MZ-2000

USER'S GUIDE

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MZ2000-E-1

CASIO

Welcome...

To the happy family of satisfied CASIO electronic musical instrument owners! To get the most out of the many features and functions of the keyboard, be sure to carefully read this manual and keep it on hand for future reference.

GUIDELINES LAID DOWN BY FCC RULES FOR USE OF THE UNIT IN THE U.S.A. (not applicable to other areas).

NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CE

CASIO ELECTRONICS CO., LTD.
Unit 6, 1000
North Circular Road
London NW2 7JD, U.K.

This mark is valid in the EU countries only.
Please keep all information for future reference.

Main Features

❒ Big, Easy-to-read LCD Screen

(Page E-14)

- A big 320 x 240-dot LCD screen provides a wealth of information about the music you are playing. It also displays easy-to-understand menus to make operation quicker and simpler.

❒ Designed for Playability (Page E-28)

- Features to help you sound better include touch response, after touch, two wheels, and optional pedal connectability.

❒ Tones (Page E-24)

- A total of 522 high-quality tones are classified among 19 groups, including piano, organ, brass, ensemble and more.

❒ Layer and Split (Page E-22)

- Layer two different tones so they both sound whenever you press a key, or split the keyboard so different tones play depending on whether you press a key on the right or on the left.

❒ Drawbars (Page E-35)

- Nine on-screen drawbars can be used to alter the parameters of the tones in the **Drawbar Organ** group. Percussion sounds and click can also be altered using the drawbars.

❒ Rhythm/Auto Accompaniment Patterns (Page E-38)

- A total of 120 rhythm/auto accompaniment patterns provide backup for rock, pops, and a wide variety of other musical styles. A simple operation adds full accompaniments that also include chord parts.

❒ Effects (Page E-32)

- The keyboard's powerful effector provides seven blocks: 4 DSP channels + Chorus + Reverb + Master. A different effect can be assigned to each block, and blocks can be turned on and off as required.

❒ Synthesizer Mode (Page E-62)

- The parameters of preset tones can be altered to create your own original sounds. Up to 40 user tones can be stored in memory.

❒ Mixer Mode (Page E-51)

- The Mixer Mode gives you the means to adjust the volume, stereo balance, and other parameters of the layer and split tones, auto accompaniment parts, etc.

❒ Registration Memory (Page E-56)

- Store up to 64 keyboard setups for quick and easy recall whenever you need them.

❒ Easy Record (Page E-73)

- Record your keyboard play, including auto accompaniment backup with the Song Sequencer Mode's Easy Record feature.

❒ Sequencer Mode (Page E-76)

- A 17-track sequencer provides a System Track for recording of the auto accompaniment plus 16 external tracks, each of which can be used to record with a different tone.

❒ Pattern Sequencer Mode (Page E-101)

- The parameters of auto accompaniment patterns can be altered to create your own original patterns. The parameters of auto accompaniment patterns can be altered to create new patterns, or you can create your own, original patterns from scratch.

❒ Song Studio (Page E-126)

- Song Studio lets you extract chord progressions out of Standard MIDI File (SMF) so you can create chord progressions for specific tunes. This gives you the ability to play along with realistic accompaniments by your favorite groups or bands.

❒ MIDI (Page E-169)

- Connect to another MIDI device and use it as a sound source to play the notes output from this keyboard. You can output keyboard notes, auto accompaniment, Song Sequencer playback, etc. You can also use this keyboard as a sound source for an external sequencer or other device.

❒ Built-in Floppy Disk Drive (Page E-140)

- Save your user tones and rhythm patterns, songs, and other data as files on a floppy diskette. Or you can play back commercially available SMFs, and even convert rhythm data created for another type of keyboard (another CASIO model, or a Technics or Roland keyboard).

❒ Tone and Function Demo Tunes

(Page E-20)

- Built-in demo tones highlight the tones, rhythms, and functions of the keyboard.

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Safety Precautions

Symbols

Various symbols are used in this user's guide and on the product itself to ensure that the product is used safely and correctly, and to prevent injury to the user and other persons as well as damage to property. Those symbols along with their meanings are shown below.

⚠ WARNING

This indication stipulates matters that have the risk of causing death or serious injury if the product is operated incorrectly while ignoring this indication.

⚠ CAUTION

This indication stipulates matters that have the risk of causing injury as well as matters for which there is the likelihood of occurrence of physical damage only if the product is operated incorrectly while ignoring this indication.

Symbol Examples

This triangle symbol (△) means that the user should be careful. (The example at left indicates electrical shock caution.)

This circle with a line through it (⃠) means that the indicated action must not be performed. Indications within or nearby this symbol are specifically prohibited. (The example at left indicates that disassembly is prohibited.)

The black dot (●) means that the indicated action must be performed. Indications within this symbol are actions that are specifically instructed to be performed. (The example at left indicates that the power plug must be unplugged from the electrical socket.)

⚠ WARNING

Please use caution regarding the handling of the AC adaptor.

- Do not use a voltage other than the indicated power supply voltage. Use of a voltage other than that indicated may cause fire or electrical shock.
- If the power cord should become damaged (exposed wires, disconnection, etc.), purchase a new AC adaptor. Use of a damaged power cord may cause fire or electrical shock.
- Do not cut or damage the power cord. Also do not place heavy objects on top of it or subject it to excessive heat. Damage to the power cord may cause fire or electrical shock.

- Do not attempt to shape the power cord or subject it to excessive bending, twisting or pulling. This may cause fire or electrical shock.
- Please use the adaptor specified for this instrument. Use of another adaptor may cause fire, electrical shock, or malfunction.

Do not locate the instrument or its stand* on an uneven or unstable surface.

- Locating the instrument or its stand on an uneven or unstable surface can cause it to fall, creating the danger of personal injury.

Do not place containers containing water or other liquids on the instrument.

- Do not place the following objects on the instrument. Placing such objects on the instrument may cause fire or electrical shock if they spill and get inside the instrument.

  - Containers filled with water or other liquids (including vases, potted plants, cups, cosmetics and medicines)
  - Small metal objects (including hairpins, sewing needles and coins)
  - Flammable objects

In the event a foreign object should happen to get inside the instrument, please take the following actions:

1. Turn power off.
2. Unplug the AC adaptor from the wall outlet.

3. Consult with the dealer where you purchased the keyboard or with an authorized CASIO service provider.

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Do not disassemble or modify the instrument.

- Never attempt of take apart or modify the instrument, its accessories, or separately sold options. Doing so may cause fire, electrical shock or malfunction. Consult your dealer concerning all inspection, adjustment or repair of internal components.

Do not use if there is an abnormality or malfunction.

- Do not use the instrument if there appear to be abnormalities such as the presence of smoke or abnormal odor. Also do not use the instrument if there appear to be malfunctions such as the power not coming on or sound not being produced. Use under such conditions may cause fire or electrical shock. In such cases, take the following actions immediately. Never attempt to repair the instrument yourself.
  1. Turn power off.
  2. Unplug the AC adaptor from the wall outlet.
  3. Consult with the dealer where you purchased the keyboard or with an authorized CASIO service provider.

When the instrument has been dropped:

- In the case the instrument has been dropped or damaged, take the following actions. Continued use may cause fire or electrical shock.
  1. Turn power off.
  2. Unplug the AC adaptor from the wall outlet.
  3. Consult with the dealer where you purchased the keyboard or with an authorized CASIO service provider.

Be careful of the bags around children.

- Never allow anyone to place the plastic bags of the instrument, its accessories, and its separately sold options over their heads. Doing so may cause suffocation. Particular caution is required in homes with small children.

⚠ CAUTION

AC Adaptor

- When in use, do not locate the AC adaptor inside a bookcase or other confined space, and never place paper, books, or other similar objects on the AC adaptor.
- Do not locate the power cord in close proximity to heaters or other heating appliances. This may cause the cord to melt leading to possible fire or electrical shock.

- When unplugging the AC adaptor from an electrical outlet, always make sure to pull on the adaptor itself and not the cord. Pulling excessively on the cord may cause it to be damaged or break leading to possible fire or electrical shock.

- Do not touch the AC adaptor with wet hands when it is plugged in. This may cause electrical shock.

- Be sure to unplug the AC adaptor from the electrical outlet during lightening storms and when you do not plan to use the keyboard for an extended period, such as when you go on a trip.
- After use turn off the power switch of the instrument and unplug the AC adaptor from the electrical outlet.
- At least once a year, unplug the AC adaptor from the power outlet and clean the area around the prongs of the plug. Dust build up around the prongs can create the danger of fire.

Transport

- When transporting the instrument, always make sure to unplug the AC adaptor from the electrical outlet and confirm that all other external connections have been disconnected. Only then should the instrument be transported. If the above is not done, the cord may be damaged leading to possible fire or electrical shock.

Care

- Whenever caring, make sure to first unplug the AC adaptor from the electrical outlet.

Location

- Never locate the instrument in areas subject to high humidity or heavy accumulation of dust. Doing so may cause fire or electrical shock.
- Never locate the instrument in areas subject to grease splatters or steam, such as in a kitchen or near a humidifier. Doing so may cause fire or electrical shock.

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765A-E-007A

Do not place keyboard on lacquered furniture.

- The instrument's silicone rubber feet may eventually blacken or scar lacquered surfaces. Use felt cloth pads to insulate the feet or preferably use a CASIO musical instrument stand designed for your keyboard.

Do not place heavy objects on the instrument.

- Do not place heavy objects on the instrument. This may cause the instrument to tip over or break resulting in injury.

Volume

- Very high volume levels can damage hearing. Avoid using the instrument at very high volume settings for long periods. Consult with a physician immediately if you experience impaired hearing or ringing in the ears.

Liquid Crystal Display (LCD) Precautions

- Avoid subjecting the keyboard's LCD to strong impact, which can crack or break the LCD's glass creating the danger of personal injury.
- Should the LCD glass ever crack or break, do not allow the liquid inside the LCD to come into contact with your skin, which can cause inflammation and reddening.
  *Should the LCD liquid get into your mouth, immediately wash out your mouth with water and then consult a physician.
  *Should the LCD liquid get in your eyes or on your skin, immediately flush with water for at least 15 minutes and then consult a physician.

Do not get onto the instrument or stand.*

- Do not crawl on top of the instrument or its optional stand. Particular caution is required in homes having small children. This may cause the instrument or stand to tip over and break resulting in injury.

Optional Stand*

- Carefully assemble the stand following the assembly instructions that come with it. Securely tighten all bolts, nuts, and fasteners, and make sure that you mount the instrument correctly onto the stand. Incorrectly or insufficiently tightening screws, or incorrectly mounting the instrument onto the stand can cause the stand to tip over or the instrument to fall off the stand, possibly leading to injury.

* The stand is available as an option.

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Care of your keyboard

Avoid heat, humidity or direct sunlight.

Do not overexpose the instrument to direct sunlight, or place it near an air conditioner, or in any extremely hot place.

Do not use near a TV or radio.

This instrument can cause video or audio interference with TV and radio reception. If this happens, move the instrument away from the TV or radio.

Do not use lacquer, thinner or similar chemicals for cleaning.

Clean the keyboard with a soft cloth dampened in a weak solution of water and a neutral detergent. Soak the cloth in the solution and squeeze until it is almost dry.

Avoid use in areas subjected to temperature extremes.

Extreme heat can cause figures on the LCD screen to become dim and difficult to read. This condition should correct itself when the keyboard is brought back to normal temperature.

Lithium Battery Precautions

The keyboard comes with a built-in lithium battery that supplies power to the memory to retain Song Sequencer, Pattern Sequencer and other data while keyboard power is turned off. If the power of the lithium battery is low, turning off keyboard power can result in deletion of all data stored in its memory.
The normal life of the original battery is five years from the time it is loaded at the factory. Due to time spent in transit and storage, the original battery probably will not provide a full five years of service life. It is up to you to contact your nearest CASIO service provider about having the lithium battery replaced periodically.

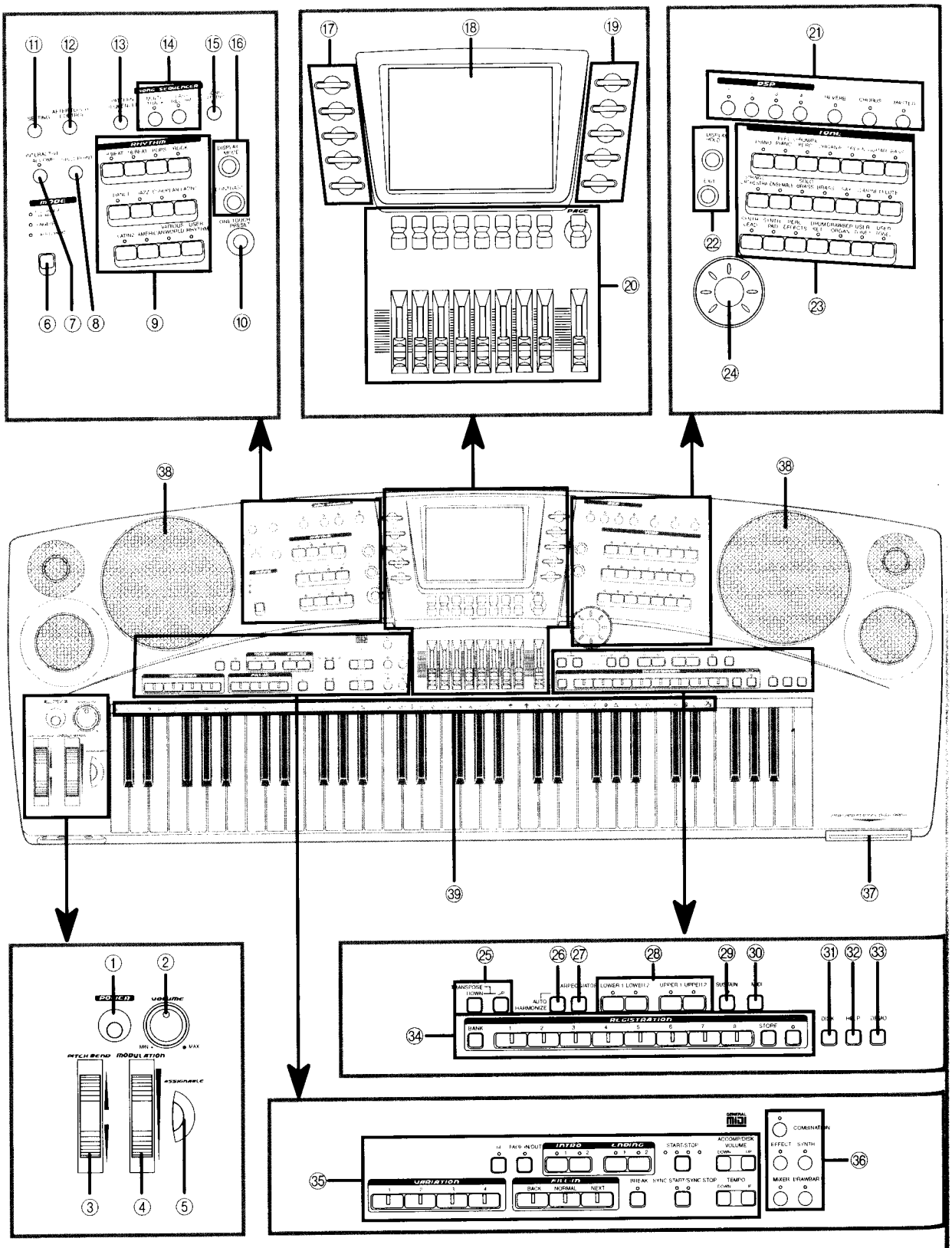
- CASIO COMPUTER CO., LTD. shall not be held responsible for any losses to you or any third party due to loss or corruption of data caused by malfunction or repair of this keyboard, or by battery replacement.

NOTE

You may notice lines in the finish of the case of this keyboard. These lines are a result of the molding process used to shape the plastic of the case. They are not cracks or breaks in the plastic, and are no cause for concern.

Contents

General Guide



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(1) POWER

(2) VOLUM

(3) PITCH B

(4) MODUL

(5) ASSIGN

(6) MODE b

(7) INTERA

(8) SPLIT PO

(9) RHYTHM

(10) ONE TOU

(11) SETTING

(12) AFTER T

(13) PATTERN

(14) SONG SE

- MULTI
- EASY R

(15) SONG ST

(16) DISPLAY CONTRA

(17) Display bu

(18) Display

(19) Display bu

* The butt play are the left s on the ri

(20) Control bu

Control sli

(21) Effect cont

- DSP but
- REVERI
- CHORU
- MASTE

(22) DISPLAY EXIT butt

(23) TONE but

(24) Selector di

(25) TRANSPO

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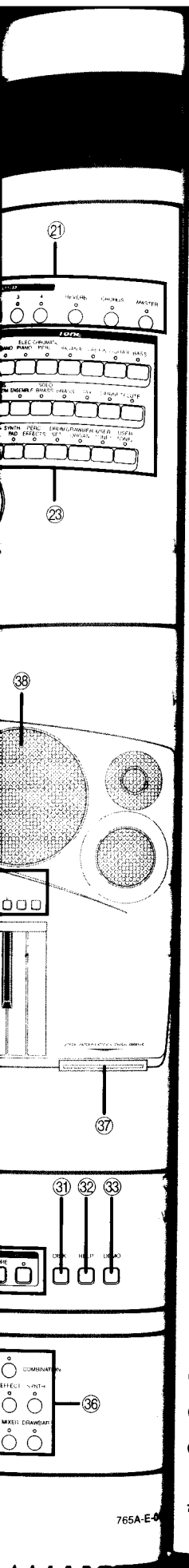

① **POWER** button

② **VOLUME** knob

③ **PITCH BEND** wheel

④ **MODULATION** wheel

⑤ **ASSIGNABLE** button

⑥ **MODE** button

⑦ **INTERACTIVE ACCOMP** button

⑧ **SPLIT POINT** button

⑨ **RHYTHM** buttons

⑩ **ONE TOUCH PRESET** button

⑪ **SETTING** button

⑫ **AFTER TOUCH/CONTROL** button

⑬ **PATTERN SEQUENCER** button

⑭ **SONG SEQUENCER** buttons

- **MULTI-TRACK** button
- **EASY RECORD** button

⑮ **SONG STUDIO** button

⑯ **DISPLAY MODE** button

CONTRAST button

⑰ Display buttons L1 through L5*

⑱ Display

⑲ Display buttons R1 through R5*

* The buttons on the left and right sides of the display are called "display buttons." The buttons on the left side are named L1 through L5 and those on the right are named R1 through R5.

⑳ Control buttons (Sets 1 to 9, **PAGE** buttons)

Control sliders (Sets 1 to 9)

㉑ Effect controls

- **DSP** buttons (1 to 4)
- **REVERB** button
- **CHORUS** button
- **MASTER** button

㉒ **DISPLAY HOLD** button

EXIT button

㉓ **TONE** buttons

㉔ Selector dial

㉕ **TRANSPOSE** buttons (**UP, DOWN**)

㉖ **AUTO HARMONIZE** button

㉗ **ARPEGGIATOR** button

㉘ **LOWER 1/LOWER 2** buttons

UPPER 1/UPPER 2 buttons

㉙ **SUSTAIN** button

㉚ **MIDI** button

㉛ **DISK** button

㉜ **HELP** button

㉝ **DEMO** button

㉞ **REGISTRATION** buttons

- **BANK** button
- Buttons 1 to 8
- **STORE** button
- **SELECT** button

㉟ Auto accompaniment controls

- **VARIATION** buttons (1 to 4)
- **BACK/NORMAL/NEXT (FILL-IN)** buttons
- **BREAK** button
- **SYNC START/SYNC STOP** button
- **TEMPO** buttons (**UP, DOWN**)
- **rit.** button
- **FADE IN/OUT** button
- **INTRO** buttons
- **ENDING** buttons
- **START/STOP** button
- **ACCOMP/DISK VOLUME** buttons (**UP, DOWN**)

㊱ **COMBINATION** button

EFFECT button

SYNTH button

MIXER button

DRAWBAR button

㊲ Floppy disk drive

- Acces lamp
- Eject button

㊳ Speakers

㊴ Percussion instrument list

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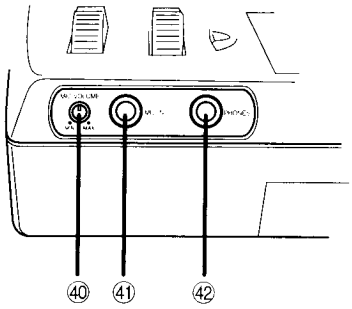
Front Panel

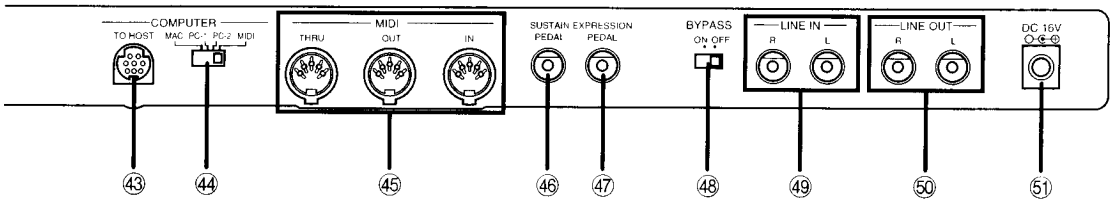


⑩ Microphone volume knob (**MIC VOLUME**)

⑪ Microphone input terminal (**MIC IN**)

⑫ Headphones terminal (**PHONES**)

Rear Panel



⑬ **TO HOST** terminal

⑭ Host select switch (**MAC, PC-1, PC-2, MIDI**)

⑮ **MIDI** terminals (**THRU, OUT, IN**)

⑯ **SUSTAIN PEDAL** terminal

⑰ **EXPRESSION PEDAL** terminal

⑱ **BYPASS** switch (**ON, OFF**)

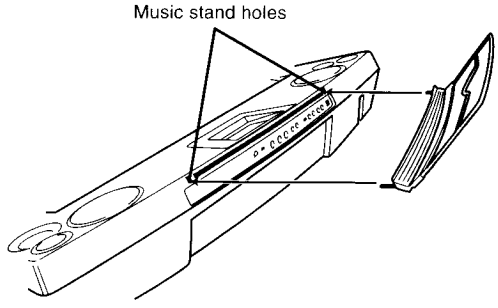
⑲ **LINE IN R, LINE IN L** terminal

⑳ **LINE OUT R, LINE OUT L** terminal

㉑ Power terminal (**DC 16V**)

Installing the Music Stand

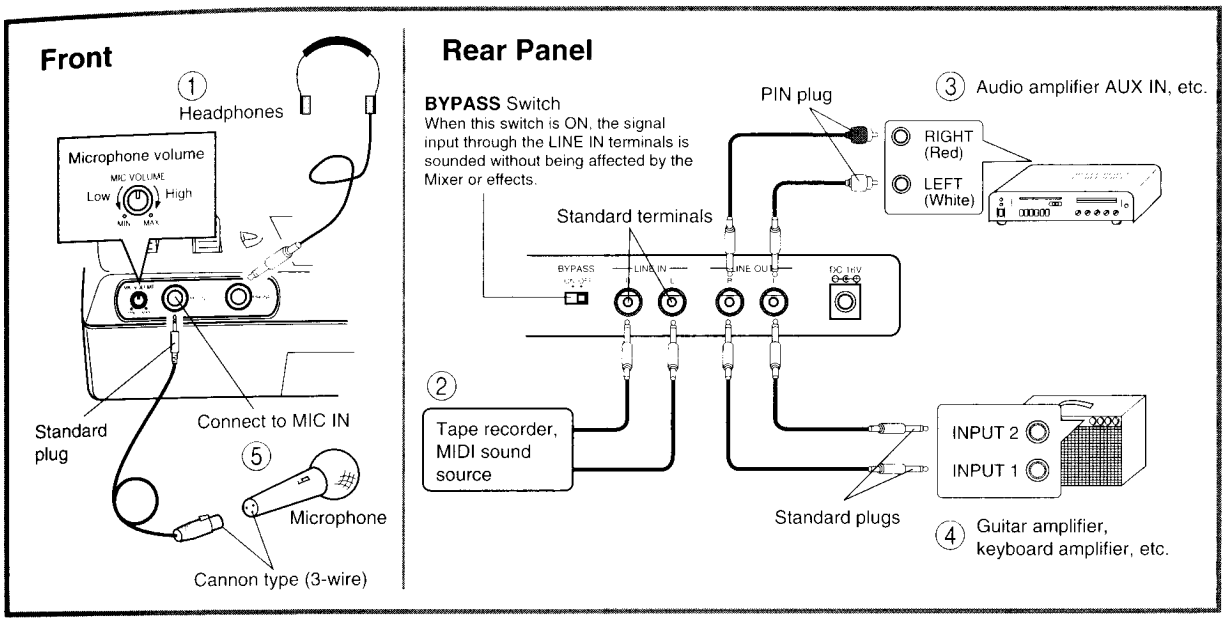
Insert the music stand that comes with the keyboard into the music stand holes.



Notes about Making Connections

Headphones, Line In, Line Out, and Microphone Terminals

Connecting to an audio or musical instrument amplifier provides even clearer, more powerful sound through external speakers.



IMPORTANT!

- Whenever connecting external equipment, first set the **VOLUME** knob of the keyboard and the volume controller of the external equipment to relatively low volume settings. You can later adjust volume to the level you want after connections are complete.
- Be sure also to refer to the documentation that comes with the external equipment for its proper connection procedures.

Connecting Headphones ①

Connect commercially available headphones to the keyboard's headphones terminal. This cuts off the built-in speakers, which means you can practice even late at night without disturbing others. To protect your hearing, make sure that you do not set the volume level too high when using headphones.

Playing External Equipment from the Piano ②

Use commercially available cables to connect the **LINE OUT** jacks of external equipment (MIDI sound source, tape recorder, etc.) to the keyboard's **LINE IN** terminals. It is up to you to purchase connecting cables that are compatible with the equipment you are connecting.

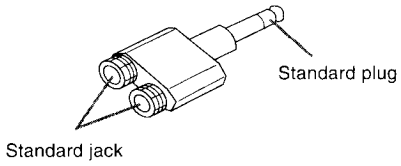
Connecting to Audio Equipment ③

Use commercially available cords to connect to the two jacks as shown in Figure ③. It is up to you to purchase connecting cables like the ones shown in the illustration for connection. Normally in this configuration, you must set the audio equipment's input selector to the setting that specifies the terminal (such as **AUX IN**) that the keyboard is connected to. Use the keyboard's **VOLUME** knob to adjust the volume level.

Connecting to a Musical Instrument Amplifier ④

Use commercially available cords to connect to the two jacks as shown in Figure ④. It is up to you to purchase connecting cables like the ones shown in the illustration for connection. Use the keyboard's **VOLUME** knob to adjust the volume level.

* If your amplifier has only one input jack, use an adapter like the one shown below.



Connecting a Microphone ⑤

You can connect a commercially available microphone and sing along with auto accompaniment or MIDI play. When connecting a microphone, we recommend that you set the **MIC VOLUME** to a very low level. Set the microphone volume to the level you want after connecting the microphone.

Microphone Specifications

The microphone you connect to the keyboard should match the following specifications.

- Type: Metal shielded microphone
- Microphone-cord connector: Cannon type (3-wire)
- Keyboard plug: standard plug (monaural)

IMPORTANT!

- Be sure to use a metal-shielded cannon type microphone. This type of microphone protects against the effects of noise causes a computer or other device connected to the keyboard.
- Unplug the microphone from the keyboard when you are not using it.

Feedback

Either of the following conditions can cause feedback (howling).

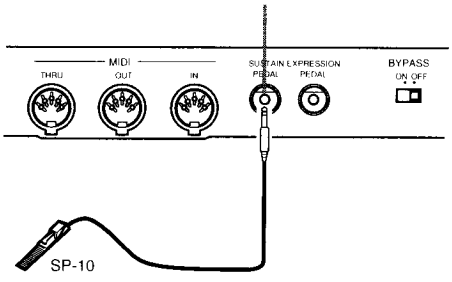
- Holding the microphone in your hand
- Locating the microphone too close to a speaker

Move the microphone away from the speaker whenever you experience feedback.

SUSTAIN PEDAL terminal

Use the **SUSTAIN PEDAL** terminal to connect an optionally available sustain pedal (SP-2 or SP-10).

SUSTAIN PEDAL terminal

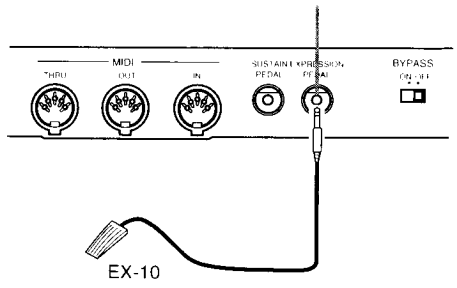


A sustain pedal provides you with effects that are similar to those produced by the sustain pedal and soft pedal of an acoustic piano. It can also be set up to control changes between rhythm fill-in patterns. See "Keyboard Setup Reference" on page E-154 for information about making sustain pedal settings.

EXPRESSION PEDAL terminal

Use the **EXPRESSION PEDAL** terminal to connect an optionally available expression pedal (EX-10).

EXPRESSION PEDAL terminal



An expression pedal can be set up by adjusting the **EXPRESSION, INTERACTIVE ACCOMP**, and **DSP 1** and **2** parameters. See "Keyboard Setup Reference" on page E-154 for information about making expression pedal settings.

Accessories and Options

Use only accessories and options that are specifically recommended for use with this keyboard. Use of a non-recommended accessory or option creates the risk of fire, electric shock, and personal injury.

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Power Requirements

This keyboard can be powered by current from a standard household wall outlet (using the specified AC adaptor). Always make sure you turn the keyboard off whenever you are not using it.

AC Adaptor

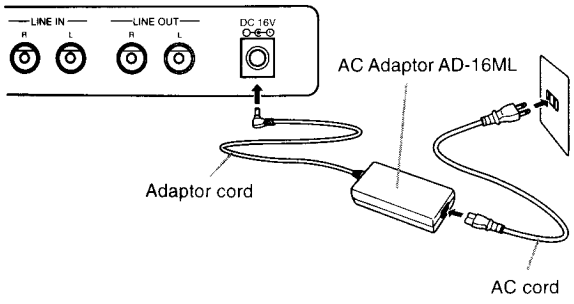
Make sure that you use only the AC adaptor specified for this keyboard.

Connecting the AC Adaptor

1. Plug the AC power cord into the AC adaptor.
2. Plug the AC power cord into a household electrical wall outlet.
3. Plug the adaptor cord into the power terminal (**DC-16V**) on the back of the keyboard.

Specified AC Adaptor: AD-16ML

Rear Panel



AC Adaptor Precautions

- Do not allow the AC adaptor cord or AC cord to become damaged or cracked. Never modify, sharply bend, twist, or pull on the cords. Do not place heavy objects on the cords or expose them to heat. Use of a damaged cord creates the risk of fire and electric shock.
- Use only the AC adaptor and AC cord specified for this keyboard. Use of another type of AC adaptor or AC cord creates the danger of explosion, fire, and personal injury.
- Unplug the AC cord from the wall outlet before leaving on a trip or any other time you plan to leave the keyboard unattended for a long time.
- After using the keyboard, turn off power and unplug the AC cord from the wall power.
- Be sure to turn off the keyboard before connecting the adaptor cord to or disconnecting it from the power terminal (**DC-16V**) on the back of the keyboard, and before plugging the AC cord into or unplugging it from a power outlet.
- The AC adaptor may become warm after long hours of use. This is normal and does not indicate malfunction.

Set Up and Data Backup Power

Tone, rhythm, and other keyboard settings, as well as memory data (registration memory, synthesizer, song sequencer, pattern sequencer, Song Studio data) are retained in memory when you turn off the keyboard. The backup power required to retain settings and data is provided by a lithium battery built into the keyboard.

Non-backed Up Settings

The following settings are lost whenever you turn off the keyboard.

- **SUSTAIN** button on/off (page E-29)
- Local Setting (See "Using MIDI" on page E-169.)

Back-up Lithium Battery

All settings and data in keyboard memory are cleared if you turn off power while the back-up lithium battery is dead. The life of the original lithium battery is about five years after it is installed at the factory. Keep track of how long it has been since you purchased the keyboard or last had the back-up battery replaced, and contact your original dealer or authorized CASIO Service Provider to have the back-up battery replaced periodically. Note that you will be charged for back-up battery replacement.

Saving Memory Data to a Floppy Diskette

You can use the procedure under "Using the Floppy Disk Drive" on page E-140 to save keyboard memory data to a floppy diskette.

Initializing the Keyboard

Use the procedure on page E-164 to initialize the keyboard, which clears all memory data and returns settings to their initial factory defaults.

Display Contents and Operations

A large, easy-to-read LCD shows you the keyboard's current settings and a wealth of other information at a glance. Buttons and sliders near the display let you change settings while you monitor the results.

Display Contents

The following shows what the display looks like immediately after you turn on the keyboard.

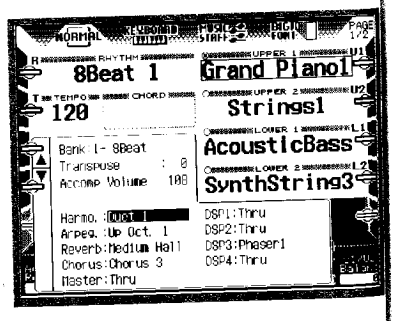
(1) Screen name ("Display Modes" page E-18)

(2) Name of currently selected rhythm

(3) Tempo (beats per minute) of rhythm and auto accompaniment

(4) Chord name (auto accompaniment)

(5) Registration memory bank number and bank name, transpose setting, accompaniment volume setting. Pressing button **L4** expands this section as shown to right, to display effect and other settings.



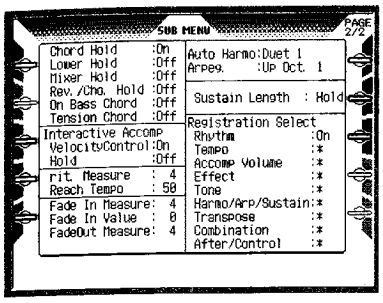
(6) Shows the number of the displayed page (number on the left) and the total number of pages available. See "About pages" below.

(7) Names of tones assigned to **UPPER 1**, **UPPER 2**, **LOWER 1**, and **LOWER 2**

(8) Mode area. This area shows the current settings of the control buttons and sliders located below the display. The contents of this area depend on what mode the keyboard is in. See "About the mode area" for more information.

About pages

The page number (**PAGE 1/2**) appears in the upper right corner of the display when the current keyboard mode has more than one display pages. Use the **PAGE** button to change between pages. Pressing the **PAGE** button while the above screen is on the display, for example, changes to the submenu screen page shown below. See "Keyboard Setup Reference" (page E-154) for more information about submenus.



About the mode area

The following describes how the contents of the mode area of the screen change depending on the current keyboard mode.

Combination Mode

Enter the Combination Mode by pressing the **COMBINATION** button. This is the mode you should use normally for keyboard play.

Level meter for each part

Auto accompaniment and other settings

Mixer Mode

Enter the Mixer Mode by pressing the **MIXER** button. Use the Mixer for adjusting the volume and other parameters of the keyboard parts (**UPPER 1**, **UPPER 2**, **LOWER 1**, **LOWER 2**). See "Using the Mixer" on page E-51 for more information.

Level meter for each part

Volume level of each part

Effect Mode

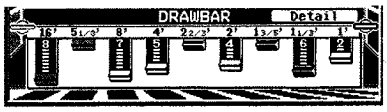
Enter the Effect Mode by pressing the **EFFECT** button. Use this mode for turning on and adjusting the effects that can be applied to tones. See "Applying Effects to Tones" on page E-32 for more information.

Effect settings

Drawbar Mode

Enter the Drawbar Mode by pressing the **DRAWBAR** button. Use this mode for adjusting organ tones. See "Using the Drawbar" on page E-35 for more information.

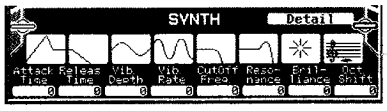
Drawbar settings



Synthesizer Mode

Enter the Synthesizer Mode by pressing the **SYNTH** button. Use this mode for adjusting the acoustic parameters of tones and to create your own original tones. See "Using the Synthesizer" on page E-62 for more information.

Easy Synth settings (page E-62)

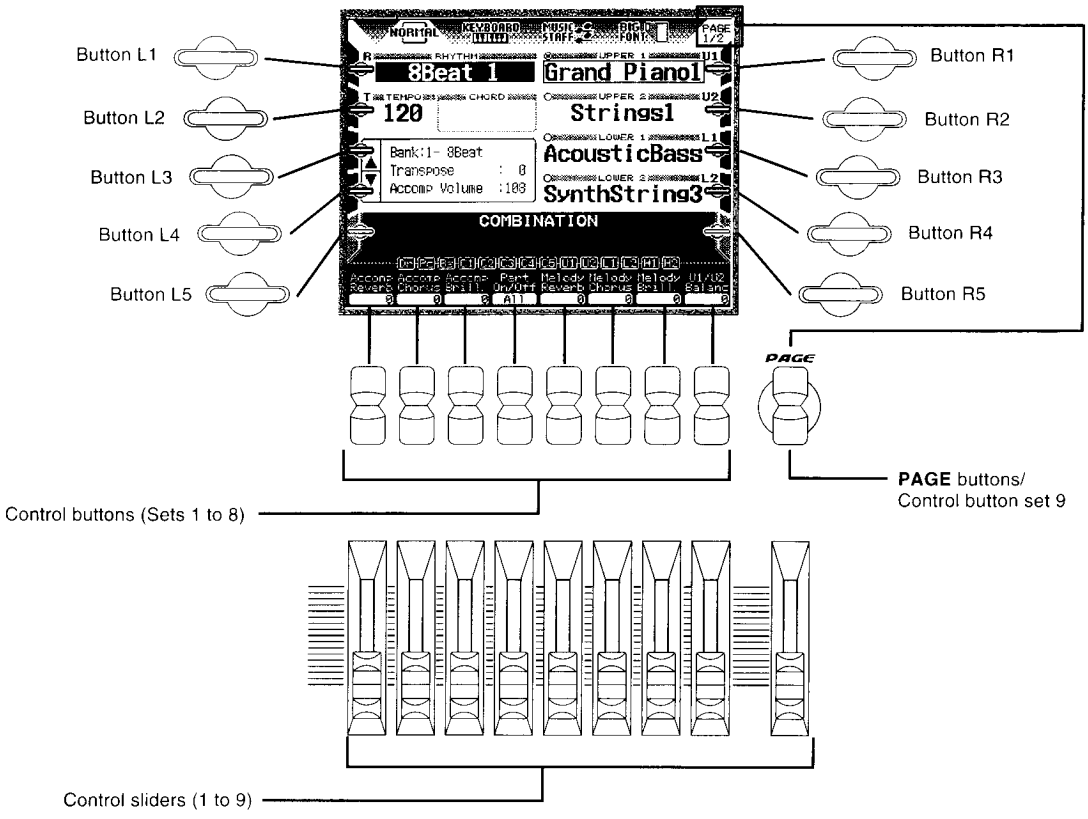


NOTE

- Full details about modes and the screen contents that appear in the mode area of the display are provided in the applicable sections of this User's Guide.
- Note that the display screens shown in this User's Guide are examples only. The values and settings that actually appear on your display screen will probably be slightly different from the example screens.

Using the Buttons and Sliders

The following describes basic operations using display buttons, control buttons, and control sliders.



Display Buttons (L1 to L5, R1 to R5)

Use the display buttons on the left and right sides of the display screen to make settings and to select options that appear on the display. Pressing display button **R2** in the above display, for example, changes to the screen for assigning a tone to the **UPPER 2** part. When a display button has a gray bar next to it (such as buttons **L5** and **R5** in the above example), it means that the button is currently disabled (which means nothing happens when you press it).

Control Buttons (Sets 1 to 8)

Pressing an upper control button increases the value on the screen above it by 1, while pressing the lower control button decreases the value above it by 1.

PAGE Button

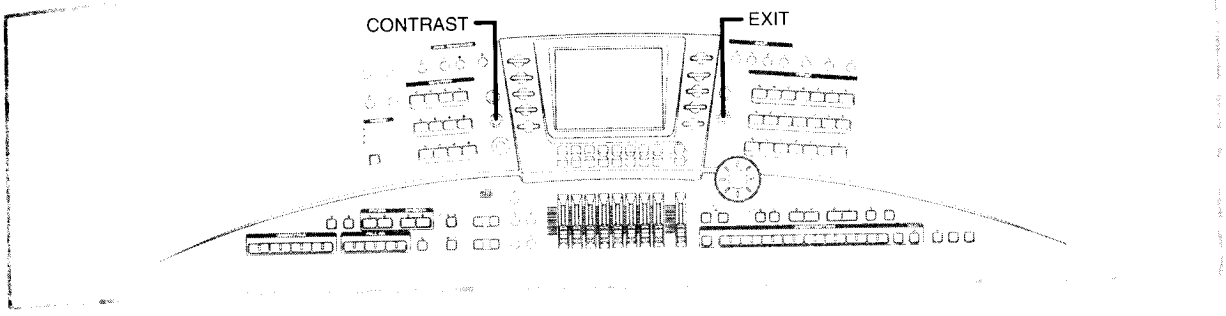
Pressing the upper **PAGE** button changes to the next display page and pressing the lower **PAGE** button changes to the previous display page. The current display page and the total number of display pages available are shown in the upper right corner of the display.

In the Drawbar Mode (page E-35), the **PAGE** button functions as a ninth set of control buttons.

Control Sliders (1 to 9)

Each control slider performs the same function as the control buttons immediately above it. Use a control slider to set a value within a general range, and then use the control buttons above it to make fine adjustments in increments of ±1.

Note that control slider 9 on the far right is activated in the Drawbar Mode only.



Adjusting Display Contrast

Perform the following steps to adjust the relative lightness and darkness of images on the display.

1. Press the **CONTRAST** button to display the contrast adjustment screen.
   - The initial default contrast setting is 150.
2. Rotate the selector dial to adjust contrast until the figures on the screen are easy to see.
   - You can set the contrast value within a range of 000 to 255.
3. After you are finished, press the **EXIT** button to exit the contrast adjustment screen.
   - The keyboard exits the contrast adjustment screen automatically if you do not perform any button operation for a few seconds.

About the "Now Working" message

The message "Now Working" appears on the display whenever the keyboard is performing a procedure, such as chord extraction or song editing, that takes a long time. The message disappears after the procedure is complete.

NOTE

- Keyboard keys and control panel switches are disabled while the "Now Working" message is on the display. This is normal and does not indicate malfunction.

Using the EXIT Button

Press the **EXIT** button when you want to exit a menu and return to the screen from which you originally displayed the menu.

Example

Press the **DEMO** button to display the demo tune menu, and then press the **EXIT** button to exit the demo tune menu.

NOTE

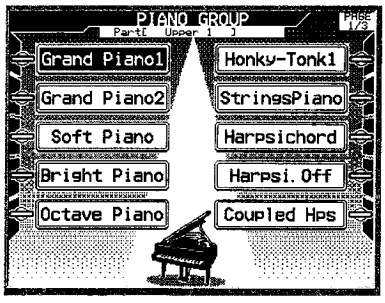
- You can also exit a menu by pressing the same button you used to originally display it. After pressing the **DEMO** button to display the demo tune selection screen, for example, you could press the **DEMO** button again to exit the menu screen.

Using Display Hold

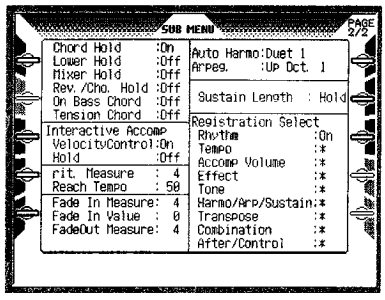
Many button operations cause the display to change to a setting screen. If you do not perform any operation for a few seconds after a setting screen appears, the keyboard often will exit the setting screen and go back to the screen from which you originally started.

Examples

Pressing a **TONE** button displays the tone setting screen. If you do not perform any operation for a few seconds, the keyboard exits the tone setting screen and returns to your original screen.



Pressing the **PAGE** button displays a submenu. If you do not perform any operation for a few seconds, the keyboard exits the submenu and returns to your original screen.



When you need to keep the current setting screen or submenu screen on the display, press the **DISPLAY HOLD** button so the lamp above it lights. The keyboard does not change the display as described above while the **DISPLAY HOLD** lamp is lit.

To turn off the **DISPLAY HOLD** lamp, press **DISPLAY HOLD** again.

NOTE

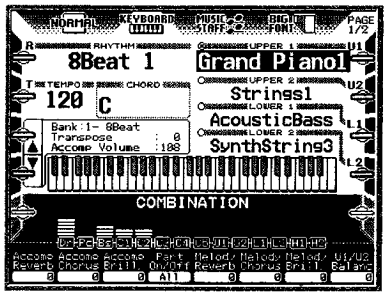
- You can always exit a setting screen or submenu by pressing the **EXIT** button, regardless of whether the **DISPLAY HOLD** lamp is on or off.

Display Modes

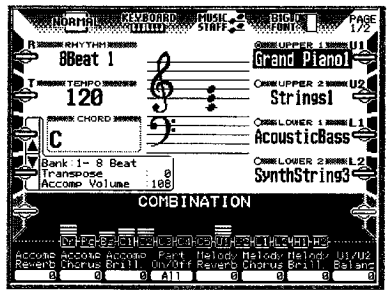
You can select from among four different display modes, pending on whether you are changing the keyboard setup performing.

① **NORMAL**

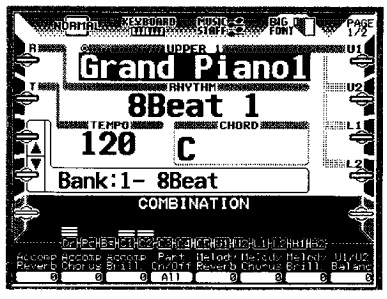
② **KEYBOARD**

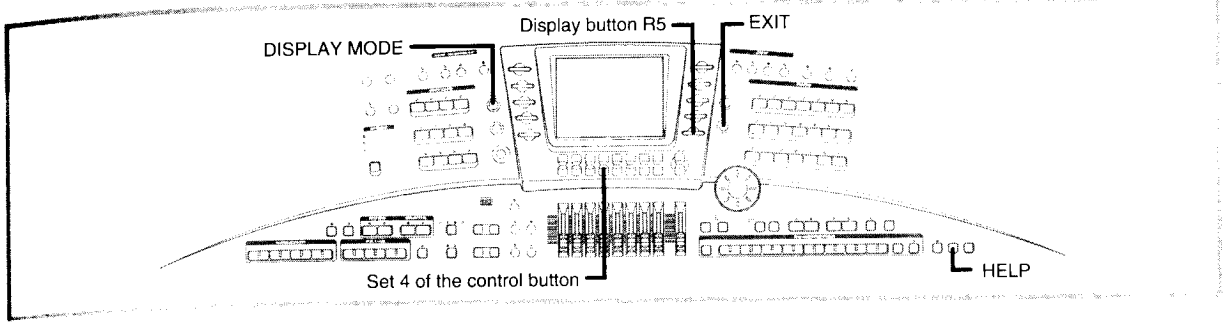


③ **MUSIC STAFF**



④ **BIG FONT**





Display Modes

① **NORMAL**
For normal keyboard play

② **KEYBOARD**
Same information as the **NORMAL** screen, along with an on-screen keyboard. Keyboard keys you press or MIDI Note On data you input is indicated on the on-screen keyboard.

③ **MUSIC STAFF**
Same information as the **NORMAL** screen, along with an on-screen great staff (treble clef staff and bass clef staff). Keyboard keys you press causes the corresponding notes to appear on the screen.

④ **BIG FONT**
This display mode displays **NORMAL** screen information using a larger font.

Changing the Display Mode

Press the **DISPLAY MODE** button to cycle through display modes in the following sequence: **NORMAL ➜ KEYBOARD ➜ MUSIC STAFF ➜ BIG FONT**.

Using Online Help

The online help feature of this keyboard provides you with quick and easy access to information about its features and functions. Note that the online help is contained on the floppy diskette that comes with the keyboard.

To view online help

1. Insert the supplied floppy diskette into the keyboard's floppy disk drive.
   - See "Using the Floppy Disk Drive" on page E-140 for information about handling floppy diskettes.
2. Press the **HELP** button to display the help menu screen.
   - At this point you should press display button **L1** next to **Language 1** or **L2** next to **Language 2** to specify the display language you want to use. The help text is displayed in the language you specify.
3. Use set **4** of the control buttons to scroll through the index of topics and highlight the one you want to select.
4. Press display button **R5** next to **Execute** to display the help screen for the item that is highlighted on the help menu screen.
5. After you are finished reading the help screen, press the **EXIT** button to return to the help menu.

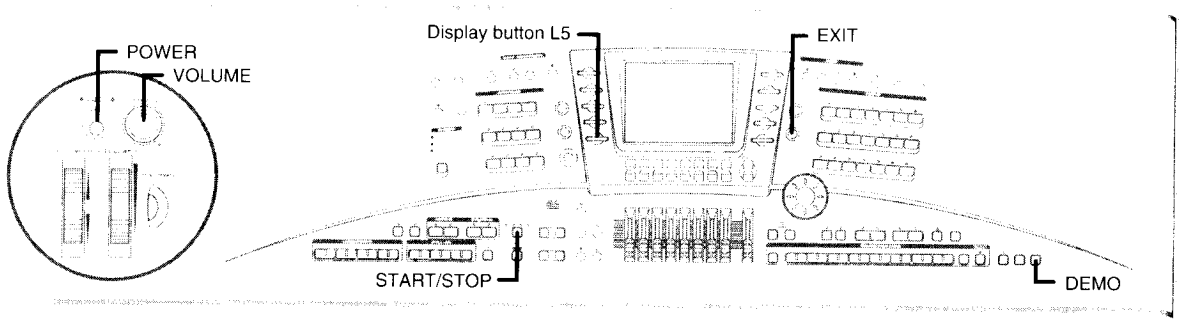
NOTE

- Pressing most of the keyboard's buttons while the help menu screen is on the display jumps to the help screen for that button. Note, however, that some buttons do not have help screens.
- If the page number indicator (**PAGE 1/2**) appears in the upper right corner of a help screen, it means that there are multiple help screen pages. Use the **PAGE** button to change the PAGE.

CAUTION!

Never eject the floppy diskette while the floppy disk drive's access lamp is lit or flashing (indicating that the keyboard is reading data from the diskette). When you want to eject the diskette, make sure that the disk drive's access lamp is not lit or flashing, before pressing the eject button.

Playing a Demo Tune



The keyboard features a number of demonstration tunes that highlight its features and functions. The following describes the types of demonstration tunes that are available.

Main Demos (3 tunes)
These tunes fully utilize the features and functions of the keyboard.

Tone Demos (10 tunes)
These tunes highlight the main tones.

Rhythm Demos (10 tunes)
These tunes highlight the main rhythms.

Spec Demo (1 tune)
With this tune, the names of the main functions used appear on the display as the tune plays.

To play a demo tune

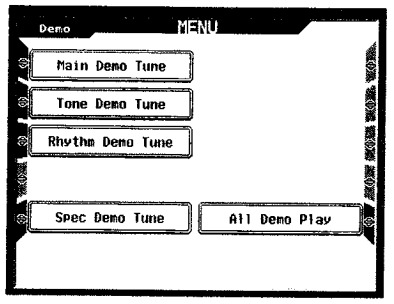
NOTE

- The following procedure cannot be used to play a Spec Demo tune. See "To play a spec demo" below.

1. Press the **POWER** button to turn on the keyboard.

2. Use the **VOLUME** knob to adjust the volume of the output.
   - It is a good idea to start out with a relatively low setting.

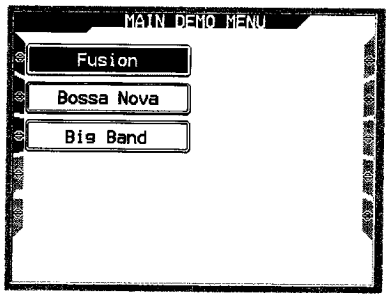
3. Press the **DEMO** button to display the demo tune menu.



4. Press the display button to the left of the demo tune type you want to play.

When you want to play a:	Press display button:
Main Demo tune	**L1**
Tone Demo tune	**L2**
Rhythm Demo tune	**L3**

- Pressing a display button produces a menu of available tunes for the corresponding demo tune type, with the first tune on the menu (the one assigned to display button **L1**) playing back.



5. Press the display button to the left of the name of the tune you want to play.
   - To play **Bossa Nova** on the sample screen in step 4, for example, you would press display button **L2**.
   - Playback of the tune starts as soon as you press its display button.

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- Demo tunes on the menu continue to play in sequence until you stop playback.

6. To stop playback, press the **START/STOP** button.

7. Press the **EXIT** button to quit demo tune play and return to the demo tune menu screen.

8. Press the **DEMO** button to exit the demo tune menu screen.

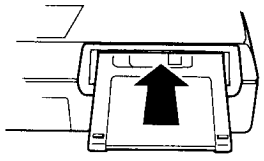
NOTE

- Pressing display button **R5** next to **All Demo Play** in step 3 plays back all the demo tunes in memory in the following sequence: Main Demos → Tone Demos → Rhythm Demos.
- To stop playback of all the demo tunes and return to the menu screen that contains the demo tune that was playing, press the **EXIT** button.
- To stop playback without changing the screen, press the **START/STOP** button.

To play a spec demo tune

1. Press the **POWER** button to turn on the keyboard.

2. Insert the supplied floppy diskette into the keyboard's floppy disk drive.



- See "Using the Floppy Disk Drive" on page E-140 for information about handling floppy diskettes.

3. Press the **DEMO** button to display the demo tune menu.

4. Press display button **L5** to the left of **Spec Demo Tune**.

5. To stop playback, press the **START/STOP** button.

6. Press the **EXIT** button to quit demo tune play and return to the demo tune menu screen.

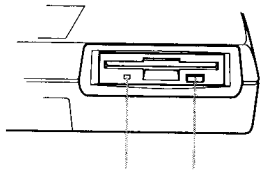
7. Press the **DEMO** button to exit the demo tune menu screen.

NOTE

- If you do not insert the floppy diskette into the drive in step 2 of the above procedure, the keyboard performs spec demo tune play but does not display any function names.

CAUTION!

Never eject the floppy diskette while the keyboard is playing back the spec demo tune. When you want to eject the diskette, stop playback, check to make sure that the disk drive's access lamp is not lit or flashing, and then press the eject button.



Access lamp Eject button

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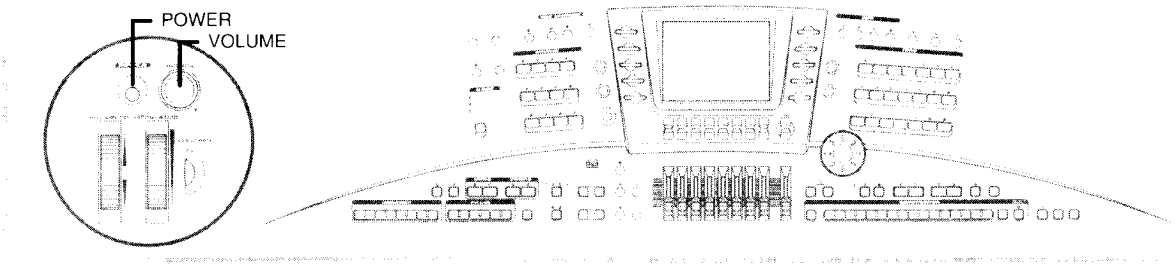
Playing the Keyboard



In addition to piano and other keyboard instrument tones, this keyboard also includes a wide selection of realistic woodwind and string tones, percussion and synthesized sounds, and other tones and sounds. You can select a particular tone or sound and play it on the keyboard, you can layer two different tones for simultaneous play, or you can split the keyboard and assign different tones or tone combinations to the left side and right side.

Playing the Keyboard for the First Time

The following is the most basic procedure you can use to play your first notes on the keyboard.

1. Press the **POWER** button to turn on the keyboard.

2. Use the **VOLUME** knob to adjust the volume of the output.
   - It is a good idea to start out with a relatively low setting.

3. Play something on the keyboard.
   - What you play sounds using the tone that is indicated for **UPPER 1** on the display.
   - See "Selecting a Tone" on page E-24 for information about changing to another tone.

NOTE

- When turning off power, you need to hold down the **POWER** button for a short while. Make sure you keep the **POWER** button depressed until power turns off.

UPPER 1, UPPER 2, LOWER 1, LOWER 2

This keyboard lets you use up to four parts simultaneous for your performances. The parts are named UPPER 1, UPPER 2, LOWER 1, and LOWER 2, and the display shows the tone currently assigned to each.

Enabled part

◉ Indicates a part that is enabled.

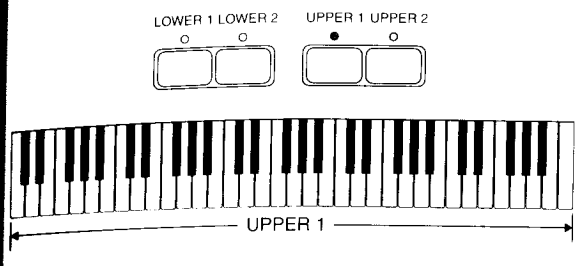
Disabled part

○ Indicates a part that is disabled.

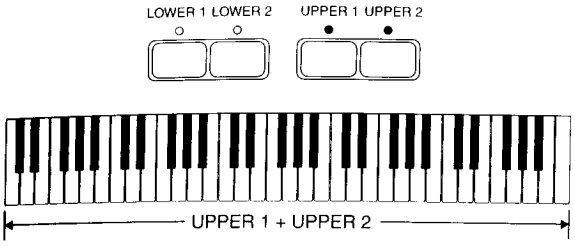
Use the part buttons to toggle each part on (enabled) and (disabled). Turning on a part causes the lamp above its button to light, and turning it off causes the lamp to go out.

- Note that all the parts cannot be turned off at the same time. At least UPPER 1 or UPPER 2 must be turned on.

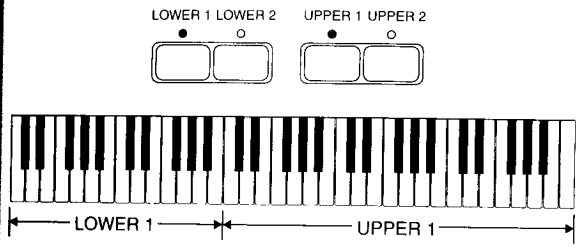
• For standard piano play, use **UPPER 1** only.



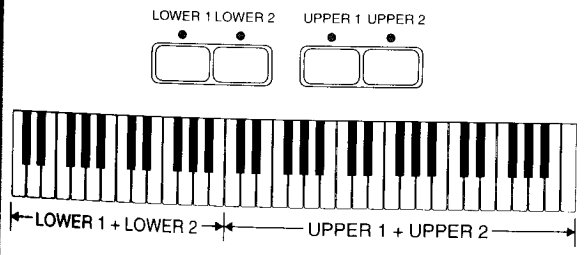
• To layer two different tones, use **UPPER 1** and **UPPER 2**.



• To split the keyboard and assign two different tones to the left and right sides, use **UPPER 1** and **LOWER 1**.



• You can also split the keyboard and layer two different tones on the left side, and two different tones on the right side.



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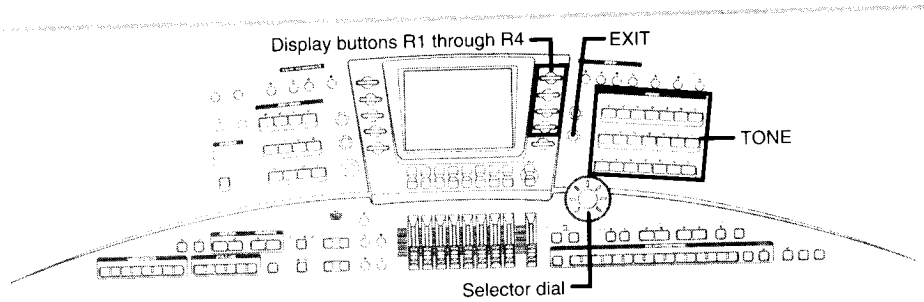


Selecting a Tone

The built-in tones are divided among 21 groups, with each group assigned to a **TONE** button on the control panel.

Tone Name	Tone Group Name	Group Contents
PIANO	Piano	Acoustic piano and other piano tones
ELEC PIANO	Electric Piano	Electric piano tones
CHROMATIC PERC	Chromatic Percussion	Vibraphone, marimba and other percussive instruments, percussion sounds
ORGAN	Organ	Organ tones
ACCORDION	Accordion	Accordion tones
GUITAR	Guitar	Guitar tones
BASS	Bass	Bass tones
STRINGS/ORCHESTRA	Strings/Orchestra	String and orchestra tones
ENSEMBLE	Ensemble	String and other instrument ensemble tones
SOLO BRASS	Solo Brass	Solo brass tones
BRASS	Brass	Brass tones
SAX	Sax	Saxophone tones
CLARINET	Clarinet	Clarinet and other woodwind tones
FLUTE	Flute	Flute and other woodwind tones
SYNTH- LEAD	Synth Lead	Synthesizer lead tones
SYNTH-PAD	Synth Pad	Special synthesizer background tones and synthesized tones for chord play
PERC/EFFECTS	Percussion/Effects	Percussion sounds and sound effects
DRUM SET	Drum Set	Drum sets that assign different drum sounds to keyboard keys
DRAWBAR ORGAN	Drawbar Organ	Drawbar organ tones that can be used with the Drawbar (page E-35)
USER TONE1	User Tone 1	Area for storing sounds you create in the Drawbar (page E-35) or Synthesizer (page E-62).
USER TONE2	User Tone 2	

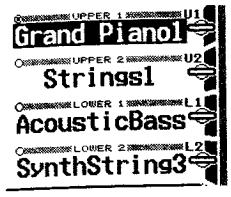
NOTE

- Though you can assign drum sounds to the keyboard, doing so causes the same drum sound is always assigned to the Upper 1, Upp 2, Lower 1, Lower 2, Auto Harmonize 1, and Auto Harmonize 2 parts. When assigning a drum sound, select any one of these parts a then select the drum sound. The drum sound is automatically assigned to all of the above parts.

To select a tone, first press a **TONE** button to display a menu of tones in the applicable group. Next you can select a tone from th group by pressing a display button or by using the selector dial.

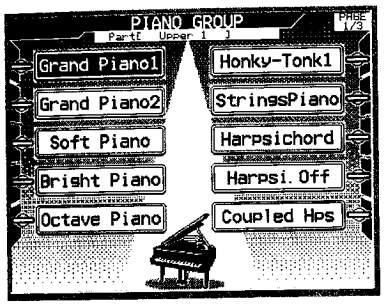
Selecting a Tone Using a TONE Button

1. Press the display button (**R1** through **R4**) next to the part whose tone you want to change.
   - If you want to change the tone assigned to the **UPPER 1** part, for example, you would press display button **R1**.



This causes the tone name next to the display button to become highlighted.

2. Press one of the **TONE** buttons to select a tone group and display a menu of tones in the group.



If a page number (**PAGE 1/2**) appears in the upper right corner, you can change between tone menu pages by pressing the **PAGE** button.

3. On the menu of tones that appears on the display, select the one you want to assign to the part.
   - Pressing a display button (**L1** to **L5**, **R1** to **R5**) selects the tone whose name is next to it.
   - The currently selected tone is the one that is highlighted on the menu. You can also rotate the selector dial to move the highlighting around the menu.

4. After selecting the tone you want, press the **EXIT** button.

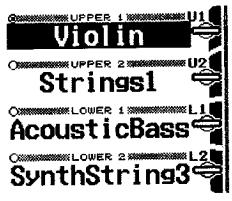
The name of the tone you selected in step 3 is now shown for part you selected in step 1.

Selecting a Tone Using the Selector Dial

1. Press the display button (**R1** through **R4**) next to the part whose tone assignment you want to change.
   - If you want to change the tone assigned to the UPPER 1 part, for example, you would press display button **R1**.

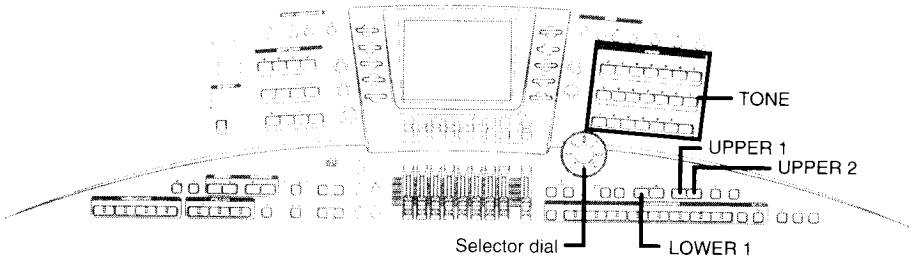
This causes the tone name next to the display button to become highlighted.

2. Rotate the selector dial to sequentially scroll through tone names at the currently highlighted (selected) part.



Tone names scroll in sequence

- The lamp lights above the **TONE** button corresponding to the group to which the currently displayed tone belongs.



About Drawbar tones

The organ tones assigned to the **DRAWBAR ORGAN** group of the **TONE** buttons can be adjusted using the keyboard's Drawbar. Selecting a tone in the **DRAWBAR ORGAN** group automatically enters the Drawbar Mode, causing the lamp over the **DRAWBAR** button to light. See "Using the Drawbar" on page E-35 for information about using the Drawbar.

Polyphony

- This keyboard has 64-note polyphony, which means it can sound up to 64 notes at the same time.
- The polyphony value is less when a rhythm or auto accompaniment is playing.

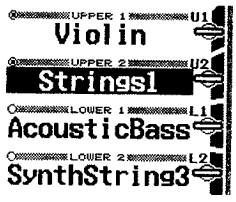
Digitally Sampled Tones

A number of the keyboard's tones are actually digitally recorded samples of the sounds produced by acoustic musical instruments. Samples are taken of each tone at various ranges (low, middle, high), and the sampled data is used to produce a full range of notes. Multiple-range sampling, however, can result in very slight differences in tone quality and volume between ranges. Normally this is not noticeable, except when playing two notes that lie on either side of the point where there is a change from one range to another. This slight difference is an unavoidable result of the digital sampling process, and does not indicate malfunction of the keyboard.

Layering Two Different Tones (UPPER 1+UPPER 2)

The following procedure describes how to layer two tone so they both sound whenever you press a keyboard key. La ering of tones is achieved using the UPPER 1 and UPPER parts.

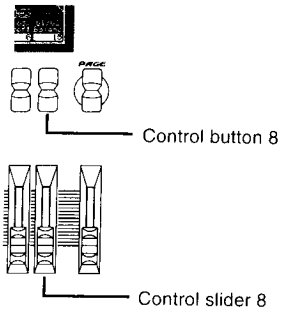
1. Assign the first tone to the **UPPER 1** part.
   - See "Selecting a Tone" on page E-24 for informatio about assigning a tone to UPPER 1.
2. Press the **UPPER 2** button so the lamp above it lit.
   - This also causes the name of the tone assigned UPPER 2 on the display screen to become highlig ed.



3. Use the **TONE** buttons or selector dial to sele the tone you want to assign to UPPER 2.
   - Use the procedure under "Selecting a Tone" on pa E-24 to select a tone for UPPER 2.
4. Try playing something on the keyboard to s what it sounds like.
   - The tones you assigned to UPPER 1 and to UPPE should both sound each time you press a keyboa key.
   - You can turn either part off and play using only t remaining tone. Pressing the **UPPER 2** button so t lamp above it is off causes only the UPPER 1 tone sound. Conversely, pressing the **UPPER 1** button the lamp above it is off causes only the UPPER 2 to to sound.

Adjusting the Volume Balance between the UPPER 1 and UPPER 2 Tones

You can use the keyboard's Combination Mode to adjust the relative balance between the layers UPPER 1 and UPPER 2 part tones. First, enter the Combination Mode by pressing the **COMBINATION** button so the lamp above it lights. Next, use set 8 of the control buttons or control slider 8 to change the **U1/U2 Balance** value.



- You can set a balance value within the range of -64 to +63. Moving the setting closer to the -64 end of the range causes the volume of the UPPER 2 part tone to be louder, while a setting closer to the 63 end of the range causes the UPPER 1 part tone to be louder. A balance setting of 0 balances the UPPER 1 and UPPER 2 part tones in accordance with the current Mixer settings (page E-51).

NOTE

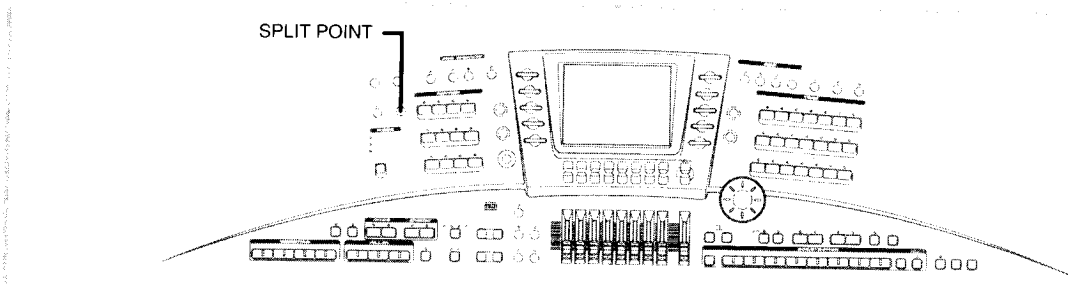
- You can use the Mixer to made fine adjustments to the volume levels of each part. See "Using the Mixer" on page E-51 for details.

Splitting the Keyboard between Two Tones (LOWER 1 / UPPER 1)

You can use the following procedure, for example, to assign a piano tone to the right side of the keyboard and a bass tone to the left side. The tone you assign to UPPER 1 is the right side tone, and the tone you assign the LOWER 1 is the left side tone.

1. Assign the first tone to the UPPER 1 part.
   - See "Selecting a Tone" on page E-24 for information about assigning a tone to UPPER 1.
2. Press the **LOWER 1** button so the lamp above it is lit.
   - This also causes the name of the tone assigned to LOWER 1 on the display screen to become highlighted.

3. Use the **TONE** buttons or selector dial to select the tone you want to assign to LOWER 1.
   - Use the procedure under "Selecting a Tone" on page E-24 to select a tone for LOWER 1.
4. Try playing something on the keyboard to see what it sounds like.
   - The tone you assigned to UPPER 1 should sound when you press the keys on the right side of the keyboard, while the tone you assigned to LOWER 1 should sound when you press keys on the left side.
   - The initial default split point between the UPPER 1 and LOWER 1 part tones is at G3. This means that the keys to the right of G3 sound the UPPER 1 part tone. You can use the procedure under "Changing the Split Point Position" below to change the location of the split point.



Changing the Split Point Position

Use the following procedure to change the position of the split point, which is the location on the keyboard where keys to the left sound the LOWER 1 part tone, and the keys to the right sound the UPPER 1 tone.

1. Press the **SPLIT POINT** button.
   - This causes the screen shown below to appear.

The keyboard at the bottom of the screen shows the current split point setting.

2. Press the key on the keyboard where you want the new split point to be.
   - The key you press and all the keys to the right of it sound the tones assigned to the UPPER 1 and/or UPPER 2 parts.

Using Layer and Split in Combination

You can also split the keyboard between two layered tones on the left (LOWER 1 and LOWER 2) and two layered tones on the right (UPPER 1 and UPPER 2). Or you could, for example use only one tone on the left (LOWER 1 or LOWER 2) and two layered tones on the right (UPPER 1 and UPPER 2). Simply turn on the part you want to sound by pressing its button so the indicator above it is lit.

Adjusting the Volume Balance between th UPPER 1, UPPER 2, LOWER 1, and LOW ER 2 Parts

You can use the Mixer to make fine adjustments to the vo ume levels of each of the four parts, See "Using the Mixe on page E-51 for more information.

Adding Various Nuances to You Keyboard Play

This keyboard is equipped with a number of controllers th provide a high degree of versatility for adding various nu ances to your keyboard play. The following provides a br description of how each controller works.

Keyboard Touch Response and After Touch

Touch response changes the volume and timbre of the ou put sound in accordance with how strongly a key is presse This allows wide versatility is expressing various music nuances, just like when you play on an acoustic piano. Aft touch changes the volume, timbre, and effect applied to tone in accordance with changes in keyboard pressure aft a key is initially depressed.

Sustain Pedal

An optionally available sustain pedal (SP-2 or SP-10) can b connected to the **SUSTAIN PEDAL** terminal on the back the keyboard. The pedal can then be used to perform susta pedal or other operations.

Expression Pedal

Pressing an optionally available expression pedal (EX-10) co nected to the **EXPRESSION PEDAL** terminal on the back the keyboard changes the volume of the melody part.

PITCH BEND Wheel

Rotating this wheel causes the pitch of notes to slide upwar or downwards. The effect obtained by rotating the **PITC BEND** wheel depends on the tone you are using and the cu rent **PITCH BEND** wheel settings.

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MODULATION Wheel

Rotating this wheel upwards applies vibrato to notes played on the keyboard. The effect obtained by rotating the **MODULATION** wheel depends on the tone you are using and the current **MODULATION** wheel settings.

ASSIGNABLE Button

Rotary effect fast/slow, portamento, or the effect assigned to the **MODULATION** wheel is applied while this button is depressed. The effect obtained by pressing this button depends on the tone you are using and the current **ASSIGNABLE** button settings.

SUSTAIN Button

Each press of this button toggles the sustain effect on (lamp above the button is lit) and off (lamp is not lit). When sustain is turned on, pressing and releasing a keyboard key cause the note to linger and gradually decay over time. When turned off, the note stops sounding as soon as you release the keyboard key.

ARPEGGIATOR Button

Each press of this button toggles the arpeggiator effect on (lamp above the button is lit) and off (lamp is not lit). When arpeggiator is turned on, the keyboard automatically plays an arpeggio pattern using notes of the chord you play in the melody keyboard range. Playing a C-chord in the melody keyboard range, for example, produces a repeating arpeggio pattern using the three notes that make up the chord (C-E-G). You can make settings that control the sequence and speed of the arpeggio pattern.

NOTE

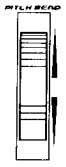
You can change the effects produced by the above controllers on the screen that appears when you press the **AFTER TOUCH/CONTROL** button. See "Keyboard Setup Reference" on page E-154 for more information.

See "Notes about Making Connections" on page E-11 for information about connecting a sustain pedal and expression pedal.

When you are using auto accompaniment, the left side of the keyboard (LOWER 1 and LOWER 2) is used at the accompaniment keyboard.

Using the PITCH BEND Wheel

Rotating the **PITCH BEND** wheel causes the pitch of notes played on the keyboard to slide smoothly upwards or downwards. The actual effect produced by the **PITCH BEND** wheel depends on the tone you are using and the **PITCH BEND** wheel setting, as described in the note below. The **PITCH BEND** wheel can be used to make saxophone and other tones sound more realistic.



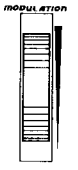
- While pressing keyboard keys with your right hand, rotate the **PITCH BEND** wheel with your left.
- The **PITCH BEND** wheel automatically returns to its neutral position (and the tone returns to its original pitch) whenever it is released.

NOTE

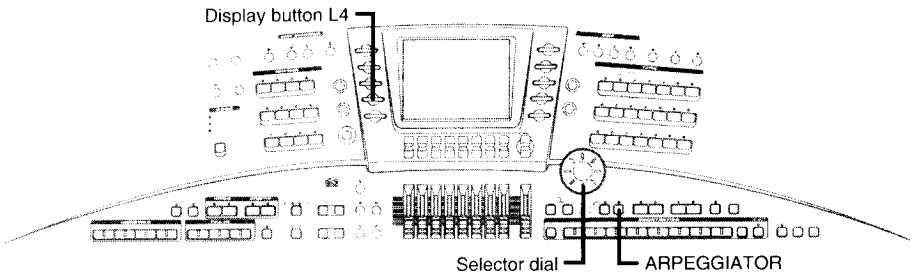
- The effect applied when the **PITCH BEND** wheel is rotated depends on the current **After Touch/Control** screen settings and the type of tone you are using. See "Keyboard Setup Reference" on page E-154 for more information about the **After Touch/Control** screen, and "Using the Synthesizer" on page E-62 for information about how effects are applied to each tone.
- The **PITCH BEND** wheel can be used to make saxophone and electric guitar tones sound more realistic.
- Never turn on the keyboard while the **PITCH BEND** wheel is rotated.

Using the MODULATION Wheel

Rotating the **MODULATION** wheel applies vibrato to notes played on the keyboard. The actual effect produced by the **MODULATION** wheel depends on the tone you are using and the **MODULATION** wheel setting, as described in the note below. The **MODULATION** wheel is best used with tones that continue to sound as long as keyboard keys are depressed, and it can be used to make violin and other similar tones sound more realistic.



- While playing melody notes with your right hand, rotate the **MODULATION** wheel with your left to apply vibrato to the notes.
- The amount of vibrato applied depends on how far you rotate the **MODULATION** wheel upwards. Setting the wheel to its neutral position (rotated as far downwards as it can go) turns vibrato off.



NOTE

- The effect applied when the **MODULATION** wheel is rotated depends on the current **After Touch/Control** screen settings and the type of tone you are using. See "Keyboard Setup Reference" on page E-154 for more information about the **After Touch/Control** screen, and "Using the Synthesizer" on page E-62 for information about how effects are applied to each tone.
- Modulation can be used to create various nuances when holding a melody note played with a violin, synthesizer, or other similar tone.
- Certain types of tones sound good with modulation, while others may not sound good when played with modulation.

Using the Arpeggiator

While the arpeggiator is turned on, the keyboard automatically plays an arpeggio pattern using the notes of the chord you are playing in the melody keyboard range. Playing a C-chord in the melody keyboard range, for example, produces a repeating arpeggio pattern using the three notes that make up the chord (C-E-G), as long as you keep playing the chord. The following procedure describes how to use the arpeggiator.

1. Press the **ARPEGGIATOR** button.
   - This causes the lamp above the button to light, indicating that the arpeggiator is turned on.
   - At this point you could use the selector dial to select the type of arpeggiator you want to use. See "Arpeggiator Types" below for more information.
2. Play a chord in the melody keyboard range.
   - An arpeggio pattern using the notes of the chord is played as long as you keep the keys depressed.
3. To turn off the arpeggiator, press the **ARPEGGIATOR** button again so the lamp above it goes out.

NOTE

- You cannot use the auto harmonize and arpeggiator effects at the same time.

Arpeggiator Types

You can select from among the 15 different types of arpeggiator types listed below.

Arpeggiator Type	Description
Up Oct 1/2/4	**Up Oct 1** plays an arpeggio pattern starting from the lowest note of the chord and progressing to the highest note in the chord. **Oct 2** extends the pattern by adding the chord notes one octave above the original chord. **Oct 4** extends the pattern by adding the chord notes one octave and two octave above the original chord.
Down Oct 1/2/4	**Down Oct 1** plays an arpeggio pattern starting from the highest note of the chord and progressing to the lowest note in the chord. **Oct 2** extends the pattern by adding the chord notes one octave below the original chord. **Oct 4** extends the pattern by adding the chord notes one octave and two octaves below the original chord.
Up Down A Oct 1/2/4	**Up Down A** plays an arpeggio pattern that starts from the lowest note of the chord, progresses to the highest note in the chord, and then progresses back to the lowest note. The lowest note is played only once whenever the arpeggio pattern changes over from the downward series of notes (at the end of the pattern) to the upward series of notes (at the beginning of the pattern. **Oct 2** extends the pattern by adding the chord notes one octave above the original chord. **Oct 4** extends the pattern by adding the chord notes one octave and two octaves above the original chord.
Up Down B Oct 1/2/4	**Up Down B** plays an arpeggio pattern that starts from the highest note of the chord, progresses to the lowest note in the chord, and then progresses back to the highest note. The lowest note is played twice whenever the arpeggio pattern changes over from the downward series of notes (at the end of the pattern) to the upward series of notes (at the beginning of the pattern. **Oct 2** extends the pattern by adding the chord notes one octave below the original chord. **Oct 4** extends the pattern by adding the chord notes one octave and two octaves below the original chord.
Random Oct 1/2/4	**Random** uses the notes that make up the chord to play a random arpeggio pattern. **Oct 2** extends the pattern by adding the chord notes one octave below the original chord. **Oct 4** extends the pattern by adding the chord notes one octave and two octaves below the original chord.

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You can use the followin
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arpeggiator.

1. Use display but
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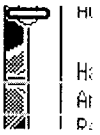

2. Rotate the selec
arpeggiator you

NOTE

- You can also select the
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Keyboard Rela

You can adjust transpos
to keyboard play.

Changing the Tra

The transpose setting le
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accustomed to playing
change the transpose se
- Each press of the **UP** b
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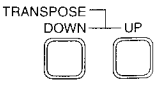
keyboard. Pressing th
by 1 and the key by o



Exam

NOTE

- The transpose setting v
(two octaves lower) to +
- The transpose setting r
tune.
- The transpose setting is
and to auto accompanir
part sounds, however, a

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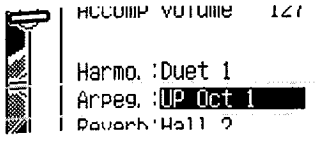
You can use the following procedure to select an arpeggiator type using the selector dial, immediately after turning on the arpeggiator.

1. Use display button **L4** to highlight the **Arpeg.** parameter on the screen.



2. Rotate the selector dial and select the type of arpeggiator you want to use.

NOTE

- You can also select the arpeggiator type by pressing the **SETTING** button and then making your selection from the screen that appears. This screen also includes settings for the speed and range of the arpeggio pattern. See "Keyboard Setup Reference" on page E-154 for more information.

Keyboard Related Settings

You can adjust transpose, tuning, and other settings related to keyboard play.

Changing the Transpose Setting

The transpose setting lets you raise or lower the key of the keyboard in semitone units. This means you can easily play in a different key (to match that of a vocalist, for example) without having to play different chords from those you are accustomed to playing. Use the **TRANSPOSE** buttons to change the transpose setting.

- Each press of the **UP** button increases the setting value by 1, which indicates a one-semitone increase in the key of the keyboard. Pressing the **DOWN** button decreases the value by 1 and the key by one semitone.

Example: To transpose the keyboard key by raising it by five semitones

NOTE

- The transpose setting value can be set within the range of -24 (two octaves lower) to +24 (two octaves higher).
- The transpose setting reverts to 0 whenever you play a demo tune.
- The transpose setting is also applied in the Sequencer Mode and to auto accompaniment play. Auto accompaniment drum part sounds, however, are not affected.

Other Settings

You can also make the other keyboard play related settings.

Tuning

The overall tuning of the keyboard can be adjusted within the range of A4 = 415.3Hz to 466.2Hz (center value to 440Hz (±1/2 tone)).

