Technics

SYNTHESIZER

SX-WSA1
SX-WSA1R

PRACTICAL APPLICATIONS

QDTG0361A

Technics

OWNER'S MANUAL
PRACTICAL APPLICATIONS

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Profile

This instrument is a Synthesizer/Synthesizer Module equipped with an "Acoustic Modeling Synthesis" sound generator. The function of each button is outlined below.

PLAY MODE

Two modes are available for playing this instrument.

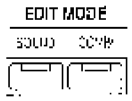
■ **SOUND**
Select a single sound to play on the keyboard. Use this mode to enjoy the vibrant quality of each individual sound. (Refer to page 8.)

■ **COMBI (COMBINATION)**
Assign multiple sounds to the keyboard in various combinations. With this mode, you can exert the full power and versatility of your instrument, for instance, in live performances. (Refer to page 12.)

- As an example, you can assign multiple sounds of up to 8 parts to the entire keyboard, so that each key produces a full, rich sound. Or you can divide the keyboard into sections and assign different sounds to each section.

EDIT MODE

Edit sounds and combinations.

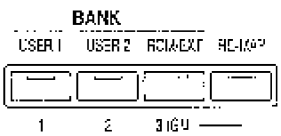


■ **SOUND**
Edit preset sounds to create exciting new sounds. (Refer to page 16.)

■ **COMBI (COMBINATION)**
Create new combinations that are perfect for your performance needs. (Refer to page 41.)

BANK

Select the **SOUND/COMBINATION** bank.



■ **USER 1, USER 2**
These are banks that you compile yourself. Use these banks during a normal performance.

- At the time of shipment from the factory, the contents of these banks are preset to the sounds which represent various possibilities of this instrument. These contents are also stored on the accessory disk provided.
- Store the sounds and combinations that you edit in these banks.
- The **USER 2** bank cannot be used to store combinations.

■ **ROM**
These banks are recorded by the manufacturer. As with the **USER** banks, they consist of banks **ROM 1** and **ROM 2**, but you use the display to select the desired bank number. The contents of these banks are permanent and cannot be erased.

■ **EXT (EXTENTION)**
This bank is for expanded **SOUND/COMBINATION** use.

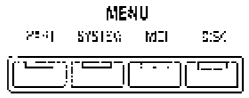
- This bank can be used only when an optional **SY-EW** series Wave Expansion Board has been installed.

■ **RE-MAP**
Use this function to rearrange the original line-up of sounds. You will find this to be a useful feature, for example, when switching sounds during live performances.

- When **SOUND** is selected for the **PLAY MODE** and you select **3**, the GENERAL MIDI (GM) arrangement is set (factory default).

MENU

The many functions and features available through these **MENU**s allow you to maximize the versatility of your instrument.



■ **SYSTEM**
Modify various global settings of your instrument, such as tuning and touch adjustments, effect settings, etc. (Refer to page 50.)

■ **PART**
Make highly detailed adjustments of all the settings associated with each PART of the sound generator. (Refer to page 62.)

■ **MIDI**
Control all the settings pertaining to MIDI operation. (Refer to page 100.)

- During a MIDI performance, if you encounter trouble (for example, an endlessly sustained tone), press the four **MENU** buttons at the same time to resolve the problem. (Refer to page 104.)

■ **DISK**
The Disk Drive functions are controlled through this menu. (Refer to page 91.)

Parts

This instrument is 32 part multi-timbral. During your performance, PART 1 is used in the **SOUND** mode, PART 1 to PART 8 in the **COMBINATION** mode. When recording in the **SEQUENCER (WSA1)**, up to 16 parts can be used. And when performing using external MIDI equipment, up to 32 parts are available.

SEQUENCER (WSA1)

Make recordings which comprise up to 16 tracks. This is a true sequencer with professional-standard editing functions. (Refer to page 66.)

Wave Expansion Board

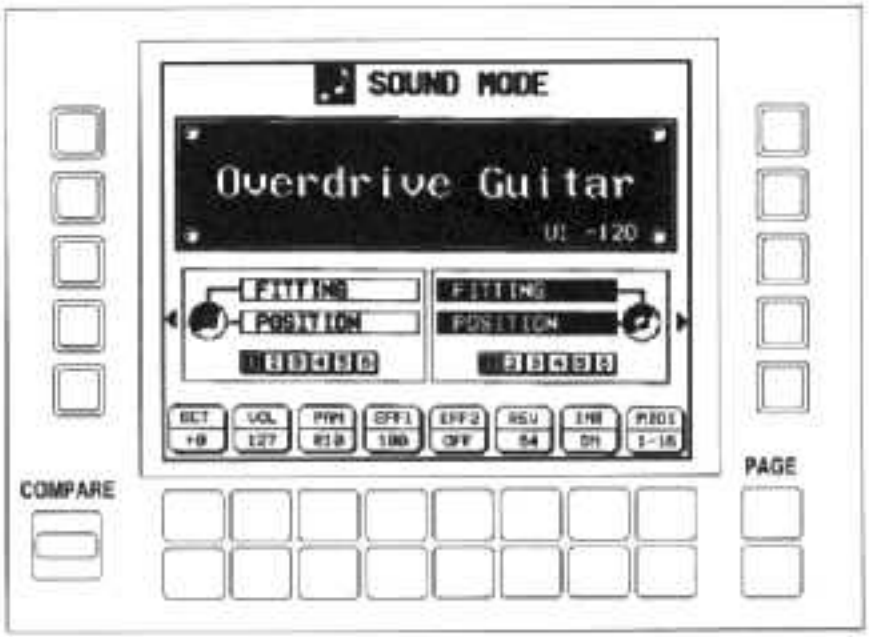
When the separately sold Wave Expansion Board (**SY-EW** series) is installed, the number of sounds and combinations that can be selected is even greater.

- Installation should be carried out by your dealer or authorized servicer.

Display

Most operations are accomplished with the help of the buttons on either side of and below the display. The functions of the buttons differ depending on the operation which is being performed.

- **WSA1**: The buttons below the display respond to two ranges of pressure. You can press and hold a button firmly to change the setting quickly.



■ CONTRAST

Adjust the contrast of the display.

WSA1 (sliding control to the left of the display)

WSA1R (knob at the left edge of the panel)

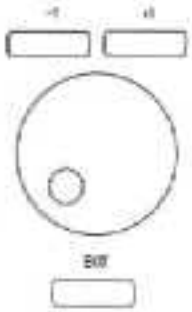
■ PAGE

When a feature requires more than one screen, these buttons are used to view the other "pages".

- When there is more than one page, an indication appears in the upper right corner of the screen. For example, if "PAGE 1/3" is shown, it means that there are three pages, and the current page is page 1.

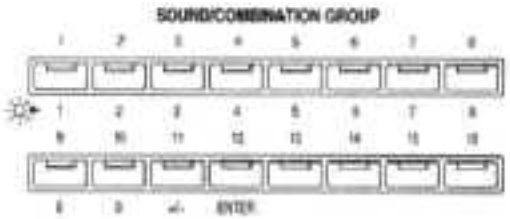
The display illustrations in this manual are for purposes of explanation only. The display on your instrument will look similar, although the contents may be different.

■ **Data entry buttons/dial (to the right of the display)**

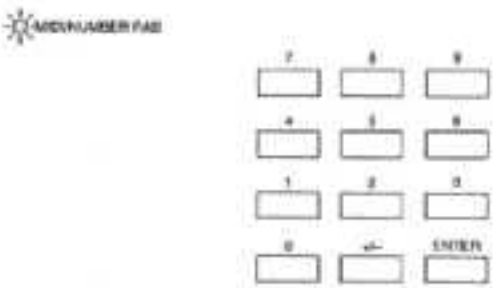


Use these controls when setting a parameter and specifying a numerical value. Use the **–1** and **+1** buttons to change the value one unit at a time. Use the dial to quickly change the value.

- **WSA1**: When setting a parameter, if the indicator at the left edge of the **SOUND COMBINATION GROUP** section is lit, the corresponding buttons can be used to specify the numerical value. The buttons' functions in this case are indicated by the labels below the buttons. Press the **+/–** button to switch between + and –. To enter a number, press the **ENTER** button after specifying the number. (The numbers flash until the **ENTER** button is pressed.)



- **WSA1R**: When setting a function, if the **MIDI/NUMBER PAD** indicator is lit, the number pad can also be used to specify the numerical value. Press the **+/–** button to switch between + and –. To enter a number, press the **ENTER** button after specifying the number. (The numbers flash until the **ENTER** button is pressed.)



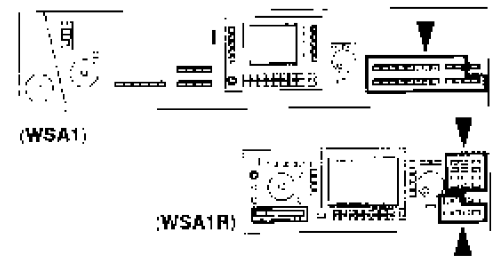
■ **EXIT**

Press this button to exit the current display and return to the previous display or home screen.

Part I Play Mode

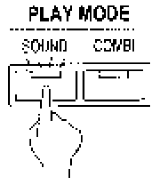
Sound

Select the **SOUND** mode when you want to play each sound of this instrument individually. When the **SOUND** mode is active, PART 1 is selected for this instrument.

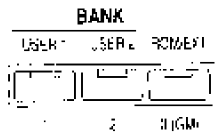


To select sounds

1. In the **PLAY MODE** section, turn on the **SOUND** button.

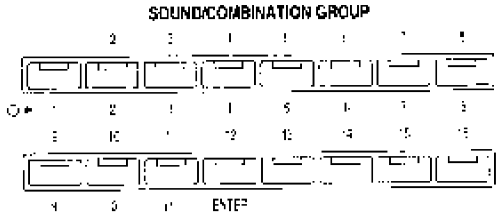


2. Select a **BANK**.

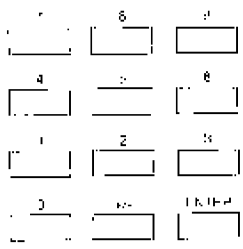


- For an explanation of the banks, refer to page 4.
- The list of sounds in each bank can be found in the separate REFERENCE GUIDE provided.

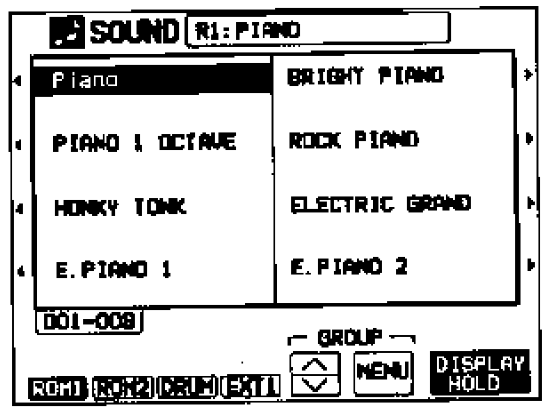
3. **WSA1**: Use the number buttons in the **SOUND/COMBINATION GROUP** to select a SOUND GROUP number (**1** to **16**).



WSA1R: Use the number pad (**0** to **9**) to specify the number of the desired SOUND GROUP, and then press **ENTER**.



- The display changes to show the list of sounds in the selected SOUND GROUP.



(The display looks similar to this, although the contents may be different.)

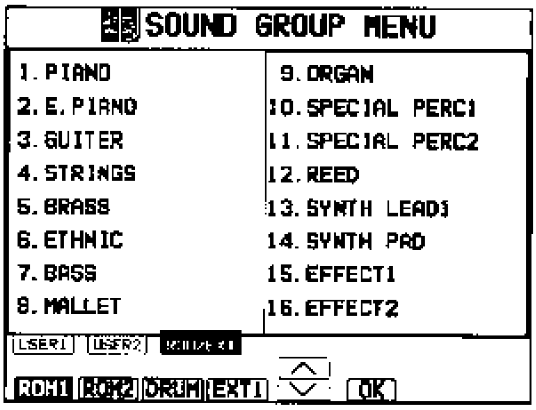
- If the **ROM/EXT** bank was selected in step 2, use the ROM1, ROM2 or EXT1 button to select a bank.
- The EXT1 bank can be used if a separately sold SY-EW series Wave Expansion Board has been installed.

4. Use the buttons to the right and left of the display to select a sound.

- If the DRUM button is pressed, the list of drum sounds is shown. Select the desired drum kit. In this case, playing the keyboard keys will produce percussion instrument sounds. For information about the arrangement of percussion instrument sounds, refer to the separate REFERENCE GUIDE provided.
- When the DISPLAY HOLD button is highlighted, the sound list display is maintained. If you press the DISPLAY HOLD button so that it is no longer highlighted, the display returns to the previous display immediately after a sound is selected.
- To select sounds from a different group, use the GROUP ∧ and ∨ buttons to show the list of sounds in each group.

■ GROUP MENU

To view the SOUND GROUP list, press the GROUP MENU button. (The contents on your display may differ.)



- Use the ∧ and ∨ buttons to select a GROUP, and then press the OK button. The display changes to show the list of sounds in the selected group.

5. Play the keyboard.

This instrument features INITIAL TOUCH (the volume changes depending on how hard the keyboard is played) and AFTER TOUCH (effects are added by pressing the keys harder).

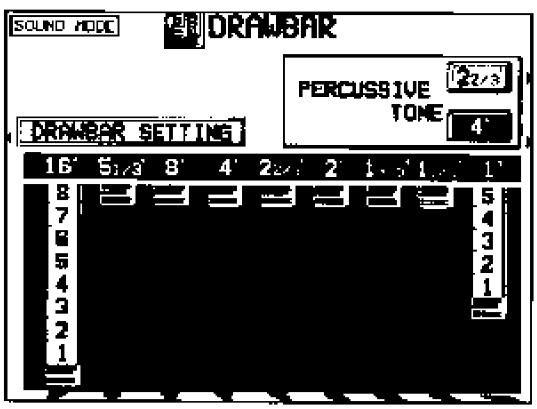
- **WSA1**: The keyboard touch response can be adjusted. (Refer to page 52.)

- If the **EXIT** button is pressed, the display returns to the SOUND MODE display, which is the home screen. (Refer to page 11.)
- The sounds can be edited. (Refer to page 16.)

DRAWBAR

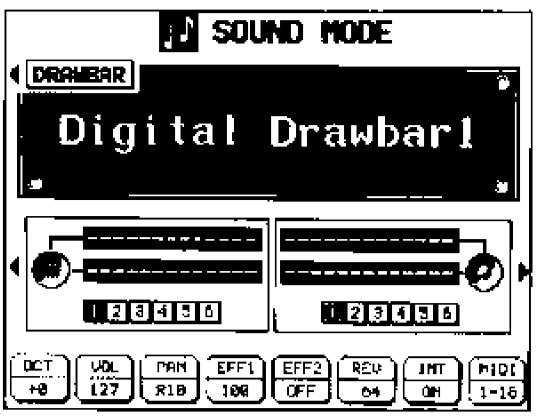
For some of the ORGAN sounds, you can use drawbars on the display to control the sound.

1. Select a DRAWBAR sound.
- The display looks similar to the following.



2. Use the buttons below the display to adjust the volume of each drawbar.
- Each drawbar corresponds to the following foot indications as they are lined up from the left: 16', 5-1/3', 8', 4', 2-2/3', 2', 1-3/5', 1-1/3' and 1'. The volume of each drawbar is illustrated on the display and changes when you press the buttons below them to adjust the volume. The 1' setting is adjusted with the **PAGE** buttons.

- If the **EXIT** button is pressed, the display changes to the SOUND MODE display. On the SOUND MODE display, the DRAWBAR button is shown to the upper left of the SOUND names. If the DRAWBAR button is pressed, the display changes to the DRAWBAR display.



■ PERCUSSIVE TONE

PERCUSSIVE TONE adds a tone with a fast initial attack to the drawbar sounds. You can select two pitch levels of attack tones (2 2/3' and 4').

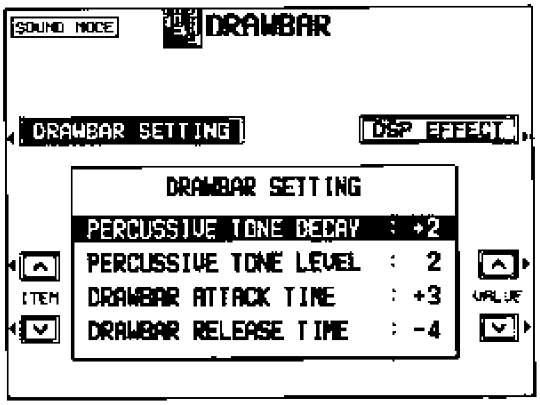
Use the PERCUSSIVE TONE 2 2/3' and 4' buttons to turn the respective tone on or off.

- The tone is on when the respective indication is highlighted.

■ DRAWBAR SETTING

The drawbar sounds can be adjusted more precisely.

1. Press the DRAWBAR SETTING button to highlight it.
- The display looks similar to the following.



2. Select the drawbar setting you wish to change.
- Use the ITEM ∧ and ∨ buttons to select the item. Use the VALUE ∧ and ∨ buttons buttons to change the setting.

PERCUSSIVE TONE DECAY: Adjust the time it takes for the percussive tone to die out.

PERCUSSIVE TONE LEVEL: Adjust the volume of the percussive tone.

DRAWBAR ATTACK TIME: Adjust the time it takes for the drawbar sound to sound after a key is played.

DRAWBAR RELEASE TIME: Adjust the time it takes for the drawbar sound to die out after the keys are released.

- If the DSP EFFECT button is turned on, the display changes to the DSP EFFECT display for **SYSTEM**, and then you can make detailed adjustments to the effect settings. (Refer to page 54.)

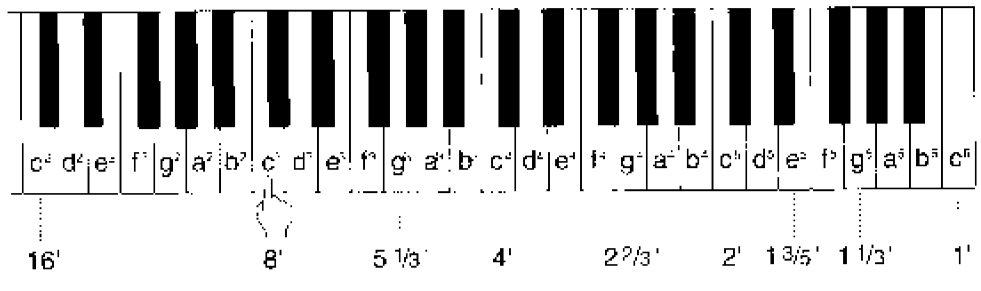
3. When you have finished changing the settings, press the DRAWBAR SETTING button again.

The drawbar settings can be stored in a **USER** bank. (Refer to page 40.)

About foot marks

The foot indication on each drawbar (for example 8') refers to the pitch of a rank of pipes in a pipe organ. If 8' is used as the standard (the pitch as played on the keyboard), a 16' rank pitch will be one octave below the 8' rank pitch, and a 4' rank pitch one octave above.

When the C3 key is pressed, the sounds of the different pitch ranks are as follows.

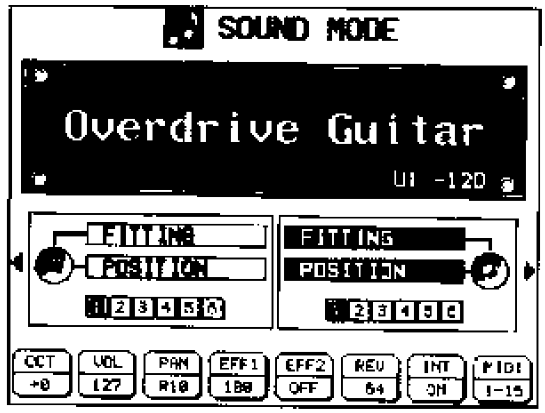


SOUND MODE home screen

When the **SOUND** mode is active, the following home screen is shown during your performance. The functions shown on this display can be used to quickly and easily change the SOUND part settings.

Selected sound

REALTIME CONTROLLER (WSA1)



REALTIME CREATOR

- For information about the **REALTIME CONTROLLER** and **REALTIME CREATOR**, refer to page 15.
- The ∧ and ∨ buttons below the display are used to adjust the following sound attributes.

  OCT: The octave of this instrument's keyboard.
  VOL: Sound volume.
  PAN: Stereo balance of the sound.
  EFF1: Level of EFFECT 1.
  EFF2: EFFECT 2 on/off.
  REV: Level of REVERB.
  INT: The on/off status of this instrument's sound generator settings.
  - If OFF is selected, no sound is produced from this instrument.

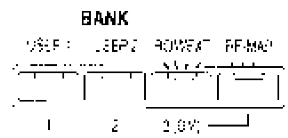
  MIDI: MIDI port and channel setting.

- These settings actually change the PART 1 settings (except for OCT).
- These settings do not change even if a different sound is selected. (However, in some cases, the EFF1, EFF2 and REV settings may change.)

■ GENERAL MIDI

The GENERAL MIDI (GM) sound arrangement can be selected for this instrument.

Turn on **RE-MAP**, and then press the **3 (GM)** button.



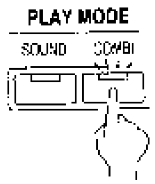
- The arrangement of sounds in this instrument changes to the GENERAL MIDI standard.
- You can also arrange the sounds in any order you wish. (Refer to page 56.)

Combination

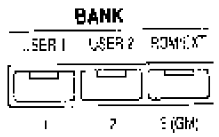
A COMBINATION is a group made up of several sounds. Select the **COMBI** mode to play sound combinations containing up to 8 sound parts (PART 1 to PART 8).

To select combinations

1. In the **PLAY MODE** section, turn on the **COMBI** button.

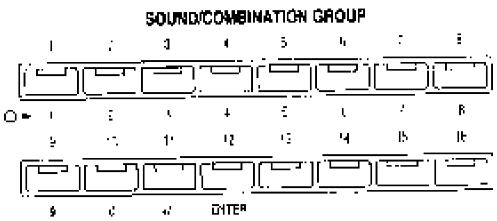


2. Select a **BANK**.

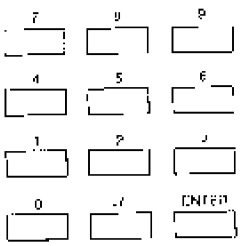


- The **USER 2** bank cannot be selected.
- For an explanation of the banks, refer to page 4.
- The list of sounds in each bank can be found in the separate REFERENCE GUIDE provided.

3. **WSA1**: Use the number buttons in the **SOUND/COMBINATION GROUP** to select a COMBINATION GROUP number (**1** to **16**).



WSA1R: Use the number pad (**0** to **9**) to specify the number of the desired COMBINATION GROUP, and then press **ENTER**.



- The display changes to show the list of combinations in the selected COMBINATION GROUP.
- If the **ROM/EXT** bank was selected in step 2, use the ROM1 or EXT1 button to select a bank.
- The EXT1 bank can be used if a separately sold SY-EW series Wave Expansion Board has been installed.

4. Use the buttons to the right and left of the display to select a combination.
- When the DISPLAY HOLD button is highlighted, the combination list display is maintained. If you press the DISPLAY HOLD button so that it is no longer highlighted, the display returns to the previous display immediately after a combination is selected.
- To select combinations from a different group, use the GROUP ∧ and ∨ buttons to show the list of combinations in each group.
- To view the COMBINATION GROUP list, press the GROUP MENU button. Use the ∧ and ∨ buttons to select a GROUP, and then press the OK button. The display changes to show the list of combinations in the selected group.
- If the **EXIT** button is pressed, the display returns to the COMBINATION MODE display, which is the home screen.

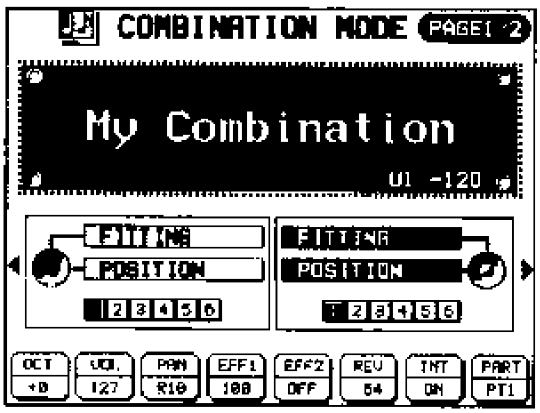
- You can create your own combinations. (Refer to page 41.)

COMBINATION MODE home screen

When the **COMBINATION** mode is active, the following home screen is shown during your performance. The functions shown on this display can be used to quickly and easily change the COMBINATION settings by adjusting the settings of each of up to 8 parts.

Selected combination

REALTIME CONTROLLER (WSA1)



REALTIME CREATOR

- For information about the **REALTIME CONTROLLER** and **REALTIME CREATOR**, refer to page 15.

- Using the ∧ and ∨ buttons below the display, you can adjust following items for the selected combination.

  OCT: The octave of this instrument's keyboard.
  PART: Select the PART to set.
  VOL: Part volume.
  PAN: Stereo balance of the part.
  EFF1: Level of EFFECT 1.
  EFF2: EFFECT 2 on/off.
  REV: Level of REVERB.
  INT: The on/off status of this instrument's sound generator settings.
  - If OFF is selected, no sound is produced from the selected part.
- These settings do not change even if a different combination is selected. (However, in some cases, the EFF1, EFF2 and REV settings may change.)

■ MIXER display

Use the **PAGE** buttons to view the 2/2 display, and you can visually edit the parameters of each part using the MIXER display. (Refer to page 47.)

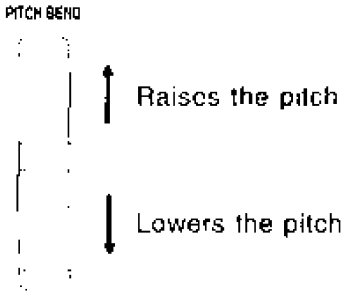
Modify the sound while playing

You can modify the sound in realtime.

PITCH BEND (WSA1)

The pitch of the instrument can be continuously changed with the **PITCH BEND** wheel at the left end of the keyboard. Using this control, you can produce the effect of bending the strings on a guitar.

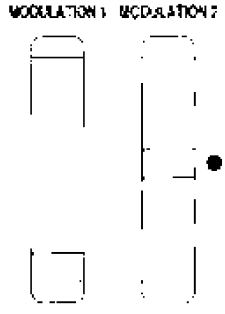
While pressing a key on the keyboard, move the **PITCH BEND** wheel up and down to control the pitch



- When you release your hand from the wheel, it returns automatically to the center position and the pitch bend effect is turned off.
- The amount of pitch bend can be set. (Refer to page 63.)
- The on/off status of pitch bend for each part can be set. (Refer to page 64.)
- You can assign a different function to the **PITCH BEND** wheel. (Refer to page 37.)

MODULATION 1, 2 (WSA1)

The **MODULATION** wheels at the left end of the keyboard are used to add effects to the sound.

