an empty disk, or one which contains sequence data files recorded by the MDF2.

Note: The MDF2 will only record sequence data to empty disks or disks that already contain files bearing the ".X??" extension. If all of the files on a disk have extensions other than ".X??", the MDF2 will decide that the disk can be used for sequence data playback only. You can record data to SY99 data disks as long as they contain standard MIDI files recorded by the SY99.

! Memory Full

The MDF2 has run out of disk space while recording SEQ data or receiving MDR data.

If this message appears while recording SEQ data, the MDF2 will create a SEQ file containing the data that it received before the error occurred. If the message appears while receiving MDR data, all of the received data will be lost.

Use a disk with enough available space. Check the amount of space remaining on a disk before receiving or recording.

! Disk protect

The disk in the drive is write-protected, and so the MDF2 cannot receive, record, rename, copy, or delete data on that disk.

Move the write-protect tap up to enable the MDF2 to write data to the disk.

! No disk

A floppy disk has not been inserted into the disk drive. Insert a disk which has been formatted by the MDF2.

! Unformat disk

The disk in the disk drive has not been formatted, or has been formatted for a device other than the MDF2. Check the disk, and format it if necessary.

! Bad disk

The MDF2 is unable to read or write data using the disk in the disk drive. The disk is either unformatted, or has been formatted by a device other than the MDF2.

If this message appears after you have formatted a disk, the disk is probably bad. Replace it with a new one.

! Illegal file

You have selected a file written using a data format other than those which the MDF2 is capable of reading.

Select another file. The MDF2 can only read standard MIDI files (format 0), ESEQ format sequence data files, and MDR data files created by the QX3 in MDR mode.

! No file

A function cannot be executed because the displayed file cannot be found on the current disk. You have probably changed the disk after selecting a file but before executing the function.

Insert the disk containing the displayed file and execute the function again.

MIDI-related errors:

! MIDI data err

There is something wrong with the MIDI data being received. Check the transmitting MIDI device and the MIDI cable.

! MIDI data full

The amount of MIDI data received at one time has exceeded the MDF2's processing capacity. Decrease the amount of data being transmitted to the MDF2.

Other errors:

! Battery Low

The batteries are running low. The MDF2 is not capable of functioning any longer. If you attempt to use the MDF2 after this message appears, the unit will not operate, or the message will appear again after a few seconds.

Replace the batteries with a new set; or connect the AC adapter.

Note: If the "YAMAHA MDF2" initial display appears when you start a playback or recording operation, it means the battery power is so low that the MDF2 cannot display the "Battery Low" error message. Replace the batteries quickly.

! Disk eject

A disk has been removed from the disk drive during playback or recording.

Never eject a disk during playback or recording, as doing so can damage the disk or the disk drive.

ABOUT THE MIDI IMPLEMENTATION CHART

The MIDI implementation chart is useful for determining the function compatibility of different MIDI devices. The chart is essentially a list of the MIDI functions supported by a MIDI device.

The various possible MIDI functions are listed in the far left column of the chart. The two columns to the right of this list tell you whether the device in question supports the transmission and reception, respectively, of MIDI data related to the function. Supported functions are indicated by an "O", whereas unsupported functions are marked by the letter "X".

By inspecting a device's implementation chart, you will get a good idea whether the device is more suitable for use as a master or a slave in your MIDI system. Generally speaking, the more O's a device has in the transmission column, the better it will perform as a master device; the more O's it has in the reception column, the better it will serve as a slave.

To determine whether two devices are compatible with regard to a specific function, compare their implementation charts. If one device supports transmission of a function and the other supports reception, the two devices can use the operation.