Touch Curve

One overall of four settings can be selected for the keyboard touch curve: Heavy, Normal, Light, or Off.

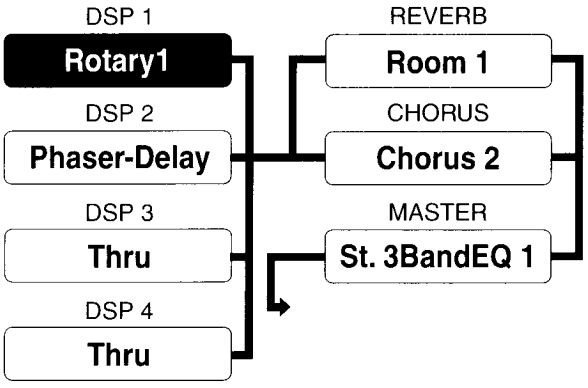
Use the setting screen that appears when you press the **SETTING** button to change the above settings. See "Keyboard Setup Reference" on page E-154 for more information.

Applying Effects to Tones

This keyboard provides you with a wide selection of effects that you can apply to tones.

Effect Blocks

The effects of this keyboard are organized according to the seven blocks shown below.



- Each of the frames next to a display button in the above display is a "block." There is a total of seven effect blocks: four **DSP** channels, **REVERB**, **CHORUS**, and **MASTER**.

DSP

DSP effects are applied to the connection between the sound source and output (PA). You can select distortion and modulation effects, in addition to a wide selection of effects unique to this keyboard. You can use all four DSP channels at the same time, with different effects and parameter setups for each channel. Use the four **DSP** buttons (DSP 1 to DSP 4) to toggle the DSP channels on and off.

REVERB

Reverb simulates the acoustics of specific types of environments. You can choose from among 15 different reverb effects, including **Room** and **Hall**. Press the **REVERB** button to toggle reverb on and off.

CHORUS

The chorus effect gives sound greater depth by causing it t vibrate. You can choose from among 20 different chorus e fects, including **Chorus**, **Flanger**, and **Ensemble**. Press th **CHORUS** button to toggle Chorus on and off.

MASTER

The master effects consist of a selection of 50 different filte (**EQ**, **Enhancer**, **Compressor**, **Limiter**, etc.) that change th timbre of a tone. Press the **MASTER** button to toggle maste effect on and off.

Turning Effects On and Off

To turn this effect on or off:	Press this button:
DSP	**DSP** (1 to 4)
Reverb	**REVERB**
Chorus	**CHORUS**
Master	**MASTER**

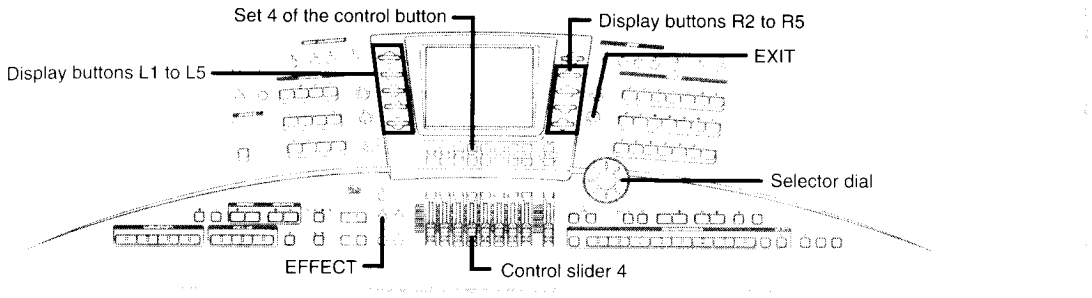
- The lamp above the corresponding button is lit when th effect is turned on, and unlit when the effect is turned off

Whether or not an effect is applied to the parts that are sound ing also depends on the Mixer Mode DSP setting. See "Usin the Mixer" on page E-51 for more information.

Changing Effect Settings

You can change effect settings at one of the two followin levels.

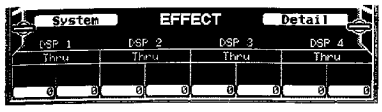
- You can change the currently selected effect (DSP 1 to 4 REVERB, CHORUS, MASTER).
- You can change the parameters of the currently selected effect. You can change the parameters of an effect immedi ately after you select the effect or while playing.



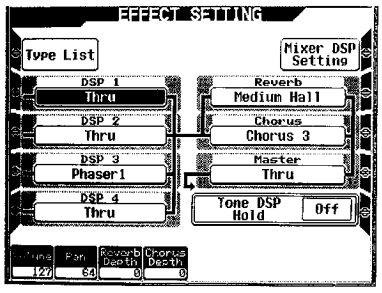
Selecting an Effect

Use the following procedure to select the effect you want to use.

1. Press the **EFFECT** button to enter the Effect Mode and display the screen shown below.



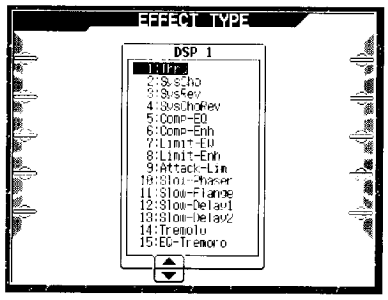
2. Press display button **R5** to the right of **Detail** to display the effect selection screen.



- Pressing display button **R1** next to **Mixer DSP Setting** displays a screen for making Mixer DSP settings.

3. Use the display buttons (**L2** to **L5**, **R2** to **R4**) to select the effect block you want.
   - To select the DSP 1 effect, for example, press display button **L2 (DSP1)**. This causes **DSP1** to become highlighted on the screen.

4. Press display button **L1** next to **Type List** to display a list of effects that can be selected the block.



- See "Effect Table" at the back of this manual for information about the effects that appear in the effect list.

5. Use set 4 of the control buttons, control slider 4, or the selector dial to highlight the name of the effect you want.

6. Press the **EXIT** button to return to the effect selection screen.

7. Check to confirm that the name shown for the DSP1 effect is the one you selected in step 5.
   - Here you could change the parameters of the currently selected effect, if you want. See "Changing Effect Parameters from the Effect Selection Screen" below for more information.

8. Now you can use the same steps to select effects for the other blocks.

9. After you are finished selecting the effects you want, press the **EXIT** button to return to the initial Effect Mode screen in step 1.

NOTE

- You can also use the selector dial to scroll through available effects without pressing display button **L1** (**Type List**) to display the effect list.
- Some tones automatically change to default DSP settings whenever you select them. You can disable automatic DSP settings by pressing display button **R5** next to **Tone DSP Hold** on the effect selection screen so it is **On**. This causes the DSP settings you make using the above procedure to be retained even when you change the tone.

Changing Effect Parameters from the Effect Selection Screen

You can change the parameters for the DSP channel that is currently selected on the effect selection screen.

- The following parameter names are shown at the bottom of the effect selection screen: **Volume**, **Pan**, **Reverb Depth**, **Chorus Depth**. These parameters are also affected by settings you make with the Mixer (page E-51).

  Volume

  The value you set here is multiplied by the values set for each Mixer part.

  Pan, Reverb Depth, Chorus Depth

  The settings you make here affect only the parts whose DSP is turned off on the Mixer setup screen. Parts that are not turned off are controlled by their Mixer settings.
- **Reverb Depth** and **Chorus Depth** parameter settings are stored for each DSP type. This means that changing the DSP type causes the associated **Reverb Depth** and **Chorus Depth** parameter values to be recalled as well. You can make individual **Reverb Depth** and **Chorus Depth** settings for each DSP (1 to 4).
- Selecting the **Double** or **Stereo** type effect (see the "Effect Table" at the back of this manual) for DSP1 or DSP2 combines the two blocks DSP1 + DSP2 for multi-effects.

  Double

  This is the multi-effect version (AWa+Dst+Dly, etc.) of the monaural effect.

  Stereo

  This is the multi-effect version of the stereo effect.

Changing Effect Parameters During Keyboard Play

In the Effect Mode, you can use the control buttons and control sliders for real-time change of effect parameter settings.

- Each press of the display button **L5** cycles through the parameter setup screens in the following sequence: 4 **DSP** channels, **REVERB**, **CHORUS**, **MASTER**.
- See the "Effect Table" at the back of this manual for information about the parameters that can be set for the currently selected effect.

Using a Wheel or Pedal for Effect Operations

You can assign an effect to the **PITCH BEND** wheel, **MODULATION** wheel, or a connected pedal and then apply the effect by operating the wheel or pedal. See "Keyboard Setup Reference" (page E-154) for details.

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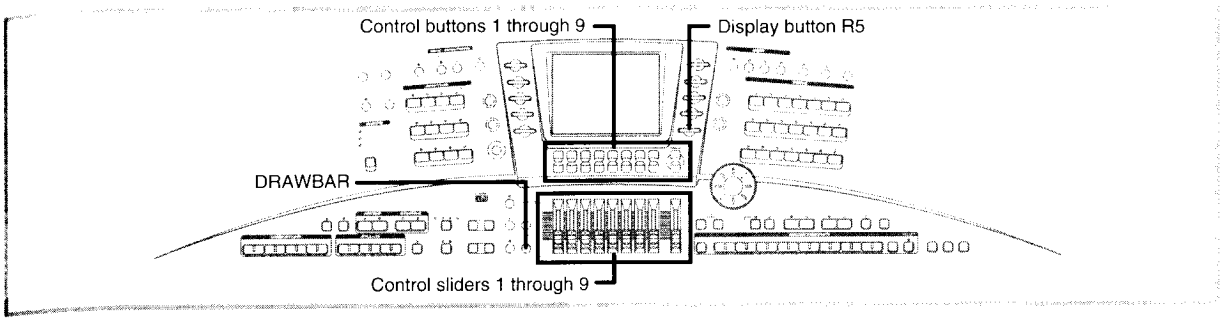
Using the Drawbar



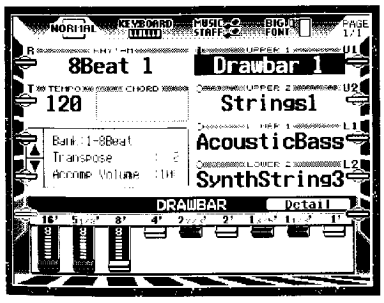
Pressing the **DRAWBAR ORGAN TONE** button gives you access to a group of "drawbar tones." Drawbar tone parameters can be changed using the Drawbar to create a variety to different organ sounds.

Changing Drawbar Tone Parameters

There are two types of Drawbar tone parameters for each tone: harmonic component levels and detailed adjustments.

Adjusting Harmonic Component Levels of a Drawbar Tone

1. Select the Drawbar tone you want.
   - Use the procedure under "Selecting a Tone" on page E-24.
   - Selecting a Drawbar tone automatically enters the Drawbar Mode, which is indicated when the lamp above the **DRAWBAR** button is lit. The Drawbar screen is shown below.



2. Use control sliders 1 through 9 (or control buttons 1 through 9) to adjust each of the harmonic components.
   - The current level of each component is shown on the screen. You can set each component level within the range of 0 to 8.

3. Play notes on the keyboard as you make your adjustments to find out how they affect the Drawbar tone.

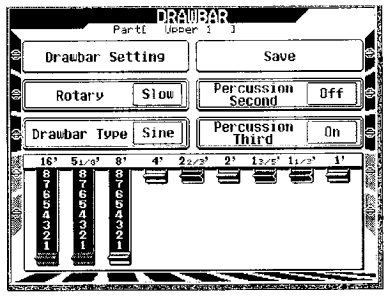
NOTE

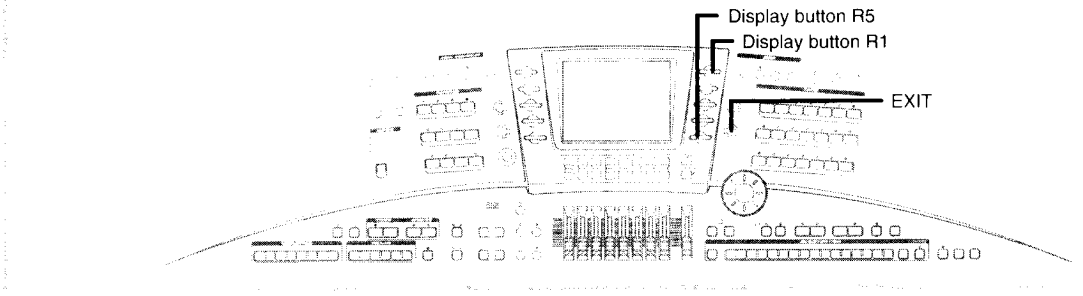
- If you select a different Drawbar tone, harmonic component level settings are changed to those for the tone you select.
- Pressing the DRAWBAR button instead of selecting a Drawbar tone in step 1 of the above procedure enters the Drawbar Mode for the Drawbar tone you had selected the last time you exited the Drawbar Mode.
- Selecting a non-Drawbar tone exits the Drawbar Mode and returns to the Combination Mode.
- If the same Drawbar tone is assigned to more than one part (UPPER 1, UPPER 2, LOWER 1, LOWER 2), changing the Drawbar tone's parameters for one of the parts causes the same parameters to be applied to the other parts to which the same Drawbar tone is assigned.

Making Detailed Adjustments to Drawbar Tone Parameters

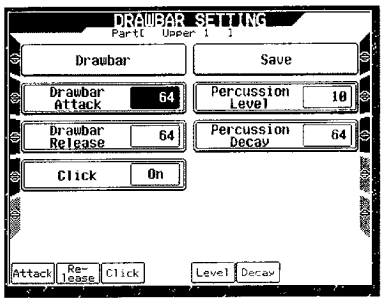
1. Select the Drawbar tone you want.

2. Press the display button **R5** next to **Detail**.
   - This causes the detail adjustment screen shown below to appear.





- Each press of display button **L1** toggles between PAGE 1 (above) and PAGE 2 (below) of the detail adjustment screen.



3. Use the screens to make the parameter settings you want.

- The following describes each of the parameters you can change using the detail adjustment screen. You can play notes on the keyboard as you change settings to find you how notes are affected.

Detail Adjustment Screen PAGE 1

Button	Parameter	Range	Description
L2	Rotary	Slow, Fast	Use this parameter to specify either **Slow** or **Fast** when using DSP **Rotary**.
L3	Drawbar Type	Sine, Vint.	This parameter specifies the Drawbar tone's waveform.
R2	Percussion Second	Off, On	Use this parameter to turn the second percussion sound on and off.
R3	Percussion Third	Off, On	Use this parameter to turn the third percussion sound on and off.

- Use control sliders 1 through 9 (or control buttons 1 through 9) to adjust the organ's harmonics.

Detail Adjustment Screen PAGE 2

Button	Parameter	Range	Description
L2	Drawbar Attack	0-127	Use this parameter to specify the Drawbar tone attack time.
L3	Drawbar Release	0-127	Use this parameter to specify the Drawbar tone release time.
L4	Click	On, Off	This parameter turns the click sound on and off.
R2	Percussion Level	0-15	The parameter can be used to adjust the volume of the percussion sound.
R3	Percussion Decay	0-127	Use this parameter to specify the percussion decay time.

4. After making the settings you want, press the **EXIT** button to return to the tone setting menu.

- You can save a modified Drawbar tone and its parameter settings at any time by pressing display button **R1** next to **Save** on PAGE 1 of the detail adjustment screen. See "Saving a Modified Drawbar Tone" below for information about saving Drawbar tones.

NOTE

- If you select a different Drawbar tone, harmonic component level settings are changed to those for the tone you select.

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Saving a Modified Drawbar Tone

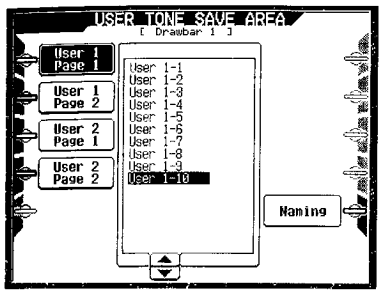
After you make changes to the parameters of a Drawbar tone, you can save the modified version as your own "user tone" for later recall when you need it.

• See page E-66 for information about user tones.

Saving a Modified Drawbar Tone

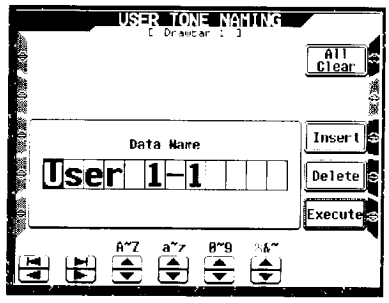
1. Create a user tone by using the procedure under "Making Detailed Adjustments to Drawbar Tone Parameters" on page E-35 to change the parameters of a Drawbar tone.

2. On page 1 of the detail adjustment screen, press display button **R1** next to **Save**.
   - This causes the screen shown below to appear.



3. Specify the user tone area where you want to save your tone.
   - Press one of the display buttons to the left of the display (**L1** to **L4**), specify **USER1** or **USER2** as the tone group, and then specify one of the pages (**PAGE 1** or **PAGE2**) inside the group.
   - Next use set 4 of the control buttons, control slider 4, or the Selector dial to select the user area you want.

4. Press display button **R5** next to **Naming** to display the tone naming screen.



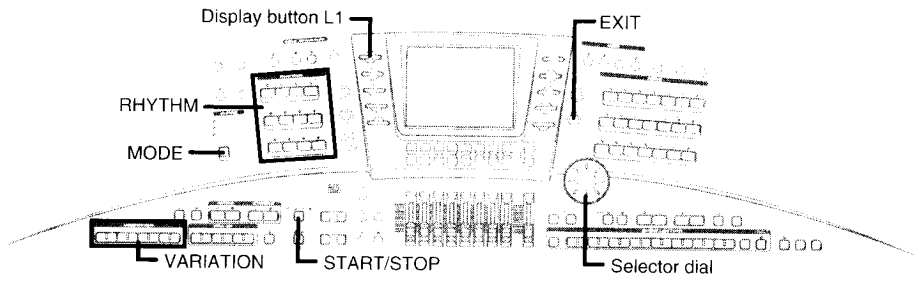
5. Input the name you want to assign to the tone.
   - The highlighted frame on the screen is the current input location. Use sets 3 through 6 of the control buttons (or control sliders 3 through 6) to input characters.
   - Pressing the lower 1 and 2 control buttons moves the highlighting left and right. Pressing the upper 1 and 2 control buttons causes the highlighting to jump to the far left or far right position.
   - To clear all of the characters you have input, press display button **R1** next to **All Clear**.
   - To insert a space at the current input location, press display button **R3** next to **Insert**.
   - To delete the character at the current input location, press display button **R4** next to **Delete**.

6. After you are finished inputting the tone name you want, press display button **R5** next to **Execute**.
   - This saves the modified Drawbar tone in the user area you specified.

NOTE

- You can recall a user tone with the same procedure you use to recall a standard built-in tone. See "Selecting a Tone" on page E-24 for more information.

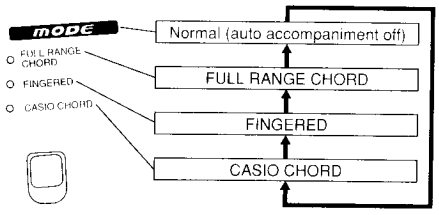
Using Rhythms and Auto Accompaniments



You can set up the keyboard so it automatically sounds the correct bass part and chord accompaniment part any time you play a chord. Bass and chord parts are played along with rhythm performed by percussion instrument sounds. Built in rhythms provide you with a wide selection of styles to suit the type of music you are playing. Add some melody notes with your right hand, and it sounds like an entire ensemble is playing along with your keyboard performances.

Using the Mode Button

Use the **MODE** button to select the auto accompaniment style you want to use, or to turn off auto accompaniment. The following shows how the each press of the **MODE** button cycles through available chord fingering modes.



- In the Normal Mode (all auto accompaniment lamps off), you can play with rhythm accompaniment only.
- When any one of the auto accompaniment lamps is lit, auto accompaniment plays in accordance with the current chord fingering mode (CASIO CHORD, FINGERED or FULL RANGE CHORD). Each of these modes is explained in detail starting from page E-41.

Selecting a Rhythm

The built-in rhythms are divided among 12 groups, with each group assigned to a **RHYTHM** button on the control panel.

Rhythm Name	Rhythm Group Name	Group Contents
8 BEAT	8 Beat	8-beat rhythms
16 BEAT	16 Beat	16-beat rhythms
POPS	Pops	Popular music rhythms
ROCK	Rock	Rock rhythms
DANCE	Dance	Dance music rhythms
JAZZ	Jazz	Jazz rhythms
EUROPEAN	Europe	European music rhythms
LATIN 1	Latin 1	Latin rhythms
LATIN 2	Latin 2	Latin rhythms
AMERICAN	American	American music rhythms
VARIOUS/ WORLD	World	Rhythms from around the world
USER RHYTHM	User Rhythms	User rhythms created using the Pattern Sequencer (page E-101). There is initially nothing stored in the User Rhythms group when you purchase the keyboard.

For more information, see the Rhythm List at the back of this manual.

To select a rhythm, first press a **RHYTHM** button to display a menu of rhythms in the applicable group. Next you can select a rhythm from the group by pressing a display button or by using the selector dial.

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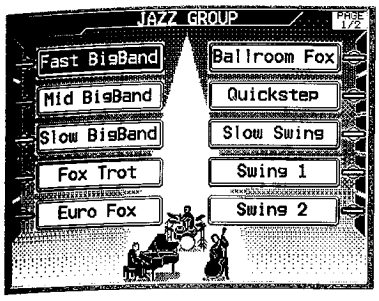
Selecting a Rhythm Using a RHYTHM Button

1. Press one of the **RHYTHM** buttons to select a rhythm group and display a menu of rhythms in the group.



2. On the menu of rhythms that appears on the display, select the one you want to select.
   - Pressing a display button (**L1** to **L5**, **R1** to **R5**) selects the rhythm whose name is next to it.
   - The currently selected rhythm is the one that is highlighted on the menu. You can also rotate the selector dial to move the highlighting around the menu.

3. After selecting the rhythm you want, press the **EXIT** button.

- The name of the rhythm you selected in step 2 is shown as the rhythm setting.

Selecting a Rhythm Using the Selector Dial

1. Press display button **L1** next to **RHYTHM**.
   - This causes the rhythm name to become highlighted.

2. Rotate the Selector Dial to sequentially scroll through rhythm names.

Rhythm names scroll in sequence

- The lamp lights above the **RHYTHM** button corresponding to the group to which the currently displayed rhythm belongs.

Playing Rhythms

This section describes how to play a specific rhythm and how to adjust its tempo (speed).

Starting and Stopping Rhythm Play

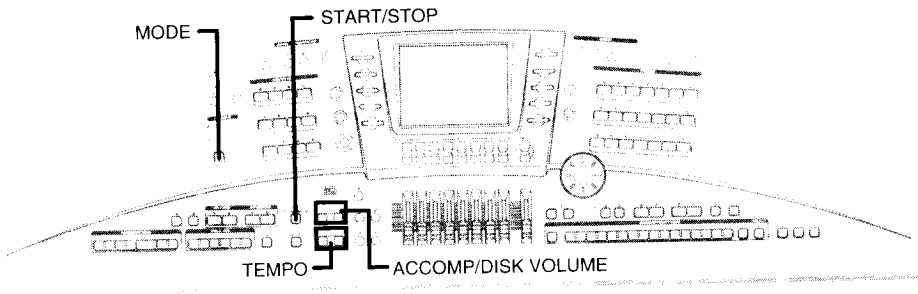
Press the **START/STOP** button to start play of the rhythm whose name is on the display. Once the rhythm pattern starts, you can play along with it on the keyboard.
To stop rhythm play, press the **START/STOP** button again.

NOTE

- If any of the auto accompaniment lamps above the **MODE** button is lit, auto accompaniment will also play along with the rhythm. To play the rhythm only, press the **MODE** button until all of the lamps above it are off.

Selecting a Rhythm Variation

Each rhythm has four variations numbered 1 through 4. While a rhythm is playing, you can press a **VARIATION** button (1 to 4) to select one of the variation patterns for the current rhythm. A lamp lights above the **VARIATION** button you press to indicate that it is the one whose variation is currently selected.



Adjusting the Tempo of Rhythm Play

You can specify the speed at which a rhythm plays as a tempo value in the range of 30 to 255. The tempo value indicates the number of beats per minute.
Use the **TEMPO** buttons to adjust the tempo.

UP ..... Increases the tempo value, which makes play faster.
DOWN ..... Decreases the tempo value, which makes play slower.

NOTE

- Pressing both the **UP** and **DOWN TEMPO** buttons at the same time returns the tempo setting to the initial default value for the currently selected rhythm.
- The tempo value indicates the number of quarter note beats per minute.
- You can also change the tempo setting by pressing display button **L2** next to **TEMPO** and then rotating the selector dial.

Using Chord Auto Accompaniment

There are three chord fingering modes with auto accompaniment: CASIO CHORD which lets you play chords using simplified fingerings with the accompaniment keyboard range, FINGERED when you want to play chords on your own, and FULL-RANGE CHORD which uses the entire keyboard as an accompaniment keyboard.

Starting and Stopping Chord Auto Accompaniment Play

1. Select a rhythm and adjust its tempo.

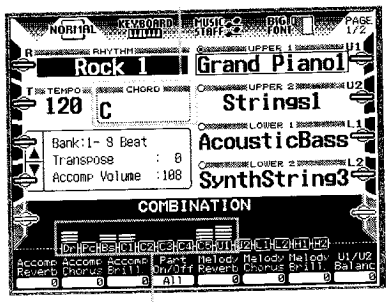
2. Press the **MODE** button so the lamp for the chord fingering mode (CASIO CHORD, FINGERED, FULL-RANGE CHORD) you want to use is lit.

3. Press the **START/STOP** button to start chord auto accompaniment play.

4. Play a chord on the keyboard.

- The method you should use for playing a chord depends on the chord fingering mode you are using. See the following sections for more information.

Name of chord played



Volume level of each part being played (level indicators)

- The selected rhythm and chord auto accompaniment starts to play automatically when you play a chord.

5. To stop the chord auto accompaniment, press the **START/STOP** button again.

Auto Accompaniment Parts and Part Volume Levels

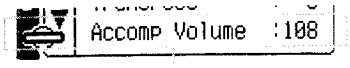
There are a total of eight parts that can be used for auto accompaniment: drums (Dr), percussion (Pc), Bass (Bs), and Chord 1 through Chord 5 (C1 through C5). The number of parts actually used for auto accompaniment depends on the currently selected rhythm and which variation of the rhythm you are using. Generally speaking, Variation 1 has the fewest parts, Variation 2 has more parts than Variation 1, and so on up to Variation 4, which has the most parts. While auto accompaniment is playing, level indicators along the bottom of the display show the volume levels show the volume levels of each part being played.

NOTE

- The level indicators appear on the display in the Combination Mode and Mixer Mode only. See "About the mode area" on page E-15 for more information.

Adjusting Accompaniment Volume

You can use the **ACCOMP/DISK VOLUME** buttons to adjust the volume level of rhythm and auto accompaniment play. Pressing the **UP** button increases volume, while the **DOWN** button decreases volume.



Accomp Volume

You can set the **ACCOMP VOLUME** level within a range of 0 to 127.

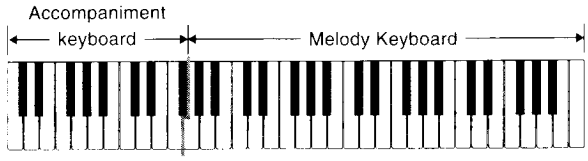
NOTE

- You can also change the accompaniment volume setting by pressing display button **L4** three times to highlight the **ACCOMP VOLUME** item, and then rotating the selector dial.

CASIO CHORD Mode

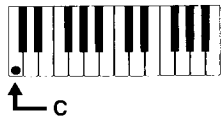
CASIO CHORD makes it possible to play four types of chords in the accompaniment keyboard range using simplified fingerings. This means you can easily play chords even if you do not know the standard fingerings.
The following shows how chords are played in the accompaniment keyboard range in the CASIO CHORD Mode.

CASIO CHORD Mode Accompaniment and Melody Keyboard Ranges



NOTE

- On the keyboard shown above, LOWER 1 and LOWER 2 are assigned to the accompaniment keyboard range and UPPER 1 and UPPER 2 are assigned to the melody keyboard range.
- When both the LOWER 1 and LOWER 2 tones are turned off (page E-22), the accompaniment keyboard range keys do not sound any melody notes. In this case, they are used to specify chords for the accompaniment pattern.
- You can expand the range of the accompaniment keyboard by moving the keyboard's split point to the right (page E-28).

Chord Types	Example
Major chords Note that the chord produced when you press an accompaniment keyboard does not change octave, regardless of which key you use to play it.	C Major (C) 
Minor chords (m) To play a minor chord, keep the major chord key depressed and press any other accompaniment keyboard key located to the right of the major chord key.	C minor (Cm) 
Seventh chords (7) To play a seventh chord, keep the major chord key depressed and press any other two accompaniment keyboard keys located to the right of the major chord key.	C seventh (C7) 
Minor seventh chords (m7) To play a minor seventh chord, keep the major chord key depressed and press any other three accompaniment keyboard keys located to the right of the major chord key.	C minor seventh (Cm7) 

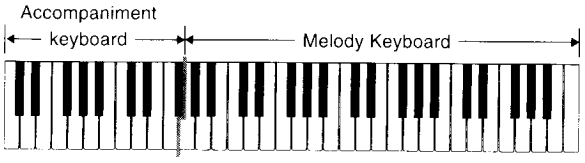
NOTE

- When you press more than one key in the accompaniment keyboard range, you can press any white or black accompaniment key, as long as it is to the right of the first key.

Fingered Mode

In this mode, you specify chords by playing them as you would on a piano, inside the accompaniment keyboard range. To specify a C-chord, you would play C-E-G.

FINGERED Mode Accompaniment and Melody Keyboard Ranges



NOTE

- On the keyboard shown above, LOWER 1 and LOWER 2 are assigned to the accompaniment keyboard range and UPPER 1 and UPPER 2 are assigned to the melody keyboard range.
- When both the LOWER 1 and LOWER 2 tones are turned off (page E-22), the accompaniment keyboard range keys do not sound any melody notes. In this case, they are used to specify chords for the accompaniment pattern.
- You can expand the range of the accompaniment keyboard by moving the keyboard's split point to the right (page E-28).

See the "Fingered/Full-Range Chord Table" at the back of this manual for information about the chords that can be recognized in the Fingered Mode.

- The chords that are recognized by the keyboard in the FINGERED Mode depend on the current "On Bass Chord", "6th Chord", and "Tension Chord" Accomp/Chord settings. See "Keyboard Setup Reference" on page E-154 for information about Accomp/Chord settings. Information about how settings affect the type of chords recognized by the keyboard "Fingered/Full-Range Chord Table" at the back of this manual.

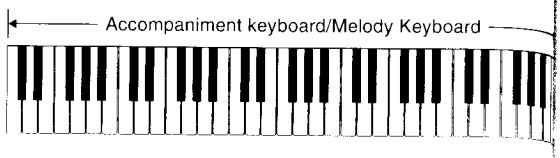
NOTE

- In the FINGERED Mode, you can use the standard fingering shown above (C-E-G for a C-chord, for example) or you can use inverted fingerings (G-E-C, for example), as long as you play chords within the accompaniment keyboard range. Note, however, that using an inverted fingering will produce a different chord entirely if the "**On Bass Chord**" Chord Mode setting is turned on.
- Generally, you must press all of the keys that make up the chords shown above. Omitting a note or playing only a single note will not produce a chord.

FULL-RANGE CHORD Mode

This mode can be used to play up to 238 different types of chords. Pressing three or more keys in a pattern that is recognized as a chord pattern by the keyboard causes the corresponding chord to be played. Playing chords in a pattern not recognized by the keyboard or pressing two keys or one key causes the corresponding notes to be played as melody notes. This means that the entire range of the keyboard acts as both a melody keyboard and accompaniment keyboard.

FULL RANGE CHORD Mode Accompaniment and Melody Keyboard Ranges

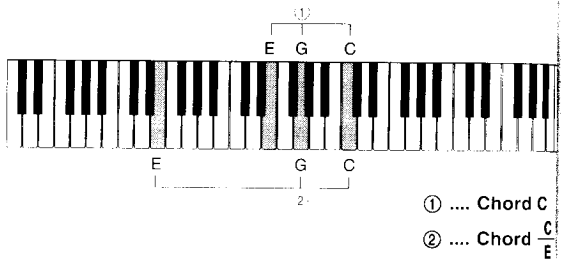


Recognized Chords

See the "Fingered/Full Range Chord Chart" at the back of this manual for more information.

Example: To play the chord C major.

Either of the fingerings shown in the illustration below will produce C major.



NOTE

- If there are more than six semitones between the lowest note and the next note to the right, the lowest note is interpreted as a bass note.

Auto Accompaniment Effects and Settings

You can apply a variety of effects, and even adjust the volume level and timbre of individual a rhythm and auto accompaniment parts. The following describes the effects and settings that you can control.

Auto Accompaniment Buttons

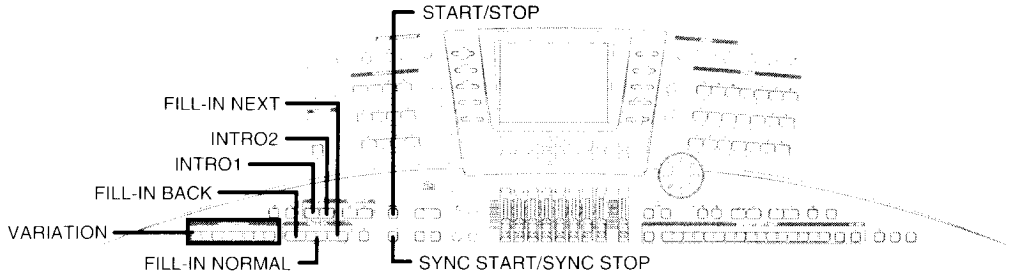
The auto accompaniment buttons are located on the left side of the control panel, where they are easily accessible from the keyboard. You can use these buttons to control rhythm and auto accompaniment play.

Button Name	Description	Where to find more information
START/STOP	Starts and stops rhythm/auto accompaniment play.	"Playing Rhythms" (page E-39)
TEMPO	Adjust rhythm/auto accompaniment tempo (speed).	"Adjusting the Tempo of Rhythm Play" (page E-40)
ACCOMP/DISK VOLUME	Adjusts rhythm/auto accompaniment volume levels.	"Adjusting Accompaniment Volume" (page E-41)
INTRO1/INTRO2	Start rhythm/auto accompaniment with an intro pattern.	"Starting Auto Accompaniment with an Intro Pattern" (page E-44)
BACK/NORMAL/NEXT (FILL-IN)	Insert fill-in patterns into a rhythm/auto accompaniment.	"Using a Fill-in Pattern" (page E-44)
BREAK	Inserts a break into a rhythm/auto accompaniment.	"Using a Break" (page E-44)
VARIATION (1 to 4)	Select rhythm/auto accompaniment variations.	"Using the Variation Patterns" (page E-44)
SYNC START	Causes rhythm/auto accompaniment play to start when something is played inside the accompaniment keyboard range.	"Using Sync Start" (page E-45)
SYNC STOP	Enables control of rhythm/auto accompaniment play start and stop using the accompaniment keyboard range.	"Using Sync Start/Sync Stop while Auto Accompaniment is Playing" (page E-45)
rit.	Gradually reduces rhythm/auto accompaniment tempo.	"Using Ritardando (rit.)" (page E-46)
FADE IN/OUT	Causes rhythm/auto accompaniment to gradually fade in/out.	"Using Fade In" "Using Fade Out" (page E-46)
ENDING 1/ENDING 2	End rhythm/auto accompaniment play with ending patterns.	"Using an Ending Pattern" (page E-47)

Control Buttons and Control Sliders

In the Combination Mode, which is indicated when the lamp above the **COMBINATION** button is lit, you can use the control buttons and control sliders to adjust the following parameters.

- Auto accompaniment reverb and chorus effects, auto accompaniment brilliance, on/off settings of certain auto accompaniment parts, melody reverb and chorus effects, melody brilliance. See "Using Control Buttons and Control Sliders to Adjust Rhythms and Auto Accompaniments" on page E-47 for more information about the above settings.
- Volume balance between UPPER 1 and UPPER 2 tones when the melody keyboard range is layered with two tones. See "Adjusting the Volume Balance between the UPPER 1 and UPPER 2 Tones" on page E-27 for more information about the above setting.



Starting Auto Accompaniment with an Intro Pattern

You can use one of two different intros to start play of an auto accompaniment pattern.

Getting Ready

- Select a rhythm and adjust its tempo.
- Use the **MODE** button to specify the chord fingering mode you want to use.

Press the **INTRO1** or **INTRO2** button.

- This plays the intro pattern assigned to the button you pressed and then starts auto accompaniment play.
- In any chord fingering mode besides NORMAL, pressing any key within the accompaniment keyboard range while the intro pattern is playing immediately switches to the auto accompaniment pattern.

NOTE

- The selected rhythm/auto accompaniment starts to play as soon as the intro pattern is complete.

Using the Variation Patterns

Each rhythm/auto accompaniment pattern has four different variations. You can vary the mood of your music by switching to a different variation while rhythm/auto accompaniment play is in progress.

Getting Ready

- Select a rhythm and adjust its tempo.
- Use the **MODE** button to specify the chord fingering mode you want to use.
- Listen to the four variations available for the rhythm you are using to get some idea of what they sound like.

1. Press the **START/STOP** button to start rhythm play.
   - It does not make any difference which **VARIATION** button (1 to 4) is depressed at first.
2. Press another **VARIATION** button to switch to a different variation of the same rhythm.
   - When you press a **VARIATION** button the change to the new rhythm variation is performed in time with the beat of the rhythm.

Using a Fill-in Pattern

A fill-in pattern is a momentary change in the rhythm/auto accompaniment pattern, which can be used to add some fla to your performances. The following describes the types fill-in patterns that are available with this keyboard.

NORMAL
Inserts a fill-in pattern and returns to the original rhyth variation.
Example: Variation 3 ➜ Fill-in ➜ Variation 3

BACK
Inserts a fill-in pattern and changes to the next lower num bered rhythm from the original variation.
Example: Variation 3 ➜ Fill-in ➜ Variation 2

NEXT
Inserts a fill-in pattern and changes to the next higher num bered rhythm from the original variation.
Example: Variation 3 ➜ Fill-in ➜ Variation 4

Use the following procedure to insert a fill-in pattern.

1. Press the **START/STOP** button to start rhythm play.
2. Press one of the **FILL-IN** buttons: **BACK**, **NORMAL**, or **NEXT**.
   - This causes the fill-in pattern to be inserted, followed by the rhythm variation in accordance with the **FILL-IN** button you pressed.

Using a Break

A break inserts a moment of silence into a rhythm/auto accompaniment pattern. Pressing the **BREAK** button stops the rhythm/auto accompaniment pattern until the beginning of the next measure, when the pattern starts to play again.

Using Sync Start

Sync Start lets you set up the keyboard so rhythm and chord accompaniment starts automatically when you press keys inside the accompaniment keyboard range.

Getting Ready

- Select a rhythm and adjust its tempo.
- Use the **MODE** button to specify the chord fingering mode you want to use.

1. While the rhythm is not playing yet, press the **SYNC START/SYNC STOP** button.
   - This causes the left lamp above the button to light, indicating that the keyboard is in sync start standby.
2. Press one of the **VARIATION** buttons (1 to 4) to select the rhythm variation you want to start with.
3. Play a chord in the accompaniment keyboard range.
   - Both rhythm and chord accompaniment starts at the same time. The lamp above the **SYNC START/SYNC STOP** button goes out when the rhythm/auto accompaniment starts.

NOTE

- Only the rhythm sounds if no lamp above the **MODE** button is lit.
- If you press an **INTRO** button before step 2 of the above procedure so the lamp above the button is lit, playing a chord causes accompaniment to start after the corresponding intro pattern is played.
- If you press a **FADE IN/OUT** button before step 2 of the above procedure so the lamp above the button is lit, playing a chord causes accompaniment to fade in.
- Pressing the **SYNC START/SYNC STOP** button again while the keyboard is in sync start standby exits sync start standby, which causes the lamp above the **SYNC START/SYNC STOP** button to go out.

Using Sync Start/Sync Stop while Auto Acommpaniment is Playing

Sync stop is the opposite of sync start. It causes the currently playing auto accompaniment pattern to stop when the keys in the accompaniment keyboard range are released. This feature is more than just a simple way to stop auto accompaniment play. It plays auto accompaniment only when valid chords are played inside the accompaniment keyboard range.

IMPORTANT!

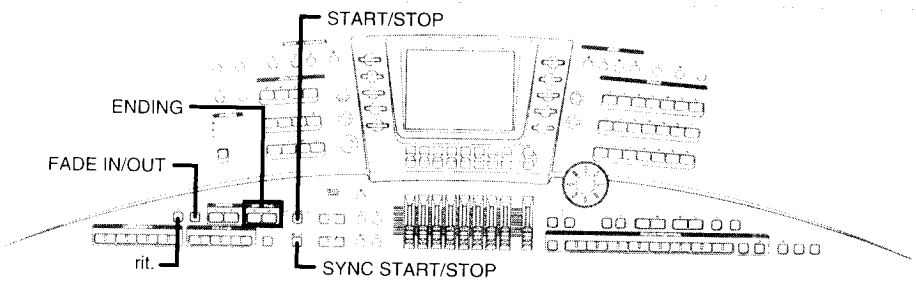
The following functions do not work in the NORMAL Mode, when all lamps above the **MODE** button are turned off.

Using Sync Stop to stop Auto Accompaniment

Getting Ready

- Select a rhythm and adjust its tempo.
- Use the **MODE** button to specify the chord fingering mode you want to use.

1. Press the **START/STOP** button to start play of the select rhythm.
2. Press the **SYNC START/SYNC STOP** button.
   - This causes the right lamp above the button to light, indicating that the keyboard is in sync stop standby.
3. Play a chord in the accompaniment keyboard range and then release the keys.
   - This causes the auto accompaniment pattern to stop playing and both lamps above the **SYNC START/SYNC STOP** button to light, indicating that the keyboard is in sync stop.
   - To exit sync stop, press the **SYNC START/SYNC STOP** button twice so the two lamps go out.
   - The section below describes what auto accompaniment operations you can perform while the keyboard is in sync stop.



Auto Accompaniment in Sync Stop

The following are the auto accompaniment operations you can perform while the keyboard is in sync standby (both lamps above the **SYNC START/SYNC STOP** button lit).

- Playing a chord in the accompaniment keyboard range causes auto accompaniment to play (only while the chord note keys are depressed). Releasing the keys causes auto accompaniment play to stop, and the keyboard enters sync stop again.
- Pressing the **SYNC START/SYNC STOP** button while playing a chord in the accompaniment keyboard range causes the lamps above the button to go out, indicating that the keyboard is no longer in sync stop.

With sync stop, you can easily create a break in auto accompaniment play to allow for ad libbing, and then restart accompaniment when you want.

Using Ritardando (rit.)

"Ritardando" (abbreviated "**rit.**")is a musical term that means a gradual slowing of the tempo (speed). Pressing the keyboards **rit.** (retardando) button while a rhythm/auto accompaniment is playing causes the current tempo to gradually slow until it reaches a speed that is about one half of the original tempo value. To return to the original tempo value, press the **rit.** (retardando) button again.

NOTE

- You can also specify how long (as a number of measures) the slowed accompaniment should continue after the **rit.** (retardando) button is pressed. See "Keyboard Setup Reference" on page E-154 for more information.

Using Fade In

Getting Ready

- Select a rhythm and adjust its tempo.
- Use the **MODE** button to specify the chord fingering mode you want to use.

1. While rhythm is not playing, press the **FADE IN/OUT** button.
   - This causes the lamp above the button to light.
2. Press the **START/STOP** button.
   - This causes the rhythm to fade in. The indicator above the **FADE IN/OUT** button goes out when fade in is complete and the rhythm reaches its normal value.
   - Playing a chord in the accompaniment keyboard range before starting rhythm play causes auto accompaniment to fade in.

NOTE

- Fade in is applied both to accompaniment and melody notes.
- You can also specify how long (as a number of measures) fade in should take to reach normal volume after the **FADE IN/OUT** button is pressed. See "Keyboard Setup Reference" on page E-154 for more information.
- Pressing the **FADE IN/FADE OUT** button again during step 1 of this procedure or while fade is in progress stops fade in.

Using Fade Out

While a rhythm/auto accompaniment is playing, press the **FADE IN/OUT** button.

- This causes the lamp above the button to light and the rhythm/auto accompaniment to fade out.
- The indicator above the **FADE IN/OUT** button goes out when fade out is complete and the rhythm/auto accompaniment stops.

NOTE

- Fade out is applied both to accompaniment and melody notes.
- You can also specify how long (as a number of measures) fade out should take to reach the point when rhythm/auto accompaniment stops after the **FADE IN/OUT** button is pressed. See "Keyboard Setup Reference" on page E-154 for more information.
- Pressing the **FADE IN/FADE OUT** button again while fade is out progress stops fade out.

Using an Ending Pattern

Each rhythm has two different ending patterns that you can use to bring auto accompaniment to a natural-sounding conclusion. Pressing one of the **ENDING** buttons plays an appropriate ending pattern and then stops the rhythm/accompaniment.

NOTE

- Pressing the **ENDING** button during the first two beats of a measure causes the ending pattern to play immediately. Pressing it anytime after the first two beats causes the ending pattern to play starting from the next measure.

Using Control Buttons and Control Sliders to Adjust Rhythms and Auto Accompaniments

In the Combination Mode, which is indicated when the lamp above the **COMBINATION** button is lit, you can use the combination2 buttons and control sliders to adjust the effects applied to auto accompaniment and melody notes.

Part On/Off Indicators

Setting	Range	Description
Accomp Reverb	-64 to 63	Adjusts the reverb effect applied to auto accompaniment.
Accomp Chorus	-64 to 63	Adjusts the chorus effect applied to auto accompaniment.
Accomp Brilliance	-6 to 6	Adjusts the brilliance of auto accompaniment notes.
Part On/Off	Drum to All	Cuts some auto accompaniment parts.
Melody Reverb	-64 to 63	Adjusts the reverb effect applied to the melody.
Melody Chorus	-64 to 63	Adjusts the chorus effect applied to the melody.
Melody Brilliance	-6 to 6	Adjusts the brilliance of the melody.
U1/U2 Balance	-64 to 63	Adjusts the volume balance between the UPPER 1 tone and UPPER 2 tone.

Part On/Off

Part On/Off provides a simple means of turning some auto accompaniment parts on or off without using the Mixer (page E-51). The following shows the auto accompaniment parts that are sounded when each of the available Part On/Off settings is selected.

Setting	Sounded Auto Accompaniment Parts
Drum	Drum (rhythm), percussion
Dr+Bs	Drum (rhythm), percussion, bass
D+B+C3	Drum (rhythm), percussion, bass, Chord 1, Chord 2, Chord 3
All	Drum (rhythm), percussion, bass, Chord 1, Chord 2, Chord 3, Chord 4, Chord 5 (all auto accompaniment parts)

- You can find out the current Part On/Off setting by checking the Part On/Off indicators along the bottom of the display. Parts that have frames around them are on, while those without frames are off.

Additional Auto Accompaniment Effects

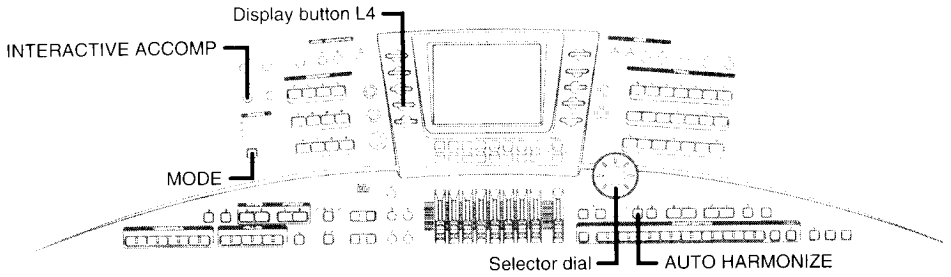
The following additional effects can also be used for auto accompaniment play.

INTERACTIVE ACCOMP

This effect applies natural modulation to the auto accompaniment pattern in accordance with the amount of pressure applied to the accompaniment keyboard range keys.

AUTO HARMONIZE

When you are using auto accompaniment, auto harmonize automatically adds an additional note to your melody in accordance with the chord that is being played. The result is a harmony effect that makes your melody line richer and fuller.



Using Interactive Accomp

Interactive accomp naturally alters the auto accompaniment pattern by making it livelier or more subdued, and by changing the phrasing of the pattern in accordance with the amount of pressure applied to the accompaniment keyboard range and the current chord progression. Normally, an accompaniment pattern becomes more lively with more accompaniment keyboard range pressure. The actual effect produced depends on the rhythm you are using.

To turn on interactive accomp, press the INTERACTIVE ACCOMP button so the lamp above it is lit.

NOTE

- You can use to the **MODULATION** wheel and expression pedal to control how interactive accomp alters the auto accompaniment. See "Keyboard Setup Reference" on page E-154 for more information.

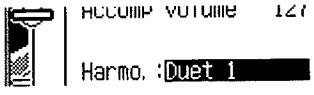
Using Auto Harmonize

When you are using auto accompaniment, auto harmonize automatically adds notes (called "harmonize notes") that are in harmony with notes you play in the melody keyboard range. The result is melody play with more richness and depth.

The following procedure describes how to use auto harmonize.

1. Use the **MODE** button to select CASIO CHORD or FINGERED as the chord fingering mode.
   - One of the lamps above the MODE button must be lit to use auto harmonize.

2. Press the **AUTO HARMONIZE** button.
   - This causes the lamp above the button to light, indicating that auto harmonize is turned on.
   - At this point you could use the selector dial to select the type of auto harmonize you want to use. See "Auto Harmonize Types" below for more information.



3. Start auto accompaniment play and then play some notes in the melody keyboard range.
   - Harmonize notes are added automatically to the notes you play in the melody keyboard range.

4. To turn off auto harmonize, press the **AUTO HARMONIZE** button again so the lamp above it goes out.

NOTE

- If you have two tones (UPPER 1, UPPER 2) layered on the keyboard, harmonize notes are added to both.
- You cannot use the auto harmonize and arpeggiator effects at the same time.
- Auto harmonize can be use in the FINGERED and CASIO CHORD chord fingering modes only.

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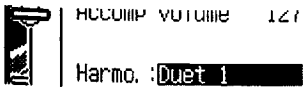
Auto Harmonize Types

You can select from among the 12 different types of auto harmonize listed below.

Type (Parameter Name)	Description
Duet1	Adds a 1-part harmony to keyboard play.
Duet2	Adds a 1-part harmony to keyboard play. Duet2 harmony is more open than Duet1.
Country	Adds a country-flavor harmony to keyboard play.
Octave	Adds notes one octave below notes played on the keyboard.
5th	Adds fifth notes above notes played on the keyboard.
3-Way Open	Adds two open harmony parts to notes played on the keyboard (creating three-part harmony).
3-Way Close	Adds two close harmony parts to notes played on the keyboard (creating three-part harmony).
Strings	Adds harmony suitable for strings.
4-Way Open	Adds three open harmony parts to notes played on the keyboard (creating four-part harmony).
4-Way Close	Adds three close harmony parts to notes played on the keyboard (creating four-part harmony).
Block	Adds block chord notes.
Big Band	Adds harmony suitable for big band play.

You can use the following procedure to select an auto harmonize type using the selector dial, immediately after turning on auto harmonize.

1. Use display button **L4** to highlight the **Harmo.** parameter on the screen.



2. Rotate the selector dial and select the type of auto harmonize you want to use.

NOTE

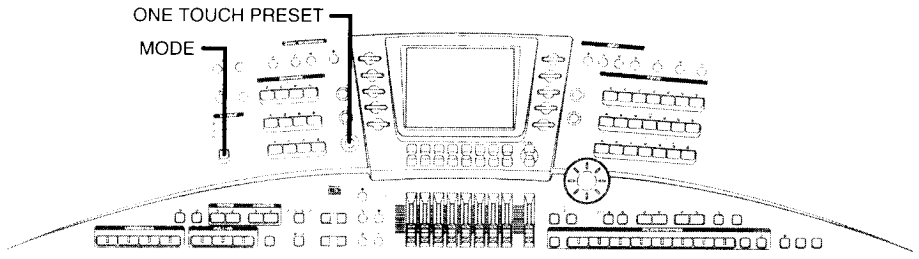
- You can also select the auto harmonize type by pressing the **SETTING** button and then making your selection from the screen that appears. See "Keyboard Setup Reference" on page E-154 for more information.

Changing the Harmonize Note Tone

Initially, the notes added by auto harmonize (harmonize notes) use the same tone as the one you selected for your melody notes. However, you can use the Mixer to specify a different tone for the harmonize notes, and to change other harmonize note settings (volume balance, etc.) See "Using the Mixer" on page E-51 for more information.

NOTE

- Changing the melody note tone setting while auto harmonize is turned on causes the tone used for the auto harmonize notes to also change to the same tone.
- Selecting a tone with the **DRAWBAR** button changes only the melody.



One-Touch Preset

As its name suggests, one-touch preset lets you call up tone and tempo settings that best match the rhythm you are using with the touch of a button. Each rhythm pattern has four different one-touch preset variations from which you can choose. The following are the parameters that are for each rhythm pattern by one-touch preset.

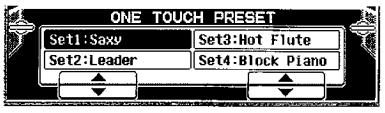
- Melody keyboard range part (UPPER 1, UPPER 2, LOWER 1, LOWER 2) on/off, tone, volume, and pan
- Harmonize tone, volume, pan
- Tempo
- Accomp volume
- Effects
- Harmonize (Type, On/Off)
- Arpeggiator (Type, On/Off, Speed, Range)
- Sustain (On/Off)

Using One-Touch Preset

1. Select the rhythm you want to use.

2. Use the **MODE** button to select the chord fingering mode you want to use.

3. Press the **ONE TOUCH PRESET** button to display the screen shown below.



   - The currently selected one-touch preset variation is the one that is highlighted on the screen.

4. Press the control button under the one-touch preset you want to use.
   - Control buttons 2, 3, 6, and 7 are used to select one-touch preset variations. Pressing a button causes the name of the corresponding variation to become highlighted.
   - Selecting a one-touch preset variation causes the keyboard tone, tempo, and other settings to change accordingly.

5. Start rhythm and auto accompaniment play, an play something on the keyboard.
   - The notes you play sound in accordance with the se tings made by the one-touch preset.

NOTE

- The one-touch preset variation that is initially highlighted (Se lected) is the one that was selected the last time you displaye the one-touch preset screen for the tone you are using. Th last variation selection you make is retained for each tone.
- The reset initial variation for all rhythms is Variation 1 (Set 1)

One-Touch Preset Select Settings

The one-touch preset select lets you specify certain parame ters (such as tempo) that should not be affected when a one touch preset is selected. See "Keyboard Setup Reference" o page E-154 for more information.

Using the Mixer

Much like a real band, auto accompaniment patterns and patterns you create with the Sequencer are played using multiple "parts," such as chords, bass, and drum parts. The Mixer provides you with the means to turn individual parts on (so they sound) and off (so they don't), and to change the tone, volume, pan, effect, and other parameters of each part.

Parts

As mentioned above, the word "part" as used in relation to this keyboard has the same meaning as it does in an orchestra or band. It also refers to the UPPER 1, UPPER 2, LOWER 1, and LOWER 2 parts of the keyboard that you use when layering or splitting keyboard tones (page E-22).

The following example shows a typical list of parts when you are using auto accompaniment with UPPER 1 and UPPER 2 tones layered in the melody keyboard range.

Melody Keyboard	Upper 1
	Upper 2
Accompaniment	Drum
	Perc (Percussion)
	Bass
	Chord 1
	Chord 2
	Chord 3
	Chord 4
	Chord 5

Types of Parts

This keyboard is capable of producing a total of 31 different parts. Parts can be broadly classified as one of two different types: internal parts and external parts.

Internal Parts

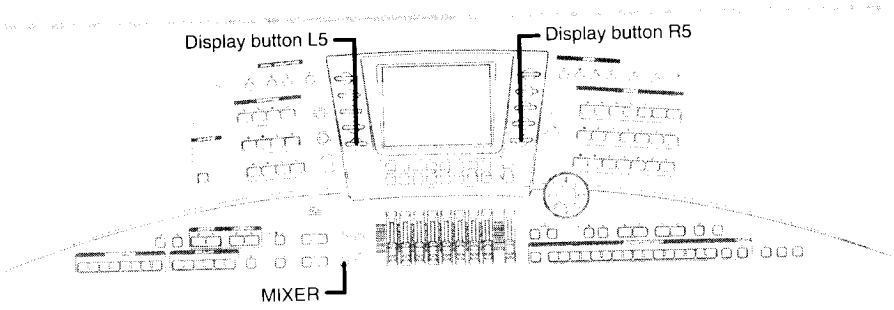
Internal parts are the ones that the keyboard normally uses for auto accompaniments and to produce the notes you play. There are 15 internal parts, including seven melody parts (for keyboard notes and MIC IN/LINE IN input) and eight accompaniment parts (for auto accompaniment).

External Parts

There are 16 external parts that the keyboard can use to sound MIDI input from an external source. External parts are also used by the keyboard's Song Sequencer (page E-76). In this case, each external part corresponds to one of the 16 external tracks of the Song Sequencer.

The following is a general overview of the parts described above.

Part Type		Part Name	Description
Internal	Melody	Upper 1	These parts are used for keyboard play. See "UPPER 1, UPPER 2, LOWER 1, LOWER 2" on page E-22.
		Upper 2	
		Lower 1	
		Lower 2	
		Harmo 1 (Auto Harmonize1)	Harmonize notes used for auto harmonize. See "Using Auto Harmonize" on page E-48.
		Harmo 2 (Auto Harmonize2)	
		Mc/Ln (Mic In/Line In)	Sound input through the MIC IN and LINE IN terminals.
	Accompaniment	Drum	Auto accompaniment parts. See "Using Chord Auto Accompaniment" on page E-40.
		Perc (Percussion)	
		Bass	
		Chord 1 to Chord 5	
External		Pt1 to Pt16 (Part 1 to Part 16)	These parts correspond to external tracks 1 to 16 when recording or playing back with the Sequencer. They are also used when sounding MIDI input from an external source. See "Using MIDI" on page E-169.

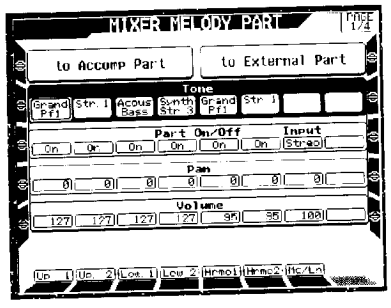


Mixer Screens

Pressing the **MIXER** button enters the Mixer Mode, which is indicated when the lamp above the button is lit. There are two Mixer screens: the basic setup screen that appears first, and a screen of more detailed settings that appears when you press display button **R5** next to **Detail**.

- On the basic setup screen that appears first when you enter the Mixer Mode, you can use the control buttons and control sliders to adjust the volume of internal parts. See "Using the Mixer to Adjust the Volume of Internal Parts" below for information about how to make adjustments on this screen.

- Pressing display button **R5** next to **Detail** changes to the detailed setting screen shown below. Use this screen to made more detailed adjustments of part parameters. See "Making Detailed Mixer Settings" on page E-53 for information about how to change the parameters on this screen.

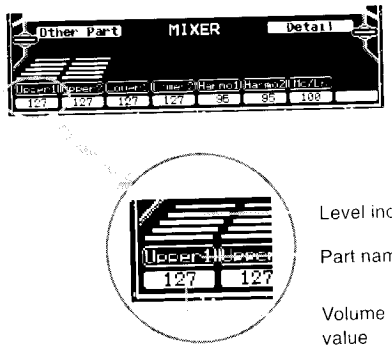


Using the Mixer to Adjust the Volume of Internal Parts

Use the basic setup screen that appears first when you enter the Mixer Mode to adjust the volume of internal parts.

Adjusting the Volume of Internal Parts

1. Press the **MIXER** button.
   - This causes the lamp above the button to light, indicating that the keyboard is in the Mixer Mode.



2. Use the control buttons and control sliders under each part to adjust its volume level.
   - You can set the volume of each part within the range of 0 to 127.

3. If the part whose volume you want to adjust is not on the screen, press display button **L5** next to **Other Part**.
   - This causes the screen to change to the accompaniment part volume settings shown below.

   - You can have auto accompaniment playing as you make adjustments so you can hear how your settings affect it.

NOTE

When the **Mixer Hold** setting of the Accomp/Chord settings is turned off, the Mixer settings for the accompaniment parts are initialized each time you press an auto accompaniment control button (**INTRO 1/2**, **FILL IN**, **ENDING 1/2**, **VARIATION 1-4**). If you want to retain Mixer settings, be sure to turn on the **Mixer Hold** setting. See "Keyboard Setup Reference" on page E-154 for information about making Accomp/Chord settings.

Making Detailed Mixer Settings

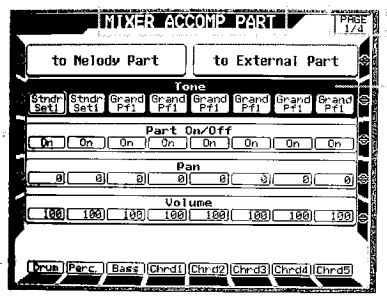
Use the Mixer detailed setting screen to change volume, tone, and other parameters for each part.

Making Detailed Mixer Settings

1. In the Mixer Mode, which is indicated when the lamp above the **MIXER** button is lit, press display button **R5** next to **Detail**.

- This displays the Mixer detailed setting screen.

Mixer screen title PAGE number



Selected parameter (highlighted)

2. Display the part whose settings you want to change.

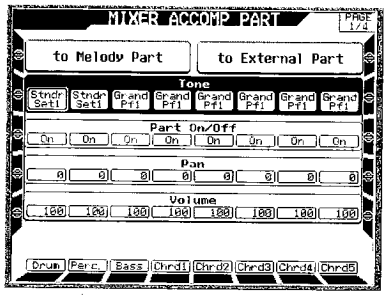
- Use display buttons **L1** and **R1** to switch between the setting screens.
- The title bar of each screen shows one of the part type names listed below.

MIXER MELODY PART ..... Internal, melody part
MIXER ACCOMP PART ..... Internal, accompaniment part
MIXER PART 1-8 ..... External part (Pt1 to Pt8)
MIXER PART 9-16 ..... External part (Pt9 to Pt16)

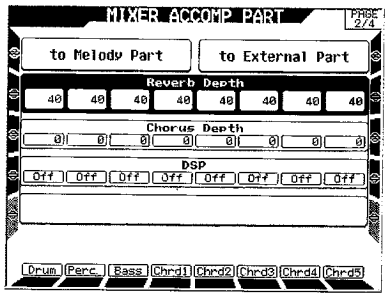
Display the page that contains the name of the parameter whose setting you want to change.

- There are for detailed parameter setting pages. Use the **PAGE** button to change between PAGE.

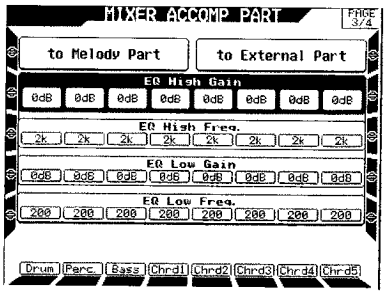
PAGE 1/4



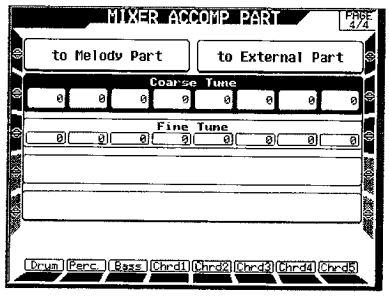
PAGE 2/4

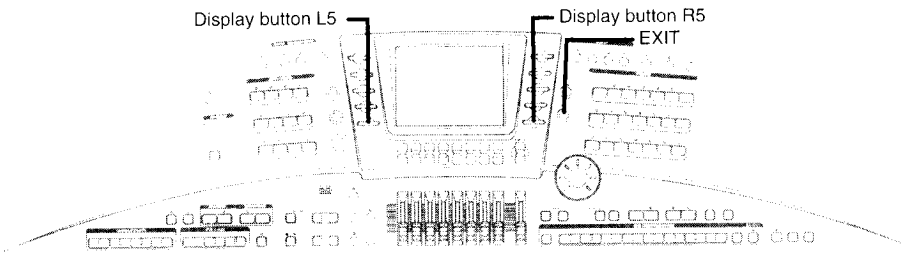


PAGE 3/4



PAGE 4/4



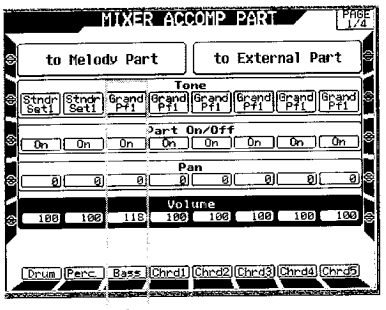


4. Select the parameter whose setting you want to change.

- To change the volume setting, for example, use display buttons **L5** or **R5** to highlight the **Volume** item on PAGE 1/4.
- See "Mixer Parameters" for information about which parameters can be changed.

5. Set the selected parameter for each of the parts.

- Use the control button or control slider below each part to change its parameter settings.



To change the setting of the **Bass** parameter on the screen, for example, you would use control button or control slider 3.

6. Repeat steps 2 through 5 to change the settings of other parameters if you want.

- When changing parameter settings, you can play notes on the keyboard as you change parameter settings to see what affect your settings have.
- After you are finished making the settings you want, press the **EXIT** button to return to the Mixer basic setting screen.

Mixer Parameters

This section provides detailed explanations of each of the Mixer parameters, and their setting ranges.

Tone Parameters (PAGE 1/4)

Tone parameters settings can be changed using PAGE 1/4 of the Mixer detailed setting screen.

Tone: 562

This parameter controls the tones assigned to each part.

NOTE

- You can also change the tone assignment with the **TONE** buttons. The only tone buttons that are enabled are those whose names are shown under **Tone** parameter on the display.
- Use DRUM tone group values for the **Drum** and **Perc** (Percussion) parts.
- You cannot select DRUM tone group values for **Bass**, or **Chord** parts.
- You cannot change this setting for the **Mc/Ln** (microphone/line) part.
- Changing the tone assigned to the Upper 1 also changes the tone assigned to Harmo 1. Changing the tone assigned to the Upper 2 also changes the tone assigned to Harmo 2.

Part On/Off: On, Off

This parameter can be used to turn each part on (sounds) and off (does not sound). The current on/off status of each part is indicated on the display as described below.

On ..... Part name framed : Chrd5
Off ..... Part name not framed : Chrd5

NOTE

- This parameter turns Combination Mode accompaniment part on and off, which is indicated when the lamp above the **COMBINATION** button is lit. See "Auto Accompaniment Effects and Settings" on page E-43 for more information.
- The on/off status of the **Mc/Ln** (microphone/line) part cannot be changed. You can, however, switch the **Mc/Ln** part **Input** setting between monaural and stereo as described in the following section.

Input: Mono, Stereo

This parameter controls the **Mc/Ln** (microphone/line) part only. Select **Stereo** for stereo signal line input and **Mono** for monaural signal line input.

*Pan: -64 to 63**

Use this parameter to adjust the pan setting (volume balance between the left and right speakers). A value of 0 puts the speakers in balance, so the stereo center is halfway between the two speakers. A smaller value shifts the stereo center left, while a larger value shifts it right.

Volume: 0 to 127

This parameter adjusts the overall volume of each part. It is the same as the setting made on the basic setup screen that appears first when you enter the Mixer Mode.

Effect Parameters (PAGE 2/4)

Use PAGE 2/4 of the Mixer detailed setting screen to change effect parameter settings. Mixer PAGE 2/4 lets you control the effects applied to each individual part, making it different from the Effect Mode, whose settings are applied to all parts in general.

*Reverb Depth: 0 to 127**

This parameter controls how much reverb is applied to a part. A setting 0 turns reverb off, while a setting of 127 applies maximum reverb.

*Chorus Depth: 0 to 127**

This parameter controls how much chorus depth is applied to a part. A setting 0 turns chorus depth off, while a setting of 127 applies maximum chorus depth.
Chorus Depth does not work with drum sounds.

DSP: Off, 1, 1+2, 2, 3, 3+4, 4

You can use this parameter to turn DSP off for a particular channel, or to turn it on and specify which DSP channels should be used.
The following are the DSP settings you can make for each part.

Melody Part: Off, 1, 1+2, 2
Accompaniment Part: Off, 3, 3+4, 4
Rhythm Part: Off, 1, 1+2, 2, 3, 3+4, 4

Gate Threshold: 0 to 127 (Noise Gate Threshold)

This setting applies to the **Mc/Ln** (microphone/line) part only. It sets the noise gate threshold for microphone/line input.

Equalizer Parameters (PAGE 3/4)

PAGE 3/4 of the Mixer is a high/low 2-band shelf type equalizer. It lets you set cut off frequencies for two bands (high and low) and adjust the gain for each part.

- There are no settings for the **Mc/Ln** (microphone/line) parts on this PAGE.

EQ High Gain: -6dB to 6dB

This parameter is for adjusting the gain for the frequency band that is higher than the frequency you set with the **EQ High Freq.** parameter.

EQ High Freq.: 2kHz, 4kHz, 8kHz, 16kHz (High Frequency)

This parameter sets the cut off frequency for the high band (2kHz to 16kHz).

EQ Low Gain: -6dB to 6dB

This parameter is for adjusting the gain for the frequency band that is lower than the frequency you set with the **EQ Low Freq.** parameter.

EQ Low Freq.: 200Hz, 400Hz, 800Hz, 1.6kHz (Low Frequency)

This parameter sets the cut off frequency for the low band (200Hz to 1.6kHz).

Tuning Parameters (PAGE 4/4)

You can use the parameters on PAGE 4/4 to individually tune each of the parts.

- There are no settings for the **Mc/Ln** (microphone/line) parts on this PAGE.

Coarse Tune: -24 to 24

This parameter tunes individual parts in semitone units, which means that changing the value by 1 changes the tuning by one semitone.

- The setting you make here is added to the transpose setting described in "Keyboard Related Settings" on page E-31.
- **Coarse Tune** does not work with drum sounds.

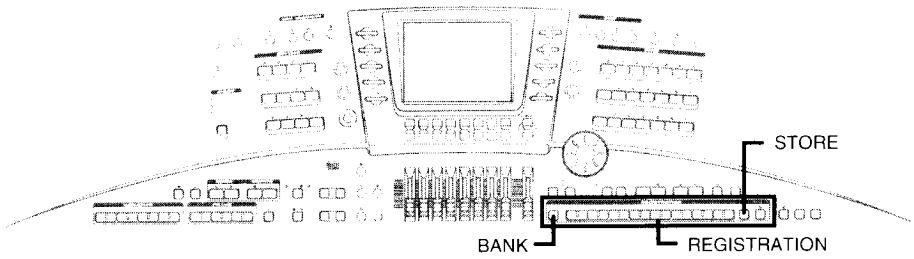
Fine Tune: -64 to 63

This parameter allows fine tuning of individual parts. A setting of -64 lowers the tuning by one semitone from normal, while 63 represents a rise of one semitone.

- The setting you make here is added to the master tune setting described in "Keyboard Setup Reference" on page E-154.

* When a setting other than **Off** is selected for the DSP you are using, these settings are applied in accordance with each DSP parameter setting.

Using Registration Memory



Registration memory lets you store the parameters that make up a keyboard setup (tone, rhythm, tempo, etc.) for later recall with the touch of a button. You can store up to 64 setups in eight memory banks (eight setups per bank).

How Registration Memory Works

Stored Parameters

Performing a registration memory save operation stores the following keyboard parameters.

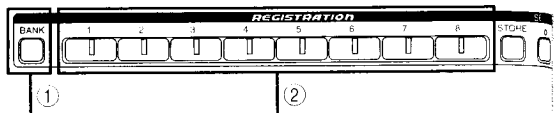
- Selected tones (UPPER 1, UPPER 2, LOWER 1, LOWER 2)
- Part (UPPER 1, UPPER 2, LOWER 1, LOWER 2) on/off status
- Keyboard split point
- Selected rhythm
- Tempo setting
- Auto accompaniment mode
- Auto harmonize, arpeggiator, sustain on/off status and other settings
- Effect Mode settings
- Effect on/off status
- Mixer settings
- Transpose setting
- After touch/control settings
- Accomp volume
- Ritardando, fade in/fade out, Interactive Accomp, Accomp/Cord settings
- Main tone parameter settings in the Synthesizer

NOTE

- Registration memory operations cannot be performed in the Sequencer Mode, during demo tune play, or while the Synthesizer detailed setting screen is on the display.
- See "Registration Memory/One Touch Preset Table" at the back of this manual for more information about settings that can be stored in registration memory.

Registration Memory Configuration

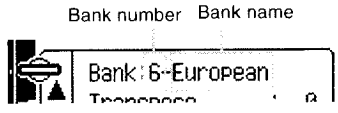
Each setup you store in registration memory is placed in one of 64 "areas." Areas are identified by two numbers separated by a hyphen (1-1, 1-2, 2-1, 3-1). The number on the le is a "bank number" and the button on the right is an "ar number."



	1	2	3	4	5	6	7	8
Bank 1	1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8
Bank 2	2-1	2-2	2-3	2-4	2-5	2-6	2-7	2-8
Bank 3	3-1	3-2	3-3	3-4	3-5	3-6	3-7	3-8
Bank 4	4-1	4-2	4-3	4-4	4-5	4-6	4-7	4-8
Bank 5	5-1	5-2	5-3	5-4	5-5	5-6	5-7	5-8
Bank 6	6-1	6-2	6-3	6-4	6-5	6-6	6-7	6-8
Bank 7	7-1	7-2	7-3	7-4	7-5	7-6	7-7	7-8
Bank 8	8-1	8-2	8-3	8-4	8-5	8-6	8-7	8-8

The following describes the how to specify a particular ban and area.

① Use the **BANK** button to select a bank. Each press of th **BANK** button cycles through the bank numbers from 1 t 8.



- You can change the bank name if you want. See "Chan ing the Bank Name" on page E-59 for more inform tion.

② To select an area number, press one of the **REGISTRA TION** buttons.

Storing and Recalling Registration Memory Setups

Storing a Registration Memory Setup

1. Make the tone, rhythm, and other keyboard settings you want.
   - See "Stored Parameters" on page E-56.
2. Use the **BANK** button to select the bank where you want to save the setup.
   - This step is not required if the bank you want is already selected.
3. While holding down the **STORE** button, press the **REGISTRATION** button whose number corresponds to the area where you want to save the setup.
4. Release both buttons.

NOTE

- If the area where you store the setup already contains setup data, the old data is replaced with the new data when you perform step 3 of the above procedure.
- Registration memory contents are retained even when you turn off the keyboard. Power required for memory storage is supplied by a built-in back-up lithium battery. See "Lithium Battery Precautions" on page E-6 for important information about the lithium battery.
- You can save registration memory setups to a floppy diskette, if you want. See "Using the Floppy Disk Drive" on page E-140 for more information.

Recalling a Registration Memory Setup

1. Use the **BANK** button to select the registration memory bank that contains the setup you want to recall.
   - Each press of the **BANK** button cycles through bank numbers on the display screen.
   - You can also go directly to a bank by holding the **BANK** button and then pressing the **REGISTRATION** button whose number (1 to 8) matches that of the bank you want.
2. Next, press the **REGISTRATION** button whose number (1 to 8) matches that of the area you want to recall.
   - This causes the lamp above the button to light and recalls the contents of the registration memory area.

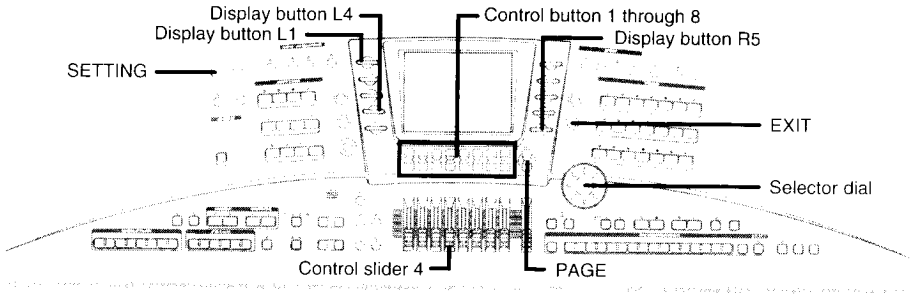
NOTE

- You can specify to exclude some of the parameters stored in a registration memory area when you recall a setup. This is called "selective recall." For example, you could use selective recall to recall a registration memory setup, but keep your current tone setting. See "Registration Memory Selective Recall" on the next page for more information.

About the SELECT Button Lamp

When recalling a registration memory setup, the status of the lamp above the **SELECT** button indicates whether the next recall operation will recall all the setup data or perform a selective recall. Each press of the **SELECT** button toggles the lamp above it on and off.

SELECT Button Lamp Status	Meaning
Off	All parameters are recalled from registration memory
On	Selective recall, excluding specific parameters

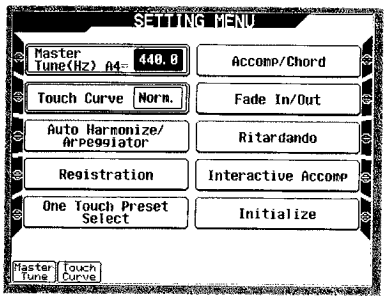


Registration Memory Selective Recall

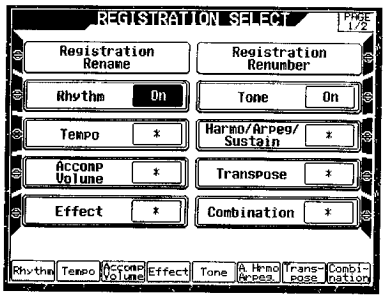
You can use registration selective recall when you want to exclude specific parameters when recalling a setup from registration memory.

Using Registration Memory Selective Recall

1. Press the **SETTING** button to display the **SETTING MENU** screen.



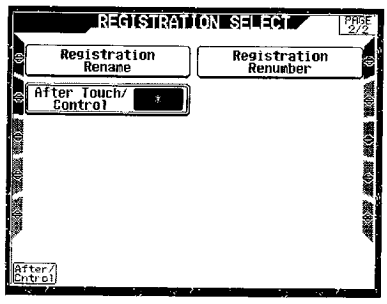
2. Press display button **L4** next to **Registration** to display the **REGISTRATION SELECT** screen.



3. Use control buttons 1 through 8 to make the se tings you want.

On ..... Parameter is recalled.
Off..... Parameter is not recalled when the SELEC button lamp is lit.
* ..... Parameter is not recalled (is turned off) wh other parameters are turned on. Paramet is recalled (is turned on) when other para eters are turned off.

4. Press the **PAGE** button to display PAGE 2 of t screen.



- Use control button 1 to make the **After/Control** s ting you want.
- Press the PAGE button again to return to PAGE 1.

5. Press the **EXIT** button twice to exit the proc dure.

Registration Memory Selective Recall Parameters

The following describes the parameters that you can turn on and off when making registration memory selective recall settings.

PAGE	Button	Parameter Name	Description
1/2	L2	Rhythm	Rhythm selection, accompaniment mixer settings, effect DSP, etc.
1/2	L3	Tempo	Tempo setting
1/2	L4	Accomp Volume	Accomp volume setting
1/2	L5	Effect	Effect on/off setting, non-DSP effect settings
1/2	R2	Tone	Tone-related settings (tone selection, tone on/off status, effect on/off status, DSP settings, etc.)
1/2	R3	Harmo/ Arpeg/ Sustain	AUTO HARMONIZE, ARPEGGIATOR, SUSTAIN button on/ off settings
1/2	R4	Transpose	Transpose setting
1/2	R5	Combination	Combination Mode settings
2/2	L2	After Touch/ Control	After touch/control setting

NOTE

- See "Registration Memory/One Touch Preset Table" at the back of this manual for how to select and deselect parameters for registration memory selective recall.

Editing a Registration Memory Setup

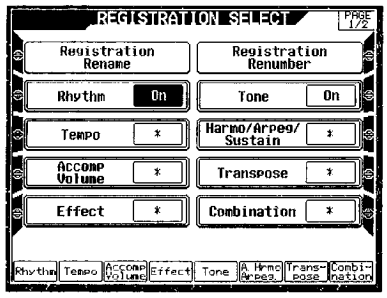
The procedures in this section describe how to change the bank name, how to copy the contents of one registration memory area to another, and how to swap data between two memory areas.

Changing the Bank Name

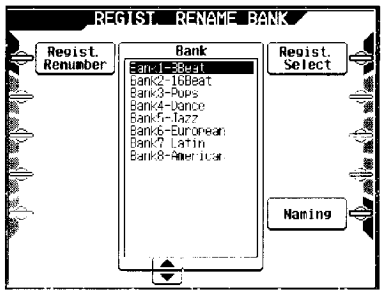
You can use the following procedure to change a bank name so it reflects the type of data contained in the bank.

1. Press the **SETTING** button to display the **SETTING MENU**.

2. Press display button **L4** next to **Registration** to display the **REGISTRATION SELECT** screen.

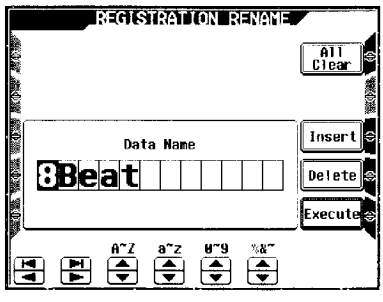


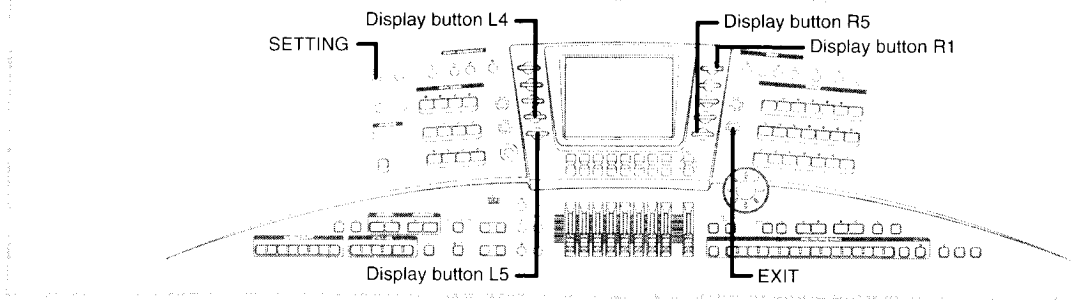
3. Press display button **L1** next to **Registration Rename** to display the bank selection screen.