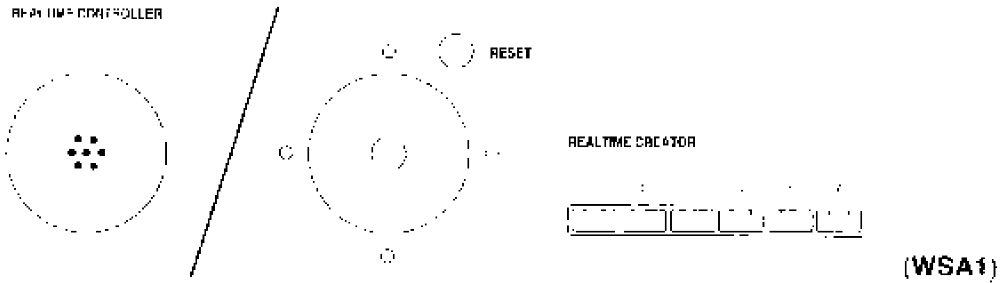


- The **MODULATION 1** wheel is in the standard position when it is turned all the way down, and the **MODULATION 2** wheel when it is set to the center.
- The function initially assigned to each wheel may differ depending on the selected sound.
- The on/off status of the **MODULATION** wheels for each part can be set. (Refer to page 64.)
- You can assign a different function to each wheel. (Refer to page 37.)

REALTIME CONTROLLER (WSA1)/REALTIME CREATOR

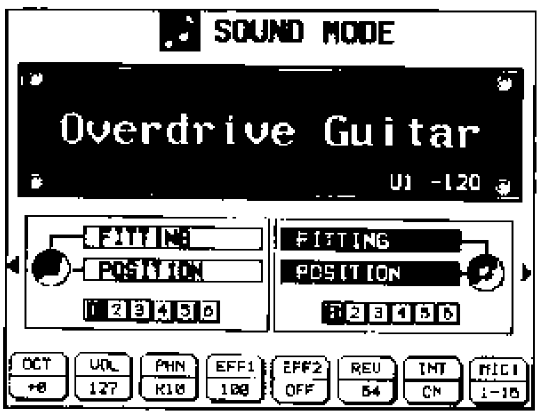
The **REALTIME CONTROLLER (WSA1)** and **REALTIME CREATOR** are used to modify the sound during your performance by visually controlling two components which affect the sound. There are six preset parameter sets of the two components (vertical-axis and horizontal-axis components), which you can select on the SOUND MODE/COMBINATION MODE display.

- **WSA1**: The horizontal-axis and vertical-axis parameters assigned to each of the number buttons 1 to 6 are used for both the **REALTIME CREATOR** and the **REALTIME CONTROLLER**.



(WSA1)

1. On the SOUND MODE/COMBINATION MODE display, select the type of controller.

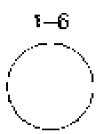


REALTIME CONTROLLER (WSA1)

REALTIME CREATER

2. **WSA1**: Use the **REALTIME CREATOR** number buttons to select a number (**1** to **6**).

   WSA1R: Press the **REALTIME CREATOR 1–6** button, and use the buttons below the display to select a number (1 to 6).



- The vertical-axis and horizontal-axis components for the respective number are shown on the display.

3. **WSA1**: Repeat steps 1 and 2 for the other controller.

4. Use the controllers during your performance to change the sound.

- You can freely combine the two components (vertical-axis direction and horizontal-axis direction) to change the sound in realtime.
- The contents of each number button differ depending on the selected sound.
- When you release your finger from the **REALTIME CONTROLLER (WSA1)**, it returns automatically to the neutral position. The **REALTIME CREATOR** does not return automatically when your finger is released, but you can return the sound to its original state by pressing the **RESET** button.

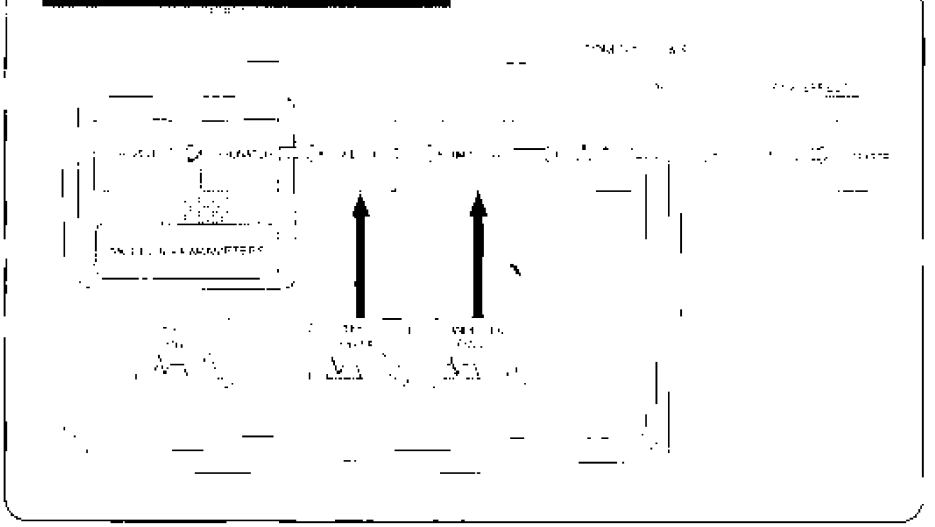
- The on/off status of the **REALTIME CONTROLLER/CREATOR** for each part can be set. (Refer to page 64.)
- The component assigned to each number button can be changed. (Refer to page 36.)
- MIDI CONTROL NUMBERs can be independently assigned to the X and Y axes of the **REALTIME CONTROLLER** and **CREATOR**. (Refer to page 52.)
- A sound which was modified by the **REALTIME CREATOR** can be stored as a new sound in a **USER** bank. (Refer to page 38.)

Part II Sound Edit

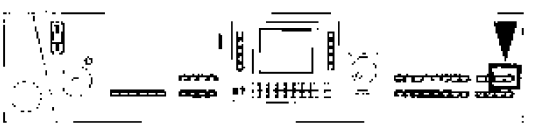
Profile

A wide variety of preset sounds has been permanently stored in the memory of this instrument, but you can also create your own unique sounds and use them in your performance just like the preset sounds. The "Acoustic Modeling Synthesis" itself can be edited, making it possible to synthesize almost any sound.

SOUND MODE STRUCTURE



Outline of the procedure



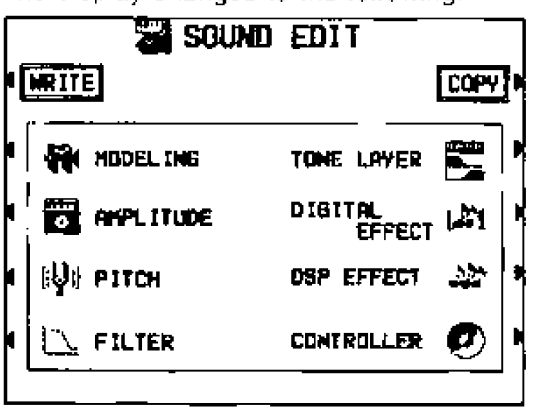
(WSA1)

(WSA1R)

1. Select a preset sound on which to build your new sound.

2. In the **EDIT MODE** section, turn on the **SOUND** button.

- The display changes to the following.



3. Select a menu item to access the corresponding setting display

MODELING (page 18)
Modify the modeling parameters

TONE LAYER (page 22)
Key and velocity layering, triggering, etc.

PITCH (page 24)
Key shift, de-tune, key scaling (microtuning), etc.

FILTER (page 27)
Filter characteristics, envelopes, LFO, etc.

AMPLITUDE (page 30)
Envelope, LFO, key following, etc.

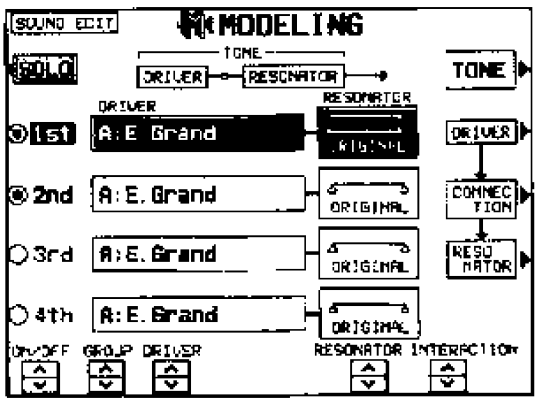
DIGITAL EFFECT (Page 33)
Settings related to the type and depth of DIGITAL EFFECT applied to each sound.

DSP EFFECT (page 34)
Settings related to the type and degree of DSP effects applied to the sound.

CONTROLLER (page 36)
Assign parameters to each controller.

4. Follow the procedure to modify the sound (explained on the following pages).

Example: MODELING



- To check the sound of a single tone, press the SOLO button to highlight it. Only the currently selected tone sounds when a key is played. (This button is not available on the CONTROLLER setting displays, etc.)
- The data entry controls can be used to specify the value when changing the settings. (Refer to page 7.)
- The **REALTIME CREATOR** can also be used to modify the sound (except for DYNAMIC CONTROL).

5. When the sound is just the way you like it, press the **EXIT** button to return to the SOUND EDIT menu display, and press the WRITE button to store your new sound. (Refer to page 38.)

- Press the **COMPARE** button (below the display to the left) to compare the edited sound to the original sound as you are modifying it.

- Some setting items can be also adjusted using the MIXER display, etc. In this case, the resulting setting may sometimes be the synthesis of both settings.

■ **TONE**

One SOUND may be made up of at most four TONEs.

SOUND — 1st TONE
2nd TONE
3rd TONE
4th TONE

- You can press the COPY button to copy one TONE to another TONE. (Refer to page 40.)

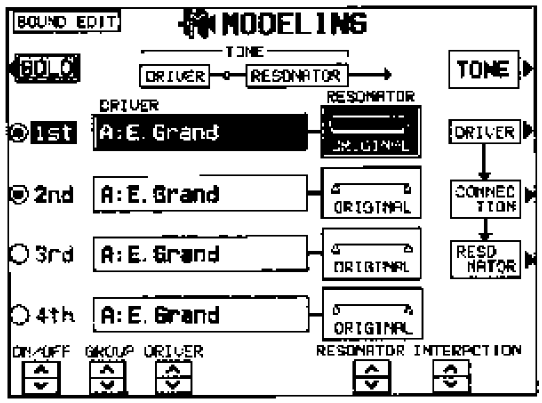
Modeling edit

Modify the modeling parameters, which form the structure of the sound. For an explanation of the principles of modeling, refer to page 4 in the volume BASIC FUNCTIONS.

MODELING

A sound may be made up of at most four tones (1st, 2nd, 3rd, 4th). Each tone consists of a DRIVER and a RESONATOR.

1. On the SOUND EDIT menu display, select MODELING.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

3. Use the ON/OFF ∧ and ∨ buttons to specify whether the TONE is emitted or not.
- Select ◉ to produce the TONE, or ○ for no TONE.

4. Select the DRIVER.
- Use the GROUP ∧ and ∨ buttons to select the group. Use the DRIVER ∧ and ∨ buttons to select the DRIVER name.

5. Use the RESONATOR ∧ and ∨ buttons to select a RESONATOR.
- ORIGINAL indicates the current RESONATOR at the time you entered the editing mode.
- Selecting a different RESONATOR will cause the settings made on the CONNECTION display and the RESONATOR display to be lost.

[RESONATOR examples]

STRING: Stringed instrument type resonator, such as piano and guitar.

CYLINDER: Clarinet, flute type.

CONE: Oboe type.

FLARE: Trumpet type.

PLATE LOW/HIGH: Plate type, such as cymbals, vibraphone, glockenspiel, etc.

MEMBRANE LOW/HIGH: Membrane type, such as drums etc.
- It is suggested that the 1st tone be set to LOW and the 2nd tone to HIGH, or that the 3rd tone be set to LOW and the 4th tone to HIGH.

- You can also select a combination of DRIVER and RESONATOR from the preset TONE TEMPLATE combinations (see the article below).
- The names of the DRIVER and RESONATOR shown on the display do not change even if they have been edited, and therefore may not reflect the actual sound.

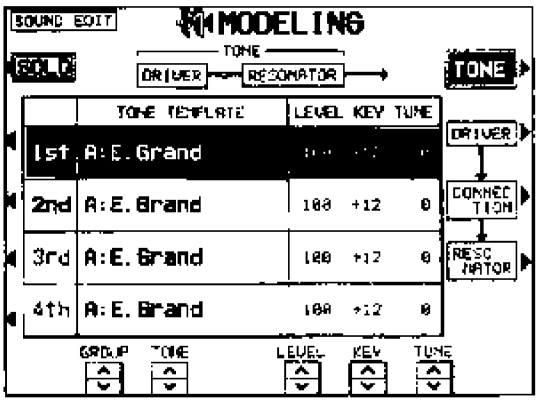
6. Use the INTERACTION ∧ and ∨ buttons to adjust the simultaneous resonance setting.
- INTERACTION is the effect whereby, for example, the played strings of a stringed instrument act upon each other, causing them to resonate simultaneously.
- The INTERACTION effect can be selected for the 1st and 2nd tones, the 3rd and 4th tones, or for all four tones. The selected type is represented graphically on the display.
- The INTERACTION effect is automatically set for some RESONATORs.
- The INTERACTION effect is available for the MAIN RESONATOR and SUB RESONATOR even if the other side is OFF.
- If the INTERACTION effect is selected for TONEs which are layered in the KEY LAYER setting, the sounds may influence each other in other ranges as well.

■ TONE TEMPLATE

You can select a preset TONE (DRIVER-RESONATOR combination) and then change the settings.

- Selecting a different TONE TEMPLATE will cause the settings made on the DRIVER, CONNECTION and RESONATOR displays to be lost.

1. Press the TONE button.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select the TONE you wish to edit.

3. Select a sound for the tone.
- Use the GROUP ∧ and ∨ buttons to select the group, and the TONE ∧ and ∨ buttons to select the sound.

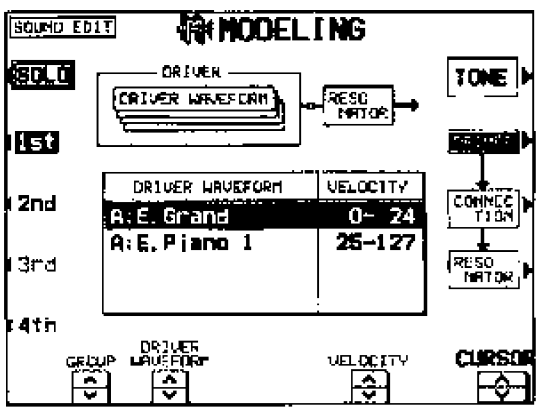
4. Complete the other settings for the tone.
- Use the LEVEL ∧ and ∨ buttons to adjust the volume. Use the KEY ∧ and ∨ buttons to adjust the pitch. Use the TUNE ∧ and ∨ buttons to fine-tune the pitch.
- The LEVEL settings are linked to the AMPLITUDE edit settings, and the KEY and TUNE settings are linked to the PITCH edit settings.

5. Repeat steps 2 to 4 for each TONE, as desired.

■ DRIVER

A DRIVER may have up to four different sampling waveforms. The velocity range of each WAVEFORM can be adjusted.

1. Press the DRIVER button.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

3. Use the CURSOR ∧ and ∨ buttons to select the row you wish to edit.

4. Modify the WAVEFORM.
- Use the GROUP ∧ and ∨ buttons to select the group, and the DRIVER WAVEFORM ∧ and ∨ buttons to select the waveform name.

5. Use the VELOCITY ∧ and ∨ buttons to specify the velocity range
- When the upper limit of a waveform is set to 127, no more waveforms can be added.

6. Repeat steps 3 to 5 to edit the other waveforms, as desired.
- Up to four waveforms can be set, with a different DRIVER for each velocity range.

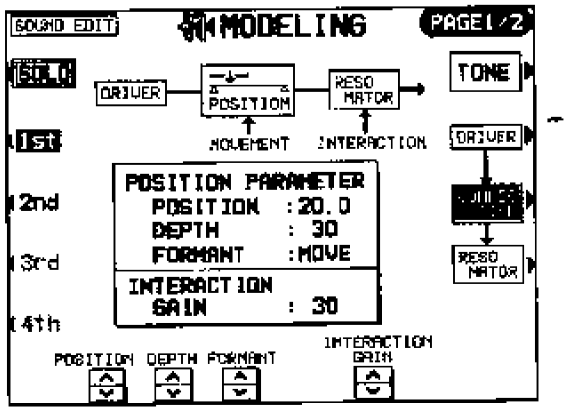
7. Repeat steps 2 to 6 for each TONE, as desired.

- The name of the uppermost DRIVER WAVEFORM is shown as the DRIVER on the MODELING display.

■ CONNECTION

Adjust the settings which determine how the DRIVER signals are transferred to the RESONATOR.

1. Press the CONNECTION button.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

3. Use the POSITION ∧ and ∨ buttons to specify the connection position.
- For example, if the STRINGS is selected as the RESONATOR type, the POSITION setting defines the point on the strings that the signal transfer occurs.

4. Use the DEPTH ∧ and ∨ buttons to specify the depth of the formant.

5. Use the FORMANT ∧ and ∨ buttons to select the type of formant.

   MOVE: The formant moves following the pitch (same formant for all pitches).

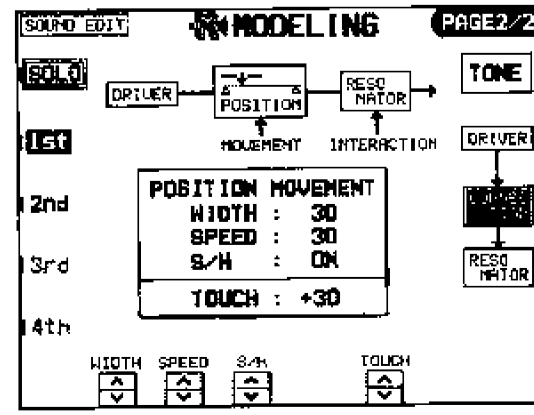
   FIX: The formant is constant, regardless of the pitch.

6. Use the INTERACTION GAIN ∧ and ∨ buttons to adjust the amount of interaction feedback.
- This setting is active when the INTERACTION has been set. (Refer to page 18.)

7. Repeat steps 2 to 6 for each TONE, as desired.

[MOVEMENT]

1. Use the **PAGE** buttons to view the 2/2 display.



2. Use the buttons to the left of the display to select a TONE.

3. Use the POSITION MOVEMENT buttons to specify cyclic change at the DRIVER-RESONATOR connection point.
- Use the WIDTH ∧ and ∨ buttons to specify the width of the change. Use the SPEED ∧ and ∨ buttons to specify the speed of the change. Use the S/H ∧ and ∨ buttons to set S/H to on or off.
- S/H (SAMPLE & HOLD) is the setting for random change within the WIDTH range each time a key is pressed. When set to ON, the SPEED setting is disabled.

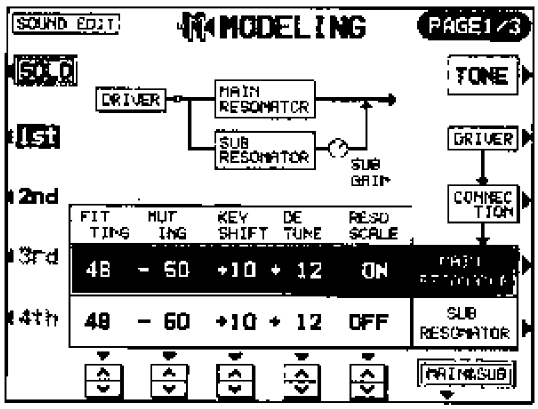
4. Use the TOUCH ∧ and ∨ buttons to specify the degree of movement relative to touch.

5. Repeat steps 2 to 4 for each TONE, as desired.

■ RESONATOR

Make fine adjustments to the RESONATOR settings. By using a SUB RESONATOR, you can produce the effect of two resonators.

1. Press the RESONATOR button.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

3. Use the buttons below the display to adjust the parameters for the selected RESONATOR.

FITTING: Degree of resonance
- At 0, only the DRIVER sound is produced.
- The higher the number, the greater the degree of resonance. (In this case the DRIVER volume is corrected to an appropriate level.)

MUTING: Degree of muting
- The smaller the number, the greater the mute effect, and the less the high frequency portion.
- This setting produces a distinct change in sounds with a large high-frequency portion, such as guitar.

KEY SHIFT: Pitch setting for the RESONATOR

DETUNE: Fine-tune pitch setting for the RESONATOR

RESO SCALE: Select the RESONATION SCALE mode

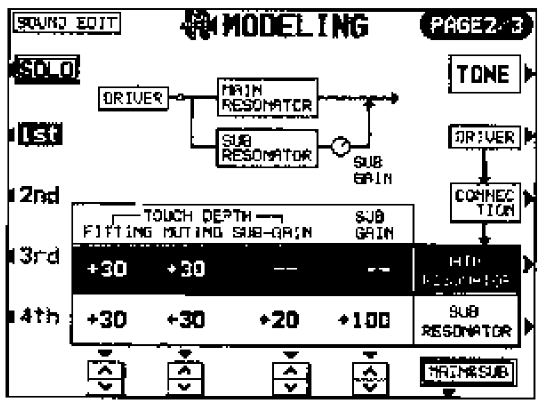
ON: Chromatic scale (The pitch of the RESONATOR is fixed. This is not affected by the pitch setting made on the PITCH edit display.)
OFF: Scale specified by the PITCH setting

4. Repeat steps 2 and 3 for each TONE, as desired.

- If you wish to make the MAIN RESONATOR and SUB RESONATOR settings separately, press the MAIN&SUB button so that it is not highlighted, and then use the buttons to select the respective RESONATOR.

[TOUCH DEPTH]

1. Use the **PAGE** buttons to view the 2/3 display.



2. Use the buttons to the left of the display to select a TONE.

3. Use the respective TOUCH DEPTH ∧ and ∨ buttons to adjust the degree of change in each parameter relative to touch.

FITTING: Touch response for FITTING
- At 0, the FITTING does not change in relation to touch.

MUTING: Touch response for MUTING

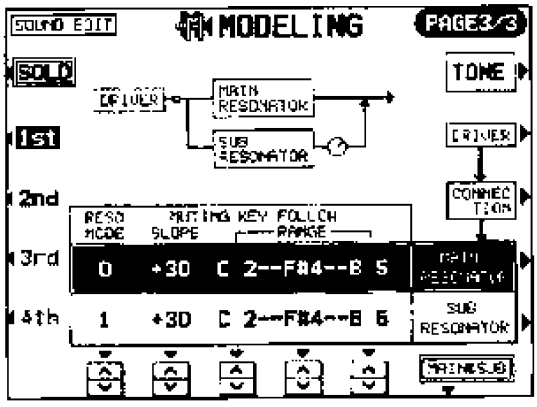
SUB GAIN (SUB RESONATOR only): Change in output level to the MAIN RESONATOR, relative to touch

4. Repeat steps 2 and 3 for each TONE, as desired.

- For the SUB RESONATOR, you can use the SUB GAIN ∧ and ∨ buttons to set the total output level.

[RESONATION SCALE, MUTING KEY FOLLOW]

1. Use the **PAGE** buttons to view the 3/3 display.



2. Use the buttons to the left of the display to select a TONE.

3. Use the RESO MODE ∧ and ∨ buttons to select the resonance mode.

   0: Standard mode
   1: Special mode (only odd-numbered harmonics resonate)

4. Use the MUTING KEY FOLLOW buttons to define the slope which determines how the muting characteristic changes relative to pitch.

- Use the SLOPE ∧ and ∨ buttons to adjust the slope. Use the respective RANGE ∧ and ∨ buttons to specify the pitch range. (The note name in the middle defines the center of the slope.)

5. Repeat steps 2 to 4 for each TONE, as desired.

Tone Layer edit

Set trigger, layering, panning and other parameters.

TONE LAYER

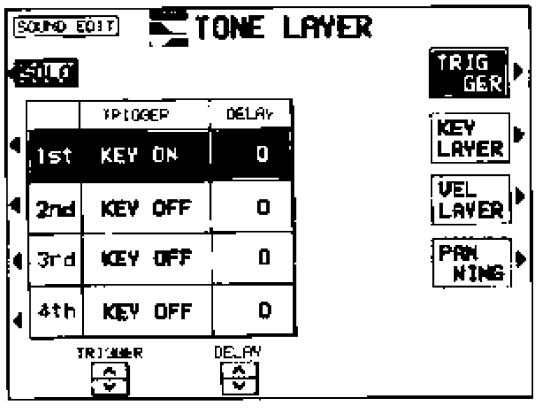
On the SOUND EDIT menu display, select TONE LAYER.

■ TRIGGER

Specify the trigger mode of the sound emission for each TONE

1. Press the TRIGGER button.

- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

3. Use the TRIGGER ∧ and ∨ buttons to select the trigger mode.

   KEY ON: Sound is emitted when the key is pressed (normal mode).

   KEY OFF: Sound is emitted when the key is released (like HARPSICHORD, for example).

   LEGATO: Sound is emitted only when a key is pressed while another key is not yet released (legato-playing).

   NON LEG: Sound is emitted only when a key is pressed while no other keys are pressed

   CHORD: Sound is emitted when chords are played (like the cutting sound of a guitar, for example).

4. Use the DELAY ∧ and ∨ buttons to adjust the delay of the attack

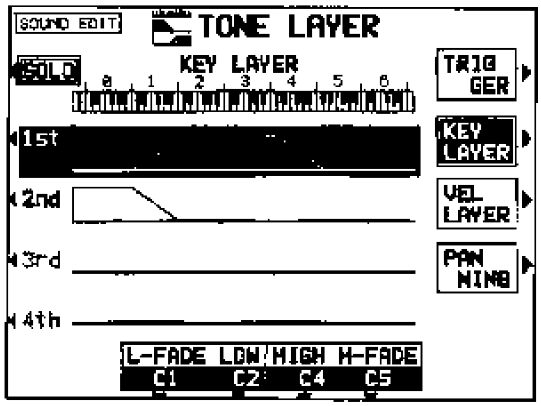
- The higher the number, the longer the delay before sound output.

5. Repeat steps 2 to 4 for each TONE, as desired.

■ KEY LAYER

Crossfade between TONEs by key note number (position).

1. Press the KEY LAYER button.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE for which the function will be set.

3. Use the L-FADE ∧ and ∨ buttons and the LOW ∧ and ∨ buttons to define the slope on the left side of the keyboard.
- By entering different values for the L-FADE and LOW setting, you can define a gradual volume increase to the peak output volume by key position.

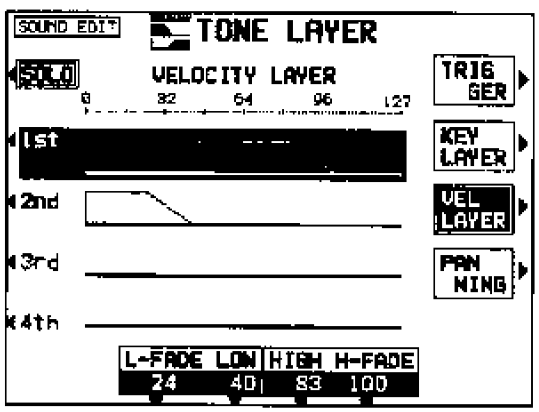
4. Use the HIGH ∧ and ∨ buttons and the H-FADE ∧ and ∨ buttons to define the slope on the right side of the keyboard.
- By entering different values for the H-FADE and HIGH settings, you can define a gradual volume decrease from the peak output by key position.
- By overlapping the L-FADE and H-FADE slopes of each different tone, you can achieve a crossfade effect, where the sound gradually changes in relation to key number.