Note: *The MDF2's MIDI implementation chart is enclosed with this manual as a separate card. This card also gives a detailed description of the MDF2's MIDI functions.*

SPECIFICATIONS

MDR Section:

File Capacity:	99 max.
Recording Capacity:	approx. 600 KB per 1 file
Time Resolution:	10 msec./tempo = 60 (fixed)
Record File Format:	Standard MIDI File format 0
Play File Format:	Standard MIDI File format 0 or Yamaha QX3 MDR

Sequencer Section:

File Capacity:	99 max.
Number of Tracks:	1 (16 MIDI Channels)
Number of Notes:	approx. 80,000 notes
Note Resolution (internal):	1/96 of quarter note
Note Resolution (MIDI sync):	1/24 of quarter note
Tempo (play):	30 to 250
Tempo (record):	120 (fixed)
Simultaneous Record Notes:	64 max.
Simultaneous Play Notes:	64 max.
Record Mode:	Realtime (overwrite)
Record File Format:	Standard MIDI File Format 0
Play File Format:	Standard MIDI File Format 0 or Yamaha ESEQ

Controls:

Panel Switches:	MDR, SEQ, JOB, UTIL, CURSOR [<<], CURSOR [>>], FILE DATA [+], FILE DATA [-], REC, PAUSE, START/STOP
-----------------	---

Displays:

LCD:	16 digit liquid crystal display
LED:	green x 4 (MDR, SEQ, JOB, UTIL), red x 4 (REC, PAUSE, START/STOP, MIDI)

External Memory:

Medium:	3.5" 2DD micro floppy disk
File Capacity:	112 files/disk max.
Disk Format:	MS-DOS standard (9 sectors/track)
Disk Volume:	720 KB

Terminals:

MIDI terminals:	IN, OUT
	Power Adapter Terminal (DC IN)

Power Supply:

Batteries:	Size "AA" or LR6 (AM3) alkaline batteries x 6 (approx. 4 hours continuous operation)
Adapter:	Yamaha PA-3, PA-4 (PA-40 for U.S.)
Power Consumption:	700 mA max.

Dimensions:

160(W) x 50(H) x 220(D) mm
(6-1/4" x 2" x 8-5/8")

Weight:

1.1 kg (batteries and disk not included)
(2 lbs. 7 oz.)

Accessories:

3.5" 2DD floppy disk x 1
MIDI cable x 1

** Specifications are subject to change without notice.*

A

AC Adapter, connecting 10, DC IN jack 9
Append, file 48
Apple Macintosh 55
Atari ST 55

B

Backup, disk 50
Batteries 10
Block, bulk data 6, headers and footers 25, interval 25
Bulk data, definition 6, recording in SEQ mode 34. See also MDR data.
Bulk dump, definition 6

C

CURSOR keys 8
Connection, AC adapter 10, MIDI 11, 58
Continue message 41
Copy, disk 50, file 48

D

DC IN jack 9
Delete, file 47
Disk, access LED 8, backup 50, capacity 3, 25, 52, drive 9, format 52, handling 14, info. 53, write protect 15

Display 8
DOS Mounter 55

E

Eject button 8
Error messages 59
ESEQ files, format 54, playback 34, transmitting 25

F

Fast forward, during playback 33
File, appending 48, copying 48, deleting 47, ESEQ format 54, MDR data 25, renaming 45, SEQ data 34, standard MIDI file 54
FILE DATA keys 8
Filename, extensions 55, file management techniques 55, renaming files 45, UTILITY mode display 44
Floppy disk, see Disk.
Format, disk 52, ESEQ 54, MDR file 25, SEQ file 34, standard MIDI file 54
Front panel 8

I

IBM PC/AT 55
Indicator, disk access LED 9, MIDI LED 8
Internal clock 40

J

JOB mode, description 16, 35, entering 35, exiting 35, functions 17

K

Keywords 7

L

LCD 8
LED, disk access 9, MIDI 8

M

Master device, MIDI synchronization 40, 42, selecting a master device 61
MDF2 Mode Overview 16
MIDI, applications 58, connections 11, definition 6, data 6, device 6, implementation chart 61, LED 8, MIDI control 41, 42, realtime control messages 41, synchronization 40, 42, sync mode 40, 42, terminals 9
MDR data, definition 7, file format 25, playback as SEQ file 56, reception 20, transmission 23
MDR mode, definition 7, description 16, 19, functions 16
Mode keys 8

P

Pause, during playback 33, during recording 29, during reception 21, during transmission 24, to start recording 29

PAUSE key 8

Personal computers, file management techniques 55, using MDI 2 data files 55

Playback, changing tempo during 33, definition 7, fast forward 33, MDR files 56, procedure 31, programmed 37, record tempo 39, repeated 36, rewind 33

Playback tempo, see Record tempo.