4. Use control button 4, control slider 4, or the selector dial to select the bank whose name you want to change.

5. Press display button **R5** next to **Naming**.
   - This displays the screen shown below.





6. Input the name you want to assign to the bank.
   - The highlighted frame on the screen is the current input location. Use sets 3 through 6 of the control buttons (or control sliders 3 through 6) to input characters.
   - Pressing the lower 1 and 2 control buttons moves the highlighting left and right. Pressing the upper 1 and 2 control buttons causes the highlighting to jump to the far left or far right position.
   - To clear all of the characters you have input, press display button **R1** next to **All Clear**.
   - To insert a space at the current input location, press display button **R3** next to **Insert**.
   - To delete the character at the current input location, press display button **R4** next to **Delete**.

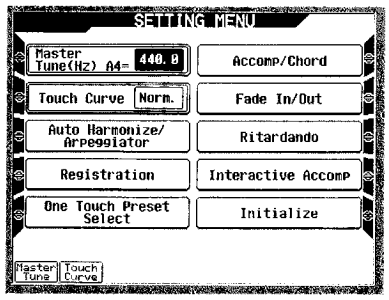
7. After you are finished inputting the tone name you want, press display button **R5** next to **Execute**.
   - This changes the bank name and returns to the **REGISTRATION SELECT** screen in step 2 of this procedure.

8. Press the **EXIT** button twice to exit the procedure.

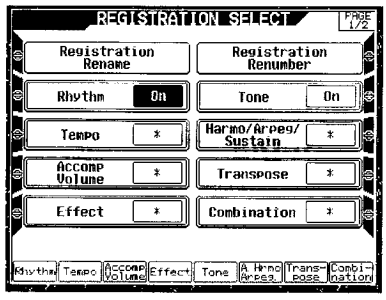
Copying Registration Memory Data

Use the following procedure to copy the contents of one registration memory area to another.

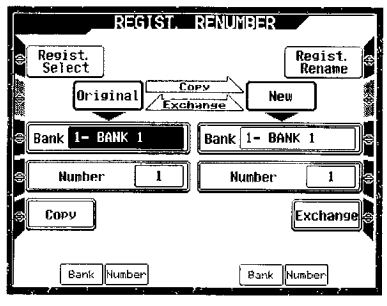
1. Press the **SETTING** button to display the **SETTING MENU** screen.



2. Press display button **L4** next to **Registration** to display the **REGISTRATION SELECT** screen.



3. Press display button **R1** next to **Registration Renumber** to display the area copy/swap screen.



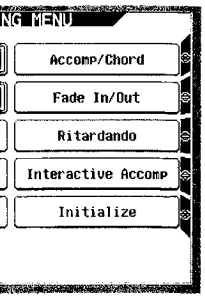
R1

000

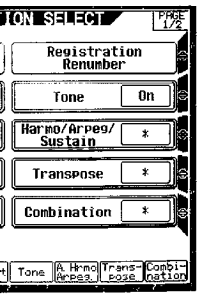
n Memory Data

to copy the contents of one
ther.

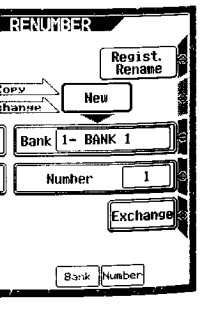
button to display the S



L4 next to Registrati
ATION SELECT screen.



R1 next to Registration
he area copy/swap scre



4. Specify the registration memory area whose data you want to copy.
   - Use control button 2 or control slider 2 to specify the bank number.
   - Use control button 3 or control slider 3 to specify the area number.

5. Specify the registration memory area to which you want to copy the data.
   - Use control button 6 or control slider 6 to specify the bank number.
   - Use control button 7 or control slider 7 to specify the area number.

6. Press display button **L5** next to **Copy** to copy the data.

7. Press the **EXIT** button twice to exit the copy procedure.

Swapping Registration Memory Data Between Two Areas

Use the following procedure to swap the contents of two registration memory areas with each other.

1. Press the **SETTING** button to display the **SETTING MENU** screen.

2. Press display button **L4** next to **Registration** to display the **REGISTRATION SELECT** screen.

3. Press display button **R1** next to **Registration Renumber** to display the area copy/swap screen.

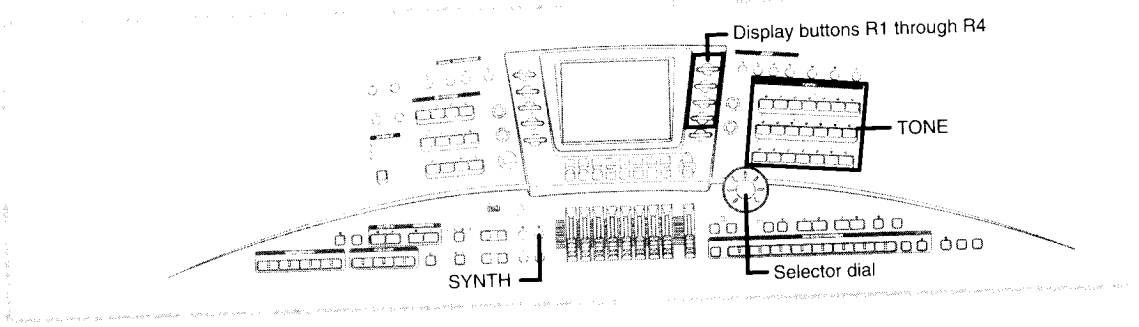
4. Specify one of the registration memory areas whose data you want to swap.
   - Use control button 2 or control slider 2 to specify the bank number.
   - Use control button 3 or control slider 3 to specify the area number.

5. Specify the other registration memory area.
   - Use control button 6 or control slider 6 to specify the bank number.
   - Use control button 7 or control slider 7 to specify the area number.

6. Press display button **R5** next to **Exchange** to swap the data.

7. Press the **EXIT** button twice to exit the swap procedure.

Using the Synthesizer

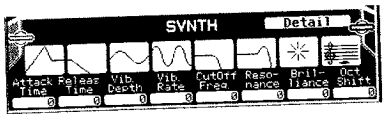


With the Synthesizer, you can edit the various components of a tone to create your own original sounds and save them as "user tones" in tone group USER TONE 1 and USER TONE 2. Once you do, you can recall your tones and use them just as you use the keyboard's preset tones.

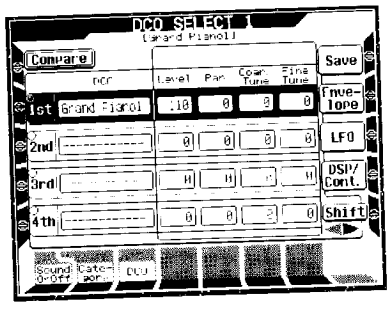
Synthesizer Screens

Pressing the **SYNTH** (synthesizer) button enters the Synthesizer Mode, which is indicated when the lamp above the button is lit. There are two Synthesizer screens: the basic setup screen that appears first, and a screen of more detailed settings that appears when you press display button **R5** next to **Detail**.

On the basic setup screen that appears first when you enter the Synthesizer Mode, you can use the control buttons and control sliders to adjust the main parameters of tones. See "Changing Main Tone Parameters" for information about how to make adjustments on this screen.



Pressing display button **R5** next to **Detail** changes to the DCO setup screen shown below. This screen gives you full control over all Synthesizer parameters. See "Tone Creation Basics" on page E-64 for general information about how to create tones, and "Creating a User Tone" on page E-66 for information on how to change the parameters on this screen.



NOTE

- Pressing the **EXIT** button to return to the synthesizer scre from the DCO setup screen causes a caution message to a pear asking whether you want to discard the edited tone. Pre display button **R4** next to **Yes** to return to the basic setup scre

Changing Main Tone Parameters

The initial screen that appears when you enter the Synth sizer Mode makes it easy to change the main parameters the currently selected tone. Use this screen to change t mood of a tone while performing, or to test some gene settings before making more detailed adjustments.

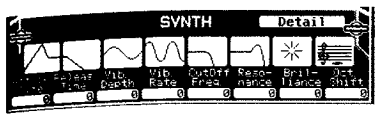
Changing Main Tone Parameters

You can use the initial screen to temporarily change the rameters of the tone assigned to the currently selected p (UPPER 1, UPPER 2, LOWER 1, LOWER 2). Note that t settings you make are discarded whenever you change to other tone or turn off the keyboard.
The initial Synthesizer screen can be used to change the tings of the following parameters.

- **Attack Time**
  Time it takes before the tone sounds after a key is pres
- **Release Time**
  Time the tone continues to sound after a key is release
- **Vib.Depth** (Vibrato Depth)
  Depth of the vibrato effect
- **Vib.Rate** (Vibrato Rate)
  Rate (speed) of the vibrato effect
- **Cut Off Freq**
  High-band cutoff for the harmonic components of the
- **Resonance**
  Resonance of the tone
- **Brilliance**
  Brilliance of the tone
- **Oct.Shift** (Octave Shift)
  Up/down octave shift

anging the Parameters of a Tone with e Synthesizer Initial Screen

1. Press the **SYNTH** (synthesizer) button.
   - This causes the lamp above the button to light, indicating that the keyboard is in the Synthesizer Mode.



2. Press the display button next to the name of the part you want to edit.
   - **R1** for UPPER 1, **R2** for UPPER 2, **R3** for LOWER 1, or **R4** for LOWER 2. The tone assigned to the part whose name is highlighted on the display is the one whose parameters will be edited.

3. Use the selector dial or **TONE** buttons to select the tone you want to edit.

4. Make the changes you want to the tone's parameters.
   - Use control buttons 1 through 8 and control sliders 1 through 8 to change parameter settings.
   - The following table shows parameters and their ranges for each of the control buttons/sliders.

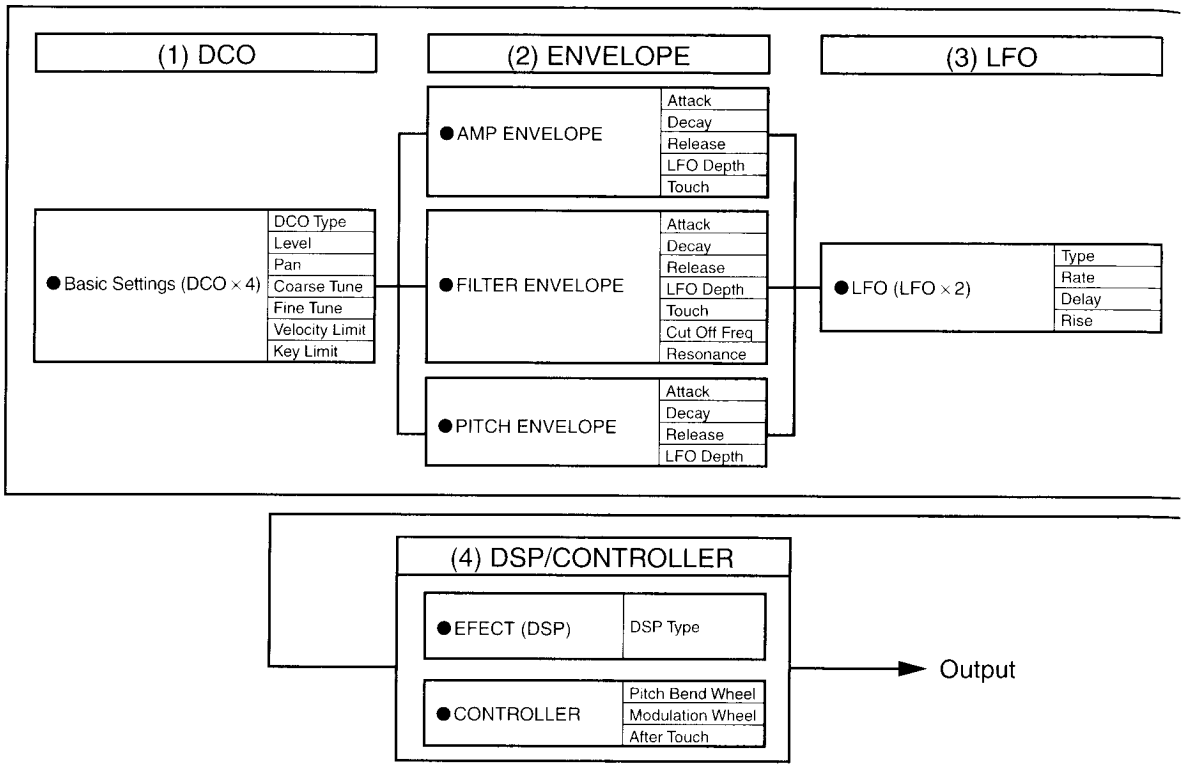
	Parameter	Setting Range
1	Attack Time	–64 to 63
2	Release Time	–64 to 63
3	Vib.Depth (Vibrato Depth)	–64 to 63
4	Vib.Rate (Vibrato Rate)	–64 to 63
5	Cut Off Freq	–64 to 63
6	Resonance	–64 to 63
7	Brilliance	–6 to 6
8	Oct.Shift (Octave Shift)	–2 to 2

   - Play notes on the keyboard to hear the results of your parameter changes as you make them.

5. If you want to change the parameters of tones assigned to other parts, use display buttons **R1** through **R4** to select the part and then perform steps 3 and 4 above to change the parameters of the tone assigned to the part.
   - Changes you make to the parameters of a tone are retained for each part as long as you do not change to another tone.

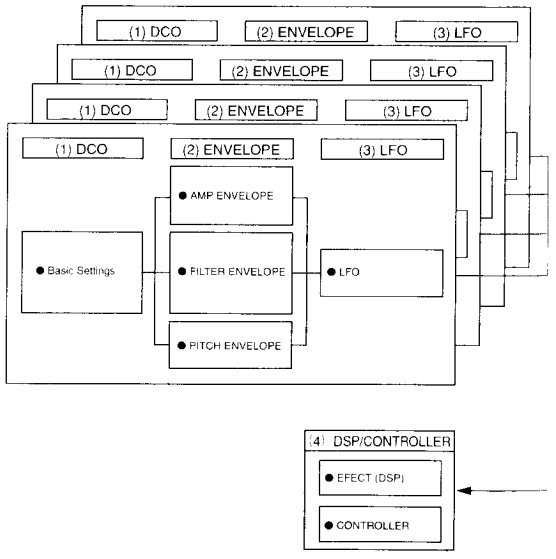
Tone Creation Basics

You can use the Synthesizer to create your own tones by changing the component parameter settings shown in the dia below. Parameters are broadly divided between four groups: DCO, ENVELOPE, LFO and DSP/CONTROLLER.



(1) DCO (Basic Tone)

The letters "DCO" stand for "Digital Controlled Oscillator," which is a component that generates a basic tone that you can edit to create the sounds you want. More concretely, you can select one of the keyboard's built-in preset tones and then select a waveform to create a source tone for your edits. This keyboard lets you use up to four DCOs at the same time for sound creation. The illustration to the right shows how a tone is created using four DCOs. Using multiple DCOs to create a sound makes it possible to layer tones.



ter settings shown in the di
SP/CONTROLLER.

(3) LFO

(LFO × 2)
Type
Rate
Delay
Rise

Output

(2) ENVELOPE
(3) LFO
ENVELOPE
(3) LFO
VELOPE
(3) LFO
OPE
(3) LFO
OPE
VELOPE
LFO
ELOPE
(4) DSP/CONTROLLER
EFECT (DSP)
CONTROLLER

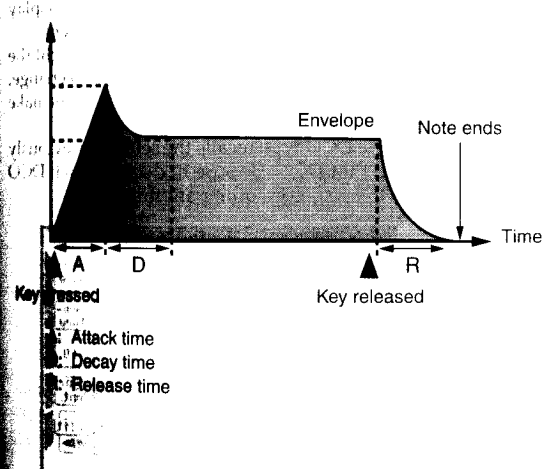
(2) ENVELOPE

An envelope is a parameter that determines how a tone changes over time, from when you press a keyboard key until the tone stops sounding. The Synthesizer lets you adjust envelopes that control the three elements of volume, timbre, and pitch for each DCO.

AMP ENVELOPE

This parameter group control volume envelope settings. You can adjust the settings of the following elements.

- **Attack**
  This is the rate or time it takes for the tone to reach its highest volume level. You can specify a fast rate, where the tone reaches its highest volume level immediately, a slow rate where it gradually rises, or something in between.
- **Decay**
  This is the rate or time it takes for the tone volume to fall back to its sustain level from its highest level. A piano tone is an example of a gradual decay, while an organ tone does not decay at all (it maintains the same volume as long as a key is pressed).
- **Release**
  This is the rate or time it takes for the tone volume to fall to zero. You can specify a release that ranges from a sudden fall to zero, to one that gradually falls to zero.

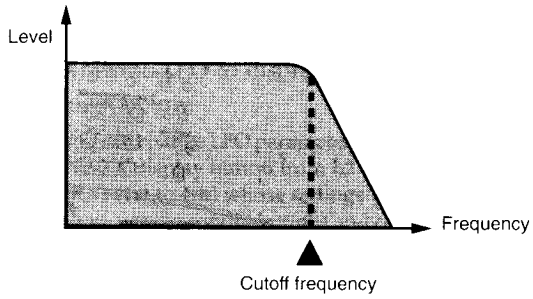


FILTER ENVELOPE

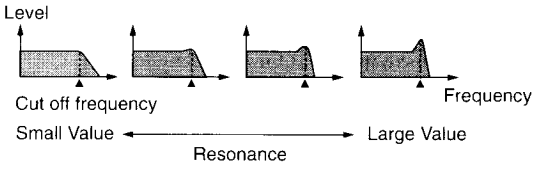
This parameter group controls filter envelope settings. The way the two parameters of cutoff frequency*1 (which cuts harmonics above a fixed frequency) and resonance*2 (which enhances the harmonics in the vicinity of the cut frequency) of the timbre can be adjusted on the time axis using **Attack**, **Decay**, and **Release** parameters like the AMP ENVELOPE.

Frequency

Cutoff frequency is a parameter for adjusting timbre by frequency that is higher than a specific frequency. A cutoff frequency produces a brighter (harder) timbre, a smaller frequency produces a darker (softer) tim-



*2 Resonance
Resonance enhances the harmonic components in the vicinity of the cutoff frequency, which creates a distinctive sound. A larger resonance value enhances the sound as shown in the figure



PITCH ENVELOPE

This parameter group controls pitch envelope settings. It alters the change of pitch over time using **Attack**, **Decay**, and **Release** parameters like the AMP ENVELOPE.

(3) LFO

The letters "LFO" stand for "Low Frequency Oscillator." The LFO can be used to add effects like vibrato and tremolo that periodically alter a sound. You can select from among LFO seven waveforms, including sine wave and rectangular wave. Two LFO channels can be used with one DCO, so two waveforms can be combined to create complex vibrato nuances.

(4) DSP/CONTROLLER

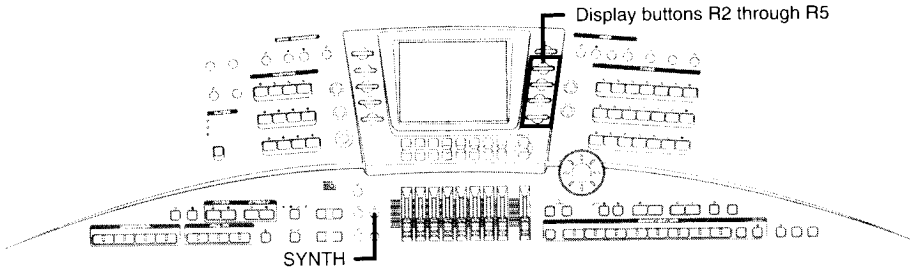
These parameters are for setting the initial defaults of tone effects and each type of controller (**PITCH BEND** wheel, **MODULATION** wheel, **AFTER TOUCH**).

DSP

This parameter can be used to specify the DSP effect type.

CONTROLLER

This parameter can be used to control effects assigned to the **PITCH BEND** wheel, **MODULATION** wheel, and **AFTER TOUCH**.



Saving a User Tone Created Using the Synthesizer

The USER TONE 1 and USER TONE 2 tone groups are called the "user areas," because they can be used to store tones (user tones) you create using the Synthesizer. After you save tones in the user areas, you can recall and use them just as you use the preset tones that are built into the keyboard.

NOTE

- If a Drawbar tone (page E-35) is selected when you enter the Synthesizer Mode, the only parameters you will be able to change are DSP and Controller.
- Initially USER TONE 1 and USER TONE 2 contain copies data for two of the keyboard's preset tones.
- You cannot change the parameters of the sounds in the DRUM group.
- When you store tone data in a user area, any tone data previously stored in that area is replaced by the new data.
- User area data is retained even when you turn off the keyboard. Power required for storage is supplied by a built-in back-up lithium battery. See "Lithium Battery Precautions" on page E-6 for important information about the lithium battery.
- You can save user tone data to a floppy diskette, if you want. See "Using the Floppy Disk Drive" on page E-140 for more information.

Creating a User Tone

The following procedure explains how to use the Synthesizer to alter the parameters of a tone to create your own original tone and store it in a user area.

Getting Ready

It is always a good idea to check the following points before actually starting to create a tone using the Synthesizer.

- Select the tone you want to use as the basis for your new tone (original tone). Especially when creating a tone using two or more DCOs, use UPPER 1+UPPER 2 to layer the two tones and confirm that they sound the way you want when played together.
- Check the user area where you plan to save your new tone (edited tone). Anything already in the user area will be replaced (and deleted) by your new data. Make sure you no longer need the current data before you replace it.

Creating an Original Tone with the Synthesizer

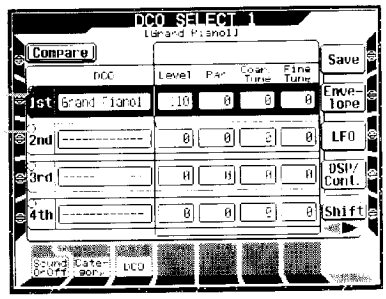
The following are the steps you should follow to create original tones. See "Synthesizer Parameters" on page E-70 for full details about the parameters that appear on each screen.

1. Press the **SYNTH** (synthesizer) button.
   - This causes the lamp above the button to light and the synthesizer setting screen (page E-62) to appear on the display.

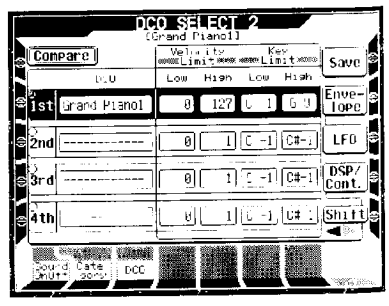
2. Press display button **R5** next to **Detail**.
   - The DCO setup screen appears first. Recall the settings of the tone you are starting from (original tone) to create your new tone (edited tone).
   - The DCO setup screen has two pages. Press display button **L5** next to **Shift** to switch between them.
   - Press a display button from **L2** to **L5** to highlight the DCO (**1st** to **4th**) whose settings you want to change. Next, use the control buttons and control sliders make the parameter settings you want.
   - Changing the DCO type recalls the settings previously assigned to that DCO. Be sure to decide which DCO you want to use before doing anything else.

DCO on

DCO off



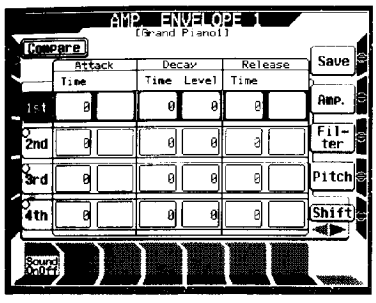
R5 (Shift)



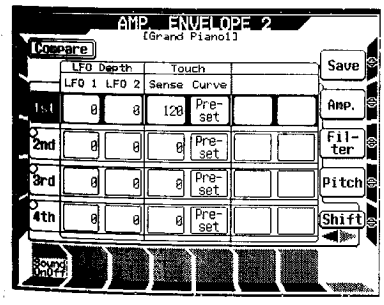
- Use set 1 of the control buttons to turn a DCO on and off.
- While changing the parameters of a tone, you can press display button **L1** next to **Compare** to compare the edited tone with the original tone. Playing notes on the keyboard while **Compare** is highlighted on the screen sounds the notes using the original tone. You can use **L1** (**Compare**) to compare the two tones at any time during steps 3 to 5 of this procedure.

3. On the DCO setup screen, press display button **R2** next to **Envelope** when you want to change envelope parameter settings.

- Pressing the display button **R2** (**Envelope**) displays the amp envelope setup screen first.
- The envelope setup screen has two pages. Press display button **L5** next to **Shift** to switch between them.
- You can change envelope parameter settings for each DCO. Press a display button from **L2** to **L5** to highlight the DCO (**1st** to **4th**) whose settings you want to change. Next, use the control buttons and control sliders make the parameter settings you want.
- Pressing display button **L1** (**Compare**) again returns to the tone you are currently editing.



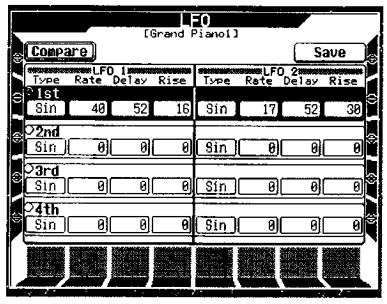
R5 (Shift)



- **Press** display button **R3** next to **Filter** to display the filter envelope setup screen, and display button **R4** next to **Pitch** to display the pitch envelope setup screen. Make the setting you want on each envelope setup screen.
- **To set** other (non-envelope) parameters, press the **EXIT** button and return to the DCO setup screen.

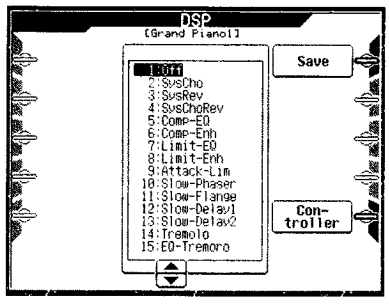
4. On the DCO setup screen, press display button **R3** next to **LFO** to display the LFO setup screen shown below.

- You can change LFO parameter settings for each DCO. Press a display button from **L2** to **L5** to highlight the DCO (**1st** to **4th**) whose settings you want to change. Next, use the control buttons and control sliders make the parameter settings you want.



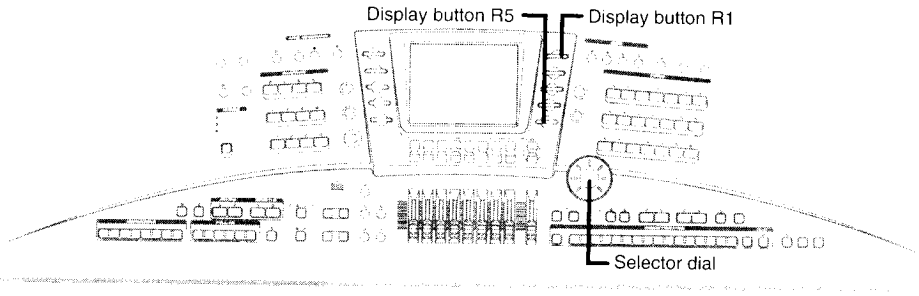
- To set other (non-LFO) parameters, press the **EXIT** button and return to the DCO setup screen.

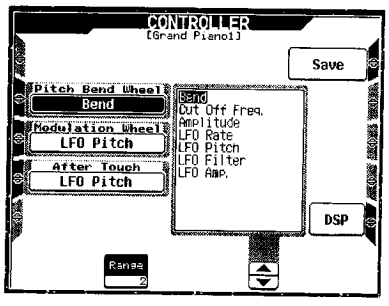
5. On the DCO setup screen, press display button **R4** next to **DSP/Cont.** to display the DSP setup screen shown below.



6. On the DSP setup screen, press display button **R5** next to **Controller** to make controller parameter settings.

- Press a display button from **L2** through **L5** to select the controller whose parameters you want to set, and then make settings to control the effects applied to the controller.



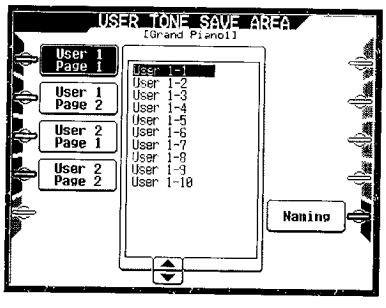


To set the parameters that control the effect applied when the **MODULATION** wheel is operated, for example, press display button **L3** next the **MODULATION** wheel . Next, use set 6 of the control buttons or control slider 6 to select an effect, and set 3 of the control buttons or control slider 3 to set the **Range** of the effect.

- To return to the DSP setup screen in step 5, press display button **R5** (**DSP**).
- To set other (non-Controller/DSP) parameters, press the **EXIT** button and return to the DCO setup screen.

7. While playing notes on the keyboard to see how your changes affect the tone, repeat steps 2 through 6 to set the parameters on the other set-up screens.

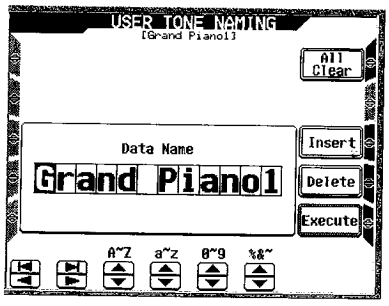
8. After you are finished setting the parameters you want, press display button **R1** next to **Save**.
   - You can press display button **R1** (**Save**) during any step of this procedure to start the save operation. Pressing **R1** (**Save**) displays the screen shown below.



9. Specify the user area where you want to s the tone.
   - Press a display button in the range of **L1** to **L4** t lect a user tone group (**USER1** or **USER2**) and a (**PAGE1** or **PAGE2**).

10. Next use set 4 of the control buttons, control er 4, or the selector dial to select user tone a

11. Press display button **R5** next to **Naming**. To play the tone name input screen shown bel



12. Input the name you want to assign to the to
   - The highlighted frame on the screen is the curre put location. Use sets 3 through 6 of the control tons (or control sliders 3 through 6) to input cha ters.
   - Pressing the lower 1 and 2 control buttons move highlighting left and right. Pressing the upper 1 2 control buttons causes the highlighting to jum the far left or far right position.
   - To clear all of the characters you have input, pres display button **R1** next to **All Clear**.
   - To insert a space at the current input location, p display button **R3** next to **Insert**.
   - To delete the character at the current input loca press display button **R4** next to **Delete**.

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utton in the range of **L1** to **L**
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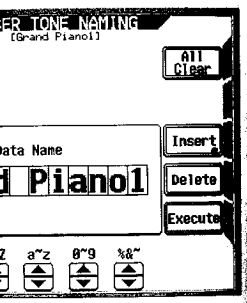

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R1 next to **All Clear**.
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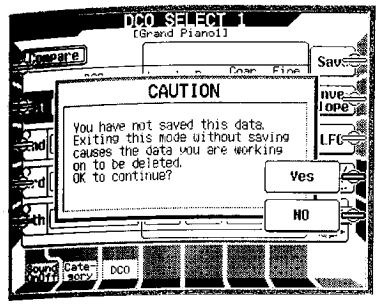
R3 next to **Insert**.
aracter at the current inp
utton **R4** next to **Delete**.

8. After you are finished inputting the tone name you want, press the display button **R5** next to **Execute**.

- This saves the modified tone in the user area you specified.

NOTE

The warning message shown below appears if you press the EXIT button in the DCO setup screen without first saving the tone.



To exit without saving the tone, press display button **R4** (**Yes**) to return to the initial Synthesizer screen. Otherwise, press **R5** (**No**) to return to the screen and then go back to step 8 of this procedure to save the tone.

After you save a tone, you can recall and use it using the same procedures as those for the preset tones. See "Selecting a Tone" on page **E-24** for more information.

Synthesizer Parameters

The following tables provide descriptions for each Synthesizer parameter, including setting ranges.

DCO

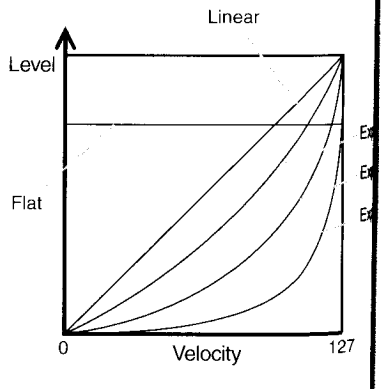
Parameter		Range	Description
DCO	On/Off	On, Off	Turn four DCOs (1st to 4th) on (◎) and off (○).
	Name	- - - - - to Explosion	Specifies the original DCO. A waveform is not used when this parameter is set to "- - - - -".
Level		0 to 180	Volume setting for each DCO
Pan		–63 to 63	Pan setting for each DCO. 0 specifies center, smaller value shifts the stereo center left, a larger value shifts it right.
Coarse Tune		–24 to 24	Changes the tuning of each DCO in semitone units.
Fine Tune		–100 to 100	Finely adjusts the tuning of each DCO.
Velocity Limit	High	0 to 127	Velocity range setting
	Low	0 to 127	
Key Limit	High	C-1 to G-9	Pitch range setting
	Low	C-1 to G-9	

AMP ENVELOPE

Parameter		Range	Description
Attack ☆	Time	–128 to 127	Time required until sound is output after key is pressed (volume peak value = until DCO Level is reached)
Decay ☆	Level	–128 to 127	Level maintained while a key is depressed
	Time	–128 to 127	Time from when key is pressed and peak volume is attained until the point is reached when volume reaches the sustain level
Release ☆	Time	–128 to 127	Time until sound reaches zero after a key is released
LFO Depth	LFO1	0 to 127	Intensity of effect set by LFO1 on the LFO setup screen, which is applied to the volume
	LFO2	0 to 127	Intensity of effect set by LFO2 on the LFO setup screen, which is applied to the volume
Touch	Sense	–128 to 128	Keyboard sensitivity, which controls the amount of change in output volume in accordance with keyboard pressure, or turns key touch off • When the Flat touch curve is being used, a touch sense value of 0 produces the maximum volume, while a touch sense value of 128 turns off sound output.
	Curve	See note below.*	

* Curve

Value	Description	Waveform
Preset	DCO default waveform	—
Linear	Linear waveform	See the diagram to the right.
Exp1	See the diagram to the right.	
Exp2	See the diagram to the right.	
Exp3	See the diagram to the right.	
Flat	Velocity	



FILTER ENVELOPE

Parameter		Range	Description
Cut Off Freq. ☆		0 to 127	Cuts the components of the original tone above a specific frequency. A smaller value specifies a lower frequency, and a larger value specifies a higher frequency.
Resonance ☆		0 to 127	Adjusts the enhancement of harmonics in the vicinity of the cut specified by the **Cut Off Freq.** setting. In the following explanations, the effect on a tone of the **Cut Off Freq.** and resonance settings are called "filters."
Attack ☆	Time	–128 to 127	Time during attack until a tone reaches the value specified by **Attack Level**
	Level	–128 to 127	Filter level during attack
Decay ☆	Time	–128 to 127	Time from **Attack Time** until filter reaches the value specified **Decay Level**
	Level	–128 to 127	Filter level maintained while key is held down
Release ☆	Time	–128 to 127	Time after key is released until the filter level reaches the values specified by **Release Level**
	Level	–128 to 127	Filter level after key is released
LFO Depth	LFO1	0 to 127	Depth of effect applied to filter as specified by LFO1 on the LFO setup screen
	LFO2	0 to 127	Depth of effect applied to filter as specified by LFO2 on the LFO setup screen
Touch	Sense	–128 to 128	Keyboard sensitivity, which controls the amount of change in the filter level in accordance with keyboard pressure, or turns key touch off • When the Flat touch curve is being used, a touch sense value of 0 produces the maximum filter level, while a touch sense value of 128 produces the minimum filter level.
	Curve		See AMP ENVELOPE touch cueve (page E-70).

PITCH ENVELOPE

Parameter		Range	Description
Attack ☆	Time	–128 to 127	Time during attack until pitch reaches the value specified by **Attack Level**
	Level	–128 to 127	Pitch during attack specified as relative value of original pitch (0 specifies no change.)
Decay ☆	Time	–128 to 127	Time from **Attack Time** until pitch reaches the value specified **Decay Level**
	Level	–128 to 127	Pitch level maintained while key is held down
Release ☆	Time	–128 to 127	Time after key is released until the pitch level reaches the values specified by **Release Level**
	Level	–128 to 127	Pitch level after key is released
LFO Depth	LFO1	0 to 127	Depth of effect applied to pitch as specified by LFO1 on the LFO setup screen
	LFO2	0 to 127	Depth of effect applied to pitch as specified by LFO2 on the LFO setup screen

NOTE

- AMP ENVELOPE, FILTER ENVELOPE, and PITCH ENVELOPE **Attack**, **Decay**, and **Release** parameters are set are level and time values relative to the original waveform. Because of this the initial default values for all these parameters are all zero.
- Depending on the tone selected for a DCO, you may not be able to hear any difference even if you change the parameters marked with "☆".

LFO

Parameter		Range	Description
LFO1	Type		*
	Rate	0 to 127	Rate of periodic modulation
	Delay	0 to 127	Time before start of periodic modulation
	Rise	0 to 127	Time from start of periodic modulation until maximum modulation (**LFO Depth** setting for each envelope)
LFO2	Type		*
	Rate	0 to 127	Same as settings for each LFO1. Vibrato is applied by combining LFO1 and LFO2 effects.
	Delay	0 to 127	
	Rise	0 to 127	

*

Value	Meaning	Waveform
Sin	Sine Wave	
Tri	Triangle Wave	
SawDw	Sawtooth Wave (Down)	
Sqr	Square Wave	
Sin R	Square Wave (Reverse)	
Tri R	Triangle Wave (Reverse)	
SawUp	Sawtooth Wave (Up)	

DSP

Parameter	Range	Description
DSP Type	Off or DSP Type	No effect is applied when the setting is "**Off**" Selecting another value (DSP type) applies the selected DSP to the tone.

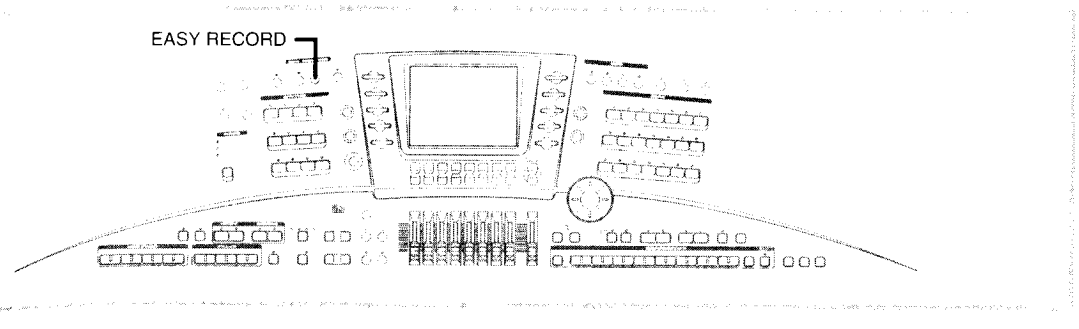
NOTE

- See "Effect Table" at the back of this manual for a list of DSP types that can be selected.

CONTROLLER

Parameter			Description
Controller	Type	Range	
PITCH BEND Wheel	Bend	0 to 24	Used as PITCH BEND wheel (pitch modulation).
	Cut Off Freq.	-64 to 63	Cutoff frequency setting
	Amplitude	-64 to 63	Volume setting
	LFO Rate	-64 to 63	LFO speed (rate)
	LFO Pitch	0 to 127	LFO pitch depth
	LFO Filter	0 to 127	LFO filter depth
	LFO Amp.	0 to 127	LFO amp depth
MODULATION Wheel	Same as PITCH BEND Wheel (Bend Range only: -24 to 24)		
AFTER TOUCH	Same as PITCH BEND Wheel (Bend Range only: -24 to 24)		

Using Easy Record



You can use the Song Sequencer Mode to record up to 10 original songs you play on the keyboard. Easy Record is one Song Sequencer method you can use to record auto accompaniment and keyboard pattern play.

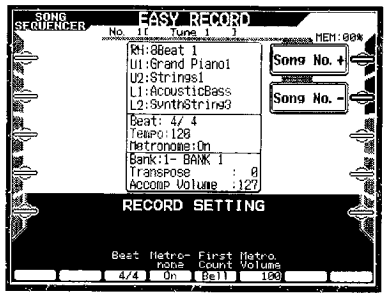
Recording with Easy Record

With Easy Record, you select a tone and rhythm, and set the auto accompaniment mode, tempo, and other parameters you want on the keyboard control panel. Then you play what you want on the accompaniment and melody ranges of the keyboard, as you normally do. Everything you play is recorded as you play it.

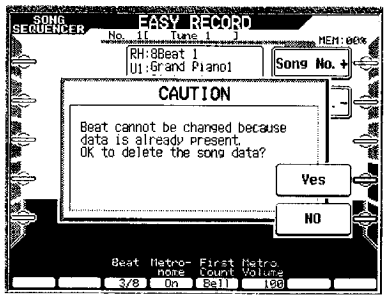
IMPORTANT!

The keyboard goes into record standby as soon as you press the **EASY RECORD** button. Make sure you do not play any keyboard keys during steps 3 to 5 of the following procedure.

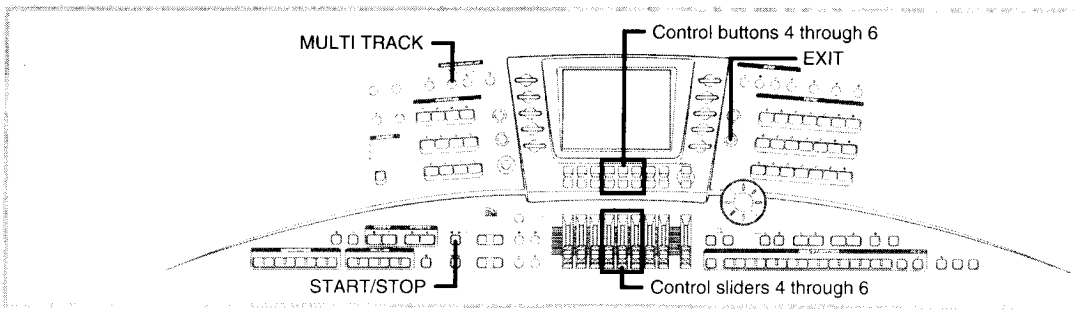
1. On the keyboard control panel, make the settings you want to use at the start of the recording.
   - Select the tone, rhythm, auto accompaniment mode, and set the other parameters you want to start out with. Use the same procedures as you would normally use for keyboard play. See "Other Easy Record Techniques" on page E-75 for more information.
   - Note that you cannot make initial parameter settings after you press the **EASY RECORD** button to enter record standby. Recording is performed using the settings in place when you press **EASY RECORD**.
2. Press the **EASY RECORD** button to enter record standby.
   - This causes the lamp above the button to light and displays the **EASY RECORD** screen.



3. Select the song area to which you want to record.
   - Use display button **R1** next to **Song No.+** and button **R2** next to **Song No.–** to select a song area number in the range of 1 to 10. If the song area you select already contains data, the existing data will be replaced by your new recording.
4. Select the meter you want to use for your recording.
   - Use control button set 3 or control slider 3 to select a time signature. Available choices are 2/4 to 7/4, plus 3/8, 5/8, 6/8, 7/8, 9/8, or 12/8 time.
   - If the song area you selected already contains data, changing the time signature causes the warning message shown below to appear on the display.



   - Press display button **R4 (Yes)** to delete the current contents, or **R5 (No)** to return to step 2 without doing anything.



5. Use control button sets 4 through 6 or control sliders 4 through 6 to set the following metronome parameters.

Control Button/Slider 4 (Metronome):
Turns the metronome **On** or **Off**.

Control Button/Slider 5 (Metronome First Count):
Selects **Bell** or **Click** as the sound of the first beat of each measure.

Control Button/Slider 6 (Metronome Volume):
Specifies the metronome volume in the range of **0** (Off) through **127** (loudest).

6. Play something on the keyboard to start actual recording.

Current measure and beat numbers

Percent of memory used. See "Song Sequencer Memory Capacity" on page E-77.

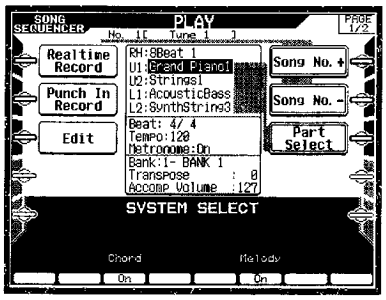
- If you want to start recording without playing anything on the keyboard, press the **START/STOP** button. A blank space (rests) is recorded until you play something.
- During recording, the metronome sounds (but is not recorded) according to the settings you made in step 4.

7. Play what you want on the keyboard.

- Auto accompaniment chord changes, as well as **PITCH BEND** wheel, pedal, and other operations are recorded.
- See "System Track Data" on page E-77 for more information about what is recorded during Easy Record.

8. After you are finished playing what you want, press the **START/STOP** button to stop recording and change to the Song Sequencer's playback screen.

- The lamp above the **EASY RECORD** button goes out and the lamp above the **MULTI TRACK** button lights.



- Pressing the **START/STOP** button at this time plays back what you just recorded. See "Play Back Song Sequencer Data" on page E-87 for more information about playback.

9. To exit the Song Sequencer Mode, press the **EXIT** or **MULTI TRACK** button.

- This causes the lamp above the **MULTI TRACK** button to go out.

NOTE

- Easy Record records what you play into the Song Sequencer's system track. See "System Track Data" on page E-77 for more information about what is actually recorded. Also see "Easy Record" on page E-78 for information about the relationship between Easy Record and the Song Sequencer.
- If you make a mistake while recording, you can start over again from step 1 of the above procedure, or use punch in recording (page E-84) to make modifications.

Other Easy Record Techniques

● To record without auto accompaniment

In step 1 of the above procedure, turn off auto accompaniment (so none of the lamps above the **MODE** button are lit).

- You can turn auto accompaniment on or off part way through a recording, if you want.

● To use sync start to start recording

At any time before you perform step 6 of the above procedure, press the **SYNC START/SYNC STOP** button.

- Both auto accompaniment and recording will start when you play a chord in the accompaniment keyboard range during record standby prior to step 6.

● To insert an intro, fill-in, break, etc.

You can use any of the following buttons during Easy Record: **INTRO** (1, 2), **FILL-IN** (BACK, NORMAL, NEXT), **BREAK**, **VARIATION** (1 to 4), **SYNC START/SYNC STOP**, **rit.** (ritardando), **FADE IN/OUT**, **ENDING** (1, 2).

● To sync start recording with an intro pattern

At any time before you perform step 6 of the above procedure, press the **SYNC START/SYNC STOP** button and then press **INTRO1** or **INTRO2**.

- Recording will start and the intro will play, followed by auto accompaniment when you play a chord in the accompaniment keyboard range during record standby prior to step 6.

● To start rhythm pattern play part way through a recording

In step 1 of the above procedure, turn off auto accompaniment (so none of the lamps above the **MODE** button are lit). After recording is started, press one of the **VARIATION** buttons (1 to 4) to start rhythm play (without chords). Auto accompaniment will start when you play a chord in the accompaniment keyboard range.

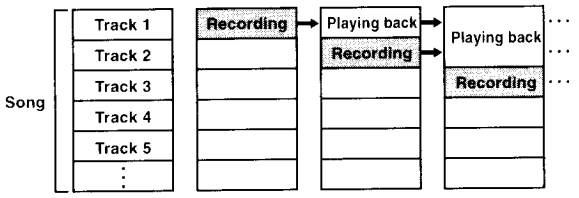
Using the Song Sequencer

The Song Sequencer provides you with powerful tools for recording up to 10 songs into keyboard memory. You can record auto accompaniments and the notes you play with them, or you can build your creation part-by-part using the Song Sequencer's 17 tracks.

How the Song Sequencer Works

The Song Sequencer provides you with capabilities that are similar to a tape recorder. You can record things you play on the keyboard and play them back. There is enough memory to store about 40,000 notes, and this total memory can be divided between up to 10 "songs."

Each song consists of up to 17 tracks, one system track and 16 external tracks numbered 1 through 16. You can record tracks one at a time and then play them back at the same time, which layers everything together and give you the potential of becoming a one-person orchestra.



About Tracks

The Song Sequencer's system track (**Sys.Track**) is used for recording auto accompaniments. More precisely, it records the eight parts that make up auto accompaniment, the four melody parts (UPPER 1, UPPER 2, LOWER 1, LOWER 2), and two parts required for harmony when Auto Harmonize is turned on.

Each of the external 16 tracks (**Tr. 1** through **Tr. 16**) can be used to record the notes played for one particular musical instrument (tone). This means you can build an orchestra that contains up to 16 different instruments in addition to the parts played on the system track.

NOTE

- Each track is independent of the others. This means that if you make a mistake while recording, you need only to edit or re-record one track.
- Once you start to record a drum sound, external tracks 1 through 16 all become drum-only parts, and recording of non-drum tones becomes impossible. Conversely, once you start to record a non-drum tone, you cannot change to a drum sound.

Recording Techniques

There are two techniques you can use for Song Sequence recording: realtime recording and punch in recording.

Realtime Recording

With realtime recording, you record what you play on the keyboard as you play it. The procedure described under "U ing Easy Record" on page E-73 is one type of realtime recor ing to the system track.

Punch In Recording

This method lets you re-record from a specific section of song that is already in memory. You can use punch-in recor ing to correct mistakes you made during real-time recor ing.

Song Sequencer Record Data

The following are the three basic types of data recorded b the Song sequencer.

- The time signature setting (stored in the song header)
- Initial track parameters (stored in the song header)
- Parameter changes and operations performed during r cording (stored at the point in the recording where yo make them)

You should also note that the data you can record in the sy tem track is different from the data you can record in the external tracks.

NOTE

- For more detailed information about the data that can be corded in each track, see the "Song Sequencer Data at t back of this User's Guide.

Time Signature Setting

The time signature setting is stored in the song header. On registered, this setting is fixed and cannot be changed wit out deleting the entire song.

- Time signature (2/4 to 7/4, 3/8, 5/8, 6/8, 7/8, 9/8, 12/8

System Track Data

System Track Initial Parameters

When you start recording of the track, the settings of these system track parameters are stored in the song header. You can change these settings using the procedure under "Changing the Song Header Data" on page E-87.

- Rhythm selection
- Tone settings
  UPPER 1, UPPER 2, LOWER 1, LOWER 2 tones, on/off status, split point setting
- Tempo
- Transpose
- Accomp volume
- Mixer settings
  Settings are recorded for each auto accompaniment and melody part and cannot be changed (except for Mixer volume) once recording starts.
- Auto accompaniment mode
- Interactive Accomp on/off status
- Auto Harmonize/Arpeggiator on/off status
- Sustain on/off status
- Settings of items accessible from the submenu (page E-155)

Parameter Changes and Operations During System Track Recording

- Notes played on the keyboard (including chords in the accompaniment keyboard range)
- **PITCH BEND** wheel, **MODULATION** wheel operations
- Pedal operations
- Tone changes
- Rhythm changes
- Tempo changes
- Transposes changes
- Accomp Volume changes
- Auto accompaniment mode changes
- Auto accompaniment controller operations (except for **START/STOP** button): **INTRO** (1, 2), **FILL-IN** (BACK, NORMAL, NEXT), **BREAK**, **VARIATION** (1 to 4), **SYNC START/SYNC STOP**, **rit.** (ritardando), **FADE IN/OUT**, **ENDING** (1, 2).
- Accompaniment keyboard range chords
- Mixer tone volume changes
- Synthesizer, drawbar, combination, effect setting changes
- Assignable switch operations

Track 1 to 16 Data

Initial Track Parameters

When you start recording of the track, the settings of these parameters are stored in the song header. You can change these settings using the procedure under "Changing the Song Header Data" on page E-87.

- Tone assignment
- Mixer settings

Parameter Setting Changes and Operations During Track 1 to 16 Recording

- Melody notes played on the keyboard
- **PITCH BEND** wheel, **MODULATION** wheel operations
- Pedal operations
- Tone changes
- Mixer tone volume changes
- Synthesizer basic setup screen setting changes
- Drawbar tone harmonic component level changes
- Assignable switch operations

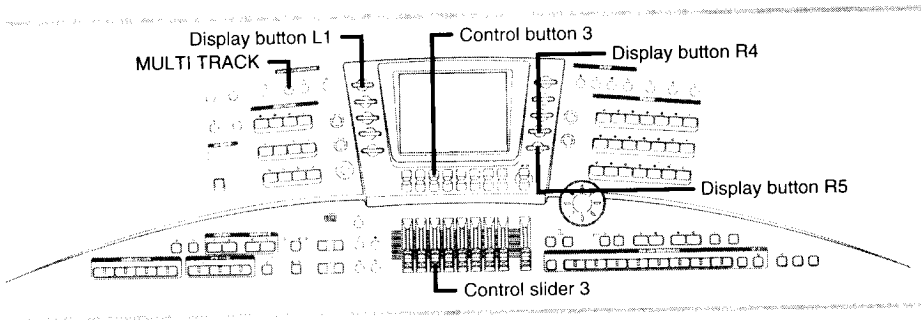
Song Sequencer Memory Capacity

You can store about 40,000 notes in Song Sequencer memory, which can be divided among up to 10 songs. You can use all 40,000 notes for a single sing, if you want.

- Remaining memory capacity is indicated as a percentage value in the upper right corner of the Song Sequencer screen (below the measure and beat number).
- Recording stops automatically when memory becomes full. Play of the auto accompaniment or rhythm pattern you are using also stops when memory becomes full.
- You can record up to 1,000 measures per tune.

Memory Data Notes

- Song Sequencer memory contents are retained even when you turn off the keyboard. Power required for memory storage is supplied by a built-in back-up lithium battery. See "Lithium Battery Precautions" on page E-6 for important information about the lithium battery.
- Turning off keyboard power while a record operation is in progress deletes the contents of the track you are currently recording.
- You can save Song Sequencer memory contents to a floppy diskette. See "Using the Floppy Disk Drive" on page E-140 for more information.



Song Sequencer Modes

There are four Song Sequencer modes: Play, Realtime Record, Punch In Record, and Edit.

Play Mode

This is the mode whose screen first appears whenever you enter the Song Sequencer Mode. Use this mode to play back Song Sequencer memory contents.

Realtime Record Mode

Use this mode for realtime recording of notes you play on the keyboard as you play them.

Punch In Record Mode

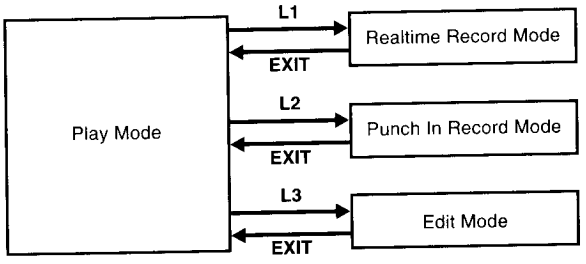
This mode is for punch in recording, which is re-recording from a specific location in a track.

Edit Mode

Use this mode for editing a specific song, track, or event, and to change the song name.

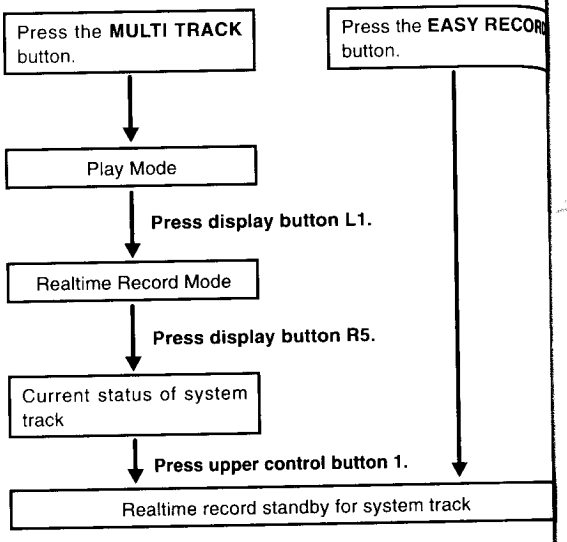
Navigating Between Song Sequencer Modes

Pressing the **MULTI TRACK** button enters the Song Sequencer Play Mode. You can navigate from the Play Mode to the other Song Sequencer modes using the display button operations shown below.



Easy Record

The diagram below shows the relationship between Easy Record (page E-73) and the other Song Sequencer modes. As you can see, Easy Record performs realtime recording of keyboard play directly into the System Track.



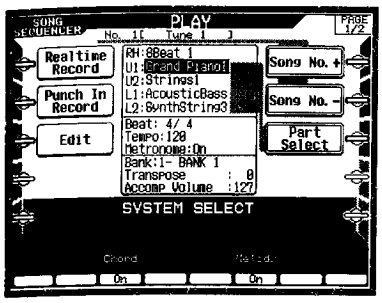
Realtime Recording

Realtime Recording to the System Track

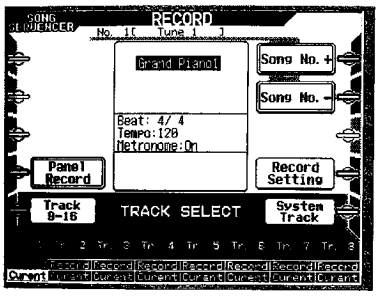
The following procedure contains only the most basic steps for realtime recording. For other techniques you can use inside this procedures, see "Other System Track Realtime Recording Techniques" on page E-81

1. Press the **MULTI TRACK** button.

- This causes the lamp above the button to light and displays the Song Sequencer Play Mode screen.



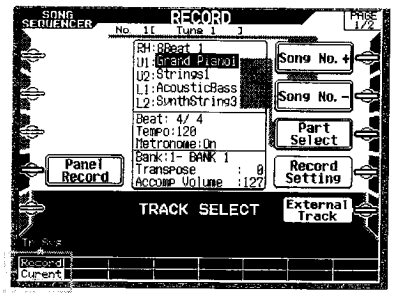
2. Press display button **L1** next to **Realtime Record** to enter the Realtime Record Mode.



3. Select the song area to which you want to record.

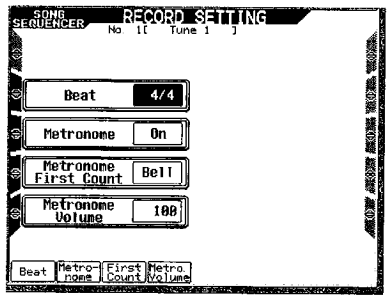
- Use display button **R1** next to **Song No.+** and button **R2** next to **Song No.–** to select a song area number in the range of 1 to 10.

4. Press display button **R5** next to **System Track** to select the system track.



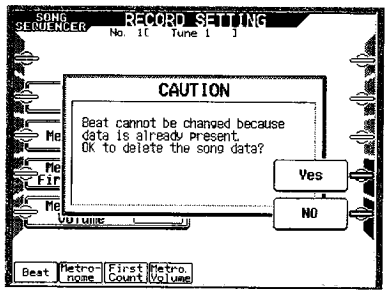
This causes the **Current** indicator to appear next to **Tr.Sys** (System Track), indicating that the system track is selected.

5. Press display button **R4** next to **Record Setting** to display the **RECORD SETTING** screen.

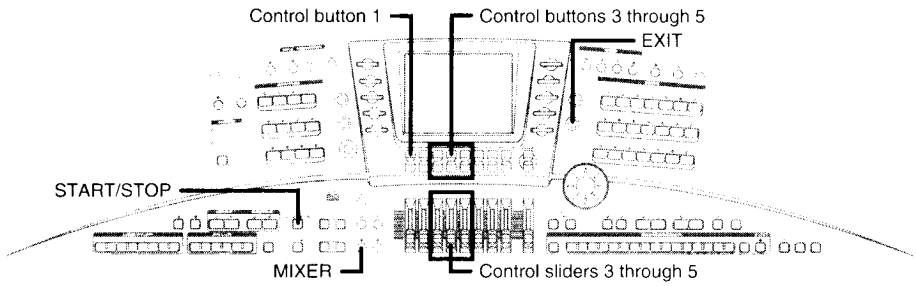


6. Use control button set 1 or control slider 1 to select a time signature.

- Available choices are 2/4 to 7/4, plus 3/8, 5/8, 6/8, 7/8, 9/8, or 12/8 time.
- If the song area you selected already contains data, changing the time signature causes the warning message shown below to appear on the display.



- Press display button **R4** (**Yes**) to delete the current contents, or **R5** (**No**) to return to step 3 without doing anything.



7. Use control button sets 3 through 5 or control sliders 3 through 5 to set the following metronome parameters.

L3 (Metronome)
Turns the metronome **On** or **Off**.

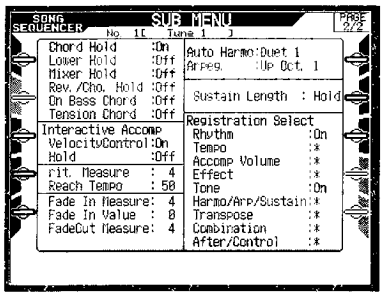
L4 (Metronome First Count)
Selects **Bell** or **Click** as the sound of the first beat of each measure.

L5 (Metronome Volume)
Specifies the metronome volume in the range of **0** (Off) through **127** (loudest).

8. After making the settings you want, press the **EXIT** button once to return to the **RECORD** screen.

9. Make the keyboard control panel settings you want to use when you start your recording.

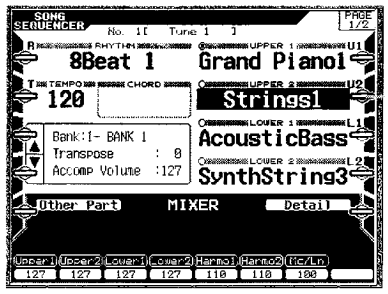
- Select the tone, rhythm, and auto accompaniment mode using the same procedures as those for normal keyboard play. "Other System Track Realtime Recording Techniques" on page E-81 also contains related information about these settings.
- Pressing the **PAGE** button displays a submenu that can also be used to make settings.



- See "Accessing the Submenu" on page E-155 for information about submenu contents and operations.
- See "System Track Data" on page E-77 for information about what parameters you can set prior to recording.

10. If you want to change Mixer parameter setting press the **MIXER** button.

- You can use the Mixer to change the parameters auto accompaniment and melody parts.



You can also change tone, rhythm, auto accompaniment and other keyboard control panel settings while this screen is on the display.

- Pressing display button **R5** next to **Detail** displays the Mixer detailed setting screen. See "Making Detailed Mixer Settings" on page E-53 for information about this screen.

11. After making the settings you want, press the **EXIT** button to return to the **RECORD** screen.

12. If you are finished setting the system track parameters you want, press upper control button 1.

This causes the indicator **Record** to appear next to **Tr.Sys** (System Track) and enters system track record standby.

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Mixer to change the param
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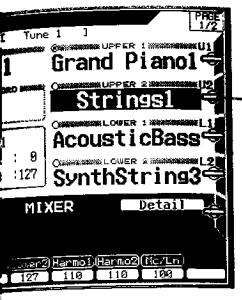

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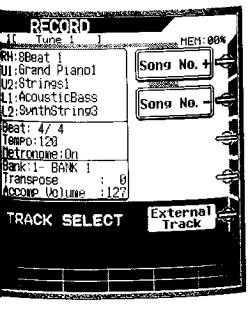


ator **Record** to appear next to **Tr.**
enters system track record stand

• **Before** actually starting recording with the next step, you can exit record standby and return to the setting screen by pressing lower control button 1. This causes the indicator next to **Tr.Sys** (System Track) to change back to **Current**.

3. Play something on the keyboard to start actual recording.

Current measure and beat numbers

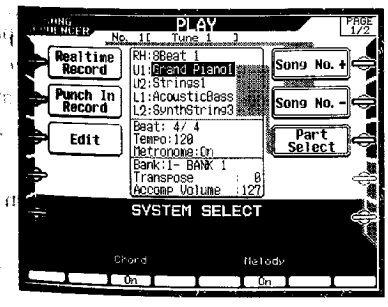
Percentage of memory used. See "Song Sequencer Memory Capacity" on page E-77 for more information.

• **During** recording, the metronome sounds (but is not recorded) according to the settings you made in step 7.

4. Play what you want on the keyboard.

• **Auto** accompaniment chord changes, as well as **PITCH BEND** wheel, pedal, and other operations are also recorded.
• See "System Track Data" on page E-77 for more information about the type of data that is recorded.

5. After you are finished playing what you want, press the **START/STOP** button to stop recording and change to the Song Sequencer's playback screen.



• **Pressing** the **START/STOP** button at this time plays back what you just recorded. See "Play Back Song Sequencer Data" on page E-87 for more information about playback.

NOTE

- Using the Realtime Record Mode to record to a track that already contains data replaces the existing data with the new recording.
- If you make a mistake while recording, you can start over again from step 1 of the above procedure, or use punch in recording (page E-84) to make modifications.

Other System Track Realtime Recording Techniques

● *To record without auto accompaniment*

In step 9 of the above procedure, turn off auto accompaniment (so none of the lamps above the **MODE** button are lit).

- You can turn auto accompaniment on or off part way through a recording, if you want.

● *To use sync start to start recording*

At any time before you perform step 9 of the above procedure, press the **SYNC START/SYNC STOP** button.

- Both auto accompaniment and recording will start when you play a chord in the accompaniment keyboard range during record standby prior to step 13.

● *To insert an intro, fill-in, break, etc.*

You can use any of the following buttons during realtime system track recording: **INTRO** (1, 2), **FILL-IN** (BACK, NORMAL, NEXT), **BREAK**, **VARIATION** (1 to 4), **SYNC START/SYNC STOP**, **rit.** (ritardando), **FADE IN/OUT**, **ENDING** (1, 2).

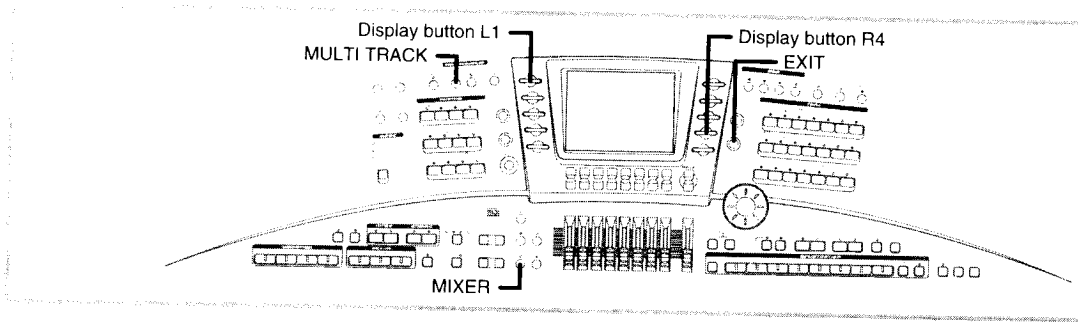
● *To sync start recording with an intro pattern*

At any time before you perform step 13 of the above procedure, press the **SYNC START/SYNC STOP** button and then press **INTRO 1** or **INTRO 2**.

- Recording will start and the intro will play, followed by auto accompaniment when you play a chord in the accompaniment keyboard range during record standby prior to step 13.

● *To start rhythm pattern play part way through a recording*

In step 9 of the above procedure, turn off auto accompaniment (so none of the lamps above the **MODE** button are lit). After recording is started, press one of the **VARIATION** buttons (1 to 4) to start rhythm play (without chords). Auto accompaniment will start when you play a chord in the accompaniment keyboard range.



Realtime Recording to Tracks 1 to 16

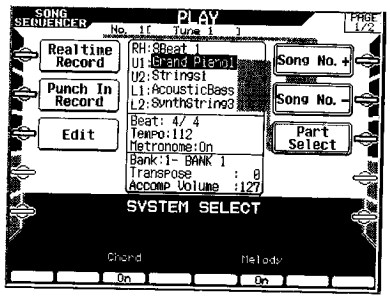
Use Tracks 1 through 16 to add other parts to the accompaniment and keyboard notes you record in the system track. You can then turn tracks on and off during playback to create the arrangement you want.

The recording procedure for tracks 1 through 16 is basically the same as that for recording to the system track. Skip the first three steps of the procedure of you go into the recording of other tracks after directly after you finish recording the system track.

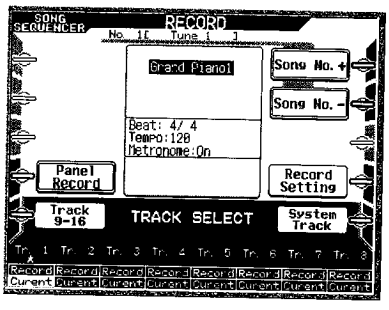
NOTE

- Tracks 1 through 16 record external parts 1 through 16. See "Parts" on page E-51.

1. Press the **MULTI TRACK** button.
   - This causes the lamp above the button to light and displays the Song Sequencer Play Mode screen.

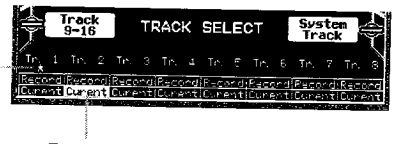


2. Press display button **L1** next to **Realtime Record** to enter the Realtime Record Mode.



3. Select the song area to which you want to reco
   - Use display button **R1** next to **Song No.+** and butt **R2** next to **Song No.–** to select a song area numbe the range of 1 to 10.

4. Press the lower control button below the nu ber of the track you want to select for recordi



This causes the **Current** indicator to appear above the track you select, indicating that the track is selected.

Any track that already contains data is indicated by an "☆" mark above it.

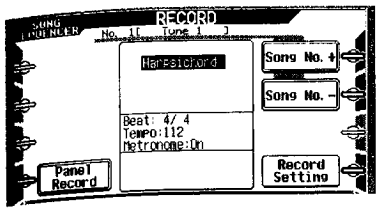
   - To select a track within the range of 9 to 16, first pre display button **L5** next to **Track 9 - 16** to display tra numbers 9 through 16.

5. Press display button **R4** next to **Record Setti** to display the **RECORD SETTING** screen.
   - If you already have a system track or another trac recorded, there is no need to select a time signatu here.

6. If you want to change the metronome param ters at this point, use the same procedure as ste 7 under "Realtime Recording to the System Trac on page E-79.

7. Press the **EXIT** button once to return to th **RECORD** screen.

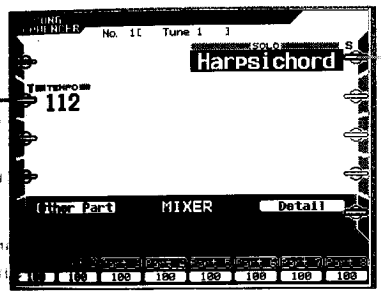
8. Make the keyboard control panel settings you want to use when you start your recording.



- Select the tone, rhythm, and auto accompaniment mode using the same procedures as those for normal keyboard play.
- The tempo setting you used for the last data recorded in a song is used as that song's initial default playback tempo setting.

9. If you want to change Mixer parameter settings, press the **MIXER** button.

- You can use the Mixer to change the parameters of all 16 external parts before recording. The settings you make here are stored in the song header, and you can change them using the procedure under "Changing the Song Header Data" on page E-87.



You can also change tone and tempo settings while this screen is on display.

- Pressing display button **R5** next to **Detail** displays the Mixer detailed setting screen. See "Making Detailed Mixer Settings" on page E-53 for information about this screen.

10. After setting the parameters you want, press the **EXIT** button to return to the **RECORD** screen.

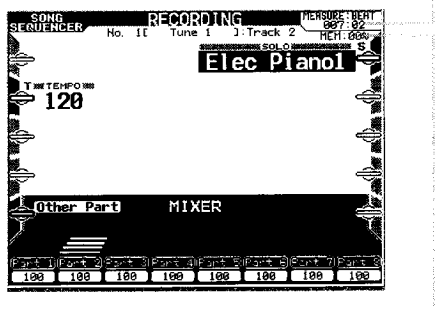
11. If you are finished setting track parameters, press the upper control button for the track you selected in step 4.

This causes the indicator **Record** to appear above the track's control button and enters record standby.

- Before actually starting recording with the next step, you can exit record standby and return to the setting screen by pressing the track's lower control button again. This causes the indicator above the track's control button to change back to **Current**.

12. Play something on the keyboard to start actual recording.

Current measure and beat numbers

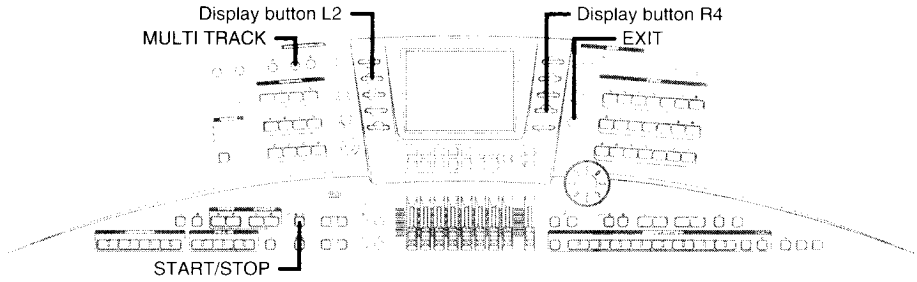


Percentage of memory used. See "Song Sequencer Memory Capacity" on page E-77 for more information.

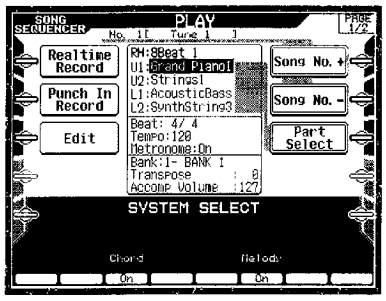
- If you want to start recording without playing anything on the keyboard, press the **START/STOP** button. A blank space (a series of rests) is recorded until you play something.
- During recording, the metronome sounds (but is not recorded) according to current metronome parameter settings.

13. Play what you want on the keyboard.

- Pitch bend wheel, pedal, and other operations are also recorded.
- See "Track 1 to 16 Data" on page E-77 for more information about the type of data that is recorded.



4. After you are finished playing what you want, press the **START/STOP** button to stop recording and change to the Song Sequencer's playback screen.



- Pressing the **START/STOP** button at this time plays back what you just recorded. See "Play Back Song Sequencer Data" on page E-87 for more information about playback.

NOTE

- Using the Realtime Record Mode to record to a track that already contains data replaces the existing data with the new recording.
- If you make a mistake while recording, you can start over again from step 1 of the above procedure, or use punch in recording to make modifications.

Modifying Recorded Data with Punch In Recording

Use punch in recording to make changes in parts you have already recorded in a track. There are two types of punch in recording: manual punch in and auto punch in.

Manual Punch In Recording

With manual punch in recording, you listen to the playback of previous recording, and start playing on the keyboard from the point where you want to make your modifications. Everything up to the point where you start playing is retained, but everything after that point is replaced with your new input.

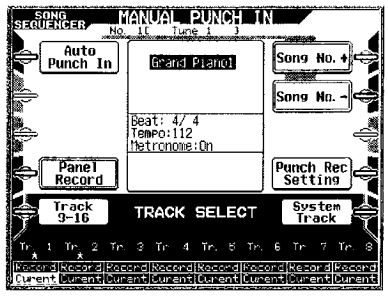
Auto Punch In Recording

Auto punch in recording lets you specify a particular measure number (called the "**Punch In Measure**") from which you want to replace the existing track data with new input. If you specify 10 as the punch in measure, for example, everything previously recorded up to the 9th measure is retained, but all the data from the 10 measure onwards is replaced by your new input.

Using Manual Punch In Recording

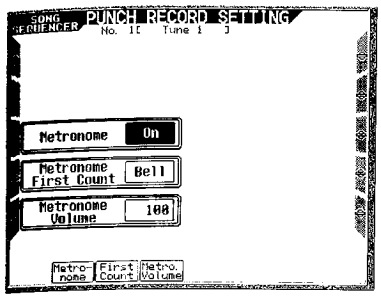
Note that you should skip the first two steps of the following procedure when you go into manual punch in recording to modify something you have just recorded.

1. Press the **MULTI TRACK** button.
   - This causes the lamp above the button to light and displays the Song Sequencer Play Mode screen.
2. Select the song area that contains the song whose data you want to modify.
   - Use display button **R1** next to **Song No.+** and button **R2** next to **Song No.–** to select a song area number in the range of 1 to 10.
3. Press display button **L2** next to **Punch In Record** to display the **MANUAL PUNCH IN** screen.



4. If you want to change metronome parameters, press display button **R4** next to **Punch Rec Setting**, make the settings you want, and then press the **EXIT** button to return to the **MANUAL PUNCH IN** screen.

- To change metronome parameters, use the same procedure as step 7 under "Realtime Recording to the System Track" on page E-79.

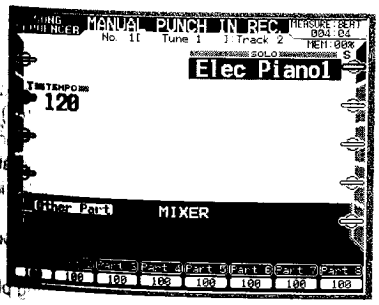


5. Select the track whose contents you want to modify.

- Press display button **R5** next to **System Track** to select the system track.
- To select one of the other tracks, press its upper control button.
- To select a track within the range of 9 to 16, first press display button **L5** next to **Track 9 - 16** to display track numbers 9 through 16.

This causes the indicator **Record** to appear for the track you select control button and enters track record standby.

6. Press the **START/STOP** button to start playback of the selected track.



7. When playback reaches the point from which you want to modify the track contents, start playing the new notes on the keyboard.

- Recording starts and playback of the track's current contents stops as soon as you play something on the keyboard.

8. After you are finished playing what you want, press the **START/STOP** button to stop recording and change to the Song Sequencer's playback screen.

NOTE

- Pressing the lower control button of the selected track (or display button **R5** when the system track is selected) in step 5, exits record standby and causes the track's indicator to change back to **Current**. You can then change Mixer parameter settings, which causes the Mixer parameters recorded in the song header to be replaced with the new ones.
- You can change the playback tone after starting playback of the track's contents in step 6, but the tone setting you make is not recorded. After you start punch in recording (in step 8), any changes you make in parameter settings are recorded just as they are during normal recording.

Using Auto Punch In Recording

Note that you should skip the first two steps of the following procedure when you go into auto punch in recording to modify something you have just recorded.

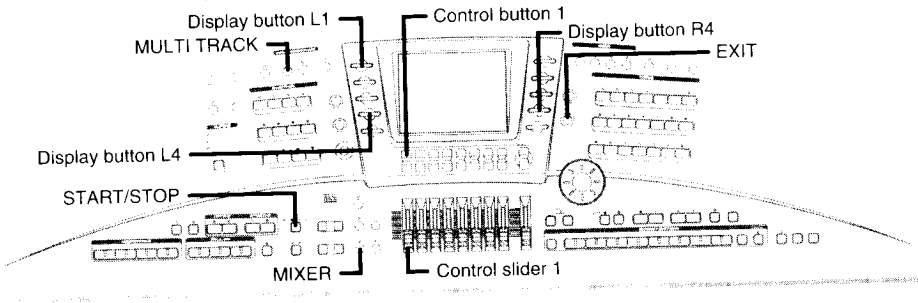
1. Press the **MULTI TRACK** button.

- This causes the lamp above the button to light and displays the Song Sequencer Play Mode screen.

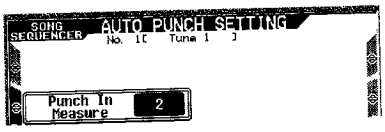
2. Select the song area that contains the song whose data you want to modify.

- Use display button **R1** next to **Song No.+** and button **R2** next to **Song No.–** to select a song area number in the range of 1 to 10.

3. Press display button **L2** next to **Punch In Record** to display the **AUTO PUNCH IN** screen.

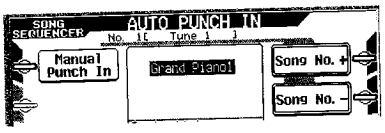


4. Press display button **L1** next to **AUTO PUNCH IN** to display the **Punch In Measure** setting screen.



5. Use control button set 1 or control slider 1 to specify the **Punch In Measure**, which is measure from which you want to modify the current contents of the track.

6. After setting the **Punch In Measure**, press the **EXIT** button once to return to the **AUTO PUNCH IN** screen.



7. If you want to change metronome parameters, press display button **R4** next to **Punch Rec Setting**, make the settings you want, and then press the **EXIT** button to return to the **MANUAL PUNCH IN** screen.

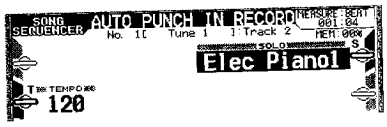
- To change metronome parameters, use the same procedure as step 7 under "Realtime Recording to the System Track" on page E-79.

8. Select the track whose contents you want to modify.

- Press display button **R5** next to **System Track** to select the system track.
- To select one of the other tracks, press its upper control button.
- To select a track within the range of 9 to 16, first press display button **L5** next to **Track 9 - 16** to display track numbers 9 through 16.

This causes the indicator **Record** to appear for the track you select control button and enters track record standby.

9. Press the **START/STOP** button to start playba of the selected track.



- Even if you play something on the keyboard, nothi is recorded until you reach the measure you spe fied in step 4. You can watch the measure number the display screen to help time the start of your ke board play.

10. Playback stops and recording starts when pla back reaches the measure you specified in st 4.

11. After you are finished playing what you wa press the **START/STOP** button to stop recordi and change to the Song Sequencer's playba screen.

NOTE

- Pressing the lower control button of the selected track (or play button **R5** when the system track is selected) in ste exits record standby and causes the track's indicator to cha back to **Current**. You can then change Mixer parameter tings, which causes the Mixer parameters recorded in the s header to be replaced with the new ones.
  Note that you can change parameters only after you finish cording.
- You can change the playback tone after starting playbac the track's contents in step 9, but the tone setting you mak not recorded. After you start punch in recording (in step any changes you make in parameter settings are recorded as they are during normal recording.

Changing Song Header Data (Panel Record)

You can use a procedure called "**Panel Record**" to change the initial Mixer, tempo and other settings stored in the song header.

- Note that you cannot use the following procedure to change the time signature, which is also stored in the song header.

Changing the Song Header Data

1. Press display button **L1** next to **Realtime Record** to enter the Realtime Record Mode.

2. Select the song area that contains the song whose header data you want to change.
   - Use display button **R1** next to **Song No.+** and button **R2** next to **Song No.–** to select a song area number in the range of 1 to 10.

3. Set the tempo, Mixer, and other song header parameters you want.

4. Press display button **L4** next to **Panel Record**.
   - This causes the current panel settings to replace the song header parameter settings of the currently selected song.