5. Repeat steps 2 to 4 for each TONE, as desired.

■ VELOCITY LAYER

Crossfade between TONEs by velocity (initial key pressure).

1. Press the VEL LAYER button.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

3. Use the L-FADE ∧ and ∨, LOW ∧ and ∨ buttons to define the curve for the lower velocities.

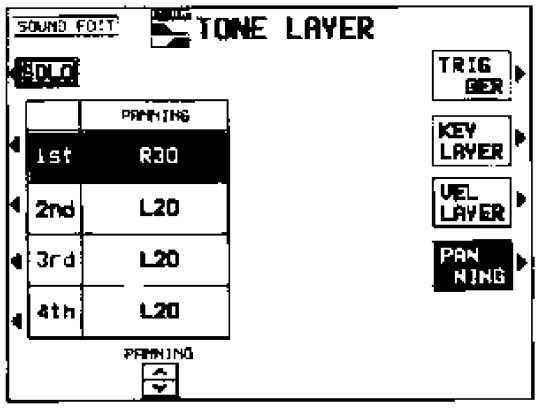
4. Use the HIGH ∧ and ∨, H-FADE ∧ and ∨ buttons to define the slope for the higher velocities.
- By overlapping the L-FADE and H-FADE curves of each different tone, you can change the way the tone sounds relative to how hard or softly the keyboard is played.

5. Repeat steps 2 to 4 for each TONE, as desired.

■ PANNING

Adjust the stereo balance setting for each TONE.

1. Press the PANNING button.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE for which the function will be set.

3. Use the PANNING ∧ and ∨ buttons to adjust the stereo balance (L64–CTR–R63, RDM).
- CTR is the center point. At L64, the sound is all the way to the left, at R63 all the way to the right.
- If RDM is selected, the stereo balance changes randomly whenever a key is played.

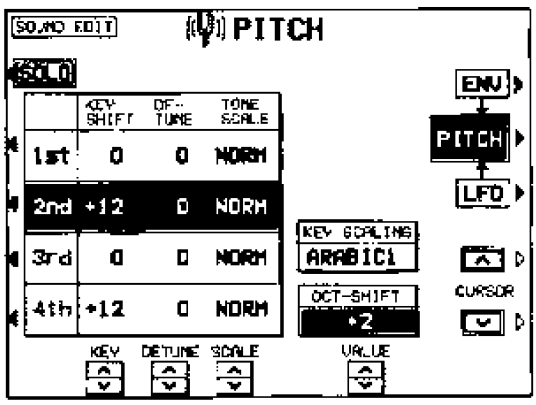
4. Repeat steps 2 and 3 for each TONE, as desired.

Pitch edit

Adjust pitch envelope, tuning and LFO parameters.

PITCH

1. On the SOUND EDIT menu display, select PITCH.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

3. Use the KEY ∧ and ∨ buttons to shift a TONE's pitch in semitone steps.

4. Use the DETUNE ∧ and ∨ buttons to detune a TONE in 1 cent steps.
- Slight differences in the DETUNE values between the tones add fullness to the sound.

5. Use the SCALE ∧ and ∨ buttons to apply micro tuning a TONE (NORM, 1/2, 1/4, 1/8, 1/16, 1/32, 1/64, FIX).
- NORM is the normal scale type. For example, when 1/2 is selected, a difference in pitch between one key and the adjacent key becomes half the normal pitch difference. When FIX is selected, the pitch is the same regardless of which key is played.

6. Select the type of scaling (tuning).
- Use the CURSOR ∧ and ∨ buttons to select KEY SCALING. Use the VALUE ∧ and ∨ buttons to change the setting.
- Key scaling is explained on page 51.

7. Set the octave of the sound.
- Use the CURSOR ∧ and ∨ buttons to select OCT-SHIFT. Use the VALUE ∧ and ∨ buttons to change the setting.

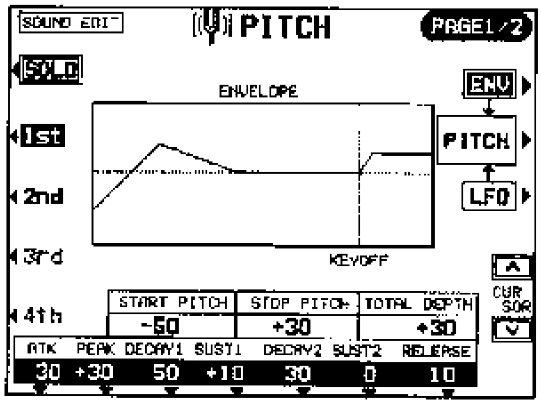
8. Repeat steps 2 to 7 for each TONE, as desired.

- For a TONE for which the RESO SCALE is ON, the RESONATOR PITCH does not change even if the pitch setting is altered on this display.

■ ENVELOPE

Specify how the pitch changes over time, from the time the key is played to the time the sound dies out for each TONE.

1. Press the ENV button.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

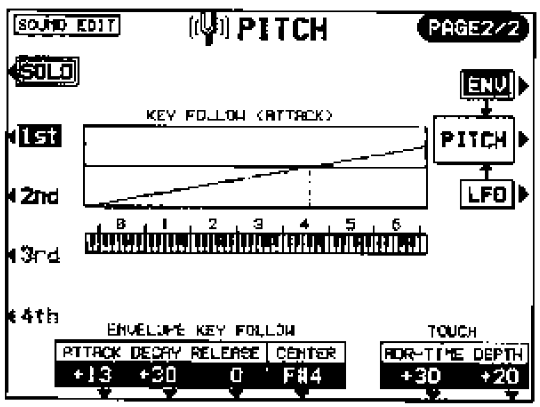
3. Adjust the settings for the pitch change envelope.
- Use the buttons below the display to set the corresponding values. The envelope is graphically illustrated on the display as you input the settings.
- Use the CURSOR ∧ and ∨ buttons to switch between the upper row and lower row items.
- Use the TOTAL DEPTH ∧ and ∨ buttons to specify the maximum level.

4. Repeat steps 2 and 3 for each TONE, as desired.

[ENVELOPE KEY FOLLOW]

Specify how the pitch envelope parameters change relative to the key played.

1. Use the **PAGE** buttons to view the 2/2 display.



2. Use the buttons to the left of the display to select a TONE.

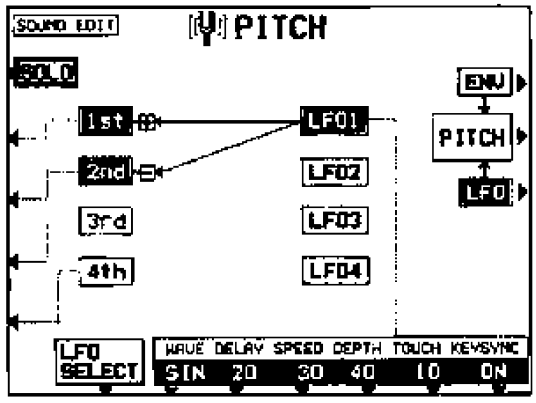
3. Change the key follow settings for the ATTACK, DECAY and RELEASE.
- Use the ∧ and ∨ buttons corresponding to the ENVELOPE KEY FOLLOW attributes to adjust the settings. Use the CENTER ∧ and ∨ buttons to select the center point of the KEY FOLLOW curve.

4. Change the touch settings.
- Use the ADR-TIME ∧ and ∨ buttons to increase or decrease the ATTACK, DECAY and RELEASE time change depending on touch. Use the DEPTH ∧ and ∨ buttons to specify the change level depending on touch.
- At a – setting, the softer the keys are pressed, the greater the change. At a + setting, the harder the keys are pressed, the greater the change.

■ LFO

Adjust the pitch LFO (cyclic modulation) settings. There are four LFOs available.

1. Press the LFO button.
- The display looks similar to the following.



2. Use the LFO SELECT ∧ and ∨ buttons to select an LFO (1 to 4).

3. Use the buttons below the display to adjust the settings for the LFO selected.

WAVE
Modulation waveform
SIN: Sine wave
TRI: Triangle wave
SQR: Square wave
SAW: Saw tooth wave

DELAY
Delay time is the time elapsed from when the keyboard key is pressed until the modulation begins.

SPEED
Modulation speed

DEPTH
Modulation depth

TOUCH
Degree of modulation change relative to touch

KEYSYNC
When playing more than one note, specify whether the LFO restarts each time a key is pressed (ON/OFF).
- When KEYSYNC is set to ON, the LFO modulation will restart each time a note is pressed.

4. Use the buttons to the left of the display to specify for each tone whether or not the specified LFO is applied.
- One LFO can be applied to multiple tones.
- A + indicates that the LFO is on for the tone, a – indicates that the inverted-phase LFO is applied to the tone.

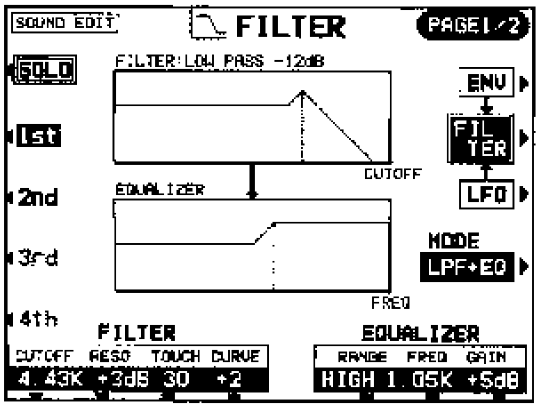
5. Repeat steps 2 to 4 for the other LFO types, as desired.

Filter edit

Adjust filter (and EQ) types, settings, envelope and LFO.

FILTER

1. On the SOUND EDIT menu display, select FILTER.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

3. Use the MODE button to select the filter mode.

LPF-EQ (low-pass filter + equalizer): 12 dB/oct
Frequencies higher than the cut-off frequency cut −12 dB per octave. An equalizer with up to 6 dB of gain is available.

HPF+EQ (high-pass filter + equalizer): 12 dB/oct
Frequencies lower than the cut-off frequency cut −12 dB per octave. An equalizer with up to 6 dB of gain is available.

LPF24 (low-pass filter 24): 24 dB/oct
A stronger low-pass filter than LPF+EQ.

HPF24 (high-pass filter 24): 24 dB/oct
A stronger high-pass filter than HPF+EQ.

BPF (band-pass filter)
Frequencies which are not in the specified range are rolled off.

THRU
No filter effect is applied.

4. Use the buttons below the display to adjust the filter attributes.

CUTOFF
Set the cut-off frequency.

RESO
Specify the filter resonance value (dB).
- Resonance adds character to the sound by emphasizing the harmonic components of frequencies close to the cut-off frequency.

TOUCH
Specify the degree of change relative to keyboard touch.

CURVE
Specify the type of curve relative to keyboard touch.

[EQUALIZER]
For LPF+EQ/HPF+EQ filters, the sound quality can be modified by the EQUALIZER.

RANGE
Select the setting range (HIGH or LOW).

FREQ
Set the standard frequency.

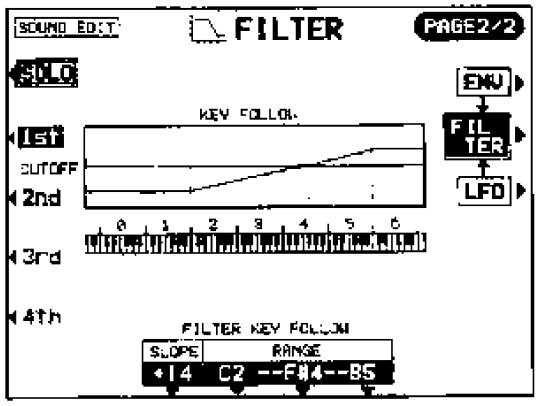
GAIN
Set the level increase or decrease from the value set for FREQ.

5. Repeat steps 2 to 4 for each TONE, as desired.

■ FILTER KEY FOLLOW

Specify how the filter envelope parameter change relative to key played.

1. Use the **PAGE** buttons to view the 2/2 display.



2. Use the buttons to the left of the display to select a TONE.

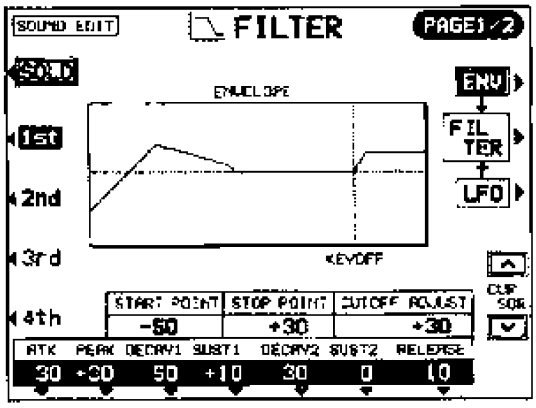
3. Change the KEY FOLLOW settings.
- Use the SLOPE ∧ and ∨ buttons to adjust the slope of the KEY FOLLOW curve. Use the RANGE ∧ and ∨ buttons to specify the key range (by note name) that is affected by the filter.

4. Repeat steps 2 and 3 for each TONE, as desired.

■ ENVELOPE

Specify how the filter changes over time, from the time the key is played to the time the sound dies out for each TONE.

1. Press the ENV button.
- The display looks similar to the following.



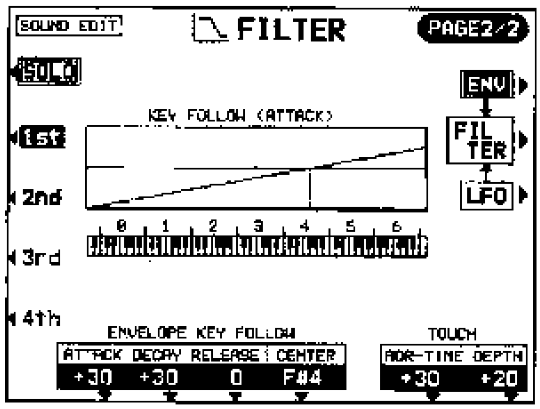
2. Use the buttons to the left of the display to select a TONE.

3. Adjust the settings for the filter envelope.
- Use the buttons below the display to set the corresponding values. The envelope is illustrated on the display as you input the settings.
- Use the CURSOR ∧ and ∨ buttons to switch between the upper row and lower row items.
- Use the CUTOFF ADJUST ∧ and ∨ buttons to move the entire graph up or down to change the amount of filter effect.

4. Repeat steps 2 and 3 for each TONE, as desired.

[ENVELOPE KEY FOLLOW]
Specify how the filter envelope parameters change relative to key played.

1. Use the **PAGE** buttons to view the 2/2 display.



2. Use the buttons to the left of the display to select a TONE.

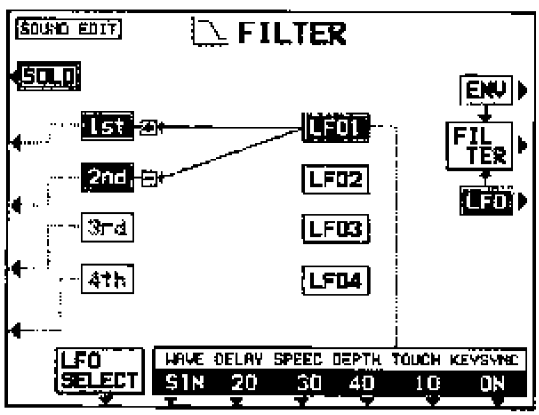
3. Change the key follow settings for the ATTACK, DECAY and RELEASE.
- Use the ∧ and ∨ buttons corresponding to the ENVELOPE KEY FOLLOW attributes to adjust the settings. Use the CENTER ∧ and ∨ buttons to select the center of the KEY FOLLOW curve.

4. Change the touch settings.
- Use the ADR-TIME ∧ and ∨ buttons to increase or decrease the ATTACK, DECAY or RELEASE time change depending on touch. Use the DEPTH ∧ and ∨ buttons to specify the pitch change level depending on touch.
- At a – setting, the softer the keys are pressed, the greater the change. At a + setting, the harder the keys are pressed, the greater the change.

■ LFO

Adjust the LFO (cyclic modulation) settings applied to the filter. There are four LFOs available.

1. Press the LFO button.
- The display looks similar to the following.



2. Use the LFO SELECT ∧ and ∨ buttons to select an LFO (1 to 4).

3. Use the buttons below the display to adjust the settings for the LFO selected.

WAVE
Modulation waveform
SIN: Sine wave
TRI: Triangle wave
SQR: Square wave
SAW: Saw tooth wave

DELAY
Delay time is the time elapsed from when the keyboard key is pressed until the modulation begins.

SPEED
Modulation speed

DEPTH
Modulation depth

TOUCH
Degree of modulation change relative to touch

KEYSYNC
When playing more than one note, specify whether the LFO restarts each time a key is pressed (ON/OFF).
- When KEYSYNC is set to ON, the LFO modulation will restart each time a key is pressed.

4. Use the buttons to the left of the display to specify whether or not the specified LFO is applied and to which tones it is applied.
- One LFO can be applied to multiple tones.
- A + indicates that the LFO is on for the tone, a – indicates that the inverted-phase LFO is applied to the tone.

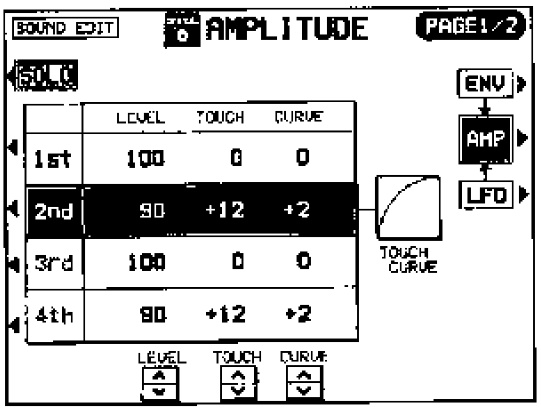
5. Repeat steps 2 to 4 for the other LFO types, as desired.

Amplitude edit

Adjust the settings related to the volume of the sound.

AMPLITUDE

1. On the SOUND EDIT menu display, select AMPLITUDE.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

3. Use the LEVEL ∧ and ∨ buttons to select the volume.

4. Use the TOUCH ∧ and ∨ buttons to set the amount of volume change relative to how hard the keyboard is played.
- At a – value, the softer the keyboard is played, the louder the sound. At a + value, the harder the keyboard is played, the louder the sound.

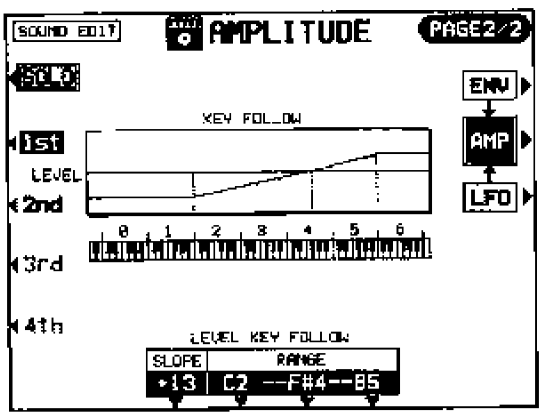
5. Use the CURVE ∧ and ∨ buttons to select the type of volume curve depending on touch.

6. Repeat steps 2 to 5 for each TONE, as desired.

■ AMPLITUDE KEY FOLLOW

Specify how the volume changes relative to note pitch.

1. Use the **PAGE** buttons to view the 2/2 display.



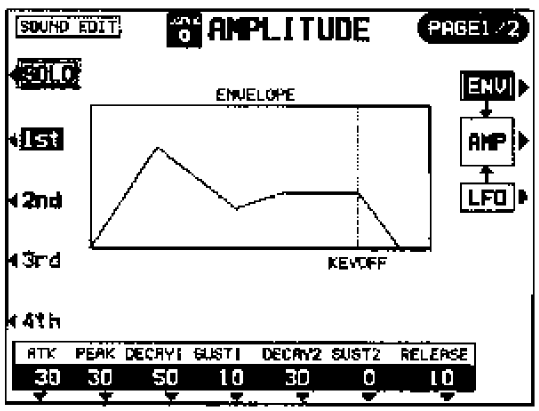
2. Use the buttons to the left of the display to select a TONE.

3. Change the KEY FOLLOW settings.
- Use the SLOPE ∧ and ∨ buttons to adjust the bend slope. Use the RANGE ∧ and ∨ buttons to specify the pitch range by note name. The center setting defines the bend direction.

■ ENVELOPE

Specify how the volume changes over time, from the time the key is played to the time the sound dies out.

1. Press the ENV button.
- The display looks similar to the following.



2. Use the buttons to the left of the display to select a TONE.

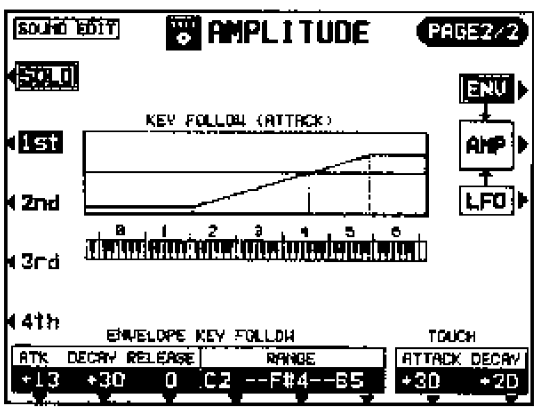
3. Adjust the settings for the volume envelope.
- Use the buttons below the display to set the corresponding values. The envelope is created graphically on the display as you input the settings.

4. Repeat steps 2 and 3 for each TONE, as desired.

[ENVELOPE KEY FOLLOW]

Specify how the volume changes relative to note pitch over time.

1. Use the **PAGE** buttons to view the 2/2 display.



2. Use the buttons to the left of the display to select a TONE.

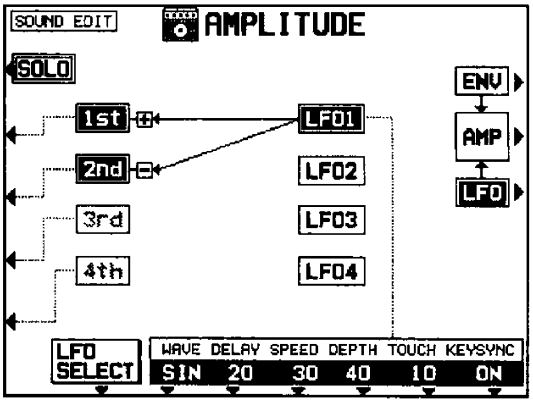
3. Change the key follow settings for the ATTACK, DECAY and RELEASE.
- Use the ∧ and ∨ buttons corresponding to the ENVELOPE KEY FOLLOW attributes to adjust the settings. Use the RANGE buttons to specify the keyboard range.

4. Change the touch settings.
- Use the ATTACK ∧ and ∨ buttons to specify the ATTACK time change depending on touch. Use the DECAY ∧ and ∨ buttons to specify the DECAY time change depending on touch.
- At a – setting, the softer the keys are pressed, the greater the change. At a + setting, the harder the keys are pressed, the greater the change.

■ LFO

Adjust the LFO (cyclic modulation) settings applied to the amplitude. There are four types of LFO.

1. Press the LFO button.
- The display looks similar to the following.



2. Use the LFO SELECT ∧ and ∨ buttons to select an LFO (1 to 4).

3. Use the buttons below the display to adjust the settings.

WAVE

Modulate the waveform.

SIN: Sine wave
TRI: Triangle wave
SQR: Square wave
SAW: Saw tooth wave

DELAY

Delay time is the time elapsed from when the keyboard key is pressed until the modulation begins.

SPEED

Modulation speed.

DEPTH

Modulation depth.

TOUCH

Degree of modulation change relative to touch.

KEYSYNC

When playing more than one note, specify whether the LFO starts or not each time a key is pressed (ON/OFF).

- When KEYSYNC is set to ON: if, while playing one note, you play a second note, the LFO is applied to the second note as well.

4. Use the buttons to the left of the display to specify whether or not the specified LFO is applied and to which tones it is applied.
- The LFO can be applied to multiple tones.
- A + indicates that the LFO is on for the tone, a – indicates that the inverted-phase LFO is applied to the tone.

5. Repeat steps 2 to 4 for the other LFO types, as desired.

Digital Effect edit

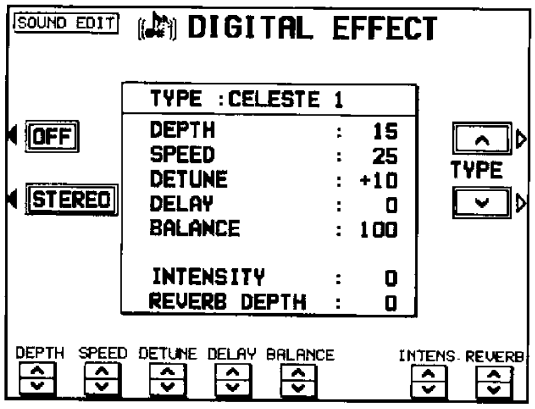
Select the type of digital effect which is applied to your new sound, and modify the effect. This effect is created by offsetting the modulations for the 1st TONE and 2nd TONE.

- This effect can be set as the characteristic parameter for each sound.

DIGITAL EFFECT

1. On the SOUND EDIT menu, select DIGITAL EFFECT.

- The display looks similar to the following.
- The display for the effect type which is best-suited for the sound currently being edited is selected.



2. Use the TYPE ∧ and ∨ buttons to select the type of effect.

- Select from the following types: CELESTE 1, 2, CHORUS 1, 2, ENSEMBLE 1, 2, TREMOLO, ORGAN TREMOLO, SINGLE DELAY, REPEAT DELAY, SOLO EFFECT 1, 2.

<ON/OFF button>
Select whether or not the digital effect is applied.

<STEREO/MONO button>
Select stereo (STEREO) or monaural (MONO) output of the effect. The button alternates between STEREO and MONO each time it is pressed.

3. Use the buttons along the bottom of the display to select the attribute you wish to adjust.

- When the type is changed, the parameters revert to the factory defaults.
- For a detailed explanation of the parameters of each type of effect, refer to the separate REFERENCE GUIDE provided.
- If either the 1st TONE or the 2nd TONE is off, the effect is created by copying the TONE which is on to the TONE which is off.
- In some cases, the TONE LAYER settings may restrict the normal effect function (it may be weaker, for example).

DSP Effect edit

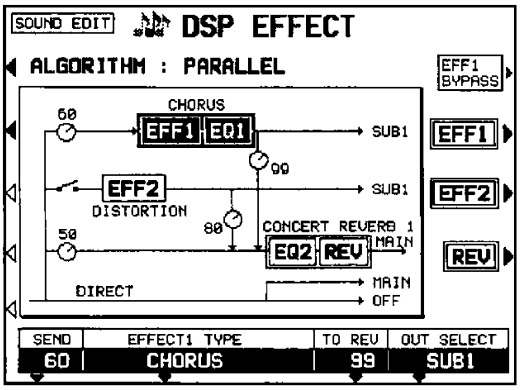
Select the type and degree of DSP (Digital Signal Processing) effects applied to the sound. The three types of effect used in this instrument are EFFECT 1, EFFECT 2 and REVERB.