Program play 37

Power, AC adapter 10, batteries 10, switch 9

R

REC key 8

Realtime control messages 41

Reception, definition 7, procedure 20, realtime control messages 41, sync signals 40

Recording, bulk data 34, definition 7, procedure 28

Record tempo 39

Rename, file 45

Repeat play, all songs 36, one song 36, program 37

Rewind 33

S

SEQ data, definition 7, file format 34, playback 31, recording 28

SEQ mode, definition 7, description 16, 27, functions 16

Sequence data, definition 6. See also SEQ data.

Slave device, MIDI synchronization 40, 42, selecting a slave device 61

Song data 7. See also SEQ data.

Specifications 62

Standard MIDI files, format 54, MDR data 25, mixing with ESEQ files 57, SEQ data 34

START/STOP key 8

Start message 41

Stop message 41

Synchronization, see MIDI synchronization.

Sync mode 40

System exclusive data, see Bulk data.

T

Tempo, changing during playback 33, record tempo 39

Terminology 6

Transmission, definition 7, procedure 23, realtime control messages 41, sync signals 41

U

UTILITY mode, description 16, 43, entering 43, exiting 43, filename display 44, functions 17

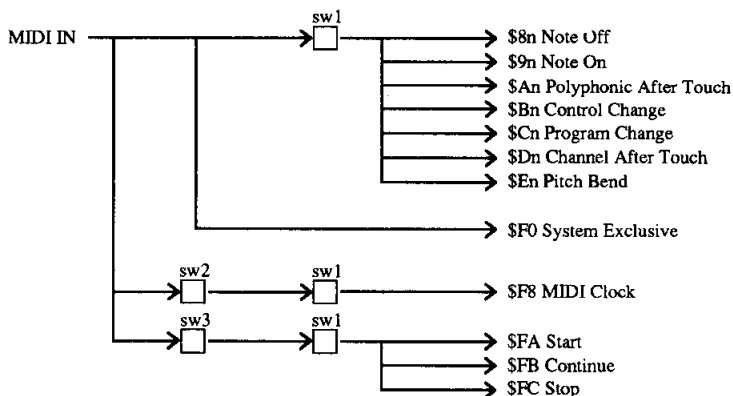
W

Write protect, disk 15

MDF2 MIDI DATA FORMAT

1. MIDI Transmission/Reception Block Diagram

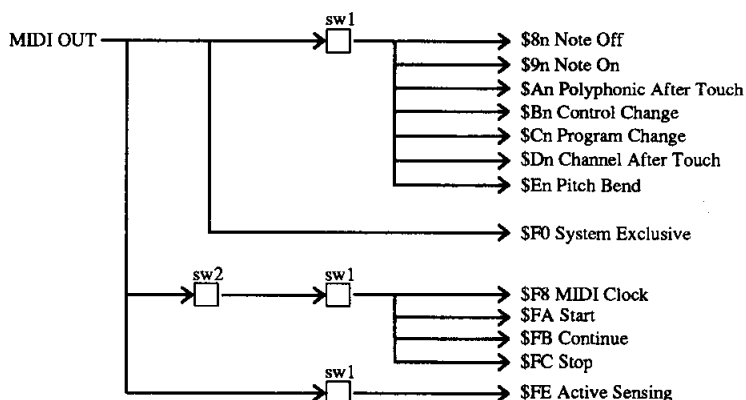
Reception flow diagram



Notes:

- sw1: ON in SEQ mode, OFF in MDR mode.
- sw2: ON when the "Sync mode" function is set to "MIDI".
- sw3: ON when the "MIDI control" function is set to "on".