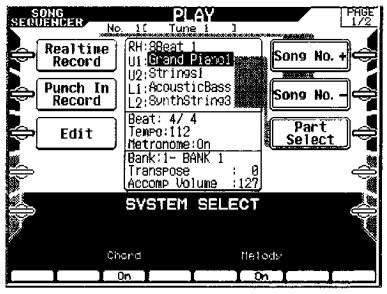
Play Back Song Sequencer Data

Note that you should skip steps 1 and 2 if the Song Sequencer's playback screen is on the display because you just got through recording. If you want to play back a song without exiting the record mode, skip steps 3 and 4.

1. Press the **MULTI TRACK** button.
   - This causes the lamp above the button to light and displays the Song Sequencer Play Mode screen.

2. Select the song area that contains the song you want to play.
   - Use display button **R1** next to **Song No.+** and button **R2** next to **Song No.–** to select a song area number in the range of 1 to 10.

3. If you want, use the buttons listed below to set the tempo and the other initial playback parameters.



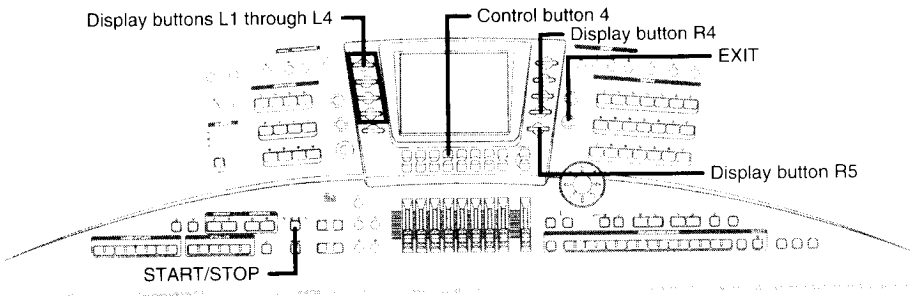
TEMPO Buttons
These buttons adjust the initial playback tempo.

Control Button Set 3
When the system track contains data, these buttons turn chord data on and off. When off, you can play chords on the keyboard along with playback. When on, the entire keyboard can be used for melody play, regardless of the current accompaniment mode setting (page E-38).

Control Button Set 6
When the system track contains data, these buttons turn the melody part on and off.

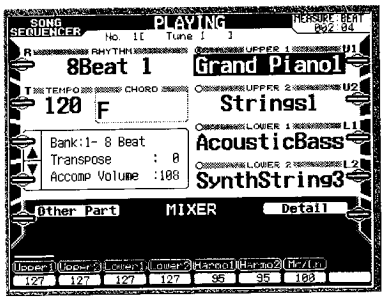
4. If you want to change Mixer parameter settings, press the **MIXER** button.

- If the part whose Mixer settings you want to change is not on the screen, press display button **L5** next to **Other Part** to change the available parts along the bottom of the screen. Use the control buttons below each part to adjust the volume balance of the system track parts (auto accompaniment and melody) and the parts of tracks 1 through 16.
- Pressing display button **R5** next to **Detail** displays the Mixer detailed setting screen. See "Making Detailed Mixer Settings" on page E-53 for information about this screen.
- The settings you make here are valid for the current playback only. Use panel record to change the Mixer parameter settings stored in the song header. See "Changing Song Header Data (Panel Record)" on this page for more information.



5. Press the **START/STOP** button to start playback of the song area you selected in step 2.

- The display screen appears as shown below during playback.



- Playback continues until the end of the song is reached. At the end of the song, display returns to the playback screen. To stop playback part way through, press the **START/STOP** button again.

Editing Recorded Data

You can edit an entire song, one of the tracks that make up a song, or an event (individual notes, settings, and other items recorded in a track). You can also change the name of a song. All of these operations are performed using the Song Sequencer's **EDIT MENU**.

Editing Types

The following are the types of editing you can perform on Song Sequencer data.

Song Editing
You can copy an entire song from one area to another, you can delete an entire song, and you can change the name of a song.

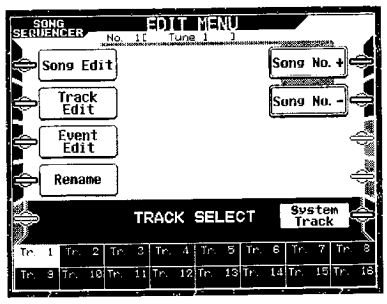
Track Editing
You can copy an entire track from to another track, you can merge one track into another track, and you can delete an entire track.

- Note that you cannot perform a copy or merge operation involving the system track.

Event Editing
You can insert, delete, copy, move, and quantize events, and you can change the tempo setting.

Displaying the EDIT MENU

On the Song Sequencer playback screen, press di play button **L3** next to **Edit**.



- To return to the playback screen from the **EDIT MEN** press the **EXIT** button.

Song Editing

Use the following song editing procedures to delete a so to copy a song from one song area to another, and to chan the name of a song.

Deleting a Song

1. On the Song Sequencer playback screen, pr display button **L3** next to **Edit** to display the **ED MENU** screen.

2. Select the song area that contains the song y want to delete.

- Use display button **R1** next to **Song No.+** and but **R2** next to **Song No.–** to select a song area numbe the range of 1 to 10.

3. Press display button **L1** next to **Song Edit**.

4. Press display button **L1** next to **Delete**.

In response to the confirmation message that appears, press display button **R4** (**Yes**) to delete the selected song or **R5** (**No**) to cancel without deleting anything.

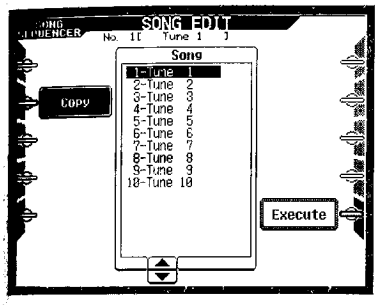
Copying a Song

1. On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT MENU** screen.

2. Select the song area you want to copy from.
   - Use display button **R1** next to **Song No.+** and button **R2** next to **Song No.–** to select a song area number in the range of 1 to 10.

3. Press display button **L1** next to **Song Edit**.

4. Press display button **L2** next to **Copy**.



5. Use control button set 4 to select the area you want to copy the song to.

6. Press display button **R5** next to **Execute** to copy the song and return to the **SONG EDIT** screen.

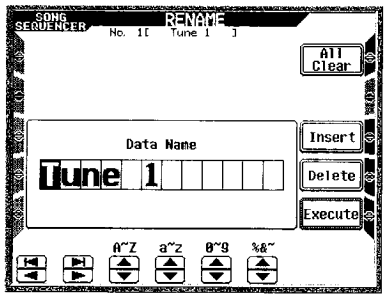
7. To return to the **EDIT MENU**, press the **EXIT** button.

Changing the Name of a Song

1. On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT MENU** screen.

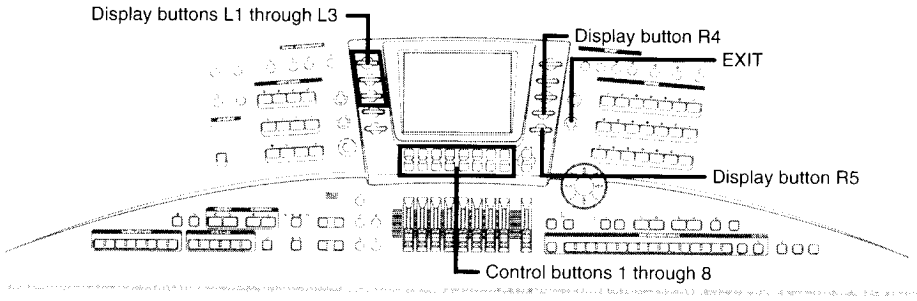
2. Select the song area that contains the song whose name you want to change.
   - Use display button **R1** next to **Song No.+** and button **R2** next to **Song No.–** to select a song area number in the range of 1 to 10.

3. Press display button **L4** next to **Rename** to display the name input screen.



4. Input the new name you want to assign to the song.
   - The highlighted frame on the screen is the current input location. Use sets 3 through 6 of the control buttons (or control sliders 3 through 6) to input characters.
   - Pressing the lower 1 and 2 control buttons moves the highlighting left and right. Pressing the upper 1 and 2 control buttons causes the highlighting to jump to the far left or far right position.
   - To clear all of the characters you have input, press display button **R1** next to **All Clear**.
   - To insert a space at the current input location, press display button **R3** next to **Insert**.
   - To delete the character at the current input location, press display button **R4** next to **Delete**.

5. After you are finished inputting the song name you want, press display button **R5** next to **Execute**.
   - This changes the song name and returns to the **EDIT MENU** screen.



Track Editing

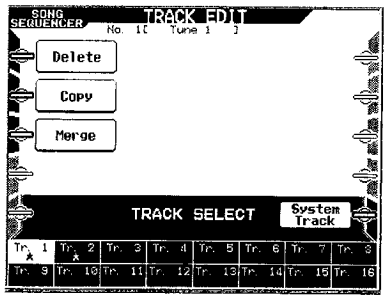
Use the following track editing procedures to delete a track, to copy one track to another, and to merge one track into another track.

NOTE

- Note that you cannot perform a copy or merge operation involving the system track.

Deleting a Track

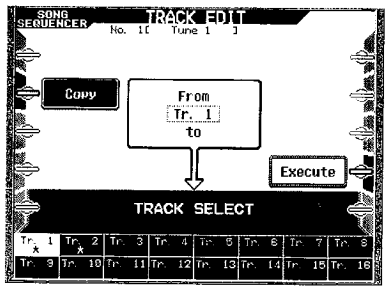
1. On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT MENU** screen.
2. Press display button **L2** next to **Track Edit** to display the **TRACK EDIT** screen.



3. Use control buttons 1 through 8 to select the track you want to delete.
4. Press display button **L1** next to **Delete**.
5. In response to the confirmation message that appears, press display button **R4** (**Yes**) to delete the selected track or **R5** (**No**) to cancel without deleting anything.

Copying a Track

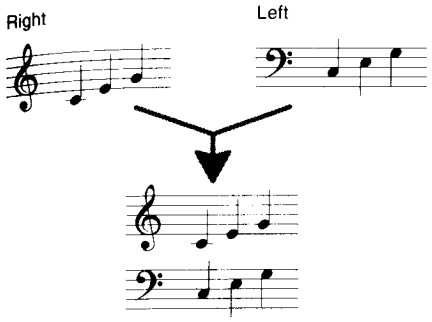
1. On the Song Sequencer playback screen, pres display button **L3** next to **Edit** to display the EDI **MENU** screen.
2. Press display button **L2** next to **Track Edit** to dis play the **TRACK EDIT** screen.
3. Use control buttons 1 through 8 to select the trac you want to copy from.
4. Press display button **L2** next to **Copy**.



5. Use control buttons 1 through 8 to select the trac you want to copy to.
6. Press display button **R4** next to **Execute** to cop the track and return to the **TRACK EDIT** scree
7. To return to the **EDIT MENU**, press the **EXIT** bu ton.

Merging One Track into Another

Use the following procedure to merge one track (original track) into another (merge track). Note that a merge operation does not change the content of the original track.



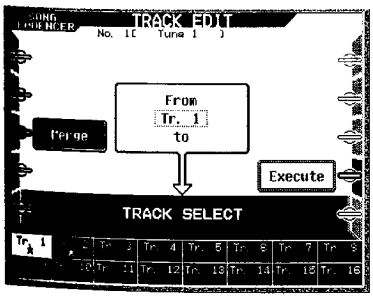
As shown above, the left hand part and right hand part recorded in separate tracks are merged into the final song.

NOTE

- Following a merge operation the song header tone and volume data contain the original header of the merge track only.
- If you no longer need the original track contents following a merge operation, use the procedure under "Deleting a Track" on page E-90 to delete it.

Perform the following steps to merge tracks.

1. On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT MENU** screen.
2. Press display button **L2** next to **Track Edit** to display the **TRACK EDIT** screen.
3. Use control buttons 1 through 8 to select the original track you want to merge into the merge track.
4. Press display button **L3** next to **Merge**.



5. Use control buttons 1 through 8 to select the merge track you want to merge to.
6. Press display button **R4** next to **Execute** to merge the tracks and return to the **TRACK EDIT** screen.
7. To return to the **EDIT MENU**, press the **EXIT** button.

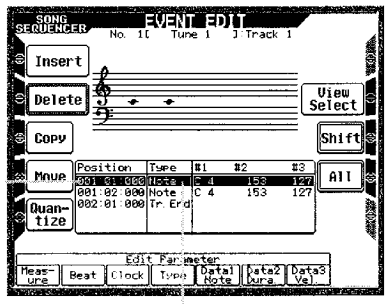
Event Editing

Recording to a track stores each note you play, as well as each pitch bend wheel operation, pedal operation, etc. as a set of value, called an "event." Playing a C-note at the first beat of the first measure, for example, records a "note event" that contains the following information.

Data	Measure	Beat	Clock	Type	Data 1	Data 2	Data 3
Values	001	01	000	Note	C4	400	127

* In a note event, Data 1 represents the pitch of the note, Data 2 its length, and Data 3 its intensity. The contents of Data 1 through Data 3 depend on the event type.

An event is shown on the event edit screen as shown below.



Note indicates that this is a note event. Note events are also represented on the on-screen musical staff.

This line corresponds to an event.

About Event Types

The following lists the types of events that can be recorded and edited in each track.

External Tracks

Type		Data 1		Data 2		Data 3		View Select on/off setting
Type Name	Screen	Setting	Range	Setting	Range	Setting	Range	
Note	Note	Note Number	C-1 to G9	Tension	0 to 1,342,655	Velocity	1 to 127	1
Program Number	Prog.	Program Number	0 to 127	–	–	–	–	3
Tone (Built-in)	Tone	Built-in Tone	Built-in Tone Name	–	–	–	–	3
Polyphonic Key Pressure	P.Pres	Note Number	C-1 to G9	Setting Value	0 to 127	–	–	7
Control	Control	Control Number	0 to 127	Setting Value	0 to 127	–	–	7
After Touch	After	Setting Value	0 to 127	–	–	–	–	7
Pitch Bend	Bend	LSB	0 to 127	MSB	0 to 127	–	–	7
Slider	Slider	Slider Name	Synth	Parameters	Synth: *1	Setting Value	Synth:0 to 127	6
			Draw.		Draw: *2		Draw:0 to 127	
Track End	Tr.End	(Reserved)						

*1 One of the eight Synthesizer Mode basic setup screen parameters (Attack, Release, VibDepth, Vib.Rate, Cutoff, Resonance, Brilliance, Oct Shift).

*2 Drawbar foot number (6', 5 1/3', 8', 4', 2 2/3', 2', 1 3/5', 1 1/3', 1')

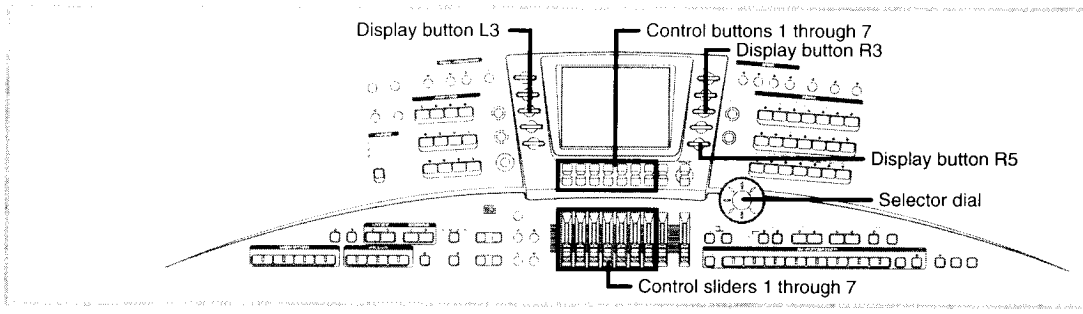
Data 3	
Setting	Range
Velocity	1 to 127
–	–
–	–
–	–
–	–
–	–
–	–
tting Value	Synth:0 to 127
	Draw:0 to 127

epth, Vib.Rate, Cutoff, Res

m Track

Type		Data 1		Data 2		Data 3		View Select on/off setting
me	Screen	Setting	Range	Setting	Range	Setting	Range	
Note	Note	Note Number	C-1 to G9	Tension	0 to 1,342,655	Velocity	0 to 127	1
ne (Built-in)	Tone	Tone Part	Up1 to Low2	Built-in Tone	Built-in Tone Name	–	–	3
Chord	Chord	Root	C to B, Off	Chord Type	*1	Bass Note	/C to /B	2
Rhythm	Rhythm	Built-in Rhythm	Built-in Rhythm Name	–	–	–	–	4
Synth (Synthesizer)	Synth	Tone Part	Up1 to Low2	Easy Synth Parameter	*2	Setting Value	*3	6
Drawbar	Draw.	Tone Part	Up1 to Low2	Drawbar Name	*4	Setting Value	0 to 8	6
Effect	Effect	Effect Type	Built-in Effect Type Name	Effect Parameter	Parameter Name	Setting Value	0 to 127	6
Combination	Combi.	Combination Parameter	Parameter Name	Setting Value	*5	–	–	6
Mixer	Mixer	Tone Part	Up1 to Low2	Part Volume	0 to 127	–	–	6
Switch (Keyboard Button Operation)	Sw.	Operated Button	Button Name	–	–	–	–	5
Tempo	Tempo	Tempo	0 to 127	–	–	–	–	5
Accompaniment Volume	AcpVol	Accomp Volume	0 to 127	–	–	–	–	5
Transpose	Trans.	Transpose	0 to 127	–	–	–	–	5
Registration	Regist	Bank Number	Bank 1 to 8	Area Number	1 to 8	–	–	5
One Touch Preset	OTP	Set Number	Set 1 to 4	–	–	–	–	5
After Touch	After	Setteing Value	0 to 127	–	–	–	–	7
Control	Control	Control Name	Modu., Exp., Sus., Asign	Setting Value	0 to 127	–	–	7
Pitch Bend	Bend	LSB	0 to 127	MSB	0 to 127	–	–	7
System Exclusive	Sys. Ex	(Delete only)						8
Track End	Tr.End	(Reserved)						–

*1 43 chord types out of the total number of chord types that can be recognized by the keyboard. The setting value is displayed as a chord name.
*2 One of the eight Synthesizer Mode basic setup screen parameters (**Attack**, **Release**, **VibDepth**, **Vib.Rate**, **Cutoff**, **Resonance**, **Brilliance**, **Oct Shift**).
*3 See "Changing Main Tone Parameters" on page E-62.
*4 Drawbar foot number (6', 5 1/3', 8', 4', 2 2/3', 2', 1 3/5', 1 1/3', 1')
*5 See "Using Control Buttons and Control Sliders to Adjust Rhythms and Auto Accompaniments" on page E-47.



NOTE

- The Setting Value entries in the Setting column indicate setting values that correspond to the setting items specified in the Data 1 or Data 2 column to the left.
- Track End is a marker that indicates the end of the data, and Track End is always inserted at the end of a track. See "Using Step Input to Input Notes (Events)" on page E-98 for information about inserting a Track End marker into a track.
- See "About View Select" on page E-95 for information about how you can turn display of events on and off.

Displaying the Event Editing Screen

1. On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT MENU** screen.

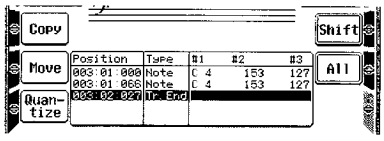
2. Use control buttons 1 through 8 to select the track you want to edit.

3. Press display button **L3** next to **Event Edit** to display the **EVENT EDIT** screen for the event you selected in step 2.

Selecting Events on the EVENT EDIT Screen

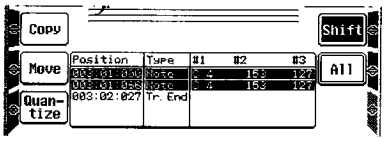
You can use the **EVENT EDIT** screen to select a single event or multiple events.

Selecting a Single Event



Rotate the selector dial to select a single event on the **EVENT EDIT** screen. The currently selected event is the one that is highlighted on the screen.

Selecting a Series of Events



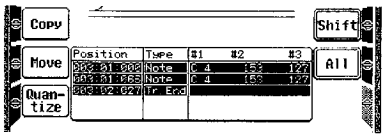
1. Rotate the selector dial to highlight the eve the top of the series of events you want to se

2. Press display button **R3** next to **Shift**.

3. Rotate the selector dial again to expand the h lighting and select the events below the one selected in step 1.

4. When the events you want to select are h lighted, press display button **R3** to select the h lighted events.

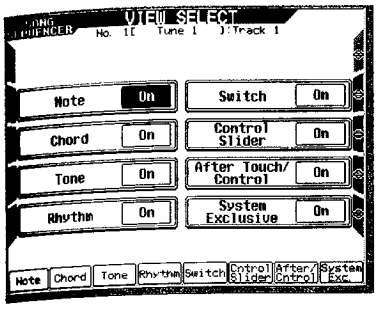
Selecting All Events



Pressing display button **R4** next to **All** selects all o events on the screen.

bout View Select

ew Select can be used to control, which events appear on e EVENT EDIT screen. Press display button **R3** next to ew Select to display the **EVENT EDIT** screen.

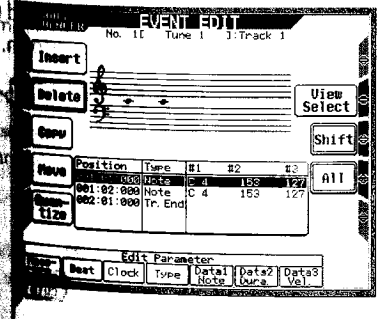


e event on and off	Use this
Note events	Button/Slider 1 (**Note**)
hord events	Button/Slider 2 (**Chord**)
one events	Button/Slider 3 (**Tone**)
hythm events	Button/Slider 4 (**Rhythm**)
witch events	Button/Slider 5 (**Switch**)
Combination, Drawbar, nthesizer, Mixer, ect event	Button/Slider 6 (**Control Slider**)
ontrol event	Button/Slider 7 (**After Touch/Control**)
em exclusive event	Button/Slider 8 (**System Exclusive**)

the "About Event Types" on page E-92 for more informa- about the types of events whose display can be turned and off.

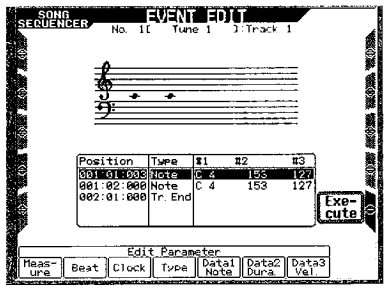
ing an Event

On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT** MENU screen.

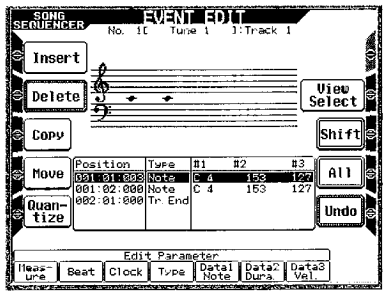


2. Select the one event you want to edit.
   - See "Selecting Events on the **EVENT EDIT** Screen" on page E-94 for information about selecting events.

3. Use control buttons 1 through 7 and control sliders 1 through 7 to change event data.



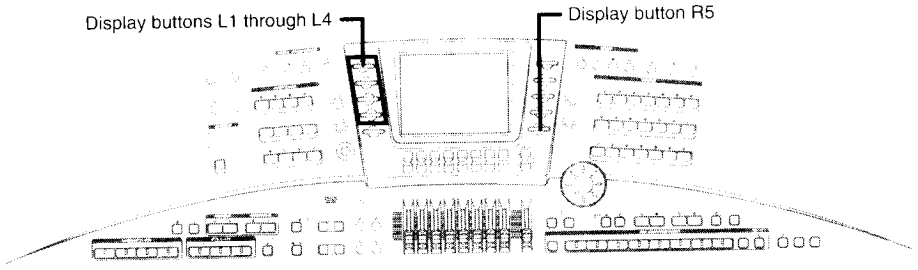
4. After making sure the data is the way you want, press display button **R5** next to **Execute**.



- This saves the edited event data and returns to the **EVENT EDIT** screen.
- Pressing display button **R5** next to **Undo** at this time undoes your changes.

▮ NOTE ▮

- See "About Event Types" on page E-92 for information about each event.



Canceling an Event Edit Operation

If you decide that you do not want to keep your edits some time before you press display button **R5 Execute**, press the **EXIT** button. You can also undo the last edit operation you performed by pressing display button **R5** next to **Undo**.

Inserting an Event

1. On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT MENU** screen.

2. Select the event that is immediately in front of or behind the location where you want to insert an event.
   - See "Selecting Events on the **EVENT EDIT** Screen" on page E-94 for information about selecting an event.

3. Press display button **L1** next to **Insert**.
   - This inserts an event that is identical to the event you selected in step 2.

4. Edit the newly inserted event to make it the type of event you want.
   - Use control buttons 1 through 7 and sliders 1 through 7 to change the event data.

5. After everything is the way you want, press display button **R5** next to **Execute** to save it and return to the **EVENT EDIT** screen.
   - Pressing display button **R5** next to **Undo** here undoes the insert operation.

Deleting an Event

You can use the following steps to delete a single event or multiple events.

1. On the **EVENT EDIT** screen, select the event or events you want to delete.
   - You can select either a single event or multiple events. See "Selecting Events on the **EVENT EDIT** Screen" on page E-94 for information about how to select events.

2. Press display button **L2** next to **Delete** to delete the selected event(s) and return to the **EVENT EDIT** screen.
   - Pressing display button **R5** next to **Undo** here undoes the delete operation.

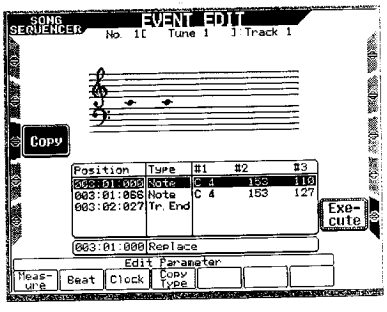
Copying an Event

You can use the following steps to copy a single event or multiple events.

1. On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT MENU** screen.

2. Select the event or events you want to copy.
   - You can select either a single event or multiple events. See "Selecting Events on the **EVENT EDIT** Screen" on page E-94 for information about how to select events.

3. Press display button **L3** next to **Copy** to display a screen for selecting the destination and the type of copy operation you want to perform.



wing steps to delete a single

EDIT screen, select the
nt to delete.

either a single event or multi
Events on the **EVENT EDI**
for information about how

button **L2** next to **Delete**
vent(s) and return to the

y button **R5** next to **Undo** h
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wing steps to copy a sing

equencer playback scre
L3 next to **Edit** to display

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either a single event or mul
Events on the **EVENT ED**
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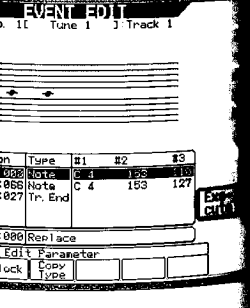
ion you want to perfo



Specify the destination and copy type.

- Use control buttons 1 through 4 and control sliders 1 through 4 to make the following settings.

Specify this	Use this
Destination measure	Button/Slider 1 (**Measure**)
Destination beat	Button/Slider 2 (**Beat**)
Destination clock	Button/Slider 3 (**Clock**) (1 clock = 1/192 beat)
Copy type	Button/Slider 4 (**Copy Type**)

- Selecting **Replace** as the copy type causes the event at the destination to be replaced with the event you are copying. Selecting **Merge** copies your event to the destination without affecting the event currently at the destination.
- When you are copying multiple events, specify the destination of the first event as the copy destination.

Press display button **R5** next to **Execute** to copy the selected event(s) and return to the **EVENT EDIT** screen.

- Pressing display button **R5** next to **Undo** here undoes the copy operation.

ing an Event

the following steps to move a single event or events.

On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT MENU** screen.

Select the event or events you want to move.

- You can select either a single event or multiple events. See "Selecting Events on the **EVENT EDIT** Screen" on page E-94 for information about how to select events.

Press display button **L4** next to **Move** to display a screen for selecting the destination and the type of move operation you want to perform.

Specify the destination and move type.

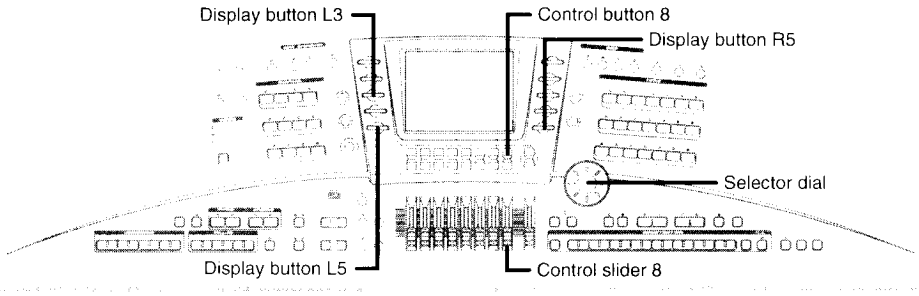
- Use control buttons 1 through 4 and control sliders 1 through 4 to make the following settings.

To specify this	Use this
Destination measure	Button/Slider 1 (**Measure**)
Destination beat	Button/Slider 2 (**Beat**)
Destination clock	Button/Slider 3 (**Clock**) (1 clock = 1/192 beat)
Move type	Button/Slider 4 (**Move Type**)

- Selecting Replace as the move type causes the any event at the destination to be replaced with the event you are moving. Selecting Merge moves your event to the destination without affecting the event currently at the destination.
- When you are moving multiple events, specify the destination of the first event as the move destination.

5. Press display button **R5** next to **Execute** to move the selected event(s) and return to the **EVENT EDIT** screen.

- Pressing display button **R5** next to **Undo** here undoes the copy operation.



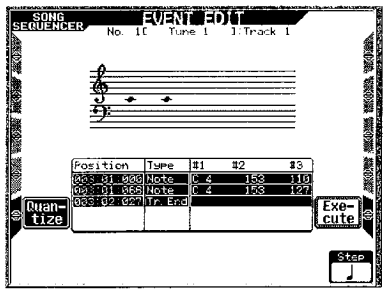
Quantizing an Event

Quantize arranges recorded notes in accordance with a particular timing (eighth notes, quarter notes, etc.) With the Song Sequencer, you can perform quantize to arrange notes in the range of quarter notes to 64th notes, and triples in the range of quarter notes to 32nd notes.

1. On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT MENU** screen.

2. Select the event you want to quantize.
   - See "Selecting Events on the **EVENT EDIT** Screen" on page E-94 for information about how to select events.

3. Press display button **L5** next to **Quantize** to display the quantize setting screen.

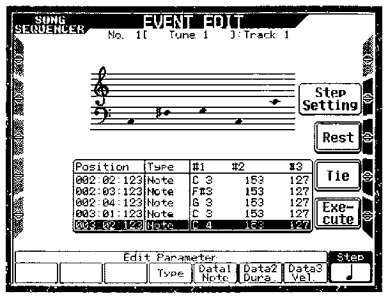


4. Use control button set 8 and control slider 8 to select the quantize setting you want to use.

5. Press display button **R5** next to **Execute** to quantize the selected event according to the setting you selected in step 4 and return to the **EVENT EDIT** screen.
   - Pressing display button **R5** next to **Undo** here undoes the quantize operation.

Using Step Input

Selecting **Tr.End** (Track End) on the **EVENT EDIT** screen displays the step input screen shown below.

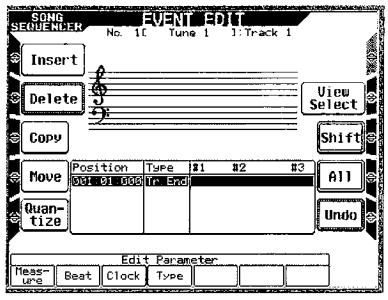


You can use this screen to input notes and events one-by-one at the end of a track.

Using Step Input to Input Notes (Events)

The following procedure shows how to use step input to input notes (events) into a track that does not contain any data yet. The procedure is the same if the track already contains data.

1. On the Song Sequencer playback screen, press display button **L3** next to **Edit** to display the **EDIT MENU** screen.

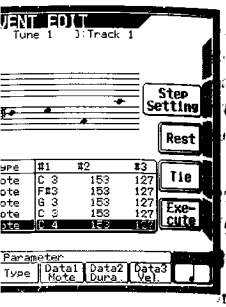


- If the track selected when you displayed the **EVENT EDIT** screen already contains data, the first event in the track is highlighted first.
- If the track selected when you displayed the **EVENT EDIT** screen does not contain any data, the track end event is highlighted first.

n R5

ector dial

d) on the EVENT EDIT sc
shown below.

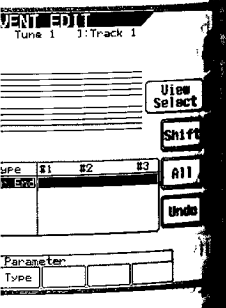


nput notes and events on

Input Notes (Events

shows how to use step in
ack that does not contain
same if the track already

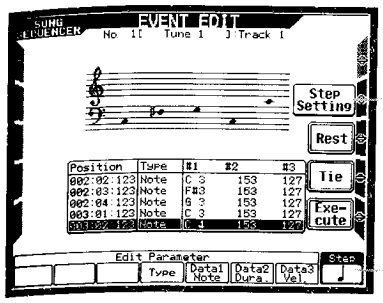
uencer playback scre
next to **Edit** to display



d when you displayed
dy contains data, the
ghted first.
d when you displayed
not contain any data,
ed first.

2. Rotate the selector dial clockwise to display the step input screen shown below.

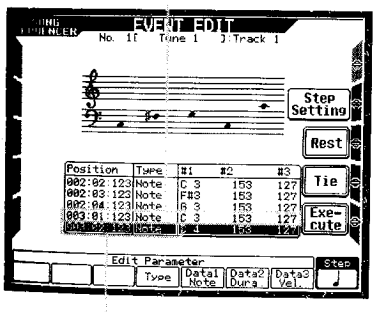
ssing display button **R2** next to **Step Setting** displays a screen
r setting the **Duration** and **Velocity** of the note you input. See "In-
ut Settings" on page E-100 for more information.



e shows the duration of the current step as a note. Use control
ton set 8 and control slider 8 to adjust the duration (duration from
e current beat clock position to the next step input start position) of
e step input. See "About the Step Input Interval" for more informa-
n.

3. Press display button **R5** next to **Execute** to input the note event in accordance with the current settings.

e event is input at the previous location of the track end (during
input, the pitch can be specified on the keyboard). The duration
a 2 = **Duration**) and velocity (Data 3 = **Velocity**) of the note are
rmined by the input settings. See "Input Settings" on page E-100
more information.



track end is shifted in accordance with the step input duration
g (see "About the Step Input Interval"). On this screen, the du-
n is shown as a quarter note (♩), so the track end is shifted by
beat.

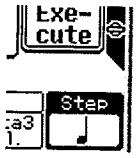
- Pressing display button **R4** next to **Tie** immediately after you input a note extends the duration of the input note by one step.
- Pressing display button **R3** next to **Rest** inputs a one-step rest.

4. You can edit the note events you have just input, if you want.

5. Repeat steps 2 through 4 to input other note events, if you want.

About the Step Input Interval

Input on the step input screen is performed using the note interval (called the "step" here) displayed in the lower right corner of the display. You can specify a whole note, a note in the range from half note to 64th note, dotted notes in the range from half note to 32nd note, or triplicates in the range from half note to 32nd note. Each note event you input causes the track end to shift by beats and clocks in accordance with the current step setting, as shown below.



NOTE

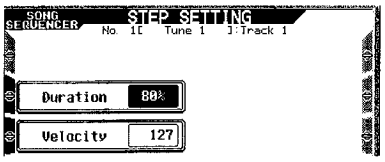
- You can also use keyboard keys to input notes.

Step	Beat	Clock
Whole Note	4	0
Half Note	2	0
Quarter Note	1	0
8th Note	0	96
16th Note	0	48
32nd Note	0	24
64th Note	0	12
Dotted Half Note	3	0
Dotted Quarter Note	1	96
Dotted 8th Note	0	144
Dotted 16th Note	0	72
Dotted 32nd Note	0	36
Triplicate Half Note	1	64
Triplicate Quarter Note	0	128
Triplicate 8th Note	0	64
Triplicate 16th Note	0	32
Triplicate 32nd Note	0	16

Use control button set 8 and control slider 8 to change the step input interval. This also causes the note in the lower right corner of the display to change.

Input Settings

When inputting a note event using step input, you can also specify initial **Duration** and **Velocity** values. Press display button **R2** next to **Step Setting** to display the **STEP SETTING** screen for making these settings.



Button/Slider 1 Duration
The duration is set as a percent of the step (see "About the Step Input Interval"). A setting of 100% makes the step the same length as the note you input.

Button/Slider 2 Velocity
Sound strength setting in the range of 1 to 127

To exit the setting screen and return to the input screen, press **EXIT**.

Creating Accompaniment Patterns with the Pattern Sequencer

The Pattern Sequencer lets you create your own original accompaniment patterns. You can create a pattern by altering the parameters of one of the 120 built-in patterns or create a pattern from scratch.

Pattern Sequencer Basics

Elements and Parts

Auto-accompaniment consists of various "elements," including intros, fill-ins, and endings. There are 11 elements that correspond to the auto accompaniment buttons.

Each element is made up of eight parts: drum, percussion, bass, and chord 1 through 5. The following table shows the general makeup of each accompaniment pattern.

Element (Button)	Part				Number of Measures (Example)
Intro 1	Drum	Percussion	Bass	Chord 1 to Chord 5	4
Intro 2	Drum	Percussion	Bass	Chord 1 to Chord 5	2
Fill In (BACK)	Drum	Percussion	Bass	Chord 1 to Chord 5	1
Fill In (NORMAL)	Drum	Percussion	Bass	Chord 1 to Chord 5	1
Fill In (NEXT)	Drum	Percussion	Bass	Chord 1 to Chord 5	1
Variation 1	Drum	Percussion	Bass	Chord 1 to Chord 5	1
Variation 2	Drum	Percussion	Bass	Chord 1 to Chord 5	2
Variation 3	Drum	Percussion	Bass	Chord 1 to Chord 5	2
Variation 4	Drum	Percussion	Bass	Chord 1 to Chord 5	2
Ending 1	Drum	Percussion	Bass	Chord 1 to Chord 5	4
Ending 2	Drum	Percussion	Bass	Chord 1 to Chord 5	2

NOTE

- The Number of Measures column in the above table shows one example of the length of each element. There are fixed number of measures for each auto-accompaniment element. With the Pattern Sequencer, you can create accompaniment patterns up to 16 measures long for each element. A fill-in is always one measure long.

Pattern Sequencer Record Data

The Pattern Sequencer records all of the component parts of an accompaniment pattern.

The component parts of each element are layered one by one to built the pattern. You can edit an existing built-in accompaniment pattern to create your own original accompaniment pattern, and save it for later recall.

One-time Parameters

The following parameters can be set once per pattern.
- Tempo
- One-touch preset settings (**User One Touch**)
- **Original Key**
- **Octave Shift**

Element Parameters

The following parameters can be set for each element.
- Beat (**Element Beat**)*
- Measure (**Element Measure**)*

* Beat and measure parameters cannot be modified without deleting the contents of everything already stored in the Pattern Sequencer work area. See "Memory Capacity" below for more information.

Realtime Record Parameters

The following parameters can be recorded in realtime for each part.
- Keyboard play
- **PITCH BEND** wheel operations
- **MODULATION** wheel operations
- Pedal operations

Part Parameters

The following parameters can be recorded for each part.
- Tone (Specified using the **TONE** buttons or Mixer, cannot be changed within the part.)
- Mixer Parameters (**Pan, Volume, Reverb Depth, Chorus Depth, DSP**)
- **Part Chord Type**

Bass, Chord 1 to 5 Part Parameters

The following are the bass and Chord 1 to Chord 5 part parameters that can be recorded. See "Making Chord Settings" on page E-113 for details on each parameter.
- **Table No.**
- **Break point**
- **Limit**
- **Inversion**
- **Bass Function**
- **Tension**
- **Retrigger**

Memory Capacity

Pattern Sequencer memory has a total capacity of approximately 22,000 notes.

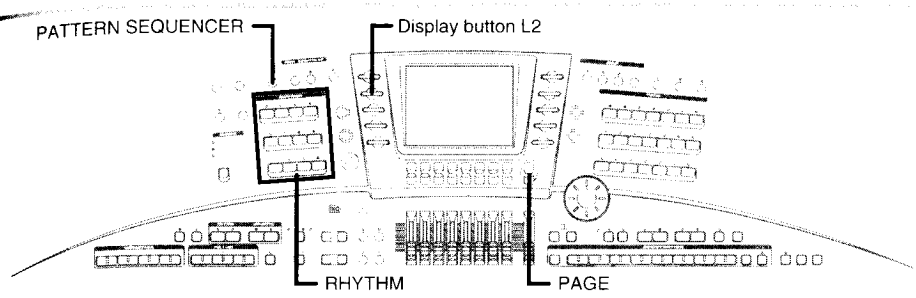
- During recording, the current memory capacity is indicated on the display as a percent value that shows approximately how much memory has been used.
- Recording stops automatically whenever memory becomes full.

About the Pattern Sequencer Work Area

When you are working on an accompaniment pattern in the Pattern Sequencer, the pattern data is temporarily stored in a memory area called the "Pattern Sequencer work area." You can continue editing the accompaniment pattern data in the Pattern Sequencer work area as long as the lamp above the **PATTERN SEQUENCER** button is lit.
When you exit the Pattern Sequencer after editing an auto accompaniment pattern, you can choose either to save the Pattern Sequencer work area data or to clear it.

Saving Your Rhythm Patterns

- The rhythm pattern memory of the keyboard has a "user area" in the **USER** group that you can use to save up to of your original rhythm patterns. Once you store your patterns, you can recall and use them the same way you built-in accompaniment patterns. You can even use original patterns as the basis to create your next Pattern Sequencer pattern.
- Memory contents are retained even when you turn off the keyboard. Power required for memory storage is supplied by a built-in back-up lithium battery. See "Lithium Battery Precaution" on page E-6 for important information about the lithium battery.
- You can save the contents of the user area to a floppy disk. See "Using the Floppy Disk Drive" on page E-140 for more information.
- The user area can hold up to 10 original auto accompaniment patterns. If your patterns are long, you may be able to store fewer than 10.



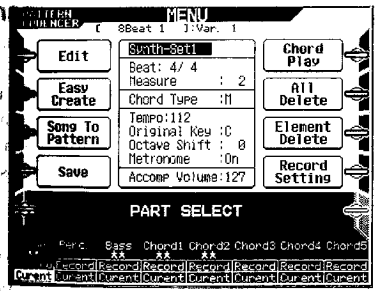
...ng an Accompaniment Pattern
...g Easy Create

...Easy Create feature of the Pattern Sequencer is auto ac...ment pattern editing in its simplest form. Using Easy ..., you can combine elements from different preset ac...ments into a single group. For example, you could ...the preset **8 Beat 1** pattern as the main element, **16 Beat 1** ...tion 2 as Variation 2, and **Bossa Nova Variation 1** as ...on 4.

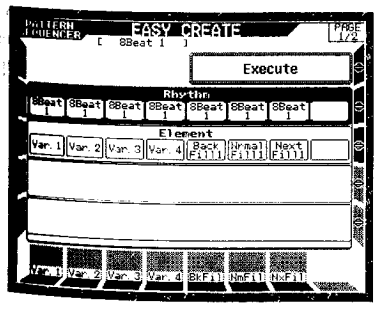
...g Easy Create

1. **Use** the **RHYTHM** button to select the rhythm you want to use as the base for your rhythm.

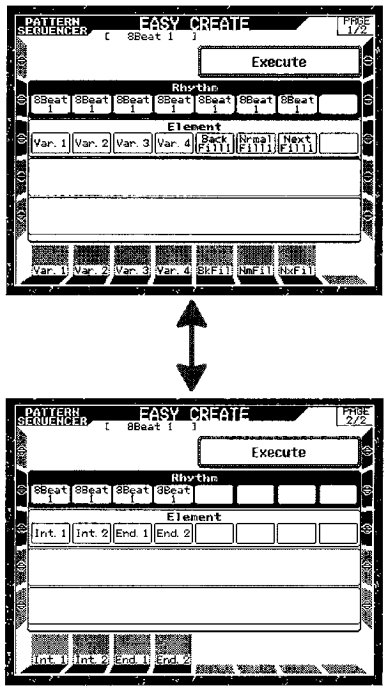
2. **Press** the **PATTERN SEQUENCER** button to display the Pattern Sequencer menu screen.



3. **Press** display button **L2** next to **Easy Create** to display the **EASY CREATE** screen.



4. Select the other rhythm elements you want to group into your accompaniment pattern.



- The following describes the types of settings you can make using each Easy Create screen.

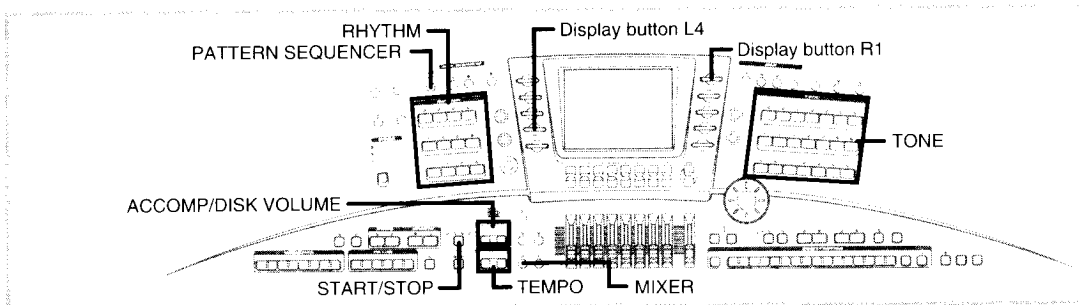
PAGE 1/2

Button/Sliders 1 to 4 (Var.1 to 4)
Specify rhythms/elements for Variation 1 through Variation 4.

Button/Slider 5 (BkFil)
Specifies the rhythm/element for the BACK fill-in pattern.

Button/Slider 6 (NmFil)
Specifies the rhythm/element for the NORMAL fill-in pattern.

Button/Slider 7 (NxFil)
Specifies the rhythm/element for the NEXT fill-in pattern.



PAGE 2/2

Buttons/Sliders 1, 2 (Int. 1, Int. 2)
Specify the rhythms/elements for the Intro 1 and Intro 2 patterns.

Buttons/Sliders 3, 4 (End. 1, I End. 2)
Specify the rhythms/elements for the Ending 1 and Ending 2 patterns.

- The following describes the steps to specify a rhythm and element for Variation 1, for example.
  - Press display button **L2** or **R2** to highlight the **Rhythm** line on the display. Then use control button set 1 and slider 1 to select the rhythm you want.
  - Next, press display button **L3** or **R3** to highlight the **Element** line. Then use control button set 1 and slider 1 to select the element you want.
- Repeat the same procedure as above to use the other control buttons and sliders to select elements for the other control buttons and control sliders.
- Use the **PAGE** button to switch between screens.

5. After everything is the way you want, press display button **R1** next to **Execute** to return to the Pattern Sequencer menu screen.

6. To save the accompaniment pattern in the Pattern Sequencer work area, press display button **L4** next to **Save**.
   - See "Saving Accompaniment Patterns" on page E-122 for information about saving accompaniment patterns.

NOTE

- After you use Easy Create to group the elements you want, you can then edit the elements to further tailor them to meet your needs. To do so, do not perform the save operation in step 6 of the above procedure, which leaves the accompaniment pattern elements in the Pattern Sequencer work area. Next, use the procedures under "Creating an Accompaniment Pattern" and "Editing the Pattern Sequencer Work Area Accompaniment Pattern" on page E-110 to edit the elements.

Creating an Accompaniment Pattern

The procedures in this section assume that you have alre read "Pattern Sequencer Basics" on page E-101, and that are familiar with the components, elements, and parts t make up the accompaniment patterns of this keyboard.

The following are the two different methods that you use to create an accompaniment patterns.

- You can modify the parameters of a built-in accompa ment pattern or a user accompaniment pattern alre stored in memory to create a new pattern. You can add delete notes on a part while playing back the part, or can completely delete the contents of a part and crea new part.
- You can use a blank pattern and record all elements parts from scratch.

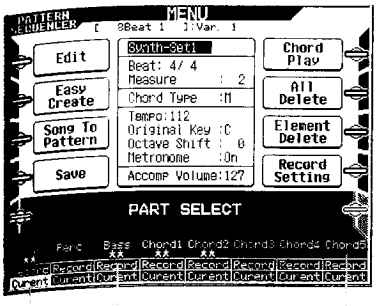
The recording procedures you use with either of the above methods are identical.

Playing an Accompaniment Pattern (P hearsal Playback)

You can play back each of the elements that make up the companiment pattern currently stored in the Pattern Sequ er work area. It is often a good idea to listen to a patte few times and plan your changes before actually startin modify it.

1. Use the **RHYTHM** button to select the rhyt pattern you want to modify to create your pattern.

2. Press the **PATTERN SEQUENCER** button.
   - This causes the lamp above the button to light displays the Pattern Sequencer menu screen.
   - At this time the pattern you selected in step 1 is ied into the Pattern Sequencer work area.



Empty part (no data)

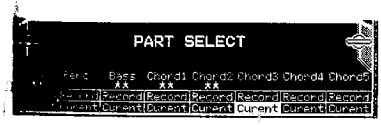
Currently selected part, indicated by Current indicator.

Part that contains data (See "Display of Parts that Contain Data" on this page.)

3. Use the keyboard's auto-accompaniment buttons to select the element you want to play back.

4. Press the **START/STOP** button to start playback of the selected element in an endless loop.

- You can also use the auto accompaniment buttons to change between elements while playback is in progress.
- During playback, the measure count and beat count appear in the upper right corner of the display.
- You can practice playing parts and try changing Mixer settings while playback is being performed.
- Notes you play on the keyboard sound using the tone assigned to the currently selected part, which is indicated by **Current**.
- Use the lower control buttons (1 through 8) to change the currently selected part.



Indicates the **Currently** selected part.

5. To stop playback, press the **START/STOP** button again.

NOTE

- Pressing the upper control buttons (1 through 8) causes the **Record** indicator to appear over the corresponding part, indicating record standby. This means you can use the control buttons to switch the status of each part between **Record** by pressing the upper button and **Current** (for rehearsal playback) by pressing the lower button. See "Recording an Accompaniment Pattern" on page E-106 for information about how to record.
- You can play back the accompaniment pattern in the Pattern Sequencer work area by using rehearsal playback as described above or using "**Chord Play**" to test the pattern you have created. For information about using chord play, see "Test Playing Recorded an Accompaniment Pattern (Chord Play)" on page E-108.

Display of Parts that Contain Data

Parts that already contain data appear on the Pattern Sequencer screen as shown below.

[☆☆] Part with interactive data

Part without data

[☆] Part with data

Interactive data is preset accompaniment pattern data used by the auto accompaniment interactive accomp function (page E-106). The following rules apply whenever you record or edit a part that includes interactive data.

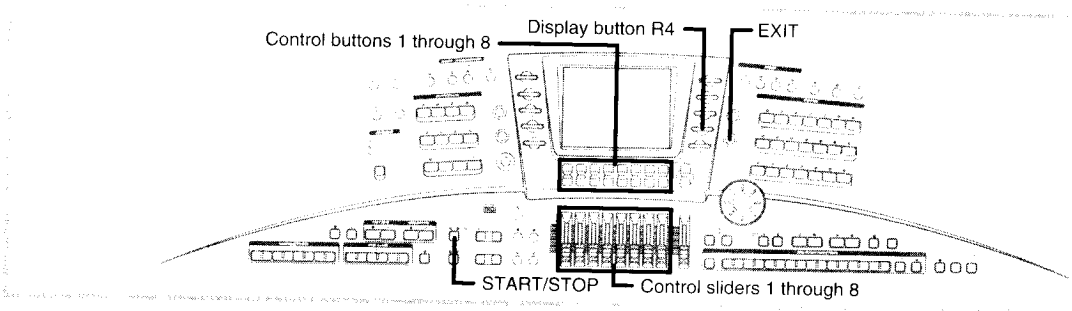
- You cannot record to a part that contains interactive data. To record to such a part, you must first delete all of its data.
- You cannot edit a part that contains interactive data. To edit such a part, you must first delete all of its data.

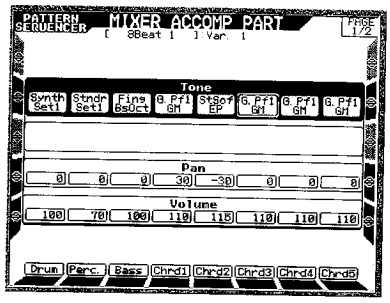
Element editing (page E-110) and part editing (page E-111) is allowed with a part that contains interactive data.

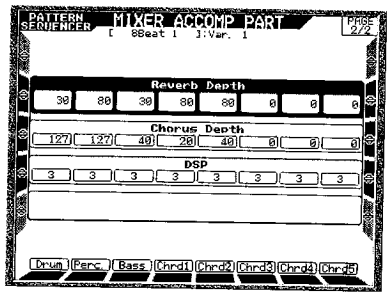
Rehearsal Playback Operations

You can perform the following operations while rehearsal playback is in progress.

- Tempo Change
  Use the **TEMPO** buttons to adjust the tempo.
- Accompaniment Volume Adjustment
  Use the **ACCOMP/DISK VOLUME** buttons to adjust the accompaniment volume.
- Part Tone Settings
  Use the **TONE** buttons to select a tone for the currently selected part, which is indicated by the **Current** indicator. You can also change the tone with the Mixer as described below.
- Mixer Settings
  Press the **MIXER** button to display the Mixer setting screens shown below.





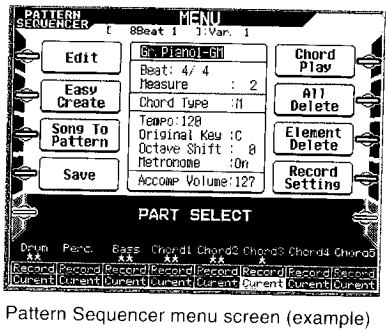


Press the **PAGE** button to switch between the two screens.

Use these screens to make pan, volume, reverb depth, chorus depth, and DSP settings for each part. See "Using the Mixer" on page E-51 for more information.

Recording an Accompaniment Pattern

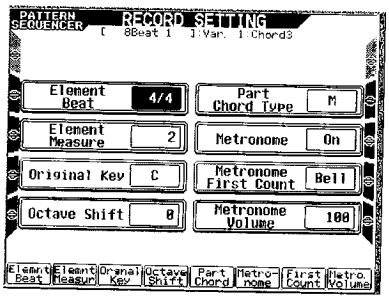
Before entering the Pattern Sequencer to start an accompaniment pattern record operation, it is a good idea to check to make sure that there is space available in the **USER** group for storage of the pattern.



Pattern Sequencer menu screen (example)

The following procedure should be performed following the procedure under "Playing an Accompaniment Pattern (Rehearsal Playback)".

1. Select the element you want to record.
   - Press the button in the auto accompaniment area of the keyboard's control panel that corresponds to the element you want to select.
   - If you want to record all element parts from scratch, use the procedure under "Deleting an Element" on page E-110 to delete the element.
2. Press display button **R4** next to **Record Setting** to display the **RECORD SETTING** screen.



- When this screen is on the display you can use control buttons 1 through 8 and control sliders 1 through 8 to make the settings described below.

Button/Slider 1 (Element Beat)
Specifies the time signature of the element. You can specify the time signature in the range of 2/4 to 7/4, or 3/8, 5/8, 6/8 , 7/8, 9/8, 12/8.

Button/Slider 2 (Element Measure)
Specifies the number of element measures. You can specify the number of measures in the range of 1 to 16.

Button/Slider 3 (Original Key)
Specifies the root used for chord specification during recording. Normally, this setting is C.

Button/Slider 4 (Octave Shift)
Specifies the pitch in the range of +1 active to -1 octave.

Button/Slider 5 (Part Chord Type)
Specifies the chord type used for chord specification during recording. You can specify either **M** (major) or **m** (minor).

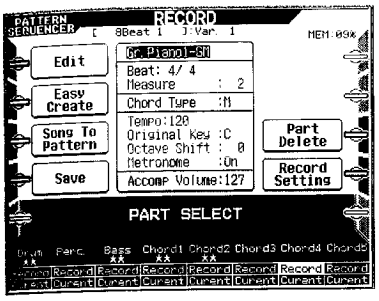
Button/Slider 6 (Metronome)
Turns the metronome sound on and off during recording.

Button/Slider 7 (Metronome First Count)
Selects **Bell** or **Click** as the sound of the first beat of each measure.

Button/Slider 8 (Metronome Volume)
Specifies the metronome volume in the range of 0 (Off) through **127** (loudest).

- After the settings are the way you want, press the **EXIT** button.

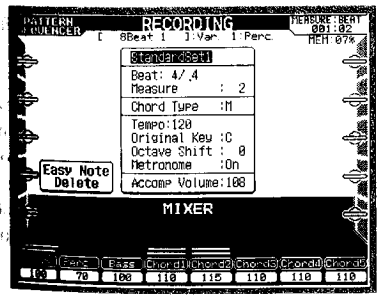
3. Use upper control buttons 1 through 8 to put one of the record parts into record standby.



The indicator **Record** appears above the button you press to indicate the part is in record standby.

- In record standby, you can change Mixer and other settings, just as you do during rehearsal playback. See "Playing an Accompaniment Pattern (Rehearsal Playback)" on page E-104 for more information.
- Pressing display button **R3** next to **Part Delete** deletes all of the contents of the currently selected part. See "Deleting All Parts in Record Standby" on page E-108 for more information.

4. Start recording.



- Recording starts automatically when you play something on the keyboard. The initial notes you play are recorded for the first beat of the part.
- You can also start recording by pressing the **START/STOP** button. Use the **START/STOP** button to start recording when you do not want anything recorded on beat 1.
- Once recording starts, all the parts of the selected element play in an endless loop. You can record to the currently selected part by playing along with the playback.
- The measure and beat numbers are displayed in the upper right corner of the screen during recording.

5. Record the selected part.

- Notes you play on the keyboard are added to the part. Notes you add are sounded the next time the pattern loops. You can time your play while you add notes by monitoring the measure number and beat number on the display.
- If you decide a note is not longer necessary, delete it using the procedure under "Deleting Unneeded Notes" below.
- In addition to keyboard play, you can also perform the following operations during recording.
  - Tempo changes (using the **TEMPO** buttons)
  - Accompaniment volume changes (using the **ACCOMP VOLUME** buttons)
  - Part volume settings (using the control buttons and control sliders)

6. To stop recording, press the **START/STOP** button.

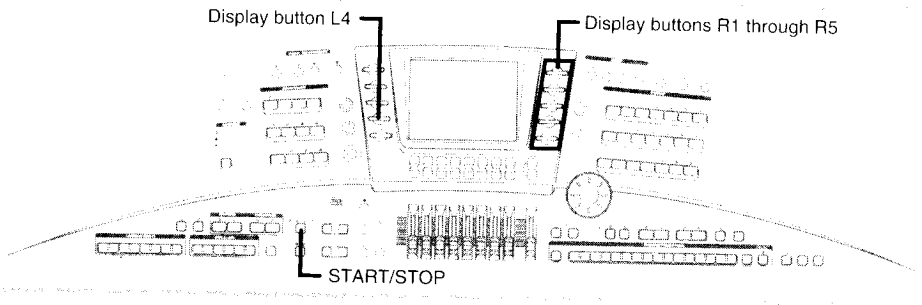
- This stops recording and causes **Current** to appear above the selected part.

7. Repeat steps 3 through 6 for the other parts you want to record.

- Press display button **R1** next to **Chord Play** to perform a test play of the element you just created. See "Test Playing Recorded an Accompaniment Pattern (Chord Play)" on page E-108 for more information.

NOTE

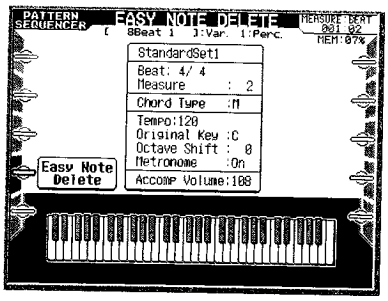
- The steps of the above procedure create a single element of the accompaniment. You must perform all of the steps for each element you want to create.
- See "Saving Accompaniment Patterns" on page E-122 for information about saving an accompaniment pattern.



Deleting Unneeded Notes

Use the following procedure to delete notes you have input by mistake, and notes from the original accompaniment pattern that you do not need.

1. Hold down display button **L4** next to **Easy Note Delete**.
   - The following screen is shown on the display as long as you hold down **L4 Easy Note Delete**.



The on-screen keyboard shows the notes you input into the part you are recording.

2. Delete a note by pressing its keyboard key as the note sounds during accompaniment playback.
   - When actually deleting a note, press the proper keyboard key slightly before the point where the note you want to delete starts to sound, and release it slightly after the note stops sounding.

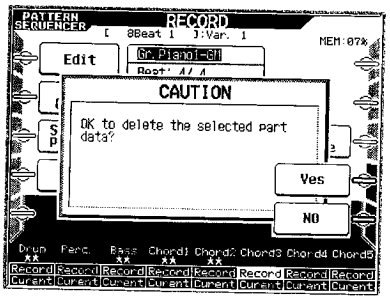
NOTE

- You can also use event edit to delete and add notes more precisely. See "Using Event Edit" on page E-114 for more information.

Deleting a Part in Record Standby

Perform the following steps after putting the part whose contents you want to delete into record standby.

1. Press display button **R3** next to **Part Delete**.
   - This causes the warning message shown below to appear on the screen.



2. Press display button **R4** (**Yes**) to delete the data or **R5** (**No**) to cancel without deleting anything.
   - After the data is deleted, the selected part goes back into record standby. This means you can immediately start recording.

Test Playing Recorded an Accompaniment Pattern (Chord Play)

Chord play lets you test play an accompaniment pattern before you store it in memory. Chord play plays the current contents of the Pattern Sequencer as an endless loop. During chord play, notes you play on the keyboard sound using the currently selected parts (UPPER 1, UPPER 2, LOWER 1, LOWER 2), and you can use the keyboard to specify chords during chord play as well.

Chord Play Operations

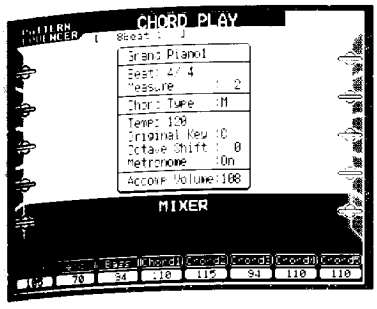
You can perform the following operation while chord play is in progress.

- Toggle **UPPER 1**, **UPPER 2**, **LOWER 1**, and **LOWER 2** button on and off
- Mode changes
- Auto Harmonize, Arpeggiator on/off
- Interactive Accomp on/off

following procedure for chord play.

• Press display button **R1** next to **Chord Play**.

• This causes the screen shown below to appear.



2. Use one of the procedures under "Using Rhythms and Auto Accompaniment" on page E-38 to start auto accompaniment play.

• You can use the buttons in the auto accompaniment area of the keyboard's control panel to change to another element while playback is in progress.

3. To stop playback, press the **START/STOP** button.

• Pressing the **EXIT** button returns to the menu screen.

...leting the Data in the Pattern Sequencer Work Area

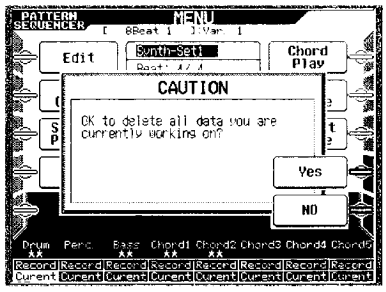
...can delete all the accompaniment pattern data in the ...Sequencer work area, a particular element, or a part.

...ing All Data in the Pattern Sequencer Work Area (All Delete)

...you press the PATTERN SEQUENCER button and ...play the Pattern Sequencer menu screen, the rhythm pat... that was selected is automatically loaded into the Pat...quencer work area. This means that there is always ...niment pattern data in the work area immediately ...you display the Pattern Sequencer menu screen. Use ...lowing procedure to delete all data in the Pattern Se... work area when you want to create a new accompa... pattern from scratch.

1. On the Pattern Sequencer menu screen, press display button **R2** next to **All Delete**.

• This causes a confirmation message to appear, asking if you really want to delete all data.



2. Press display button **R4** (**Yes**) to delete all the data or **R5** (**No**) to cancel without deleting anything.

Deleting a Specific Element from the Pattern Sequencer Work Area (Element Delete)

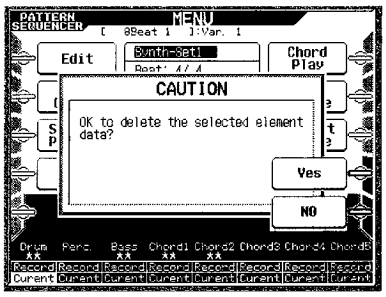
Use the following procedure when you want to delete a particular element from the accompaniment pattern data currently in the Pattern Sequencer work area.

1. On the Pattern Sequencer menu screen, select the element you want to delete.

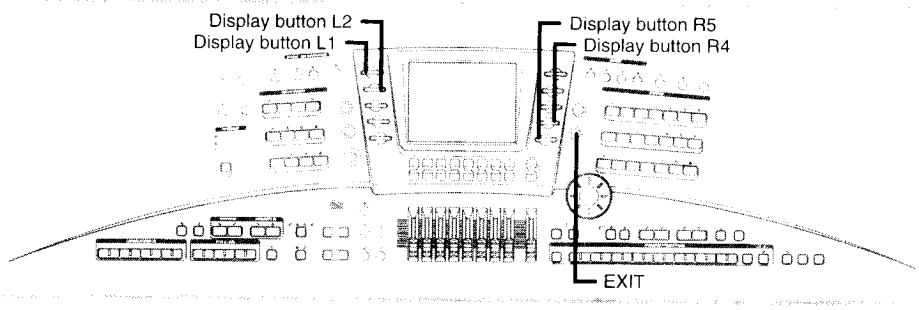
• Press the button in the auto accompaniment area of the keyboard's control panel that corresponds to the element you want to select.

2. Press display button **R3** next to **Element Delete** .

• This causes a confirmation message to appear, asking if you really want to delete the element.



3. Press display button **R4** (**Yes**) to delete the element or **R5** (**No**) to cancel without deleting anything.



Deleting Specific Part from the Pattern Sequencer Work Area (Part Delete)

You delete a part while the keyboard is in the record standby state. See "Deleting a Part in Record Standby" on page E-108 for more information.

Editing the Pattern Sequencer Work Area Accompaniment Pattern

You can edit an element, part, or event of the accompaniment pattern that is currently in the Pattern Sequencer work area. You can also change the settings of the one touch preset to which the accompaniment pattern is assigned.

Editing Types

The following are the types of editing you can perform on the accompaniment pattern currently in the Pattern Sequencer work area.

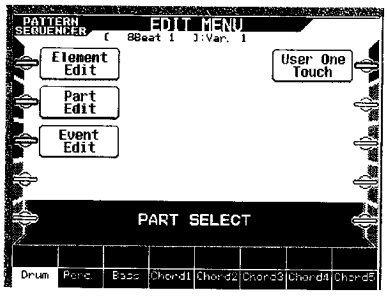
Element Editing
You can copy elements from location to another and delete elements.

Part Editing
You can copy parts from location to another and delete parts. You can also make chord settings for the bass and chord (1 to 5) parts.

Event Editing
You can insert, delete, copy, move, and quantize events.

Using the EDIT MENU screen

Element, part, and event editing is performed using the Pattern Sequencer **EDIT MENU** screen. To display the **EDIT MENU** screen press display button **L1** next to **Edit** on the Pattern Sequencer menu screen.



Using Element Edit

With element edit, you can delete the currently selected element or copy it to another element.

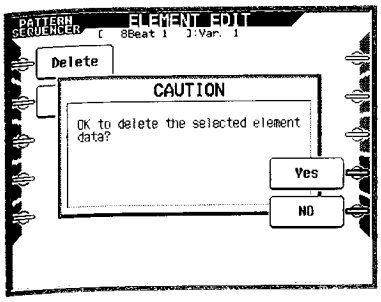
Deleting an Element

1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EDIT MENU** screen.

2. Select the element you want to delete
   - Press the button in the auto accompaniment area of the keyboard's control panel that corresponds to the element you want to select.

3. Press display button **L1** next to **Element Edit**.

4. Press display button **L1** next to **Delete**.



5. Press display button **R4** (**Yes**) to delete the selected element or **R5** (**No**) to cancel without deleting anything.

NOTE

- You can also delete an element by pressing display button **R3** next to **Element Delete** on the Pattern Sequencer menu screen. See page E-109 for more information.

Copying an Element

When you perform an element copy operation on a source element whose number of measures is different from that of the destination element, the designation element is adjusted to make it the required number of measures. However, if the destination element is a fill-in pattern, only the first measure of the source element is copied.

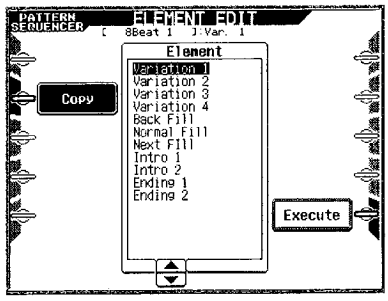
1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EDIT MENU** screen.

2. Select the copy source element (the element you want to copy from).

- Press the button in the auto accompaniment area of the keyboard's control panel that corresponds to the element you want to select.

3. Press display button **L1** next to **Element Edit**.

4. Press display button **L2** next to **Copy**.



5. On the display screen, specify the destination element (the element you want to copy to).

- Use control button set 4 and control slider 4 to highlight the name of the element you want to use as the destination element.

6. Press display button **R5** next to **Execute** to copy the element and return to the **ELEMENT EDIT** screen.

7. To return to the Pattern Sequencer menu screen, press the **EXIT** button twice.

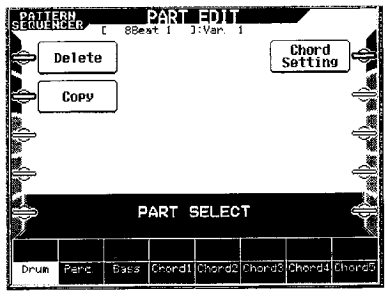
Using Part Edit

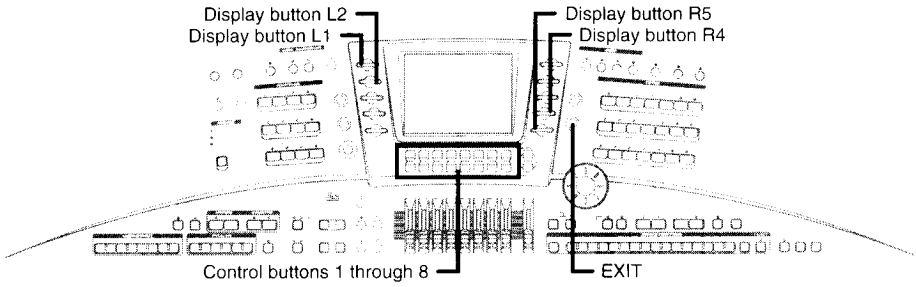
Part edit lets you copy parts from area to another and delete parts. You can also make chord settings for the bass and chord (1 to 5) parts.

Deleting a Part

1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EDIT MENU** screen.

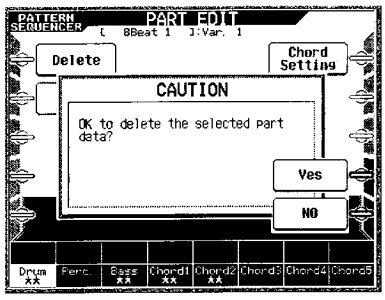
2. Press display button **L2** next to **Part Edit** to display the **PART EDIT** screen.





3. Use control buttons 1 through 8 to select the part you want to delete.
   - The currently selected part is highlighted on the display.

4. Press display button **L1** next to **Delete**.



5. Press display button **R4** (**Yes**) to delete the selected element or **R5** (**No**) to cancel without deleting anything.

Copying a Part

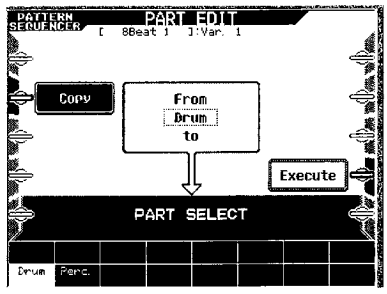
You can copy parts in the combinations described below only.
- You can copy from a drum and percussion part, or vice versa.
- You can copy between bass and Chord (1 to 5) parts.
- You cannot copy between a drum or percussion part and another (chord) part.

1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EDIT MENU** screen.

2. Press display button **L2** next to **Part Edit** to display the **PART EDIT** screen.

3. Use control buttons 1 through 8 to select the source part (the part you want to copy from).

4. Press display button **L2** next to **Copy**.



5. Select the destination part (the part you want to copy to).
   - Use control buttons 1 and 2 (when the source part you selected is a rhythm or percussion part) or control buttons 3 through 8 (when the source part you selected is a chord part) to select the destination part.

6. Press display button **R4** next to **Execute** to copy the part and return to the **PART EDIT** screen.

7. To return to the Pattern Sequencer menu screen, press the **EXIT** button twice.

...g Chord Settings

...table below shows the settings you can make to the bass and chord (1 to 5) parts using the item on the **PART EDIT** screen.

Name	Range	Description
Table No.	1 to 16	Specifies number of the optimum chord conversion table*1 for this part.
Break Point	C to B	Specifies the break point*2 of this part's accompaniment pattern.
Limit	Off, On	**On** Raises all notes below E1 during auto accompaniment by one octave. **Off** plays all notes in accordance with the conversion table.
Inversion	Off, On, 7th	During auto accompaniment play, a chord change is output as an inversion*3, without following the original data. **Off** ..... Notes always follow original data. **On** ..... Outputs inversions. **7th** ..... Outputs inversions. This setting is used when the key of the original data is a 7th, and chord conversion table 7 is selected.
Bass Function	Off, On	This setting controls how fraction chord fingerings are handled by auto accompaniment. **Off** ..... Fraction chord fingering has no effect on auto accompaniment. **On** ..... Fingering a fraction chord causes all notes in the part below B3 to be converted to the same fraction chord bass note.
Tension	Off, Shift, Add	This setting controls how tension chord fingerings are handled by auto accompaniment. **Off** ..... Tension chord fingering has no effect on auto accompaniment. **Shift**... Fingering a tension chord shifts all notes to be sounded to tension tones. **Add** .... Fingering a tension chord adds tension tones to all notes to be sounded.
Retrigger	Off, On	When retrigger is turned on an auto accompaniment chord change (or interactive chord change) causes the chord change to occur using the same timing as the current chord. **On** turn retrigger on, while **Off** turns it off.

...Chord Conversion Table

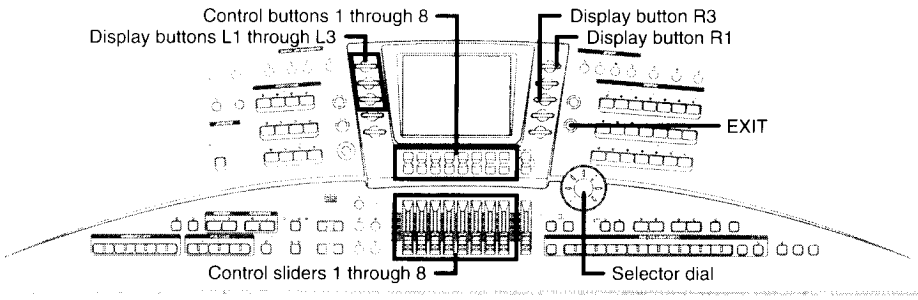
...ompaniment patterns are always recorded in the key of C. The chord conversion table is used to convert the recorded pattern ...the key of C major) to other keys. It should be noted here that a simple direct shift of each chord results in unnatural sounding ...ords, and so the chord table is used to make corrections required to make chords sound more natural. There are 16 chord tables ...cluding the keyboard's accompaniment pattern table), numbered 1 through 16. See the "Chord Table List" at the back of this ...r's Guide for information about chord conversion table numbers.

...Break Point

...ce you specify a break point, any chord above the break point is played in the next lower octave when playing back chords ...ng CASIO CHORD, FINGERED, and FULL RANGE CHORD.

...Inversion

...is setting determines whether chord inversions are used when accompaniment pattern data is played back in a key that is ...ferent from the key it was recorded. When a pattern is recorded in the key of C, for example, the root configuration of a C chord ...C-E-G. Fingering an F chord in the accompaniment keyboard range when inversion is turned off plays F-A-C. When inversion ...turned on, however the F chord is played as the inversion C-F-A, which is the closest to the original C-E-G. Turning on inver... ...n keeps the playback chord from jumping too far away from the original chord, which ensures that accompaniment sounds ...ural.



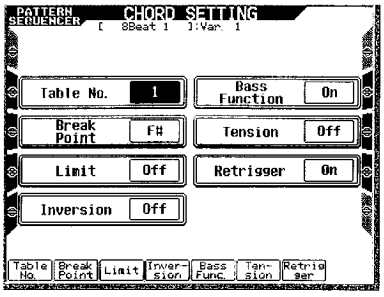
Use the following procedure to make chord settings.

1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EDIT MENU** screen.

2. Press display button **L2** next to **Part Edit** to display the **PART EDIT** screen.

3. Select the part whose chord settings you want to change.
   - Select either a bass or chord part (1 to 5). Chord settings cannot be made for drum or percussion parts.

4. Press display button **R1** next to **Chord Setting** to display the **CHORD SETTING** screen shown below.



5. Use control buttons 1 through 8 or control sliders 1 through 8 to make the chord settings you want.

6. After making the settings you want, press the **EXIT** button once to return to the **PART EDIT** screen.

7. Repeat steps 3 through 6 as required to make chord settings for other parts.

8. After you are finished, press the **EXIT** button twi to return to the Pattern Sequence menu scree

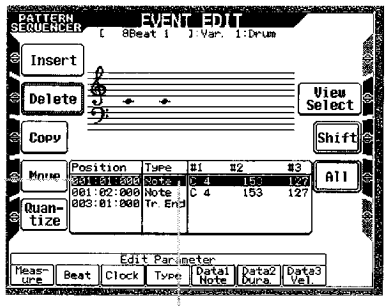
Using Event Edit

Recording to a part stores each note you play, as well as ea **PITCH BEND** wheel operation, pedal operation, etc. as a of values, called an "event." Playing a C-note at the first be of the first measure, for example, records a "note event" th contains the following information.

Data	Measure	Beat	Clock	Type	Data 1	Data 2	Data
Values	001	01	000	Note	C4	400	12

- In a note event, **Data 1** represents the pitch of the note, Da **2** its length, and **Data 3** its intensity. The contents of **Data** through **Data 3** depend on the event type.

An event is shown on the **EVENT EDIT** screen as shown b low.



Note indicates that this is a note event. Note ever are also represented on the on-screen musical st

This line corresponds to an event.

765A-E

About Event Types

The following describes the types of events that can be recorded in each track.

Type		Data 1		Data 2		Data 3		View Select on/off setting
Type Name	Screen	Setting	Range	Setting	Range	Setting	Range	
Note	Note	Note Number	C-1 to G9	Duration	0 to 1,342,655	Velocity	1 to 127	1
Control	Control	Control Name	Modu., Hold1	Setting Value	0 to 127	–	–	7
Pitch Bend	Bend	LSB	0 to 127	MSB	0 to 127	–	–	7
Track End	Tr.End	(Reserved)						

- The control name **Modu.** to the right of event type **Control** is the modulation wheel, while **Hold1** is sustain pedal hold.
- Track End is a marker that indicates the end of the data, and Track End is always inserted at the end of a track. See "Using Step Input to Input Notes (Events)" on page E-119 for information about inserting a Track End marker into a track.

Displaying the Event Editing Screen

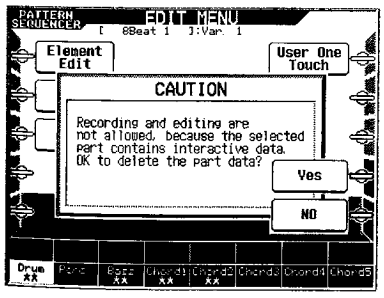
1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EDIT MENU** screen.

2. Use control buttons 1 through 8 to select the part you want to edit.

3. Press display button **L3** next to **Event Edit** to display the part event editing screen for the event you selected in step 2.

NOTE

- If the part you selected contains interactive data (see "Display of Parts that Contain Data" on page E-105), pressing display button **L3** in step 3 of this procedure causes the warning message shown below to appear on the display.

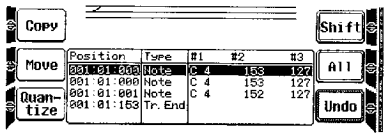


- Press display button **R4** (**Yes**) to display the **EVENT EDIT** screen, which you can use to add notes and other events from scratch.

Selecting Events on the EVENT EDIT Screen

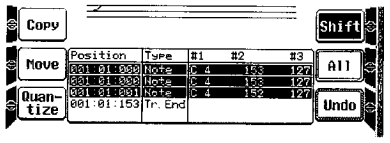
You can use the **EVENT EDIT** screen to select a single event or multiple events.

Selecting a Single Event



Rotate the selector dial to select a single event on the **EVENT EDIT** screen. The currently selected event is the one that is highlighted on the screen.

Selecting a Series of Events

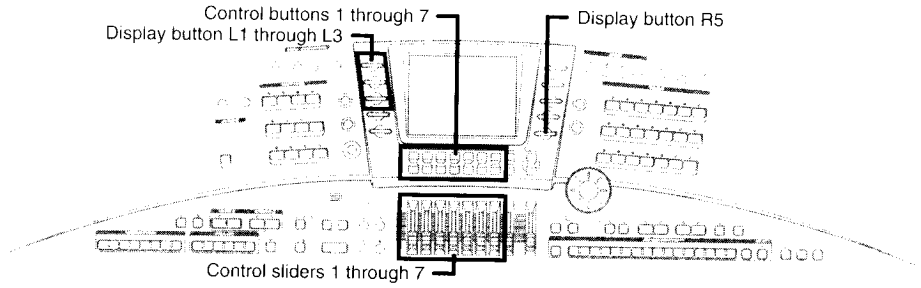


1. Rotate the selector dial to highlight the event at the top of the series of events you want to select.

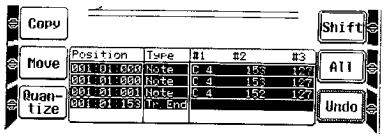
2. Press display button **R3** next to **Shift**.