DSP EFFECT

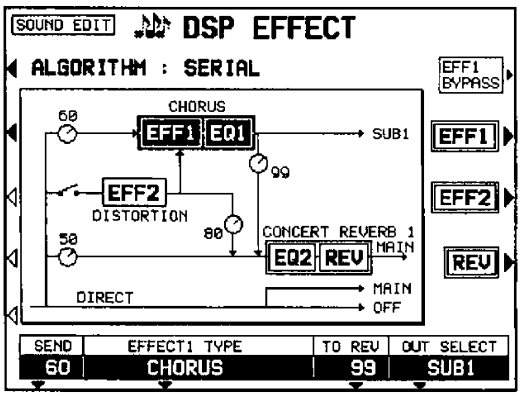
1. On the SOUND EDIT menu display, select DSP EFFECT.

2. Use the ALGORITHM button to select the effect algorithm.

PARALLEL



SERIAL



3. Use the buttons to the left of the display to select the effect which will be set.

4. Use the SEND ∧ and ∨ buttons to specify the amount of input.
- The EFF2 setting is an ON/OFF setting.

5. Use the TYPE ∧ and ∨ buttons to select the type of each effect.
- For a detailed explanation of types which can be selected, refer to the separate REFERENCE GUIDE provided.
- When a type is selected, the parameters return to the default values.

6. Use the TO REV ∧ and ∨ buttons to specify the amount of output from EFFECT 1 and EFFECT 2 to the REVERB (0 to 99).

7. Use the OUT SELECT ∧ and ∨ buttons to specify an output terminal (MAIN/SUB1/SUB2/SUB3).
- REV is permanently set to MAIN.
- If an optional SY-ES1 Output Expansion Board (sold separately) has been installed, you can also use SUB2 or SUB3.

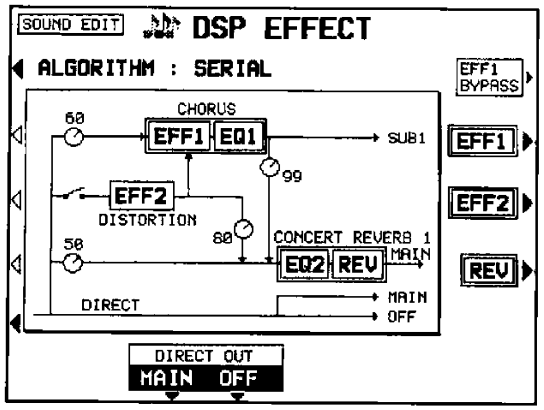
8. Repeat steps 3 to 7 for the other effects as desired.

- You can press the BYPASS button to highlight it and bypass the currently selected effect. Use this feature to check the sound.

■ DIRECT OUT

You can press the DIRECT button to the left of the display, and then specify how the direct sound is handled when the DIRECT OUT buttons are used.

- "Direct" refers to the portion of the sound which is not sent to an effect processor.



Left buttons: Specify whether or not the sound is output from the **MAIN OUT** terminals (MAIN/OFF).

Right buttons: Specify whether or not the sound is output from the **SUB OUT** terminals (OFF/SUB1/SUB2/SUB3).

- If an optional SY-ES1 Output Expansion Board (sold separately) has been installed, you can also use SUB2 or SUB3.

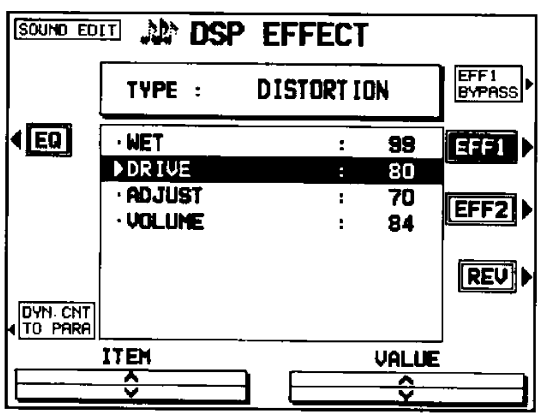
■ DETAIL EDIT

Perform fine adjustments to the parameters of each effect.

- For detailed information about each parameter, refer to the separate REFERENCE GUIDE provided.

1. Select the effect which will be set (EFF1, EFF2 or REV).

- The display looks similar to the following.



2. Use the ITEM ∧ and ∨ buttons to select the parameter to set.

3. Use the VALUE ∧ and ∨ buttons to adjust the parameter.

4. Repeat steps 2 and 3 for other parameters, as necessary.

[DYMANIC CONTROL]

The desired parameter can be operated by a controller.

While the parameter you wish to control is selected, press the DYN.CNT TO PARA button.

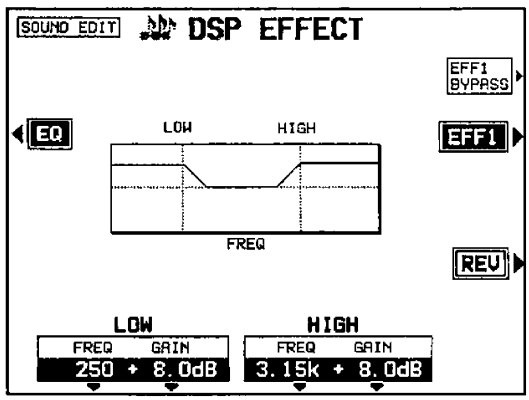
- A mark "•" indicates that the parameter can be assigned to a controller. A "▶" mark shows that the parameter is selected for DYNAMIC CONTROL.
- Use the CONTROLLER edit display to specify the functions to assign to the controllers. (Refer to page 37.)
- Even if the controller to which DYNAMIC CONTROL is assigned is operated to change the sound, the internal parameters do not change. Therefore, even if the WRITE procedure is executed in this case, the unaltered sound will stored.

[EQUALIZER (EFFECT 1, REVERB)]

The equalizing effect for EFFECT 1 and REVERB can be adjusted.

- EFFECT 1 has a post-equalizer, and REVERB has a pre-equalizer.

1. Press the EQ button.
- The display looks similar to the following.



2. Use the LOW ∧ and ∨ buttons to set the lower range.
- Adjust the standard frequency with the FREQ buttons, and the change in level (decibels) with the GAIN buttons.

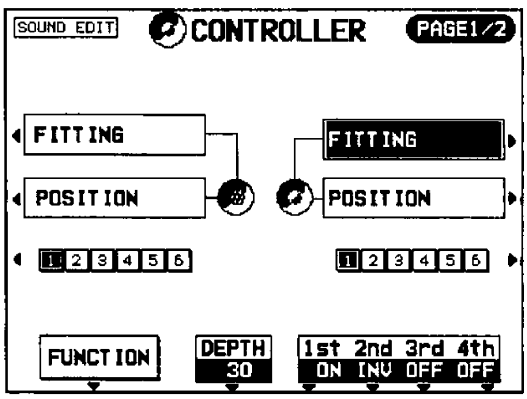
3. Use the HIGH ∧ and ∨ buttons to set the upper range.
- Adjust the standard frequency with the FREQ buttons, and the change in level (decibels) with the GAIN buttons.

Controller edit

Specify how operation of the controllers, such as the **REALTIME CREATOR** and the wheels, etc., affects the sound.

CONTROLLER

1. On the SOUND EDIT menu display, select CONTROLLER.
- The display looks similar to the following.



(WSA1)

2. Use the button to the right of the display to select the number to set.

3. Assign the function for the right part of the display (**REALTIME CREATOR**).
- Select the upper row, and then use the FUNCTION buttons to set the vertical-axis function. Select the lower row, and then use the FUNCTION buttons to set the horizontal-axis function.
- **WSA1**: The same functions which were assigned in step 2 are also assigned to the numbers in the left part of the display (**REALTIME CONTROLLER**).

- If the parameter selected for DYNAMIC CONTROL on the DSP EFFECT display is assigned, use the FUNCTION buttons to select EFF1/EFF2/REV DYNAMIC.

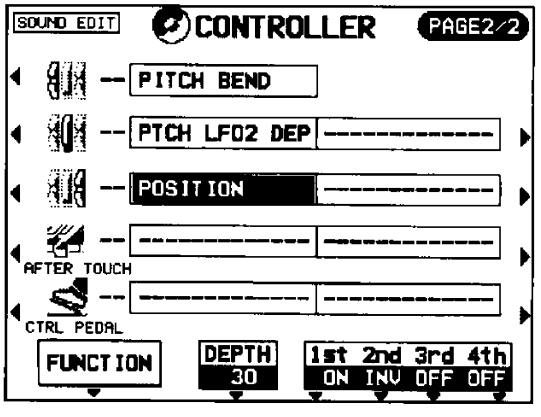
4. Use the DEPTH ∧ and ∨ buttons to set the depth of the function regulated by the controller.

5. Use the 1st, 2nd, 3rd and 4th ∧ and ∨ buttons to set the controller to on or off for each tone.
- When set to INV, the function is inverted for the tone.
- If desired, you can repeat steps 2 to 5 for the other number buttons to assign up to different 6 functions to the controller.

6. Use the number buttons to specify the number selected when the current sound is recalled.
- **WSA1**:The numbers can be selected for the **REALTIME CONTROLLER** and the **REAL TIME CREATOR** independently.

■ **Wheel settings**

1. Use the **PAGE** buttons to view the 2/2 display.



(WSA1)

2. Use the buttons to the left and right of the display to select the controller.
- The controllers are lined up from the top in the following order.
  PITCH BEND
  MODULATION 1
  MODULATION 2
  AFTER TOUCH
  CONTROL PEDAL
- For the controllers other than PITCH BEND, you can assign two functions each.

3. Use the FUNCTION ∧ and ∨ buttons to specify the function to assign.

4. Use the DEPTH ∧ and ∨ buttons to set the depth of the function applied by the controller.

5. Use the 1st, 2nd, 3rd and 4th ∧ and ∨ buttons to set the controller to on or off for each tone.
- When set to INV, the function is inverted for the tone.

6. Repeat steps 2 to 5 for the other controllers as desired.

Store the new sound

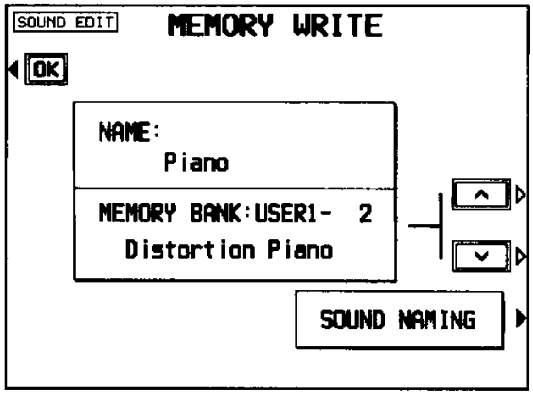
The **USER** banks are reserved for the sounds you create. You can store your original sounds in the memories, and then select them just like the preset sounds.

Procedure

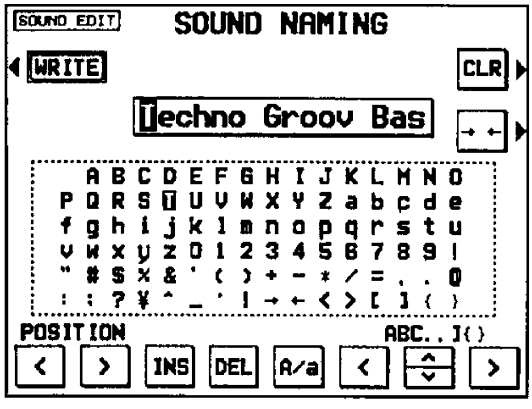
Warning: Your new sound will be erased if you exit the **EDIT** mode without first storing it in a memory.

- You cannot store a sound if MEMORY PROTECT is set to ON. (Refer to page 58.)

1. On the SOUND EDIT menu display, press the WRITE button.
- The display changes to the following.



2. If you wish to assign a name to your new sound, press the SOUND NAMING button.
- If you do not assign a name to your sound, the name becomes the same as the original sound from which you started. In this case, skip to step 5.
- The display looks similar to the following.



3. Type a new name for your sound (up to 16 characters).
- Use the POSITION < and > buttons to highlight the character position. Use the ABC••]{ } < and > buttons to select the alphanumeric character. Repeat these steps to type the whole name.
- Use the INS button to type a space.
- Use the DEL button to erase a character.
- Use the A/a button to switch between upper case and lower case characters.
- To erase all the characters, press the CLR button.
- You can press the → ← button if you wish to have the name centered.

4. When the name is complete, press the WRITE button.
- The display changes to the MEMORY WRITE display.

5. Use the ∧ and ∨ buttons to select a **USER** bank and number.

6. Press the OK button.
- The new sound is stored, and "COMPLETED!" is shown on the display.
- This instrument returns to the normal performance mode.
- The stored sound memories can be saved on a disk for recall at a later time. (Refer to page 97.)

Drum Kit Edit

You can create your original drum kit.

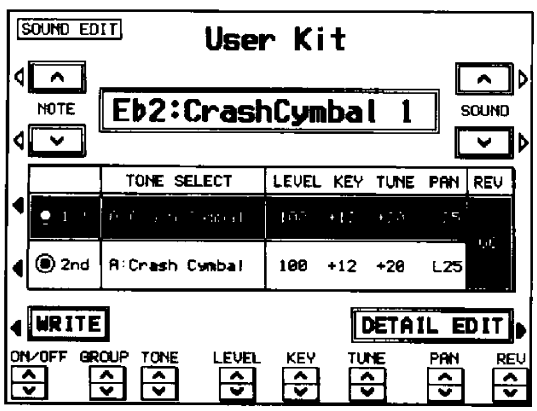
DRUM SOUND EDIT

By editing each percussion instrument sound in the drum kit, you can create your original drum kit.

- A percussion sound is comprised of a 1st TONE and a 2nd TONE.

1. From the DRUM bank, select a drum kit to use as the foundation of your new drum kit.

2. Press the **EDIT MODE SOUND** button to turn it on.
- The display looks similar to the following.



3. While pressing the key for the percussion instrument sound you wish to edit, press either NOTE button.
- You can also use the NOTE ∧ and ∨ buttons to select the note name.

4. If necessary, use the SOUND ∧ and ∨ buttons to select the percussion instrument sound to assign.

5. Use the buttons below the display to change the necessary settings.

6. Repeat steps 3 to 5 for the other percussion instrument.

7. When you have finished editing, press the WRITE button to store your original drum kit.

■ DETAIL EDIT

Press the DETAIL EDIT button to change to the SOUND EDIT display, on which you can more precisely edit each item.

- The editing procedure is basically the same as the **SOUND EDIT** procedure for other sounds.
- For drum kits, the number of items that can be edited is limited.
- You can press the DRUM SOUND NAMING button to assign a name to your percussion instrument sound while you are editing it.

[More about AMPLITUDE]

GROUP DUMP

With this function you can specify that multiple sounds are treated as one group, and that multiple sounds within a group are not generated at the same time. By this, you can prevent an unnatural sound (for example, hi-hat close and hi-hat open sounding simultaneously).

1. Use the GROUP ∧ and ∨ buttons to specify a group by number.
- Sounds with the same number are treated as one group.
- Normal sounds are defined as 0, so please do not use 0.
- Preset sounds of the same category are already divided into groups by the manufacturer.

2. Use the ON/OFF ∧ and ∨ buttons to select the sound generator mode.

ON: When this sound is generated, other sounds in the same group are silenced.
OFF: Other sounds in the same group are not necessarily silenced when this sound is generated.

KEY OFF MODE (ENV)

Use the KEY OFF MODE button to specify the envelope key-off mode.

OFF: When a key is played, the sound fades naturally even if the key is not released (the normal mode for percussion instruments).
ON: The sound begins to fade only after the key is released.

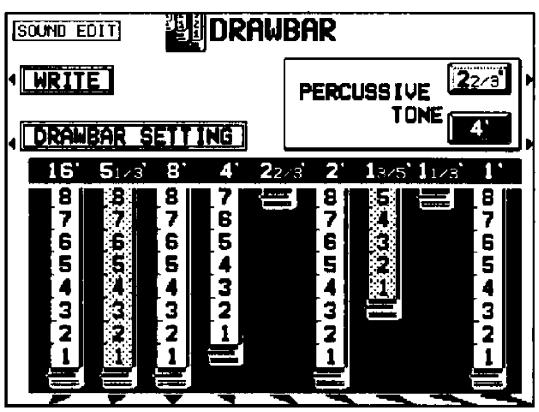
Recording Drawbar sounds

You can save your customized drawbar settings.

DRAWBAR EDIT

1. Follow the procedure to adjust the DRAWBAR sound. (Refer to page 10.)

2. Press the **EDIT MODE SOUND** button to turn it on.
- The display looks similar to the following.



- On the DRAWBAR SETTING display, you can press the DSP EFFECT button to change to the DSP EFFECT display. (Refer to page 34.)
- SOUND EDIT functions other than DSP EFFECT are not available.

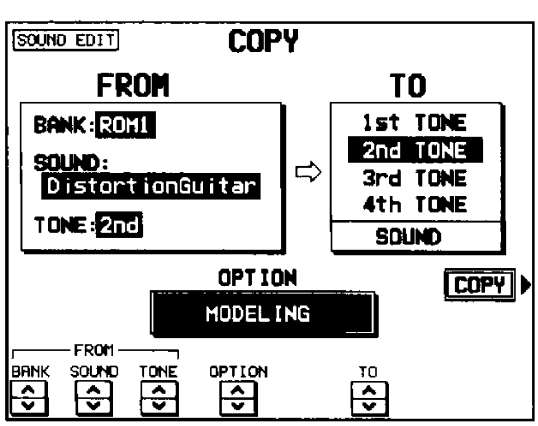
3. Press the WRITE button.
- The display changes to the MEMORY WRITE display. Follow the procedure to store the new sound. (Refer to page 38.)

Copy a Tone

You can copy a TONE from a different SOUND to a TONE in the SOUND you are editing.

COPY

1. On the SOUND EDIT menu display, press the COPY button.
- The display looks similar to the following.



2. Select the TONE to copy.
- Use the BANK, SOUND and TONE ∧ and ∨ buttons to select the tone.
- Use the OPTION ∧ and ∨ buttons to select the tone attributes you wish to copy.

3. Use the TO ∧ and ∨ buttons to select the TONE you wish to copy to.
- Select SOUND if you wish to copy to all the TONEs.
- Parameters which are common to all the TONEs of a sound, such as LFO and octave shift, are copied only when SOUND is selected as the copy destination.

4. Press the COPY button.
- The TONE is copied.

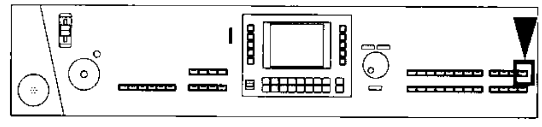
- If you are creating a sound from scratch, use the OPTION ∧ and ∨ buttons to select CLEAR, and then press the COPY button. The sound you are editing will change to the standard settings.

Part III Combination Edit

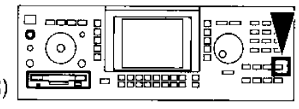
Profile

A wide variety of preset combinations has been permanently stored in the memory of this instrument, but you can also create your own unique combinations and use them in your performance just like the preset combinations.

Outline of the procedure

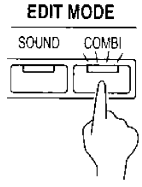


(WSA1)

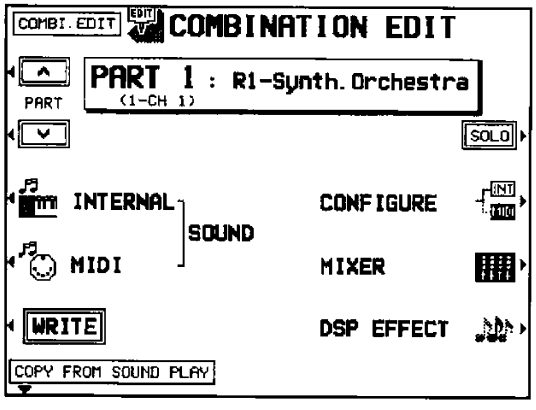


(WSA1R)

1. In the **EDIT MODE** section, turn on the **COMBI** button.



- The display changes to the following.

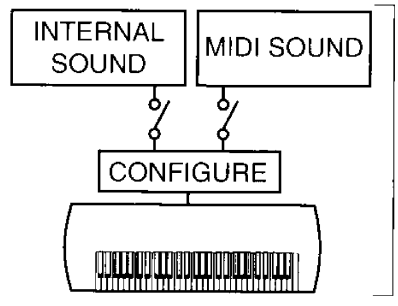


2. Select a menu item to access the corresponding setting display.

INTERNAL SOUND (page 42)
Settings related to the sound of each part.

MIDI SOUND (page 44)
Settings pertaining to the external sound generator used for each part when MIDI data is transmitted.

CONFIGURE (page 45)
Settings related to keyboard connections for each part, including when MIDI data is transmitted, and settings that determine how each part is assigned to the keyboard.



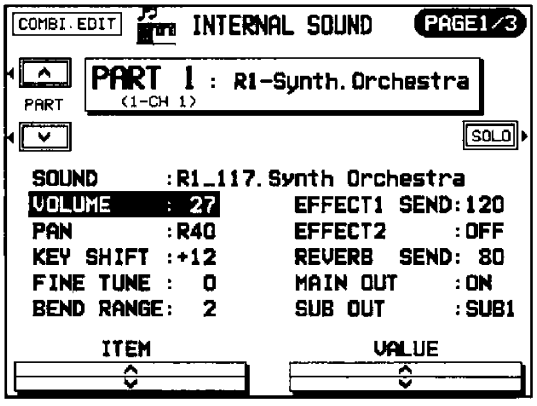
MIXER (page 47)
Use the MIXER display to visually adjust the major settings of each part. Use this display to make broad, general changes to the settings.

DSP EFFECT (page 48)
Modify the settings associated with the DSP effects applied to the combinations.

- If you wish to copy the parameters of each part (VOLUME, PAN, etc.) which was modified in the SOUND mode on the MIXER display for SYSTEM or PART, to the COMBINATION EDIT, press the COPY FROM SOUND PLAY button.

3. Follow the procedure to modify the combination (explained on the following pages).

<Example: INTERNAL SOUND>



- To check the sound of a single part, press the SOLO button to highlight it. Only the currently selected part sounds when a key is played.
- The data entry controls can be used to specify the value when changing the settings. (Refer to page 7.)

4. When the sound is just the way you like it, press the **EXIT** button to return to the COMBINATION EDIT display, and press the WRITE button to store your new sound. (Refer to page 49.)

- Press the **COMPARE** button (below the display to the left) to compare the edited sound to the original sound as you are modifying it.

COMPARE

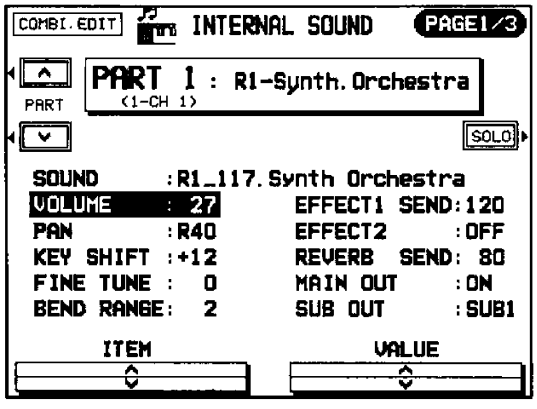
- Executing the WRITE procedure also stores the following data as COMBINATION data.
  TOTAL KEY SCALING
  KEY TRANSPOSE
  MAIN OUT EQUALIZER
  Please use the **SYSTEM** setting display to store this data beforehand. (Refer to pages 51 and 59.)
- Use the DATA LOAD FILTER to specify whether or not COMBINATION data is used. (Refer to page 58.)

Set each part

Modify the settings of each of the parts (1 to 8) that comprise the combination.

INTERNAL SOUND

Settings related to the sounds of the parts (1 to 8) that comprise the combination.



1. Use the PART ∧ and ∨ buttons to select a part.

2. Use the ITEM ∧ and ∨ buttons to select an item.

SOUND: Select a sound.
- R indicates a sound from a **ROM** bank, U a sound from a **USER** bank, D a drums sound, and E a sound from a Wave Expansion Board (sold separately).

VOLUME: Adjust the volume (0 to 127).

PAN: Adjust the stereo balance of the sound (L64–CTR–R63).
- At L64, the sound is all the way to the left, at R63 all the way to the right. The center point is CTR.

KEY SHIFT: Adjust the pitch (–36 to +36).
- A value of 1 means a shift of one semitone. A value of 12 is a shift of one octave.

FINE TUNE: Fine-tune the pitch of each part (–128 to +127).

BEND RANGE: Pitch change when the **PITCH BEND** wheel is operated (0 to 12).
- Increments are in semitones.

EFFECT1 SEND: Adjust the amount of EFFECT 1 output (0 to 127).

EFFECT2: On/off setting of EFFECT 2.

REVERB SEND: Adjust the amount of REVERB output (0 to 127).

MAIN OUT: Enable/disable output from the **MAIN OUT** terminals (ON/OFF).

SUB OUT: Enable/disable output from the **SUB OUT** terminals (OFF/SUB1/SUB2/SUB3).
- SUB2 or SUB3 can be used only when an optional SY-ES1 Output Expansion Board (sold separately) has been installed.
- When EFFECT2 is set to ON, signals cannot be output from both the **MAIN OUT** and **SUB OUT** terminals.

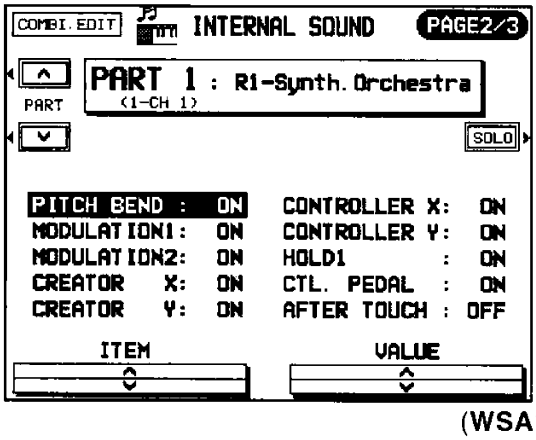
3. Use the VALUE ∧ and ∨ buttons to change to setting.

4. Repeat steps 2 and 3 for each item.

■ CONTROLLER settings

Specify for each part whether the function assigned to the controller is enabled or disabled (ON/OFF).

1. Use the **PAGE** buttons to view the 2/3 display.



(**WSA1**)

2. Use the ITEM ∧ and ∨ buttons to select a controller.
- X is used for the horizontal axis, and Y for the vertical axis.

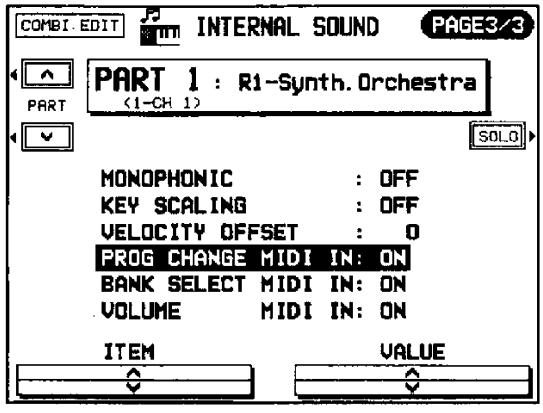
3. Use the VALUE ∧ and ∨ buttons to set the controller to ON or OFF.