Transmission flow diagram



Notes:

- sw1: ON in SEQ mode, OFF in MDR mode
- sw2: ON when the "MIDI control" function is set to "on".

2. DATA TRANSMISSION AND RECEPTION

2.1 CHANNEL VOICE MESSAGES

Channel voice messages are received and recorded when recording in SEQ mode. Data is received from all channels at all times, and recorded without modification. Channel voice messages are ignored in MDR mode.

Channel voice messages are transmitted when playing back files in SEQ mode. Data is transmitted as recorded on disk, without modification.

2.1.1 NOTE OFF

STATUS	1000nnnn	(\$8n)	n = 0 – 15 channel number
NOTE NUMBER	0kkkkkkk		k = 0(C-2) – 127(G8)
VELOCITY	0vvvvvvv		v = 0 – 127

2.1.2 NOTE ON

STATUS	1001nnnn	(\$9n)	n = 0 – 15 channel number
NOTE NUMBER	0kkkkkkk		k = 0(C-2) – 127(G8)
VELOCITY	0vvvvvvv		v = 0 – 127(0=note off)

2.1.3 POLYPHONIC AFTER TOUCH

STATUS	1010nnnn	(\$An)	n = 0 – 15 channel number
NOTE NUMBER	0kkkkkkk		k = 0(C-2) – 127(G8)
VELOCITY	0vvvvvvv		v = 0 – 127

2.1.4 CONTROL CHANGE

STATUS	1011nnnn	(\$Bn)	n = 0 – 15 channel number
CONTROL NUMBER	0ccccccc		c = 0 – 120
CONTROL VALUE	0vvvvvvv		v = 0 – 127

2.1.5 PITCH BEND

STATUS	1110nnnn	(\$En)	n = 0 – 15 channel number
LSB	0vvvvvvv		v = 0 – 127
MSB	0vvvvvvv		v = 0 – 127

2.1.6 PROGRAM CHANGE

STATUS	1100nnnn	(\$Cn)	n = 0 – 15 channel number
PROGRAM NUMBER	0ppppppp		p = 0 – 127

2.1.7 CHANNEL AFTER TOUCH

STATUS	1101nnnn	(\$Dn)	n = 0 – 15 channel number
PRESSURE VALUE	0vvvvvvv		v = 0 – 127

2.2 SYSTEM EXCLUSIVE MESSAGES

System exclusive messages are received and recorded when recording in either SEQ or MDR modes. All received data is recorded with the addition of time signals, but without other modification.

System exclusive messages are transmitted when playing back files in either SEQ or MDR modes. Data is transmitted as recorded on disk, without modification.

2.3 CHANNEL MODE MESSAGES

Channel mode messages are received and recorded when recording in SEQ mode. Data is received from all channels at all times, and recorded without modification. Channel mode messages are ignored in MDR mode.

Channel mode messages are transmitted when playing back files in SEQ mode. Data is transmitted as recorded on disk, without modification.

Note, however that ALL NOTE OFF messages (c = 123) are ignored when received; such messages are neither recorded nor transmitted.

STATUS	1011nnnn	(\$Bn)	n = 0 – 15 channel number
MODE NUMBER	0ccccccc		c = 121 – 127(except C=123)
MODE VALUE	0vvvvvvv		v = 0 – 127

2.4 SYSTEM COMMON MESSAGES

System common messages are neither transmitted nor received.

2.5 SYSTEM REALTIME MESSAGES

2.5.1 TIMING CLOCK

STATUS 11111000 (\$F8)

The MDF2 synchronizes recording or playback in SEQ mode to a received timing clock signal when the “Sync mode” function is set to “MIDI”.

The MDF2 transmits a timing clock signal synchronized to its internal clock at all times when the “MIDI control” function is set to “MIDI”. It does not transmit this signal when the “MIDI control” function is set to “int.”

2.5.2 START

STATUS 11111010 (\$FA)

The MDF2 starts recording or playback of the selected file when a start message is received while recording or playback is paused in SEQ mode, if the "MIDI control" function is set to "on". If the MDF2 was paused at a location other than the start of a file, the MDF2 begins recording or playback from at the paused location rather than from the beginning of the file.