3. Rotate the selector dial again to expand the highlighting and select the events below the one you selected in step 1.

4. When the events you want to select are highlighted, press display button **R3** to select the highlighted events.



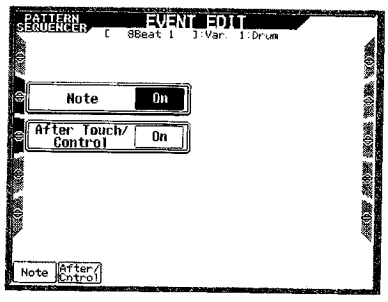
Selecting All Events



Pressing display button **R4** next to **All** selects all of the events on the screen.

About View Select

View Select can be used to control which events appear on the **EVENT EDIT** screen. Press display button **R3** next to **View Select** to display the **EVENT EDIT** screen.



To turn this event on and off	Use this
Note events	Button/Slider 1 (**Note**)
Control event	Button/Slider 2 (**After Touch/Control**)

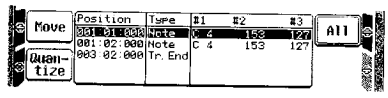
NOTE

- See "About Event Types" on page E-115 for more information about the types of events whose display can be turned on and off.
- You may not be able to perform insert/step input while **View Select** is turned off.

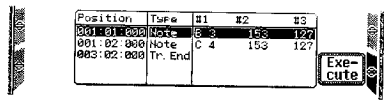
Editing an Event

1. On the Pattern Sequencer menu screen, pre display button **L1** next to **Edit** to display t **EVENT EDIT** screen.

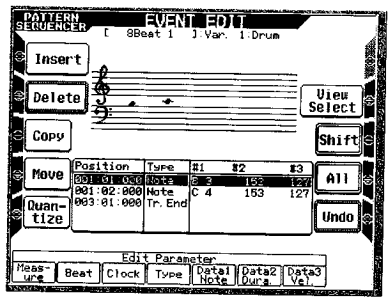
2. Select the one event you want to edit.
   - See "Selecting Events on the **EVENT EDIT** Scre on page E-115 for information about selecting eve



3. Use control buttons 1 through 7 and control sli ers 1 through 7 to change event data.



4. After making sure the data is the way you wa press display button **R5** next to **Execute**.



• This saves the edited event data and returns to the **EVENT EDIT** screen.
• Pressing display button **R5** next to **Undo** at this time undoes your changes.

NOTE

See "About Event Types" on page E-115 for information about each event.

Canceling an Event Edit Operation

You decide that you do not want to keep your edits some time before you press display button **R5 Execute**, press the **EXIT** button. You can also undo the last edit operation you performed by pressing display button **R5** next to **Undo**.

Inserting an Event

1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EVENT EDIT** screen.

2. Select the event that is immediately before or after the location where you want to insert an event.
   • See "Selecting Events on the **EVENT EDIT** Screen" on page E-115 for information about selecting an event.

3. Press display button **L1** next to **Insert**.
   • This inserts an event that is identical to the event you selected in step 2.

4. Edit the newly inserted event to make it the type of event you want.
   • Use control buttons 1 through 7 and sliders 1 through 7 to change the event data.

5. After everything is the way you want, press display button **R5** next to **Execute** to save it and return to the **EVENT EDIT** screen.
   • Pressing display button **R5** next to **Undo** here undoes the insert operation.

Deleting an Event

You can use the following steps to delete a single event or multiple events.

1. On the **EVENT EDIT** screen, select the event or events you want to delete.
   • You can select either a single event or multiple events. See "Selecting Events on the **EVENT EDIT** Screen" on page E-115 for information about how to select events.

2. Press display button **L2** next to **Delete** to delete the selected event(s) and return to the **EVENT EDIT** screen.
   • Pressing display button **R5** next to **Undo** here undoes the delete operation.

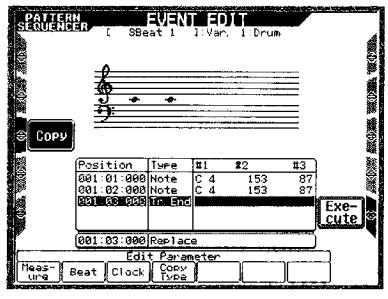
Copying an Event

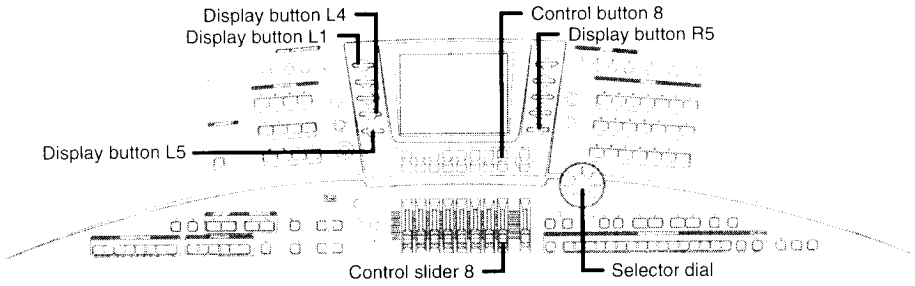
You can use the following steps to copy a single event or multiple events.

1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EVENT EDIT** screen.

2. Select the event or events you want to copy.
   • You can select either a single event or multiple events. See "Selecting Events on the **EVENT EDIT** Screen" on page E-115 for information about how to select events.

3. Press display button **L3** next to **Copy** to display a screen for selecting the destination and the type of copy operation you want to perform.





4. Specify the destination and copy type.

- Use control buttons 1 through 4 and control sliders 1 through 4 to make the following settings.

To specify this	Use this
Destination measure	Button/Slider 1 (**Measure**)
Destination beat	Button/Slider 2 (**Beat**)
Destination clock	Button/Slider 3 (**Clock**) (1 clock = 1/192 beat)
Copy type	Button/Slider 4 (**Copy Type**)

- Selecting **Replace** as the copy type causes the any event at the destination to be replaced with the event you are copying. Selecting **Merge** copies your event to the destination without affecting the event currently at the destination.
- When you are copying multiple events, specify the destination of the first event as the copy destination.

5. Press display button **R5** next to **Execute** to copy the selected event(s) and return to the **EVENT EDIT** screen.

- Pressing display button **R5** next to **Undo** here undoes the copy operation.

Moving an Event

You can use the following steps to move a single event or multiple events.

1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EVENT EDIT** screen.

2. Select the event or events you want to move.

- You can select either a single event or multiple events. See "Selecting Events on the **EVENT EDIT** Screen" on page E-115 for information about how to select events.

3. Press display button **L4** next to **Move** to displa a screen for selecting the destination and the typ of move operation you want to perform.

4. Specify the destination and move type.

- Use control buttons 1 through 4 and control sliders through 4 to make the following settings.

To specify this	Use this
Destination measure	Button/Slider 1 (**Measure**)
Destination beat	Button/Slider 2 (**Beat**)
Destination clock	Button/Slider 3 (**Clock**) (1 clock = 1/192 beat)
Move type	Button/Slider 4 (**Move Type**)

- Selecting **Replace** as the move type causes any even at the destination to be replaced with the event yo are moving. Selecting **Merge** moves your event to th destination without affecting the event currently a the destination.
- When you are moving multiple events, specify th destination of the first event as the move destinatio

5. Press display button **R5** next to **Execute** to mov the selected event(s) and return to the **EVEN EDIT** screen.

- Pressing display button **R5** next to **Undo** here undoe the copy operation.

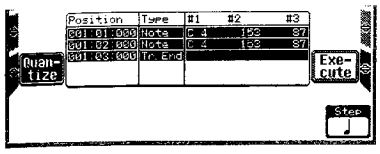
Quantizing an Event

Quantize arranges recorded notes in accordance with a particular timing (eighth notes, quarter notes, etc.). With the Pattern Sequencer, you can perform quantize to arrange notes in the range of whole notes to 64th notes, and triplets in the range of quarter notes to 32nd notes.

1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EVENT EDIT** screen.

2. Select the event you want to quantize.
   - See "Selecting Events on the **EVENT EDIT** Screen" on page E-115 for information about how to select events.

3. Press display button **L5** next to **Quantize** to display the quantize setting screen.

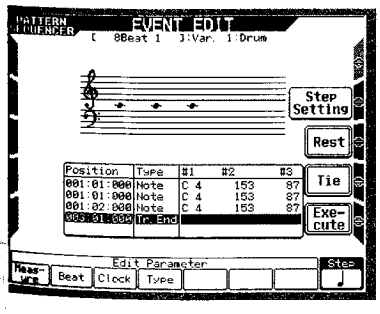


4. Use control button set 8 and control slider 8 to select the quantize setting you want to use.

5. Press display button **R5** next to **Execute** to quantize the selected event according to the setting you selected in step 5 and return to the **EVENT EDIT** screen.
   - Pressing display button **R5** next to **Undo** here undoes the quantize operation.

...ing Step Input

...ecting **Tr.End** (Track End) on the **EVENT EDIT** screen displays the step input screen shown below.



...u can use this screen to input notes and events one-by-one ...the end of a track.

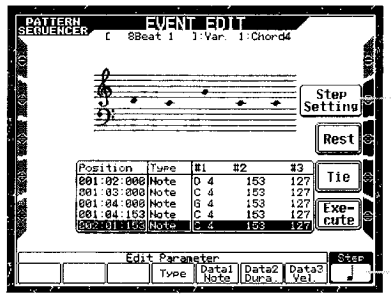
Using Step Input to Input Notes (Events)

The following procedure shows how to use step input to append notes (events) to a track that does not contain any data yet. The procedure is the same if the track already contains data.

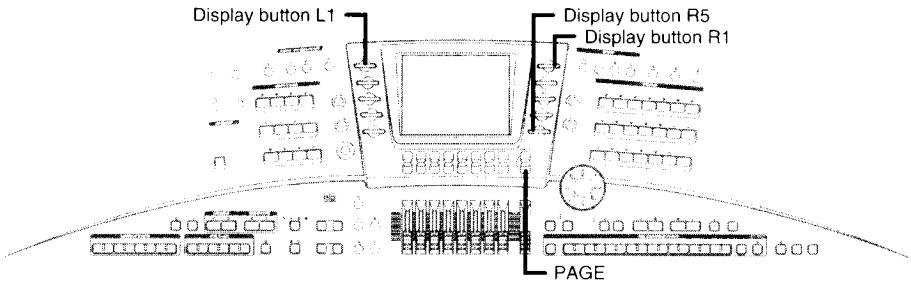
1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EVENT EDIT** screen.
   - If the track selected when you displayed the **EVENT EDIT** screen already contains data, the first event in the track is highlighted first.
   - If the track selected when you displayed the **EVENT EDIT** screen does not contain any data, the track end event is highlighted first.

2. Rotate the selector dial clockwise to display the step input screen shown below.

Pressing display button **R2** next to **Step Setting** displays a screen for setting the duration and velocity of the note you input. See "Input Settings" on page E-121 for more information.

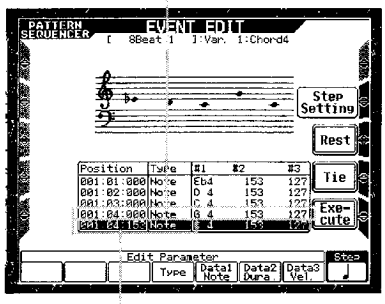


This shows the duration of the current step as a note. Use control button set 8 and control slider 8 to adjust the duration (duration from the current beat clock position to the next step input start position) of the step input. See "About the Step Input Interval" on page E-120 for more information.



3. Press display button **R5** next to **Execute** to input the note event in accordance with the current settings.

The note event is inserted at the location of the previous track end (during step input, the pitch can be specified on the keyboard). The duration (Data 2 = **Duration**) and velocity (Data 3 = **Velocity**) of the note are determined by the input settings. See "Input Settings" on page E-121 for more information.



The track end is shifted in accordance with the step input duration setting (see "About the Step Input Interval" on this page). On this screen, the duration is shown as a quarter note (♩), so the track end is shifted by one beat.

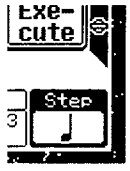
- Pressing display button **R4** next to **Tie** immediately after you input a note extends the duration of the input note by one step.
- Pressing display button **R3** next to **Rest** inputs a one-step rest.

4. You can edit the note events you have just input, if you want.

5. Repeat steps 2 through 4 to input other note events, if you want.

About the Step Input Interval

Input on the step input screen is performed using the note interval (called the "step" here) displayed in the lower right corner of the display. You can specify a whole note, a note in the range from half note to 64th note, dotted notes in the range from half note to 32nd note, or triplicates in the range from quarter note to 32nd note. Each note event you input causes the track end to shift by beats and clocks in accordance with the current step setting, as shown below.



NOTE

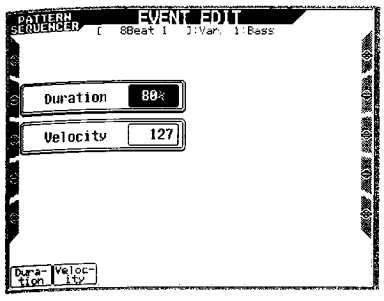
- You can also use keyboard keys to input notes.

Step	Beat	Clock
Whole Note	4	0
Half Note	2	0
Quarter Note	1	0
8th Note	0	96
16th Note	0	48
32nd Note	0	24
64th Note	0	12
Dotted Half Note	3	0
Dotted Quarter Note	1	96
Dotted 8th Note	0	144
Dotted 16th Note	0	72
Dotted 32nd Note	0	36
Triplicate Half Note	1	64
Triplicate Quarter Note	0	128
Triplicate 8th Note	0	64
Triplicate 16th Note	0	32
Triplicate 32nd Note	0	16

Use control button set 8 and control slider 8 to change the step input interval. This also causes the note in the lower right corner of the display to change.

Input Settings

When inputting a note event using step input, you can also specify initial duration and velocity values. Press display button **R2** next to **Step Setting** to display the screen for making these settings.



Button/Slider 1 Duration
The duration is set as a percent of the step (see "About the Step Input Interval"). A setting of 100% makes the step the same length as the note you input.

Button/Slider 2 Velocity
Sound strength setting in the range of 1 to 127

To exit the setting screen and return to the input screen, press **EXIT**.

Changing One Touch Preset Settings (User One Touch)

You can record one touch preset (page E-50) to the accompaniment pattern you are currently creating. Selecting a stored accompaniment pattern and pressing a **ONE TOUCH PRESET** button recalls the settings you recorded as a one touch preset to the accompaniment pattern.

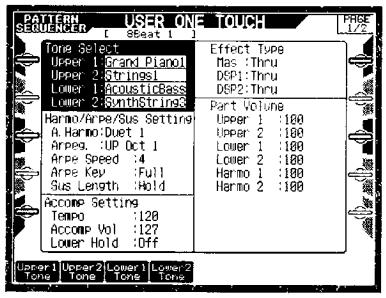
NOTE

- Use the **USER ONE TOUCH** screen to assign a one touch preset to an accompaniment pattern you create.

Making One Touch Preset Settings

1. On the Pattern Sequencer menu screen, press display button **L1** next to **Edit** to display the **EVENT EDIT** screen.

2. Press display button **R1** next to **User One Touch** to display page 1 of the **USER ONE TOUCH** screen.

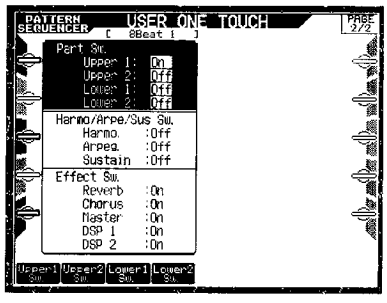


3. Make the settings you want to the first screen.

- Press display button **L1**, **L3**, **L5**, **R1**, or **R3** to select a group. The currently selected group is highlighted on the display.
- When you select a group, its parameters appear along the bottom of the display screen indicating they can be adjusted using the control buttons and sliders.

L1 Tone Select
Tone selection for each melody part*1
L3 Harmo/Arpe/Sus Setting
Auto harmonize, arpeggiator, and sustain settings*2
L5 Accomp Setting
Auto accompaniment settings*3
R1 Effect Type
Effect settings*4
R3 Part Volume
Melody part volume settings*5

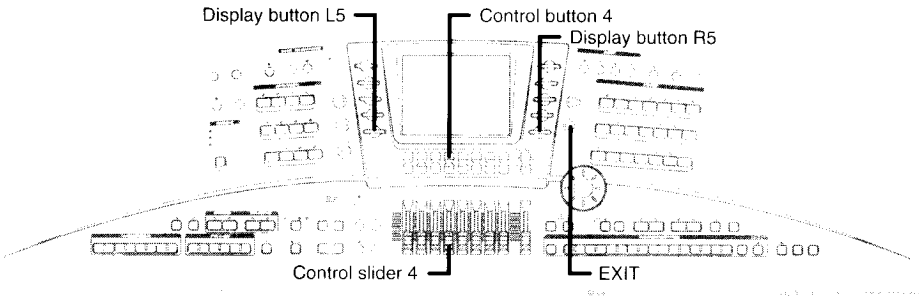
4. Press the **PAGE** button to change to PAGE 2.



5. Make the settings you want on PAGE 2, using the same procedures you used on PAGE 1.

L1 Part Sw.
Toggles the melody part on and off.*1
L3 Harmo/Arpe/Sus Sw.
Toggles auto harmonize, arpeggiator, and sustain on and off.*2
L5 Effect Sw.
Toggles effects on and off.*4

- Each press of the **PAGE** button changes between PAGE 1 and PAGE 2.



6. After you are finished making the settings you want, press the **EXIT** button to return to the playback screen.

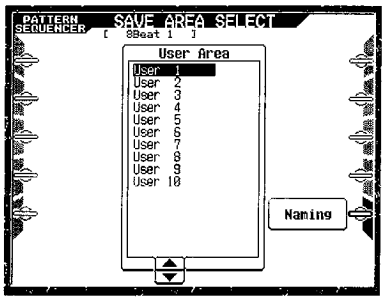
*1 See "UPPER 1, UPPER 2, LOWER 1, LOWER 2" on page E-22.
*2 See "Keyboard Setup Reference" on page E-154.
*3 See "Using Rhythms and Auto Accompaniments" on page E-38 for information about tempo and accompaniment volume, and "Keyboard Setup Reference" on page E-154 for information about accompaniment and chord settings.
*4 See "Applying Effects to Tones" on page E-32.
*5 See "Using the Mixer Mode to Adjust the Volume of Internal Parts" on page E-52.

Saving Accompaniment Patterns

The rhythm pattern memory of the keyboard has a "user area" in the **USER** group that you can use to save up to 10 of your original rhythm patterns. The following procedure describes how to save the current Pattern Sequencer work area data as a user accompaniment pattern.

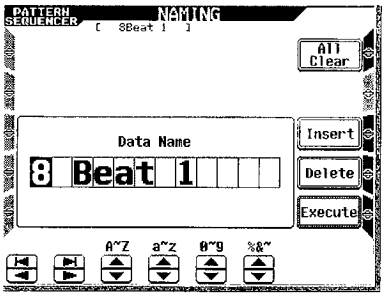
Saving an Original Accompaniment Pattern

1. On the Pattern Sequencer menu screen, press display button **L5** next to **Save**.
   - This displays a screen for specifying the user area where you want to store the accompaniment pattern.



2. Use control button set 4 or control slider 4 to specify a user area in the range of **USER1** to **USER10**.

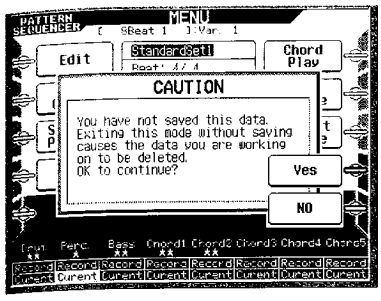
3. Press display button **R5** next to **Naming** to display the rhythm name input screen.



4. Input the rhythm name you want.
   - The highlighted frame on the screen is the current input location. Use sets 3 through 6 of the control buttons (or control sliders 3 through 6) to input characters.
   - Pressing the lower 1 and 2 control buttons moves the highlighting left and right. Pressing the upper 1 and 2 control buttons causes the highlighting to jump to the far left or far right position.
   - To clear all of the characters you have input, press the display button **R1** next to **All Clear**.
   - To insert a space at the current input location, press the display button **R3** next to **Insert**.
   - To delete the character at the current input location press the display button **R4** next to **Delete**.
   - After you input the rhythm name, press display button **R5** next to **Execute** to save the accompaniment pattern.

NOTE

- The warning message shown below appears on the screen if you press the **EXIT** button or the **PATTERN SEQUENCER** button on the Pattern Sequencer menu screen without saving the accompaniment pattern.



- If you do not need to save the work area contents, press display button **R4** (**Yes**) to discard the data and exit the Pattern Sequencer.
- If you want to save the Pattern Sequencer work memory contents, press display button **R5** (**No**), and then perform the above procedure to save it.
- You can recall the accompaniment patterns you wave using the same procedures you use for selecting built-in rhythms. See "Selecting a Rhythm" on page E-38 for more information.

Extracting an Accompaniment Pattern from a Song (SONG TO PATTERN)

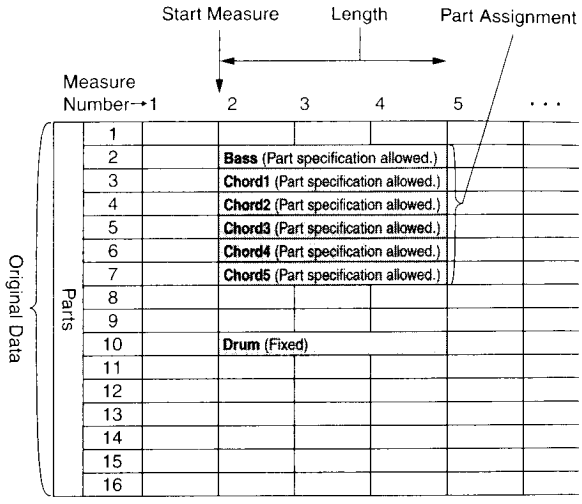
Use the procedures in this section to extract accompaniment patterns from a Standard MIDI File (SMF) or from a Song Sequencer Song. Once you extract a pattern, you can edit it using the procedures under "Editing the Pattern Sequencer Work Area Accompaniment Pattern" on pages E-110 through E-122 and then store it as your own user pattern.

IMPORTANT!

- The term "source data" in this section refers to a Standard MIDI File (SMF) or Song Sequencer song.
- The term "song" in this section always means "Song Studio song" unless otherwise noted. Song Studio "songs" are different from Song Sequencer "songs" (page E-76).

How Accompaniment Pattern Extraction Works

SMF data and Song Sequencer songs are made up of 16 tracks. The accompaniment patterns of such data can be obtained by cutting out the tracks that contain melody data. Accompaniment pattern extraction is performed in accordance with the following parameters, which can be set for each element.



Start Measure

Specifies, as a measure number, the measure in the source data from which you want to start extracting the accompaniment pattern. You can specify the start measure by playing back the source data and pressing a button when playback reaches the point from which you want extraction to start.

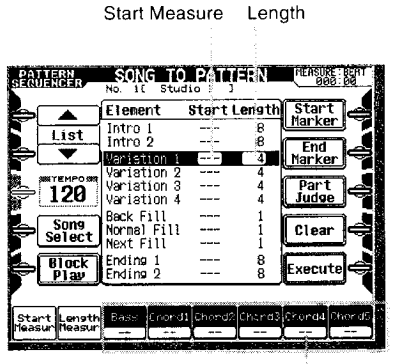
Length

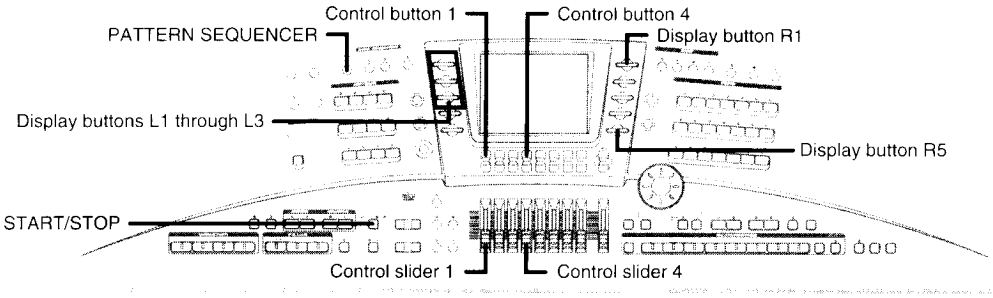
Specifies how many measures of data you want to extract.

Part Assignment

This parameter specifies how the parts of the source data should be assigned to accompaniment pattern parts (Bass, Chord 1 through Chord 5). In the above example, source data parts 2 through 7 are allocated respectively to the Bass part and then Chord 1 through Chord 5. You can specify parts, or you can leave it up to the keyboard to make optimal assignments automatically.

The following shows how each parameter appears on the **SONG TO PATTERN** screen.

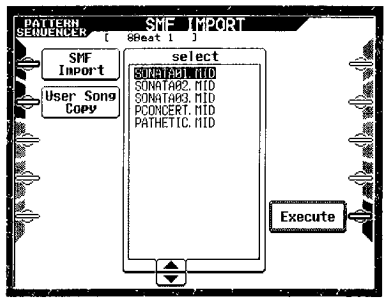




The following is the procedure you should use to extract accompaniment pattern data from source data.

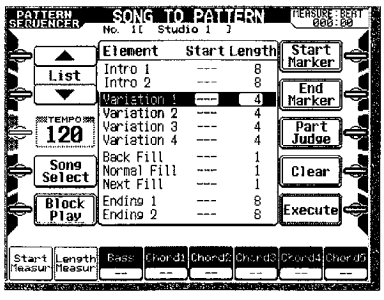
1. Press the **PATTERN SEQUENCER** button to display the Pattern Sequencer menu screen.
   - The lamp above the **PATTERN SEQUENCER** button also lights at this time.

2. Press display button **L3** next to **Song To Pattern** to display the **SMF IMPORT** screen.



3. Use control button set 4 and control slider 4 to select a Standard MIDI File (SMF).
   - If you want to select a Song Sequencer song, press display button **L2** next to **User Song Copy**.
   - Note that you cannot extract accompaniment pattern data from the system track

4. Press display button **R5** next to **Execute** to import the source data.
   - The keyboard returns to the **SONG TO PATTERN** screen after file import is complete.



5. Use display buttons **L1** and **L2** to select the element whose settings you want to change.

6. Use control button set 2 and control slider 2 to specify the element length in a range of 1 through 16.
   - The length setting for a fill-in element (**Back Fill**, **Normal Fill**, **Next Fill**) is fixed at 1.

7. Specify the start measure.
   - You can specify the start measure during playback of the data, or by specifying a value with control button set 1 and control slider 1. See "Specifying the Start Measure During Playback" and "Specifying the Start Measure with the Control Button/Slider" at the end of this procedure.

8. Allocate the source data parts to accompaniment pattern parts.
   - Use control buttons 3 through 8 and control sliders 3 through 8 to allocated source data parts to accompaniment data parts Bass, and Chord1 through Chord5.
   - Pressing display button **R3** next to **Part Judge** analyzes the source data automatically assigns the source data parts to accompaniment parts. You can then use control buttons 3 through 8 and control sliders 3 through 8 to change the settings if you want.
   - Part Judge is disabled while playback of data in the Pattern Sequencer work area is in progress.

9. Repeat steps 5 through 8 for all the other elements.
   - Pressing display button **R4** next to **Clear** while you are making settings clears all of the settings for the currently selected parameter. You can then make the settings you want from scratch.

s display button **R5** next to **Execute** to start ual accompaniment pattern extraction.

- Extracting an accompaniment pattern overwrites the data in the Pattern Sequencer work area. You can use the procedure under "Saving an Accompaniment Pattern" on page E-122 to save the data before extracting an accompaniment pattern.
- After extraction is complete, the display returns to the Song Sequencer menu screen.

cifying the Start Measure during Playback

orm the following steps for step 8 of the above proce- to playback the source data and specify the start mea- with the press of a button.

Press the **START/STOP** button to start playback of the source data.

- After starting playback, you can use the **TEMPO** buttons to adjust the tempo of the playback, if you want.
- The tempo setting you make becomes the initial default tempo for that rhythm.

When playback reaches the location of the element you specified in step 5 of the above procedure, press display button **R1** next to **Start Marker**.

- The number of the measure that is playing when you press the button is input as the start measure.
- Instead of specifying the start measure here, you could also press display button **R2** next to **End Marker** to specify the end measure. If you specify an end measure, extracted pattern consists of the measures in front of the end measure. How many measures depends on the length you specify in step 6 of the above procedure.

Press the **START/STOP** button again to stop playback.

At this point, you could use control button set 1 and control slider 1 to adjust the start measure value, if you want.

Specifying the Start Measure with the Control Button/Slider

In step 8 of the above procedure, use control button set 1 and control slider 1 to change the start measure value currently shown on the display.

NOTE

- The extracted accompaniment pattern is initially stored in the Pattern Sequencer work area. You can use the procedures under "Editing the Pattern Sequencer Work Area Accompaniment Pattern" on page E-110 to edit the Pattern Sequencer work area contents.
- See "Saving an Original Accompaniment Pattern" on page E-122 for information about how to save the Pattern Sequencer work area contents.
- To select different song data, press display button **L4** next to **Song Select**.

Using Song Studio

Song Studio helps you to get the most out of the auto accompaniment functions of this keyboard.

When you normally use auto accompaniment, your first select and start the auto accompaniment you want to use. Next, you play chords in the auto accompaniment keyboard range and switch between accompaniment pattern elements (fill-ins, breaks, etc.) as required. All this time you are also playing the melody notes you want.

With Song Studio, you can pre-record auto accompaniment chord progressions and element switches, and then play along on the keyboard as it plays back.

A Song Studio song is created by extracting chord progressions and other parts from a Standard MIDI File (SMF). This means that once you obtain an SMF with the song you want to play, you can extract the accompaniment data, edit it, and then save it to memory for instant recall whenever you need it. You can also use Song Studio to extract data from a Song Sequencer song.

IMPORTANT!

The term "source data" in this section refers to the Standard MIDI File (SMF) or a Song Sequencer song.

Song Studio Data

Each Song Studio song consists of a system track, melody tracks, and header data. Song Studio can have up to 10 songs stored in memory at one time.

System Track Data

Chord progressions and element changes are stored in the system track. Chord progressions can be extracted from source data.

Melody Track Data

The melody tracks store melody notes. Melody notes can be extracted from source data. The data actually store in the melody traces are the same as that stored by Song Sequencer tracks. See "Track 1 to 16 Data" on page E-77 for more information.

Header Data

Whenever you start to record a Song Studio song, the current accompaniment pattern setting, the current tone setting for each part, and other control panel settings are recorded as "header data." The contents of Song Studio header data are the same as those for Song Sequencer header data (page E-87).

Song Studio Features

The following describes what features you can access wh using Song Studio.

Accompaniment Extraction

- You can extract chord progressions from a source file an automatically create up to 999 measures of data. Auto ac companiment is applied to the extracted chord progressio
- You can extract any one track from the source file as th melody track, and play it at the same time as the cho progression.
- You can extract the auto accompaniment pattern from th source file and edit it to make an original pattern. As wit the Pattern Sequencer, you can save original auto accom paniment patterns as user rhythms for later recall. All this means you can build an entire library of your own a companiment patterns that produce exactly the effect yo want.

Data Editing

- CHORD EDIT
  Editing of the system track contents is called "chord edi ing." You can edit each of the individual chords extracte from the source data, add measures, and even insert ele ment button operations.
- MELODY EVENT EDIT
  You can edit events in the melody track. This type of edi ing is the same as the editing of events in Song Sequence external tracks.
- PANEL REC
  Use panel recording to change Song Studio header data.
- Song Studio Song Edit
  You can delete, copy, and rename a Song Studio song.

Playback

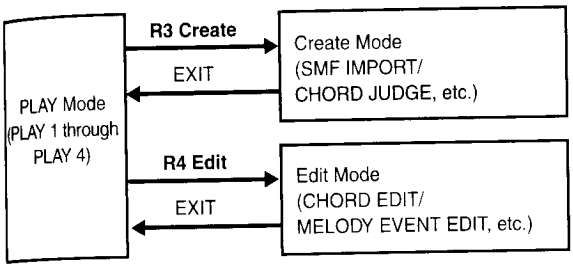
- Chord progressions can be displayed and played back based on one of three chord fingering methods: CASIO Chord (Maj, m, 7, m7 only), normal (on bass chord turned off), or on bass chord turned on.
- The display can be set up to show a chord chart, with the beat cursor indicating the chord you should play. This makes it possible for you to play auto accompaniment while monitoring the chords on the display.
- You can change keyboard control panel settings at any time during playback. An easy operation restores control panel settings to those registered as header data.

Navigating Between Song Studio Modes

Song Studio has three modes, each of which is described below.

- Play Mode
  This is the mode whose screen first appears whenever you enter the Song Studio. Use this mode to play back a Song Studio song.
- Create Mode
  Use this mode to select the source file, and to actually extract chords and patterns.
- Edit Mode
  Use the Edit Mode to edit chords, melody, panel recording, and Song Studio songs.

Pressing the **SONG STUDIO** button displays the Song Studio play screen, from which you can access all the other modes.



- The text inside the parentheses indicates applicable screen titles.

Creating a Song Studio Song

This section describes how to actually create a Song Studio song.

General Steps

The following shows how a Song Studio song is created using the Create Mode and Play Mode.

① Source file import

In this step, you import a Standard MIDI File (SMF) from a floppy diskette or from Song Sequencer memory into a temporary memory area. Once the source data is in the temporary area, you can perform steps ② through ④.

***About the work area**

Importing source data into Song Studio causes it to be placed into a temporary work area. The data in the work area is deleted automatically whenever you change to another Song Studio song or when you exit Song Studio.

② Chord extraction

In this step, you extract the chord progression from the data in the temporary area. When creating a Song Studio song, you extract chords immediately after importing the source file in step ①.

③ Melody track import

In this step, you can select any one of the parts of the data in the temporary area and import it into the Song Studio melody track.

④ Accompaniment pattern extraction

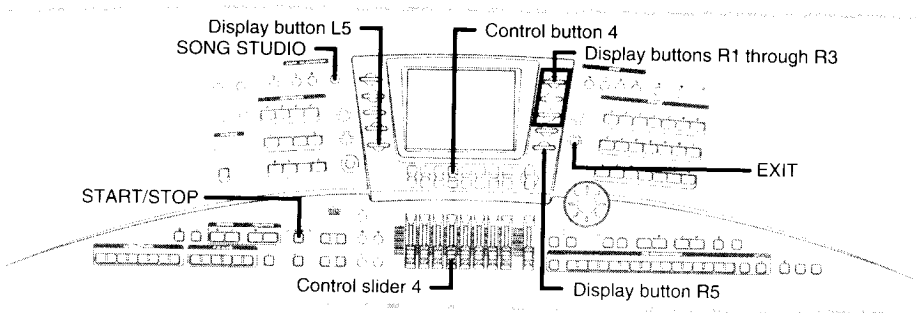
In this step, you can cut part of the data in the temporary area and use it to create an accompaniment pattern. You can use the accompaniment pattern you create for Song Studio playback and as a standard auto accompaniment pattern, just like user rhythms you create using the Pattern Sequencer.

⑤ Header data registration

In this step, you register the accompaniment pattern, tone, etc as header data. This data is used during playback of the Song Studio song you create.

NOTE

- Steps ① through ④ are performed in the Create Mode. Step ⑤ is performed in the Edit Mode.
- Perform steps ③ through ⑤ as required. By performing all of the steps, you end up with Song Studio data that is quite complete. Note that you can perform steps ② through ⑤ in any sequence, but the normal sequence is ②, ③, ④, ⑤.



Creating a Song Studio Song

You can create up to 10 songs and store them in Song Studio memory. The following procedure describes how to create one Song Studio song.

IMPORTANT!

The term "song" in this section always means "Song Studio song" unless otherwise noted. Song Studio "songs" are different from Song Sequencer "songs" (page E-76).

Extracting the Chord Progression

The following describes how to import source data into the Song Studio temporary area, and how to extract the chord progression from the data. It corresponds to steps (1) and (2) under "General Steps" on page E-127.

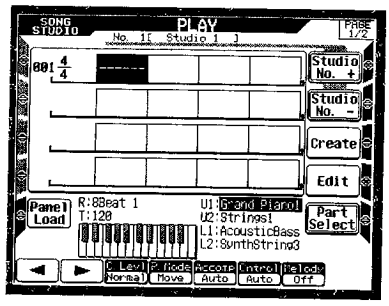
NOTE

- The following procedure describes how to import and then extract chord progression data from a Standard MIDI File. The procedure is the same for a Song Sequencer song, except as specifically noted otherwise.

Getting Ready

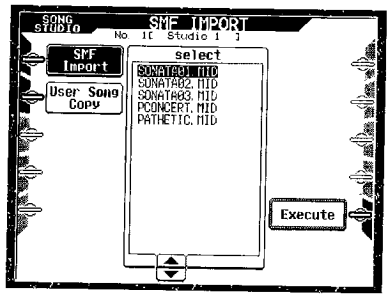
Insert the floppy diskette that contains the Standard MIDI File you want to import into the keyboard's disk drive. See "Using the Floppy Disk Drive" on page E-140.

1. Press the **SONG STUDIO** button to display the Song Studio play screen.
   - This also causes the lamp above the button to light.



2. Use display buttons **R1** and **R2** to select a Song Studio song.
   - The currently selected song name (which is initially a number) is shown below the screen title.

3. Press display button **R3** next to **Create** to display the **SMF IMPORT** screen.



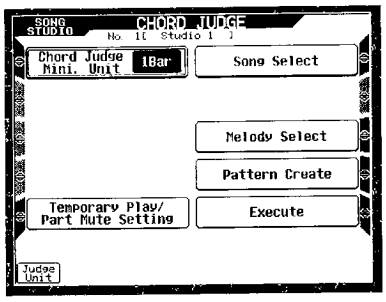
NOTE

- If the temporary area already contains source data, pressing display button **R3 Create** changes to the **CHORD JUDGE** screen (step 5 below).

4. Use control button set 4 and control slider 4 to select the Standard MIDI File you want to import.
   - When importing Song Sequencer data, press display button **L2** next to **User Song Copy**.
   - When using data created with the Song Sequencer you cannot extract chords, extract the rhythm pattern or select the melody of the system track.

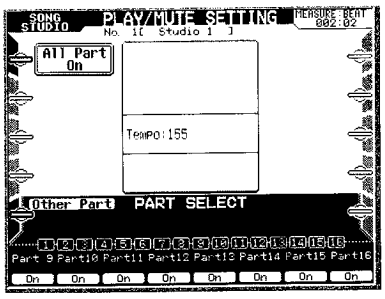
5. Press display button **R5** next to **Execute** to actually start importing data.

- The **CHORD JUDGE** screen appears after the time it takes to complete the source data import operation.



- At this point, you could press display button **R5** next to **Execute** and perform chord extraction. Before that, however, you should perform step 6 below to play back the source data in the temporary area and mute any parts that are not required for chord extraction.

6. Press display button **L5** next to **Temporary Play/ Part Mute Setting** to display the **PLAY/MUTE SETTING** screen.



- Pressing the **START/STOP** button plays back the data in the temporary area. During playback, the volume level of each part is shown by the level indicators on the display. To stop playback, press the **START/STOP** button again.
- Use control buttons 1 through 8 to mute any part you want. If the part you want to mute is not on the screen, press display button **L5** next to **Other Part** to change the menu of parts along the bottom of the screen. Parts that have frames around them are on (unmuted), while those without frames are off (muted). Pressing display button **L1** next to **All Part On** turns all muted parts back on.
- Any parts you mute are not used during the chord extraction operation. Muting parts that are not related to the chord progression helps to increase the accuracy of the chord progression produced by Song Studio.
- Muting the melody part (instrumental and vocal) and phrase part (solo) makes it easier to extract chords.

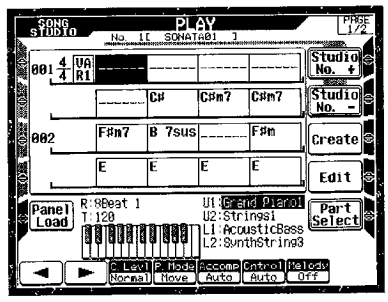
7. After muting unnecessary parts, press the **EXIT** button to return to the **CHORD JUDGE** screen.

8. Specify the minimum number of measures you want to use as the unit for chord extraction.

- Use control button set 1 to change the value next to **Chord Judge Mini.Unit** (Chord Judge Minimum Unit). A setting of **1Measr** specifies one measure. A setting of 1Beat to 3Beat specifies the corresponding number of beats.

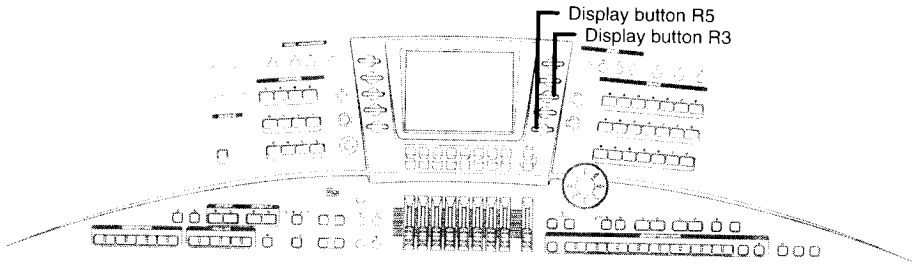
9. Press display button **R5** next to **Execute** to start chord extraction.

- After extraction is complete, the display returns to the playback screen, which shows the results of the extraction.



- Pressing the **START/STOP** button here starts play of the currently selected accompaniment pattern, along with the extracted chord progression.

The above procedure creates the basic part (chord progression only) of a Song Studio song. After this, you should also import the melody track (see "Importing Melody Track Data" below), extract the accompaniment pattern (see "Extracting an Accompaniment Pattern" on page E-131), and register header data (see "Registering Header Data" on page E-134) to add the finishing touches required to create a polished Song Studio song.

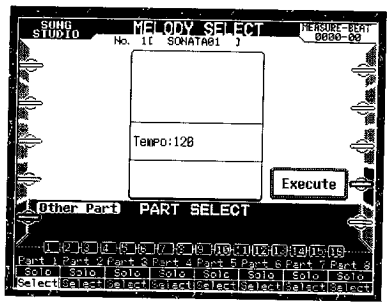


Importing Melody Track Data

Use the following procedure to import melody data from the data in the temporary area into the Song Studio melody track. You should perform this procedure after you perform the procedure under "Extracting the Chord Progression" on page E-128 or "Extracting the Accompaniment Pattern" on page E-131.

1. On the Song Studio play screen, press display button **R3** next to **Create** to display the **CHORD JUDGE** screen.

2. Press display button **R3** next to **Melody Select** to display the **MELODY SELECT** screen shown below.



- Pressing the **START/STOP** button plays back the data in the temporary area. During playback, the volume level of each part is shown by the level indicators on the display. To stop playback, press the **START/STOP** button again.
- Use upper control buttons 1 through 8 to select parts you want to play back alone (**solo**), so you can determine which parts you want to include in the melody track. The track that is currently selected for solo play is indicated by **Solo** appearing above its control buttons. If the part you want to mute is not on the screen, press display button **L5** next to **Other Part** to change the menu of parts along the bottom of the screen.
- While listening to playback of all parts, you can use lower control buttons 1 through 8 to select which parts you want to import.

3. After selecting the parts you want, press displ button **R4** next to **Execute** to start import.

- After import is complete, the display returns to play screen.
- Pressing the **START/STOP** button at this time sta play of the currently selected accompaniment patte and chord progression, along with the melody yo just imported into the Song Studio melody track.

s you want, press display
ute to start import.
e, the display returns to the

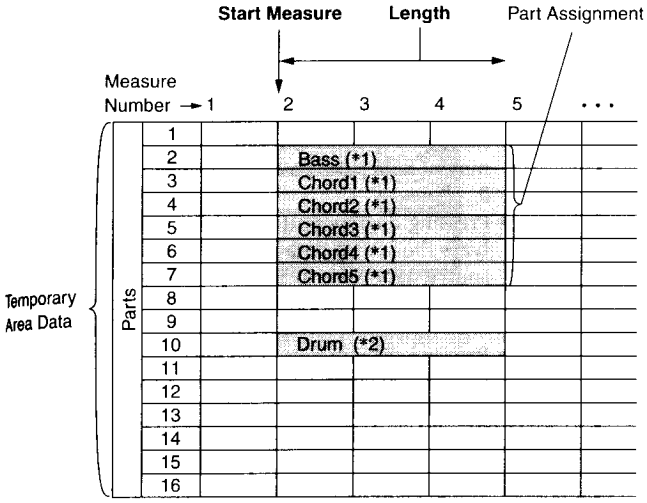
OP button at this time starts
ected accompaniment pattern
along with the melody you
ong Studio melody track.

Extracting an Accompaniment Pattern

Use the procedures in this section to extract the accompaniment pattern from data in the temporary area. Once you extract a pattern, you can use the edit it using the procedures under "Editing the Pattern Sequencer Work Area Accompaniment Pattern" on pages E-110 through E-122 and then store it as your own user pattern, just as you do with Pattern Sequencer data.

•How Accompaniment Pattern Extraction Works

Importing source data into the temporary area imports 16 tracks.
The accompaniment pattern of such data can be obtained by cutting out the tracks that contain melody data. Accompaniment pattern extraction is performed in accordance with the following parameters, which can be set for each element.



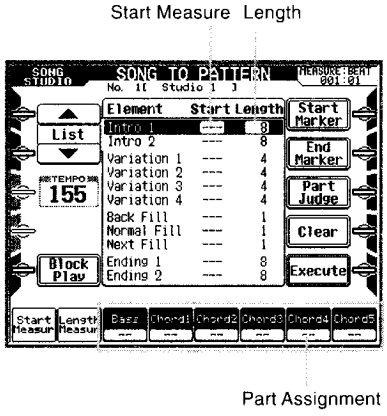
(*1) Part specification allowed.
(*2) Fixed

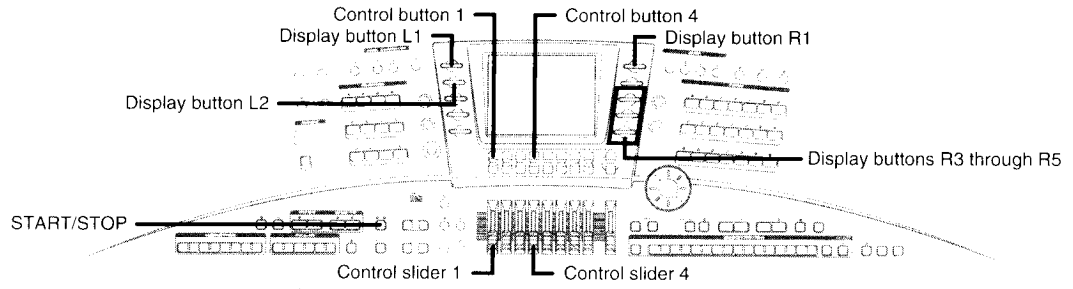
Start Measure
Specifies, as a measure number, the measure in the source data from which you want to start extracting the accompaniment pattern. You can specify the start measure by playing back the source data and pressing a button when playback reaches the point from which you want extraction to start.

Length
Specifies how many measures of data you want to extract.

Part Assignment
This parameter specifies how the parts of the source data should be assigned to accompaniment pattern parts (Bass, Chord1 through Chord5). In the example, source data parts 2 through 7 are allocated respectively to the Bass part and then Chord 1 through Chord 5. You can specify parts, or you can leave it up to the keyboard to make optimal assignments automatically.

The following shows how each parameter appears on the **SONG TO PATTERN** screen.

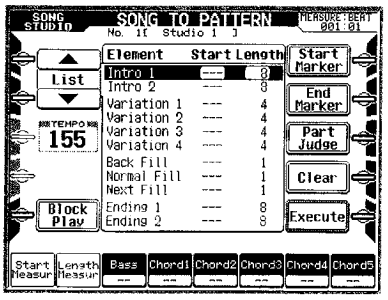




Perform the following procedure after the one under "Extracting the Chord Progression" on page E-128 or after "Importing Melody Track Data" on page E-130.

1. On the Song Studio play screen, press display button **R3** next to **Create** to display the **CHORD JUDGE** screen.

2. Press display button **R4** next to **Pattern Create** to display the **SONG TO PATTERN** screen. Use display buttons **L1** and **L2** to select the element whose settings you want to change.



3. Use display buttons **L1** and **L2** to select the element whose settings you want to change.

4. Use control button set 2 and control slider 2 to specify the element length in a range of 1 through 16.

- The length setting for a fill-in element (**Back Fill, Normal Fill, Next Fill**) is fixed at 1.

5. Specify the start measure.

- You can specify the start measure during playback of the data, or by specifying a value with control button set 2 and control slider 2. See "Specifying the Start Measure During Playback" and "Specifying the Start Measure with the Control Button/Slider" at the end of this procedure.

6. Allocate the source data parts to accompaniment pattern parts.

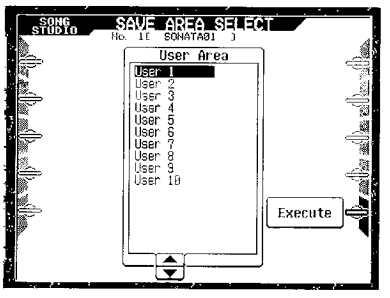
- Use control buttons 3 through 8 and control sliders 3 through 8 to allocated source data parts to accompaniment data parts Bass, and Chord 1 through Chord 5.
- Pressing display button **R3** next to **Part Judge** analyzes the source data and automatically assigns the source data parts to accompaniment parts. You can then use control buttons 3 through 8 and control sliders 3 through 8 to change the settings if you want.
- Pressing display button **L5** next to **Block Play** plays back the data from the measure selected as the current element. At this time, only the parts (Bass and Chord 1 to 5) selected for element settings are played. You can use this technique to text elements for the extracted pattern.

7. Repeat steps 3 through 6 for all the other elements.

- Pressing display button **R4** next to **Clear** while you are making settings clears all of the settings for the currently selected parameter. You can then make the settings you want from scratch.
- You cannot extract any element for which a start measure is not specified.

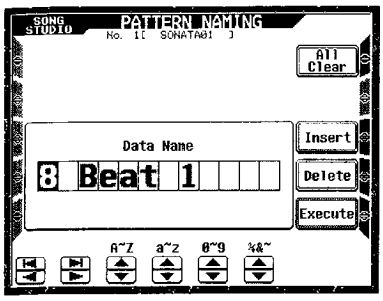
8. Press display button **R5** next to **Execute** to start actual accompaniment pattern extraction.

- After extraction is complete, the display changes to the **USER PATTERN AREA** screen.



9. Use control button set 4 or control slider 4 to select the user area (**USER1** through **USER10**) where you want to store the accompaniment pattern.

10. Press display button **R5** next to **Execute** to displays the **PATTERN NAMING** screen shown below.



11. Input the name you want to assign to the accompaniment pattern.

- The highlighted frame on the screen is the current input location. Use sets 3 through 6 of the control buttons to input characters.
- Pressing the lower 1 and 2 control buttons moves the highlighting left and right. Pressing the upper 1 and 2 control buttons causes the highlighting to jump to the far left or far right position.
- To clear all of the characters you have input, press the display button **R1** next to **All Clear**.
- To insert a space at the current input location, press the display button **R3** next to **Insert**.
- To delete the character at the current input location, press the display button **R4** next to **Delete**.

12. After you are finished inputting the song name you want, press the display button **R5** next to **Execute**.

- This stores the extracted accompaniment pattern into the user area you specified and then returns to the Song Studio play screen.

Specifying the Start Measure during Playback

Perform the following steps for step 5 of the above procedure to playback the source data and specify the start measure with the press of a button.

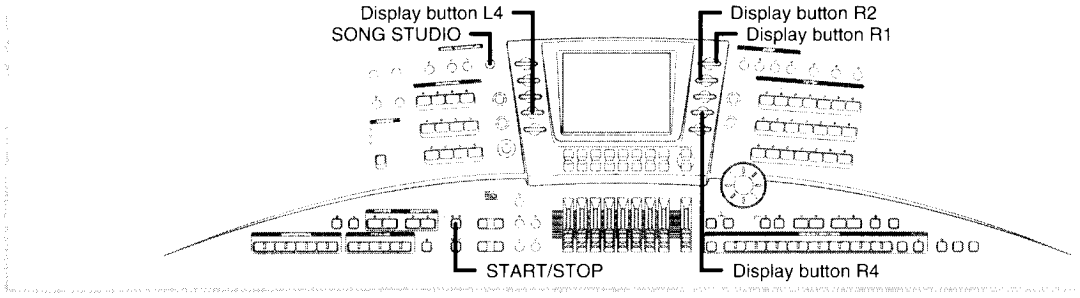
1. Press the **START/STOP** button to start playback of the source data.
   - After starting playback, you can use the **TEMPO** buttons to adjust the tempo of the playback, if you want.
2. When playback reaches the location of the element you specified in step 3 of the above procedure, press display button **R1** next to **Start Marker**.
   - The number of the measure that is playing when you press the button is input as the start measure.
   - Instead of specifying the start measure here, you could also press display button **R2** next to **End Marker** to specify the end measure. If you specify an end measure, the extracted pattern consists of the measures in front of the end measure. How many measures depends on the length you specify in step 4 of the above procedure.
3. Press the **START/STOP** button again to stop playback.
4. At this point, you could use control button set 1 and control slider 1 to adjust the start measure value, if you want.

Specifying the Start Measure with the Control Button/Slider

In step 5 of the above procedure, use control button set 1 and control slider 1 to change the start measure value currently shown on the display.

NOTE

- Perform the following procedure under "Registering Header Data" when you want to use the accompaniment pattern you created with the above procedure in the Song Studio song you are currently creating.



Registering Header Data

You can register the initial playback accompaniment pattern selection, part tones, and other keyboard control panel settings as header data. The type of data you can register as header data is the same as that for Song Sequencer header data.

Getting Ready

- While the Song Studio playback screen is on the display, change the keyboard's control panel settings to those you want to register in the header of the Song Studio song you are creating.
- You can press the **START/STOP** button to start playback of the Song Studio song and monitor the effects of the settings as you make them.

1. Press display button **R4** next to **Edit** to display the **CHORD EDIT** screen.
   - You can also use the **CHORD EDIT** screen to change keyboard control panel settings. However, you cannot play back Song Studio data.

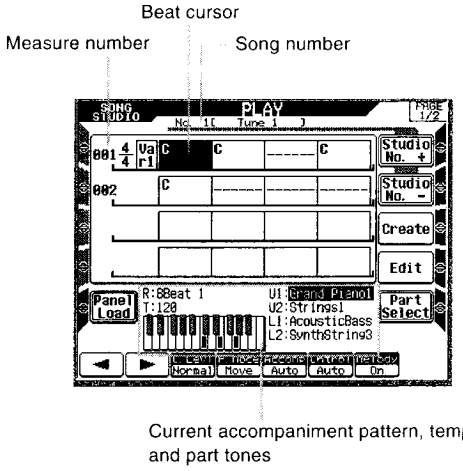
2. Press display button **L4** next to **Panel Rec** to register the keyboard's current settings as header data.

Playing Back a Song Studio Song

You can playback a Song Studio song and play along on the keyboard.

Playing Back a Song Studio Song

1. Press the **SONG STUDIO** button to display the Song Studio playback screen.

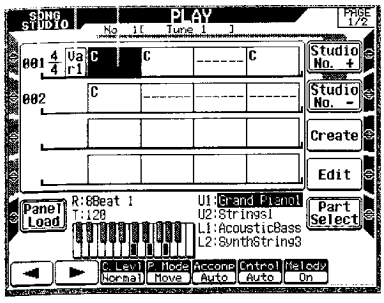


2. Use display buttons **R1** and **R2** to select the Song Studio song you want to play.
   - The number you select appears under the screen title.
   - You can change the keyboard's control panel settings before starting playback or while playback is in progress. Pressing display button **L5** next to **Panel Load** returns keyboard control panel parameters to their initial (header data) settings.

3. Press the **START/STOP** button to start playback.
   - You can play along with the Song Studio song on the keyboard.
   - Pressing display button **L5** next to **Block Play** plays back the data from the measure selected as the current element. At this time, only the parts (Bass and Chord 1 to 5) selected for element settings are played. You can use this technique to text elements for the extracted pattern.
   - Playback stops when the end of the data is reached. To stop playback part way through, press the **START/STOP** button again.
   - Playback stops when the end of the system track or the auto accompaniment track you are editing is reached.

Playback Screen Operations

The following describes the settings you can make and the operations you can perform while the Song Studio playback screen is on the display.



Control Button 1, 2 (</>)

Use these control buttons to move the beat cursor left and right while Song Studio data playback is stopped.

Control Button 3 (**C.Level**)

There are three "chord levels" that can be used during playback: the Casio Chord level (**CC**), the Normal chord level (**Normal**), and the **On Bass** level (**On Bass**). The Casio Chord level plays four types of chords (Maj, m, 7, m7) only; the Normal level plays back all FINGERED chords except those played by the On Bass level; and the On Bass level plays back all FINGERED chords, including on bass chords. The chord display changes in accordance with the chord level you select.

Control Button 4 (**P.Mode**)

Select **Move** when you want to start Song Studio playback using the **START/STOP** button. The beat cursor to moves automatically with playback in this case.

Select **Stay** when you want the **START/STOP** button to perform its normal functions (rhythm and auto accompaniment start/stop) without starting Song Studio playback. In this case, you can move the cursor manually, and check chords at your own pace.

Control Button 5 (**Accomp**)

Select **Auto** when you want auto accompaniment chords to be played in accordance with the chord progression as it plays back. Select **Off** if you do not want auto accompaniment chords to change with playback chords. Select **Off** for this option when you want to practice playing chords yourself in the accompaniment keyboard range.

Control Button 6 (**Cntrol**)

Select **Auto** when you want rhythm elements to be played back or **Off** when you do not want element data to be played back.

See "Inserting and Modifying Accompaniment Pattern Elements" on page E-136.

Control Button 7 (**Melody**)

Use this button to turn melody track play on and off.

Editing a Song Studio Song

The procedures in this section can be used to edit a Song Studio song you have created.

Editing Types

The following are the types of editing you can perform on Song Sequencer data.

Chord Editing

Use chord editing to edit the contents of the system track. You change chords, insert or modify elements, add measures, and partially re-extract chord progressions from the data in the temporary area.

Melody Editing

Use melody editing to edit the contents of the melody track. Using the Song Sequencer procedures described under "Event Editing" on page E-91, you can insert, delete, copy, move, and quantize events.

Header Data Registration

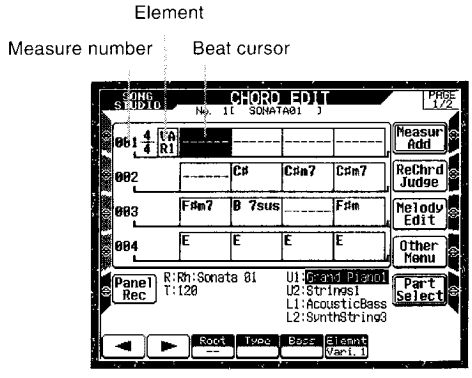
The initial playback accompaniment pattern, tone, and other keyboard control panel settings you want to use for a Song Studio song can be registered as header data. See "Registering Header Data" on page E-134 for more information.

Song Editing

You can copy, delete, and change the name of a Song Studio song.

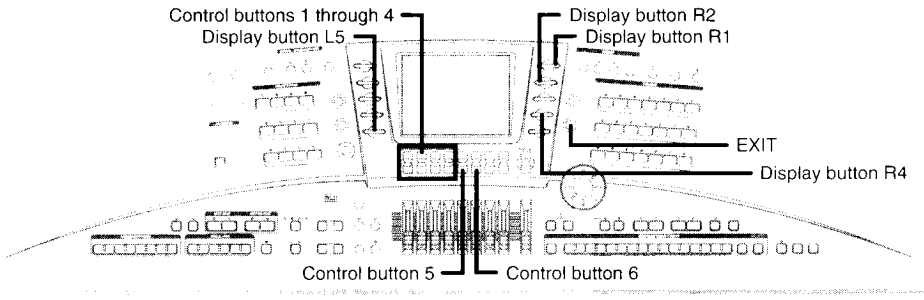
Chord Editing

On the Song Studio playback screen, press display button **R4** next to **Edit** to display the **CHORD EDIT** screen. The **CHORD EDIT** screen shows the same system track contents as the playback screen.



NOTE

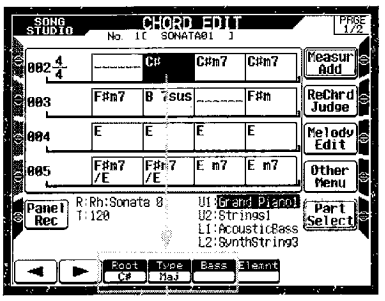
- You cannot playback a Song Studio song while the **CHORD EDIT** screen is on the display.



Modifying a Chord

1. Display the **CHORD EDIT** screen.

2. Use control buttons 1 and 2 to move the beat cursor to the chord you want to modify.



Information about the chord at the current beat cursor position

3. Use controls buttons 3 through 5 to modify the chord.

- The following describes how each control button modifies the chord.

Control Button 3 (Root)
This button specifies the root of the chord. To delete a chord from a beat, specify "--" for this setting.

Control Button 4 (Type)
This button specifies the chord type. You can specify any of the full range chords recognized by the keyboard. You cannot input or edit a tension chord.

Control Button 5 (Bass)
Use this button to turn on bass chords on and off.

4. Repeat steps 2 through 3 to modify other chords if you want.

5. After making the modifications you want, press the **EXIT** button to return to the playback screen.

Inserting and Modifying Accompaniment Patte Elements

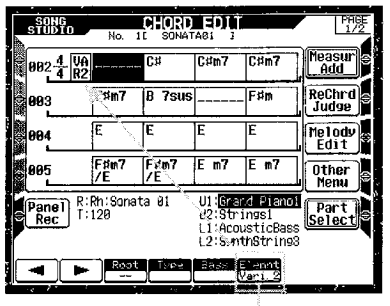
You can insert any of the following elements at the first be of a measure: **INTRO** (1, 2), **FILL IN** (BACK, NORMA NEXT), **VARIATION** (1 to 4), **ENDING** (1, 2), **BREAK**. can also modify and delete elements.

1. Display the **CHORD EDIT** screen.

2. Use control buttons 1 and 2 to move the be cursor to the first beat of the measure where yo want to insert the element.

- If you are changing an existing element, move the cu sor to the measure that contains the element.

3. Use control button set 6 to specify the eleme you want to insert.



Each press of the button cycles through the elements listed below. The currently selected element is shown on the display next to the beat cursor.

- The following shows the elements you can spec with control button 6.

For this element:	Select this setting:
Intro 1 / Intro 2	INTRO1 / INTRO 2
End. 1 / End. 2	ENDING1 / ENDIN
BckFil	FILL IN BACK
NrmFil	FILL IN NORMAL
NxtFil	FILL IN NEXT
Variation 1 - 4	Vari.1 to Vari. 4
Break	Break
Blank	No element

765A-E

4. If you want to insert of modify the element for another measure, repeat steps 2 and 3.

- To playback the data after you make the changes you want, press the **EXIT** button to return to the playback screen.

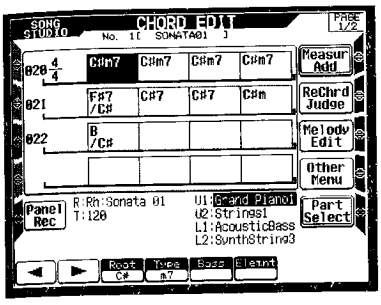
NOTE

- Elements can be inserted at the first beat of a measure only.

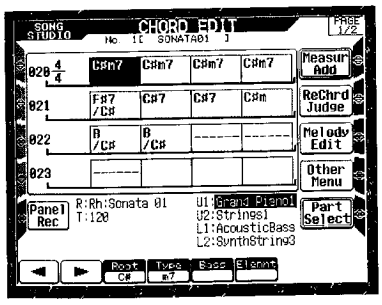
Added Measures

New measures can be added by appending them to the end of an existing Song Studio song only.

1. Display the **CHORD EDIT** screen.



2. Press display button **R1** next to **Add Measure** to append a measure at the end of the data.



Added measure

- To add a chord to the newly added measure, perform the procedure under "Modifying a Chord" on page E-136.
- To insert an accompaniment pattern element into the newly added measure, perform the procedure under "Inserting and Modifying Accompaniment Pattern Elements" on page E-136.

CAUTION!

- *Once you add a new measure, you cannot delete it.*

Using Re-chord Judge

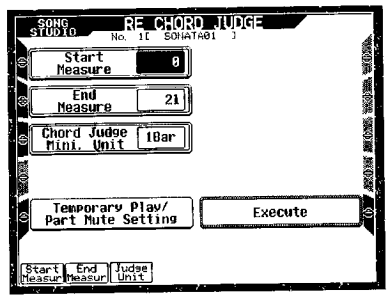
When extracting a chord progression from an arrangement in which the beat of chord changes not uniform, you can specify the most common beat for Chord Judge (page E-129), and then go back to perform Re-chord Judge on the portions that use a different chord change beat. Just as with Chord Judge, you can mute unneeded parts during Re-chord Judge.

NOTE

- The **Re Chord Judge** operation cannot be performed unless you perform the **Chord Judge** operation first (page E-129).
- Before performing Re-chord Judge, it is a good idea to play back the data and decide which measures you want to use as the start and end measures.

1. Display the **CHORD EDIT** screen.

2. Press display button **R2** next to press display button **Re Chrd Judge** (chord rejudge) to display the **RE CHORD REJUDGE** screen.



3. Use control button set 1 to specify the start measure.

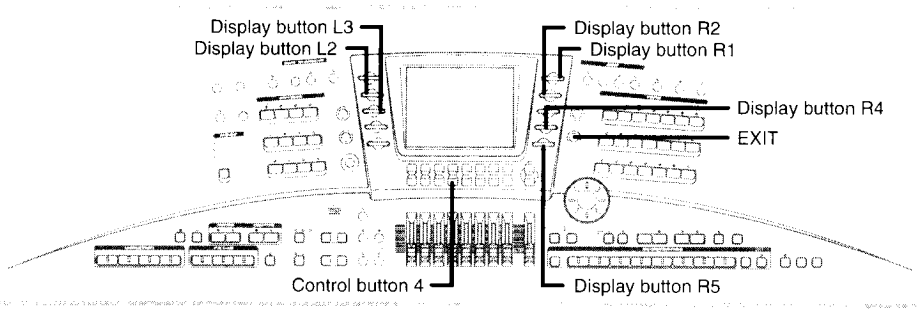
4. Use control button set 2 to specify the end measure.

5. Specify the minimum number of measures you want to use unit you want to use as the unit for chord re-extraction.

- Use control button set 3 to change the value next to **Chord Judge Mini.Unit** (Chord Judge Minimum Unit). A setting of **1Measr** specifies one measure. A setting of 1Beat through 3Beat specifies the corresponding number of beats.

6. If necessary, press display button **L5** next to **Temporary Play/Part Mute Setting** to display the **PLAY/MUTE SETTING** screen.

- Use the procedure under step 6 of "Extracting the Chord Progression" on page E-128 to mute any parts you want.

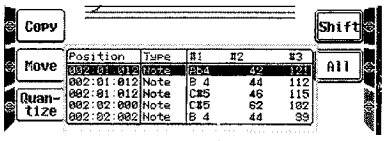


7. Press display button **R5** next to **Execute** to start chord re-extraction.
   - After re-extraction is complete, the display returns to the **CHORD EDIT** screen.
   - To play the extracted chords, press the **EXIT** button to return to the playback screen.

Melody Editing

Melody Editing

On the **CHORD EDIT** screen, press display button **R3** next to **Melody Edit** to display the **MELODY EVENT EDIT** screen, which shows a list of individual events recorded in the melody track.



Event list

The operations you can perform with this screen are the same as those you perform with the Song Sequencer. The following shows where you can go for more information about each operation.

"Event Editing" - page E-91

- "About View Select" - page E-95
- "Editing an Event" - page E-95
- "Inserting an Event" - page E-96
- "Deleting an Event" - page E-96
- "Copying an Event" - page E-96
- "Moving an Event" - page E-97
- "Quantizing an Event" - page E-98
- "Using Step Input" - page E-98

See "External Tracks" on page E-92 for the types of events you can select.

NOTE

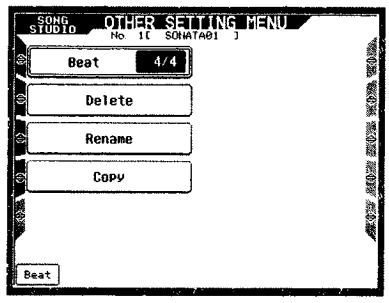
- To exit melody editing, press the **EXIT** button to return to the **CHORD EDIT** screen.

Song Editing

Use the following song editing procedures to delete, cop and change the name of a Song Studio song. You can pe form these operations on the **OTHER SETTING MEN** screen.

Displaying the OTHER SETTING MENU Scree

On the **CHORD EDIT** screen, press display button R4 [to] to **Other Menu** to display the **OTHER SETTING MEN** screen.



Changing the Time Signature of Song Stud Data

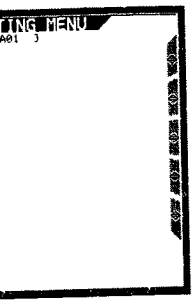
Use control button 1 to change the time signature setting

- You can select a time signature of 2/4 to 7/4, plus 3/8, 5/ 6/8, 7/8, 9/8, or 12/8 time.
- Note that you cannot change the time signature setting there is already any Song Studio data present.

button R4

g procedures to delete, copy,
g Studio song. You can per-
OTHER SETTING MENU

SETTING MENU Screen
press display button R4 next
e OTHER SETTING MENU



gnature of Song Stu

ge the time signature settin
ure of 2/4 to 7/4, plus 3/8.

ge the time signature setti
tudio data present.

Deleting a Song Studio Song

1. On the Song Studio playback screen, use display buttons **R1** and **R2** to select the Song Studio song you want to delete.
2. Press display button **R4** next to **Edit** to display the **CHORD EDIT** screen.
3. Press display button **R4** next to **Other Menu**.
4. Press display button **L2** next to **Delete**.
5. In response to the confirmation message that appears, press display button **R4** (**Yes**) to delete the selected song and return to the **CHORD EDIT** screen or **R5** (**No**) to cancel without deleting anything.

Copying a Song Studio Song

1. On the Song Studio playback screen, use display buttons **R1** and **R2** to select the Song Studio song you want to copy.
2. Press display button **R4** next to **Edit** to display the **CHORD EDIT** screen.
3. Press display button **R4** next to **Other Menu**.
4. Press display button **L4** next to **Copy** to display the copy destination selection screen.
5. Use control button set 4 to specify the name of the song to which you want to copy the song data.
6. Press display button **R5** next to **Execute** to start the actual copy operation.
   - After the copy operation is complete, the screen returns to the **CHORD EDIT** screen.

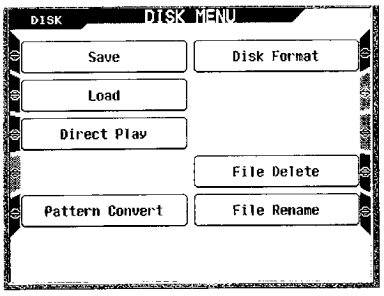
Changing the Name of a Song Studio Song

1. On the Song Studio playback screen, use display buttons **R1** and **R2** to select the Song Studio song whose name you want to change.
2. Press display button **R4** next to **Edit** to display the **CHORD EDIT** screen.
3. Press display button **R4** next to **Other Menu**.
   - Press display button **L3** next to **Rename** to display the name input screen.
4. Input the new name you want to assign to the song.
   - The highlighted frame on the screen is the current input location. Use sets 3 through 6 of the control buttons to input characters.
   - Pressing the lower 1 and 2 control buttons moves the highlighting left and right. Pressing the upper 1 and 2 control buttons causes the highlighting to jump to the far left or far right position.
   - To clear all of the characters you have input, press the display button **R1** next to **All Clear**.
   - To insert a space at the current input location, press the display button **R3** next to **Insert**.
   - To delete the character at the current input location, press the display button **R4** next to **Delete**.
5. After you are finished inputting the song name you want, press the display button **R5** next to **Execute**.
   - This changes the name and returns to the **CHORD EDIT** screen.

Using the Floppy Disk Drive

Floppy Disk Drive Features

The keyboard's built-in floppy disk drive lets you save keyboard memory data and re-load it later, and play back commercially available Standard MIDI file (SMF) data. Whenever you want to perform a disk drive operation, press the **DISK** button to display the **DISK MENU**.



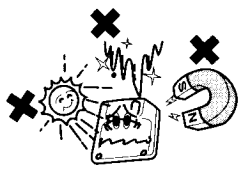
The following describes each of the items available on the **DISK MENU**.

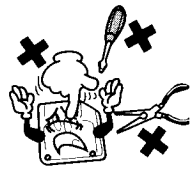
When you want to do this:	Press this button:
Save data you created with the Sequencer or Synthesizer to a floppy diskette	**L1 Save**
Load data from a floppy diskette	**L2 Load**
Play an SMF (Standard MIDI file, Format 0) directly from a floppy diskette	**L3 Direct Play**
Convert rhythm data created on another keyboard (another CASIO model, a Roland model, or a Technics model) to rhythm data compatible with this keyboard	**L5 Pattern Convert**
Format a floppy diskette for use with this keyboard (and delete any data currently on the diskette)	**R1 Disk Format**
Delete a data on a floppy diskette	**R4 File Delete**
Rename a file on a floppy diskette	**R5 File Rename**

Floppy Diskette and Disk Drive P cautions

IMPORTANT!

- Avoid storing or using floppy diskettes in the followin cations. Such conditions can cause corruption and lo data stored in a diskette.
  - On top of a television or stereo set, or any other so of magnetism. Always keep floppy diskettes away sources of magnetism.
  - In areas exposed to direct sunlight, and subject to amounts of humidity and sudden temperature chan
- Note the following when handling a floppy diskette. handling can cause corruption and loss of data store diskette.
  - Never try to take a diskette apart.
  - Do not open the diskette's shutter or touch the film r um inside it.
  - Do not bend a diskette or subject it to strong impac
  - Affix diskette labels only within the areas provided never affix a new label on top of an old one.





- Never eject a diskette from the drive while the drive cess lamp is lit or flashing. Also, do not turn off keyb power with a diskette left in the drive. Doing so can c the data store on the diskette or damage the disk dri
- Never insert any other item besides a floppy diskett the disk drive. Doing so can cause malfunction of the drive.
- The disk drive uses magnetic heads to write data ont read data from a floppy diskette. A dirty magnetic hea interfere with proper reading and writing. Because o you should periodically clean the head using a com cially available cleaning diskette.
- Never use a computer or other electronic musical in ment to change a file name or edit the contents of created using this keyboard. Doing so can make it in sible to read the data on this keyboard and even le malfunction of the keyboard.

- Note that CASIO COMPUTER CO., LTD. shall not held responsible for any malfunction of this keybo caused by the contents of a floppy diskette.

765A

Using Floppy Diskettes

This section contains basic information about handling and using floppy diskettes.

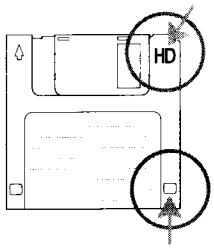
Supported Flooppy Diskette Types

This disk drive supports use of both 2HD (1.44MB formatted) and 2DD (720KB formatted) 3.5" diskettes. Use of other disk sizes and capacities is not supported.

Diskette Type Indicators

2HD ..... A 2HD diskette is marked with the letters "HD" in the upper right corner of the front side. In addition, there is a square hole in the lower right corner.

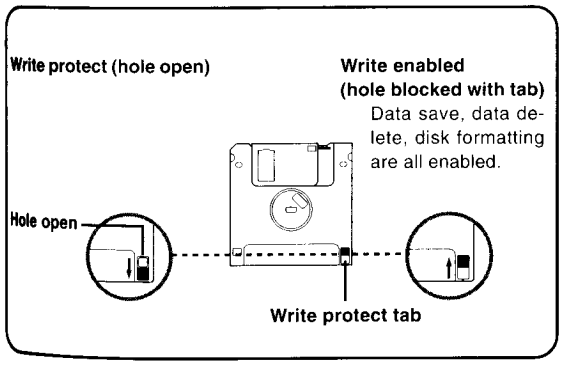
2DD ..... This type of diskette is marked with the character "2DD" in the upper right corner. It does not have a hole in the lower right corner.



Write Protection

IMPORTANT!

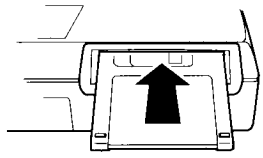
- You can write protect a diskette so data on it cannot be deleted and no new data can be stored on the diskette. In addition, a write-protected diskette cannot be formatted. You can read data from a diskette regardless of whether or not it is write protected.



- The diskette that comes with the keyboard contains sample data and programs. Make sure you handle this diskette carefully to avoid damaging or erasing its data.

Loading a Diskette into the Drive

1. Insert the diskette, label side up and shutter edge forward, into the disk drive slot.



2. Slide the diskette into the drive as far as it will go, until you hear it click into place.
   - This causes the eject button to extend.

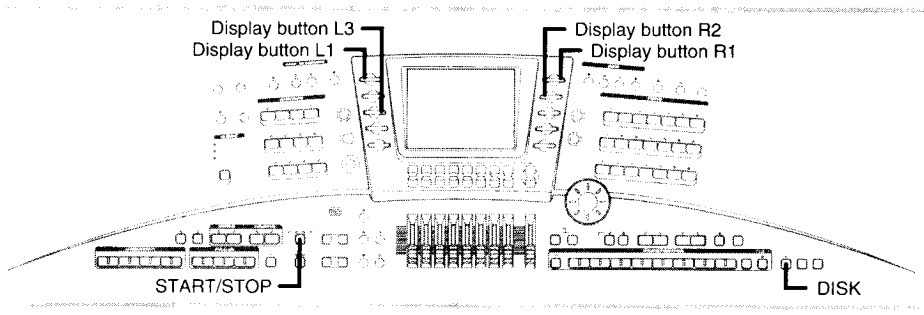
Ejecting a Diskette from the Drive

IMPORTANT!

- Before ejecting a diskette, make sure that the access lamp is not lit or flashing. A lit or flashing access lamp means that the keyboard is performing a data read or write operation. Ejecting a diskette while the access lamp is lit or flashing can cause its data to become corrupted.

1. Press the eject button.
   - This causes the diskette to be partially ejected from the disk drive.

2. Remove the diskette from the drive by hand.



Playing Back an SMF (Direct Play)

SMF (standard MIDI file) is a data file format that makes it possible to port MIDI data between sequencers and synthesizers of different types and brands. There are actually three different SMF formats, named 0, 1, and 2. Direct Play supports SMF Format 0, which is the most widely used.
The built-in floppy disk drive lets you play back SMFs created using a computer or other device.

GETTING READY

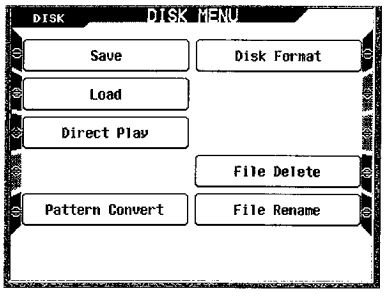
- Songs you create using this keyboard's Sequencer can be saved in its CASIO proprietary format, or SMF Format 0 or Format 1. See "Saving and Loading Data" on page E-146 for more information.

Playing Back an SMF

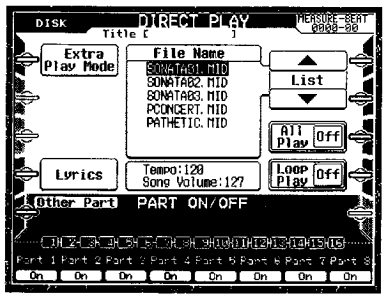
GETTING READY

Insert the floppy diskette that contains the SMF data into the keyboard's disk drive. Note that the diskette that comes with this keyboard also contains SMFs.

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the **DISK MENU** screen.
   - You can skip this step if the **DISK MENU** screen is already on the display.



2. Press display button **L3** next to **Direct Play** to display the **DIRECT PLAY** screen that shows a list of SMFs contained on the diskette.



3. Use display buttons **R1** and **R2** to highlight the name of the SMF you want to select.
   - To select all the SMFs on the diskette for playback, press display button **R3** next to **All Play** to turn it on. Each press of **R3** toggles **All Play** on and off.
   - To play back in a continuous loop, press display button **R4** next to **Loop Play** to turn it on. Each press of **R4** toggles **Loop Play** on and off.
   - Turning on both **All Play** and **Loop Play** causes all the SMFs on the diskette to be played one after the other in a continuous loop. Turning **Loop Play** on and **All Play** off causes the currently selected SMF file to be played in a continuous loop.

4. To start SMF play, press the **START/STOP** button.
   - Playback starts in accordance with the settings you made in step 3.
   - You can use the SMF list screen to turn parts on and off. See "SMF List Screen Operations" below for more information.

5. To stop playback, press the **START/STOP** button again.
   - When **Loop Play** is turned off, playback stops automatically when it reaches the end of the file or file

SMF List Screen Functions

The following are the functions you can use while the SMF list screen is on the display.

Lyrics Display
Pressing display button **L4** next to **Lyrics** displays, at the bottom of the screen, lyric data included in the SMF being played. Each press of **L4 Lyrics** toggles lyrics display on and off.

Tempo Adjustment
You can use the **TEMPO** buttons to adjust the tempo (speed) of the playback. The current tempo setting value is shown on the screen.

Disk Volume Adjustment
You can use the **ACCOMP/DISK VOLUME** buttons to adjust the SMF playback volume. The current volume setting value is shown on the screen.

Play Along with SMF Playback

You can play along with SMF playback using one of two methods: **Guide Play** or **Melody Part Cut**.

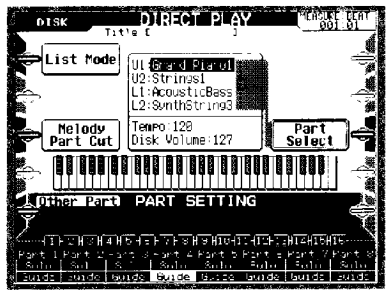
Guide Play
With Guide Play, you can use the playback from the SMF as background accompaniment as you play along on the keyboard. You can assign keyboard tones just as you do for normal keyboard play.

Melody Part Cut
Melody Part Cut lets you cut out a specific part from the SMF playback so it does not sound. You can then play the missing part on the keyboard. You can assign keyboard tones just as you do for normal keyboard play.