4. Repeat steps 2 and 3 for each controller, as necessary.

- This setting is based on the condition that each controller is assigned the factory-preset function. If the CONTROLLER ASSIGN procedure for **SYSTEM** was used to reassign the function of each controller, this setting may result in irregular operation. (Refer to page 52.)

■ **Other settings**

1. Use the **PAGE** buttons to view the 3/3 display.



2. Use the ITEM ∧ and ∨ buttons to select an item.

   MONOPHONIC: Enable/disable the monophonic mode (ON/OFF).
   - In this mode, the last received note has priority.

   KEY SCALING: Enable/disable the KEY SCALING function (ON/OFF).
   - When set to OFF, the KEY SCALING settings for the SOUND assigned to the part you are editing are disabled.
   - For KEY SCALING, refer to page 51.

   VELOCITY OFFSET: Offset the VELOCITY value (–24 to +24).

   PROG CHANGE MIDI IN: Enable/disable reception of the PROGRAM CHANGE data from MIDI (ON/OFF).

   BANK SELECT MIDI IN: Enable/disable reception of the BANK SELECT data from MIDI (ON/OFF).

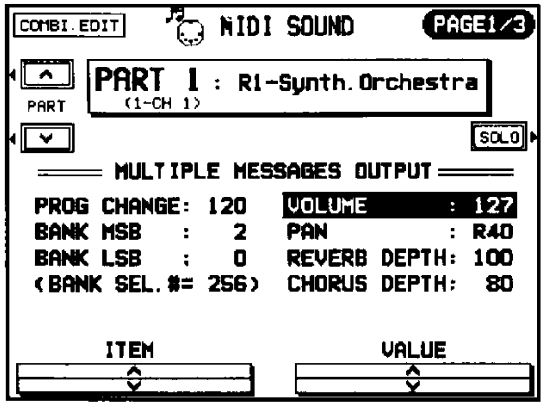
   VOLUME MIDI IN: Enable/disable reception of the VOLUME data from MIDI (ON/OFF).

3. Use the VALUE ∧ and ∨ buttons to change the setting.

4. Repeat steps 2 and 3 for each item, as necessary.

MIDI SOUND

Specify how combination data is handled when transmitting MIDI data to other instruments.



1. Use the PART ∧ and ∨ buttons to select a part.

2. Use the ITEM ∧ and ∨ buttons to select an item.

   PROG CHANGE: PROGRAM CHANGE number settings (INT, OFF, 0 to 127)
   - Select INT to make the INTERNAL SOUND settings operative. Select OFF for no output.

   BANK MSB: BANK SELECT MSB setting

   BANK LSB: BANK SELECT LSB setting
   - The total of bank numbers is shown in the parentheses ( ).

   VOLUME: Volume setting

   PAN: Stereo balance (INT, OFF, L64–CTR–R63)

   REVERB DEPTH: Amount of REVERB data output

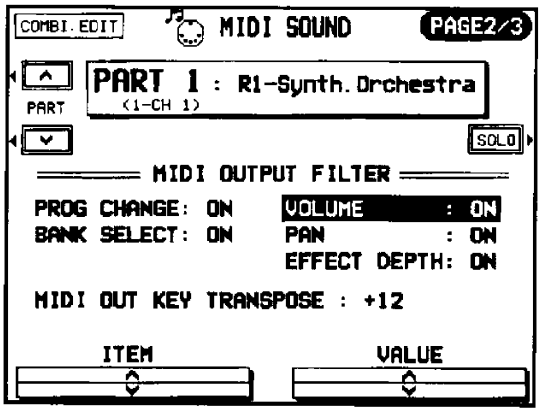
   CHORUS DEPTH: Amount of CHORUS data output

3. Use the VALUE ∧ and ∨ buttons to change the setting.

4. Repeat steps 2 and 3 for each item, as necessary.

■ OUTPUT FILTER

1. Use the **PAGE** buttons to view the 2/3 display.



2. Use the PART ∧ and ∨ buttons to select a part.

3. Use the ITEM ∧ and ∨ buttons to select the data.

4. Use the VALUE∧ and ∨ buttons to change the setting (ON/OFF).

5. Repeat steps 2 to 4 for each item, as necessary.

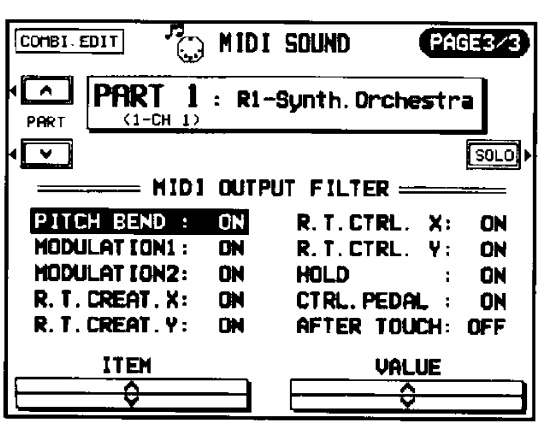
   EFFECT DEPTH: Common depth setting for DSP EFFECT (EFF1, EFF2, REV)

   MIDI OUT KEY TRANSPOSE: Transpose the transmitted notes to another key (–36 to 36).
   - Increments are in semitones.

■ CONTROLLER settings

Specify for the part whether the function assigned to the controller is transmitted as MIDI data (ON/OFF).

1. Use the **PAGE** buttons to view the 3/3 display.



(**WSA1**)

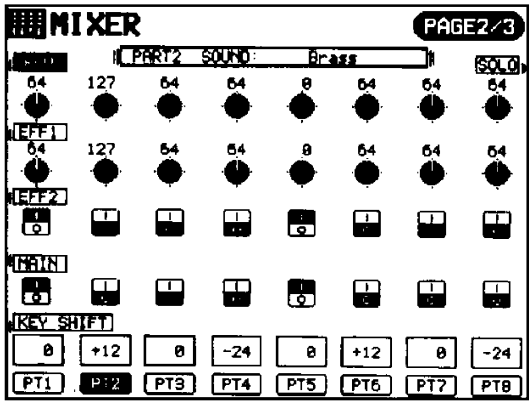
2. Use the ITEM ∧ and ∨ buttons to select an item.

3. Use the VALUE ∧ and ∨ buttons to select ON or OFF.

4. Repeat steps 2 and 3 for each item, as necessary.

- This setting is based on the condition that each controller is assigned the factory-preset function. If the CONTROLLER ASSIGN procedure for **SYSTEM** was used to reassign the function of each controller, this setting may result in irregular operation. (Refer to page 52.)

[PAGE2/3]



REV: Adjust the amount of reverb applied to each part (0 to 127).

EFF1: Adjust the amount of EFFECT 1 applied to each part (0 to 127).

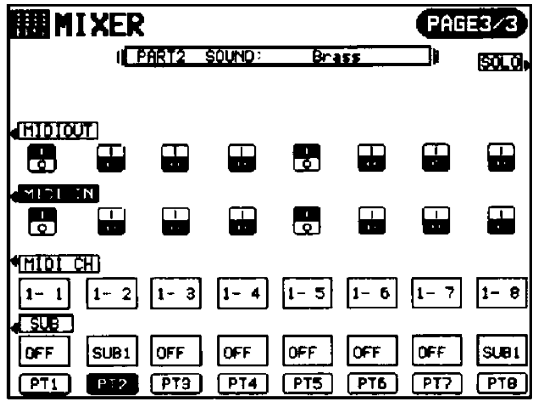
EFF2: Turn EFFECT 2 on (1) or off (0) for each part.

MAIN: Enable (1) or disable (0) signal output from the **MAIN OUT** terminals for each part.

- When EFF2 is set to (1), signals cannot be output from both the **MAIN OUT** and **SUB OUT** terminals.

KEY SHIFT: Change the note pitch setting (in semitone increments).

[PAGE3/3]



MIDI OUT: When the MIDI OUT button is pressed, the buttons below the display can be used to enable (1) or disable (0) MIDI output for each part.

MIDI IN: Enable (1) or disable (0) MIDI input for each part.

MIDI CH: Set the MIDI channel for each part (1-1 to 1-16, 2-1 to 2-16).

- This instrument has two sets of MIDI terminals, which are differentiated by the first number in the setting (1 or 2).

SUB: Enable or disable signal output from the **SUB OUT 1** terminals (OFF/SUB1/SUB2/SUB3) for each part.

- If an optional SY-ES1 Output Expansion Board (sold separately) has been installed, you can also use SUB2 or SUB3.

DSP Effect

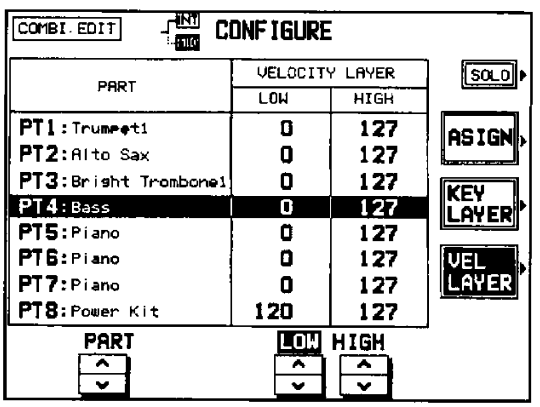
Select the type and degree of DSP (Digital Signal Processing) effects applied to the combination. The three types of effect used in this instrument are EFFECT 1, EFFECT 2 and REVERB.

- In the COMBI mode, the settings performed here become the active settings, and the DSP EFFECT data which was set for each sound is ignored.
- These settings are the same as the DSP EFFECT settings for **SYSTEM**. (Refer to page 54.)

■ **VELOCITY LAYER**

Adjust these settings to regulate the sound output-range relative to the velocity for each part. You can change the parts which will be heard relative to how hard or softly the keyboard is played.

1. Press the VEL LAYER button.
- The display looks similar to the following.



2. Use the PART ∧ and ∨ buttons to select a part.

3. Use the LOW ∧ and ∨ buttons to specify the lowest value of the velocity range to output (0–127).

4. Use the HIGH ∧ and ∨ buttons to specify the highest value of the velocity range to output (0–127).

5. Repeat steps 2 to 4 for the other parts as desired.

Mixer display

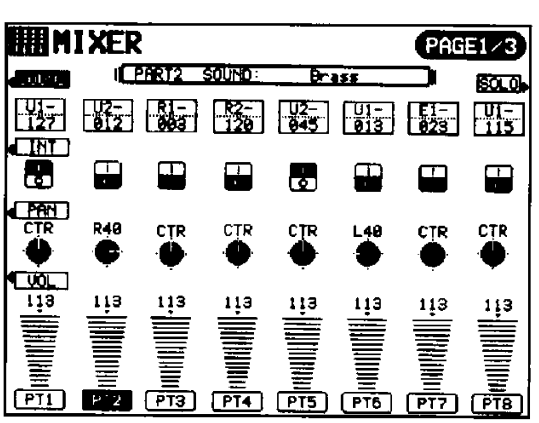
The MIXER display can be used to visually change the most basic edit settings.

MIXER

The MIXER display consists of 3 pages. Use the **PAGE** buttons to switch among the pages.

On the COMBINATION EDIT menu display, select MIXER.

[PAGE1/3]



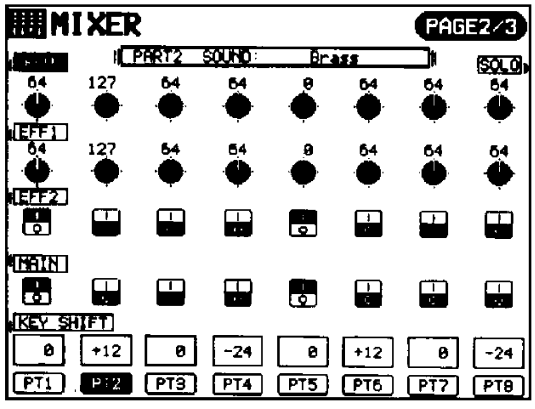
SOUND: When the SOUND button is pressed, the buttons below the display can be used to change the sound of each part.
- R indicates a sound from a **ROM** bank, U a sound from a **USER** bank, D a drums sound, and E a sound from a Wave Expansion Board (sold separately).

INT: When the INT button is pressed, the buttons below the display can be used to set each part to on (1) or off (0).

PAN: Adjust the stereo balance of each part (L64 to R63; CTR is the center).

VOL: Adjust the volume of each part.

[PAGE2/3]



REV: Adjust the amount of reverb applied to each part (0 to 127).

EFF1: Adjust the amount of EFFECT 1 applied to each part (0 to 127).

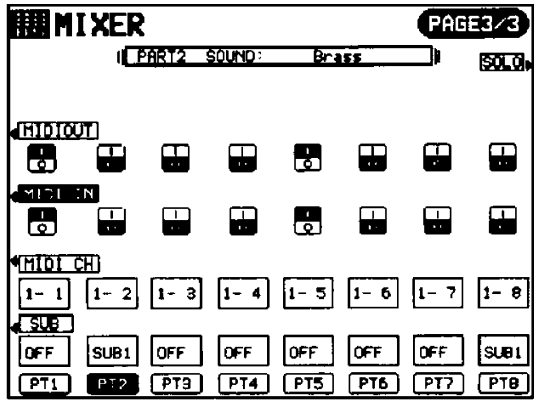
EFF2: Turn EFFECT 2 on (1) or off (0) for each part.

MAIN: Enable (1) or disable (0) signal output from the **MAIN OUT** terminals for each part.

- When EFF2 is set to (1), signals cannot be output from both the **MAIN OUT** and **SUB OUT** terminals.

KEY SHIFT: Change the note pitch setting (in semitone increments).

[PAGE3/3]



MIDI OUT: When the MIDI OUT button is pressed, the buttons below the display can be used to enable (1) or disable (0) MIDI output for each part.

MIDI IN: Enable (1) or disable (0) MIDI input for each part.

MIDI CH: Set the MIDI channel for each part (1-1 to 1-16, 2-1 to 2-16).

- This instrument has two sets of MIDI terminals, which are differentiated by the first number in the setting (1 or 2).

SUB: Enable or disable signal output from the **SUB OUT 1** terminals (OFF/SUB1/SUB2/SUB3) for each part.

- If an optional SY-ES1 Output Expansion Board (sold separately) has been installed, you can also use SUB2 or SUB3.

DSP Effect

Select the type and degree of DSP (Digital Signal Processing) effects applied to the combination. The three types of effect used in this instrument are EFFECT 1, EFFECT 2 and REVERB.

- In the COMBI mode, the settings performed here become the active settings, and the DSP EFFECT data which was set for each sound is ignored.
- These settings are the same as the DSP EFFECT settings for **SYSTEM**. (Refer to page 54.)

Store the new combination

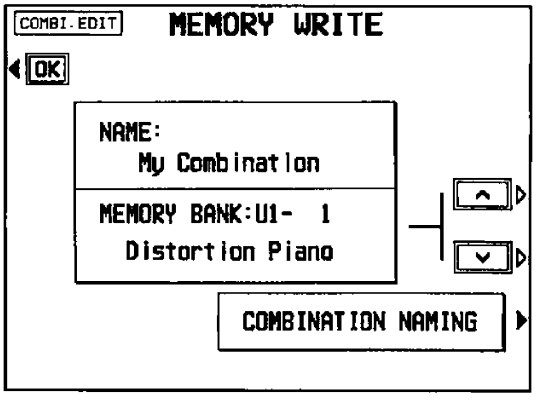
The **USER 1** bank is reserved for the combinations you create. You can store your original combinations in the memories, and then select them just like the preset combinations.

Procedure

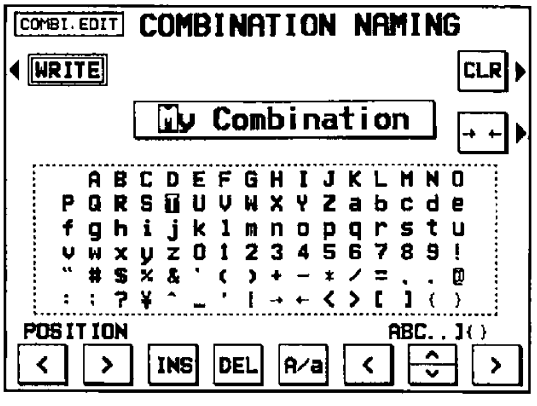
Warning: Your new combination will be erased if you exit the **EDIT** mode without first storing it in a memory.

- You cannot store a sound if MEMORY PROTECT is set to ON. (Refer to page 58.)

1. On the COMBINATION EDIT menu display, press the WRITE button.
- The display changes to the following.



2. Press the COMBINATION NAMING button.
- The display looks similar to the following.



3. Type a new name for your sound (up to 16 characters).
- Use the POSITION < and > buttons to highlight the character position. Use the ABC••]{} < and > buttons to select the alphanumeric character. Repeat these steps to type the whole name.
- Use the INS button to type a space.
- Use the DEL button to erase a character.
- Use the A/a button to switch between upper case and lower case characters.
- To erase all the characters, press the CLR button.
- You can press the → ← button if you wish to have the name centered.

4. When the name is complete, press the WRITE button.
- The display changes to the MEMORY WRITE display.

5. Use the ∧ and ∨ buttons to select a **USER** bank and number.

6. Press the OK button.
- The new combination is stored, and "COMPLETED!" is shown on the display.
- This instrument returns to the normal performance mode.

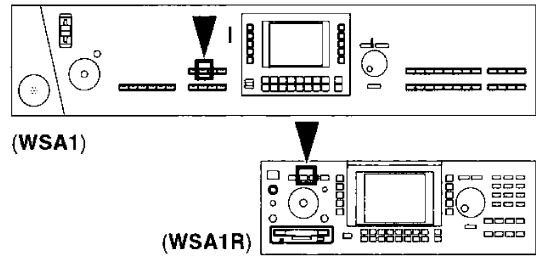
- The stored COMBINATION data can be saved on a disk for recall at a later time. (Refer to page 97.)

Part IV System

Profile

The settings for the whole instrument can be adjusted.

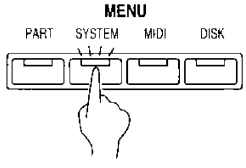
Outline of the procedure



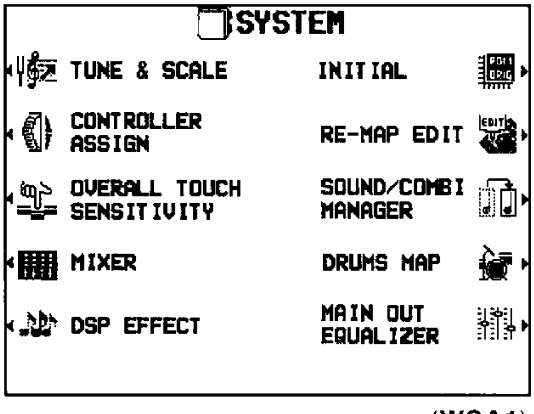
(WSA1)

(WSA1R)

1. In the **MENU** section, turn on the **SYSTEM** button.



- The display looks similar to the following.



(**WSA1**)

2. Select a menu item to access the corresponding setting dislay.

TUNE & SCALE (page 51)
Tuning and scaling settings for the whole instrument.

CONTROLLER ASSIGN (page 52)
Assign a MIDI CONTROL CHANGE function to each controller.

OVERALL TOUCH SENSITIVITY (**WSA1**) (page 52)
Keyboard touch settings.

MIXER (page 53)
The MIXER display can be used to visually change the most basic settings, such as volume, of each part.

DSP EFFECT (page 54)
Settings related to the DSP effects.

RE-MAP EDIT (page 56)
Re-order the line-up of sounds.

SOUND/COMBI MANAGER (page 57)
Adjust the various settings related to SOUND/COMBINATION.

DRUMS MAP (page 59)
Set the arrangement of percussion instruments.

MAIN OUT EQUALIZER (page 59)
Adjust the sound quality (equalizing) from the **MAIN OUT** terminals.

- INITIAL is explained on page 105.

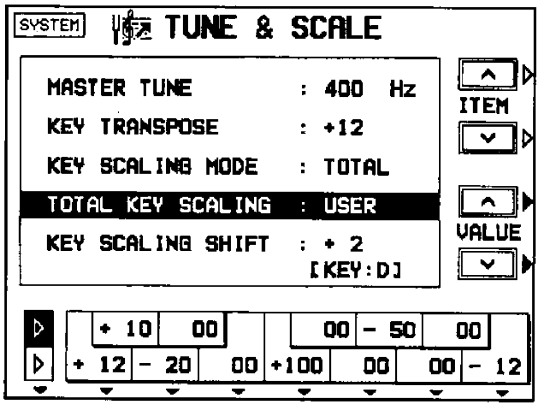
3. Follow the procedures to adjust the settings (explained on the following pages).
- The data entry controls can be used to specify the value when changing the settings. (Refer to page 7.)

Adjusting the settings

Adjust the settings after selecting the item.

TUNE & SCALE

Tuning and scaling settings for the whole keyboard.



1. Use the ITEM ∧ and ∨ buttons to select an item.

MASTER TUNE
Fine-tune the pitch of the entire instrument (427.3 to 453.0 Hz).

KEY TRANSPOSE
Change the pitch of the instrument in semitone steps (–36 to +36).

KEY SCALING MODE (TOTAL/SOUND)
TOTAL: The selected KEY SCALING is active for all parts.
SOUND: The KEY SCALING defined for each sound is active.
- You can use the SOUND EDIT feature to adjust the KEY SCALING for each sound. (Refer to page 24.)

- The ON/OFF status of KEY SCALING for each part is set using the INTERNAL SOUND display for **PART**. (Refer to page 64.)

TOTAL KEY SCALING
Select the type of scaling (tuning).
- Select from OFF, RANDOM, PIANO, ORCHSTRA (ORCHESTRA), PYTHAGRN (PYTHAGOREAN), WRKMISTR (WERCKMEISTER), KRNBERGR (KIRNBERGER), ARABIC 1 to 5, SLENDRO, PELOG, USER.
- Select OFF for the normal scaling. Select USER if you wish to use a customized scaling.

KEY SCALING SHIFT
Select the key on which the tuning will be based.
- Set to the key in which you are going to perform.

2. Use the VALUE ∧ and ∨ buttons to adjust the setting.

3. Repeat steps 1 and 2 for each item, as necessary.

■ User type scaling

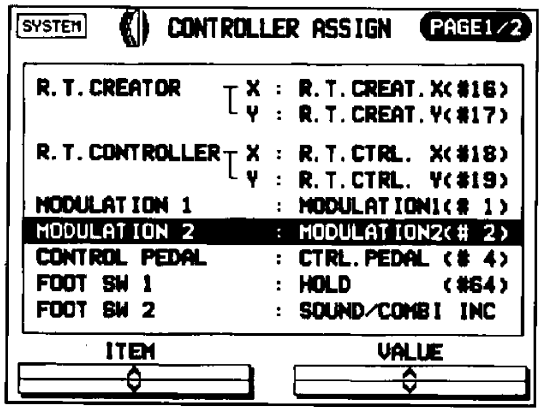
You can adjust the instrument to a customized scaling.
- In KEY SCALING, the pitch of each note of the octave is slightly shifted up or down from the standard (equal temperament) tuning.

1. Select USER for TOTAL KEY SCALING.

2. Adjust the scaling.
- Scaling is adjusted by changing the pitch of each note within the octave. Use the buttons below the display to adjust the pitch of the corresponding keyboard key shown on the display.
- Use the leftmost buttons below the display to switch between white keys and black keys.
- Increments are in cents (one hundredth of an equal-tempered semitone). A + value raises the pitch and a – value lowers the pitch in relation to standard (equal temperament) tuning.

CONTROLLER ASSIGN

Assign a function to each controller.



(WSA1)

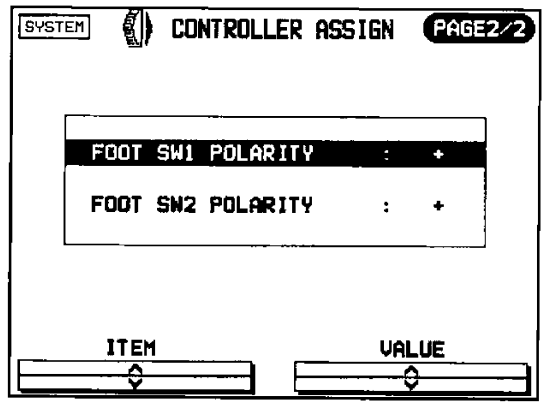
1. Use the ITEM ∧ and ∨ buttons to select a controller.
- X is used for the horizontal axis, and Y for the vertical axis.

2. Use the VALUE ∧ and ∨ buttons to select a function.
- **WSA1**: For connection of an optional Foot Controller or Foot Switch, refer to page 106.
- The numbers are those defined by MIDI CONTROL CHANGE.
- If SOUND/COMBI INC (or DEC) is selected, pressing the foot switch will switch the sound to the next (or preceding) sound.
- The two types of controllers are exemplified by the **MODULATION 1** wheel, where 0 is the basic value, and by the **MODULATION 2** wheel, where 64 is the basic value (**WSA1**). Assign parameters which match the type of controller selected.

■ FOOT SWITCH POLARITY (WSA1)

Adjust the setting to match the polarity of a connected Foot Switch.

1. Use the **PAGE** buttons to view the 2/2 display.



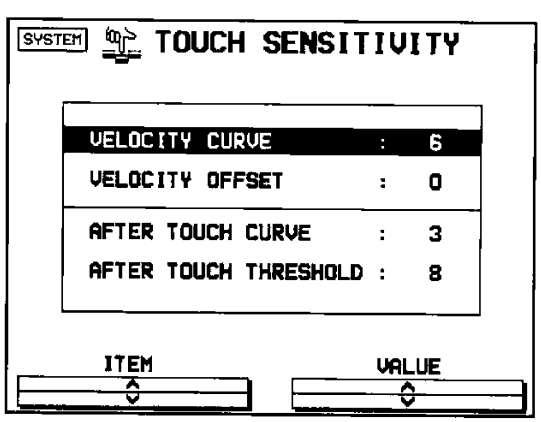
2. Use the ITEM ∧ and ∨ buttons to select the number of the Foot Switch.

3. Use the VALUE ∧ and ∨ buttons to select the polarity (+ or –).

Note: If the polarity for a Foot Switch to which the HOLD function has been assigned is set to – and no Foot Switch is connected to the terminal, the switch will be read as on, and the sound will be generated endlessly.

OVERALL TOUCH SENSITIVITY (WSA1)

Adjust the amount of keyboard touch response.



1. Use the ITEM ∧ and ∨ buttons to select an item.

TOUCH VELOCITY CURVE
Specify how the volume changes relative to velocity.

TOUCH VELOCITY OFFSET
Modify the velocity curve (upward and downward direction).

AFTER TOUCH CURVE
Specify how the after touch effect changes relative to the degree of pressure on the keys.

AFTER TOUCH THRESHOLD
Specify the time lag from the time the keys are pressed to the start of the after touch effect.

2. Use the VALUE ∧ and ∨ buttons to change the setting.

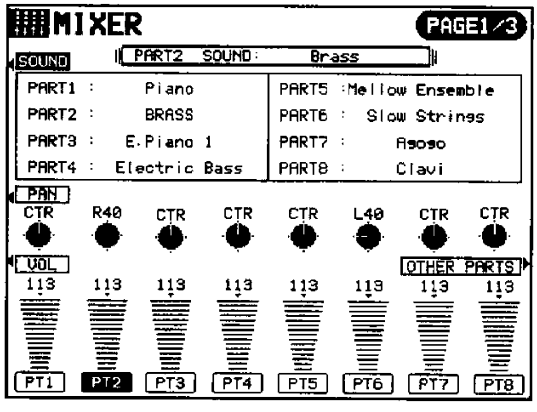
3. Repeat steps 1 and 2 for the other items, as necessary.