The MDF2 transmits a start message when recording or playback is started at the beginning of a file in SEQ mode, if the "MIDI control" function is set to "on". The MDF2 does not transmit a start message when the "MIDI control" function is set to "off".

2.5.3 CONTINUE

STATUS 11111011 (\$FB)

The MDF2 starts recording or playback of the currently selected file at the current position when a continue message is received while recording or playback is paused in SEQ mode.

The MDF2 transmits a continue message when recording or playback of a file is started in SEQ mode, if the "MIDI control" function is set to "on".

2.5.4 STOP

STATUS 11111100 (\$FC)

The MDF2 stops recording or playback of a file when a stop message is received while recording or playing back a file in SEQ mode, if the "MIDI control" function is set to "on".

The MDF2 transmits a stop message when recording or playback is stopped in SEQ mode, if the "MIDI control" function is set to "on".

2.5.5 ACTIVE SENSING

STATUS 11111110 (\$FE)

The MDF2 outputs an active sensing signal every 200 msec while its power supply is turned on. It does not receive active sensing signals.

Function ...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	1 - 16 1 - 16	1 - 16 1 - 16	*1
Mode Default Messages Altered	x x *****	x x x	*1
Note Number : True voice	0 - 127 *****	0 - 127	*1
Velocity Note ON Note OFF	o 9nH, v=1-127 o 8nH, v=0-127	o v=1-127 o v=0-127	*1
After Key's Touch Ch's	o o	o o	*1
Pitch Bender	o	o	*1
Control Change 0-120	o	o	*1
Prog Change : True #	o 0 - 127 *****	o 0 - 127	*1
System Exclusive	o	o	
System : Song Pos : Song Sel Common : Tune	x x x	x x x	
System :Clock Real Time :Commands	o *2 o *2	o *3 o *2	
Aux :Local ON/OFF :All Notes OFF Mes- :Active Sense sages:Reset	o x o x	o x x x	*1
Notes: *1 = if SEQ mode. *2 = if MIDI control switch is on. *3 = receive clock at MIDI sync mode.			

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO o : Yes
 Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No

For details of products, please contact your nearest Yamaha or the authorized distributor listed below.

Pour plus de détails sur les produits, veuillez-vous adresser à Yamaha ou au distributeur le plus proche de vous figurant dans la liste suivante.

Die Einzelheiten zu Produkten sind bei Ihrer unten aufgeführten Niederlassung und bei Yamaha Vertragshändlern in den jeweiligen Bestimmungsländern erhältlich.

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Yamaha Canada Music Ltd.
135 Milner Avenue, Scarborough, Ontario,
M1S 3R1, Canada
Tel: 416-298-1311

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Yamaha Corporation of America
6600 Orangethorpe Ave., Buena Park, Calif. 90620,
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Tel: 714-522-9011

MIDDLE & SOUTH AMERICA

MEXICO

Yamaha De Mexico S.A. De C.V.,
Departamento de ventas
Javier Rojo Gomez No.1149, Col. Gpe Del
Moral, Deleg. Iztapalapa, 09300 Mexico, D.F.
Tel: 686-00-33

BRASIL

Yamaha Musical Do Brasil LTDA.
Ave. Rebouças 2636, Sao Paulo, Brasil
Tel: 011-853-1377

PANAMA

Yamaha De Panama S.A.
Edificio Interseco, Calle Elvira Mendez no.10,
Piso 3, Oficina #105, Ciudad de Panama, Panama
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Tel: 01908-366700

IRELAND

Danfay Ltd.
611D, Sallynoggin Road, Dun Laoghaire, Co. Dublin
Tel: 01-2859177

GERMANY/SWITZERLAND

Yamaha Europa GmbH.
Siemensstraße 22-34, 25462 Rellingen, F.R. of
Germany
Tel: 04101-3030

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Schleiergasse 20, A-1100 Wien Austria
Tel: 0222-60203900