Using Guide Play

1. Perform the first three steps under "Playing Back an SMF" on page E-142.

2. Press display button **L1** next to **Extra Play Mode** to display the Guide Play screen.



3. Select the tone you want to use for play along on the keyboard.
   - Use display button **R3** next to **Part Select** to select the part (UPPER 1, UPPER 2, LOWER 1, or LOWER 2) whose tone setting you want to change.

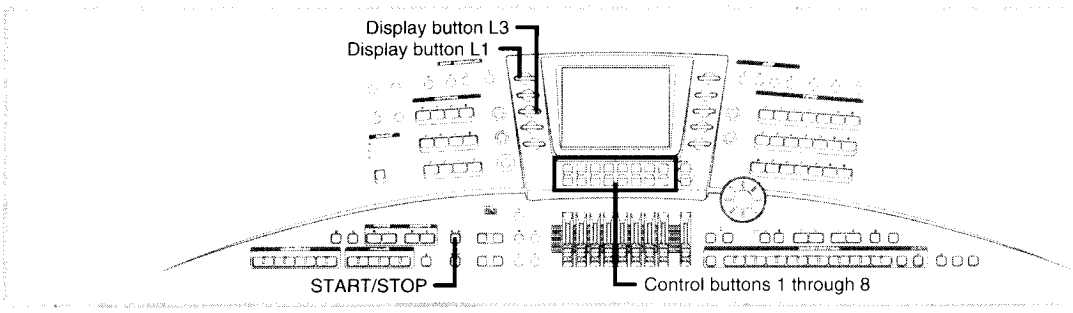
4. Press the **START/STOP** button to start playback.

5. Play along on the keyboard.
   - Notes you play sound with the tone you selected in step 3.
   - You can make tone changes while SMF playback is in progress.

6. To stop playback, press the **START/STOP** button again.
   - When **Loop Play** is turned off, playback stops automatically when it reaches the end of the file or files.

NOTE

- Pressing display button **L1** next to **List Mode** returns to the SMF list screen. Pressing **L1 List Mode** does not affect SMF playback.
- Pressing display button **L3** next to **Melody Part Cut** displays the melody cut screen (page E-144). Pressing **L3 Melody Cut Part** does not affect SMF playback.



Guide Play Functions

The following are the functions you can use with Guide Play.

Guide

Selecting one of the parts that make up the SMF data causes its notes to appear on the keyboard along the bottom of the screen. Use the lower control buttons (1 through 8) to select the guide part you want. Pressing a lower control button causes the **Guide** indicator to appear on the display. If the part you want to select is not on the screen, press display button **L5** next to **Other Part**.

Solo

You can select a specific SMF part for playback of that part alone. This function is useful when there is a particular part you want to learn or check for some reason. Use the upper control buttons (1 through 8) to select the solo part you want. Selecting a **Solo** part also causes its notes to appear on the keyboard along the bottom of the screen.

Tempo Adjustment

You can use the **TEMPO** buttons to adjust the tempo (speed) of the playback. The current tempo setting value is shown on the screen.

Disk Volume Adjustment

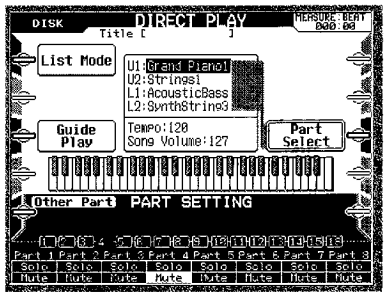
You can use the **ACCOMP/DISK VOLUME** buttons to adjust the SMF playback volume. The current volume setting value is shown on the screen.

Using Melody Part Cut

1. Perform the first three steps under "Playing Bac an SMF" on page E-142.

2. Press display button **L1** next to **Extra Play Mod** to display the Guide Play screen.

3. Press display button **L3** next to **Melody Part Cu** to display the melody part cut screen.



4. Use the lower control buttons (1 thorough 8) t select the part you want to cut.
   - Cutting a part causes the **Mute** indicator to appe on the display.
   - If the part you want to cut is not on the screen, pre display button **L5** next to **Other Part**.

5. Press the **START/STOP** button to start playbac
   - Playback starts, without the part you specified in ste 4.
   - The notes of the part that is cut (the one that is n sounding) are indicated on the on-screen keyboard

6. To stop playback, press the **START/STOP** butto again.
   - When **Loop Play** is turned off, playback stops aut matically when it reaches the end of the file or file

NOTE

- Pressing display button **L1** next to **List Mode** returns to the SMF list screen. Pressing **L1 List Mode** does not affect SMF playback.
- Pressing display button **L3** next to **Guide Play** displays the guide play screen (page E-143). Pressing **L3 Guide Play** does not affect SMF playback.

Melody Part Cut Functions

The following are the functions you can use with Melody Part Cut.

Solo

You can select a specific SMF part for playback of that part alone. This function is useful when there is a particular part you want to learn or check for some reason. Use the upper control buttons (1 through 8) to select the solo part you want. Selecting a **Solo** part also causes its notes to appear on the keyboard along the bottom of the screen.

Tempo Adjustment

You can use the **TEMPO** buttons to adjust the tempo (speed) of the playback. The current tempo setting value is shown on the screen.

Disk Volume Adjustment

You can use the **ACCOMP/DISK VOLUME** buttons to adjust the SMF playback volume. The current volume setting value is shown on the screen.

Control Panel Operations during Direct Play

While Direct Play is either paused or in progress, you can change the setup of the keyboard and even use the Mixer, Synthesizer, and other modes.

Direct play gives you control over most normal keyboard operations, except for rhythm and auto accompaniment operations. The tone, Mixer, effect, and other settings you make using this screen are applied to the SMF data during playback.

Keyboard Operation During Direct Play

The following details the control panel operations, modes, and other operations that are allowed and those that are not allowed during Direct Play.

Control Panel Operations

Allowed

Tone selection, split point specification, part on/off (UPPER 1, UPPER 2, LOWER 1, LOWER 2), disk volume setting, tempo setting, transpose setting, **EFFECT** button on/off, arpeggiator on/off, sustain on/off

Not allowed

Rhythm selection, **MODE** button operation, **INTERACTIVE ACCOMP** button operation, **HARMONIZE** button operation

Accessible Modes

Combination Mode, Mixer, Effect Mode, Synthesizer, Digital Drawbar

Other

- Pressing the **SETTING** button displays the **SETTING MENU** screen, which you can use for making various settings (except for rhythm settings).
- Pressing the **AFTER TOUCH/CONTROL** button displays the **AFTER TOUCH/CONTROL SETTING** screen.

NOTE

- See "Keyboard Setup Reference" on page E-154 for information about the settings you can make using the **SETTING MENU** and **AFTER TOUCH/CONTROL SETTING** screens.

Saving and Loading Data

The procedures in this section describe how to save Sequencer, Synthesizer, and other data to floppy diskette, and later load the data when you need it again.

Data File Types

The following table shows the data file types that are saved by this keyboard. Note that the formats of these files are all specific to the CASIO MZ-2000 keyboard.

Data Type		Filename Extension	Description
Song Sequencer	1 Tune	.C00	Data file containing one tune created with the Song Sequencer
	1 Tune	.MID	Data file containing one tune created using SMF 0 or 1
	All Data	.C10	Data file containing a dump of all Song Sequencer memory contents
User Rhythm (Pattern Sequencer)	1 Rhythm	.C01	Data file containing one auto accompaniment user rhythm created with the Pattern Sequencer
	All Data	.C11	Data file containing a dump of all Pattern Sequencer user rhythm memory contents
User Tones	1 Tone	.C02	Data file containing one user tone created with the Synthesizer or Digital Drawbar
	All Data	.C12	Data file containing a dump of all user tones created with the Synthesizer or Digital Drawbar
Song Studio	1 Song	.C03	Data file containing one Song Studio song*1
	All Data	.C13	Data file containing a dump of all Song Studio songs*2
Registration Memory	8 Banks	.C04	Data file containing a dump of all data in all eight banks of Registration Memory
All Data		.C05	Data file containing a dump of all memory data (Song Sequencer, user rhythms, user tones, Song Studio, Registration Memory)

*1 When you save Song Studio data that uses a user rhythm, the Song Studio data file also includes the corresponding user rhythm data. When you load such a file, you can specify a memory area for storage of the Song Studio data and another memory area for storage of the user rhythm data.

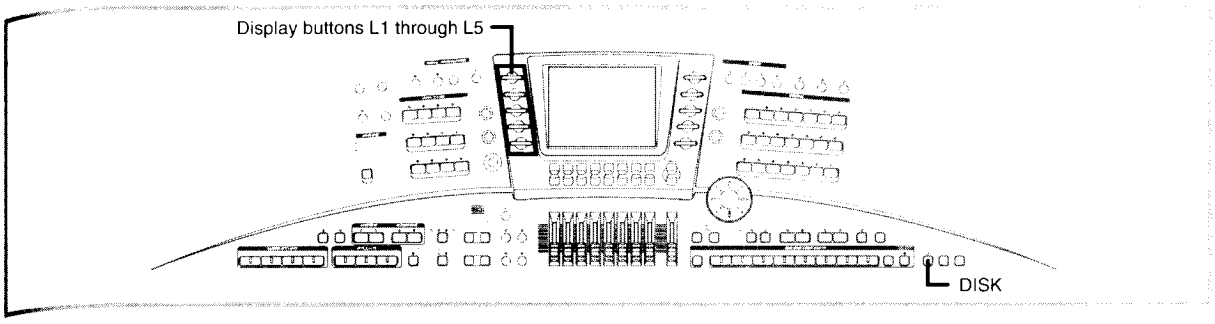
*2 When you save a dump of all Song Studio data, all user rhythm data in keyboard memory is stored along with it.

Saving Data

The following is the general procedure you can use to save data to a floppy diskette.

Getting Ready

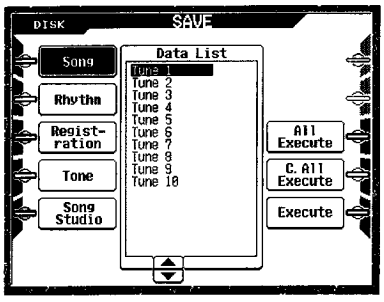
- Insert a formatted floppy diskette into the keyboard's disk drive. Make sure that the write protect tab of the diskette is closed which enables writing.
- Before actually getting started, decide which data you are going to save. If you plan to save a user tone, make a note of the tone number.



Saving Data for a Specific Category

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the disk menu screen.

2. Press display button **L1** next to **Save** to display the **SAVE** screen.



3. Press the display button (**L1** through **L5**) next to the category (type) of the data you want to save.

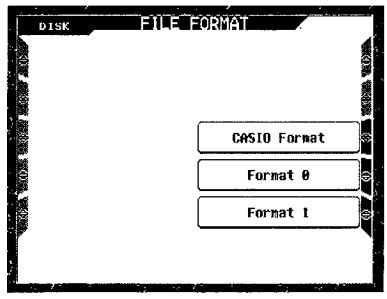
L1 Song ..... Song Sequencer data
L2 Rhythm ..... Pattern Sequencer (user rhythm) data
L3 Registration ..... Registration memory data
L4 Tone ..... User tone data
L5 Song Studio ..... Song Studio data

4. If you want to save a single record (song, pattern, etc.), select the record you want.
   - Use set 4 of the control buttons or control slider 4 to highlight the record in the list on the screen.
   - This step is not necessary if you want to store all the data for the category you selected in step 3, or if you selected Registration in step 3.

5. Specify the type of save operation you want to perform.
   - To save all of the data for the category you selected in step 3, press display button **R4** next to **C. All Execute**.
   - To save only the record you selected in step 4, press display button **R5** next to **Execute**.
   - Pressing the **R4** or **R5** display button causes the file name input screen to appear.

NOTE

- The file format selection screen shown below appears when you press **R5 Execute** for the save operation type when saving Song Sequencer data.

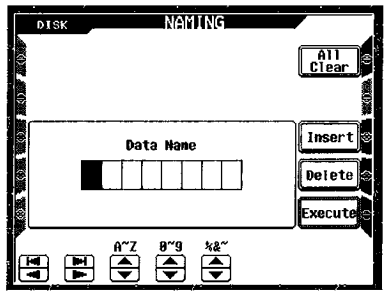


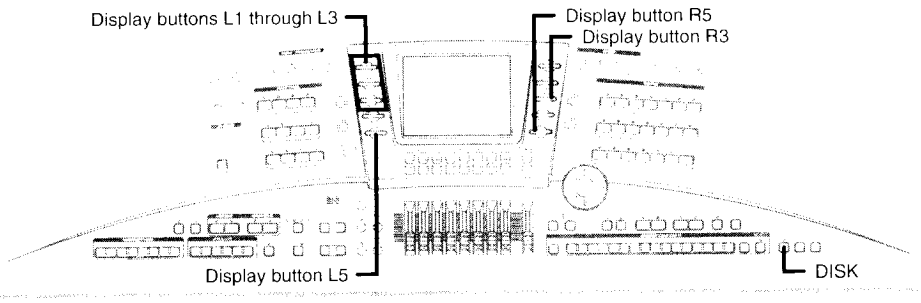
R3 CASIO Format ..... CASIO proprietary format
R4 Format 0 ..... SMF Format 0
R5 Format 1 ..... SMF Format 1*

- An SMF save normally does not include system track data. Only external tracks 1 through 16 are saved. Select the **CASIO Format** option to save all data, including system track data.

Pressing any of the above buttons advances to the file name input screen.

6. Input the name you want to give to the file.
   - The highlighted frame on the screen is the current input location. Use control buttons 3, 4, and 5 to input characters.





- Pressing the lower 1 and 2 control buttons moves the highlighting left and right. Pressing the upper 1 and 2 control buttons causes the highlighting to jump to the far left or far right position.
- To clear all of the characters you have input, press display button **R1** next to **All Clear**.
- To insert a space at the current input location, press display button **R3** next to **Insert**.
- To delete the character at the current input location, press display button **R4** next to **Delete**.

7. Press display button **R5** next to **Execute** to save the file.
   - The display returns to the disk menu screen when the file save operation is complete.

Saving a Dump of All Data in Keyboard Memory

Use the following procedure when you want to dump all of the Sequencer data, user rhythms, user tones, Song Studio data, and Registration Memory data into a single file.

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the disk menu screen.
2. Press display button **L1** next to **Save** to display the **SAVE** screen.
3. Press display button **R3** next to **All Execute**.
4. Input the name you want to give to the file.
   - Use the character input procedure described in step 6 under "Saving Data for a Specific Category" on page E-147.
5. Press display button **R5** next to **Execute** to save the file.
   - The display returns to the disk menu screen when the file save operation is complete.

Loading Data

Use the following procedure to load data stored on a diskette.

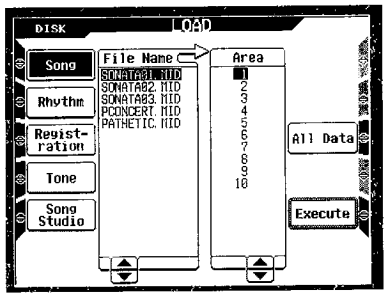
Getting Ready

Insert the floppy diskette that contains the data you want to load into the keyboard's disk drive.

Loading Song Sequencer, User Rhythm, or User Tone Data

The same procedure is used when loading Song Sequencer, user rhythm, or user tone date.

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the disk menu screen.
2. Press display button **L2** next to **Load** to display the **LOAD** screen.



3. Press the display button next to the category (type) of the data you want to load.
   - The category name next to the button you press becomes highlighted to indicate it is selected.

L1 Song ..... Song Sequencer data
L2 Rhythm ..... Pattern Sequencer (user rhythm) data
L4 Tone..... User tone data

- This displays a **File Name** list with all the files whose names have the extension that corresponds to the file type you selected.

NOTE

- See "Data File Types" on page E-146 for information about file name extensions.

4. Select the name of the file whose data you want to load.
   - Use control button set 3 or control slider 3 to select the file name.
   - Skip step 5 below if you select a file name with the extension ".**C10**," ".**C11**," or ".**C12**," (all of which contain a dump of all the data in a particular category).

5. Specify the keyboard memory area where you want the data to be loaded.
   - Use control button set 6 or control slider 6 to specify the memory area. A memory area that already contains data is indicated by "★".
   - A confirmation message appears if the memory area you specified already contains data. Press display button **R4** (**Yes**) to continue with the load operation or **R5** (**No**) to cancel and return to the previous screen.

6. Press display button **R5** next to **Execute** to load the file.
   - The display returns to the disk menu screen when the file load operation is complete.

Loading Registration Memory Data

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the disk menu screen.

2. Press display button **L2** next to **Load** to display the **LOAD** screen.

3. Press display button **L3** next to **Registration**.
   - This displays a **File Name** list with all files whose names have the extension ".**C04**" (Registration memory data).

4. Select the name of the file whose data you want to load.
   - Use control button set 4 or control slider 4 to select the file name.

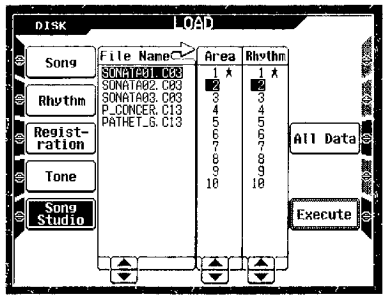
5. Press display button **R5** next to **Execute** to load the file.
   - The display returns to the disk menu screen when the file load operation is complete.

Loading Song Studio Data

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the disk menu screen.

2. Press display button **L2** next to **Load** to display the **LOAD** screen.

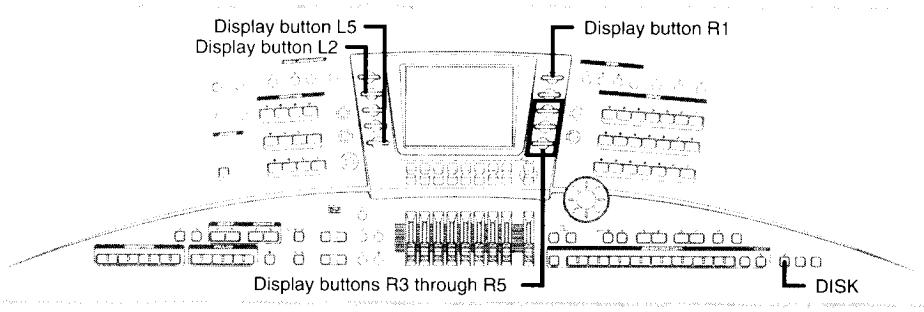
3. Press display button **L5** next to **Song Studio**.
   - This displays a **File Name** list with all files whose names have the extension ".**C03**" (one song) or ".**C13**" (Song Studio memory dump) (Registration memory data).



4. Select the name of the file whose data you want to load.
   - Use control button set 3 or control slider 3 to select the file name.
   - Skip step 5 below if you select a file name with the extension ".**C13**," (Song Studio memory dump).

5. Specify the keyboard memory area where you want the data to be loaded.
   - Use control button set 5 or control slider 5 to specify the Song Studio memory area.
   - Use control button set 6 or control slider 6 to specify the memory area where you want to store the user rhythm data included with the Song Studio data. This operation is not available if the Song Studio data does not include a user rhythm.
   - A memory area that already contains data is indicated by "★".

6. Press display button **R5** next to **Execute** to load the file.
   - The display returns to the disk menu screen when the file load operation is complete.



Loading Data from a Memory Dump File

IMPORTANT!

Loading data from a memory dump file replaces all Song Sequencer, user rhythm, user tone, Song Studio, and Registration Memory data currently stored in keyboard memory. This means that the data currently in keyboard memory is deleted loading the new data.

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the disk menu screen.
2. Press display button **L2** next to **Load** to display the **LOAD** screen.
3. Press display button **R3** next to **All Data**.
   - This displays a **File Name** list with all files whose names have the extension "**.C05**" (memory dump data).
4. Select the name of the file whose data you want to load.
   - Use control button set 4 or control slider 4 to select the file name.
5. Press display button **R5** next to **Execute** to load the file.
   - The display returns to the disk menu screen when the file load operation is complete.
   - It may take some time for the data load operation to finish. Do not perform any keyboard operation until the disk menu screen appears.

Converting Accompaniment Patterns (Pattern Convert)

The procedure in this section describes how to convert accompaniment pattern data for another CASIO keyboard model or another keyboard brand to a format that is compatible with this keyboard. The following are the three types of pattern data that can be converted.

Data Type	File Name Extension
CASIO Accompaniment Pattern	.CPT
Technics Accompaniment Pattern	.CMP
Roland Accompaniment Pattern	.STL

IMPORTANT!

- The pattern conversion function of this keyboard is intended for conversion of data for your own personal use only.
- The sound source and accompaniment system of this keyboard is different from those equipped on other keyboard makes and models. Because of this, accompaniment patterns may sound different when played on this keyboard.
- You may not be able to convert certain accompaniment patterns intended for other keyboard makes and models.
- Be sure to direct any inquiries concerning pattern conversion to CASIO, and not to the manufacturers of the other keyboard models.

NOTE

- Data can be converted one file at a time.
- Converted data is loaded into the user rhythm memory area of this keyboard.

Converting Pattern Data

The following procedure converts accompaniment data from another make or model keyboard and stores it into this keyboard's user rhythm area.

Getting Ready

- Insert the floppy diskette that contains the data you want to convert into this keyboard's disk drive.

DISK

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nvert)

n describes how to convert ac-
for another CASIO keyboard
rand to a format that is compat-
following are the three types of
erted.

	File Name Ext
ttern	.CPT
Pattern	.CMP
ttern	.STL

RTANT!

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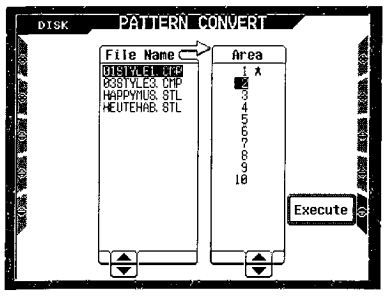
e that contains the data you
oard's disk drive.

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the disk menu screen.

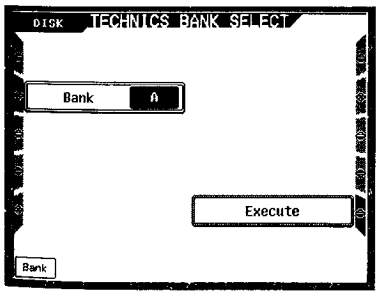
2. Press display button **L5** next to **Pattern Convert** to display the **PATTERN CONVERT** screen.



3. Select the name of the file whose data you want to convert.
   - Use control button set 3 or control slider 3 to select the file name.

4. Select the user rhythm area where you want to store the converted data.
   - Use control button set 6 or control slider 6 to specify the user rhythm area. A memory area that already contains data is indicated by "★".

5. Press display button **R5** next to **Execute** to convert the file.
   - The display returns to the disk menu screen when the pattern convert operation is complete.
   - The screen shown below appears at this point when you select a file name that has the extension "**.CMP**" (Technics accompaniment pattern) in step 3.



Use control button set 1 to select a bank in the range of A to C, and then press display button **R5** next to **Execute** to save the pattern.

Formatting a Diskette and Managing Diskette Data

The procedures in this section describe how to format a floppy diskette, how to delete a file, and how to change the name of a file.

NOTE

- You use the following procedure to delete and rename files that have been saved by this keyboard, and CPT, CMP, or STL files (which are the file types that can be converted by the pattern convert function on page E-150) only. If you cannot load a file or convert it, you cannot delete or rename it.

Formatting a Floppy Diskette

Use the following procedure to format a floppy diskette.

Getting Ready

- Load an empty floppy diskette or a diskette whose contents you no longer need into the disk drive. Make sure that the write protect tab of the diskette is closed, which enables writing.

IMPORTANT!

Formatting a diskette that contains data deletes the data. Make sure you no longer need any data that may be on a diskette before you format it.

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the disk menu screen.

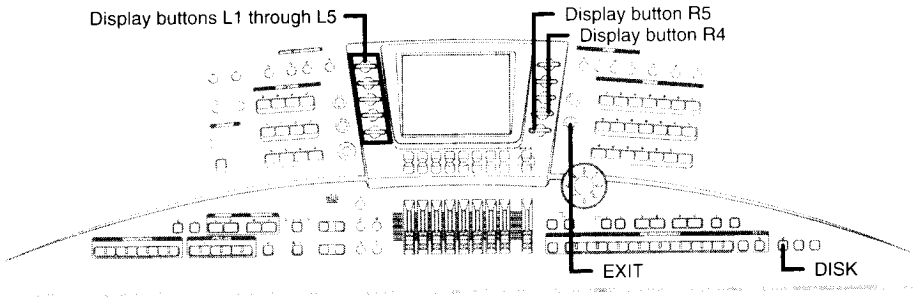
2. Insert the diskette you want to format into the disk drive.

3. Press display button **R1** next to **Disk Format**.
   - A confirmation message appears on the display asking whether you really want to delete all the data on the diskette.
   - If you want to cancel the diskette format operation at this point, press display button **R5** (**No**) to return to the disk menu screen without deleting anything.

4. To start formatting of the diskette, press display button **R4** (**Yes**).
   - A message appears to let you know that formatting is in progress. The display returns to the disk menu screen after formatting is complete.

NOTE

- A diskette formatted under MS-DOS or Windows can also be used by this keyboard. Diskettes formatted under other types of computer systems are not supported.

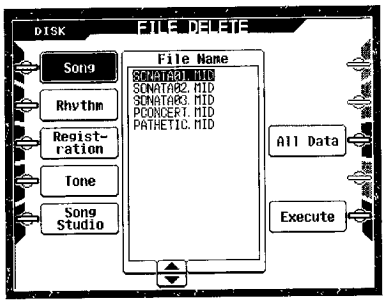


Deleting Files from a Floppy Diskette

Use the following procedure to delete files from a floppy diskette. You can delete only one file at a time.

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the disk menu screen.

2. Press display button **R4** next to **File Delete** to display the **FILE DELETE** screen.



3. Press the display button (**L1** through **R3**) next to the category (type) of data you want to display.

L1 Song ..... Song Sequencer data
L2 Rhythm ..... Pattern Sequencer (user rhythm) data
L3 Registration ..... Registration memory data
L4 Tone ..... User tone data
L5 Song Studio ..... Song Studio data
R3 All Data ..... All Data files

4. Select the file you want to delete.
   - Use set 4 of the control buttons or control slider 4 to highlight the record in the list on the screen.

5. Press display button **R5** next to **Execute**.
   - A confirmation message appears on the display asking whether you really want to delete the file.
   - If you want to cancel the file delete operation at this point, press display button **R5** (**No**) to return to the screen in step 4.

6. To delete the file, press display button **R4** (**Yes**).
   - Repeat steps 3 through 6 if you want to delete more files.

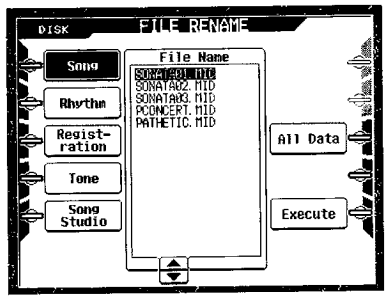
7. After you are finished deleting all the files you want, press the **EXIT** button to return to the **DISK MENU** screen.

Renaming a File

Use the following procedure when you want to change the name of a file stored on a floppy diskette. Remember that the only files you can rename are those that were created on the keyboard or files that can be converted by this keyboard.

1. Press the **DISK** button.
   - This causes the lamp above the button to light and displays the disk menu screen.

2. Press display button **R5** next to **File Rename** to display the **FILE RENAME** screen.

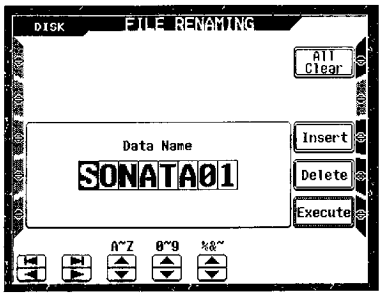


3. Press the display button (**L1** through **R3**) next to the category (type) of data you want to display.

L1 Song ..... Song Sequencer data
L2 Rhythm ..... Pattern Sequencer (user rhythm) data
L3 Registration ..... Registration memory data
L4 Tone ..... User tone data
L5 Song Studio ..... Song Studio data
R3 All Data ..... All files

4. Select the file you want to rename.
   - Use set 4 of the control buttons or control slider 4 to highlight the record in the list on the screen.

5. Press display button **R5** next to **Execute** to display a list of file names.



6. Input the new name you want to give to the file.
   - Use the character input procedure described in step 6 under "Saving Data for a Specific Category" on page E-147.

7. Press display button **R5** next to **Execute** to assign the new name to the file.
   - The display returns to the disk menu screen when the rename operation is complete.

Keyboard Setup Reference

This section provides details of all the settings you can make on this keyboard.

Setting Types

The settings of this keyboard can be broadly classified into two types: **SETTING MENU** screen settings and **AFTER TOUCH CONTROL** screen settings.

SETTING MENU Screen Settings

Pressing the **SETTING** button displays the **SETTING MENU** screen, which contains the items listed below. See the reference pages for more information.

Item Name	Description	Page
Master Tune	Fine adjustment of overall keyboard tuning	E-156
Touch Curve	Adjustment of how keyboard pressure affects sound output	E-156
Auto Harmonize/Arpeggiator	Settings for auto harmonize and arpeggiator effects	E-157
Registration	Settings and operations for registration memory	E-158
One Touch Preset Select	Select settings for certain control panel settings	E-159
Accomp/Chord Setting	Settings for auto accompaniment	E-160
Fade In/Out	Adjustment of fade-in and fade-out	E-161
Ritardando	Adjustment of ritardando	E-161
Interactive Accomp	Adjustment of effects used by Interactive Accomp	E-162
Initialize	Reset operations to initialize all settings to initial factory defaults or to reset specific settings	E-163

AFTER TOUCH/CONTROL SETTING Screen Settings

Pressing the **AFTER TOUCH/CONTROL** button displays the **AFTER TOUCH/CONTROL SETTING** screen, which contains the items listed below. See the referenced pages for more information.

Item Name	Description	Page
Pitch Bend Wheel	Selection of effect assigned to the pitch bend wheel	E-165
Modulation Wheel	Selection of effect assigned to the modulation wheel	E-166
Assignable Sw.	Selection of effect assigned to the assignable switch	E-166
After Touch	Effect assigned to After Touch and specification of how the effect is applied	E-167
Expression Pedal	Selection of effect assigned to the expression pedal	E-167
Sustain Pedal	Effect assigned to the sustain pedal (foot switch) and specification of how the effect is applied	E-168
Sustain Sw.	Effect assigned to the SUSTAIN button	E-168

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ted below. See the referenced

	Page
	E-156
output	E-156
	E-157
	E-158
	E-159
	E-160
	E-161
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	E-162
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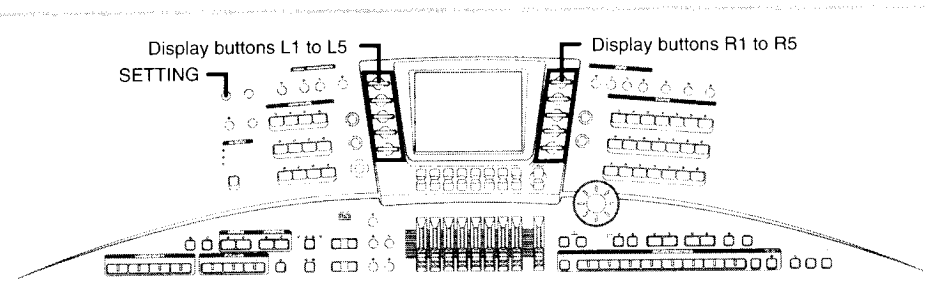
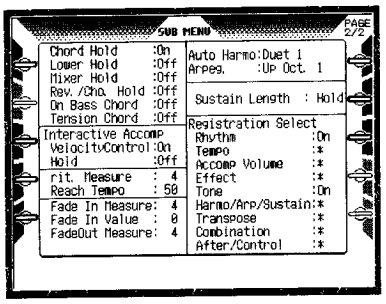
	E-167
and specifica-	E-168
	E-168



Accessing the Submenu

Pressing the **PAGE** button in the Combination Mode displays a submenu that can be used to make settings that affect keyboard and auto accompaniment play. The submenu can also be used for direct access to various **SETTING MENU** screen and **CONTROL/SETTING** screen items.



L1 Accomp/Chord
Displays an accompaniment/chord setting screen (SETTING MENU).

L3 Interactive Accomp
Displays an Interactive Accomp setting screen (SETTING MENU).

L4 rit. (Retardants)
Displays the retardando setting screen (SETTING MENU).

L5 Fade In/Out
Displays the fade-in/fade-out screen (SETTING MENU).

R1 Auto Harmonize/Arpeggiator
Displays the auto harmonize/arpeggiator screen (SETTING MENU).

R2 Sustain Length
Displays a controller setting screen.

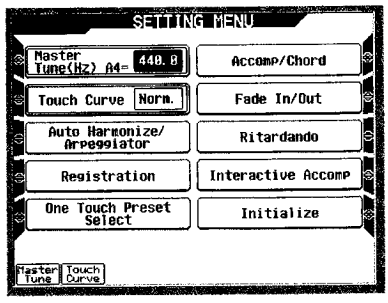
R3 Registration Select
Displays a registration memory selection screen (SETTING MENU).

SETTING MENU Screen Items

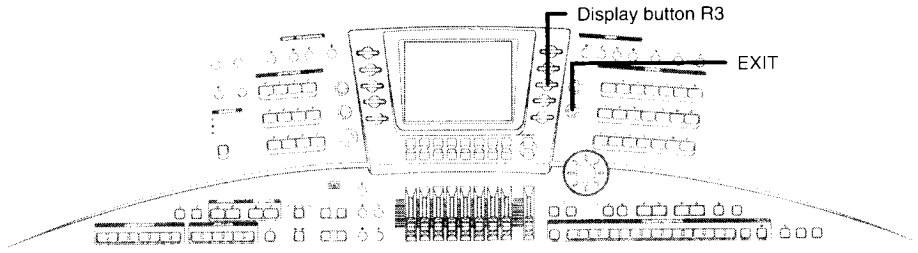
This sections provides details about the settings you can make using the **SETTING MENU** screen.

SETTING MENU Screen Operation Example

1. Press the **SETTING** button to display the **SETTING MENU** screen.



2. Press the display button (**L1** to **L5**, **R1** to **R5**) next to the setting you want to change.
   - Pressing display buttons **L3** to **L5** or **R1** to **R5** changes to a setting screen for the corresponding item.
   - Pressing the **L1** display button selects **Master Tune** without changing to another screen. Then you can use the selector dial, control button set 1, or slider 1 to change the master tune setting.
   - Pressing the **L2** display button selects **Touch Curve** without changing to another screen. Then you can use the selector dial, control button set 2, or slider 2 to change the touch curve setting.



3. Press display button **R3** next to **Ritardando**, for example to display the ritardando setting screen.

- Use this screen to change the settings of its two ritardando items.
- Press control button **L1** next to **Measure** or **L2** next to **Reach Tempo** to select the corresponding item. Then use the selector dial or control button set 1 or slider 1 (for **Measure**), or control button set 2 or slider 2 (for **Reach Tempo**) to change the setting.

4. After you are finished making the setting you want, press the **EXIT** button to return to the **SETTING MENU** screen.

NOTE

- The procedure you need to perform after pressing the display button next to **R5 (Initialize)** is different from that noted above. See "Setting Menu **R5**: Initialize" on page E-163 for details.

SETTING MENU L1: Master Tune

Master tune controls the tuning of all the keyboard's sound sources (all internal and external parts).

Button for Adjustment	Item	Range	Description
Control Button/Slider 1	Master Tune	415.3 Hz to 446.2 Hz	Sets frequency of A4. Default setting is A4 = 440Hz.

SETTING MENU L2: Touch Curve

Touch curve sets touch response to one of four levels.

Button for Adjustment	Item	Range	Description
Control Button/Slider 2	Touch Curve	Heavy	Relatively heavy touch required to increase sound volume.
		Norm.	Normal touch response
		Light	Relatively light touch
		Off	Touch response off. Sound output not affected by pressure applied to the keyboard.

SETTING MENU L3: Auto Harmonize/Arpeggiator

Pressing display button **L3** next to **Auto Harmonize/Arpeggiator** on the **SETTING MENU** screen displays an auto harmonize/arpeggiator setting screen. This screen can be used to make harmonize/arpeggiator settings when these effects are turned on. Press display button **L2** next to **Auto Harmonize** or the **L3** button next to **Arpeggiator** to display a screen of settings for the corresponding effect.

L2 Auto Harmonize

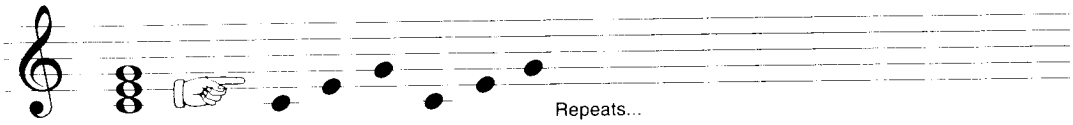
Button for Adjustment	Setting	Range	Description
Control Button/Slider 6	Effect Type	Duet1	Adds 1-voice close harmony (2 to 4-tone separation) under the melody notes.
		Duet2	Adds 1-voice open harmony (4 to 6-tone separation) under the melody notes.
		Country	Adds harmony suitable for country music.
		Octave	Adds notes one octave below melody notes.
		5th	Adds notes one 5th above melody notes.
		3-Way Open	Adds 2-voice (3 voices counting melody note) open harmony.
		3-Way Close	Adds 2-voice (3 voices counting melody note) close harmony.
		Strings	Adds harmony suitable for string music.
		4-Way Open	Adds 3-voice (4 voices counting melody note) open harmony.
		4-Way Close	Adds 3-voice (4 voices counting melody note) open harmony.
		Block	Adds block chords.
		Big Band	Adds harmony suitable for big band music.

L3 Arpeggiator

Button for Adjustment	Setting	Range	Description
Control Button/Slider 1	Hold	On, Off	When turned on, effect continues after keys are released.
Control Button/Slider 2	Speed	1, 2, 3,4, 6, 8	Specifies the number of arpeggio notes per beat.
Control Button/Slider 3	Key Range	Full, Upper, Lower	Specifies the range of arpeggiator effect.
Control Button/Slider 6	Effect Type	Up Oct 1/2/4	Uses the notes played in the arpeggio pattern shown in Example 1, below. Specifying 1 uses the actual notes played. Specifying 2 uses the actual notes played plus the same notes one octave higher. Specifying 4 uses the notes played plus the same notes up to three octaves higher.
		Down Oct 1/2/4	Uses the notes played in the arpeggio pattern shown in Example 2, below. Specifying 1 uses the actual notes played. Specifying 2 uses the actual notes played plus the same notes one octave lower. Specifying 4 uses the notes played plus the same notes up to three octaves lower.
		U/D A Oct 1/2/4	Uses the notes played in the arpeggio pattern shown in Example 3, below. The 1/2/4 options are the same as "Up Oct 1/2/4."
		U/D B Oct 1/2/4	Uses the notes played in the arpeggio pattern shown in Example 4, below. The 1/2/4 options are the same as "Up Oct 1/2/4."
		Random Oct 1/2/4	Uses the notes played in a random arpeggio pattern. The 1/2/4 options are the same as "Up Oct 1/2/4."

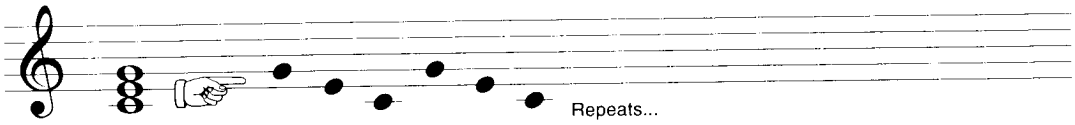
Example 1

Up Oct 1



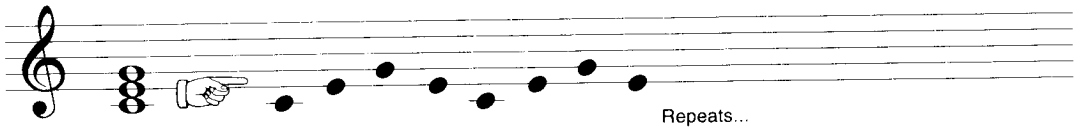
Example 2

Down Oct 1



Example 3

Up/Down A Oct 1



Example 4

Up/Down B Oct 1

SETTING MENU L4: Registration

Pressing display button **L4** next to **Registration** on the **SETTING MENU** screen displays a registration memory setting screen. This screen can be used to configure selective recall of registration memory contents, to copy the contents of one registration memory area to another, or to swap the contents of two registration memory areas. For more information about this item, see "Using Registration Memory" on page E-56.

SETTING MENU L5: One Touch Preset Select

Pressing display button **L5** next to **One Touch Preset Select** on the **SETTING MENU** screen displays a one-touch preset select setting screen. This screen can be used to specify which one-touch preset parameters you want to recall.

...on for Adjustment	Setting	Range	Description
Control Button/Slider 1	Tempo	On, Off	Selecting **On** for a parameter causes its setting to be recalled by the one-touch preset recall operation, and saved by the one-touch preset save operation. **Off** causes the setting to be ignored by save and recall operations.
Control Button/Slider 2	Accomp Volume	On, Off	
Control Button/Slider 3	Tone (Melody Part)	On, Off	
Control Button/Slider 4	Rhythm (Accompaniment Part)	On, Off	

NOTE

- For more information about one-touch preset settings for "**Tone**" and "**Rhythm**," see the "Registration Memory/One Touch Preset Table" at the back of this manual.

SETTING MENU R1: Accomp/Chord Setting

Pressing display button **R1** next to **Accomp/Chord** on the **SETTING MENU** screen displays an accompaniment/chord setting screen. This screen can be used to control chord auto accompaniment, the chord recognition system, etc.

Button for Adjustment	Setting	Range	Description
Control Button/Slider 1	Chord Hold	On, Off	Specifies whether auto accompaniment chords should continue to play after the keys in the accompaniment keyboard range are released. **On** causes auto accompaniment chords to continue, while **Off** causes chords to stop, but rhythm continues.
Control Button/Slider 2	Lower Hold	On, Off	Specifies whether the lower parts (LOWER 1, LOWER 2) should continue (**On**) to play or stop (**Off**) during auto accompaniment after keys are released. **On** adds more depth to accompaniments.
Control Button/Slider 3	Mixer Hold	On, Off	Specifies whether changes you make to accompaniment part Mixer settings should be retained. **On** causes Mixer settings and DSP 3, 4 to be retained when you change to another rhythm or rhythm element, while **Off** causes settings to revert to their preset defaults when you change to another rhythm or rhythm element.*1
Control Button/Slider 4	Rev.Cho.Hold	On, Off	Specifies whether changes you make to chorus/reverb settings should be retained. **On** causes chorus/reverb settings to be retained when you change to another rhythm, while **Off** causes settings to revert to their preset defaults when you change to another rhythm.*2
Control Button/Slider 5	On Base Chord	On, Off	Specifies whether the lowest note you play when using an inverted fingering of a chord in the accompaniment keyboard range during auto accompaniment should be interpreted as a bass note. **On** causes the lowest note of an inverted form chord to be interpreted as a bass note, while **Off** causes the inverted form chord to sound normally.*3
Control Button/Slider 6	Tension Chord	On, Off	Enables and disables recognition of tension chords during auto accompaniment play. **On** enables recognition, while **Off** disables recognition.
Control Button/Slider 7	6th Chord	On, Off	Enables and disables recognition of root position 6th and m6th chords during auto accompaniment play. **On** enables recognition, while **Off** disables recognition. *4

*1 Rhythm elements are preset with optimum default Mixer settings, which are normally applied automatically when you use auto accompaniment. Turning on **Mixer Hold** uses your settings instead of the preset defaults.

*2 Rhythms are preset with optimum default reverb and chorus type settings, which are normally applied automatically when you select a rhythm. Turning on **Rev.Cho.Hold** uses your settings instead of the preset defaults.

*3 This setting is mainly used with the FINGERED auto accompaniment mode, and it helps to turn it on when you want to play on bass chords within the relatively limited accompaniment keyboard range. You can leave this setting off if you are playing both the base note and the other notes of the chord in the accompaniment keyboard range. Even when **On Base Chord** is turned off, a chord in the accompaniment keyboard range with a fingering that separates the lowest note and the next lowest note by five tones or more is always interpreted as an on bass chord whose root is the lowest note.

*4 Examples
Off: Interpreted as Am7
On: Interpreted as C6

ccompaniment/chord setting
n, etc.

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ognition of root position 6th and o accompaniment play. **On** en- **Off** disables recognition. *4
lied automatically when you u ults. nally applied automatically wh aults. turn it on when you want to p this setting off if you are play ge. Even when **On Base Chor** e lowest note and the next low est note.

SETTING MENU R2: Fade In/Out

Pressing display button **R2** next to **Fade In/Out** on the **SETTING MENU** screen displays a fade in/out setting screen. This screen can be used to control how fade-in and fade-out are applied.

Button for Adjustment	Setting	Range	Description
Control Button/Slider 1	Fade In Measure	1 to 16	Specifies how many measures fade-in should take once it is started.
Control Button/Slider 2	Fade In Value (%)	0 to 100	Specifies the initial volume at the beginning of fade-in.
Control Button/Slider 5	Fade Out Measure	1 to 16	Specifies how many measures fade-out should take once it is started.

SETTING MENU R3: Ritardando

Pressing display button **R3** next to **Ritardando** on the **SETTING MENU** screen displays a ritardando setting screen. This screen can be used to control how ritardando is applied.

tton for Adjustment	Setting	Range	Description
Control Button/Slider 1	Measure	1 to 16	Specifies the number of measures ritardando should continue.
Control Button/Slider 2	Reach Tempo (%)	0 to 100	Specifies by what percent tempo should be decreased during the number of measures specified by the **Measure** parameter.

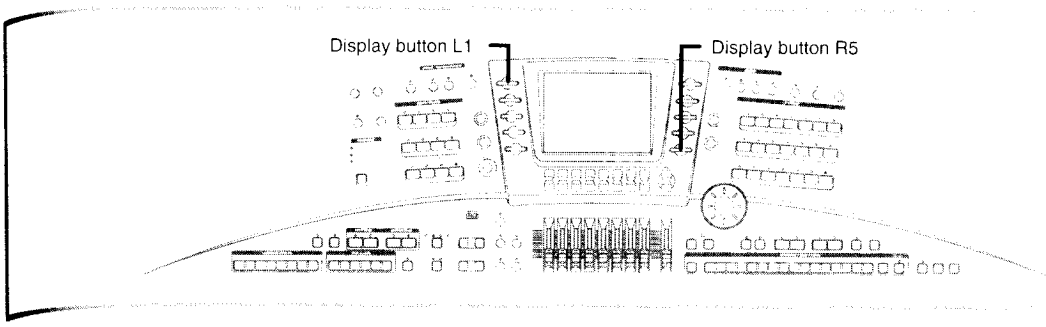
SETTING MENU R4: Interactive Accomp

Pressing display button **R4** next to **Interactive Accomp** on the **SETTING MENU** screen displays an Interactive Accomp setting screen. This screen can be used when Interactive Accomp is turned on (page E-47) to control various effects applied to auto accompaniment.

Button for Adjustment	Setting	Range	Description
Control Button/Slider 1	Velocity Control	On, Off	Specifies whether auto accompaniment should be affected (**On**) or not affected (**Off**) by changes in keyboard pressure while Interactive Accomp is turned on.
Control Button/Slider 2	Interactive Hold	On, Off	Specifies whether adjustments in the Interactive Accomp level* should be maintained (**On**) or not maintained (**Off**) after Interactive Accomp is turned off.
Control Button/Slider 3	Chord Function	On, Off	Specifies whether changes in auto accompaniment made using Interactive Accomp should be applied in accordance with the chord progression. When you play a fingering for a new chord in the accompaniment keyboard range when this function is turned on, the keyboard determines the relationship with the chord immediately before it, and alters the accompaniment pattern accordingly (pattern is altered when you play dominant chords). The chord progression does not affect the accompaniment pattern when this function is turned off.
Control Button/Slider 4	Interactive Sense	0 to 7	Specifies the degree of change in auto accompaniment caused by operation of a controller (keyboard, modulation wheel, expression pedal) to which Interactive Accomp is assigned. A larger value causes more change than a smaller value.

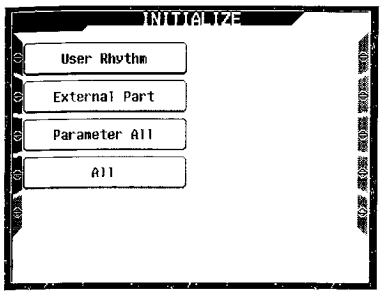
* Interactive Accomp Level
The relative degree that auto accompaniment is changed by Interactive Accomp is called the "Interactive Accomp Level." For example, the weakest keyboard play is Level 1, while the strongest keyboard play is Level 4. The function that maintains the Interactive Accomp level is called "Interactive Hold."

Pressing display button **R1** next to **After Touch/Control** on the Interactive Accomp setting screen displays an after touch control setting screen. Use this screen to assign Interactive Accomp effects to the modulation wheel or expression pedal. See "AFTER TOUCH/CONTROL Screen Items" on page E-164 for information about the settings you can make using the after touch/control setting screen.



SETTING MENU R5: Initialize

Pressing display button **R5** next to **Initialize** on the **SETTING MENU** screen displays an initialization operation screen.



L1 User Rhythm
Deletes user rhythms (accompaniment patterns created using the Pattern Sequencer). You can delete a single user rhythm or all user rhythms currently stored in memory.

L2 External Part
Initializes external parts when using S.SQR, Demo, Disk, Song Studio, and MIDI In.

IMPORTANT!

Parameters for all parts controlled by MIDI (Mater Tune, Master Key-shift, Master Volume, Master Pan) are also initialized.

L3 Parameter All
Returns all parameters (all parameters, including **SETTING MENU** screen settings, **AFTER TOUCH/CONTROL** screen settings, etc.) to their initial default settings.

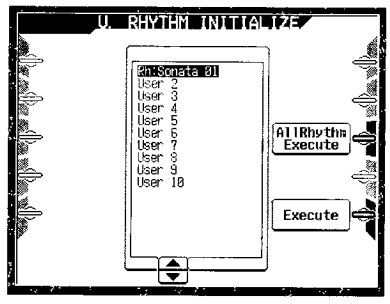
L4 All
Initializes all keyboard settings (including **SETTING** and **AFTER TOUCH/CONTROL** menu screen settings), and deletes all user data created using the Song Sequencer, Pattern Sequencer, Synthesizer, etc.

The following are the procedures you should use for each type of initialization.

Deleting User Rhythms

1. On the **SETTING MENU** screen, press display button **R5** next to **Initialize** to display the initialize screen.

2. Press display button **L1** next to **User Rhythm** to display the user rhythm initialization screen.



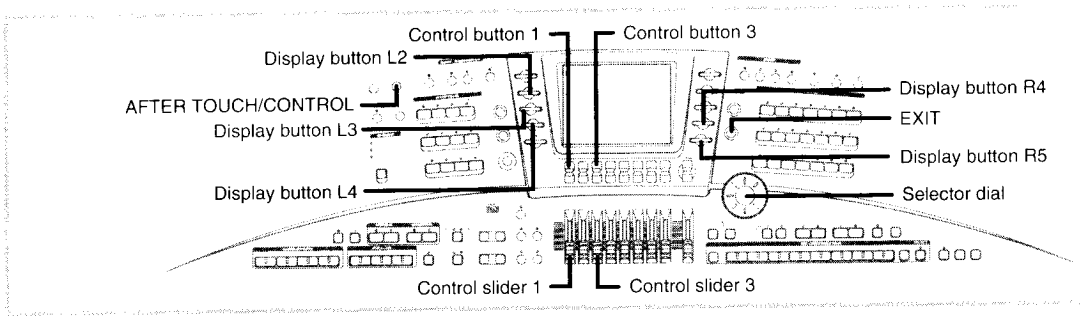
3. The next steps you should perform depend on whether you want to delete a single user rhythm or all user rhythms.

To delete a single user rhythm

- Use control button set 4 or control slider 4 to select the user rhythm you want to delete.
- Press display button **R5** next to **Execute**.
- In response to the confirmation message that appears, press display button **R4** (**Yes**) to delete the selected rhythm or **R5** (**No**) to cancel without deleting anything.

To delete all user rhythms

- Press display button **R3** next to **All Rhythm Execute** (all pattern execute).
- In response to the confirmation message that appears, press display button **R4** (**Yes**) to delete all user rhythm patterns in memory or **R5** (**No**) to cancel without deleting anything.



Initializing External Parts

1. On the **SETTING MENU** screen, press display button **R5** next to **Initialize** to display the initialize screen.

2. Press display button **L2** next to **External Part**.

3. In response to the confirmation message that appears, press display button **R4** (**Yes**) to initialize all external parts or **R5 (No)** to cancel without doing anything.

Initializing All Keyboard Parameters

1. On the **SETTING MENU** screen, press display button **R5** next to **Initialize** to display the initialize screen.

2. Press display button **L3** next to **Parameter All**.

3. In response to the confirmation message that appears, press display button **R4** (**Yes**) to initialize all keyboard parameters or **R5 (No)** to cancel without doing anything.

Deleting All Data in Keyboard Memory

1. On the **SETTING MENU** screen, press display button **R5** next to **Initialize** to display the initialize screen.

2. Press display button **L4** next to **All**.

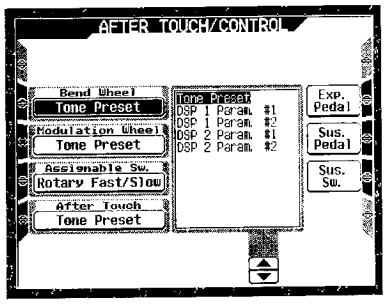
3. In response to the confirmation message that appears, press display button **R4** (**Yes**) to delete all data in keyboard memory or **R5 (No)** to cancel without doing anything.

AFTER TOUCH/CONTROL Screen Items

This sections provides details about the settings you can make using the **AFTER TOUCH/CONTROL** screen.

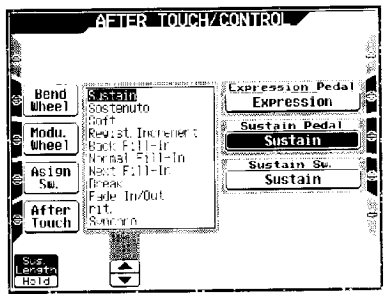
AFTER TOUCH/CONTROL Screen Operation Example

1. Press the **AFTER TOUCH/CONTROL** button to display the **AFTER TOUCH/CONTROL** screen.



2. Press the display button next to the controller whose settings you want to change.

- In this example, we will press display button R3 next to **Sus.Pedal** to change the settings of the sustain pedal. Pressing **R3** causes the screen shown below to appear.



3. Use control button set 3, control slider 3, or the selector dial to select the effect assigned to the sustain pedal.

4. Use control button set 1 and control slider 1 to set the **Sus. Length** (sustain length).
   - This setting is valid only when sustain is the assigned effect.

5. After you are finished making the settings you want, press the **EXIT** button to exit the **AFTER TOUCH/CONTROL** screen.
   - You can also exit the **AFTER TOUCH/CONTROL** screen by pressing the **AFTER TOUCH/CONTROL** button.

AFTER TOUCH/CONTROL L2: Pitch Bend Wheel

Pressing display button **L2** next to **Pitch Bend Wheel** on the **AFTER TOUCH/CONTROL** screen displays a pitch bend wheel effect assignment screen.

...n for Adjustment	Setting	Range	Description
Control Button/Slider 6	Pitch Bend Wheel Effect Assignment	Tone Preset	Tone Preset / Effect applied to tone when wheel is rotated. See the Synthesizer Mode controller settings on page E-72 for information about the effects assigned to each tone.
		DSP 1 Parameter #1	DSP 1 Parameter #1 / When wheel is rotated, controls Parameter 1 of effect assigned to DSP 1. Change setting using control button 1 or control slider 1.
		DSP 1 Parameter #2	DSP 1 Parameter #2 / When wheel is rotated, controls Parameter 2 of effect assigned to DSP 1. Change setting using control button 2 or control slider 2.
		DSP 2 Parameter #1	DSP 2 Parameter #1 / When wheel is rotated, controls Parameter 1 of effect assigned to DSP 2. Change setting using control button 3 or control slider 3.
		DSP 2 Parameter #2	DSP 2 Parameter #2 / When wheel is rotated, controls Parameter 2 of effect assigned to DSP 2. Change setting using control button 4 or control slider 4.

AFTER TOUCH/CONTROL L3: Modulation Wheel

Pressing display button **L3** next to **Modulation Wheel** on the **AFTER TOUCH/CONTROL** screen displays a modulation wh effect assignment screen.

Button for Adjustment	Setting	Range	Description
Control Button/Slider 6	Modulation Wheel Effect Assignment	Tone Preset	Tone Preset / Effect applied to tone when wheel is rot ed. See the Synthesizer Mode controller settings on pa E-71 for information about the effects assigned to ea tone.
		DSP 1 Parameter #1	DSP 1 Parameter #1 / When wheel is rotated, contr Parameter 1 of effect assigned to DSP 1. Change setti using control button 1 or control slider 1.
		DSP 1 Parameter #2	DSP 1 Parameter #2 / When wheel is rotated, contr Parameter 2 of effect assigned to DSP 1. Change sett using control button 2 or control slider 2.
		DSP 2 Parameter #1	DSP 2 Parameter #1 / When wheel is rotated, contr Parameter 1 of effect assigned to DSP 2. Change sett using control button 3 or control slider 3.
		DSP 2 Parameter #2	DSP 2 Parameter #2 / When wheel is rotated, contr Parameter 2 of effect assigned to DSP 2. Change sett using control button 4 or control slider 4.
		Interactive	Adjusts application of the interactive function to auto companiment in accordance with how far the whee rotated.
		Portamento Time	Adjusts portamento time in accordance accomp with h far the wheel is rotated when Portamento On/Off is signed to the assignable button.

AFTER TOUCH/CONTROL L4: Assignable Switch

Pressing display button **L4** next to **Assignable Sw.** on the **AFTER TOUCH/CONTROL** screen displays a screen for adjustin affect achieved when the **ASSIGNABLE** button is pressed.

Button for Adjustment	Setting	Range	Description
Control Button/Slider 1	Depth	1 to 127	Specifies the strength and depth of the effect when button is pressed.
Control Button/Slider 6	Assignable Button Effect Assignment	Rotary Fast/Slow	Specifies rotary effect speed (valid only when rotary fect is assigned to a DSP).
		Portamento On/Off	Each press of the button toggles portamento on and
		Tone Preset (Mod.)	Tone Preset / Effect applied to tone when wheel is r ed. See the Synthesizer Mode controller settings on p E-72 for information about the effects assigned to tone.

AFTER TOUCH/CONTROL L5: After Touch

Pressing display button **L5** next to **After Touch** on the **AFTER TOUCH/CONTROL** screen displays a screen for selecting the effect obtained and how the effect is applied in accordance with changes in keyboard pressure.

...on for Adjustment	Setting	Range	Description
Control Button/Slider 1	After Curve	Off, Light, Normal, Heavy 1, Heavy 2	Specifies how much keyboard pressure is required to apply the after touch effect. Selecting **Off** turns off after touch.
Control Button/Slider 6	After Touch Effect Assignment	Tone Preset	Applies the after touch effect to a tone.
			Tone Preset / Effect applied to tone when wheel is rotated. See the Synthesizer Mode controller settings on page E-72 for information about the effects assigned to each tone.
		DSP 1 Parameter #1	DSP 1 Parameter #1 / When wheel is rotated, controls Parameter 1 of effect assigned to DSP 1. Change setting using control button 1 or control slider 1.
		DSP 1 Parameter #2	DSP 1 Parameter #2 / When wheel is rotated, controls Parameter 2 of effect assigned to DSP 1. Change setting using control button 2 or control slider 2.
		DSP 2 Parameter #1	DSP 2 Parameter #1 / When wheel is rotated, controls Parameter 1 of effect assigned to DSP 2. Change setting using control button 3 or control slider 3.
		DSP 2 Parameter #2	DSP 2 Parameter #2 / When wheel is rotated, controls Parameter 2 of effect assigned to DSP 2. Change setting using control button 4 or control slider 4.

AFTER TOUCH/CONTROL R1: Expression Pedal

Pressing display button **R1** next to **Exp.Pedal** (expression pedal) on the **AFTER TOUCH/CONTROL** screen displays a screen for assigning an effect to the sustain pedal.

...for Adjustment	Setting	Range	Description
Control Button/Slider 3	Expression Pedal Effect Assignment	Expression	Causes volume to be adjusted in accordance with how far the pedal is depressed.
		DSP 1 Parameter #1	DSP 1 Parameter #1 / When wheel is rotated, controls Parameter 1 of effect assigned to DSP 1. Change setting using control button 1 or control slider 1.
		DSP 1 Parameter #2	DSP 1 Parameter #2 / When wheel is rotated, controls Parameter 2 of effect assigned to DSP 1. Change setting using control button 2 or control slider 2.
		DSP 2 Parameter #1	DSP 2 Parameter #1 / When wheel is rotated, controls Parameter 1 of effect assigned to DSP 2. Change setting using control button 3 or control slider 3.
		DSP 2 Parameter #2	DSP 2 Parameter #2 / When wheel is rotated, controls Parameter 2 of effect assigned to DSP 2. Change setting using control button 4 or control slider 4.
		Interactive	Causes application of the interactive accomp function to auto accompaniment to be adjusted in accordance with how far the pedal is pressed.

AFTER TOUCH/CONTROL R3: Sustain Pedal

Pressing display button **R3** next to **Sus.Pedal** (sustain pedal) on the **AFTER TOUCH/CONTROL** screen displays a screen for assigning an effect or operation to the expression pedal (foot switch).

Button for Adjustment	Setting	Range	Description
Control Button/Slider 1	Sus.Length	1 to 63, Hold	This setting is valid only when **Sustain** is assigned as the effect to the sustain pedal. This setting specifies how long the volume of the sound is sustained while the pedal is depressed. Hold is the maximum sustain time, and with an organ type tone the sound continues as long as the sustain pedal is depressed. A value specifies the sustain time, with sustain being maintained longer as the value becomes greater.
Control Button/Slider 3	Sustain Pedal Effect Assignment	Sustain	Sustain pedal
		Sostenuto	Sostenuto pedal
		Soft	Soft pedal
		Regist. Increment	Each press of the sustain pedal cycles through registration memories.
		Back Fill-In	Sustain pedal performs same function as the **BACK FILL-IN** button.
		Normal Fill-In	Sustain pedal performs same function as the **NORMAL FILL-IN** button.
		Next Fill-In	Sustain pedal performs same function as the **NEXT FILL-IN** button.
		Break	Sustain pedal performs same function as the **BREAK** button.
		Fade in/out	Sustain pedal toggles the **FADE IN/OUT** button on and off.
		rit.	Sustain pedal toggles the rit. (ritardando) button on and off.
		Synchro	Sustain pedal performs same function as the **SYNCHRO START/SYNC STOP** button.
		Auto Harmonize	Sustain pedal applies auto harmonize.
		Arpeggiator	Sustain pedal toggles the **ARPEGGIATOR** button on and off.
		Arpeggiator Hold	Sustain pedal toggles arpeggiator hold*1 on and off.
		Rotary Fast/Slow	Sustain pedal changes the Rotary Effect Speed. This setting is valid only when **Rotary** is assigned to the DSP.
		DSP 1	Sustain pedal toggles Insertion 1 on and off.
		DSP 2	Sustain pedal toggles Insertion 2 on and off.
		Interactive	Sustain pedal toggles the **INTERACTIVE ACCOMP** button on and off.
		On Bass chord	Sustain pedal toggles on bass*2 on and off.

*1 See page E-157 for more information about arpeggiator hold.
*2 See page E-160 for more information about on bass chord.

AFTER TOUCH/CONTROL R4: Sustain Switch

Pressing display button **R4** next to **Sus.Sw.** (sustain switch) on the **AFTER TOUCH/CONTROL** screen displays a screen for assigning and controlling the assigned to the sustain switch.

Button for Adjustment	Setting	Range	Description
Control Button/Slider 1	Sus.Length	1 to 63, Hold	This setting specifies how long the volume of the sound is sustained while the button is depressed. Hold is the maximum sustain time, and with an organ type tone the sound continues as long as the sustain pedal is depressed. A value specifies the sustain time, with sustain maintained longer as the value becomes greater.

Using MIDI

What is MIDI?

The letters "MIDI" stand for "Musical Instrument Digital Interface," which is the name of a worldwide standard for digital signals and connectors that makes it possible to exchange musical data between musical instruments and computers (devices) produced by different manufacturers. MIDI compatible equipment can exchange keyboard key press, key release, tone change, and other data as "messages."

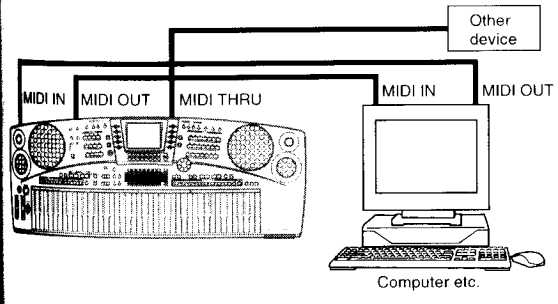
Though you do not need any special knowledge about MIDI to use this keyboard as a stand-alone unit, MIDI operations require a bit of specialized knowledge. This section provides you with an overview of MIDI that will help to get you going.

MIDI Connections

MIDI messages are sent out through the MIDI OUT terminal of one device to the MIDI IN terminal of another device over a MIDI cable. To send a message from this keyboard to another device, for example, you must use a MIDI cable to connect the MIDI OUT terminal of this keyboard to the MIDI IN terminal of the other device. To send MIDI messages back to this keyboard, you need to use a MIDI cable to connect the other device's MIDI OUT terminal to the MIDI IN terminal of this keyboard.

To use a computer or other MIDI device to record and playback the MIDI data produced by this keyboard, you must connect the MIDI IN and MIDI OUT terminals of both devices in order to send and receive data.

There is a third MIDI terminal named MIDI THRU, which passes any MIDI messages received by the MIDI IN terminal on to another device.



NOTE

- This keyboard also has a **HOST** terminal that can be used to connect to a computer. See "Connecting to a Computer" on page E-175 for more information.

MIDI Channels

MIDI allows you to send the data for multiple parts at the same time, with each part being sent over a separate "MIDI channel." There are 16 MIDI channels, numbered 1 through 16, and MIDI channel data is always included whenever you exchange data (key press, pitch bend operation, etc.)

This keyboard is equipped with "multi-timbre" capabilities, which means it can receive messages over all 16 MIDI channels and play up to 16 parts at the same time. Keyboard and pedal operations performed on this keyboard are sent out by selecting a MIDI channel (1 to 16) and then sending the appropriate message.

General MIDI

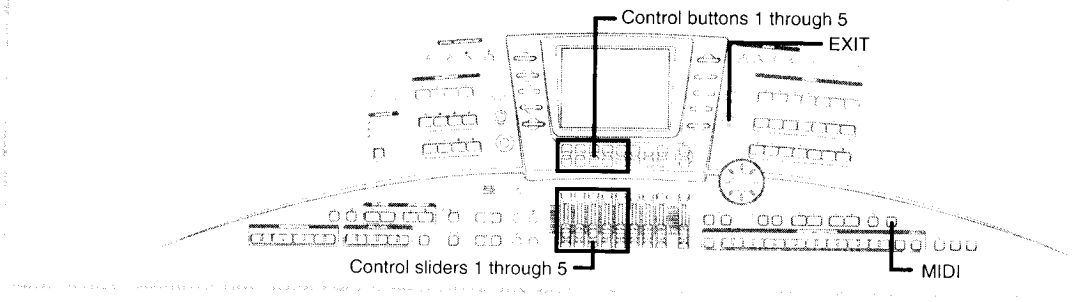
Though MIDI makes it possible to exchange musical data between devices produced by different manufacturers, MIDI musical data does not indicate the actual notes themselves, but rather information on whether a keyboard key is pressed or released, and the tone number.

If tone number 1 on a keyboard produced by Company A is PIANO while tone number 1 on a Company B's keyboard is BASS, for example, data that is played using the PIANO tone on Company A's keyboard will be played using the BASS tone on Company B's keyboard. If a computer, sequencer or other device with auto accompaniment capabilities is used to produce music data for the Company A keyboard which has 16 parts (16 channels) and then that data is sent to the Company B keyboard which can receive only 10 parts (10 channels), some of the parts will not sound.

To overcome problems such as these, the industry has come up with standard numbering for tones, pads, and other general factors that determine the sound source configuration. This standard is called "General MIDI."

General MIDI defines the tone numbering sequence, the drum sound numbering sequence, the number of MIDI channels that can be used, and other general factors that determine the sound source configuration. Because of this, musical data produced on a General MIDI sound source can be played back using similar tones and identical nuances as the original, even when played on another manufacturer's sound source.

This keyboard conforms to General MIDI standards, so it can be connected to a computer or other device and used to play back General MIDI data that has been purchased, downloaded from the Internet, or obtained from any other source.



Sending and Receiving MIDI Messages

This keyboard can send notes you play on the keyboard, as well as auto accompaniment patterns and Sequencer playback as MIDI messages to another device.

MIDI Send Data

Keyboard Play

Each keyboard part (UPPER 1, UPPER 2, LOWER 1, LOWER 2) can be sent over its own individual MIDI channel. When Auto Harmonize is turned on, harmonize notes are also sent over each individual MIDI channel.

Auto Accompaniment Play

Each accompaniment part can be sent over its own individual MIDI channel. The "Accomp MIDI Out" parameter (page E-169) is used to specify whether a part is sent.

Song Sequencer Playback

The following describes how track data can be sent over individual MIDI channels.

- System Track ..... Each part (internal part) that makes up the system track can be sent over its own individual MIDI channel.
- Tracks 1 through 16 ... Track 1 through 16 correspond to external parts 1 through 16. Each part can be sent over its own individual MIDI channel.

Song Studio Playback

Each accompaniment part can be sent over its own individual MIDI channel. Use the **Accomp MIDI Out** parameter (page E-171) to specify whether a part should be sent. Melody part is sent in accordance with the channel settings of Part 1 (**pt1**) on the **TX SETTING** screen (page E-171).

Part Send Channels

Use the procedure under "Specifying Send Channels for Each Part" to assign parts to send channels.

MIDI Message Receive

Multi Channel Receive

The 16 external parts can be used to receive data over 16 MIDI message channels at the same time. Receive channel assignments for each part can be made using the "**Rx Setting**" parameter (page E-171).

Chord Changes when Using Auto Accompaniment

MIDI messages received from an external device can be interpreted as chord changes as specified by the fingerings supported by the auto accompaniment system of this keyboard. Use the "**MIDI In Chord Judge**" parameter (page E-171) to turn this capability on and off.

- See the MIDI Implementation Chart at the back of this User's Guide for more information about each MIDI message.

MIDI Settings

You can change the settings of a number of parameters that control how MIDI messages are sent and received.

MIDI Parameters

Pressing the MIDI button displays a **MIDI MENU** screen, which contains the MIDI parameters described below.

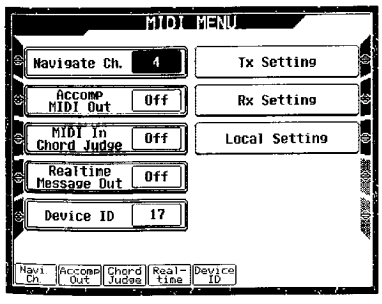
Setting/Menu	Description	Reference Page
Navigate Ch. (Navigate Channel)	Specifies which MIDI channel's Note On message data appears on the on-screen keyboard or staff when **KEYBOARD** or **MUSIC STAFF** is selected as the display mode (page E-18)	E-171
Accomp MIDI Out (Accompaniment MIDI Out)	Specifies whether this keyboard's accompaniment is sent as MIDI messages.	E-171
MIDI In Chord Judge	Specifies whether MIDI messages received from an external device should be interpreted as auto accompaniment chord changes.	E-171
Realtime Message Out	Specifies whether real-time messages (FA, FC, F8) should be output.	E-171
Device ID	Specifies the MIDI device ID for this keyboard.	E-171
Tx Setting (Transmit Setting)	Specifies whether MIDI messages are sent for each part of this keyboard, and the send channel for each part.	E-172
Rx Setting (Receive Setting)	Specifies whether MIDI messages are received for each part of this keyboard, and the receive channel for each part.	E-173
Local Setting	Specifies whether or not this keyboard should sound each part in accordance with the keyboard's local control* settings.	E-174

* The term "local control" as used here refers to keyboard play, playback of song data, and other control operations and functions of this keyboard.

Making Navigate Channel, Accomp MIDI Out, MIDI In Chord Judge, Realtime Message Out, and Device ID Settings

Use the following procedure to change **Navigate Ch.**, **Accomp MIDI Out**, **MIDI In Chord Judge**, **Realtime Message Out**, and **Device ID** settings directly on the **MIDI MENU** screen.

1. Press the **MIDI** button to display the **MIDI MENU** screen.



2. Use control buttons and control sliders 1 through 5 to make the settings you want.

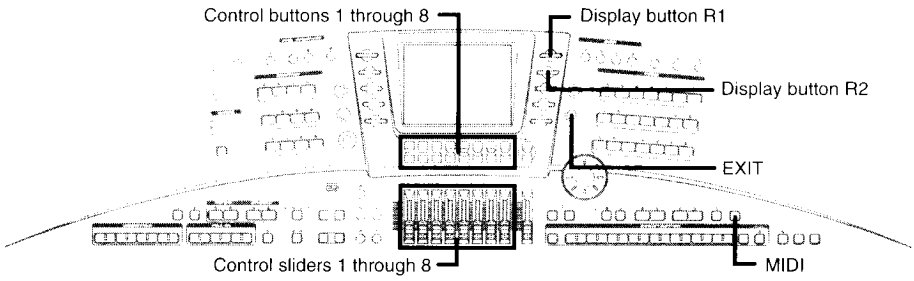
Control Button/Slider 1 (Navigate Ch.)
Selects a navigate channel in the range of 1 to 16.
Control Button/Slider 2 (Accomp MIDI Out)
Turns the accompaniment MIDI channel on and off.
Control Button/Slider 3 (MIDI In Chord Judge)
Turns MIDI in chord judgment on and off.
Control Button/Slider 4 (Realtime Message Out)
Turns real-time message output on and off.
Control Button/Slider 5 (Device ID)
Selects a device ID in the range of 1 through 32.

- You can also change the setting of a parameter by pressing the display button (**L1** through **L5**) next to the parameter name to highlight it, and then rotating the selector dial.

3. After you are finished making the settings you want, press the **EXIT** button to return to the **MIDI MENU** screen.

Navigate Ch. (Navigate Channel)

This parameter specifies which MIDI channel's Note On message data appears on the on-screen keyboard or staff when **KEYBOARD** or **MUSIC STAFF** is selected as the display mode (page E-18). You can set a value in the range of 1 through 16.



MIDI In Chord Judge

This parameter determines whether note data received from an external device should be interpreted as an auto accompaniment chord fingering. Turn on this parameter when you want to control auto accompaniment chords from a computer or other external device.

- **On** ..... Causes note data input through MIDI IN to be interpreted as auto accompaniment chord fingerings. Note data received over the channel specified as Part 1 (**Pt1**) by the **Rx Setting** (receive channel setting) parameter described on page E-169 is interpreted as auto accompaniment chord fingerings.
- **Off** ..... Turns off **MIDI In Chord Judge**.

Accomp MIDI Out (Accompaniment MIDI Out)

Turn on this parameter when you want sound auto accompaniment on an external devices sound source.

- **On** ..... Outputs auto accompaniment as MIDI messages through the keyboard's MIDI OUT terminal.
- **Off** ..... Does not output auto accompaniment.

Device ID

A device ID is a number used by system exclusive messages to tell one device from another. When you specify a device ID for this keyboard, it recognizes (receives) only system exclusive messages that include the same device ID number. You should assign device IDs when you are using an external synthesizer to control multiple MZ-2000 units. Doing so makes it possible to send a system exclusive message to a specific MZ-2000 unit.

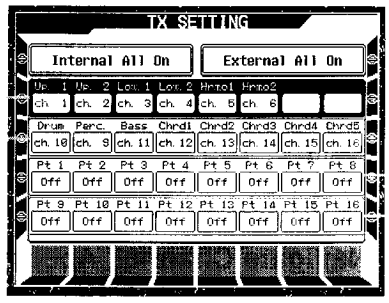
NOTE

- For more detailed information, visit the CASIO Website at http://www.casio.co.jp/English/

Specifying Send Channels for Each Part

1. Press the **MIDI** button to display the **MIDI MENU** screen.

2. Press display button **R1** next to **Tx Setting** (transmit setting) to display the **TX SETTING** screen.



Internal parts (accompaniment)

Internal parts (melody)

External parts (9 to 16)

External parts (1 to

3. Press a display button to select the row that contains the part whose send channel you want to specify.

- To select the row that contains external parts 1 through 8, for example, press display button **R4** or **L4**. The row becomes highlighted to indicate it is selected.

4. Use control buttons and control sliders 1 through 8 to change the channel setting of each of the parts in the highlighted (selected) line.
   - To change the send channel setting of Part 7 (**pt7**), for example, use control button set 7 or slider 7.
   - You can select **Off** or a value in the range of **ch1** through **ch16** for each part. No MIDI messages are sent for any parts that are **Off**.

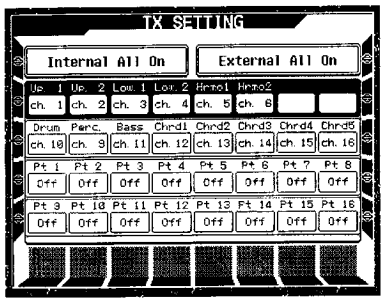
5. After you are finished making the settings you want, press the **EXIT** button to return to the **MIDI MENU** screen.

6. To exit the **MIDI MENU** screen, press the **EXIT** button again.

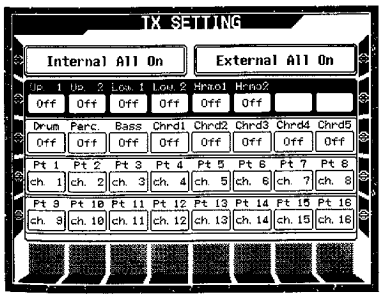
NOTE

- Pressing display button **L1** next to **Internal All On** turns all internal parts on, and all external parts off.
- Pressing display button **R1** next to **External All On** turns all external parts on, and all internal parts off.

Pressing **L1 Internal All On**



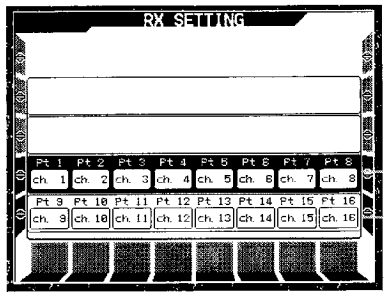
Pressing **R1 External All On**



Specifying Receive Channels for Each Part

1. Press the **MIDI** button to display the **MIDI MENU** screen.

2. Press display button **R2** next to **Rx Setting** (receive setting) to display the **RX SETTING** screen.



External parts (9 to 16)

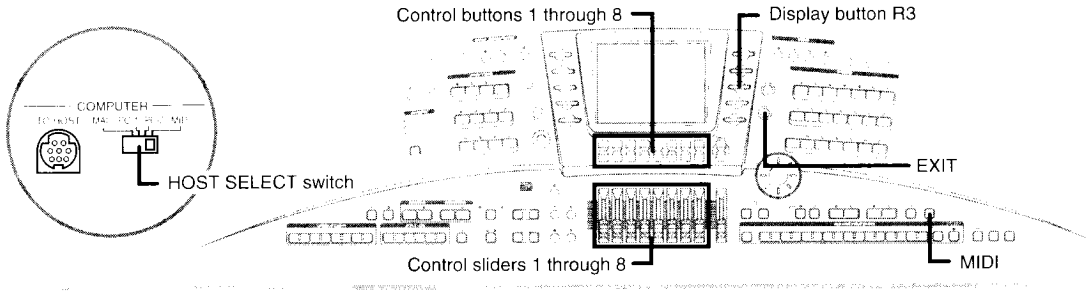
External parts (1 to 8)

3. Press a display button to select the row that contains the part whose receive channel you want specify.
   - To select the row that contains external parts 1 through 8, for example, press display button **R4** or **L4**. The row becomes highlighted to indicate it is selected.

4. Use control buttons and control sliders 1 through 8 to change the channel setting of each of the parts in the highlighted (selected) line.
   - To change the receive channel setting of Part 7 (**pt7**), for example, use control button set 7 or slider 7.
   - You can select **Off** or a value in the range of **ch1** through **ch16** for each part. No MIDI messages are received for any parts that are **Off**.

5. After you are finished making the settings you want, press the **EXIT** button to return to the **MIDI MENU** screen.

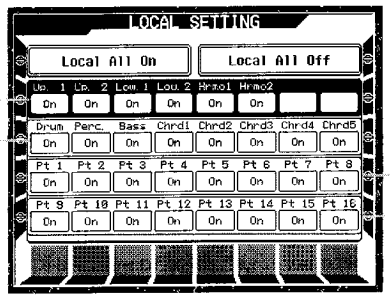
6. To exit the **MIDI MENU** screen, press the **EXIT** button again.



Making Local Settings

1. Press the **MIDI** button to display the **MIDI MENU** screen.

2. Press display button **R3** next to **Local Setting** to display the **LOCAL SETTING** screen.



Internal parts (accompaniment)

Internal parts (melody)

External parts (9 to 16)

External parts (1 to 8)

3. Press a display button to select the row that contains the part whose local setting you want change.
   - To select the row that contains external parts 1 through 8, for example, press display button **R4** or **L4**. The row becomes highlighted to indicate it is selected.

4. Use control buttons and control sliders 1 through 8 to change the local setting of each of the parts in the highlighted (selected) line.
   - To change the local setting of Part 7 (**pt7**), for example, use control button set 7 or slider 7.
   - You can select **On** or **Off** for each part. A part that is **On** is controlled locally, so it is affected by keyboard play, playback of song data, and other control operations and functions of this keyboard. Local control is not applied to part that is **Off**.

5. After you are finished making the settings you want, press the **EXIT** button to return to the **MIDI MENU** screen.

6. To exit the **MIDI MENU** screen, press the **EXIT** button again.

NOTE

- Pressing display button **R1** next to **Local All On** turns all local parts on, while **R1** next to **Local All Off** turns all local parts off.
- Regardless of the **Local Setting** parameter setting, MIDI messages are sent in accordance with the **Tx Setting** (transmit setting) parameter (page E-172).

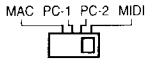
Connecting to a Computer

You can use the keyboard's **HOST** terminal to connect it to a computer.