MIXER

The MIXER display can be used to visually change the most basic settings, such as volume, of each part.

- The MIXER display consists of 3 pages. Use the **PAGE** buttons to switch among the pages.
- You can use the OTHER PARTS button to switch to the setting display for other parts.

[PAGE1/3]



SOUND

When the SOUND button is pressed, the buttons below the display can be used to change the sound of each part.

- The **BANK** buttons and **SOUND/COMBINATION GROUP** buttons with the display can also be used to select the sound.

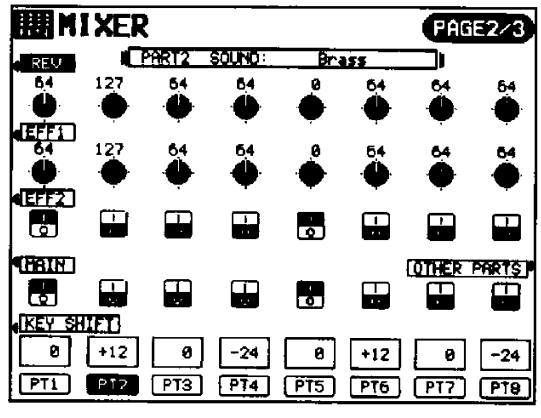
PAN

When the PAN button is pressed, the buttons below the display can be used to adjust the stereo balance of each part (L64 to R63; CTR is the center).

VOL

Adjust the volume of each part.

[PAGE2/3]



REV

Adjust the amount of reverb applied to each part (0 to 127).

EFF1

Adjust the amount of EFFECT 1 applied to each part (0 to 127).

EFF2

Turn EFFECT 2 on (1) or off (0) for each part.

MAIN

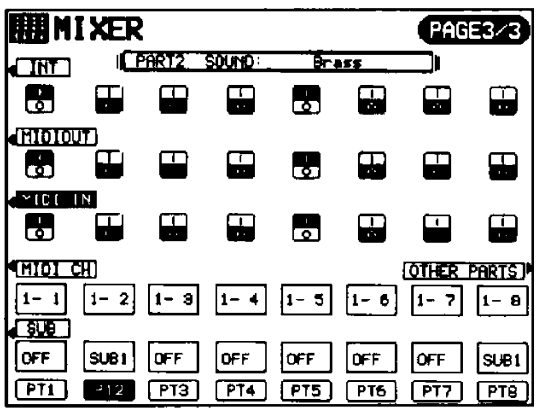
When the MAIN button is pressed, the buttons below the display can be used to enable (1) or disable (0) signal output from the **MAIN OUT** terminals for each part.

- When EFF2 has been set to (1), signals cannot be output from both the **MAIN OUT** and **SUB OUT** terminals.

KEY SHIFT

Change the note pitch setting (in semitone increments).

[PAGE3/3]



INT

When the INT button is pressed, the buttons below the display can be used to set each part to on (1) or off (0).

MIDI OUT

When the MIDI OUT button is pressed, the buttons below the display can be used to enable (1) or disable (0) MIDI output for each part.

MIDI IN

Enable (1) or disable (0) MIDI input for each part.

MIDI CH

Set the MIDI channel for each part (1-1 to 1-16, 2-1 to 2-16).

- This instrument has two sets of MIDI terminals, which are differentiated by the first number in the setting (1 or 2).

SUB

Enable or disable signal output from the **SUB OUT 1** terminals (OFF/SUB1/SUB2/SUB3) for each part.

- If an optional SY-ES1 Output Expansion Board (sold separately) has been installed, you can also use SUB2 or SUB3.

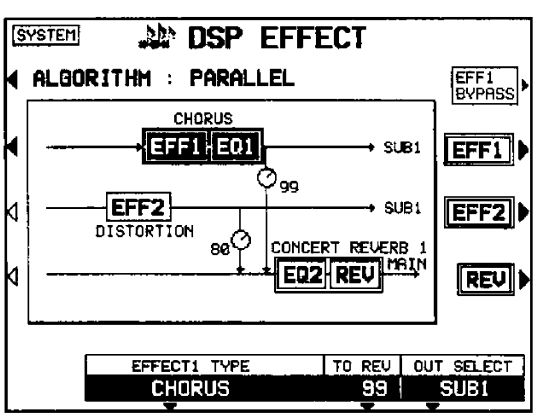
DSP EFFECT

Set the DSP (Digital Signal Processing) effects for the entire instrument. The three types of effect used in this instrument are EFFECT 1, EFFECT 2 and REVERB.

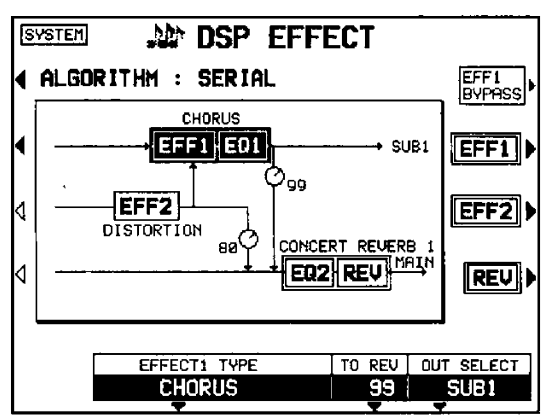
- When using the DSP EFFECT settings from the **SYSTEM** mode, set the EFFECT and OUTPUT settings for the DATA LOAD FILTER to OFF. (Refer to page 58.)

1. Use the ALGORITHM button to select the effect algorithm.

PARALLEL



SERIAL



2. Use the buttons to the left of the display to select the effect which will be set.

3. Use the TYPE ∧ and ∨ buttons to select the type of each effect.

- For a detailed explanation of types which can be selected, refer to the separate REFERENCE GUIDE provided.
- When a type is selected, the parameters return to the default values.

4. Use the TO REV ∧ and ∨ buttons to specify the amount of output from EFFECT 1 and EFFECT 2 to the REVERB (0 to 99).

5. Use the OUT SELECT ∧ and ∨ buttons to specify a output terminal.
- REV is permanently set to MAIN.
- If an optional SY-ES1 Output Expansion Board (sold separately) has been installed, you can also use SUB2 or SUB3.

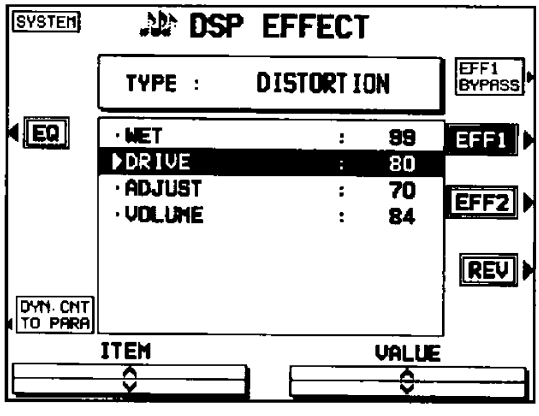
6. Repeat steps 2 to 5 for the other effects as desired.

- You can press the BYPASS button to highlight it and bypass the currently selected effect. Use this feature to check the sound.

■ DETAIL EDIT

Perform fine adjustments to the parameters of each effect.
- For detailed information about each parameter, refer to the separate REFERENCE GUIDE provided.

1. Select the effect which will be set (EFF1, EFF2 or REV).
- The display looks similar to the following.



2. Use the ITEM ∧ and ∨ buttons to select the parameter to set.

3. Use the VALUE ∧ and ∨ buttons to adjust the parameter.

4. Repeat steps 2 and 3 for other parameters, as necessary.

[DYNAMIC CONTROL]

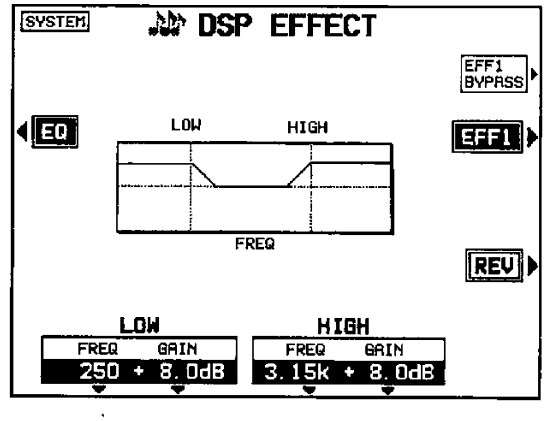
The desired parameter can be operated by a controller.

While the parameter you wish to control is selected, press the DYN.CNT TO PARA button.
- A mark "•" indicates that the parameter can be assigned to a controller. A "▶" mark shows that the parameter is selected for DYNAMIC CONTROL.
- The controller used to change the parameter is determined by the setting for each SOUND.

[EQUALIZER (EFFECT 1, REVERB)]

The equalizing effect for EFFECT 1 and REVERB can be adjusted.
- EFFECT 1 has a post-equalizer, and REVERB has a pre-equalizer.

1. Press the EQ button.
- The display looks similar to the following.



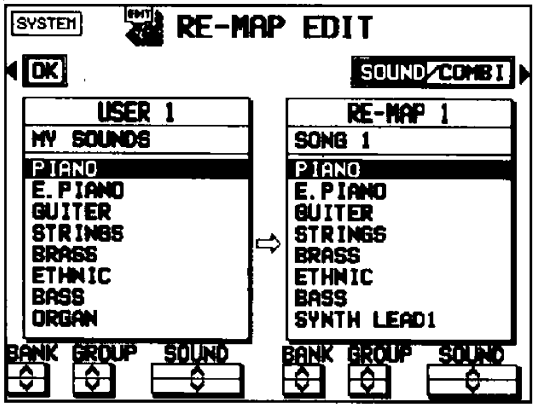
2. Use the LOW ∧ and ∨ buttons to set the lower range.
- Adjust the standard frequency with the FREQ buttons, and the change in level (decibels) with the GAIN buttons.

3. Use the HIGH ∧ and ∨ buttons to set the upper range.
- Adjust the standard frequency with the FREQ buttons, and the change in level (decibels) with the GAIN buttons.

RE-MAP EDIT

This function lets you order the line-up of sounds as you like. You can select sounds from each bank and rearrange them for easy recall, a real convenience for live performances.

- When **SOUND** is selected for the **PLAY MODE** in the initialized state, the GENERAL MIDI (GM) arrangement is preset in MAP **3**.
- Three sound maps can be stored for **SOUND** and three for **COMBI** in the **PLAY MODE**.



1. Use the SOUND/COMBI button in the upper right part of the display to select SOUND or COMBI.

2. On the left part of the display, select the SOUND/COMBINATION to copy from.
- Use the BANK ∧ and ∨ buttons to select the bank, the GROUP ∧ and ∨ buttons to select the group, and the SOUND/COMBI ∧ and ∨ buttons to select the sound name.

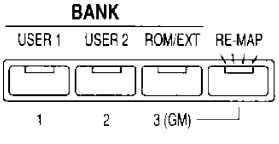
3. On the right part of the display, select the location to copy to.
- Use the BANK ∧ and ∨ buttons to select the RE-MAP bank, the GROUP ∧ and ∨ buttons to select the group, and the SOUND/COMBI ∧ and ∨ buttons to select the location to copy to.

4. Repeat steps 2 and 3 to create your customized line-up of sounds.

5. Press the OK button.

■ Recalling a map

To recall a map that you stored, select a **PLAY MODE**, turn on the **RE-MAP** button, and then press a number button.

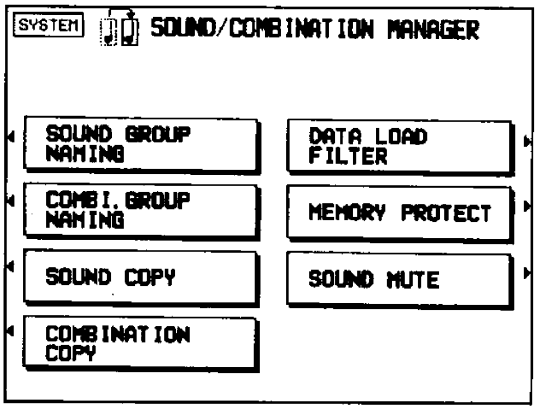


- In the initialized state, the GENERAL MIDI (GM) arrangement is preset in MAP **3**. Your edited sounds can also be used in the GENERAL MIDI. In this case, use the above procedure to change the mapping.

- If the GENERAL MIDI mode of this instrument is set to ON, MAP **3** of the **SOUND** is selected as the GM sound arrangement. Please be aware of this if you are going to change the sound arrangement in MAP **3**.

SOUND/COMBINATION MANAGER

Adjust various settings relative to SOUND/COMBINATION as you wish.



1. Select an item on the display.

SOUND GROUP NAMING
Assign your original name to the SOUND GROUP.

COMBI. GROUP NAMING
Assign your original name to the COMBINATION GROUP.

SOUND/COMBINATION COPY
Copy a SOUND/COMBINATION to a USER area.

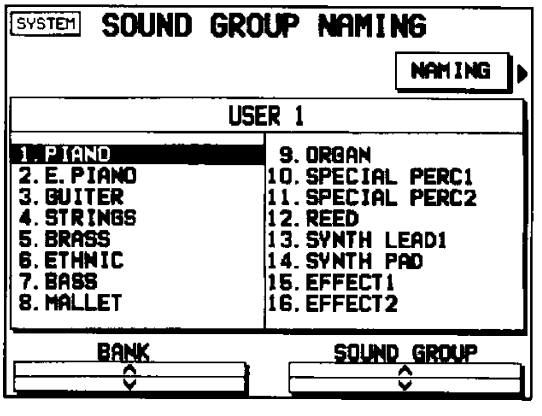
DATA LOAD FILTER
When a SOUND or COMBINATION is selected, specify whether or not their effect settings etc. are also recalled.

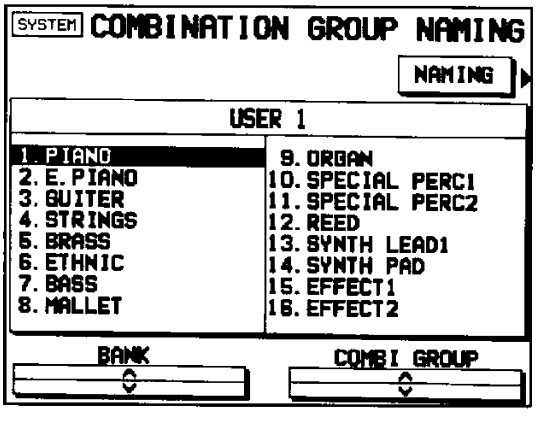
MEMORY PROTECT
Protect the data stored in **USER** banks from accidental loss.

SOUND MUTE
When changing from one sound to another while the first sound is still playing, specify whether or not the first sound is canceled.

2. Adjust each item.

■ SOUND GROUP NAMING/COMBI. GROUP NAMING





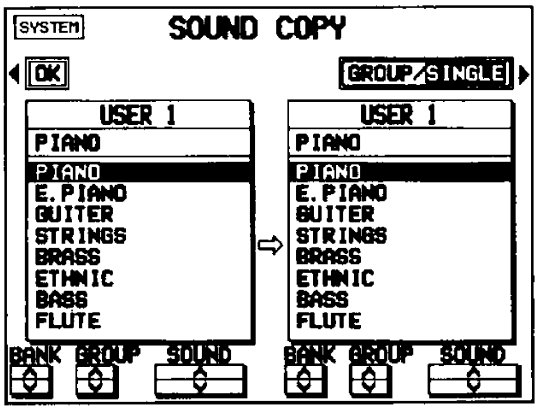
1. Use the BANK ∧ and ∨ buttons and the GROUP ∧ and ∨ buttons to select the sound to which you will assign a name.

2. Press the NAMING button, and use the NAMING display to specify a name.
- The method is the same as the NAMING procedure for SOUND EDIT, etc. (Refer to page 38.)

3. On the NAMING display, press the WRITE button.
- The display returns to the previous display.

■ SOUND COPY/COMBINATION COPY

The DRUM bank sounds cannot be copied.



(SOUND COPY)

1. Use the GROUP/SINGLE button to select the copy mode.

   SINGLE: Copy single sounds.
   GROUP: Copy a group.

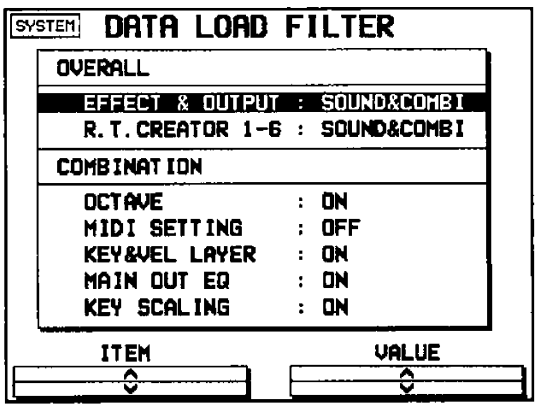
2. On the left part of the display, select the copy source.

3. On the right part of the display, select the copy destination.

- If SINGLE was selected in step 1, use the SOUND/COMBI ∧ and ∨ buttons to select the sound.

4. Press the OK button.
- The comfirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.

■ DATA LOAD FILTER

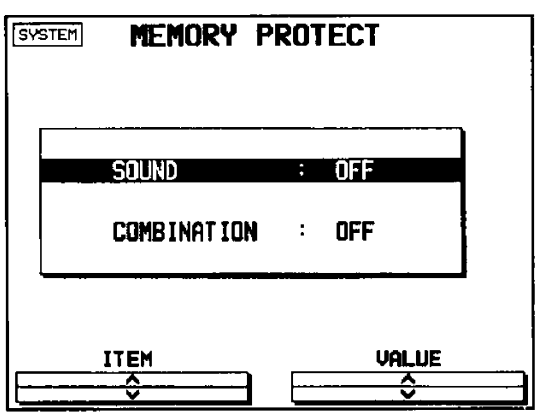


1. Use the ITEM ∧ and ∨ buttons to select an item.

   OVERALL: For each item, specify the active mode for the data settings.
   COMBINATION: Specify whether each item is loaded or not.
   - Data is loaded for items which are set to ON. Data is ignored for items which are set to OFF.

2. Use the VALUE ∧ and ∨ buttons to change the setting.

■ MEMORY PROTECT

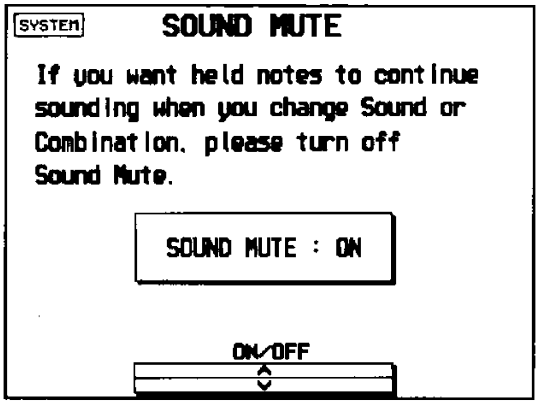


1. Use the ITEM ∧ and ∨ buttons to select SOUND or COMBINATION.

2. Use the VALUE ∧ and ∨ buttons to select ON or OFF.

   ON: Memory protect is enabled.
   OFF: Memory protect is disabled.

■ SOUND MUTE



Use the ON/OFF button to select ON or OFF.

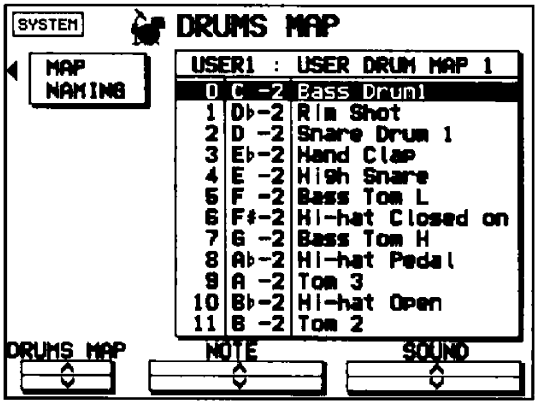
ON: When changing from one sound to another, the first sound is canceled.

OFF: When changing from one sound to another with the keyboard keys pressed, the first sound is not canceled.

DRUMS MAP

Set the arrangement of percussion instruments.

- Select a sound from the DRUM bank before selecting this screen.



1. Use the DRUMS MAP ∧ and ∨ buttons to select a map number (USER 1 to 3).

2. Use the NOTE ∧ and ∨ buttons to select the NOTE number.

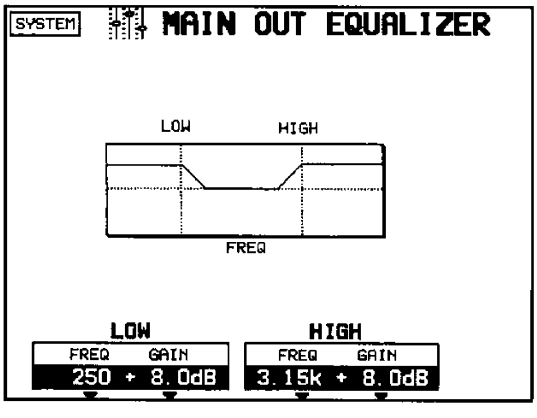
3. Use the SOUND ∧ and ∨ buttons to select a percussion instrument sound for the NOTE.

4. Repeat steps 2 and 3 to create your customized DRUMS MAP.

- Press the MAP NAMING button if you wish to assign a new name to your map.
- To use your new map, use the DRUMS MAP ∧ and ∨ buttons to select it. If you do not wish to use it, change the setting to NORMAL.

MAIN OUT EQUALIZER

The equalizing effect for the output from the **MAIN OUT** terminals can be adjusted.



1. Use the LOW ∧ and ∨ buttons to set the lower range.

- Adjust the standard frequency with the FREQ buttons, and the change in level (decibels) with the GAIN buttons.

2. Use the HIGH ∧ and ∨ buttons to set the upper range.

- Adjust the standard frequency with the FREQ buttons, and the change in level (decibels) with the GAIN buttons.

Part V DSP Effect

Profile

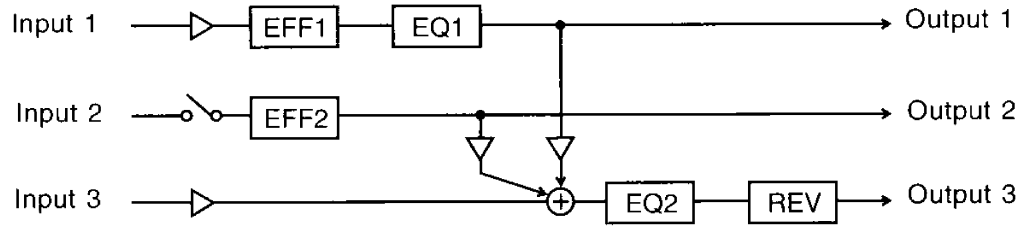
The concept of this instrument's DSP (Digital Signal Processing) effects is explained.

Your **WSA1** comes with three built-in DSP stereo effectors: EFF1, EFF2 and REV. EFF1 and EFF2 are used for non-reverb effects, and REV is used for all the effects including reverb. Because effect parameters are treated as a part of SOUND data and COMBINATION data, the effects can be used when synthesizing sounds. Effect parameters edited in the SYSTEM mode affect the whole instrument, while effect parameters edited in the SOUND or COMBINATION mode affect individual sounds or combinations, respectively.

- In the COMBI mode, the DSP EFFECT data which was set for each sound is ignored. Use the DATA LOAD FILTER to specify the active mode for the DSP EFFECT settings. (Refer to page 58.)

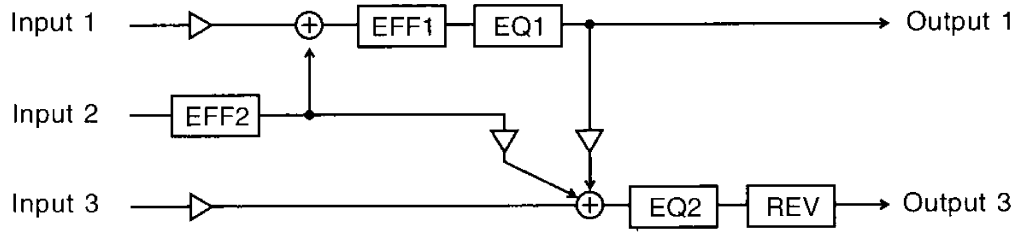
EFF1 and REV are variable-level input effectors, and EFF2 is an on/off-switch input effector. Effect output can be changed depending on the effector connection status: three outputs in the PARALLEL mode or two outputs in the SERIAL mode.

PARALLEL mode: EFF1 and EFF2 are applied in parallel.



For output 1 and 2, you can choose from MAIN, SUB 1, SUB 2 and SUB 3. If a SUB output is specified, it becomes possible to output only the effected sound. Output 3 is permanently set to MAIN.

SERIAL mode: EFF1 and EFF2 are applied in series.



For output 1, you can choose from MAIN, SUB 1, SUB 2 and SUB 3. Output 3 is permanently set to MAIN.

Equalizer (EQ) 1 is placed directly after EFF1, and equalizer 2 is directly before REV. The low emphasis (or low de-emphasis) and high emphasis (or high de-emphasis) settings can be adjusted for each equalizer and, like the effect parameters, can be used as a part of SOUND and COMBINATION data when synthesizing sounds.

- The procedure to adjust the DSP effect settings is explained on the pages as indicated below.
  - SOUND (effect settings for each SOUND) ..... page 34
  - COMBINATION (effect settings for each COMBINATION) ..... pages 48, 54
  - SYSTEM (effect settings for the entire instrument) ..... page 54
- The block diagrams and explanation of parameters for the respective effect types that can be selected for EFF1, EFF2 and REV can be found in the separate REFERENCE GUIDE provided.

■ **Dynamic control**

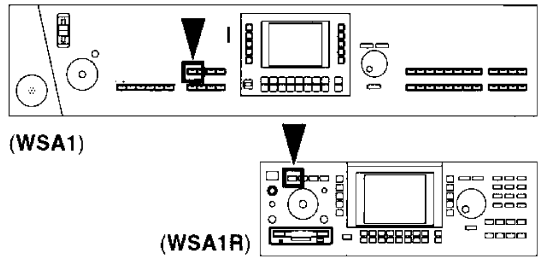
Controllers, such as the **REALTIME CREATOR**, can be used to control the effect parameters in realtime, and are easily manipulated to enhance your performance expression. EFF1, EFF2 and REV can each be assigned to a controller. Use the DSP EFFECT for SOUND EDIT to select the parameters to control.

Part VI Part

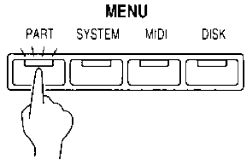
Profile

The settings for each part of this instrument (1 to 32) can be adjusted to serve your personal preferences and requirements.