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Yamaha Music Benelux B.V.,
Verkoop Administratie
Kanaalweg 18G, 3526KL, Utrecht, The Netherlands
Tel: 030-828411

BELGIUM/LUXEMBOURG

Yamaha Music Benelux B.V.,
Brussels-office
Keiberg Impetuistraat 8, 1930 Zaventem, Belgium
Tel: 02-7258220

FRANCE

Yamaha Musique France,
Division Professionnelle
BP 70-77312 Marne-la Vallée Cedex 2, France
Tel: 01-64-61-4000

ITALY

Yamaha Musica Italia S.P.A.,
Combo Division
Viale Italia 88, 20020 Lainate (Milano), Italy
Tel: 02-935-771

SPAIN

Yamaha-Hazen Electronica Musical, S.A.
Jorge Juan 30, 28001, Madrid, Spain
Tel: 91-577-7270

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Estrada de Porto Salvo, Paço de Arcos 2780 Oeiras,
Portugal
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GREECE

Philippe Nakas S.A.

Navarinou Street 13, P.Code 10680, Athens, Greece
Tel: 01-364-7111

SWEDEN

Yamaha Scandinavia AB

L. A. Wettergrens Gata 1
Box 30053
S-400 43 Göteborg, Sweden
Tel: 031 89 34 00

DENMARK

YS Copenhagen Liaison Office

Generatorvej 8B
DK-2730 Herlev, Denmark
Tel: 44 92 49 00

FINLAND

Warner Music Finland OY/Fazer Music

Aleksanterinkatu 11, P.O. Box 260
SF-00101 Helsinki, Finland
Tel: 0435 011

NORWAY

Narud Yamaha AS

Grim Næringspark 17
N-1345 Østerås, Norway
Tel: 67 14 47 90

ICELAND

Skeifan HF

Skeifan 17 P.O. Box 8120
IS-128 Reykjavik, Iceland
Tel: 525 5000

EAST EUROPEAN COUNTRIES

(Except HUNGARY)

Yamaha Europa GmbH.

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Germany
Tel: 04101-3030

AFRICA

Yamaha Corporation,
International Marketing Division
Nakazawa-cho 10-1, Hamamatsu, Japan 430
Tel: 053-460-2312

MIDDLE EAST

TURKEY/CYPRUS

Yamaha Musique France, Division Export
BP 70-77312 Marne-la-Vallée Cedex 2, France
Tel: 01-64-61-4000

OTHER COUNTRIES

Yamaha Corporation,
International Marketing Division
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Tel: 053-460-2312

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Korea
Tel: 02-466-0021-5

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Malaysia
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Makati, Metro Manila, Philippines
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Yamaha Music Asia Pte., Ltd.
Blk 17A Toa Payoh #01-190 Lorong 7
Singapore 1231
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TAIWAN

Kung Hsue She Trading Co., Ltd.
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Tel: 02-709-1266

THAILAND

Siam Music Yamaha Co., Ltd.
865 Phornprapha Building, Rama I Road,
Patumwan, Bangkok 10330, Thailand
Tel: 2-215-3443

THE PEOPLE'S REPUBLIC OF CHINA AND OTHER ASIAN COUNTRIES

Yamaha Corporation,
International Marketing Division
Nakazawa-cho 10-1, Hamamatsu, Japan 430
Tel: 053-460-2317

OCEANIA

AUSTRALIA

Yamaha Music Australia Pty. Ltd.
17-33 Market Street, South Melbourne, Vic. 3205,
Australia
Tel: 3-699-2388

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Music Houses of N.Z. Ltd.
146/148 Captain Springs Road, Te Papapa, Auckland,
New Zealand
Tel: 9-634-0099

**COUNTRIES AND TRUST
TERRITORIES IN PACIFIC OCEAN**

Yamaha Corporation,
International Marketing Division
Nakazawa-cho 10-1, Hamamatsu, Japan 430
Tel: 053-460-2317

HEAD OFFICE Yamaha Corporation, Electronic Musical Instrument Division

Nakazawa-cho 10-1, Hamamatsu, Japan 430
Tel: 053-460-2445

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