To connect to a computer

Be sure to turn off the keyboard and your computer before connecting them. You should also set the volume controller of the keyboard to a relatively low volume.

1. Slide the **HOST SELECT** switch to the setting that matches the type of computer you are connecting to.

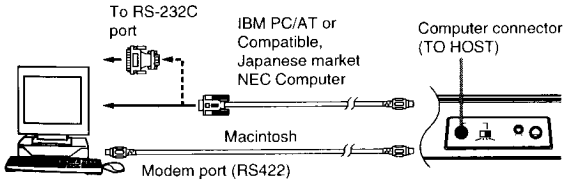


PC-1 : Japanese market NEC Computer (31,250 bps)
PC-2 : IBM PC/AT or Compatible (38,400 bps)
MAC : Macintosh
MIDI : MIDI keyboard or other MIDI device (using the MIDI terminals)

NOTE

- Be sure to set the **HOST SELECT** switch to **MIDI** whenever using the MIDI terminals. Signals will not go to the **MIDI** terminals when the selector is in any other position.

2. Connect the keyboard's **TO HOST** connector to your computer's serial port.



3. Turn on the keyboard, and then turn on your computer or other connected device.

4. Start up the software you want to use on your computer.

NOTE

- Make sure keyboard power is turned off before changing the **HOST SELECT** switch setting. Any changes made while power is turned on are ignored.
  Correct operation may not be possible if the **HOST SELECT** switch setting does not match the type of computer you are using.
- RS-232C ports come in two types: 25-pin and 9-pin. This keyboard can be connected to either type of port. Just make sure that the cable you use is one that matches the type of port equipped on your computer.
- The RS-232C interfaces equipped on Japanese market NEC Computer come in two types: 31,250 bps and 38,400 bps. Set the **HOST SELECT** switch to either PC-1 (31,250 bps) or PC-2(38,400 bps) in accordance with the documentation that comes with the music software or serial driver software you are using.

Troubleshooting

Problem	Possible Cause	Action	See page
No sound when keyboard keys are pressed.	1. AC adaptor is not connected correctly. 2. Power is not turned on. 3. **VOLUME** knob setting is too low. 4. Playing in the accompaniment keyboard range while the accompaniment mode is CASIO CHORD or FINGERED. 5. **LOCAL CONTROL** is off. 6. The melody part is off. 7. The melody part volume setting is too low. 8. The Synthesizer cutoff frequency is too low. 9. The Synthesizer attack time is too high. 10. A MIDI IN command has lowered the master volume setting. 11. All Drawbar settings are 0 or Off. 12. The DSP volume setting is 0. 13. The Combination U1/U2 balance is set to some extreme value. 14. Expression is being applied with the expression pedal. 15. Amplitude is assigned to the modulation wheel and the modulation wheel is rotated. 16. The keyboard is in fade in standby.	1. Check to make sure the AC adaptor is connected correctly. 2. Press the **POWER** button to turn on power. 3. Use the **VOLUME** knob to increase volume. 4. Auto accompaniment is turned off, which is indicated when none of the accompaniment mode indicators are lit. 5. Turn on **LOCAL CONTROL**. 6. Use the Mixer to turn on the melody part. 7. Use the Mixer to increase the volume setting for the melody part. 8. Check the cutoff frequency. 9. Check the attack time. 10. Execute the initialize function external part. 11. Check the Drawbar Settings. 12. Check the DSP volume setting. 13. Check the U1/U2 balance setting. 14. Check the expression pedal. 15. Return the modulation wheel to its original position or check the Synthesizer Mode controller settings. 16. Press the **FADE IN/OUT** button again to cancel fade in standby.	Page E-13 Page E-22 Page E-22 Page E-40 Page E-174 Page E-54 Page E-52 Page E-62 Page E-62 Page E-164 Page E-35 Page E-34 Page E-27 Page E-42 Pages E-29, 7 Page E-46
Auto accompaniment does not sound.	1. Accompaniment volume is set to 000. 2. Auto accompaniment parts are turned off. 3. The volume settings of the auto accompaniment parts are too low. 4. The DSP volume setting is 0. 5. A MIDI IN command has lowered the master volume setting.	1. Use the **Accomp/Disk Volume** button to increase the volume. 2. Use the Mixer to turn on the auto accompaniment parts. 3. Use the Mixer to increase the volume settings of the applicable parts. 4. Check the DSP volume setting. 5. Execute the initialize function external part.	Page E-41 Page E-53 Page E-52 Pages E-34, 1 Page E-16
Sound output does not change when key pressure is varied.	Touch response is turned off.	Use the **SETTING MENU** screen to select touch curve.	Page E-15
Some parts stop playing at some point during Sequencer playback.	Playback exceeds the maximum polyphony of the keyboard.	Use the Song Sequencer to turn off parts and decrease the number of parts playing at the same time.	Page E-87
Cannot record auto accompaniment rhythm.	An external track (1 to 16) is selected as the record track.	When in record standby, select the system track as the record track.	Page E-7

	See page
AC adaptor	Page E-13
n to turn on	Page E-22
b to increase	Page E-22
s turned off, n none of the e indicators	Page E-40
TROL. on the melo-	Page E-174 Page E-54
ease the vol- elody part. uency.	Page E-52 Page E-62
.	Page E-62
function exter-	Page E-164
Settings. me setting. lance setting.	Page E-35 Page E-34 Page E-27
n pedal.	Page E-12
ion wheel to its check the Syn- roller settings. N/OUT button in standby.	Pages E-29, 7 Page E-46
isk Volume but- volume. urn on the auto rts. ncrease the vol- applicable parts. ume setting. ze function exter-	Page E-41 Page E-53 Page E-52 Pages E-34 Page E-16
MENU screen to	Page E-15
encer to turn off e number of parts time.	Page E-8
dby, select the sys- ord track.	Page E-7

Problem	Possible Cause	Action	See page
No sound is produced when playing MIDI data from a computer.	1. MIDI cables are not connected properly. 2. The part is turned off or its volume setting is too low. 3. Receive channels are turned off. 4. A MIDI IN command has lowered the master volume setting. 5. The **HOST SELECT** setting is wrong.	1. Connect MIDI cables properly. 2. Use the Mixer to turn on the part or increase its volume. 3. Specify the channel using the receive channel setting. 4. Execute the initialize function external part. 5. Set **HOST SELECT** to the correct setting for the computer to which you are connected.	Page E-169 Pages E-52, 54 Page E-173 Page E-164 Page E-175
Playing on the keyboard produces strange sound when connected to a computer.	The computer's MIDI THRU function is turned on.	Turn off the computer's MIDI THRU function or turn of **LOCAL CONTROL** on the keyboard.	Page E-174
Cannot record data played on the keyboard to a computer.	1. **ACCOMP MIDI OUT** is turned off. 2. Receive channels are turned off. 3. The **HOST SELECT** setting is wrong. 4. **Realtime Message Out** is turned off.	1. Turn on **ACCOMP MIDI OUT**. 2. Specify the channel using the receive channel setting. 3. Set **HOST SELECT** to the correct setting for the computer to which you are connected. 4. Turn on **Realtime Message Out**.	Page E-171 Page E-173 Page E-175 Page E-171
No sound produced by microphone/line input.	1. The line cables are not connected properly. 2. The Mixer volume setting is 0. 3. The microphone volume setting is too low.	1. Check the line cables for proper connection. 2. Check the Mixer volume setting. 3. Check the **MIC VOLUME** jnob setting.	Page E-11 Page E-52 Page E-11
No sound from the left speaker or right speaker.	1. The Mixer pan setting is at either extreme. 2. A MIDI IN command has changed the master setting. 3. The left or right **Line In** cable is not connected correctly.	1. Check the Mixer pan setting. 2. Execute the initialize function external part. 3. Check the line cables for proper connection.	Page E-52 Page E-164 Page E-11
Keyboard cannot receive exclusive messages over MIDI IN.	The exclusive message device ID does not match the keyboard's device ID.	Make sure the exclusive message device ID matches the keyboard's device ID.	Page E-171
DSP effects are not applied even when they are turned on.	1. The Mixer DSP setting is turned off for the part to which you are trying to apply an effect. 2. The type setting is **Thru**. 3. The Mixer reverb depth and chorus depth settings are 0. 4. The DSP 1-4 reverb depth and chorus depth settings are 0.	1. Change the Mixer DSP setting. 2. Change to a different type. 3. Use the Mixer to change the reverb depth and chorus depth settings. 4. Change the DSP 1-4 reverb depth and chorus depth settings.	Page E-51 Page E-33 Page E-53 Pages E-34, 55
No sound is produced even when DCO is selected in the Synthesizer Mode.	The **Sound On/Off** setting is off.	Turn on the **Sound On/Off** setting.	Page E-66

Problem	Possible Cause	Action	See page
Sound does not change when tone parameters are altered in the Synthesizer Mode.	The **Compare** setting is on.	Turn off the **Compare** setting.	Page E-66
Mixer pan effect does not work.	A DSP (1 to 4) is assigned to the part.	Set the pan effect using the DSP (1 to 4) pan setting.	Pages E-34, 53
Interactive Accomp effect does not work even though it is turned on.	The Interactive Accomp **Velocity Control** setting is off.	Turn on **Velocity Control**.	Page E-162
Auto Harmonize effect does not work.	The current accompaniment mode is NORMAL or FULL RANGE CHORD.	Change the accompaniment mode to CASIO CHORD or FINGERED.	Page E-40
Arpeggiator effect does not work.	You are using the wrong key range.	Change the key range.	Page E-157
Wheel/after touch effect does not work.	1. The Synthesizer Mode settings are invalid. 2. After touch is turned off.	1. Assign the effects you want to the controllers. 2. Use the **AFTER TOUCH/CONTROL** setting screen to make after curve settings.	Page E-72 Page E-167
Cannot playback Song Sequencer data.	The system select setting **Chord/Melody** item is turned off.	Use the Song Sequencer to turn on the system select settings.	Page E-87
No sound is produced when using direct play SMF playback.	The disk volume is set to 0.	Check the disk volume setting.	Page E-143
Cannot play back Song Studio data or no sound is produced during Song Studio playback.	1. The play mode is **Stay**. 2. The Song Studio accompaniment setting is **Off**. 3. The Song Studio control setting is **Off**. 4. The Song Studio melody setting is **Off**.	1. Change the play mode to **Move**. 2. Change the Song Studio accompaniment setting to **Auto**. 3. Change the Song Studio control setting to **Auto**. 4. Change the Song Studio melody setting to **On**.	Page E-135 Page E-135 Page E-135 Page E-135
Power does not turn off when the power button is pressed.	You are not holding down the **power** button long enough.	Hold down the **power** button for a short while.	Page E-22

	See page
ing.	Page E-66
ne DSP (1 to	Pages E-34, 53
.	Page E-162
ent mode to ERED.	Page E-40
	Page E-157
want to the	Page E-72
UCH/CON- o make after	Page E-167
o turn on the	Page E-87
etting.	Page E-143
e to **Move**.	Page E-135
dio accompa- o.	Page E-135
lio control set-	Page E-135
udio melody	Page E-135
button for a	Page E-22

Specifications

Model:	MZ-2000
Keyboard:	61 standard-size keys; 5 octaves; touch response (Can be assigned one of three touch curves.) /after touch (Can be assigned one of four touch curves.)
Interface	
• Display Screen:	320 x 240-dot LCD panel with menu interface
• Controllers:	Dial, control buttons, control sliders (Setting results appear on display screen.)
Tones:	562 total (507 preset tones + 15 drum sounds + 40 user tones); layer and split; variable split point Rhythm Instrument Tones: 65
Polyphony:	64 notes maximum (32 maximum for some tones)
Digital Effects:	4-channel DSP (240 types) + Reverb (15 types) + Chorus (20 types) + Master (50 types)
Digital Drawbar Function	
Drawbars:	9 (16', 5 1/3', 8', 4', 2 2/3', 2', 1 3/5', 1 1/3', 1')
Digital Drawbar Types:	Sine, Vintage
Percussion:	Second, Third
Click:	On, Off
Auto Accompaniment	
Rhythm Patters:	120 Presets + 10 User Rhythms (130 total)
Tempo:	Variable (226 levels: ♩ =30 to 255)
Chords:	3 types (CASIO CHORD, FINGERED, FULL RANGE CHORD)
Rhythm Controller:	Start/Stop; Intro 1, 2; Fill in BACK, NORMAL, NEXT; Break; Variations 1 to 4; Sync Start/Stop; Ritardando; Fade In/Out; Ending 1, 2
Accompaniment volume:	0 to 127 (128 levels)
One Touch Presets:	Optimal tone, tempo, layer/auto harmonize settings to match rhythm; 4 presets for each built-in rhythm, 1 assignable for user rhythm
Auto Harmonize:	12 types; adds harmony notes to melody in accordance with auto accompaniment chord fingerings.
Arpeggiator:	15 types; automatic arpeggio using notes of a chord played on the keyboard
Interactive Accomp:	Automatic adjustment of auto accompaniment to match keyboard play
Song Sequencer	
Number of Songs:	10
Number of Record Tracks:	17 (system track + external tracks 1 through 16)
Record Methods:	Realtime, Step
Memory Capacity:	Approximately 40,000 notes (10 songs)
Punch-in Functions:	Manual punch-in; auto punch-in
Editing Functions:	Song editing; track editing; event editing
Pattern Sequencer	
User Pattern Areas:	10
Memory Capacity:	Approximately 22,000 notes
Elements:	Intro 1, 2; Fill In BACK, NORMAL, NEXT; Variations 1 through 4; Endings 1, 2
Number of Parts:	8 (drum, percussion, bass, chord 1 to 5)
Recording Methods:	Real-time, step
Editing Functions:	Element editing; part editing; event editing

Song Studio	
• Number of Songs:	10
• Composing Functions:	Chord extraction, pattern extraction, melody extraction from SMF or Song Sequencer data
• Editing Functions:	Chord editing; melody track editing
Memory Capacity:	Memory shared with Song Sequencer
Registration Memory	
• Number of Memory Areas:	64 (8 sets x 8 banks)
• Savable Setup Data:	Rhythm; tone; tempo; auto harmonize, arpeggiator, sustain button on/off status; accomp volume; transpose setting; effect settings, etc. (See the "Registration Memory/One Touch Preset Table" for more information.)
Demos:	Melody Demos (3 tunes); Tone Demos (10 tunes); Rhythm Demos (10 tunes); Function Demo (1 tune)
Synthesizer:	Two modes (basic settings, advanced settings)
• Parameters:	Basic tones (DCO) x 4; envelope (accomp envelope, filter envelope, pitch envelope); LFO x 2 channels; effect settings; controller settings
Mixer:	Two modes (basic settings, advanced settings)
• Number of Channels:	31 (15 internal + 16 external)
• Parameters:	Tone; part on/off; input (microphone, line only); pan; volume; reverb depth; chorus depth; DSP; noise gate threshold; EQ high frequency/high gain; EQ low frequency/low gain; coarse tune; fine tune
MIDI:	16-channel multi-timbre receive; GM Level 1 compliant
Controllers	Pitch bend wheel; modulation wheel; assignable button; sustain button
Other Functions	
• Transpose:	49 levels (–24 semitones to 0 to + 24 semitones)
• Tuning:	A4=415.3Hz to 466.2Hz (Center: 440Hz)
Terminals	
• MIDI:	IN, OUT, THRU
• HOST:	Mini DIN jack (selectable)
• Foot Pedal:	Standard jack
• Expression Pedal:	Stereo standard jack
• Line Out (L/R):	Standard jack x 2 Output impedance: 5.7kΩ Output voltage: 3.0V (RMX) MAX
• Line In (L/R):	Standard jack (with bypass switch) Input impedance: 75kΩ Input sensitivity: 200mV
• Headphones:	Stereo standard jack
• Microphone In:	Standard jack (with microphone volume knob) Input impedance: 40kΩ Input sensitivity: 10mV
• Power:	16V DC
Floppy Disk Drive	
• Type:	3.5-inch floppy disk drive
• Disk Format:	2DD: 720KB MS-DOS format 2HD: 1.44MB MS-DOS format
• Functions:	Save and load of user tones, user rhythms, Song Sequencer data, Song Studio data, Registration Memory data; playback and melody part cut of Standard MIDI files (SMF); disk formatting; file delete; file rename; pattern conversion

Power Requirements:	AD-16ML AC Adaptor
Speaker Output:	15W + 15W
Power Consumption:	16V ⎓ 32W
Dimensions:	115.0 x 42.5 x 20.2 cm ($45\,^{5}/_{16}$ x $16\,^{3}/_{4}$ x $7\,^{15}/_{16}$ inch)
Weigh:	Approximately 12.4kg (27.4 lbs)

* Design and specifications are subject to change without notice.

Demos

Melody Demos (3 tunes)

Tune Number	Title	Composer	Time
1	Fusion	KEI AKAGI/ Red Castle Music	2:24
2	Bossa nova	TECH-NOTE INTERNATIONAL LTD.	1:53
3	Big Band	TECH-NOTE INTERNATIONAL LTD.	2:18

No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
1	PIANO	1	Grand Piano1	0	32	1	A	
2	PIANO	2	Grand Piano2	0	33	1	A	
3	PIANO	3	Mellow Piano	0	16	1	A	
4	PIANO	4	Bright Piano	1	32	1	A	
5	PIANO	5	Octave Piano	0	30	2	A	
6	PIANO	6	Piano Oct.Dw	0	31	1	B	
7	PIANO	7	Honky-Tonk 1	3	0	2	A	
8	PIANO	8	Dance Piano	1	16	2	A	
9	PIANO	9	Harpsichord	6	0	1	A	
10	PIANO	10	Coupled Hps	6	8	2	A	
11	PIANO	11	StringsPiano	0	24	2	A	
12	PIANO	12	Syn–StrPiano	0	25	3	A	
13	PIANO	13	Choir Piano	0	26	2	A	
14	PIANO	14	Chorus Piano	0	11	1	A	
15	PIANO	15	TremoloPiano	0	12	1	A	
16	PIANO	16	Stereo Piano	0	2	2	A	
17	PIANO	17	G.Piano Wide	0	8	1	A	
18	PIANO	18	BrightPf.Wid	1	8	1	A	
19	PIANO	19	Harpsi.Wide	6	16	1	A	
20	PIANO	20	Harpsi.Off	6	24	1	A	
21	PIANO	21	Honky-Tonk 2	3	8	2	A	
22	PIANO	22	G.Piano 1-GM	0	0	1	A	
23	PIANO	23	G.Piano 2-GM	0	1	1	A	
24	PIANO	24	Bright Pf-GM	1	0	1	A	
25	ELEC PIANO	1	Elec.Piano 1	4	1	1	A	
26	ELEC PIANO	2	Elec.Piano 2	4	32	1	A	
27	ELEC PIANO	3	60's E.Piano	4	24	1	A	
28	ELEC PIANO	4	Elec.Piano 3	4	2	2	A	
29	ELEC PIANO	5	E.GrandPiano	2	0	1	A	
30	ELEC PIANO	6	FM E.Piano 1	5	0	2	A	
31	ELEC PIANO	7	St.Soft EP	4	8	2	A	
32	ELEC PIANO	8	FM E.Piano 2	4	16	2	A	
33	ELEC PIANO	9	St.FM EP	5	16	2	A	
34	ELEC PIANO	10	Clavi	7	0	1	A	
35	ELEC PIANO	11	Detuned FMEP	5	8	2	A	
36	ELEC PIANO	12	E.G.PianoWid	2	8	1	A	
37	ELEC PIANO	13	E.Piano1-GM	4	0	1	A	
38	ELEC PIANO	14	Tremolo EP	4	17	1	A	
39	ELEC PIANO	15	Wah E.Piano	4	18	1	A	
40	ELEC PIANO	16	Phaser EP	4	19	1	A	
41	ELEC PIANO	17	Elec.Piano 4	4	3	2	A	
42	ELEC PIANO	18	Comp.Clavi	7	8	1	A	
43	ELEC PIANO	19	Reso.Clavi	7	16	1	A	
44	ELEC PIANO	20	Synth-Clavi	7	32	1	A	
45	CHROMATIC PERC	1	Vibraphone 1	11	0	1	A	
46	CHROMATIC PERC	2	Marimba	12	0	1	A	
47	CHROMATIC PERC	3	Xylophone	13	0	1	A	
48	CHROMATIC PERC	4	Celesta	8	40	1	C	

No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
49	CHROMATIC PERC	5	Glockenspiel	9	40	1	C	
50	CHROMATIC PERC	6	Music Box	10	40	1	C	
51	CHROMATIC PERC	7	TubularBells	14	0	1	A	
52	CHROMATIC PERC	8	Church Bell	14	8	2	A	
53	CHROMATIC PERC	9	Carillon	14	9	1	A	
54	CHROMATIC PERC	10	Tinkle Bell	112	40	2	C	
55	CHROMATIC PERC	11	Dulcimer 1	15	0	1	A	
56	CHROMATIC PERC	12	Sitar 1	104	0	1	A	
57	CHROMATIC PERC	13	Sitar 2	104	1	2	A	
58	CHROMATIC PERC	14	Kalimba	108	0	1	A	
59	CHROMATIC PERC	15	Steel Drum	114	0	1	A	
60	CHROMATIC PERC	16	Vibes Wide	11	8	1	A	
61	CHROMATIC PERC	17	Marimba Wide	12	8	1	A	
62	CHROMATIC PERC	18	Celesta Oct.	8	0	1	A	
63	CHROMATIC PERC	19	Glocken.Oct.	9	0	1	A	
64	CHROMATIC PERC	20	MusicBox Oct	10	0	1	A	
65	CHROMATIC PERC	21	TinklBellOct	112	0	2	A	
66	CHROMATIC PERC	22	Shamisen	106	0	1	A	
67	CHROMATIC PERC	23	Koto	107	0	1	A	
68	CHROMATIC PERC	24	Taisho Koto	107	8	2	A	
69	CHROMATIC PERC	25	Vibraphone 2	11	1	1	A	
70	CHROMATIC PERC	26	Dulcimer 2	15	1	2	A	
71	ORGAN	1	Perc.Organ 1	17	40	2	A	
72	ORGAN	2	16+3rdPc Org	17	41	1	A	
73	ORGAN	3	Chorus Organ	17	42	2	A	
74	ORGAN	4	Even+2nd Org	17	43	1	A	
75	ORGAN	5	Perc.Organ 2	17	44	2	A	
76	ORGAN	6	Full Organ 1	16	41	1	A	
77	ORGAN	7	Full Organ 2	16	43	2	A	
78	ORGAN	8	Even Bar	16	46	1	A	
79	ORGAN	9	60's Organ	16	44	1	A	
80	ORGAN	10	70's Organ	16	45	1	A	
81	ORGAN	11	Rock Organ	18	40	2	A	
82	ORGAN	12	Rotary Slow	18	41	1	A	
83	ORGAN	13	Rotary Fast	18	42	1	A	
84	ORGAN	14	OverdriveOrg	16	40	1	A	
85	ORGAN	15	Tremolo Org1	16	42	1	A	
86	ORGAN	16	Tremolo Org2	18	43	1	A	
87	ORGAN	17	ChurchOrgan1	19	40	1	A	
88	ORGAN	18	ChurchOrgan2	19	43	2	A	
89	ORGAN	19	ChurchOrgan3	19	44	2	A	
90	ORGAN	20	ChapelOrgan1	19	41	1	A	
91	ORGAN	21	ChapelOrgan2	19	42	2	A	
92	ORGAN	22	Theater Org1	19	45	2	A	
93	ORGAN	23	Theater Org2	19	46	2	A	
94	ORGAN	24	Reed Organ	20	40	1	A	
95	ORGAN	25	PercOrg1 Det	17	33	2	A	
96	ORGAN	26	16+3PcOrgDet	17	34	2	A	

No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
97	ORGAN	27	Even+2 Org.D	17	35	2	A	
98	ORGAN	28	FullOrg1 Det	16	35	2	A	
99	ORGAN	29	FullOrg2 Det	16	37	2	A	
100	ORGAN	30	Even Bar Det	16	39	2	A	
101	ORGAN	31	70's Org.Det	16	38	2	A	
102	ORGAN	32	Ovd Org.Det	16	34	2	A	
103	ORGAN	33	TremOrg1 Det	16	36	2	A	
104	ORGAN	34	TremOrg2 Det	18	33	2	A	
105	ORGAN	35	PercOrg1-GM	17	0	2	A	
106	ORGAN	36	16+3PcOrgTch	17	2	1	A	
107	ORGAN	37	ChorusOrgTch	17	8	2	A	
108	ORGAN	38	Even+2 Org.T	17	16	1	A	
109	ORGAN	39	PercOrg2 Tch	17	32	2	A	
110	ORGAN	40	FullOrg1 Tch	16	2	1	A	
111	ORGAN	41	FullOrg2 Tch	16	9	2	A	
112	ORGAN	42	Even Bar Tch	16	33	1	A	
113	ORGAN	43	60's Org.Tch	16	16	1	A	
114	ORGAN	44	70's Org.Tch	16	32	1	A	
115	ORGAN	45	Rock Org.Tch	18	0	2	A	
116	ORGAN	46	Rotary S.Tch	18	16	1	A	
117	ORGAN	47	Rotary F.Tch	18	24	1	A	
118	ORGAN	48	Ovd Org.Tch	16	0	1	A	
119	ORGAN	49	TremOrg1 Tch	16	8	1	A	
120	ORGAN	50	TremOrg2 Tch	18	32	1	A	
121	ORGAN	51	ChrchOrg1Tch	19	0	1	A	
122	ORGAN	52	ChrchOrg2Tch	19	8	2	A	
123	ORGAN	53	ChrchOrg3Tch	19	16	2	A	
124	ORGAN	54	ChaplOrg1Tch	19	1	1	A	
125	ORGAN	55	ChaplOrg2Tch	19	2	2	A	
126	ORGAN	56	TheatOrg1Tch	19	33	2	A	
127	ORGAN	57	TheatOrg2Tch	19	34	2	A	
128	ORGAN	58	Reed Org.Tch	20	0	1	A	
129	ORGAN	59	Dist.Organ1	16	47	1	A	
130	ORGAN	60	Dist.Organ2	16	48	2	A	
131	ORGAN	61	Excite Organ	16	49	2	A	
132	ORGAN	62	Wah Organ	16	50	1	A	
133	ORGAN	63	Tremolo Org3	17	45	2	A	
134	ORGAN	64	Phaser Organ	17	46	2	A	
135	ACCORDION	1	Fr.Accordion	21	0	1	A	
136	ACCORDION	2	Accordion 1	21	8	1	A	
137	ACCORDION	3	Accordion 2	21	10	1	A	
138	ACCORDION	4	Accordion 3	21	11	2	A	
139	ACCORDION	5	Accordion 4	21	12	2	A	
140	ACCORDION	6	Accordion 5	21	13	2	A	
141	ACCORDION	7	Harmonica	22	0	1	A	
142	ACCORDION	8	Bandoneon	23	0	2	A	
143	GUITAR	1	NylonStr.Gt1	24	0	1	A	
144	GUITAR	2	NylonStr.Gt2	24	32	1	A	
145	GUITAR	3	SteelStr.Gt1	25	0	1	A	
146	GUITAR	4	SteelStr.Gt2	25	32	1	A	
147	GUITAR	5	Jazz Guitar1	26	0	1	A	
148	GUITAR	6	Clean Gt 1	27	4	1	A	
149	GUITAR	7	Clean Half	27	1	1	A	
150	GUITAR	8	TC FrontPick	27	16	1	A	
151	GUITAR	9	TC Rear Pick	27	17	1	A	
152	GUITAR	10	Mute Guitar	28	0	1	A	
153	GUITAR	11	Amp Ovd Gt 1	27	40	1	A	
154	GUITAR	12	Amp Ovd Gt 2	27	44	1	A	
155	GUITAR	13	OverdriveGt1	29	0	1	A	
156	GUITAR	14	OverdriveGt2	29	1	2	A	
157	GUITAR	15	Ovd Gt Leg.	29	4	1	A	
158	GUITAR	16	Amp Dist Gt1	27	41	1	A	
159	GUITAR	17	Amp Dist Gt2	27	43	1	A	
160	GUITAR	18	Amp Dist Gt3	27	45	1	A	
161	GUITAR	19	Dist.Gt1 Leg	30	3	1	A	
162	GUITAR	20	Dist.Gt2 Leg	30	4	1	A	
163	GUITAR	21	Nylon Gt Off	24	16	1	A	
164	GUITAR	22	12Strings Gt	25	8	2	A	
165	GUITAR	23	Mandolin	25	16	1	A	
166	GUITAR	24	Ukulele	24	8	1	A	
167	GUITAR	25	Chorus A.Gt	25	40	1	A	
168	GUITAR	26	Jazz Guitar2	26	1	1	A	
169	GUITAR	27	Jazz Guitar3	26	2	1	A	
170	GUITAR	28	Pedal Steel	26	8	2	A	
171	GUITAR	29	Octave J.Gt	26	32	2	A	
172	GUITAR	30	Banjo	105	0	1	A	
173	GUITAR	31	Clean Gt 2	27	0	1	A	
174	GUITAR	32	Open Hard	27	2	1	A	
175	GUITAR	33	Wah Clean Gt	27	5	1	A	
176	GUITAR	34	AmpPhaserGt1	27	42	1	A	
177	GUITAR	35	AmpPhaserGt2	27	46	1	A	
178	GUITAR	36	Funk Pop Gt1	28	8	1	A	
179	GUITAR	37	Funk Pop Gt2	28	16	1	A	
180	GUITAR	38	Wah Ovd Gt	29	17	1	A	
181	GUITAR	39	Rotary OvdGt	29	18	1	A	
182	GUITAR	40	Mute Dist.Gt	28	1	1	A	
183	GUITAR	41	Rotary J.Gt	26	9	1	A	
184	GUITAR	42	Chorus E.Gt	27	8	2	A	
185	GUITAR	43	Dist.Guitar1	30	0	1	A	
186	GUITAR	44	Dist.Guitar2	30	5	1	A	
187	GUITAR	45	Dist.Guitar3	30	1	2	A	
188	GUITAR	46	Dist.Guitar4	30	2	2	A	
189	GUITAR	47	Feedback Gt1	30	8	2	A	
190	GUITAR	48	Feedback Gt2	30	9	2	A	
191	GUITAR	49	Gt Harmonics	31	0	1	A	
192	GUITAR	50	Gt Feedback	31	8	1	A	

135	ACCORDION	1	Fr.Accordion	21	0	1	A
136	ACCORDION	2	Accordion 1	21	8	1	A
137	ACCORDION	3	Accordion 2	21	10	1	A
138	ACCORDION	4	Accordion 3	21	11	2	A
139	ACCORDION	5	Accordion 4	21	12	2	A
140	ACCORDION	6	Accordion 5	21	13	2	A
141	ACCORDION	7	Harmonica	22	0	1	A
142	ACCORDION	8	Bandoneon	23	0	2	A
143	GUITAR	1	NylonStr.Gt1	24	0	1	A
144	GUITAR	2	NylonStr.Gt2	24	32	1	A

183	GUITAR	41	Rotary J.Gt	26	9	1	A
184	GUITAR	42	Chorus E.Gt	27	8	2	A
185	GUITAR	43	Dist.Guitar1	30	0	1	A
186	GUITAR	44	Dist.Guitar2	30	5	1	A
187	GUITAR	45	Dist.Guitar3	30	1	2	A
188	GUITAR	46	Dist.Guitar4	30	2	2	A
189	GUITAR	47	Feedback Gt1	30	8	2	A
190	GUITAR	48	Feedback Gt2	30	9	2	A
191	GUITAR	49	Gt Harmonics	31	0	1	A
192	GUITAR	50	Gt Feedback	31	8	1	A

765A-E-186A

765A-E-187A

No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
193	BASS	1	AcousticBass	32	40	1	B	
194	BASS	2	Finger.Bass1	33	40	1	B	
195	BASS	3	Picked Bass	34	40	1	B	
196	BASS	4	FretlessBass	35	40	1	B	
197	BASS	5	Slap Bass 1	36	40	1	B	
198	BASS	6	Slap Bass 2	37	40	1	B	
199	BASS	7	Synth-Bass1	38	40	2	B	
200	BASS	8	Synth-Bass2	39	40	1	B	
201	BASS	9	Synth-Bass3	38	41	1	B	
202	BASS	10	Acid Bass	38	42	1	B	
203	BASS	11	Finger.Bass2	33	41	1	B	
204	BASS	12	SynthSawBass	38	43	1	B	
205	BASS	13	SynthSqrBass	38	44	1	B	
206	BASS	14	MG Bass	38	45	2	B	
207	BASS	15	MG Oct.Bass1	38	46	2	B	
208	BASS	16	Lead Bass	38	47	2	B	
209	BASS	17	Beef FM Bass	39	41	2	B	
210	BASS	18	Rubber Bass	39	42	2	B	
211	BASS	19	Rave Bass	39	45	2	B	
212	BASS	20	Mix Saw Bass	39	46	3	B	
213	BASS	21	Dual SawBass	39	47	2	B	
214	BASS	22	Kick Bass 1	39	43	2	B	
215	BASS	23	Kick Bass 2	39	44	2	B	
216	BASS	24	Ride AcoBass	32	41	2	B	
217	BASS	25	Aco.Bass Oct	32	0	1	A	
218	BASS	26	FingBass1Oct	33	0	1	A	
219	BASS	27	PickedBs.Oct	34	0	1	A	
220	BASS	28	FretlesBsOct	35	0	1	A	
221	BASS	29	Slap Bs1 Oct	36	0	1	A	
222	BASS	30	Slap Bs2 Oct	37	0	1	A	
223	BASS	31	SynBass1 Oct	38	0	2	A	
224	BASS	32	SynBass2 Oct	39	0	1	A	
225	BASS	33	SynBass3 Oct	38	1	1	A	
226	BASS	34	AcidBass Oct	38	8	1	A	
227	BASS	35	FingBass2Oct	33	1	1	A	
228	BASS	36	Saw Bass Oct	38	13	1	A	
229	BASS	37	Sqr Bass Oct	38	17	1	A	
230	BASS	38	MG Bass Oct.	38	18	2	A	
231	BASS	39	MG Oct.Bass2	38	19	2	A	
232	BASS	40	Lead Bs.Oct.	38	20	2	A	
233	BASS	41	BeefFMBs Oct	39	8	2	A	
234	BASS	42	RubberBs.Oct	39	16	2	A	
235	BASS	43	RaveBass Oct	39	32	2	A	
236	BASS	44	MixSawBs.Oct	39	17	3	A	
237	BASS	45	DualSawBsOct	39	18	2	A	
238	BASS	46	Kick Bs1 Oct	39	22	2	A	
239	BASS	47	Kick Bs2 Oct	39	23	2	A	
240	BASS	48	Ride Bs.Oct.	32	32	2	A	

No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
241	STRINGS/ORCHESTRA	1	Violin	40	0	1	A	
242	STRINGS/ORCHESTRA	2	Slow Violin	40	8	1	A	
243	STRINGS/ORCHESTRA	3	Viola	41	0	1	A	
244	STRINGS/ORCHESTRA	4	Cello	42	40	1	B	
245	STRINGS/ORCHESTRA	5	Contrabass	43	40	1	B	
246	STRINGS/ORCHESTRA	6	Tremolo Str.	44	0	1	A	
247	STRINGS/ORCHESTRA	7	Pizzicato	45	0	1	A	
248	STRINGS/ORCHESTRA	8	Harp 1	46	0	1	A	
249	STRINGS/ORCHESTRA	9	Harp 2	46	17	1	A	
250	STRINGS/ORCHESTRA	10	Timpani	47	40	1	B	
251	STRINGS/ORCHESTRA	11	Fiddle	110	0	1	A	
252	STRINGS/ORCHESTRA	12	Cello Oct	42	0	1	A	
253	STRINGS/ORCHESTRA	13	ContrbassOct	43	0	1	A	
254	STRINGS/ORCHESTRA	14	Timpani Oct	47	0	1	A	
255	ENSEMBLE	1	Strings 1	48	0	1	A	
256	ENSEMBLE	2	Strings 2	49	0	1	A	
257	ENSEMBLE	3	Bright Str.	48	1	1	A	
258	ENSEMBLE	4	SynthString1	50	0	2	A	
259	ENSEMBLE	5	SynthString2	51	0	2	A	
260	ENSEMBLE	6	SynthString3	50	24	1	A	
261	ENSEMBLE	7	Choir Aahs 1	52	0	1	A	
262	ENSEMBLE	8	Voice Ooh 1	53	2	2	A	
263	ENSEMBLE	9	Voice Doo 1	53	0	2	A	
264	ENSEMBLE	10	Synth-Voice1	54	0	1	A	
265	ENSEMBLE	11	Orchestra 1	48	8	2	A	
266	ENSEMBLE	12	Orchestra 2	48	9	2	A	
267	ENSEMBLE	13	Strings 3	49	1	1	A	
268	ENSEMBLE	14	StringsCombi	49	9	2	A	
269	ENSEMBLE	15	SynthString4	50	8	2	A	
270	ENSEMBLE	16	SynthString5	50	2	1	A	
271	ENSEMBLE	17	SynthString6	50	1	2	A	
272	ENSEMBLE	18	Melo.Strings	50	18	1	A	
273	ENSEMBLE	19	Wide SynStr.	50	32	2	A	
274	ENSEMBLE	20	Tambourn Pad	50	17	2	A	
275	ENSEMBLE	21	Choir Aahs 2	52	32	2	A	
276	ENSEMBLE	22	Voice Ooh 2	53	3	2	A	
277	ENSEMBLE	23	Voice Doo 2	53	1	2	A	
278	ENSEMBLE	24	Synth-Voice2	54	17	1	A	
279	ENSEMBLE	25	Synth-Voice3	54	18	1	A	
280	ENSEMBLE	26	Voice Ens. 1	54	19	2	A	
281	ENSEMBLE	27	Voice Ens. 2	54	20	2	A	
282	ENSEMBLE	28	Voice Ens. 3	54	21	2	A	
283	ENSEMBLE	29	OrchestrHit1	55	0	2	A	
284	ENSEMBLE	30	OrchestrHit2	55	1	2	A	
285	ENSEMBLE	31	OrchestrHit3	55	2	3	A	
286	ENSEMBLE	32	OrchestrHit4	55	3	3	A	
287	ENSEMBLE	33	OrchestrHit5	55	4	3	A	
288	ENSEMBLE	34	Rave Hit	55	16	2	A	

No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
289	ENSEMBLE	35	Techno Hit	55	17	2	A	
290	SOLO BRASS	1	Trumpet 1	56	0	1	A	
291	SOLO BRASS	2	Trumpet 2	56	1	1	A	
292	SOLO BRASS	3	Trombone 1	57	40	1	B	○
293	SOLO BRASS	4	Trombone 2	57	41	2	B	
294	SOLO BRASS	5	Tuba	58	40	1	B	
295	SOLO BRASS	6	Mute Trumpet	59	0	1	A	○
296	SOLO BRASS	7	French Horn1	60	0	1	A	
297	SOLO BRASS	8	French Horn2	60	1	2	A	
298	SOLO BRASS	9	Trumpet 3	56	17	1	A	
299	SOLO BRASS	10	Trombone 3	57	42	1	B	
300	SOLO BRASS	11	Tuba Oct	58	0	1	A	
301	SOLO BRASS	12	Trombone1Oct	57	0	1	A	○
302	SOLO BRASS	13	Trombone2Oct	57	1	2	A	
303	SOLO BRASS	14	Trombone3Oct	57	18	1	A	
304	BRASS	1	Brass 1	61	0	1	A	
305	BRASS	2	Brass 2	61	8	2	A	
306	BRASS	3	Synth-Brass1	62	0	2	A	
307	BRASS	4	Synth-Brass2	63	0	1	A	
308	BRASS	5	Synth-Brass3	63	32	2	A	
309	BRASS	6	Brass&Trp.	61	20	2	A	
310	BRASS	7	Brass&Trb.	61	21	2	A	
311	BRASS	8	Synth-Brass4	62	1	2	A	
312	BRASS	9	Pro Brass	62	8	2	A	
313	BRASS	10	Oct SynBrass	62	16	2	A	
314	BRASS	11	SynBrass Sfz	63	8	2	A	
315	BRASS	12	Velo.Brass	63	16	2	A	
316	BRASS	13	Synth-Brass5	62	17	2	A	
317	SAX	1	BreathyA.Sax	65	16	1	A	○
318	SAX	2	VeloAltoSax1	65	25	1	A	○
319	SAX	3	Alto Sax 1	65	0	1	A	○
320	SAX	4	Alto Sax 2	65	24	1	A	○
321	SAX	5	Soprano Sax1	64	0	1	A	○
322	SAX	6	BreathyT.Sax	66	8	2	A	○
323	SAX	7	VeloTenorSax	66	24	2	A	○
324	SAX	8	Tenor Sax 1	66	0	1	A	○
325	SAX	9	Bright TSax1	66	16	1	A	○
326	SAX	10	Baritone Sax	67	40	1	B	○
327	SAX	11	VeloAltoSax2	65	17	1	A	○
328	SAX	12	Mellow A.Sax	65	18	1	A	○
329	SAX	13	VeloAltoSax3	65	8	1	A	○
330	SAX	14	Growl A.Sax	65	9	1	A	○
331	SAX	15	Tenor Sax 2	66	1	2	A	○
332	SAX	16	Bright TSax2	66	17	2	A	
333	SAX	17	Velo.Sop.Sax	64	8	1	A	
334	SAX	18	Soprano Sax2	64	9	1	A	
335	SAX	19	Bari.Sax Oct	67	0	1	A	
336	CLARINET	1	Oboe 1	68	0	1	A	

No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
337	CLARINET	2	Oboe 2	68	9	1	A	
338	CLARINET	3	Velo.Oboe	68	8	1	A	
339	CLARINET	4	Clarinet	71	0	1	A	
340	CLARINET	5	BassClarinet	71	40	1	B	
341	CLARINET	6	English Horn	69	0	1	A	
342	CLARINET	7	Bassoon	70	40	1	B	
343	CLARINET	8	Shanai	111	0	2	A	
344	CLARINET	9	Bag Pipe	109	0	2	A	
345	CLARINET	10	BassCla.Oct	71	8	1	A	
346	CLARINET	11	Bassoon Oct	70	0	1	A	
347	CLARINET	12	Double Reed	68	17	2	A	
348	FLUTE	1	Flute 1	73	0	1	A	
349	FLUTE	2	Mellow Flute	73	1	2	A	
350	FLUTE	3	Velo.Flute	73	2	1	A	
351	FLUTE	4	Piccolo	72	40	1	C	
352	FLUTE	5	Recorder	74	0	1	A	
353	FLUTE	6	Pan Flute	75	0	2	A	
354	FLUTE	7	Bottle Blow	76	0	1	A	
355	FLUTE	8	Shakuhachi	77	0	2	A	
356	FLUTE	9	Whistle	78	0	1	A	
357	FLUTE	10	Ocarina	79	0	2	A	
358	FLUTE	11	Flute 2	73	4	2	A	
359	FLUTE	12	Piccolo Oct	72	0	1	A	
360	FLUTE	13	Shaku.Lead	77	8	2	A	
361	FLUTE	14	Flute 3	73	3	2	A	
362	SYNTH-LEAD	1	Square Wave	80	0	2	A	
363	SYNTH-LEAD	2	MG Square	80	1	1	A	
364	SYNTH-LEAD	3	Square	80	2	1	A	
365	SYNTH-LEAD	4	Sine	80	8	1	A	
366	SYNTH-LEAD	5	Saw.Wave	81	0	2	A	
367	SYNTH-LEAD	6	Sawtooth	81	1	1	A	
368	SYNTH-LEAD	7	Saw+Square	81	8	2	A	
369	SYNTH-LEAD	8	MG Saw	81	24	1	A	
370	SYNTH-LEAD	9	MG Saw Lead	81	31	2	A	
371	SYNTH-LEAD	10	Calliope	82	0	2	A	
372	SYNTH-LEAD	11	Chiff Lead	83	0	2	A	
373	SYNTH-LEAD	12	Charang	84	0	2	A	
374	SYNTH-LEAD	13	Voice Lead	85	0	2	A	
375	SYNTH-LEAD	14	Fifth Lead	86	0	2	A	
376	SYNTH-LEAD	15	Bass+Lead 1	87	0	2	A	
377	SYNTH-LEAD	16	GR Lead1	81	6	1	A	
378	SYNTH-LEAD	17	GR Lead2	81	7	3	A	
379	SYNTH-LEAD	18	Square Lead1	80	17	3	A	
380	SYNTH-LEAD	19	Square Lead2	80	18	2	A	
381	SYNTH-LEAD	20	Square Lead3	80	19	2	A	
382	SYNTH-LEAD	21	Saw.Lead 1	81	18	2	A	
383	SYNTH-LEAD	22	Saw.Lead 2	81	19	2	A	
384	SYNTH-LEAD	23	Saw.Lead 3	81	20	2	A	

327	SAX	11	VeloAltoSax2	65	17	1	A	
328	SAX	12	Mellow A.Sax	65	18	1	A	
329	SAX	13	VeloAltoSax3	65	8	1	A	
330	SAX	14	Growl A.Sax	65	9	1	A	
331	SAX	15	Tenor Sax 2	66	1	2	A	
332	SAX	16	Bright TSax2	66	17	2	A	
333	SAX	17	Velo.Sop.Sax	64	8	1	A	
334	SAX	18	Soprano Sax2	64	9	1	A	
335	SAX	19	Bari.Sax Oct	67	0	1	A	
336	CLARINET	1	Oboe 1	68	0	1	A	

375	SYNTH-LEAD	14	Fifth Lead	86	0	2	A	
376	SYNTH-LEAD	15	Bass+Lead 1	87	0	2	A	
377	SYNTH-LEAD	16	GR Lead1	81	6	1	A	
378	SYNTH-LEAD	17	GR Lead2	81	7	3	A	
379	SYNTH-LEAD	18	Square Lead1	80	17	3	A	
380	SYNTH-LEAD	19	Square Lead2	80	18	2	A	
381	SYNTH-LEAD	20	Square Lead3	80	19	2	A	
382	SYNTH-LEAD	21	Saw.Lead 1	81	18	2	A	
383	SYNTH-LEAD	22	Saw.Lead 2	81	19	2	A	
384	SYNTH-LEAD	23	Saw.Lead 3	81	20	2	A	

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No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
385	SYNTH-LEAD	24	Smooth Lead	81	21	3	A	
386	SYNTH-LEAD	25	Sweep Saw	81	17	2	A	
387	SYNTH-LEAD	26	SequenceWave	81	22	2	A	
388	SYNTH-LEAD	27	Square Lead4	80	20	2	A	
389	SYNTH-LEAD	28	Bass+Lead 2	87	8	1	A	
390	SYNTH-LEAD	29	Bass+Lead 3	87	9	2	A	
391	SYNTH-LEAD	30	Bass+Lead 4	87	10	2	A	
392	SYNTH-LEAD	31	Bass+Lead 5	87	11	2	A	
393	SYNTH-LEAD	32	Bass+Lead 6	87	12	2	A	
394	SYNTH-PAD	1	Fantasy 1	88	0	2	A	
395	SYNTH-PAD	2	Warm Pad 1	89	0	1	A	
396	SYNTH-PAD	3	Polysynth 1	90	0	2	A	
397	SYNTH-PAD	4	Space Choir	91	0	2	A	
398	SYNTH-PAD	5	Bowed Glass	92	0	2	A	
399	SYNTH-PAD	6	Metallic Pad	93	0	2	A	
400	SYNTH-PAD	7	Halo Pad	94	0	2	A	
401	SYNTH-PAD	8	Sweep Pad	95	0	2	A	
402	SYNTH-PAD	9	Rain Drop	96	0	2	A	
403	SYNTH-PAD	10	Soundtrack	97	0	2	A	
404	SYNTH-PAD	11	Crystal	98	0	2	A	
405	SYNTH-PAD	12	Atmosphere	99	0	2	A	
406	SYNTH-PAD	13	Brightness	100	0	2	A	
407	SYNTH-PAD	14	Goblins	101	0	2	A	
408	SYNTH-PAD	15	Echoes	102	0	1	A	
409	SYNTH-PAD	16	SF	103	0	2	A	
410	SYNTH-PAD	17	Synth-Mallet	98	1	1	A	
411	SYNTH-PAD	18	Echo Bell	102	1	2	A	
412	SYNTH-PAD	19	Echo Pan	102	2	2	A	
413	SYNTH-PAD	20	Space Bell	88	3	3	A	
414	SYNTH-PAD	21	Fantasy 2	88	1	3	A	
415	SYNTH-PAD	22	Warm Pad 2	89	1	1	A	
416	SYNTH-PAD	23	Warm Pad 3	89	2	2	A	
417	SYNTH-PAD	24	Warm Pad 4	89	3	2	A	
418	SYNTH-PAD	25	Warm Pad 5	89	4	2	A	
419	SYNTH-PAD	26	VoicePad Oct	94	2	2	B	
420	SYNTH-PAD	27	Cyber Voice	91	1	2	A	
421	SYNTH-PAD	28	Polysynth 2	90	1	2	A	
422	SYNTH-PAD	29	Polysynth 3	90	2	3	A	
423	SYNTH-PAD	30	5thPolysynth	90	3	3	A	
424	SYNTH-PAD	31	Tap Saw	90	4	2	A	
425	SYNTH-PAD	32	Voice Pad	94	1	2	A	
426	PERC/EFFECTS	1	Agogo	113	0	1	A	
427	PERC/EFFECTS	2	Wood Block	115	0	1	D	
428	PERC/EFFECTS	3	Castanets	115	8	1	D	
429	PERC/EFFECTS	4	MelodicTom	117	0	1	D	
430	PERC/EFFECTS	5	Room Tom	117	8	1	D	
431	PERC/EFFECTS	6	Rock Tom	117	10	1	D	
432	PERC/EFFECTS	7	Power Tom	117	9	1	D	

No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
433	PERC/EFFECTS	8	Brush Tom	117	4	1	D	
434	PERC/EFFECTS	9	Synth-Drum	118	0	1	D	
435	PERC/EFFECTS	10	Elec.Perc.	118	9	1	D	
436	PERC/EFFECTS	11	Analog Tom 1	118	8	1	D	
437	PERC/EFFECTS	12	Analog Tom 2	118	12	1	D	
438	PERC/EFFECTS	13	Taiko	116	0	1	D	
439	PERC/EFFECTS	14	Concert BD	116	8	1	D	
440	PERC/EFFECTS	15	Rev.Cymbal	119	0	1	D	
441	PERC/EFFECTS	16	Gt.FretNoise	120	0	1	D	
442	PERC/EFFECTS	17	Gt.Cut Noise	120	1	1	D	
443	PERC/EFFECTS	18	String Slap	120	2	1	D	
444	PERC/EFFECTS	19	Breath Noise	121	0	1	A	
445	PERC/EFFECTS	20	Fl.Key Click	121	1	1	D	
446	PERC/EFFECTS	21	Seashore	122	0	1	D	
447	PERC/EFFECTS	22	Rain	122	1	1	D	
448	PERC/EFFECTS	23	Thunder	122	2	1	D	
449	PERC/EFFECTS	24	Wind	122	3	1	D	
450	PERC/EFFECTS	25	Stream	122	4	2	D	
451	PERC/EFFECTS	26	Bubble	122	5	2	D	
452	PERC/EFFECTS	27	Bird 1	123	0	2	D	
453	PERC/EFFECTS	28	Dog	123	1	1	D	
454	PERC/EFFECTS	29	Horse Gallop	123	2	1	D	
455	PERC/EFFECTS	30	Bird 2	123	3	1	D	
456	PERC/EFFECTS	31	Cat	123	4	1	D	
457	PERC/EFFECTS	32	Growl	123	5	1	D	
458	PERC/EFFECTS	33	Telephone 1	124	0	1	D	
459	PERC/EFFECTS	34	Telephone 2	124	1	1	D	
460	PERC/EFFECTS	35	DoorCreaking	124	2	1	D	
461	PERC/EFFECTS	36	Door	124	3	1	D	
462	PERC/EFFECTS	37	Scratch 1	124	4	1	D	
463	PERC/EFFECTS	38	Wind Chimes	124	5	2	D	
464	PERC/EFFECTS	39	Scratch 2	124	7	1	D	
465	PERC/EFFECTS	40	Helicopter	125	0	1	D	
466	PERC/EFFECTS	41	Car Engine	125	1	1	D	
467	PERC/EFFECTS	42	Car Stop	125	2	1	D	
468	PERC/EFFECTS	43	Car Pass	125	3	2	D	
469	PERC/EFFECTS	44	Car Crash	125	4	1	D	
470	PERC/EFFECTS	45	Siren	125	5	1	D	
471	PERC/EFFECTS	46	Train	125	6	1	D	
472	PERC/EFFECTS	47	Jetplane	125	7	2	D	
473	PERC/EFFECTS	48	Starship	125	8	2	D	
474	PERC/EFFECTS	49	Burst Noise	125	9	1	D	
475	PERC/EFFECTS	50	Applause 1	126	0	2	D	
476	PERC/EFFECTS	51	Laughing	126	1	1	D	
477	PERC/EFFECTS	52	Screaming	126	2	1	D	
478	PERC/EFFECTS	53	Punch	126	3	1	D	
479	PERC/EFFECTS	54	Heart Beat	126	4	1	D	
480	PERC/EFFECTS	55	Footsteps	126	5	1	D	

No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
481	PERC/EFFECTS	56	Applause 2	126	6	2	D	
482	PERC/EFFECTS	57	Small Club	126	7	2	D	
483	PERC/EFFECTS	58	Voice Yahoo	126	32	1	D	
484	PERC/EFFECTS	59	Gun Shot	127	0	1	D	
485	PERC/EFFECTS	60	Machine Gun	127	1	1	D	
486	PERC/EFFECTS	61	Laser Gun	127	2	2	D	
487	PERC/EFFECTS	62	Explosion	127	3	1	D	
488	DRUM SET	1	StandardSet1	00	00	–	–	
489	DRUM SET	2	StandardSet2	01	00	–	–	
490	DRUM SET	3	Room Set	08	00	–	–	
491	DRUM SET	4	Power Set	16	00	–	–	
492	DRUM SET	5	Elec.Set	24	00	–	–	
493	DRUM SET	6	Synth-Set 1	25	00	–	–	
494	DRUM SET	7	Synth-Set 2	30	00	–	–	
495	DRUM SET	8	Jazz Set	32	00	–	–	
496	DRUM SET	9	Brush Set	40	00	–	–	
497	DRUM SET	10	Orch.Set	48	00	–	–	
498	DRUM SET	11	SFX Set	56	00	–	–	
499	DRUM SET	12	Gate Set	02	00	–	–	
500	DRUM SET	13	Phaser Set	03	00	–	–	
501	DRUM SET	14	LoFi Set	04	00	–	–	
502	DRUM SET	15	Fx Set	05	00	–	–	
503	DRAWBAR ORGAN	1	Drawbar 1	0	96	3	A	
504	DRAWBAR ORGAN	2	Drawbar 2	1	96	3	A	
505	DRAWBAR ORGAN	3	Drawbar 3	2	96	3	A	
506	DRAWBAR ORGAN	4	Drawbar 4	3	96	3	A	
507	DRAWBAR ORGAN	5	Drawbar 5	4	96	3	A	
508	DRAWBAR ORGAN	6	Drawbar 6	5	96	3	A	
509	DRAWBAR ORGAN	7	Drawbar 7	6	96	3	A	
510	DRAWBAR ORGAN	8	Drawbar 8	7	96	3	A	
511	DRAWBAR ORGAN	9	Drawbar 9	8	96	3	A	
512	DRAWBAR ORGAN	10	Drawbar 10	9	96	3	A	
513	DRAWBAR ORGAN	11	Drawbar 11	10	96	3	A	
514	DRAWBAR ORGAN	12	Drawbar 12	11	96	3	A	
515	DRAWBAR ORGAN	13	Drawbar 13	12	96	3	A	
516	DRAWBAR ORGAN	14	Drawbar 14	13	96	3	A	
517	DRAWBAR ORGAN	15	Drawbar 15	14	96	3	A	
518	DRAWBAR ORGAN	16	Drawbar 16	15	96	3	A	
519	DRAWBAR ORGAN	17	Drawbar 17	16	96	3	A	
520	DRAWBAR ORGAN	18	Drawbar 18	17	96	3	A	
521	DRAWBAR ORGAN	19	Drawbar 19	18	96	3	A	
522	DRAWBAR ORGAN	20	Drawbar 20	19	96	3	A	
523	USER TONE 1	1	User 1-1	0	80,97	–	–	
524	USER TONE 1	2	User 1-2	1	80,97	–	–	
525	USER TONE 1	3	User 1-3	2	80,97	–	–	
526	USER TONE 1	4	User 1-4	3	80,97	–	–	
527	USER TONE 1	5	User 1-5	4	80,97	–	–	
528	USER TONE 1	6	User 1-6	5	80,97	–	–	

No.	Tone Group	Tone Group No.	Tone Name	Program Change	Bank Select MSB	DCO Channels Used	Range Type	Legato
529	USER TONE 1	7	User 1-7	6	80,97	–	–	
530	USER TONE 1	8	User 1-8	7	80,97	–	–	
531	USER TONE 1	9	User 1-9	8	80,97	–	–	
532	USER TONE 1	10	User 1-10	9	80,97	–	–	
533	USER TONE 1	11	User 1-11	10	80,97	–	–	
534	USER TONE 1	12	User 1-12	11	80,97	–	–	
535	USER TONE 1	13	User 1-13	12	80,97	–	–	
536	USER TONE 1	14	User 1-14	13	80,97	–	–	
537	USER TONE 1	15	User 1-15	14	80,97	–	–	
538	USER TONE 1	16	User 1-16	15	80,97	–	–	
539	USER TONE 1	17	User 1-17	16	80,97	–	–	
540	USER TONE 1	18	User 1-18	17	80,97	–	–	
541	USER TONE 1	19	User 1-19	18	80,97	–	–	
542	USER TONE 1	20	User 1-20	19	80,97	–	–	
543	USER TONE 2	1	User 2-1	20	80,97	–	–	
544	USER TONE 2	2	User 2-2	21	80,97	–	–	
545	USER TONE 2	3	User 2-3	22	80,97	–	–	
546	USER TONE 2	4	User 2-4	23	80,97	–	–	
547	USER TONE 2	5	User 2-5	24	80,97	–	–	
548	USER TONE 2	6	User 2-6	25	80,97	–	–	
549	USER TONE 2	7	User 2-7	26	80,97	–	–	
550	USER TONE 2	8	User 2-8	27	80,97	–	–	
551	USER TONE 2	9	User 2-9	28	80,97	–	–	
552	USER TONE 2	10	User 2-10	29	80,97	–	–	
553	USER TONE 2	11	User 2-11	30	80,97	–	–	
554	USER TONE 2	12	User 2-12	31	80,97	–	–	
555	USER TONE 2	13	User 2-13	32	80,97	–	–	
556	USER TONE 2	14	User 2-14	33	80,97	–	–	
557	USER TONE 2	15	User 2-15	34	80,97	–	–	
558	USER TONE 2	16	User 2-16	35	80,97	–	–	
559	USER TONE 2	17	User 2-17	36	80,97	–	–	
560	USER TONE 2	18	User 2-18	37	80,97	–	–	
561	USER TONE 2	19	User 2-19	38	80,97	–	–	
562	USER TONE 2	20	User 2-20	39	80,97	–	–	

▮ NOTE ▮

- See the next page for information about range types (A to D).
- Legato Tones ○ : Tones that change during legato play
- DRUM SET group sounds can be sounded over the drum assign channel only.
- USER TONE group Bank Select MSB is 97 for a Drawbar tone and 80 for any other tone.

518	DRAWBAR ORGAN	16	Drawbar 16	15	96	3	A	
519	DRAWBAR ORGAN	17	Drawbar 17	16	96	3	A	
520	DRAWBAR ORGAN	18	Drawbar 18	17	96	3	A	
521	DRAWBAR ORGAN	19	Drawbar 19	18	96	3	A	
522	DRAWBAR ORGAN	20	Drawbar 20	19	96	3	A	
523	USER TONE 1	1	User 1-1	0	80,97	–	–	
524	USER TONE 1	2	User 1-2	1	80,97	–	–	
525	USER TONE 1	3	User 1-3	2	80,97	–	–	
526	USER TONE 1	4	User 1-4	3	80,97	–	–	
527	USER TONE 1	5	User 1-5	4	80,97	–	–	
528	USER TONE 1	6	User 1-6	5	80,97	–	–	

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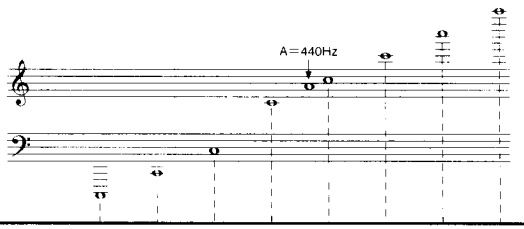

Range Type	C-1 C0 C1 C2 C3 C4 C5 C6 C7 G7 C8 C9 G9
A (Standard type)	
B (Low pitch instruments)	
C (High pitch instruments)	
D (Sound Effect)	No scale for tones.

a .....Range of keyboard play

b .....Playable range (Transpose, when receiving MIDI data)

c .....Range in which same note is played in nearest octave as a result of transpose and MIDI data receive operation. (Transpose, when receiving MIDI data)

Drum Sound Key Assignment List

KEY/Note No.	Program Change/Drum Set Name										
	00:StandardSet 1 02:Gate Set 03:Phaser Set 05:Fx Set	01:StandardSet 2	08:Room Set	16:Power Set	24:Elec.Set	25:Synth-Set 1 04:LoFi Set	30:Synth-Set 2	32:Jazz Set	40:Brush Set	48:Orch. Set	56:SFX Set
C-1 ~ B♭0/ 0 ~ 22	—	—	—	—	—	—	—	—	—	—	—
B0 23	Concert SD	←	←	←	←	←	←	←	←	←	—
C1 24	Snare Roll	←	←	←	←	←	←	←	←	←	—
C♯1 25	Finger Snap 2	←	←	←	Finger Snap 1	Finger Snap 2	←	Finger Snap 1	←	←	—
D1 26	High Q	←	←	←	←	←	←	←	←	Closed Hi-Hat	—
E♭1 27	Slap	←	←	←	←	←	←	←	←	Pedal Hi-Hat	—
E1 28	Scratch Push 1	←	←	←	Scratch Push 2	←	←	Scratch Push 1	←	Open Hi-Hat	—
F1 29	Scratch Pull 1	←	←	←	Scratch Pull 1	←	←	Scratch Pull 1	←	Ride Cymbal 1	—
F♯1 30	Sticks	←	←	←	←	←	←	←	←	←	—
G1 31	Square Click	←	←	←	←	←	←	←	←	←	—
A♭1 32	Metronome Click	←	←	←	←	←	←	←	←	←	—
A1 33	Metronome Bell	←	←	←	←	←	←	←	←	←	—
B♭1 34	Standard1 Kick 2	Standard2 Kick 2	Room Kick 2	Power Kick 2	Electric Kick 2	Synth 1 Kick 2	Techno Kick 2	Zazz Kick 2	←	Zazz Kick 1	—
B1 35	Standard1 Kick 1	Standard2 Kick 1	Room Kick 1	Power Kick 1	Electric Kick 1	Synth 1 Kick 1	Synth 2 Kick 1	Zazz Kick 1	←	Concert BD 1	—
C2 36	Side Stick	←	←	Power Side Stick	Side Stick	Synth 1 Rim Shot	Synth 2 Rim	Side Stick	←	←	—
C♯2 37	Standard1 Snare 1	Standard2 Snare 1	Room Snare 1	Power Snare 1	Electric Snare 1	Synth 1 Snare 1	Synth 2 Snare 1	Zazz Snare 1	Brush Snare 1	Concert SD	—
D2 38	Hand Clap 1	←	←	Hand Clap 3	←	←	Synth 2 Hand Clap	Hand Clap 2	Brush Slap	Castanets	High Q
E♭2 39	Standard1 Snare 2	Standard2 Snare 2	Room Snare 2	Power Snare 2	Electric Snare 2	Synth 1 Snare 2	Synth 2 Snare 2	Zazz Snare 2	Brush Snare 2	Concert SD	Slap
E2 40	Low Tom 2	←	Room Low Tom 2	Power Low Tom 2	Electric Low Tom 2	Synth 1 Low Tom 2	Synth 2 Low Tom 2	Low Tom 2	Brush Low Tom 2	Timpani F	Scratch Push 1
F2 41	Closed Hi-Hat	←	←	Power CHH	Closed Hi-Hat	Synth 1 Closed HH 1	Synth 2 Closed HH 1	Closed Hi-Hat	Brush Closed Hi-Hat	Timpani F♯	Scratch Pull 1
F♯2 42	Low Tom 1	←	Room Low Tom 1	Power Low Tom 1	Electric Low Tom 1	Synth 1 Low Tom 1	Synth 2 Low Tom 1	Low Tom 1	Brush Low Tom 1	Timpani G	Sticks
G2 43	Pedal Hi-Hat	←	←	Power PHH	Pedal Hi-Hat	Synth 1 Closed HH 2	Synth 2 Closed HH 2	Pedal Hi-Hat	←	Timpani G♯	Square Click
A♭2 44	Mid Tom 2	←	Room Mid Tom 2	Power Mid Tom 2	Electric Mid Tom 2	Synth 1 Mid Tom 2	Synth 2 Mid Tom 2	Mid Tom 2	Brush Mid Tom 2	Timpani A	Metronome Click
A2 45	Open Hi-Hat	←	←	Power OHH	Open Hi-Hat	Synth 1 Open HH	Synth 2 Open HH	Open Hi-Hat	Brush Open Hi-Hat	Timpani A♯	Metronome Bell
B♭2 46	Mid Tom 1	←	Room Mid Tom 1	Power Mid Tom 1	Electric Mid Tom 1	Synth 1 Mid Tom 1	Synth 2 Mid Tom 1	Mid Tom 1	Brush Mid Tom 1	Timpani B	Guitar Fret Noise
B2 47	High Tom 2	←	Room High Tom 2	Power High Tom 2	Electric High Tom 2	Synth 1 High Tom 2	Synth 2 High Tom 2	High Tom 2	Brush High Tom 2	Timpani c	Guitar Cutting Noise Up
C3 48	Crash Cymbal 1	←	←	←	←	Synth 1 Crash Cymbal	Synth 2 Crash Cymbal	Crash Cymbal 1	Brush Crash Cymbal 1	Timpani c♯	Guitar Cutting Noise Down
C♯3 49	High Tom 1	←	Room High Tom 1	Power High Tom 1	Electric High Tom 1	Synth 1 High Tom 1	Synth 2 High Tom 1	High Tom 1	Brush High Tom 1	Timpani d	Bass String Slap
D3 50	Ride Cymbal 1	←	←	←	←	Synth 2 Ride Cymbal	←	Ride Cymbal Inner	←	Timpani d♯	Flute Key Click Noise
E♭3 51	Chinese Cymbal	←	←	←	Reverse Cymbal	Chinese Cymbal	←	←	←	Timpani e	Laughing
E3 52	Ride Bell	←	←	←	←	←	←	←	Brush Ride Bell	Timpani f	Screaming
F3 53	Tambourine 1	←	←	←	←	Synth 1 Tambourine	Tambourine 2	Tambourine 1	←	←	Punch
F♯3 54	Splash Cymbal	←	←	←	←	←	←	←	←	←	Heart Beat
G3 55	Cowbell	←	←	←	←	Synth 1 Cowbell	←	Cowbell	←	←	Footsteps 1
A♭3 56	Crash Cymbal 2	←	←	←	←	Synth 2 Crash Cymbal	Crash Cymbal 2	←	Brush Crash Cymbal 2	Concert Cymbal 2	Footsteps 2
A3 57	Vibraslap	←	←	←	←	←	←	←	←	←	Applause 1
B♭3 58	Ride Cymbal 2	←	←	←	←	Ride Cymbal Edge	←	←	←	Concert Cymbal 1	Door Creaking
B3 59	High Q	←	←	←	←	Synth 1 High Range	High Range	←	←	←	Door

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E♭3 51	Chinese Cymbal	←	←	←	Reverse Cymbal	Chinese Cymbal	←	←	←	Laughing	
E3 52	Ride Bell	←	←	←	←	←	←	←	Brush Ride Bell	Timpani f	Screaming
F3 53	Tambourine 1	←	←	←	←	Synth 1 Tambourine	Tambourine 2	Tambourine 1	←	←	Punch
F♯3 54	Splash Cymbal	←	←	←	←	←	←	←	←	←	Heart Beat
G3 55	Cowbell	←	←	←	←	Synth 1 Cowbell	←	Cowbell	←	←	Footsteps 1
A♭3 56	Crash Cymbal 2	←	←	←	←	Synth 2 Crash Cymbal	Crash Cymbal 2	←	Brush Crash Cymbal 2	Concert Cymbal 2	Footsteps 2
A3 57	Vibraslap	←	←	←	←	←	←	←	←	←	Applause 1
B♭3 58	Ride Cymbal 2	←	←	←	←	Ride Cymbal Edge	←	←	←	Concert Cymbal 1	Door Creaking
B3 59	High Bongo	←	←	←	←	Synth 1 High Bongo	High Bongo	←	←	←	Door

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KEY/Note No.	Program Change/Drum Set Name										
	00:StandardSet 1 02:Gate Set 03:Phaser Set 05:Fx Set	01:StandardSet 2	08:Room Set	16:Power Set	24:Elec.Set	25:Synth-Set 1 04:LoFi Set	30:Synth-Set 2	32:Jazz Set	40:Brush Set	48:Orch. Set	56:SFX Set
C4 60	Low Bongo	←	←	←	←	Synth1 Low Bongo	Low Bongo	←	←	←	Scratch
C♯4 61	Mute High Conga	←	←	←	←	Synth1 Mute Hi Conga	Mute High Conga	←	←	←	Wind Chimes
D4 62	Open High Conga	←	←	←	←	Synth1 Open Hi Conga	Open High Conga	←	←	←	Car Engine
E♭4 63	Open Low Conga	←	←	←	←	Synth1 Open Low Conga	Open Low Conga	←	←	←	Car Stop
E4 64	High Timbale	←	←	←	←	←	←	←	←	←	Car Passing
F4 65	Low Timbale	←	←	←	←	←	←	←	←	←	Car Crash
F♯4 66	High Agogo	←	←	←	←	←	←	←	←	←	Siren
G4 67	Low Agogo	←	←	←	←	←	←	←	←	←	Train
A♭4 68	Cabasa	←	←	←	←	←	←	←	←	←	Jetplane
A4 69	Maracas	←	←	←	←	Synth1 Maracas	←	Maracas	←	←	Helicopter
B♭4 70	Short High Whistle	←	←	←	←	←	←	←	←	←	Starship
B4 71	Long Low Whistle	←	←	←	←	←	←	←	←	←	Gun Shot
C5 72	Short Guiro	←	←	←	←	←	←	←	←	←	Machine Gun
C♯5 73	Long Guiro	←	←	←	←	Synth1 Guiro	←	Long Guiro	←	←	Laser Gun
D5 74	Claves	←	←	←	←	Synth1 Claves	←	Claves	←	←	Explosion
E♭5 75	High Wood Block	←	←	←	←	←	←	←	←	←	Dog
E5 76	Low Wood Block	←	←	←	←	←	←	←	←	←	Horse Gallop
F5 77	Mute Cuica	←	←	←	←	High Hoo	←	Mute Cuica	←	←	Bird 1
F♯5 78	Open Cuica	←	←	←	←	Low Hoo	←	Open Cuica	←	←	Rain
G5 79	Mute Triangle	←	←	←	←	Elec. Mute Triangle	←	Mute Triangle	←	←	Thunder
A♭5 80	Open Triangle	←	←	←	←	Elec. Open Triangle	←	Open Triangle	←	←	Wind
A5 81	Shaker	←	←	←	←	Synth1 Shaker	←	Shaker	←	←	Seashore
B♭5 82	Jingle Bell	←	←	←	←	←	←	←	←	←	Stream
B5 83	Bell Tree	Bar Chimes	Bell Tree	←	←	←	←	←	←	←	Bubble
C6 84	Castanets	←	←	←	←	←	←	←	←	←	Cat
C♯6 85	Mute Surdo	←	←	←	←	←	←	←	←	←	Bird 2
D6 86	Open Surdo	←	←	←	←	←	←	←	←	←	Growl
E♭6 87	Applause 2	←	←	←	Small Club	←	Applause 2	Applause 1	←	←	Applause 2
E6 88	—	—	—	—	—	—	—	—	—	—	Telephone 1
F6 89	—	—	—	—	—	—	—	—	—	—	Telephone 2
F♯6 90	—	—	—	—	—	—	—	—	—	—	Small Club 1
G6 91	—	—	—	—	—	—	—	—	—	—	Small Club 2
A♭6 ~ G9/ 92 ~ 127	—	—	—	—	—	—	—	—	—	—	—

Rhythm List

Rhythm Group Name	Rhythm Name	Default Tempo	Beat	
8 BEAT	8Beat 1	100	4/4	
	8Beat 2	105	4/4	
	8Beat 3	110	4/4	
	8Beat Gtr	110	4/4	
	8Beat Dance	110	4/4	
	8Beat Bld 1	77	4/4	
	8Beat Bld 2	66	4/4	
	8Beat Bld 3	76	4/4	*
	Pop Rock 1	78	4/4	
	Pop Rock 2	115	4/4	
16 BEAT	16Beat 1	115	4/4	
	16Beat 2	102	4/4	
	16Beat 3	86	4/4	
	16Beat Bld 1	78	4/4	
	16Beat Bld 2	82	4/4	
	16Beat Bld 3	78	4/4	
	Funk 1	104	4/4	
	Funk 2	114	4/4	
	Fusion	110	4/4	
	Funk 3	104	4/4	
POPS	Pop Ballad	70	4/4	
	Euro Pop	110	4/4	
	Soul Ballad	92	4/4	
	Soul	55	6/8	
	Oldies Shfl	140	4/4	
	Oldies Bld	83	4/4	
	Folkie Pop	168	4/4	
	60s Pop	96	4/4	
	R&B	116	4/4	
	ShuffleBld 1	69	4/4	
	Dance Soul	122	4/4	
	6/8 Ballad	75	6/8	
	Shuffle Pop	116	4/4	
	ShuffleBld 2	80	4/4	
	Pop Waltz	77	3/4	*
ROCK	Rock 1	130	4/4	
	Rock 2	111	4/4	
	60s Rock	142	4/4	
	70s Rock	140	4/4	
	Heavy Metal	110	4/4	
	Rock Ballad	76	4/4	
	Shuffle Rock	130	4/4	
	Rock 3	140	4/4	
	Blues	124	4/4	*
	R&R	158	4/4	*(2, 4)
	Shfl Boogie	168	4/4	
	Twist	180	4/4	

Rhythm Group Name	Rhythm Name	Default Tempo	Beat	
DANCE	Dance	124	4/4	
	Hip Hop	108	4/4	
	Trip Hop	80	4/4	
	Disco Soul	122	4/4	
	70s Disco	120	4/4	
	90s Dance	120	4/4	
	Techno 1	145	4/4	
	Techno 2	134	4/4	
	Electric Pop	132	4/4	
	Jungle	170	4/4	
JAZZ	Fast BigBand	96	4/4	
	Mid BigBand	120	4/4	
	Slow BigBand	80	4/4	
	Fox Trot	120	4/4	
	Euro Fox	134	4/4	
	Ballroom Fox	120	4/4	
	Quickstep	200	4/4	**
	Slow Swing	84	4/4	
	Swing 1	136	4/4	
	Swing 2	120	4/4	
	Jazz Combo	100	4/4	*
	Euro Combo	160	4/4	
	Jazz Waltz 1	98	3/4	
	Jazz Walts 2	170	3/4	*(2, 4)
EUROPEAN	Polka	118	4/4	
	Polka Fox	126	4/4	
	Pop Polka	114	4/4	
	March 1	120	4/4	
	March 2	120	4/4	**
	German March	120	4/4	
	Waltz	100	3/4	
	Volk Waltz	200	6/8	
	ViennaWaltz 1	168	3/4	
	ViennaWaltz 2	180	6/8	
	French Waltz	170	3/4	*
	Blrm Waltz	90	3/4	
LATIN 1	Bossa Nova 1	140	4/4	
	Bossa Nova 2	145	4/4	*(1, 2, 3)
	Samba 1	110	4/4	
	Samba 2	115	4/4	
	Merengue	148	4/4	
	Cumbia	110	4/4	
	Cha Cha Cha	120	4/4	
	Salsa	105	4/4	
	Beguine	113	4/4	
	Son	200	4/4	

Rhythm Group Name	Rhythm Name	Default Tempo	Beat	
LATIN 2	Rhumba 1	118	4/4	**
	Rhumba 2	120	4/4	
	Mambo	124	4/4	*
	Reggae 1	88	4/4	
	Reggae 2	105	4/4	
	Ska	132	4/4	
	Rumba Espana	166	4/4	
	Bolero	92	4/4	
	Tango 1	128	4/4	**
	Tango 2	120	4/4	
AMERICAN	Bluegrass	136	4/4	*(4)
	Country	170	4/4	
	C&W	120	4/4	
	Country Shfl	120	4/4	
	Country Wltz	120	3/4	*
	Fast Gospel	112	4/4	
	Slow Gospel	120	6/8	
	Broadway	140	4/4	**
	Jive	170	4/4	
	Dixie	92	4/4	*(2, 4)
VARIOUS /WORLD	Pasodoble	130	4/4	
	Sirtaki	82	4/4	
	Sevillana	166	3/4	
	Gypsy	120	4/4	
	Hawaiian	114	4/4	
	Adani	90	2/4	
	Baladi	104	4/4	

NOTE

* Pattern changed by dominant (also changed by accompaniment keyboard range pressure).
Variations in parentheses also change by dominant.

** Pattern changed by dominant only.

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Rhythm Name	Default Tempo	Beat	
umba 1	118	4/4	**
umba 2	120	4/4	
mbo	124	4/4	*
ggae 1	88	4/4	
ggae 2	105	4/4	
a	132	4/4	
mba Espana	166	4/4	
lero	92	4/4	
ngo 1	128	4/4	**
ngo 2	120	4/4	
uegrass	136	4/4	*(1)
untry	170	4/4	
W	120	4/4	
untry Shfl	120	4/4	
untry Wltz	120	3/4	*
st Gospel	112	4/4	
w Gospel	120	6/8	
oadway	140	4/4	**
e	170	4/4	
xie	92	4/4	*(2, 4)
sodoble	130	4/4	
taki	82	4/4	
villana	166	3/4	
psy	120	4/4	
waiian	114	4/4	
lani	90	2/4	
ladi	104	4/4	

anged by dominant (also accompaniment keyboard ure).
parentheses also change by

nged by dominant only.

Effect Table

DSP EFFECT List

No.	Type Name	Parameter 1	Parameter 2
Mono Single Size			
● Thru / System Fx			
1.	Thru	—	—
2.	SysCho	—	—
3.	SysRev	—	—
4.	SysChoRev	—	—
● Dynamics Fx			
5.	Comp-EQ	Comp. Attack	Comp. Depth
6.	Comp-Enh	Comp. Attack	Comp. Depth
7.	Limit-EQ	Comp. Attack	Comp. Thresh
8.	Limit-Enh	Comp. Attack	Comp. Thresh
9.	Attack-Lim	Comp. Attack	Comp. Thresh
10.	Slow-Phaser	SlwAtk Attack	Phaser Rate
11.	Slow-Flange	SlwAtk Attack	Flange Rate
12.	Slow-Delay1	SlwAtk Attack	Delay Feedbk
13.	Slow-Delay2	SlwAtk Attack	Delay Feedbk
14.	Tremolo	Trem. Rate	Trem. Depth
15.	EQ-Tremoro	Trem. Depth	Trem. Rate
16.	Trem-SysCho	Trem. Rate	Trem. Depth
17.	Phase-Trem	Phaser Rate	Trem. Rate
18.	Comp-Trem	Comp. Thresh	Trem. Rate
19.	Pan	AtPan Rate	AtPan Depth
20.	EQ-APan1	AtPan Depth	AtPan Rate
21.	EQ-APan2	AtPan Depth	AtPan Rate
● Filter Fx			
22.	LoudnessEQ	3BEQ LoGain	3BEQ HiGain
23.	EQ-SysChoRev	3BEQ LoGain	3BEQ HiGain
24.	HiBoostEQ1	3BEQ LoGain	3BEQ HiGain
25.	HiBoostEQ2	3BEQ LoGain	3BEQ HiGain
26.	Enhancer	Enha. LoGain	Enha. HiGain
27.	FixWah	Wah Freq.	Wah Reso.
28.	LfoWah	Wah LfoDep	Wah LfoRat
29.	StpWah	Wah LfoDep	Wah LfoRat
30.	EQ-Wah	Wah Freq.	Wah LfoDep
31.	QuicAutoWah	AtWah Peak	AtWah Sens.
32.	DullAutoWah	AtWah Peak	AtWah Sens.
33.	SlowAWah-Dly	AtWah Peak	Delay Feedbk
● Modulation Fx			
34.	Phaser1	Phaser Rate	Phaser Reso.
35.	Phaser2	Phaser Rate	Phaser Reso.
36.	Phaser3	Phaser Rate	Phaser Reso.
37.	StpPhaser	Phaser Rate	Phaser Reso.
38.	Pha-SyCho1	Phaser Rate	Phaser Reso.
39.	Pha-SyCho2	Phaser Rate	Phaser Reso.