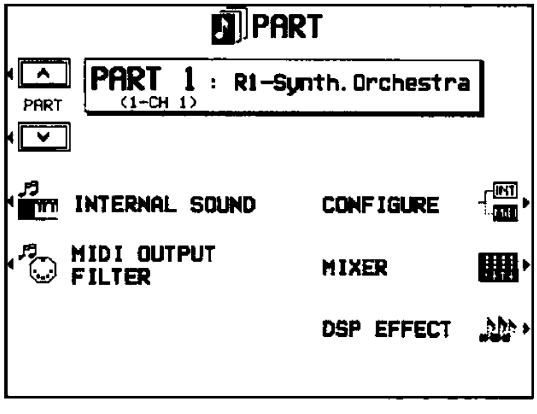
Outline of the procedure



1. In the **MENU** section, turn on the **PART** button.



- The display looks similar to the following.



2. Select a menu item to access the corresponding setting display.

INTERNAL SOUND (page 63)
Settings related to the sound of each part.

MIDI OUTPUT FILTER (page 65)
Settings related to MIDI transmission of each part.

CONFIGURE
Settings related to keyboard connections for each part, including when MIDI data is transmitted, and how each part is assigned to the keyboard.

- The procedure is the same as the CONFIGURE settings for COMBINATION EDIT. (Refer to page 46). However, there is no setting for KEY LAYER or VEL LAYER. In addition, you can select from PARTs 1 to 32.

MIXER
Use the MIXER display to visually adjust the major settings of each part. Use this display to make broad, general changes to the settings.

- The MIXER display for **PART** is operated the same way as the MIXER display for **SYSTEM**. (Refer to page 53.)

DSP EFFECT
Settings related to the DSP effects.

- The setting procedure is the same as DSP EFFECT for **SYSTEM**. (Refer to page 54.)
- When using the DSP EFFECT from the **PART** mode, set the EFFECT & OUTPUT settings for the DATA LOAD FILTER to OFF. (Refer to page 58.)

3. Follow the procedures to adjust the settings (explained on the following pages).

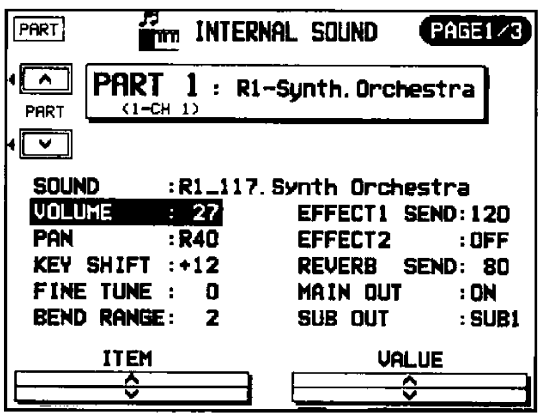
- The data entry controls can be used to specify the value when changing the settings. (Refer to page 7.)

Adjusting the settings

Adjust the settings after selecting the item.

INTERNAL SOUND

These are settings related to the sound assigned to each part (1 to 32).



1. Use the PART ∧ and ∨ buttons to select a part.

2. Use the ITEM ∧ and ∨ buttons to select an attribute.

   SOUND: Select a sound.
   - R indicates a sound from a **ROM** bank, U a sound from a **USER** bank, and D a drums sound. If a Wave Expansion Board (sold separately) has been installed, its sounds are indicated by E.

   VOLUME: Adjust the volume (0 to 127).

   PAN: Adjust the stereo balance of the sound (L64–CTR–R63).
   - At L64, the sound is all the way to the left, at R63 all the way to the right. The center point is CTR.

   KEY SHIFT: Adjust the pitch (–36 to +36).
   - A value of 1 means a shift of one semitone. A value of 12 is a shift of one octave.

   FINE TUNE: Fine-tune the pitch of each part (–128 to +127).

   BEND RANGE: Pitch change when the **PITCH BEND** wheel is operated (0 to 12).
   - Increments are in semitones.

   EFFECT1 SEND: Amount of EFFECT 1 data output (0 to 127).

   EFFECT2: On/off setting of EFFECT 2.

   REVERB SEND: Amount of REVERB data output (0 to 127).

   MAIN OUT: Enable/disable output from the **MAIN OUT** terminals (ON/OFF).

   SUB OUT: Enable/disable output from the **SUB OUT** terminals (OFF/SUB1/SUB2/SUB3).
   - SUB2 or SUB3 can be used only when an optional SY-ES1 Output Expansion Board (sold separately) has been installed.

- When EFFECT2 is set to ON, signals cannot be output from both the **MAIN OUT** and **SUB OUT** terminals.

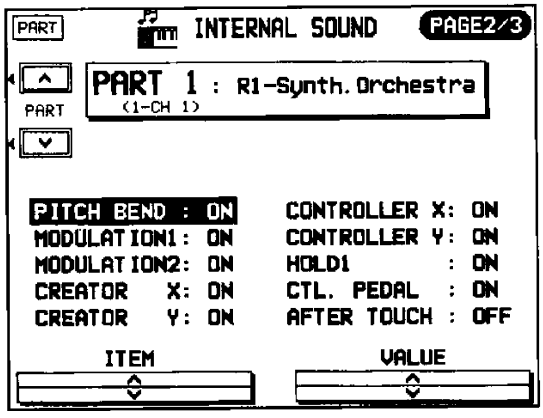
3. Use the VALUE ∧ and ∨ buttons to change to setting.

4. Repeat steps 2 and 3 for each item.

■ CONTROLLER settings

Specify for each part whether the function assigned to the controller is enabled or disabled (ON/OFF).

1. Use the **PAGE** buttons to view the 2/3 display.

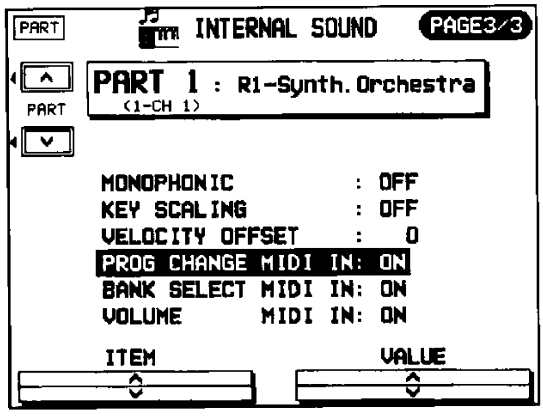


(**WSA1**)

2. Use the ITEM ∧ and ∨ buttons to select a controller.
   - X is used for the horizontal axis, and Y for the vertical axis.
3. Use the VALUE ∧ and ∨ buttons to set the controller to ON or OFF.
4. Repeat steps 2 and 3 for each controller, as necessary.

■ Other settings

1. Use the **PAGE** buttons to view the 3/3 display.



2. Use the ITEM ∧ and ∨ buttons to select an item.

   MONOPHONIC: Enable/disable the monophonic mode (ON/OFF).
   - In this mode, the last received note has priority.

   KEY SCALING: Enable/disable the KEY SCALING function (ON/OFF).
   - For KEY SCALING, refer to page 51.
   - When set to OFF, the KEY SCALING settings for the SOUND assigned to the part you are editing are disabled.

   VELOCITY OFFSET: Offset the VELOCITY value (–24 to +24).

   PROG CHANGE MIDI IN: Enable/disable reception of the PROGRAM CHANGE data from MIDI (ON/OFF).

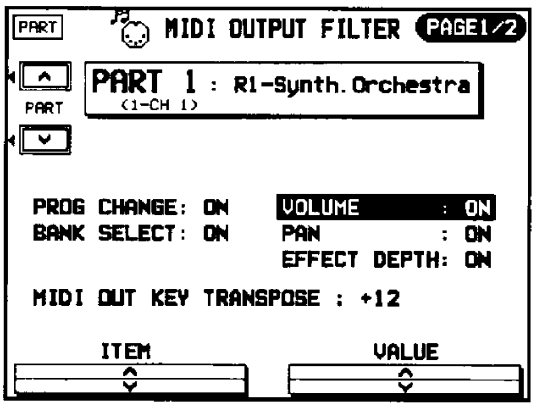
   BANK SELECT MIDI IN: Enable/disable reception of the BANK SELECT data from MIDI (ON/OFF).

   VOLUME MIDI IN: Enable/disable reception of the VOLUME data from MIDI (ON/OFF).

3. Use the VALUE ∧ and ∨ buttons to change the setting.
4. Repeat steps 2 and 3 for each item, as necessary.

MIDI OUTPUT FILTER

Specify how data for each part is handled when transmitting MIDI data to other instruments.



1. Use the PART ∧ and ∨ buttons to select a part.

2. Use the ITEM ∧ and ∨ buttons to select the data.

3. Use the VALUE ∧ and ∨ buttons to change the setting (ON/OFF).

4. Repeat steps 2 and 3 for each item, as necessary.

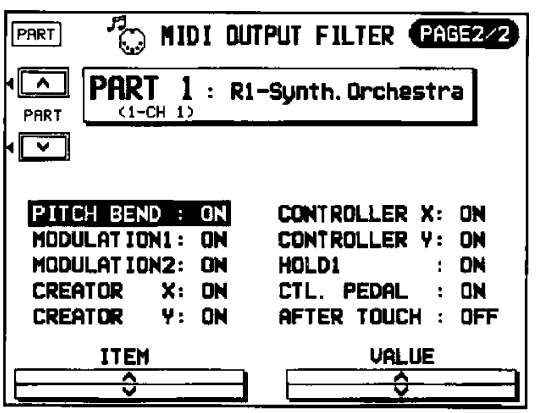
EFFECT DEPTH: Common depth setting for DSP EFFECT (EFF1, EFF2, REV).

MIDI OUT KEY TRANSPOSE: Transpose the transmitted notes to another key (–36 to 36).
- Increments are in semitones.

■ CONTROLLER settings

Specify for the part whether the function assigned to the controller is transmitted as MIDI data (ON/OFF).

1. Use the **PAGE** buttons to view the 2/2 display.



2. Use the ITEM ∧ and ∨ buttons to select an item.

3. Use the VALUE ∧ and ∨ buttons to select ON or OFF.

4. Repeat steps 2 and 3 for each items, as necessary.

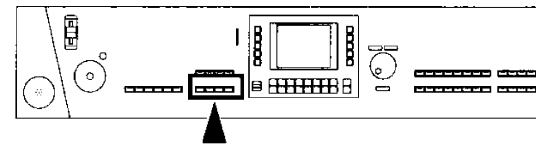
- This setting is based on the condition that each controller is assigned the factory-preset function. If the CONTROLLER ASSIGN procedure for **SYSTEM** was used to reassign the function of each controller, this setting may result in irregular operation. (Refer to page 52.)

Part VII Sequencer (WSA1)

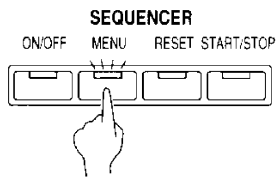
Profile

This instrument's **SEQUENCER** allows you to record and play back the performances of up to 10 melodies. A variety of recording options means you can perform and record the entire performance in one go, or build up the recorded performance one part at a time.

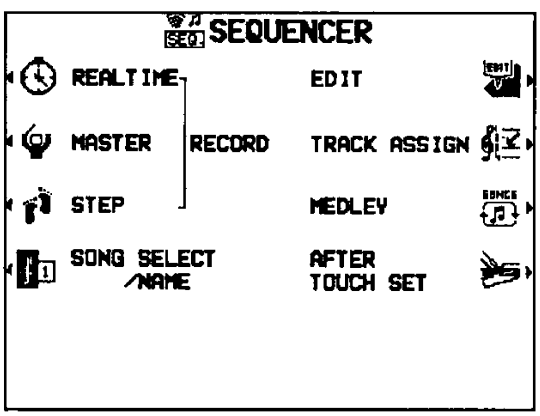
Outline of the procedure



1. In the **SEQUENCER** section, turn on the **MENU** button.



- The display changes to the following.



2. Select a menu item to access the corresponding display.

3. Follow the procedures to record the song (explained on the following pages).

4. When you have finished recording, press the **MENU** button to turn the **SEQUENCER** off.

■ **Memory capacity**

Up to 10 songs can be recorded in the **SEQUENCER**. The total number of notes which can be stored in the combined songs is about 47,000. The remaining memory available for recording is shown on the display as a percentage (MEMORY=).

- When "MEMORY FULL!" appears on the display, no more data can be stored in the **SEQUENCER**.
- It is a good practice to save your recorded performances on disks. (Refer to page 97.)

■ **Summary of SEQUENCER menu items**

SONG SELECT/NAME (page 67)
Specify the song number and name of the recorded song.

REALTIME RECORD (page 69)
Record your performance just as you play it on the keyboard.

STEP RECORD (page 73)
Store the sounds note-by-note on the display.

MASTER RECORD (page 75)
Use step record to store the time signature and tempo data.

EDIT (page 76)
Full-scale editing features are available.

NOTE EDIT: Store and correct performance (NOTE) data on a piano roll display.

DRUM EDIT: Store and correct DRUM data on a special display.

QUANTIZE: Correct the timing of the recorded performance.

TRANSPOSE: Change the key of specified performance data.

VELOCITY CHANGE: Modify velocity data (how hard the keys are played).

SONG COPY: Copy specific songs.

TRACK MERGE: Merge the recorded contents of two tracks and store in a third track.

SONG CLEAR: Erase the recorded contents of all tracks.

TRACK CLEAR: Erase the contents of a specific track.

NOTE CHANGE: Change the pitch of specific notes.

PANEL WRITE: Modify the panel status at the beginning of the song.

ADVANCE/DELAY: Speed up or delay the sound production of performance data.

MEASURE COPY: Copy the contents of specific measures.

MEASURE DELETE: Delete specific measures from the performance.

MEASURE ERASE: Erase the contents of specific measures.

MEASURE INSERT: Insert additional measures in the performance.

TRACK ASSIGN (page 88)
Assign parts to up to 16 different tracks.

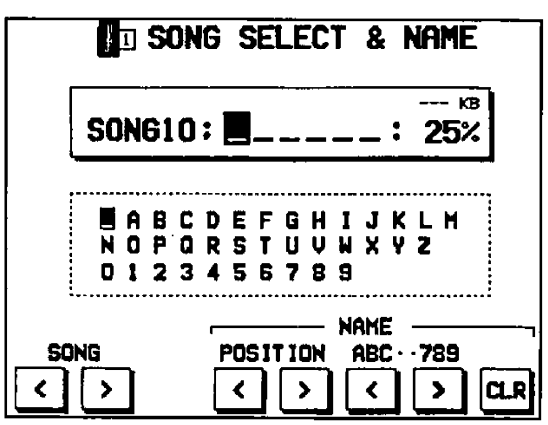
MEDLEY (page 89)
Specify medley playback of songs recorded on a disk.

AFTER TOUCH SET (page 90)
Specify whether or not keyboard after touch is recorded as data.

Song Select & Name

Up to 10 songs can be recorded in the **SEQUENCER**. The song number and song name are specified before recording begins.

1. On the SEQUENCER menu display, select SONG SELECT/NAME.
- The display looks similar to the following.



2. Use the SONG < and > buttons to select a song number (01 to 10).

3. Assign a name to the song (up to 6 characters).
- Use the POSITION < and > buttons to highlight the character position. Use the ABC••789 < and > buttons to select the alphanumeric character. Repeat these steps to type the whole name.
- To erase the name, press the CLR button.
- The total amount of memory used for the current song is shown as a percentage (%) to the right of the song name.

4. Press the **EXIT** button.

5. Follow the procedure to record the song.
- Until this procedure is repeated, all subsequent recording procedures are associated with the specified song number.

- To optimize memory, songs you do not wish to preserve should be deleted. (Refer to page 82.)
- The same procedure is used to specify a song when selecting a song for playback.
- To set a different tempo for each song, use the MASTER RECORD display to store the tempo data. (Refer to gage 75.)

Sequencer parts

The **SEQUENCER** has 16 recording tracks. The track assignment and recorded contents are as outlined in the following table.

■ **Recorded contents**

- Sound setting
- Volume settings
- **PITCH BEND** wheel operation
- **MODULATION** wheels operation
- AFTER TOUCH (REALTIME only)
- PANPOT
- Operation of the **REALTIME CONTROLLER**
- Operation of the **REALTIME CREATOR**
- Operation of the Foot Switch(es) (sold separately)

  etc.

- You can use the TRACK ASSIGN function to assign parts to tracks as you wish. (Refer to page 88.)
- During recording, the measure count on the display (MEASURE=) corresponds to the time signature specified in the MASTER TRACK. The tempo data is also stored in the MASTER TRACK using the step record mode. (Refer to page 75.)
- The **SYSTEM** settings for the DSP EFFECT are recorded at the beginning of the song. You cannot set a different type of DSP EFFECT for each part.

■ **Default track assignment**

Track 1: PART 1	5: PART 5	9: PART 9	13: PART 13
2: PART 2	6: PART 6	10: PART 10	14: PART 14
3: PART 3	7: PART 7	11: PART 11	15: PART 15
4: PART 4	8: PART 8	12: PART 12	16: PART 16

- PART 1 to 8 are also the parts used for SOUND and COMBINATION. Therefore, if you intend to play along with a recorded song, you should avoid using these parts in the recording. In this case, it is recommended that you select SET-UP2 on the TRACK ASSIGN PRESETS screen. (Refer to page 88.)
- When using the **SEQUENCER**, the individual EFFECT settings for each SOUND and COMBINATION can be disabled (multi mode). In this case, set the EFFECT & OUTPUT settings for the DATA LOAD FILTER to OFF. (Refer to page 58.)

Realtime Record

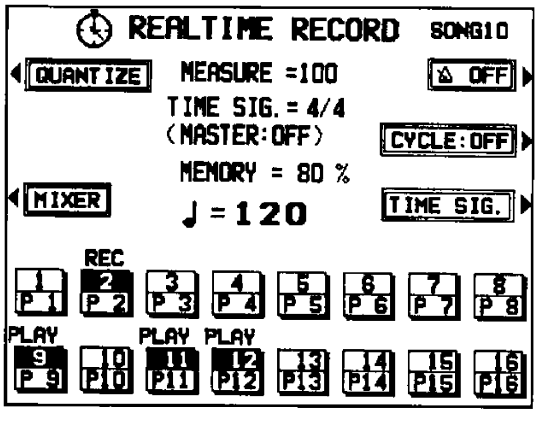
With REALTIME RECORD, your performance is recorded with the timing exactly as you played it on the keyboard. You can record in up to 16 tracks (multi-track recording).

Recording procedure

You can simplify the recording procedure by first using the MIXER to assign sounds and volumes to each PART beforehand.

1. Select the song number. (Refer to page 67.)

2. On the SEQUENCER menu display, select REALTIME RECORD.
- The display looks similar to the following.



3. Use the buttons below the display to show "REC" above the track numbers you are going to record.
- Use the upper buttons to select tracks 1 to 8, and the lower buttons to select tracks 9 to 16.
- While you are recording, you can play back tracks which are already recorded. Press the corresponding buttons to display "PLAY" above the track number you wish to have played back.
- You can select two or more tracks to record at one time. However, of the selected tracks, only the track with the lowest number can be performed on the keyboard.

4. If necessary, use the **BANK** buttons, the **SOUND/COMBINATION GROUP** buttons and the display to set the sounds.
- COMBINATION performances cannot be stored.
- If you wish to change the settings for each part, press the MIXER button.
- The settings which are in effect at the time that recording begins are stored at the very beginning of the song.

5. Use the data entry controls to adjust the recording tempo.
- The tempo is shown on the display as a numerical value (♩ = 40–300).
- If you wish to record the tempo setting and tempo changes as song data, store them in the MASTER TRACK. (Refer to page 75.)

6. Use the TIME SIG. button to specify the time signature of the song.
- Select from a time signature of 1/4 to 8/4. On the display, "TIME SIG.=" indicates the current time signature.
- The time signature can also be recorded in the MASTER TRACK (page 75). In this case, a (MASTER:ON) indication appears below TIME SIG.= on the display. The time signature stored in the MASTER TRACK has priority over a time signature stored in any other track.
- MASTER:ON automatically changes to MASTER:OFF if the TIME SIG. button is pressed.
- The MASTER TRACK on/off setting can be changed on the SEQUENCER PLAY display. (Refer to page 71.)

7. Turn the metronome on or off as desired with the ON or OFF button.
- The metronome selection alternates between ON and OFF each time the button is pressed.
- The metronome sound is not recorded.
- When the metronome is on, the METRONOME BALANCE display is overlaid on the display. Use the ∧ and ∨ buttons to adjust the metronome balance.

8. Play the keyboard.
- Recording begins.
- The current measure number is shown as "MEASURE=" on the display.
- If the metronome is on, when you press the **START/STOP** button, a two-measure count plays, after which recording automatically begins. Recording does not start until the two-measure count is completed.
- On the display, "MEMORY=" indicates the remaining memory (%) available for recording.

■ **Multi-track recording**

To record the next track immediately after the first track is completed, press the **START/STOP** button. The track you just recorded changes to a "PLAY" track. Use the buttons below the display to show "REC" above the next track you wish to record, and make the various settings (sound, etc.) for the track. Next, press the **START/STOP** button and record the track. The "PLAY" tracks are played back while you record. You can repeat these steps until your multi-track recording is complete.

- For multi-track recording, be sure to press the **START/STOP** button to begin playback of the tracks already recorded.
- If you wish to correct the timing of the performance in the tracks which were played back, press the QUANTIZE button and perform the QUANTIZE procedure (refer to page 80). To return to the REALTIME RECORD display, press the **EXIT** button.

If the settings were changed on the MIXER display, for example, after recording, and you wish to have those settings stored as beginning song data, follow the PANEL WRITE procedure. (Refer to page 85.)

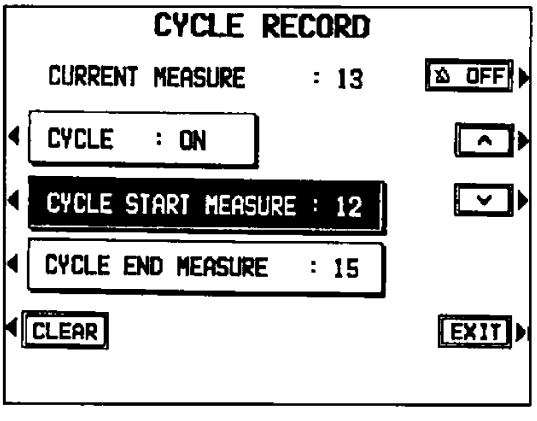
9. When you have finished recording, turn off the **MENU** button.
- When the **MENU** button is turned off, the ending command (END) is recorded. Note that, as long as the ending command is not recorded, blank recording continues even if you stop playing.
- The display changes to the SEQUENCER PLAY display.

CYCLE RECORD

This mode allows you to have specified recording measures continuously repeated. Thus you can record measures by adding notes during any cycle.

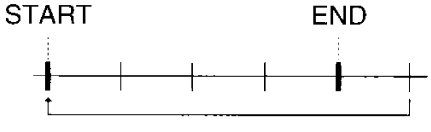
1. On the REALTIME RECORD display, specify "REC" for the track number you are going to record, and "PLAY" for track numbers you wish to have played back.

2. Press the CYCLE: OFF button.
- The display looks similar to the following.



3. Select CYCLE START MEASURE, and use the ∧ and ∨ buttons to specify the beginning measure number.

4. Select CYCLE END MEASURE, and use the ∧ and ∨ buttons to specify the ending measure number.
- The measure in which the END command has been stored can also be specified.



5. Press the **START/STOP** button.
- If the metronome is on, cycle recording of the specified measures begins after a two-measure count.

6. Play the keyboard.
- The specified measures are repeated, during which time you can record by adding notes little by little at the correct timing (over-dubbing).
- If you wish to erase all the performance data from the specified measures, press the CLEAR button.
- If CYCLE is selected and the ∨ button is used to select OFF, cycle recording is not activated. This button does not work during recording.
- To return to the REALTIME RECORD display, press the EXIT button.
- Cycle record can also be started from the REALTIME RECORD display whenever the CYCLE: ON indication is shown.

- When the CYCLE: ON indication is shown on the REALTIME RECORD display, if the QUANTIZE button is pressed, the track and measure settings for the QUANTIZE function become the same as the CYCLE RECORD settings. To return to the REALTIME RECORD display, press the **EXIT** button.
- The maximum number of notes which can sound simultaneously for a track is 16.

7. When you have finished recording, turn off the **MENU** button.

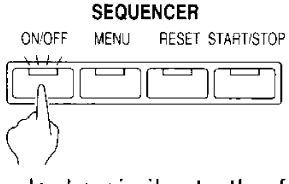
Sequencer Play

Play back your recorded performance.

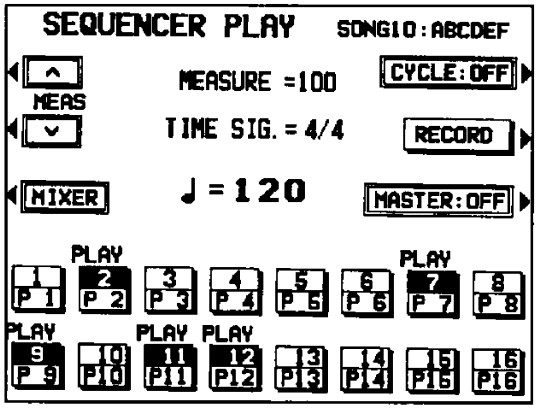
Playback procedure

1. Select the song number you wish to have played back. (Refer to page 67.)
- If you are playing back a song immediately after recording it, the same song number is already selected, and this step is not necessary.

2. In the **SEQUENCER** section, press the **ON/OFF** button to turn it on.



- The display looks similar to the following.



3. Use the buttons below the display to show "PLAY" above the track numbers you wish to have played back.
- Use the upper buttons to select tracks 1 to 8, and the lower buttons to select tracks 9 to 16.
- You can select two or more tracks to play back at one time.

4. Use the data entry controls to adjust the playback tempo.
- The tempo is shown on the display as "♩ =".
- If the time signature has been recorded in the MASTER TRACK, press the MASTER button to select MASTER:ON. The MASTER TRACK data has priority.

5. In the **SEQUENCER** section, press the **RESET** button.
- The measure indication changes to "1" and the beginning panel settings for all parts which were assigned to tracks 1 to 16 are recalled.
- Note that if you are using PART 1 to 8, the COMBINATION settings at that time may change.

6. To begin playback from a measure other than measure 1, use the MEAS ∧ and ∨ buttons to specify the beginning measure.
- "MEASURE=" indicates the current measure number.

7. Press the **START/STOP** button.
- The recorded performance is played back from the specified measure.
- If you wish to change the settings for each part, press the MIXER button.

8. To stop playback, press the **START/STOP** button.
- If the **START/STOP** button is pressed again, playback will continue from the point it was interrupted.
- If the RECORD button is pressed during playback stop, the display changes to the REALTIME RECORD display.

9. When you are finished playing back your performance, press the **ON/OFF** button to turn it off.

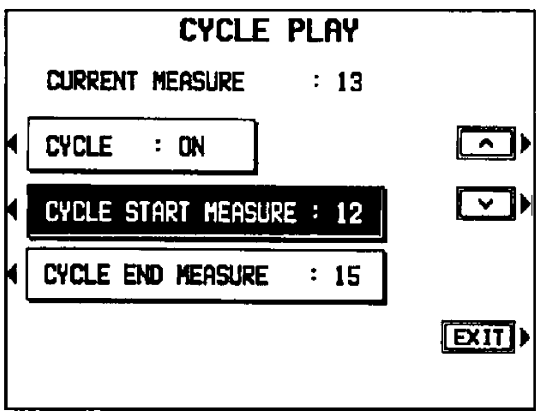
- Even when the SEQUENCER PLAY display is not shown, if you press the **START/STOP** button, the "PLAY" tracks are played back.