No.	Type Name	Parameter 1	Parameter 2
40.	EQ-Phaser1	Phaser Rate	Phaser Reso.
41.	EQ-Phaser2	Phaser Rate	Phaser Reso.
42.	EQ-Chorus1	3BEQ HiGain	Chorus Depth
43.	EQ-Chorus2	3BEQ HiGain	Chorus Depth
44.	EQ-Chorus3	Chorus Depth	Chorus Rate
45.	EQ-Chorus4	Chorus Depth	Chorus Rate
46.	Flanger	Flange Rate	Flange Feedbk
47.	EQ-Flanger1	Flange Depth	Flange Rate
48.	EQ-Flanger2	Flange Depth	Flange Rate
49.	Comp-Phaser	Comp. Thresh	Phaser Rate
50.	Cmp-Pha-SyCo	Comp. Thresh	Phaser Rate
51.	Comp-Chorus1	Comp. Thresh	Chorus Depth
52.	Comp-Chorus2	Comp. Thresh	Chorus Depth
● Rotary Fx			
53.	Rotary1_F	Rotary RateSw	Rotary Break
54.	Rotary1_S	Rotary RateSw	Rotary Break
55.	Rotary2_F	Rotary RateSw	Rotary Break
56.	Rotary2_S	Rotary RateSw	Rotary Break
57.	Rotary3_F	Rotary RateSw	Rotary Break
58.	Rotary3_S	Rotary RateSw	Rotary Break
● Delay / Rev Combination Fx			
59.	AmbDelay1	Delay DelLvl	Delay Feedbk
60.	AmbDelay2	Delay DelLvl	Delay Feedbk
61.	EQ-ShtDly1	Delay DelLvl	Delay Feedbk
62.	EQ-ShtDly2	Delay DelLvl	Delay Feedbk
63.	EQ-SglDly1	Delay DTimC	Delay DLvlC
64.	EQ-MidDly1	Delay DelLvl	Delay Feedbk
65.	EQ-MidDly2	Delay DelLvl	Delay Feedbk
66.	EQ-MidDly3	Delay DTimC	Delay Feedbk
67.	EQ-LngDly1	Delay DelLvl	Delay Feedbk
68.	EQ-LngDly2	Delay DelLvl	Delay Feedbk
69.	EQ-LngDly3	Delay DelLvl	Delay Feedbk
70.	EQ-LngDly4	Delay DelLvl	Delay Feedbk
71.	EQ-LngDly5	Delay DTimC	Delay Feedbk
72.	EQ-Dly-SyCo1	Delay DTimC	Delay Feedbk
73.	EQ-Dly-SyCo2	Delay DTimC	Delay Feedbk
74.	Pha-ShtDly1	Delay DelLvl	Delay Feedbk
75.	Pha-ShtDly2	Delay DelLvl	Delay Feedbk
76.	Pha-LngDly1	Phaser Rate	Delay DTimC
77.	Pha-LngDly2	Phaser Rate	Delay DTimC
78.	Cho-AmbDly1	Delay DelLvl	Delay Feedbk
79.	Cho-AmbDly2	Delay DelLvl	Delay Feedbk
80.	Cho-ShtDly1	Delay DelLvl	Delay Feedbk
81.	Cho-ShtDly2	Delay DelLvl	Delay Feedbk

No.	Type Name	Parameter 1	Parameter 2
82.	Cho-LngDly1	Chorus Rate	Delay DTimC
83.	Cho-LngDly2	Chorus Rate	Delay DTimC
84.	AmbDly-Cho1	Delay DelLvl	Delay Feedbk
85.	AmbDly-Cho2	Delay DelLvl	Delay Feedbk
86.	Flng-ShtDly1	Delay DelLvl	Delay Feedbk
87.	Flng-ShtDly2	Delay DelLvl	Delay Feedbk
88.	Flng-MidDly1	Delay DelLvl	Delay Feedbk
89.	Flng-MidDly2	Delay DelLvl	Delay Feedbk
90.	Flng-MidDly3	Flange Rate	Delay DTimC
91.	Flng-MidDly4	Flange Rate	Delay DTimC
92.	Flng-LngDly1	Delay DelLvl	Delay Feedbk
93.	Flng-LngDly2	Delay DelLvl	Delay Feedbk
94.	Cho-MidDly1	Delay DelLvl	Delay Feedbk
95.	Cho-MidDly2	Delay DelLvl	Delay Feedbk
96.	Cho-LngDly1	Delay DelLvl	Delay Feedbk
97.	Cho-LngDly2	Delay DelLvl	Delay Feedbk
● Vocal Fx			
98.	Vo.Enh-Dly	3BEQ MdFreq	3BEQ MdGain
● Clean Guitar Fx			
99.	SmallFcAmp	AmpSim Direct	AmpSim Color
100.	ComboFdAmp	AmpSim Direct	AmpSim Color
101.	ComboSlAmp	AmpSim Direct	AmpSim Color
102.	DarkEQ-Amp	3BEQ LoGain	3BEQ HiGain
103.	Amp-SyChoRev	AmpSim Direct	AmpSim Color
104.	Amp-Enhancer	Enha. LoGain	Enha. HiGain
105.	Wah-Amp1	Wah Freq.	Wah LfoDep
106.	Wah-Amp2	Wah Freq.	Wah LfoDep
107.	Wah-Amp3	Wah Freq.	Wah LfoDep
108.	AWah-Amp	AtWah Freq.	AtWah Sens.
109.	Amp-Phaser	AmpSim Color	Phaser Rate
110.	Amp-Chorus1	AmpSim Color	Chorus Rate
111.	Amp-Chorus2	AmpSim Color	Chorus Rate
112.	Amp-Chorus3	AmpSim Color	Chorus Rate
113.	Amp-Flanger	AmpSim Color	Flange Rate
114.	Amp-Delay1	AmpSim Color	Delay DelLvl
115.	Amp-Delay2	AmpSim Color	Delay DelLvl
● Basic Distortion/Amp			
116.	Crunch	Dist. Drive	Dist. Tone
117.	OverDrive	Dist. Drive	Dist. Tone
118.	LightDist	Dist. Drive	Dist. Tone
119.	Distortion	Dist. Drive	Dist. Tone
120.	MetalDist	Dist. Drive	Dist. Tone
121.	Fuzz	Dist. Drive	Dist. Tone

No.	Type Name	Parameter 1	Parameter 2
● LoFi / SFx			
122.	FixRing	RingMd Freq.	RingMd Direct
123.	LfoRing	RingMd LfoDep	RingMd LfoRat
124.	StpRing	RingMd LfoDep	RingMd LfoRat
125.	LfoRing-Pan	RingMd LfoDep	AtPan Rate
126.	LfoRing-Flng	RingMd LfoRat	Flange Feedbk
127.	FxiRing-Dly	RingMd Freq.	RingMd Direct
128.	LfoRing-Dly	RingMd LfoDep	RingMd LfoRat
129.	StpRing-Dly	RingMd LfoDep	RingMd LfoRat
130.	LoFi	LoFi LFType	LoFi HumLvl
131.	Wah-LoFi	Wah Freq.	LoFi NoiLvl
Mono Double Size			
● Dynamics Fx			
132.	Trem-Delay	Trem. Rate	Trem. Depth
133.	Pan-Delay	StDel. DTimL	StDel. DTimR
134.	Slow-Pan-Dly	StDel. DTimL	StDel. DTimR
135.	Wah-Pan-Dly	StDel. DTimL	StDel. DTimR
136.	AWa-Pan-Dly	StDel. DTimL	StDel. DTimR
● Rotary Fx			
137.	OdRotary1_F	Dist. Drive	Rotary RateSw
138.	OdRotary1_S	Dist. Drive	Rotary RateSw
139.	OdRotary2_F	Dist. Drive	Rotary RateSw
140.	OdRotary2_S	Dist. Drive	Rotary RateSw
141.	Rot-AmbDly_F	Rotary RateSw	Delay Feedbk
142.	Rot-AmbDly_S	Rotary RateSw	Delay Feedbk
143.	Rot-ShtDly_F	Rotary RateSw	Delay Feedbk
144.	Rot-ShtDly_S	Rotary RateSw	Delay Feedbk
● Delay / Rev Combination Fx			
145.	Amb-MidDly	Delay DelLvl	Delay Feedbk
146.	Amb-LngDly	Delay DelLvl	Delay Feedbk
147.	GateReverb	GateRV Time	GateRV Color
148.	ReverseGate	GateRV Time	GateRV Color
149.	AWa-Gate-EQ	AtWah Peak	AtWah Sens.
150.	Comp-Gate-EQ	Comp. Depth	GateRv Color
● Vocal Fx			
151.	Vo.Cmp-Cho	3BEQ MdFreq	3BEQ MdGain
152.	Vo.Cho-Dly	3BEQ MdFreq	3BEQ MdGain
153.	Vo.Cho-Dly2	3BEQ MdFreq	3BEQ MdGain
● Clean Guitar Fx			
154.	Slow-Amp-Dly	AmpSim Color	Delay Feedbk
● Basic Distortion/Amp			
155.	Cmp-Dst-EQ1	Dist. Drive	3BEQ MdFreq
156.	Cmp-Dst-EQ2	Dist. Drive	3BEQ MdFreq
157.	Cru-Jc-Dly1	Dist. Drive	AmpSim Color
158.	Cru-Jc-Dly2	Dist. Drive	AmpSim Color
159.	Dst-Jc-Dly1	Dist. Drive	AmpSim Color
160.	Dst-Jc-Dly2	Dist. Drive	AmpSim Color
161.	Dst-SR-Dly1	Dist. Drive	AmpSim Color
162.	Dst-SR-Dly2	Dist. Drive	AmpSim Color
163.	Od-Fd-Dly1	Dist. Drive	Delay DelLvl
164.	Od-Fd-Dly2	Dist. Drive	Delay DelLvl
165.	Dst-Bg-Dly1	Dist. Drive	AmpSim Color
166.	Dst-Bg-Dly2	Dist. Drive	AmpSim Color
167.	PreEQ-Bg1	3BEQ MdFreq	Dist. Drive
168.	PreEQ-Bg2	3BEQ MdFreq	Dist. Drive
169.	Dst-Sl-Dly1	Dist. Drive	AmpSim Color
170.	Dst-Sl-Dly2	Dist. Drive	AmpSim Color
171.	Dst-Ms-Dly1	Dist. Drive	AmpSim Color
172.	Dst-Ms-Dly2	Dist. Drive	AmpSim Color
173.	Met-Ms-Dly1	Dist. Drive	AmpSim Color
174.	Met-Ms-Dly2	Dist. Drive	AmpSim Color
175.	Fuz-Pg-Dly	Dist. Drive	AmpSim Color
176.	Fuz-Fd-Dly	Dist. Drive	AmpSim Color
177.	Fuz-Fd-Flng	Dist. Drive	AmpSim Color
● Pre Dist GAS multi			
178.	Slow-Dst-Amp	SlwAtk Attack	Dist. Drive
179.	Wah-Dst-Amp1	Wah Freq.	Wah LfoDep
180.	Wah-Dst-Amp2	Wah Freq.	Wah LfoDep
181.	AWa-Dst-Amp1	AtWah Freq.	Dist. Drive
182.	AWa-Dst-Amp2	AtWah Freq.	Dist. Drive
183.	Pha-Dist-Amp	Phaser Rate	Dist. Drive
● Post Dist Multi			
184.	Dst-Wah-Amp	Dist. Drive	Wah Freq.
185.	Dst-Ring-Amp	Dist. Drive	RingMd Freq.
186.	Dst-Amp-Pha	Dist. Drive	Phaser Rate
187.	Dst-Amp-Cho	Dist. Drive	Chorus Rate
188.	Dst-Amp-Flng	Dist. Drive	Flange Rate
189.	Dst-Amp-Trem	Dist. Drive	Trem. Rate
190.	Dst-Amp-Pan	Dist. Drive	AtPan Rate
● Delay Dist Multi			
191.	Wah-Dst-Dly1	Wah Freq.	Delay DTimC
192.	Wah-Dst-Dly2	Wah Freq.	Delay DTimC
193.	AWa-Dst-Dly	AtWah Sens.	Delay DTimC
194.	Rng-Dst-Dly1	RingMd Freq.	Delay DTimC
195.	Rng-Dst-Dly2	RingMd LfoStp	Delay DTimC
● LoFi / SFx			
196.	AWa-LoFi-GRv	AtWah Freq.	LoFi ScrLvl
197.	AWa-LoFi-Dly	AtWah Freq.	LoFi LFType
198.	LoFi-AWa-Dly	AtWah Freq.	LoFi LFType
199.	Wah-LoFi-Dly	Wah Freq.	LoFi NoiLvl
200.	LoFi-Wah-Dly	Wah Freq.	LoFi NoiLvl
201.	Rng-LoFi-Dly	RingMd Freq.	LoFi LFType
202.	LoFi-Rng-Dly	RingMd Freq.	LoFi LFType
203.	LoFi-Flanger	LoFi LFType	LoFi NoiLvl
204.	Pan-LoFi-Dly	AtPan Rate	StLoFi LFType
205.	Dst-GateRev	Dist. Drive	GateRv Color

No.	Type Name	Parameter 1	Parameter 2
Stereo			
● Thru / System Fx			
206.	StThru	—	—
● Dynamics Fx			
207.	StComp-EQ	StComp Attack	StComp Depth
208.	StComp-Enh	StComp Attack	StComp Depth
209.	StLimit-EQ	StComp Attack	StComp Thresh
210.	StLimit-Enh	StComp Attack	StComp Thresh
● Filter Fx			
211.	StLoudnessEQ	St3BEQ LoGain	St3BEQ HiGain
212.	StEnhancer	StEnha LoGain	StEnha HiGain
● Modulation Fx			
213.	StEQ-Phaser1	St3BEQ HiGain	StPhas Rate
214.	StEQ-Phaser2	St3BEQ HiGain	StPhas Rate
215.	StEQ-StpPha	St3BEQ HiGain	StPhas Rate
216.	StEQ-Ph-SyCo	St3BEQ HiGain	StPhas Rate
217.	StEQ-Chorus	St3BEQ HiGain	StCho. Depth
218.	StEQ-Flanger	St3BEQ HiGain	StCho. Depth
219.	StComp-Phase	StComp Thresh	StPhas Rate
220.	StComp-Cho	StComp Thresh	StCho. Rate
● Delay / Rev Combination Fx			
221.	StAmbDelay1	St3BEQ LoGain	St3BEQ HiGain
222.	StAmbDelay2	St3BEQ LoGain	St3BEQ HiGain
223.	StEQ-Cho-Dl1	St3BEQ LoGain	St3BEQ HiGain
224.	StEQ-Cho-Dl2	St3BEQ LoGain	St3BEQ HiGain
225.	StEQ-Dl-Cho1	St3BEQ LoGain	St3BEQ HiGain
226.	StEQ-Dl-Cho2	St3BEQ LoGain	St3BEQ HiGain
227.	StCmp-Delay1	StDel. DTimL	StDel. DTimR
228.	StCmp-Delay2	StDel. DTimL	StDel. DTimR
229.	StCmp-Delay3	StDel. DTimL	StDel. DTimR
230.	StCmp-TapDl1	TapDel DTimL1	TapDel DTimR1
231.	StCmp-TapDl2	TapDel DTimL1	TapDel DTimR1
232.	StPha-Delay1	StDel. DTimL	StDel. DTimR
233.	StPha-Delay2	StDel. DTimL	StDel. DTimR
234.	StEQ-Pha-Dl1	StPhas Rate	StPhas Reso.
235.	StEQ-Pha-Dl2	StPhas Rate	StPhas Reso.
236.	StCho-Delay1	StDel. DTimL	StDel. DTimR
237.	StCho-Delay2	StDel. DTimL	StDel. DTimR
● LoFi / SFx			
238.	StLoFi-Phase	StLoFi LFType	StLoFi NoiLvl
239.	StLoFi-Dly1	StLoFi LFType	StLoFi HiGain
240.	StLoFi-Dly2	StLoFi LFType	StLoFi HiGain

Name	Parameter 1	Parameter 2
m Fx		
	—	—
x		
EQ	StComp Attack	StComp Depth
Enh	StComp Attack	StComp Depth
Q	StComp Attack	StComp Thresh
nh	StComp Attack	StComp Thresh
essEQ	St3BEQ LoGain	St3BEQ HiGain
cer	StEnha LoGain	StEnha HiGain
Fx		
aser1	St3BEQ HiGain	StPhas Rate
aser2	St3BEQ HiGain	StPhas Rate
Pha	St3BEQ HiGain	StPhas Rate
-SyCo	St3BEQ HiGain	StPhas Rate
orus	St3BEQ HiGain	StCho. Depth
nger	St3BEQ HiGain	StCho. Depth
Phase	StComp Thresh	StPhas Rate
Cho	StComp Thresh	StCho. Rate
Combination Fx		
elay1	St3BEQ LoGain	St3BEQ HiGain
elay2	St3BEQ LoGain	St3BEQ HiGain
o-Dl1	St3BEQ LoGain	St3BEQ HiGain
o-Dl2	St3BEQ LoGain	St3BEQ HiGain
-Cho1	St3BEQ LoGain	St3BEQ HiGain
-Cho2	St3BEQ LoGain	St3BEQ HiGain
Delay1	StDel. DTimL	StDel. DTimR
Delay2	StDel. DTimL	StDel. DTimR
Delay3	StDel. DTimL	StDel. DTimR
TapDl1	TapDel DTimL1	TapDel DTimR1
TapDl2	TapDel DTimL1	TapDel DTimR1
elay1	StDel. DTimL	StDel. DTimR
elay2	StDel. DTimL	StDel. DTimR
a-Dl1	StPhas Rate	StPhas Reso.
a-Dl2	StPhas Rate	StPhas Reso.
elay1	StDel. DTimL	StDel. DTimR
elay2	StDel. DTimL	StDel. DTimR
Phase	StLoFi LFType	StLoFi NoiLvl
Dly1	StLoFi LFType	StLoFi HiGain
Dly2	StLoFi LFType	StLoFi HiGain

REVERB EFFECT List

No.	Type Name	Parameter 1	Parameter 2*
1.	Room 1	Reverb Time	Delay Feedbk
2.	Room 2	Reverb Time	Delay Feedbk
3.	Room 3	Reverb Time	Delay Feedbk
4.	Hall 1	Reverb Time	Delay Feedbk
5.	Hall 2	Reverb Time	Delay Feedbk
6.	Plate 1	Reverb Time	Delay Feedbk
7.	Delay	Delay Time	Delay Feedbk
8.	Pan Delay	Delay Time	Delay Feedbk
9.	Room 4	Reverb Time	Delay Feedbk
10.	Plate 2	Reverb Time	Delay Feedbk
11.	Small Hall	Reverb Time	Delay Feedbk
12.	Medium Hall	Reverb Time	Delay Feedbk
13.	Large Hall	Reverb Time	Delay Feedbk
14.	Bright Hall	Reverb Time	Delay Feedbk
15.	Church	Reverb Time	Delay Feedbk

* Enabled only while DELAY is selected as the reverb type.

CHORUS EFFECT List

No.	Type Name	Parameter 1	Parameter 2
1.	Chorus 1	LFO Rate	Delay Time
2.	Chorus 2	LFO Rate	Delay Time
3.	Chorus 3	LFO Rate	Delay Time
4.	Chorus 4	LFO Rate	Delay Time
5.	Fbk Chorus	LFO Rate	Delay Time
6.	Flanger 1	LFO Rate	Delay Time
7.	Short Delay1	LFO Rate	Delay Time
8.	Short Delay2	LFO Rate	Delay Time
9.	Chorus 5	LFO Rate	Delay Time
10.	Chorus 6	LFO Rate	Delay Time

No.	Type Name	Parameter 1	Parameter 2
11.	Chorus 7	LFO Rate	Delay Time
12.	Ensemble 1	LFO Rate	Delay Time
13.	Ensemble 2	LFO Rate	Delay Time
14.	Ensemble 3	LFO Rate	Delay Time
15.	Flanger 2	LFO Rate	Delay Time
16.	Flanger 3	LFO Rate	Delay Time
17.	Flanger 4	LFO Rate	Delay Time
18.	Organ 1	LFO Rate	Delay Time
19.	Organ 2	LFO Rate	Delay Time
20.	Organ 3	LFO Rate	Delay Time

MASTER EFFECT List

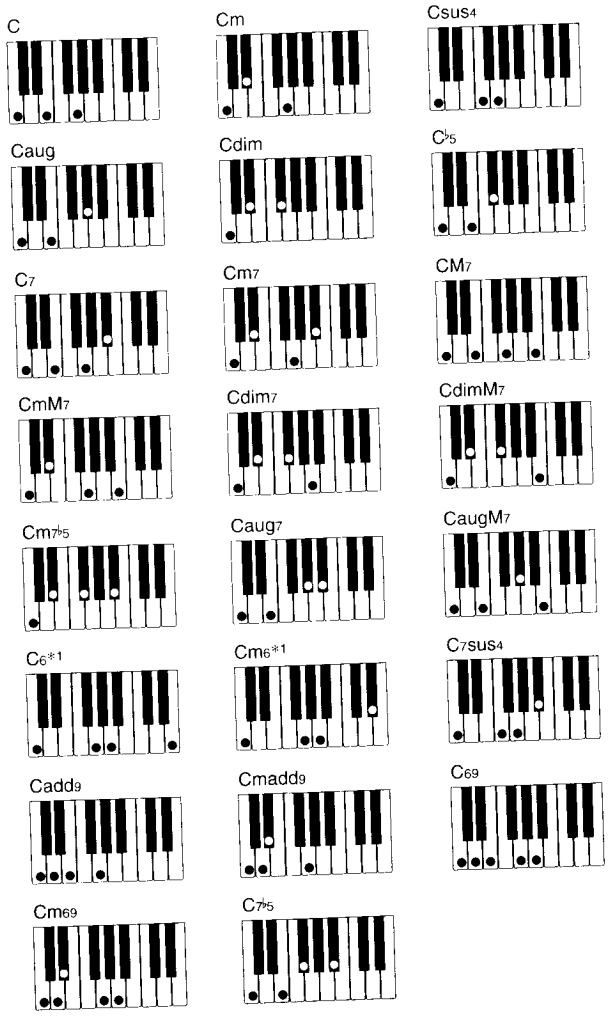
No.	Type Name	Parameter 1	Parameter 2	Parameter 3	Parameter 4
1.	Thru	—	—	—	—
2.	Compressor1	Attack	Threshold	Depth	Level
3.	Compressor2	Attack	Threshold	Depth	Level
4.	Compressor3	Attack	Threshold	Depth	Level
5.	Compressor4	Attack	Threshold	Depth	Level
6.	Compressor5	Attack	Threshold	Depth	Level
7.	Compressor6	Attack	Threshold	Depth	Level
8.	Compressor7	Attack	Threshold	Depth	Level
9.	Compressor8	Attack	Threshold	Depth	Level
10.	AttackComp1	Attack	Threshold	Depth	Level
11.	AttackComp2	Attack	Threshold	Depth	Level
12.	AttackComp3	Attack	Threshold	Depth	Level
13.	Limiter1	Attack	Threshold	Depth	Level
14.	Limiter2	Attack	Threshold	Depth	Level
15.	EQ Lo+	Level	—	—	—
16.	EQ Hi+	Level	—	—	—
17.	EQ LoHi+Mid-	Level	—	—	—
18.	EQ Mid+	Level	—	—	—
19.	EQ Mid-	Level	—	—	—
20.	EQ Hi-	Level	—	—	—
21.	EQ Lo-	Level	—	—	—
22.	EQ LoHi-Mid+	Level	—	—	—
23.	EQ Loud1	Level	—	—	—
24.	EQ Loud1 Lo+	Level	—	—	—
25.	EQ Loud1 Hi+	Level	—	—	—

No.	Type Name	Parameter 1	Parameter 2	Parameter 3	Parameter 4
26.	EQ Loud2	Level	—	—	—
27.	EQ Loud2 Lo+	Level	—	—	—
28.	EQ Loud2 Hi+	Level	—	—	—
29.	EQ Loud3	Level	—	—	—
30.	EQ Loud3 Lo+	Level	—	—	—
31.	EQ Loud3 Hi+	Level	—	—	—
32.	EQ Flat	Level	—	—	—
33.	Enhance Hi1	Lo Gain	Hi Gain	Level	—
34.	Enhance Hi2	Lo Gain	Hi Gain	Level	—
35.	Enhance Lo1	Lo Gain	Hi Gain	Level	—
36.	Enhance Lo2	Lo Gain	Hi Gain	Level	—
37.	Enh.Loud1	Lo Gain	Hi Gain	Level	—
38.	Enh.Loud2	Lo Gain	Hi Gain	Level	—
39.	Enh.Lo -Hi	Lo Gain	Hi Gain	Level	—
40.	Enh.Hi -Lo	Lo Gain	Hi Gain	Level	—
41.	Surround1	Depth	—	—	—
42.	Surround2	Depth	—	—	—
43.	Surround3	Depth	—	—	—
44.	Surround4	Depth	—	—	—
45.	LoFi Bright1	Noise Level	LoFi Mix	Direct Level	—
46.	LoFi Bright2	Noise Level	LoFi Mix	Direct Level	—
47.	LoFi Bright3	Noise Level	LoFi Mix	Direct Level	—
48.	LoFi Dark1	Noise Level	LoFi Mix	Direct Level	—
49.	LoFi Dark2	Noise Level	LoFi Mix	Direct Level	—
50.	LoFi Dark3	Noise Level	LoFi Mix	Direct Level	—

Fingered/Full Range Chord Table

Example: Root C

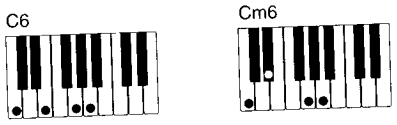
Root Position Chords (23 types)



*1 6th, m6th Chords

When the **6th chord** option is turned off, there must be at least five intervals separating the bass note and second note, as shown above.

When the **6th chord** option is turned on, you can specify a 6th chord by fingering the root position chord plus the 6th note, as shown below.



On Bass Chords: When the bass note is a chord component (32 types)

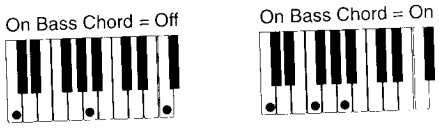
In either of the following cases, the lowest note is interpreted as the bass note, and the chord is interpreted as one of the chords shown below.

- When the lowest note is more than five intervals from the second note
- When the [On Bass Chord] setting is turned on

● 3-Note Chords

F/C	A♭/C	Fm/C
Am/C	Fsus4/C	Gsus4/C
Adim/C	F♯dim/C	A♭♭5/C
F♯♭5/C		

Example F/C



● 4-Note Chords

F7/C	A♭7/C	Fm7/C	Am7/C*2
FM7/C	A♭M7/C	FmM7/C	AmM7/C
F♯dimM7/C	AdimM7/C	F♯m7♭5/C	
Eaug7/C	A♭aug7/C	EaugM7/C	AbaugM7/C
F7sus4/C	G7sus4/C		
Fadd9/C	A♭add9/C	Fmadd9/C	Amadd9/C
A♭7♭5/C			

*2 A fingering that includes the 5th (E) is interpreted as Am7/C, while a fingering that does not include the 5th is interpreted as C6.

the bass note is a ypes)

lowest note is interpreted
interpreted as one of the

an five intervals from the

ng is turned on

Fm/C

Gsus4/C

A♭5/C

On Bass Chord = On

m7/C Am7/C*2

mM7/C AmM7/C

m7♭5/C

augM7/C AbaugM7/C

madd9/C Amadd9/C

e 5th (E) is interpreted as
t does not include the 5th is

On Bass Chords: When the bass note is not a chord component (119 types)

In either of the following cases, the lowest note is interpreted as the bass note, and the chord is interpreted as one of the chords shown below.

- When the lowest note is more than five intervals from the second note
- When the **On Bass Chord** setting is turned on

● major chord type

F♯/C G/C A/C B♭/C C♯/C D/C

● minor chord type

F♯m/C Gm/C A♭m/C B♭m/C Bm/C C♯m/C Dm/C

● sus4 type

C♯sus4/C Dsus4/C F♯sus4/C A♭sus4/C Asus4/C Bsus4/C

● dim type

Fdim/C Gdim/C A♭dim/C Bdim/C C♯dim/C Ddim/C

● aug type

C♯aug/C Daug/C

● major ♭5 type

C♯♭5/C F♭5/C G♭5/C A♭5/C

● 7th type

C♯7/C E♭7/C E7/C F♯7/C
G7/C A7/C B♭7/C B7/C

● m7th type

C♯m7/C E♭m7/C F♯m7/C Gm7/C
A♭m7/C B♭m7/C Bm7/C

● M7th type

DM7/C EM7/C F♯M7/C GM7/C
AM7/C B♭M7/C BM7/C

● mM7th type

DmM7/C EmM7/C F♯mM7/C GmM7/C
A♭mM7/C B♭mM7/C BmM7/C

● dim7 type

Ddim7/C

● dimM7 type

DdimM7/C FdimM7/C GdimM7/C
A♭dimM7/C B♭dimM7/C BdimM7/C

● m7♭5 type

C♯m7♭5/C E♭m7♭5/C Fm7♭5/C Gm7♭5/C
A♭m7♭5/C B♭m7♭5/C Bm7♭5/C

● aug7 type

C♯aug7/C E♭aug7/C Faug7/C F♯aug7/C
Aaug7/C B♭aug7/C

● augM7 type

DaugM7/C FaugM7/C F♯augM7/C GaugM7/C
AaugM7/C BbaugM7/C BaugM7/C

● 7sus4 type

C♯7sus4/C E♭7sus4/C E7sus4/C F♯7sus4/C
A♭7sus4/C B♭7sus4/C B7sus4/C

● add9 type

C♯add9/C Eadd9/C F♯add9/C Gadd9/C
Aadd9/C Badd9/C

● *m add9 type*

Dm add9/C F♯m add9/C Gm add9/C A♭m add9/C
Bm add9/C

● 69 type

C♯69/C D69/C E69/C F♯69/C
G69/C A69/C B69/C

● m69 type

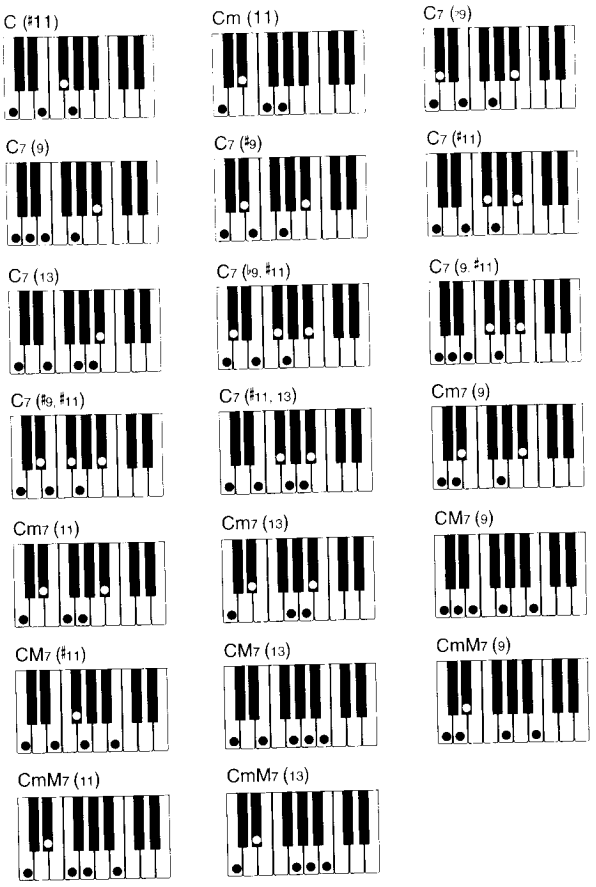
C♯m69/C Dm69/C Em69/C F♯m69/C
A♭m69/C Bm69/C

● 7♭5 type

C♯7♭5/C A7♭5/C B♭7♭5/C B7♭5/C

Tension Chords (20 Types)

Tension chords are recognized only while the Tension Chord setting is turned on.



Tension Chord On Bass Chords (40 Types)

In either of the following cases, the lowest note is interpreted as the bass note, and the chord is interpreted as one of the chords shown below only when the **Tension Chord** setting is turned on.

- When the lowest note is more than five intervals from the second note
- When the **On Bass Chord** setting is turned on

A♭(♯11)/C	D(♯11)/C	Fm(11)/C
D♭(♯11)/C		
D7(♭9)/C	D7(9)/C	D7(♯9)/C
F7(♭9)/C	F7(♯9)/C	F7(13)/C
A♭7(♭9)/C	A♭7(9)/C	A♭7(♯11)/C
A♭7(13)/C		
D7(9,♯11)/C	D7(♯9,♯11)/C	
F7(♭9,♯11)/C	F7(9,♯11)/C	F7(♯9,♯11)/C
F7(♯11,13)/C	A♭7(♭9♯11)/C	
A♭7(9,♯11)/C	A♭7(♯9,♯11)/C	A♭7(♯11,13)/C
C♯m(11)/C	Dm(11)/C	Fm7(9)/C
Fm7(13)/C	Am7(9)/C*3	Am7(13)/C*4
C♯M7(9)/C	C♯(♯11)/C	FM7(9)/C
FM7(♯11)/C	A♭M7(9)/C	A♭M7(♯11)/C
FmM7(9)/C	FmM7(11)/C	AmM7(9)/C
AmM7(11)/C		

*3 A fingering that includes the 5th (E) is interpreted as Am7(9)/C, while a fingering that does not include the 5th is interpreted as CM7(13).

*4 A fingering that includes the 5th (E) is interpreted as Am7(13)/C, and a fingering that does not include the 5th is not recognized.

Chords (40 Types)

e lowest note is interpreted
s interpreted as one of the
the **Tension Chord** setting

han five intervals from the

ng is turned on

Fm(11)/C

D7(♯9)/C

F7(13)/C

A♭7(♯11)/C

C

F7(♯9,♯11)/C

C

/C A♭7(♯11,13)/C

Fm7(9)/C

C*3 Am7(13)/C*4

FM7(9)/C

/C A♭M7(♯11)/C

)/C AmM7(9)/C

s the 5th (E) is interpreted a
g that does not include the 5

s the 5th (E) is interpreted a
g that does not include the 5

Registration Memory/One Touch Preset Table

Item		Registration Select Group	One Touch Preset Select Group
Tone	Upper 1	Tone	Tone
	Upper 2	Tone	Tone
	Lower 1	Tone	Tone
	Lower 2	Tone	Tone
	Upper 1 On/Off	Tone	Tone
	Upper 2 On/Off	Tone	Tone
	Lower 1 On/Off	Tone	Tone
	Lower 2 On/Off	Tone	Tone
Auto Harmonize	On/Off	Harmo/Arpeg/Sustain	Tone
	Type	Harmo/Arpeg/Sustain	Tone
Arpeggiator	On/Off	Harmo/Arpeg/Sustain	Tone
	Type	Harmo/Arpeg/Sustain	Tone
	Hold	Harmo/Arpeg/Sustain	-----
	Speed	Harmo/Arpeg/Sustain	Tone
	Key Range	Harmo/Arpeg/Sustain	Tone
Rhythm		Rhythm	-----
Tempo		Tempo	Tempo
Split Point		-----	-----
Accomp Volume		Accomp Volume	Accomp Volume
Transpose		Transpose	-----
Mode		-----	-----
Synchro Start		-----	-----
Fade In 待機状態		-----	-----
Variation No.		-----	-----
Accomp/Chord	Chord Hold	-----	-----
	Lower Hold	-----	-----
	Mixer Hold	-----	-----
	Rev.Cho Hold	-----	-----
	On Bass Chord	-----	-----
	Tension Chord	-----	-----
	6th Chord	-----	-----
Fade In/Out	Fade In Measure	-----	-----
	Fade-In Value	-----	-----
	Fade Out Measure	-----	-----
Ritardando	Measure	-----	-----
	Reach Tempo	-----	-----
Interactive Accomp	On/Off	-----	-----
	Velocity Control	-----	-----
	Interactive Hold	-----	-----
	Chord Function	-----	-----
	Interactive Sense	-----	-----
After Touch/Control	Pitch Bend Wheel Type	After Touch/Control	-----
	Modulation Wheel Type	After Touch/Control	-----
	Assignable sw. Type	After Touch/Control	-----
	After Touch Type	After Touch/Control	-----
	Expression Pedal Type	After Touch/Control	-----
	Sustain Pedal Type	After Touch/Control	-----
	Assignable sw. Depth	After Touch/Control	-----
	After Touch Curve	After Touch/Control	-----
	Sustain On/Off	Harmo/Arpeg/Sustain	Tone
	Sustain Length	Harmo/Arpeg/Sustain	Tone
Effect	DSP 1 On/Off	Tone	Tone
	DSP 2 On/Off	Tone	Tone
	DSP 3 On/Off	Rhythm	Rhythm
	DSP 4 On/Off	Rhythm	Rhythm

Item		Registration Select Group	One Touch Preset Select Group
	Reverb On/Off	Effect	-----
	Chorus On/Off	Effect	
	Master On/Off	Effect	
	DSP 1 Type	Tone	Tone
	DSP 2 Type	Tone	Tone
	DSP 3 Type	Rhythm	Rhythm
	DSP 4 Type	Rhythm	Rhythm
	Reverb Type	Effect	
	Chorus Type	Effect	
	Master Type	Effect	
	DSP 1 Parameter#1	Tone	-----
	DSP 1 Parameter#2	Tone	-----
	DSP 2 Parameter#1	Tone	-----
	DSP 2 Parameter#2	Tone	-----
	DSP 3 Parameter#1	Rhythm	-----
	DSP 3 Parameter#2	Rhythm	-----
	DSP 4 Parameter#1	Rhythm	-----
	DSP 4 Parameter#2	Rhythm	-----
	Reverb Parameter#1	Effect	-----
	Reverb Parameter#2	Effect	-----
	Chorus Parameter#1	Effect	-----
	Chorus Parameter#2	Effect	-----
	Master Parameter#1	Effect	-----
	Master Parameter#2	Effect	-----
	Master Parameter#3	Effect	-----
	Master Parameter#4	Effect	-----
	Tone DSP Hold	Effect	-----
Setting	Master Tune		-----
	Touch Curve		-----
Navigate Ch.			-----
Mixer (Upper 1/2,Lower 1/2)	Part On/Off	Tone	Tone
	Pan	Tone	Tone
	Volume	Tone	Tone
	Reverb Depth	Tone	Tone
	Chorus Depth	Tone	Tone
	DSP	Tone	Tone
	EQ High Gain	Tone	Tone
	EQ High Frequency	Tone	Tone
	EQ Low Gain	Tone	Tone
	EQ Low Frequency	Tone	Tone
	Coarse Tune	Tone	Tone
	Fine Tune	Tone	Tone
Mixer (Harmo 1/2)	Tone	Harmo/Arpeg/Sustain	Tone
	Part On/Off	Harmo/Arpeg/Sustain	Tone
	Pan	Harmo/Arpeg/Sustain	Tone
	Volume	Harmo/Arpeg/Sustain	Tone
	Reverb Depth	Harmo/Arpeg/Sustain	Tone
	Chorus Depth	Harmo/Arpeg/Sustain	Tone
	DSP	Harmo/Arpeg/Sustain	Tone
	EQ High Gain	Harmo/Arpeg/Sustain	Tone
	EQ High Frequency	Harmo/Arpeg/Sustain	Tone
	EQ Low Gain	Harmo/Arpeg/Sustain	Tone
	EQ Low Frequency	Harmo/Arpeg/Sustain	Tone
	Coarse Tune	Harmo/Arpeg/Sustain	Tone
	Fine Tune	Harmo/Arpeg/Sustain	Tone

Item		Registration Select Group	One Touch Preset Select Group
Mixer (Accomp part)	Tone	Rhythm	-----
	Part On/Off	Rhythm	Rhythm
	Pan	Rhythm	-----
	Volume	Rhythm	-----
	Reverb Depth	Rhythm	-----
	Chorus Depth	Rhythm	-----
	DSP	Rhythm	-----
	EQ High Gain	Rhythm	-----
	EQ High Frequency	Rhythm	-----
	EQ Low Gain	Rhythm	-----
	EQ Low Frequency	Rhythm	-----
	Coarse Tune	Rhythm	-----
	Fine Tune	Rhythm	-----
Mixer (Mic/Line)	Input	-----	-----
	Pan	-----	-----
	Volume	-----	-----
	Reverb Send	-----	-----
	Chorus Send	-----	-----
	DSP	-----	-----
Combination	Accomp Reverb Depth	Combination	-----
	Accomp Chorus Depth	Combination	-----
	Accomp Brilliance	Combination	-----
	Part On/Off	Combination	-----
	Melody Reverb Depth	Combination	-----
	Melody Chorus Depth	Combination	-----
	Melody Brilliance	Combination	-----
	U1/U2 Volume Balance	Combination	-----
Easy Synth (Upper 1/2,Lower 1/2)	Attack Time	Tone	-----
	Release Time	Tone	-----
	Vibrato Depth	Tone	-----
	Vibrato Rate	Tone	-----
	Cut Off Frequency	Tone	-----
	Resonance	Tone	-----
	Brilliance	Tone	-----
	Octave Shift	Tone	-----
Drawbar (Upper 1/2,Lower 1/2)	16'5 1/3 8 4 2 2/3 2 1/3 5 1/3 1	Tone	-----
	Percussion Second	Tone	-----
	Percussion Third	Tone	-----
	Rotary	Tone	-----
	Drawbar Type	Tone	-----
	Drawbar Attack	Tone	-----
	Drawbar Release	Tone	-----
	Click	Tone	-----
	Percussion Level	Tone	-----
	Percussion Decay	Tone	-----

* ----- : Not stored as a parameter

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Song Sequencer Data

Data Item			A	B			
				SYSTEM Track		1-16Track	
				Record	Edit	Record	Edit
Key On/Off			○	○	○	○	○
Tone		Upper1	○	○	○	○	
		Upper2	○	○	○	○	
		Lower1	○	○	○	○	
		Lower2	○	○	○	○	
Part		Upper1 On/Off	○	○	○	○	
		Upper2 On/Off	○	○	○	○	
		Lower1 On/Off	○	○	○	○	
		Lower2 On/Off	○	○	○	○	
Auto Harmonize		On/Off	○	○	○	○	
		Type	○	○	○		
Arpeggiator		On/Off	○	○	○	○	
		Type	○	○			
		Hold	○	○			
		Speed	○	○			
		Key Range	○	○			
Chord On/Off			○	○	○	○	
Variation			○	○	○	○	
Intro/Ending			○	○	○	○	
Fill-In/Break			○	○	○	○	
Synchro Start/Synchro Stop			○	○	○	○	
Rhythm			○	○	○		
Tempo			○	○	○		
Split Point			○	○			
Accomp Volume			○	○			
Transpose			○	○			
Mode			○	○	○		
Accomp/Chord		Chord Hold	○	○			
		Lower Hold	○	○			
		Mixer Hold	○	○			
		Rev.Cho Hold	○	○			
		On Bass Chord	○	○			
		Tension Chord	○	○			
		6th Chord	○	○			
Fade In/Out		On/Off	○	○	○		
		Fade In Measure	○	○			
		Fade In Value	○	○			
		Fade Out Measure	○	○			
Int.		On/Off	○	○	○		
		Measure	○	○			
		Reach Tempo	○	○			
Interactive		On Off	○	○			
		Velocity Control	○	○			
		Velocity Fix Point	○	○			
		Chord Function	○	○			
		Arp. Range	○	○			

Data Item			A	B			
				SYSTEM Track		1-16Track	
				Record	Edit	Record	Edit
After/Control		Pitch Bend Wheel	○	○	○	○*1	○*1
		Modulation Wheel	○	○	○	○*1	○*1
		Assignable Sw	○	○	○	○*1	○*1
		After Touch	○	○	○	○*1	○*1
		Expression Pedal	○	○	○	○*1	○*1
		Sustain Pedal	○	○	○	○*1	○*1
		Sustain Sw	○	○	○		
		Pitch Bend Wheel Type	○	○			
		Modulation Wheel Type	○	○			
		Assignable Sw Type	○	○			
		After Touch Type	○	○			
		Expression Pedal Type	○	○			
		Sustain Pedal Type	○	○			
		Assignable Sw Depth	○	○			
		After Touch Curve	○	○			
		Sustain Sw On/Off	○	○			
		Sustain Length	○	○			
Effect(DSP1-4,System3)		Effect On/Off	○	○			
		DSP1-4 Type	○	○			
		DSP1-4 Volume	○	○			
		DSP1-4 Pan	○	○			
		DSP1-4 Rev Depth	○	○			
		DSP1-4 Cho Depth	○	○			
		DSP1-4 Pararameter	○	○			
		Reverb Type	○	○			
		Reverb Pararameter	○	○			
		Chorus Type	○	○			
		Chorus Pararameter	○	○			
Setting		Master Type	○	○			
		Master Pararameter	○	○			
		Tone DSP Hold	○	○			
		Master Tune	○	○			
		Touch Curve	○	○			
Mixer(Melody Part)		Tone (Harmo1/2)	○	○			
		Part On/Off	○	○			
		Pan	○	○			
		Volume	○	○	○		
		Reverb Depth	○	○			
		Chorus Depth	○	○			
		DSP	○	○			
		Coarse Tune	○	○			
		Fine Tune	○	○			
Mixer(Accomp part)		Tone	○	○			
		Part On Off	○	○			
		Pan	○	○			
		Volume	○	○			

	Fade In Value	○				
	Fade Out Measure	○				
rit.	On/Off		○	○		
	Measure	○				
	Reach Tempo	○				
Interactive	On/Off	○	○	○		
	Velocity Control	○				
	Interactive Hold	○				
	Chord Function	○				
	Interactive Sense	○				

	Volume	○	○	○		
	Reverb Depth	○				
	Chorus Depth	○				
	DSP	○				
	Coarse Tune	○				
	Fine Tune	○				
Mixer(Accomp part)	Tone	○				
	Part On/Off					
	Pan	○				
	Volume	○	○	○		

Data Item		A	B			
			SYSTEM Track		1-16Track	
			Record	Edit	Record	Edit
Mixer(Accomp part)	Reverb Depth	○				
	Chorus Depth	○				
	DSP	○				
	Coarse Tune	○				
	Fine Tune	○				
Combination	Accomp Reverb Send	○	○	○		
	Accomp Chorus Send	○	○	○		
	Accomp Brilliance	○	○	○		
	Part On/Off	○	○	○		
	Melody Reverb Send	○	○	○		
	Melody Chorus Send	○	○	○		
	Melody Brilliance	○	○	○		
	U1/U2 Volume Ballance	○	○	○		
Synth	Attack Time		○	○	○	○
	Release Time		○	○	○	○
	Vibrate Depth		○	○	○	○
	Vibrate Rate		○	○	○	○
	Cutoff Frequency		○	○	○	○
	Resonance		○	○	○	○
	Brilliance		○	○	○	○
	Octave Shift		○	○	○	○
Drawbar	16'		○	○	○	○
	5 1/3'		○	○	○	○
	8'		○	○	○	○
	4'		○	○	○	○
	2 2/3'		○	○	○	○
	2'		○	○	○	○
	1 3/5'		○	○	○	○
	1 1/3'		○	○	○	○
	1'		○	○	○	○
Mixer(External Part)	Tone	○			○	○
	Part On/Off	○				
	Pan	○				
	Volume	○			○	○
	Reverb Depth	○				
	Chorus Depth	○				
	DSP	○				
	Coarse Tune	○				
	Fine Tune	○				
Regist. Memory Call			○	○		
One Touch Preset Call			○	○		
Beat (Song Sequencer)		○				
Chord Level		○				
Other MIDI Control Change, etc						○

A : Song header data
B : Song data

○*1 : Fixed effect

Backed Up Parameter Table

Data Item		Content
Main	Main Screen	
	Contrast	
	Disp Hold	
	Split Point	
	Variation No.	
	Mode	
	Part On/Off (Upper1, Upper2, Lower1, Lower2)	
	Rhythm	
	Tempo	
	Transpose	
	Accomp Volume	
Combination	Accomp Reverb	
	Accomp Chorus	
	Accomp Brilliance	
	Part On/Off	
	Melody Reverb	
	Melody Chorus	
	Melody Brilliance	
	U1/U2 Balance	
Drawbar	Drawbar(16'~1')	Upper1/2,Lower1/2
	Percussive Second	Upper1/2,Lower1/2
	Percussive Third	Upper1/2,Lower1/2
	Rotary Fast/Slow	Upper1/2,Lower1/2
	Drawbar Type	Upper1/2,Lower1/2
	Drawbar Attack	Upper1/2,Lower1/2
	Drawbar Release	Upper1/2,Lower1/2
	Click On/Off	Upper1/2,Lower1/2
	Percussive Level	Upper1/2,Lower1/2
	Percussive Decay	Upper1/2,Lower1/2
Effect	Effect On/Off (Master, Reverb, Chorus, DSP1-4)	
	Effect Type (Master, Reverb, Chorus, DSP1-4)	
	DSP Volume (DSP1-4)	
	DSP Pan (DSP1-4)	
	DSP Reverb Depth (DSP1-4)	
	DSP Chorus Depth (DSP1-4)	
	DSP Prameter 1 (Master, Reverb, Chorus, DSP1-4)	
	DSP Prameter 2 (Master, Reverb, Chorus, DSP1-4)	
	DSP Prameter 3 (Master)	
	DSP Prameter 4 (Master)	
	Tone DSP Hold	
Auto Harmonize/Arpeggiator	Auto Harmonize On/Off	
	Arpeggiator On/Off	
	Auto Harmonize Type	
	Arpeggiator Type	
	Arpeggiator Hold	
	Arpeggiator Speed	
	Arpeggiator Range	

Data Item		Content
Accomp/Chord	Chord Hold	
	Lower Hold	
	Mixer Hold	
	Reverb/Chorus Hold	
	On Bass Chord	
	Tension Chord	
	6th Chord	
Fade In/Out	Fade In Measure	
	Fade In Value	
	Fade Out Measure	
rit.	Measure	
	Reach Tempo	
Interactive Accomp On/Off	Velocity Control	
	Interactive Hold	
	Chord Function	
	Interactive Sense	
Mixer	Tone	30Part
	Part On/Off	30Part
	Pan	30Part,Line/Mic
	Volume	30Part,Line/Mic
	Coarse Tune	30Part
	Fine Tune	30Part
	EQ High Gain	30Part
	EQ Low Gain	30Part
	EQ High Freq.	30Part
	EQ Low Freq.	30Part
	Reverb Depth	30Part,Line/Mic
	Chorus Depth	30Part,Line/Mic
	DSP	30Part,Line/Mic
	Input	Line/Mic
	N.Gate Threshold	Line/Mic
Registration	Bank No.	
	Bank Name	
	Select On/Off	
	Select Group On/Off	9 Group
Synth	Attack Time	Upper1/2,Lower1/2
	Release Time	Upper1/2,Lower1/2
	Vibrato Depth	Upper1/2,Lower1/2
	Vibrato Rate	Upper1/2,Lower1/2
	Cut Off Frequency	Upper1/2,Lower1/2
	Resonance	Upper1/2,Lower1/2
	Brilliance	Upper1/2,Lower1/2
	Octave Shift	Upper1/2,Lower1/2
Song Sequencer	Song No.	
	Beat	
Shared by Song Sequencer and Pattern Sequencer	Metronome	
	Metronome First Count	
	Metronome Volume	
Song Studio	Song Studio Song Number	
User Data	User Tone	
	User Rhythm	
	Song	

Data Item		Content
User Data	Song Studio	
	Registration	
After Touch/Control	Bend Type	
	Modulation Type	
	Assignable Sw Type	
	After Touch Type	
	Expression Pedal Type	
	Sustain Pedal Type	
	Sustain On/Off	
	After Touch Curve	
	Assignable Sw Depth	
	Sustain Length	
Setting	Master Tune	
	Touch Curve	
MIDI	Navigate Ch	
	Accomp MIDI Out	
	MIDI In Chord Judge	
	Realtime Message MIDI Out	
	Device ID	
	TX Setting	
	RX Setting	

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Chord Conversion Table

- The applicable chord conversion table depends on the particular combination of elements and parts. The symbol ○ in the table below indicates that a chord table is applicable, while × indicates that a chord table is not applicable.
- The explanations in the "Description" column all assume the following conditions for the recorded accompaniment pattern.

  Root: C
  Major chords, unless specified otherwise.

- The explanations in the "Description" column describe how the recorded accompaniment (12 notes from C to B) are modified when an accompaniment chord is specified.
- The shaded rows are the default numbers for each element and part.

No.	Names	Element Names		Part Names		Description
		Intro, Ending	Normal, Variation, Normal/Fill-in, Variation/Fill-in	Bass	Chord 1 Chord 2 Chord 3	
01	Basic Bass	×	○	○	×	Normally used for the bass part.
02	7th Bass	×	○	○	×	Used for a bass part recorded by a 7th chord.
03	Basic Chord	×	○	×	○	Normally used for the chord part.
04	Tension chord	×	○	×	○	Used for the tension chord part used in jazz, bossa nova, etc.
05	Variation Chord1	×	○	×	○	scale to the 7th note of the scale. In the case of C7, for example, G becomes B♭.
06	Variation Chord2	×	○	×	○	Variation of number 4 (Variation Chord 1)
07	7th Chord	×	○	×	○	Used for the chord part when a 7th chord is recorded.
08	Minor Chord	×	○	×	○	Used for the chord part when a minor chord is recorded.
09	Major Phrase	×	○	×	○	Used for the chord part when a phrase is recorded in a major scale.
10	Minor Bass Phrase	×	○	○	×	Used for the bass part when a phrase is recorded in a minor scale.
11	Penta Phrase	×	○	×	○	Used for the chord part when a phrase is recorded in a penta scale (CDEGA).
12	Natural Minor	○	×	○	○	Transforms to natural minor when a minor chord is played.
13	Melodic Minor	○	×	○	○	Transforms to melodic minor (ascending) when a minor chord is played.
14	Harmonic Minor	○	×	○	○	Transforms to harmonic minor when a minor chord is played.
15	No Change	○	×	○	○	Original chord as recorded in response to chord that is played, without transformation to minor or major.
16	Dorian Scale	○	×	○	○	Play of a minor chord is transformed to the Dorian scale. The Dorian scale lowers the major scale E and B one semitone.

MZ-2000 MIDI Data Format

The following sections describe the MZ-2000 main MIDI data format. For more detailed information, visit the CASIO Website at http://www.casio.co.jp/English/

Channel Messages

- The channel numbers used for channel messages received for each part are in accordance with the receive channel settings for each part made using the MZ-2000's **Rx Setting** parameter. Channel messages are not received for parts that are turned off using **Rx Setting**.
- When MZ-2000's **MIDI In-chord Judge** setting is turned on, MZ-2000's auto accompaniment chord can be specified by a note message in the accompaniment keyboard range received over the channel specified by the receive channel setting for Part 1.

Note Messages

Note Off

Recognition

Format

Byte 1	Byte 2	Byte 3
8nH	kkH	vvH
9nH	kkH	00H

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
kk .... Note Number = 00H to 7FH
vv .... Note Off Velocity = 00H to 7FH

Remarks
Note Off Velocity value is ignored.

Send

Format

Byte 1	Byte 2	Byte 3
8nH	kkH	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
kk .... Note Number = 18H to 6CH
vv .... Note Off Velocity = 40H

Remarks
Normally, the range of the Note Number is 24H to 60H. However, when you change the value of the Octave Shift in the Pattern Sequencer, the range of the Note Number changes as shown below.

Octave Shift	Range of Note Number (kk)
-1	18H to 54H
0	24H to 60H
+1	30H to 6CH

Note On

Recognition

Format

Byte 1	Byte 2	Byte 3
9nH	kkH	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
kk .... Note Number = 00H to 7FH
vv .... Note Off Velocity = 00H to 7FH

Remarks
Normally, the range of the Note Number is 24H to 60H

Send

Format

Byte 1	Byte 2	Byte 3
9nH	kkH	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
kk .... Note Number = 18H to 6CH
vv .... Note Off Velocity = 01 to 7FH

Remarks
Normally, the range of the Note Number is 24H to 60H. However, when you change the value of the Octave Shift in the Pattern Sequencer, the range of the Note Number changes as shown below.

Octave Shift	Range of Note Number (kk)
-1	18H to 54H
0	24H to 60H
+1	30H to 6CH

Polyphonic Key Pressure

Format

Byte 1	Byte 2	Byte 3
AnH	kkH	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
kk .... Note Number = 00H to 7FH
vv .... Pressure Value = 00H to 7FH

Recognition
Polyphonic Key Pressure messages can always be recognized.

Send
Polyphonic Key Pressure messages cannot be sent.

Control Change

Bank Select

Format

Byte 1	Byte 2	Byte 3
BnH	00H	mmH (Bank Select MSB)
BnH	20H	llH (Bank Select LSB)

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
mm .. Bank Number MSB = 00H to 7FH
ll ..... Bank Number LSB = 00H to 7FH

Recognition
The ll value is used for switching the tone map, but since current value 00H only is listed in the map, any setting other than 00H is ignored. Program change messages received while the setting is other than 00H are also ignored.

Send
A Bank Select message is sent at the same time when you select a tone on the MZ-2000.

Modulation Wheel

Format

Byte 1	Byte 2	Byte 3
BnH	01H	vvH

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Modulation Depth = 00H to 7FH

Recognition
Use System Exclusive messages to select a type of modulation.

Send
Modulation Wheel messages are sent when you operate the modulation wheel*1 or assignable switch*2 on the MZ-2000.
*1 Only when "Tone Preset" is selected for the modulation wheel.
*2 Only when "Tone Preset (Mod.)" is selected for the assignable switch.

Portamento Time

Format

Byte 1	Byte 2	Byte 3
BnH	05H	vvH

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Modulation Depth = 00H to 7FH

Recognition
Portamento Time messages can always be recognized.

Send
Portamento Time messages are sent when you operate the modulation wheel*1 while pressing the assignable switch*2 on the MZ-2000.
*1 Only when "Portamento Time" is selected for the modulation wheel.
*2 Only when "Portamento On/Off" is selected for the assignable switch.

Data Entry

Format

Byte 1	Byte 2	Byte 3
BnH	06H	mmH (Data Entry MSB)
BnH	26H	llH (Data Entry LSB)

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
mm .. Data entry MSB value for the parameter that is selected by RPN and NRPN
ll ..... Data entry LSB value for the parameter that is selected by RPN and NRPN

Channel Volume

Format

Byte 1	Byte 2	Byte 3
BnH	07H	vvH

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Volume = 00H to 7FH

Recognition
Channel Volume messages can always be recognized.

Send
Channel Volume messages are sent when you change the following parameters: mixer volume, accomp volume, disk volume, U1/U2 balance.

Pan

Format

Byte 1	Byte 2	Byte 3
BnH	0AH	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Pan = 00H (left) to 40H (center) to 7FH (right)

Recognition
When a Pan message is received on the drum part, the Pan setting changes relatively to the Pan setting of each drum sound on the drum part.

Send
Pan messages are sent when you change the pan setting using the Mixer.

Expression Controller

Format

Byte 1	Byte 2	Byte 3
BnH	0BH	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Expression = 00H to 7FH

Recognition
Expression Controller messages can always be recognized.

Send
Pan messages are sent when you operate the Expression pedal.

General Controller (1 to 8)

General Controller messages are assigned to the effect parameters on the MZ-2000.

Format

Byte 1	Byte 2	Byte 3
BnH	kkH	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
kk .... cc Number = 4CH to 53H
vv .... Effect Value = 00H to 7FH

The following table shows relationship between the cc Numbers and the effect parameters.

cc	Effect Parameter
4CH	DSP1 parameter 1
4DH	DSP1 parameter 2
4EH	DSP2 parameter 1
4FH	DSP2 parameter 2
50H	DSP3 parameter 1
51H	DSP3 parameter 2
52H	DSP4 parameter 1
53H	DSP4 parameter 2

Recognition
The MZ-2000 can always recognize General Controller messages.

Send
General Controller messages are sent when you change the effect parameters on the MZ-2000.

Hold 1 (Damper Pedal)

Format

Byte 1	Byte 2	Byte 3
BnH	40H	vvH

Recognition
n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Hold 1 = 00H to 7FH (00H to 3FH:OFF, 40H to 7FH:ON)

Send
n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Hold 1 = 00H,7FH(00H:OFF, 7FH:ON)

Hold 1 messages are sent when you operate the sustain pedal*1 or sustain switch on the MZ-2000.
*1 Only when sustain effect is assigned to the pedal.

Portamento

Format

Byte 1	Byte 2	Byte 3
BnH	41H	vvH

Recognition
n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Portamento = 00H to 7FH (00H to 3FH:OFF, 40H to 7FH:ON)

Send
n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Portamento = 00H, 7FH (00H:OFF, 7FH:ON)

Portamento messages are sent when you operate the assignable button*1 on the MZ-2000.
*1 Only when portamento effect is assigned to the button.

meter
eter 1
eter 2
eter 1
eter 2
eter 1
eter 2
eter 1
eter 2

ize General Controller

sent when you change
-2000.

Byte 3
vvH

0H to FH (Ch1 to Ch16)
H to 3FH:OFF, 40H to

0H to FH (Ch1 to Ch16)
FF, 7FH:ON)
you operate the sustain
MZ-2000.
signed to the pedal.

Byte 3
vvH

0H to FH (Ch1 to Ch16)
(00H to 3FH:OFF, 40H

0H to FH (Ch1 to Ch16)
0H:OFF, 7FH:ON)
hen you operate the as-
0.
t is assigned to the but-

Sostenuto

Format

Byte 1	Byte 2	Byte 3
BnH	42H	vvH

Recognition
n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Sostenuto = 00H to 7FH (00H to 3FH:OFF, 40H to 7FH:ON)

Send
n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Sostenuto = 00H, 7FH (00H:OFF, 7FH:ON)

Sostenuto messages are sent when you operate the assignable button*1 on the MZ-2000.
*1 Only when sostenuto effect is assigned to the pedal.

Soft

Format

Byte 1	Byte 2	Byte 3
BnH	43H	vvH

Recognition
n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Soft = 00H to 7FH (00H to 3FH:OFF, 40H to 7FH:ON)

Send
n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Soft = 00H, 7FH(00H:OFF, 7FH:ON)

Soft messages are sent when you operate the sustain pedal*1 on the MZ-2000.
*1 Only when soft effect is assigned to the pedal.

Sound Controller 2 (Resonance)

Format

Byte 1	Byte 2	Byte 3
BnH	47H	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... TVF Resonance = 00H to 7FH

Recognition
Sound Controller 2 messages can always be recognized.

Send
This message cannot be sent.

Sound Controller 3 (Release Time)

Format

Byte 1	Byte 2	Byte 3
BnH	48H	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... TVA Release Time = 00H to 7FH

Recognition
Sound Controller 3 messages can always be recognized.

Send
This message cannot be sent.

Sound Controller 4 (Attack Time)

Format

Byte 1	Byte 2	Byte 3
BnH	49H	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... TVA Attack Time = 00H to 7FH

Recognition
Sound Controller 4 messages can always be recognized.

Send
This message cannot be sent.

Sound Controller 5 (Brightness)

Format

Byte 1	Byte 2	Byte 3
BnH	4AH	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... TVF Cutoff Frequency = 00H to 7FH

Recognition
Sound Controller 5 messages can always be recognized.

Send
This message cannot be sent.

Portamento Control

Format

Byte 1	Byte 2	Byte 3
BnH	54H	kkH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
kk .... Source Note Number = 00H to 7FH

Recognition
Portamento Control messages can always be recognized.

Send
This message cannot be sent.

Effect 1 (Reverb Send Level)

Format

Byte 1	Byte 2	Byte 3
BnH	5BH	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Reverb Send Level = 00H to 7FH

Recognition

Effect 1 (Reverb Send Level) messages can always be recognized.

Send

Effect 1 messages are sent when you change the following parameters: mixer reverb depth, accomp reverb depth, melody reverb depth.

Effect 3 (Chorus Send Level)

Format

Byte 1	Byte 2	Byte 3
BnH	5DH	vvH

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Chorus Send Level = 00H to 7FH

Recognition

Effect 3 (Chorus Send Level) messages can always be recognized.

Send

Effect 3 messages are sent when you change the following parameters: mixer chorus depth, accomp chorus depth, melody chorus depth.

NRPN (Non-Registered Parameter Numbers)

With the MZ-2000, NRPN are defined as tone editing parameters and drawbar parameters. The MSB and LSB of an NRPN specify the parameter being controlled, while the specified parameter's value is set in accordance with the subsequent data entry.
The following table shows the relationship between parameters and NRPN as defined by the MZ-2000.

NRPN MSB	NRPN LSB	Parameter
01H	08H	Vibrato Rate
01H	09H	Vibrato Depth
01H	0AH	Vibrato Delay
01H	20H	TVF Cut Off Frequency
01H	21H	TVF Resonance
01H	63H	TVF/TVA Envelope Attack Time
01H	64H	TVF/TVA Envelope Decay Time
01H	66H	TVF/TVA Envelope Release Time
40H	00H to 08H	Drawbar Control

See "Vibrato Rate" through "Drawbar Control" for the data entry MSB value range and other details.

Format

Byte 1	Byte 2	Byte 3
BnH	63H	pmH (MSB)
BnH	62H	plH (LSB)

n..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
pm ... MSB of NRPN
pl ..... LSB of NRPN

Recognition

- NRPN messages not defined by the MZ-2000 can also be received, but subsequent data entry values after undefined NRPN messages are ignored.
- After the NRPN MSB and LSB are received and the applicable control parameters settings are made, the value is set by receipt of the MSB of the subsequent data entry. The data entry LSB is ignored.

Send

An NRPN and data entry are sent whenever an operation that changes the parameter assigned to the NRPN (such as Vibrato Rate).

meter Numbers)

ed as tone editing param-
MSB and LSB of an NRPN
lled, while the specified
nce with the subsequent

onship between parame-
Z-2000.

Parameter
ate
epth
elay
Off Frequency
nance
Envelope Attack Time
Envelope Decay Time
Envelope Release Time
Control

ar Control" for the data
tails.

Byte 3
pmH (MSB)
plH (LSB)

0H to FH (Ch1 to Ch16)

y the MZ-2000 can also
ta entry values after un-
gnored.
are received and the ap-
tings are made, the val-
of the subsequent data
nored.

nt whenever an opera-
assigned to the NRPN

Vibrato Rate

NRPN MSB = 01H
NRPN LSB = 08H
Data Entry MSB = mmH

mm .. Vibrato Rate = 00H to 40H to 7FH (-64 to 0 to +63)

Recognition
When the MZ-2000 receives this message, the preset Vibrato Rate value for the tone is changed to the Vibrato Rate value that corresponds to the data entry MSB of the received message. There is no change when the value of the data entry MSB is 40H(0).

Send
The NRPN message for Vibrato Rate is sent when you change the Vibrato Rate parameter using the initial screen in the Synthesizer Mode.

Vibrato Depth

NRPN MSB = 01H
NRPN LSB = 09H
Data Entry MSB = mmH

mm .. Vibrato Depth = 00H to 40H to 7FH (-64 to 0 to +63)

Recognition
When the MZ-2000 receives this message, the preset Vibrato Depth value for the tone is changed to the value that corresponds to the data entry MSB of the received message. There is no change when the value of the data entry MSB is 40H(0).

Send
The NRPN message for Vibrato Depth is sent when you change the Vibrato Depth parameter using the initial screen in the Synthesizer Mode.

Vibrato Delay

NRPN MSB = 01H
NRPN LSB = 0AH
Data Entry MSB = mmH

mm .. Vibrato Delay = 00H to 40H to 7FH (-64 to 0 to +63)

Recognition
When the MZ-2000 receives this message, the preset Vibrato Delay value for the tone is changed to the value that corresponds to the data entry MSB of the received message. There is no change when the value of the data entry MSB is 40H(0).

Send
This message cannot be sent.

TVF Cut Off Frequency

NRPN MSB = 01H
NRPN LSB = 20H
Data Entry MSB = mmH

mm .. Cut Off Frequency = 00H to 40H to 7FH (-64 to 0 to +63)

Recognition
When the MZ-2000 receives this message, the preset TVF Cut off Frequency value for the tone is changed to the value that corresponds to the data entry MSB of the received message. There is no change when the value of the data entry MSB is 40H(0).

Send
The NRPN message for Cut Off Frequency is sent when you change the Filter Cut off parameter using the initial screen in the Synthesizer Mode.

TVF Resonance

NRPN MSB = 01H
NRPN LSB = 21H
Data Entry MSB = mmH

mm .. TVF Resonance= 00H to 40H to 7FH (-64 to 0 to +63)

Recognition
When the MZ-2000 receives this message, the preset TVF Resonance value for the tone is changed to the value that corresponds to the data entry MSB of the received message. There is no change when the value of the data entry MSB is 40H(0).

Send
The NRPN message for Resonance is sent when you change the Resonance parameter using the initial screen in the Synthesizer Mode.

TVF/TVA Envelope Attack Time

NRPN MSB = 01H
NRPN LSB = 63H
Data Entry MSB = mmH

mm .. TVF/TVA Envelope Attack Time = 00H to 40H to 7FH (-64 to 0 to +63)

Recognition
When the MZ-2000 receives this message, the preset TVF/TVA Envelope Attack Time value for the tone is changed to the value that corresponds to the data entry MSB of the received message. There is no change when the value of the data entry MSB is 40H(0).

Send
The NRPN message for Attack Time is sent when you change the Attack Time parameter using the initial screen in the Synthesizer Mode.

TVF/TVA Envelope Decay Time

NRPN MSB = 01H
NRPN LSB = 64H
Data Entry MSB = mmH

mm .. TVF/TVA Envelope Decay Time = 00H to 40H to 7FH (-64 to 0 to +63)

Recognition

When the MZ-2000 receives this message, the preset TVF/TVA Envelope Decay Time value for the tone is changed to the value that corresponds to the data entry MSB of the received message. There is no change when the value of the data entry MSB is 40H(0).

Send

This message cannot be sent.

TVF/TVA Envelope Release Time

NRPN MSB = 01H
NRPN LSB = 66H
Data Entry MSB = mmH

mm .. TVF/TVA Envelope Release Time = 00H to 40H to 7FH (-64 to 0 to +63)

Recognition

When the MZ-2000 receives this message, the preset TVF/TVA Envelope Release Time value for the tone is changed to the value that corresponds to the data entry MSB of the received message. There is no change when the value of the data entry MSB is 40H(0).

Send

The NRPN message for Release Time is sent when you change the Release Time parameter using the initial screen in the Synthesizer Mode.

Drawbar Control

NRPN MSB = 40H
NRPN LSB = 00H to 08H (16' to 1')
Data Entry MSB = mmH

mm .. Drawbar position = 00H to 7FH (0 to 8)

The following table shows the drawbar number assigned to each NRPN value.

NRPN MSB	NRPN LSB	Drawbar Number
40H	00H	16'
40H	01H	5 1/3'
40H	02H	8'
40H	03H	4'
40H	04H	2 1/3'
40H	05H	2'
40H	06H	1 3/5'
40H	07H	1 1/3'
40H	08H	1'

The following table shows the drawbar position for each mm value.

mm	Drawbar Position
00H to 0EH	0
0FH to 1CH	1
1DH to 2AH	2
2BH to 38H	3
39H to 47H	4
48H to 55H	5
56H to 63H	6
64H to 71H	7
72H to 7FH	8

Recognition

While a tone from the Preset Drawbar Organ (Bank Number 60H) or User Drawbar Organ (Bank Number 61H) group is selected, you can use a Drawbar Control message for external adjustment of the harmonic component levels.

Send

The NRPN message for Drawbar Control is sent when you operate the control sliders in the Drawbar Mode.

RPN (Registered Parameter Numbers)

On the MZ-2000, RPNs are defined as settings for the following parameters.

NRPN MSB	NRPN LSB	Parameter
00H	00H	Pitch Bend Sensitivity
00H	01H	Master Fine Tuning
00H	02H	Master Coarse Tuning
7FH	7FH	RPN Null

The MSB and LSB of an RPN specify the parameter being controlled, while the specified parameter's value is set in accordance with the MSB of the subsequent data entry.
See "Pitch Bend Sensitivity" through "RPN Null" for the data entry MSB value range and other details.

Format

Byte 1	Byte 2	Byte 3
BnH	65H	qmH (MSB)
BnH	64H	qlH (LSB)

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
qm ... MSB of RPN
ql ..... LSB of RPN

rawbar position for each

bar Position
0
1
2
3
4
5
6
7
8

vbar Organ (Bank Num-
n (Bank Number 61H)
Drawbar Control mes-
ie harmonic component

r Control is sent when
the Drawbar Mode.

lumbers)

settings for the follow-

Parameter
Pitch Bend Sensitivity
Master Fine Tuning
Master Coarse Tuning
RPN Null

cify the parameter be-
d parameter's value is
f the subsequent data

gh "RPN Null" for the
other details.

Byte 3
qmH (MSB)
qlH (LSB)

H to FH (Ch1 to Ch16)

Recognition

- RPN messages not defined by the MZ-2000 can also be received, but subsequent data entry values after undefined RPN messages are ignored.
- After the MSB and LSB of an RPN are received and the applicable control parameters settings are made, the value is set by receipt of the MSB of the subsequent data entry. The data entry LSB is ignored.

Send

An RPN is sent whenever an operation that changes the parameter assigned to the RPN is performed.

Pitch Bend Sensitivity

RPN MSB = 00H
RPN LSB = 00H
Data Entry MSB = mmH

mm .. Pitch Bend Sensitivity = 00H to 18H (0 to 24 semitones)

Recognition

The data entry LSB is always ignored.

Send

When accompaniment data MIDI OUT is turned on, the Pitch Bend Sensitivity value is sent when accompaniment starts.

Master Fine Tuning

RPN MSB = 00H
RPN LSB = 01H
Data Entry MSB = mmH
Data Entry LSB = llH

mm .. ll Master Fine Tuning = 00 00H to 40H 00H to 7FH 7FH (-100 to 0 to +99.99 cents)

Recognition

Master Fine Tuning messages can always be recognized.

Send

The RPN message for Master Fine Tuning is sent when you change the Fine Tune parameter in the Mixer Mode.

Master Coarse Tuning

RPN MSB = 00H
RPN LSB = 02H
Data Entry MSB = mmH
mm .. Master Coarse Tuning = 28H to 40H to 58H (-24 to 0 to +24 semitones)

Recognition

The data entry LSB is always ignored.

Send

The RPN message for Master Coarse Tuning is sent when you change the Coarse Tune parameter in the Mixer Mode.

RPN Null

RPN MSB = 7FH
RPN LSB = 7FH

Recognition

Once an RPN Null is sent, all received data entry MSBs and LSBs are ignored until another RPN message other than RPN Null or an NRPN message is received.

Send

A Drawbar or Easy Synth operation causes the corresponding data value to be sent.

Program Change

Format

Byte 1	Byte 2
CnH	ppH

pp .... Program Number = 00H to 7FH

Recognition

When a Bank Select MSB value other than 00H is receive by the drum part at the same time as the program change message, that value is ignored and program change is performed as if the value were 00H.

Send

Program Change messages are sent when you select a tone on the MZ-2000.

Channel Pressure

Format

Byte 1	Byte 2
DnH	vvH

vv .... Pressure Value = 00H to 7FH

Recognition

When a Bank Select MSB value other than 00H is receive by the drum part at the same time as the program change message, that value is ignored and program change is performed as if the value were 00H.

Send

The Channel Pressure message is sent whenever an after touch operation (change in keyboard pressure after keyboard keys are pressed) is performed.*

* Only when the "After Touch" item on the AFTER TOUCH/CONTROL screen is set to "Tone Preset."

Pitch Bend Change

Format

Byte 1	Byte 2	Byte 3
EnH	llH	mmH

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
ll ..... Pitch Bend Change LSB = 00H to 7FH
mm .. Pitch Bend Change MSB = 00H to 7FH

Recognition

- The value llH mmH is 00H 00H at the lowest pitch, 00H 40H at mid-pitch, and 7FH 7FH at the highest pitch.
- You have to set both the LSB and MSB together to form a 14-bit value and make a Pitch Bend Change message recognized by the MZ-2000.

Send

The Pitch Bend Change message is sent whenever a Pitch Bend Wheel is performed.*

* Only when the "Bend Wheel" item on the AFTER TOUCH/CONTROL screen is set to "Tone Preset."

Channel Mode Message

All Sound Off

Format

Byte 1	Byte 2	Byte 3
BnH	78H	00H

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)

Recognition

- Receipt of this message immediately mutes all tones playing over the MIDI channels.
- Receipt of this message is ignored while the MZ-2000 Omni Mode is turned on.

Send

The All Sound Off message is sent when you use the Fade-Out function.

Reset All Controller

Format

Byte 1	Byte 2	Byte 3
BnH	79H	00H

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)

Recognition

Receipt of the Reset All Controller message causes the following controllers to be reset.

Controller Name	Reset Value
Polyphonic Key Pressure	vvH = 00H
Modulation Wheel	vvH = 00H
Expression Controller	vvH = 7FH
Hold 1	vvH = 00H
Portamento	vvH = 00H
Sostenuto	vvH = 00H
Soft	vvH = 00H
NRPN	msb = 7FH, lsb = 7FH
RPN	msb = 7FH, lsb = 7FH
Channel Pressure	vvH = 00H
Pitch Bend Change	llH mmH = 00H 40H

Send

The Reset All Controller message is sent whenever you change modes on the MZ-2000 (such as switching from the Combination Mode to the Mixer Mode).

All Note Off

Format

Byte 1	Byte 2	Byte 3
BnH	7BH	00H

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)

Recognition

Receipt of the All Note Off message mutes all tones being played by data received over the MIDI channels (note off).

If Hold 1 or Sostenuto is turned on when the All Note Off message is received, notes are sustained in accordance with the corresponding pedal operation.

Send

This message cannot be sent.

Omni Mode Off

Format

Byte 1	Byte 2	Byte 3
BnH	7CH	00H

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)

Recognition

Receipt of an Omni Mode On message does not turn on the MZ-2000 Omni Mode. Receipt of an Omni Mode On message is treated as an All Note Off message.

Send

This message cannot be sent.

Reset Value
H = 00H
H = 00H
H = 7FH
H = 00H
H = 00H
H = 00H
H = 00H
sb = 7FH, lsb = 7FH
sb = 7FH, lsb = 7FH
H = 00H
l mmH = 00H 40H

ge is sent whenever you (such as switching from Mixer Mode).

Byte 3
00H

0H to FH (Ch1 to Ch16)

sage mutes all tones be- the MIDI channels (note

d on when the All Note e sustained in accordance peration.

Byte 3
00H

0H to FH (Ch1 to Ch16)

essage does not turn on ot of an Omni Mode On e Off message.

Omni Mode On

Format

Byte 1	Byte 2	Byte 3
BnH	7DH	00H

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)

Recognition

Receipt of an Omni Mode On message does not turn on the MZ-2000 Omni Mode. Receipt of an Omni Mode On message is treated as an All Note Off message.

Send

This message cannot be sent.

Mono Mode On

Format

Byte 1	Byte 2	Byte 3
BNH	7EH	vvH

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Number of Mono Mode Channels = 00H to 10H

Recognition

Receipt of a Mono Mode On message does not turn on the MZ-2000 Mono Mode. Receipt of a Mono Mode On message is treated as an All Sound Off message.

Send

This message cannot be sent.

Poly Mode On

Format

Byte 1	Byte 2	Byte 3
BNH	7FH	vvH

n ..... Voice Channel Number = 0H to FH (Ch1 to Ch16)
vv .... Number of Mono Mode Channels 00H to 10H

Receive

Receipt of a Poly Mode On message by the MZ-2000 sets Channel n to Mode 3 and is processed as if an All Sound Off message and All Note Off message were received.

Send

This message cannot be sent.

System Messages

System Real-Time Message

Active Sensing

Format

Byte 1
FEH

Receive

If no message is received within 400msec after the Active Sensing message is received, the All Sound Off, All Note Off, and Reset Controller procedures are performed.

Send

This message cannot be sent.

Timing Clock

Format

Byte 1
F8H

Recognition

This message cannot be received.

Send

This message is sent during auto accompaniment and song playback while the MZ-2000's Real Time Message Out is turned on.

Start

Format

Byte 1
FAH

Recognition

This message cannot be received.

Send

This message is sent when auto accompaniment and song playback starts while the MZ-2000's Real Time Message Out is turned on.

Stop

Format

Byte 1
FCH

Recognition

This message cannot be received.

Send

This message is sent when auto accompaniment and song playback ends while the MZ-2000's Real Time Message Out is turned on.

System Common Message

The MZ-2000 does not sends/recognizes System Common messages.

System Exclusive Message

System exclusive messages received by the MZ-2000 sound source starts with the following data.

F0H 44H 7EH 02H 00H 7FH

System exclusive messages can be broadly classified according to their parameters. Changing the setting of one of these parameters on the MZ-2000 causes the corresponding message to be sent. This message also includes a device ID value that corresponds to the Channel Number of the Channel Message. This device ID is used when sending system exclusive messages. You can change the device ID value on the MZ-2000.
Visit the CASIO Website at http://www.casio.co.jp/English/ for details about system exclusive messages.

Universal System Exclusive Message

GM System On

Format

F0H 7EH 7FH 09H 01H F7H

Recognition

GM System On messages cannot be recognized when the Rx.Gm On is Off.

Send

This message cannot be sent.

Master Volume

Format

F0H 7FH 7FH 04H 01H llH mmH F7H

ll..... Master Volume LSB
mm .. Master Volume MSB

Recognition

The MZ-2000 always receives this message.

Send

The Master Volume message is sent whenever you perform a Fade In or Fade Out operation on the MZ-2000.

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Model **MZ-2000**

MIDI Implementation Chart

Version: 1.0

Function		Transmitted	Recognized	Remarks
Basic Channel	**Default**	1 - 16	1 - 16	
	Changed	1 - 16	1 - 16	
Mode	**Default**	Mode 3	Mode 3	
	Messages	X	X	
	Altered	**********	**********	
Note Number:	**True voice**	24 - 108 **********	0 - 127 0 - 127*1	*1See Note Table.
Velocity	**Note ON**	O 9nH v = 1 - 127	O 9nH v = 1 - 127	
	Note OFF	X 8nH v = 64	X 9nH v = 0, 8nH v = XX	XX = no relation
After Touch	**Key's**	X	O	
	Ch's	X	O	
Pitch Bender		O	O	
Control Change	**0, 32**	O	O	Bank select
	1	O	O	Modulation
	6, 38	O	O	Data entry
	7	O	O	Volume
	10	O	O	Pan
	11	O	O	Expression
	64	O*2	O	Hold1
	65	O	O	Portamento
	66	O*2	O	Sostenuto
	67	O*2	O	Soft pedal
	71	X	O	Resonance
	72	X	O	Release Time
	73	X	O	Attack Time
	74	X	O	Brightness
	76	O	O	DSP 1 Parameter 1

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66	O*2	O	Sostenuto
67	O*2	O	Soft pedal
71	X	O	Resonance
72	X	O	Release Time
73	X	O	Attack Time
74	X	O	Brightness
76	O	O	DSP 1 Parameter 1
77	O	O	DSP 1 Parameter 2
78	O	O	DSP 2 Parameter 1
79	O	O	DSP 2 Parameter 2
80	O	O	DSP 3 Parameter 1
81	O	O	DSP 3 Parameter 2
82	O	O	DSP 4 Parameter 1
83	O	O	DSP 4 Parameter 2
84	X	O	Portament Control
91	O	O	Reverb send
93	O	O	Chorus send
98, 99	O	O	NRPN LSB, MSB
100, 101	O	O	RPN LSB, MSB
120	O	O	All sound off
121	O	O	Reset all controller
Program Change: True #	O 0 - 127 **********	O 0 - 127 **********	
System Exclusive	O	O	
System Common : Song Pos	X	X	
: Song Sel	X	X	
: Tune	X	X	
System Real Time : Clock	O	X	
: Commands	O	X	
Aux : Local ON/OFF	X	X	
: All notes OFF	X	O	
Messages : Active Sense	X	O	
: Reset	X	X	
Remarks	***2 In accordance with sustain pedal**		

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

O : Yes
X : No