CYCLE PLAY

You can have specified measures played back repeatedly.

1. On the SEQUENCER PLAY display, specify "PLAY" for track numbers you wish to have played back.

2. Press the CYCLE: OFF button.
- The display looks similar to the following.



3. Select CYCLE START MEASURE, and use the ∧ and ∨ buttons to specify the beginning measure number.

4. Select CYCLE END MEASURE, and use the ∧ and ∨ buttons to specify the ending measure number.
- The measure in which the END command has been stored can also be specified.

5. Press the **START/STOP** button.
- Cycle playback of the specified measures begins.
- If the END command is entered midway through the performance, playback stops at that point. The NOTE EDIT can be used to change the position of the END command. (Refer to page 77.)

6. To stop cycle playback, press the **START/STOP** button again.
- During playback stop, if the **RESET** button in the **SEQUENCER** section is pressed, the **SEQUENCER** returns to the measure number specified in step 3. If the **RESET** button is pressed again, the **SEQUENCER** returns to measure 1.
- If CYCLE is selected and the ∨ button is pressed to select OFF, cycle playback is not activated.
- To return to the SEQUENCER PLAY display, press the EXIT button.
- Cycle playback can also be specified on the SEQUENCER PLAY display whenever the CYCLE: ON indication is shown.

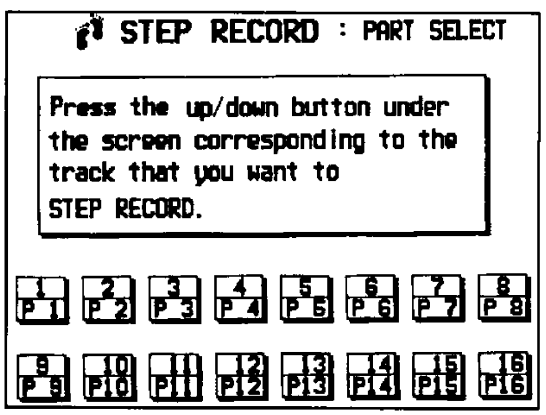
Step Record

STEP RECORD is simply a method of making a tune by storing the sounds note-by-note on the display. This is an especially effective method for storing complicated passages that are difficult to play or when the exact timing of a part is critical.

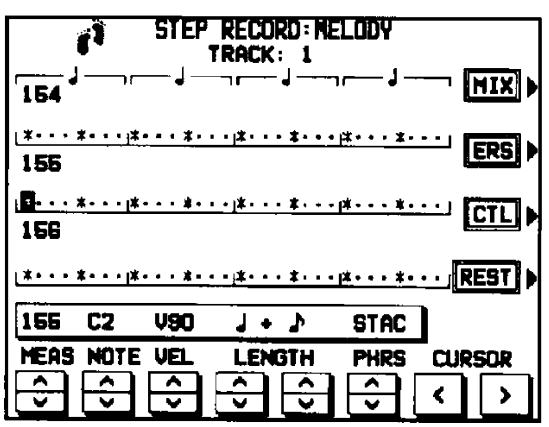
Recording procedure

1. Select the song number. (Refer to page 67.)

2. On the SEQUENCER menu display, select STEP RECORD.
- The display looks similar to the following.



3. Use the buttons below the display to specify the track for the part you are going to record (only one track can be selected at a time).
- Use the upper buttons to select tracks 1 to 8, and the lower buttons to select tracks 9 to 16.
- The settings such as sound selection which were in effect at the time input begins are stored at the very beginning of the song.
- The display changes to the STEP RECORD input display similar to the following.



4. Use the MEAS ∧ and ∨ buttons to select the measure.

5. Use the CURSOR < and > buttons to move the cursor to the note position (dot) you are going to store.
- Each dot represents one-eighth of a quarter-note (a thirty-second note).
- When storing triplets, it may not be possible to match the timing exactly with the 1/32-note steps. However, if you select triplet-type notes for the note length (LENGTH) in step 6 below, the timing is automatically corrected.

6. Use the left LENGTH ∧ and ∨ buttons to specify the note value.
- Select from 𝅘𝅥𝅯3, 𝅘𝅥𝅯, 𝅘𝅥𝅮3, 𝅘𝅥𝅮, ♪3, ♪, 𝅗𝅥3, 𝅗𝅥, 𝅗𝅥, 𝅝, 𝅝 × 2 to 4. (A 3 denotes a triplet-type note.)
- For note values other than these, use the right LENGTH buttons to specify the note value to be added to that which you specified with the left buttons.

  Example: To record a dotted quarter-note (♩.)
  ♩ + ♪

7. Use the PHRS ∧ and ∨ buttons to specify the actual length of the produced sound for the desired legato or staccato effect.

  TENU (tenuto): Sound is produced for 95% of the note length.
  NORM (normal): 80%
  STAC (staccato): 50%
  CUTT (cutting): 25%

8. Specify the pitch and velocity of the note by playing the keyboard.
- The dot on the display where the note is stored changes to a ✳ mark.
- When recording chords, you can store multiple notes at one position.
- Any panel setting changes—for example changes in the sound selection, button operation, wheel operation, etc.—are recorded at the cursor position.
- When a wheel or controller is operated, the input value is indicated on the display. Confirm that this is the correct value and press the YES button to record the value, or the NO button to cancel it.

REST: To store a rest, after specifying the note LENGTH, press the REST button.
- Positions at which nothing is stored are read as rests.

ERS: If you make a mistake, move the cursor to the error, and after displaying the data you wish to erase, press the ERS button.

MIX: To specify the volume etc. at the cursor position, after pressing the MIX button, use the MIXERdisplay to change the settings.

9. Repeat steps 5 through 8 to continue storing notes.
- To input data on another track, press the **EXIT** button to return to the PART SELECT display, and repeat the procedure from step 3.

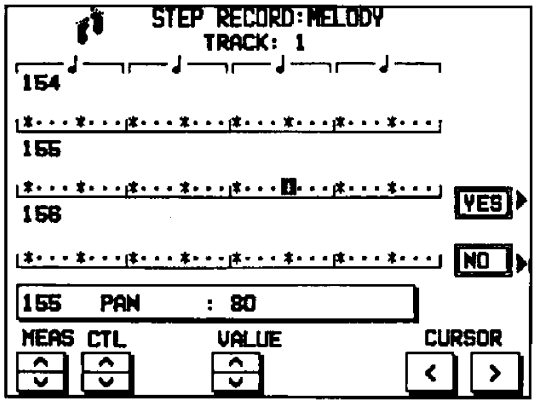
If the settings were changed on the MIXER display, for example, after recording, and you wish to have those settings stored as beginning song data, follow the PANEL WRITE procedure. (Refer to page 85.)

10. When you have finished recording, press the **MENU** button to turn it off.

■ Storing control data

Various control data can be stored at the cursor position.

1. On the STEP RECORD display, press the CTL button.
- The display looks similar to the following.



2. Use the CTL ∧ and ∨ buttons to select the control data you wish to insert.
- Select from PAN, KYE SHIFT (COARSE TUNE), TUNING (FINE TUNE), BEND SENSE, etc.

3. Use the VALUE ∧ and ∨ buttons to adjust the numerical value of the setting.

4. Press the YES button.

■ Correcting the data

1. On the STEP RECORD display, specify the track you wish to correct.

2. Use the MEAS ∧ and ∨ buttons to go to the measure you wish to modify. Use the CURSOR < and > buttons to move the cursor to the point (∗) you wish to edit.
- The data stored at that point is shown on the display.
- When multiple data is stored at one point, different data is displayed in order each time a CURSOR button is pressed. When a chord is recorded, a different note in the chord is displayed each time a CURSOR < or > button is pressed.

3. Correct the data.

Performance data

NOTE data (note pitch) and VEL data (how hard the key was played), etc. are displayed. Use the relevant buttons to correct the data as desired.

Sound data

The name of the sound is displayed. Change the sound as desired.

Control data

The name of the function is displayed. Change the data as desired.

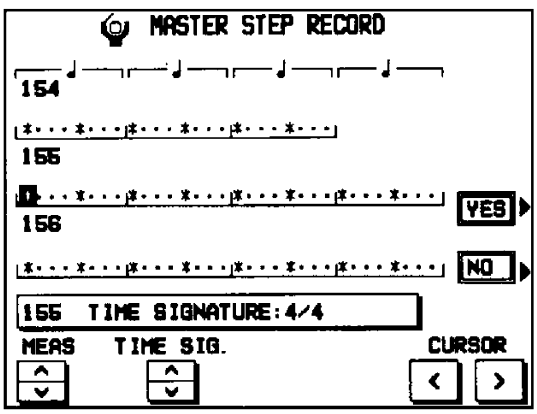
- Press the ERS button to erase the data which is displayed.
- You can also correct data which was stored in the REALTIME RECORD mode.
- Performance (NOTE) data can be edited on a piano roll display, and there is also a specialized display for editing the DRUM data. (Refer to page 78.)

Master Record

The MASTER track is a special track for step recording time signature and tempo data.

1. Select the song number. (Refer to page 67.)

2. On the SEQUENCER menu display, select MASTER RECORD.
- The display looks similar to the following.



3. Use the MEAS ∧ and ∨ buttons to select the measure in which to store the time signature.

4. Use the TIME SIG. ∧ and ∨ buttons to specify the time signature of the song.
- Press the YES button if you wish to record the time signature, or the NO button to cancel the setting.
- The time signature can be stored only at the beginning of a measure.

5. Use the MEAS ∧ and ∨ buttons and the CURSOR < and > buttons to select the point at which to store the tempo.

6. Use the data entry controls to specify the tempo.
- Press the YES button to store the tempo, or the NO button to cancel it.

7. Repeat these steps to record other data, as necessary.

- If the ERS button is pressed, the data which is currently displayed is erased.

MASTER TRACK CLEAR
You can erase all the data, excluding the beginning data, from the MASTER track.
On the MASTER STEP RECORD display, press the CLR button.
- The display changes to the confirmation display. Press the YES button to clear the data, or the NO button to cancel it.

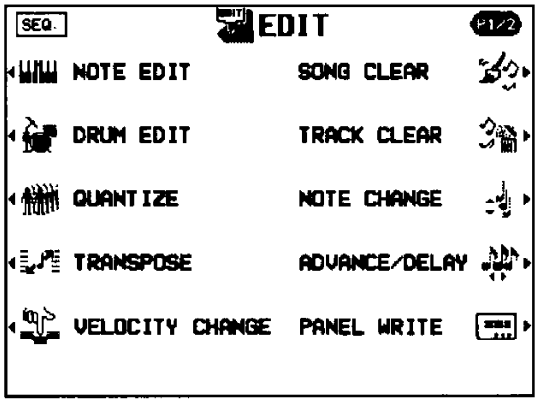
Edit the recorded performance

The edit feature allows you to erase or change portions of your performance after it has been recorded.

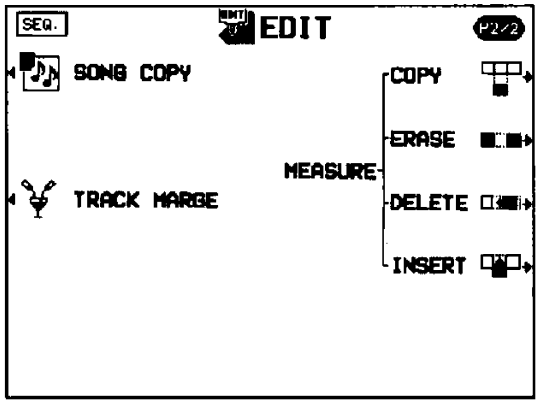
Select the edit function

1. Select the number of the song you wish to edit. (Refer to page 67.)

2. On the SEQUENCER menu display, select EDIT.
- The display looks similar to the following.



- Use the **PAGE** ∨ button to view a different section of the menu.



3. Select the edit function.
- The display changes in accordance with your selection.

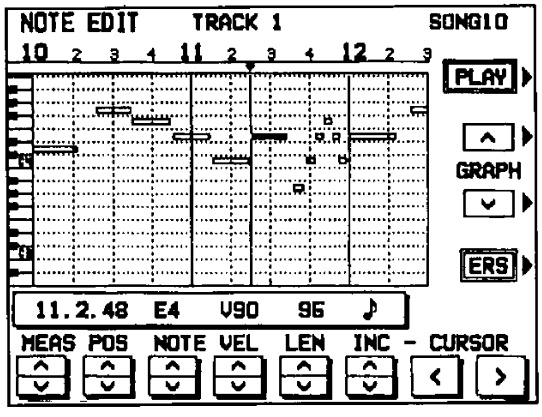
4. Perform the editing procedures (explained on the following pages).
- The data entry controls can be used to specify the value when editing the functions. (Refer to page 7.)
- During the editing procedure, you can press the **EXIT** button to go back to the EDIT display.

NOTE EDIT

You can edit performance (NOTE) data on a piano roll display. This differs from the normal STEP RECORD edit procedure, and is a convenient way to check the data for each note.

- Data other than NOTE data cannot be corrected or recorded. To correct or record other types of data, use the STEP RECORD display. (Refer to page 73.)

1. On the PART SELECT display, select a track.
- The display looks similar to the following.



2. Use the MEAS ∧ and ∨ buttons to select the measure you wish to edit.

3. Use the CURSOR < and > buttons to move the cursor (▼) to the point you wish to edit.
- Recorded performance (NOTE) data is shown as white horizontal bars. Data selected for editing is highlighted.
- You can use the INC ∧ and ∨ buttons to change the increment of cursor movement. The resolution can be set at 𝅗𝅥 /96. However, if NOTE data is present between increments, the cursor will stop.
- You can press a CURSOR button hard to move the cursor one beat at a time.
- Use the POS ∧ and ∨ buttons to change the value.
  Example: 11.2.48 indicates a point in measure 11, beat 2, point 48 (one point is 1/96 of a quarter note [𝅗𝅥]).
- ⊣ is shown at the point where the END command is stored.

4. Select the data to edit (it changes to a highlighted horizontal bar). Edit the data.
- Use the POS ∧ and ∨ buttons to move the cursor, the NOTE ∧ and ∨ buttons to change the note number, the VEL ∧ and ∨ buttons to change the velocity (how hard the keys are played), and the LEN ∧ and ∨ buttons to change the note length (1 = 1/96 of a quarter note [𝅗𝅥]).
- Use the GRAPH ∧ and ∨ buttons to view a higher or lower section of the keyboard (in one-octave steps).
- If the ERS button is pressed, the selected NOTE data is erased.

5. Repeat steps 2 to 4 to continue editing.

■ Inserting note data

You can also store note data on this display.

1. Specify the point where the new note data will be stored.

2. Use the LEN ∧ and ∨ buttons to specify the note length.
- Examples of note lengths
  91: tenuto (95%)
  76: normal (80%)
  48: staccato (50%)
  24: cutting (25%)

3. Play a key on the keyboard to specify the note pitch (NOTE NUMBER) and velocity (how hard the key is played).

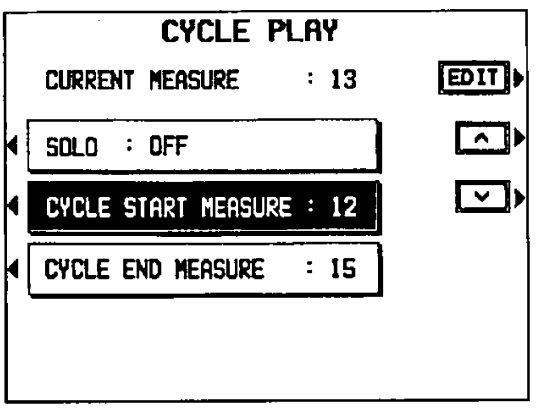
4. Repeat steps 1 to 3 to input more note data.

■ CYCLE PLAY

You can access the CYCLE PLAY display from the NOTE EDIT display. This allows you to hear the edited results immediately.

- If you wish other tracks to be played back, they should be selected beforehand on the SEQUENCER PLAY display. (Refer to page 71.)

1. On the NOTE EDIT display, press the PLAY button.
- The display looks similar to the following.



2. Select CYCLE START MEASURE, and use the ∧ and ∨ buttons to select the beginning playback measure.

3. Select CYCLE END MEASURE, and use the ∧ and ∨ buttons to select the last playback measure.

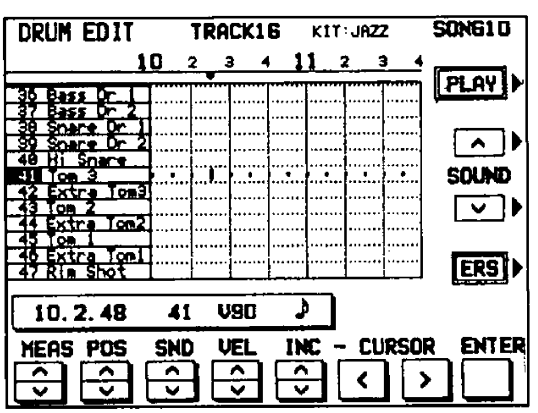
4. Press the **START/STOP** button.
- Cycle playback of the specified measures begins.
- If the SOLO button is turned ON, playback changes to that of the recording track only. If it is turned OFF, all the tracks specified on the SEQUENCER PLAY display are played back.

5. To stop cycle playback, press the **START/STOP** button again.
- During playback stop, if the **RESET** button in the **SEQUENCER** section is pressed, the **SEQUENCER** returns to the measure number specified in step 2. If the **RESET** button is pressed again, the **SEQUENCER** returns to measure 1.
- During playback stop, if the EDIT button is pressed, the **SEQUENCER** returns to the NOTE EDIT display.

DRUM EDIT

The part to which DRUM sound data has been assigned can be edited on a specialized display. This differs from the normal STEP RECORD edit procedure, and is a convenient way to check the data for each note.

1. On the PART SELECT display, select the track to which the part for DRUM sounds has been assigned.
- The display looks similar to the following.



2. Use the SOUND ∧ and ∨ buttons to select the percussion instrument you wish to edit.
- The number to the left of the instrument name is its corresponding key note number.
- If sounds other than percussion instrument sounds are assigned, they are not displayed.

3. Use the MEAS ∧ and ∨ buttons to select the measure you wish to edit.

4. Use the CURSOR < and > buttons to move the cursor (▼) to the point you wish to edit.
- Recorded performance data is shown as vertical bars. Data selected for editing is shown as a longer vertical bar.
- You can use the INC ∧ and ∨ buttons to change the increment of cursor movement. The resolution can be set at ♪ =96. However, if NOTE data is present between increments, the cursor will stop.

- You can press a CURSOR button hard to move the cursor one beat at a time.
- Use the POS ∧ and ∨ buttons to change the value.
  Example: 11.2.48 indicates a point in measure 11, beat 2, point 48 (one point is 1/96 of a quarter note [♩]).
- ⊣ is shown at the point where the END command is stored.

5. Select the data to edit (it changes to a long bar). Edit the data.
- Use the POS ∧ and ∨ buttons to move the cursor, the SND ∧ and ∨ buttons to change the percussion instrument sound, and the VEL ∧ and ∨ buttons to change the velocity (how hard the keys are played).
- If the ERS button is pressed, the selected NOTE data is erased.

6. Repeat steps 2 to 5 to continue editing.

■ Inserting DRUMS data

You can also store DRUM sound data on this display.

1. Specify the point where the new note data will be stored.

2. Use the VEL ∧ and ∨ buttons to specify the velocity (how hard the key is played).

3. Press the ENTER button to store the data.
- Instead of the ENTER button, you can store data (including velocity data) by playing the keyboard. In this case, the instrument is the one specified on the display, regardless of which key is played.
- The note length is fixed. If you wish to change the note length, use the STEP RECORD function to specify a different note length. The NOTE EDIT display can also be used to change the length (LEN). (Refer to page 77.)

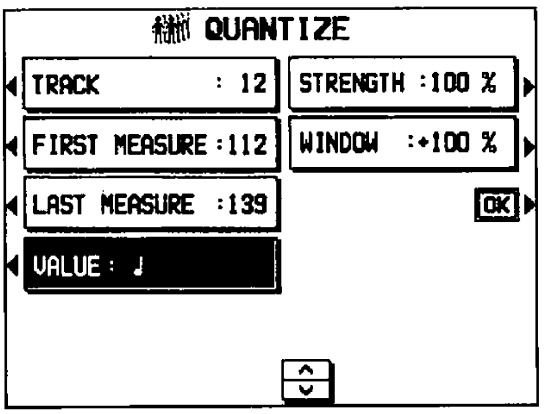
4. Repeat steps 1 to 3 to input more DRUM sound data.

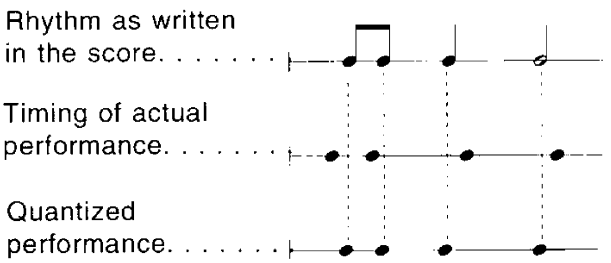
■ CYCLE PLAY

You can access the CYCLE PLAY display from the DRUM EDIT display. This allows you to hear the edited results immediately.
- The procedure is the same as for NOTE EDIT.
- If you wish other tracks to be played back, they should be selected beforehand on the SEQUENCER PLAY display. (Refer to page 71.)

QUANTIZE

The QUANTIZE function can correct the timing of your performance after it has been recorded. If the rhythm is slightly out of sync or inexact, it will automatically be corrected to the specified quantize level.





1. Select TRACK. Use the ∧ and ∨ buttons to specify the track number.
- If ALL is selected, all the tracks are quantized.
- The MASTER track cannot be selected.

2. Select FIRST MEASURE. Use the ∧ and ∨ buttons to specify the start point (measure number).

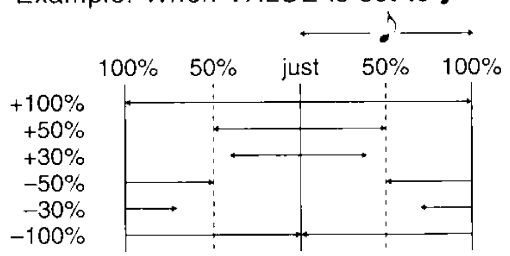
3. Select LAST MEASURE. Use the ∧ and ∨ buttons to specify the end point (measure number).

4. Select VALUE. Use the ∧ and ∨ buttons to specify the quantize level.
- Select from 𝅝, 𝅗𝅥, 𝅗𝅥3, ♩, ♩3, 𝅘𝅥𝅯, 𝅘𝅥𝅯3. (A 3 denotes a triplet-type note.)

5. Select STRENGTH. Use the ∧ and ∨ buttons to select the amount of quantize (%).
- 100% is a convenient setting. When set to 100%, the performance data is quantized exactly to the level specified for the VALUE ("just"). For example, at 50%, the data is quantized to a point that is half that of the just level. By this setting, you can attain an effect that is very slightly off-beat from the rhythm.

6. Select WINDOW. Use the ∧ and ∨ buttons to specify the range (%) affected by the quantize setting.
- With the increment set to 100 for the VALUE, at a + setting data close to the just point is corrected, and at a – setting, data far from the just point is corrected. For example, if set to –30% the quantize function affects data far from the just point, and if set to +30% the quantize function affects data close to the just point. +100% is usually a convenient setting.
- The +100% setting and the –100% setting are the same.

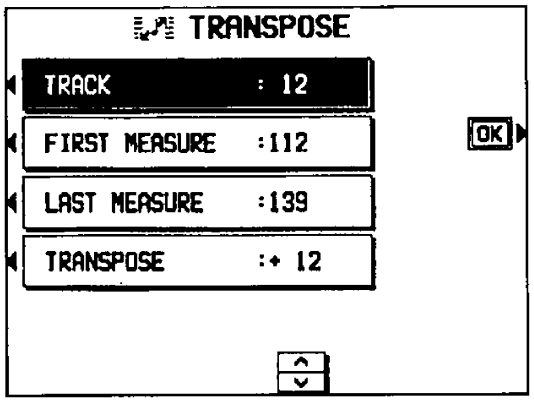
Example: When VALUE is set to ♩



7. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.

TRANSPOSE

Change of key of specific measures of specific tracks.



1. Select TRACK. Use the ∧ and ∨ buttons to select the track you wish to edit.
- If ALL is selected, all tracks will be edited.
- The MASTER track cannot be selected.

2. Select FIRST MEASURE. Use the ∧ and ∨ buttons to specify the start point (measure number) of the transpose.

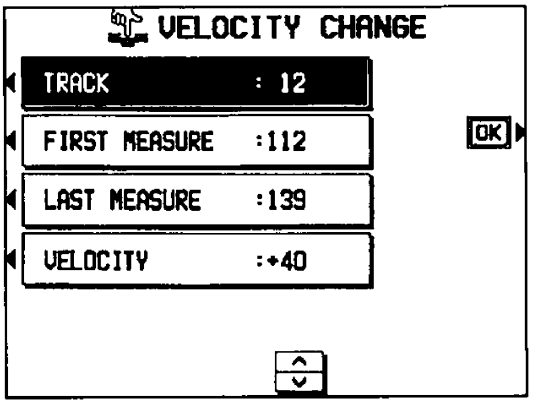
3. Select LAST MEASURE. Use the ∧ and ∨ buttons to specify the end point (measure number) of the transpose.

4. Select TRANSPOSE. Use the ∧ and ∨ buttons to specify the change in pitch.
- Increments are in semitones. A value of 12 is one octave. A – value lowers the pitch, and a + value raises it.

5. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.

VELOCITY CHANGE

Modify the recorded velocity in specific measures of specific tracks.



1. Select TRACK. Use the ∧ and ∨ buttons to select the track you wish to edit.
- If ALL is selected, all tracks will be edited.
- The MASTER track cannot be selected.

2. Select FIRST MEASURE. Use the ∧ and ∨ buttons to specify the start point (measure number) of the velocity change.

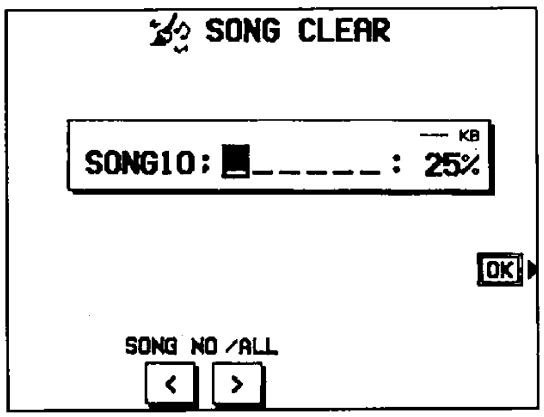
3. Select LAST MEASURE. Use the ∧ and ∨ buttons to specify the end point (measure number) of the velocity change.

4. Select VELOCITY. Use the ∧ and ∨ buttons to specify the change in velocity.
- The value you select will be added to or deleted from the current velocity.

5. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.

SONG CLEAR

Erase the recorded contents of all tracks.

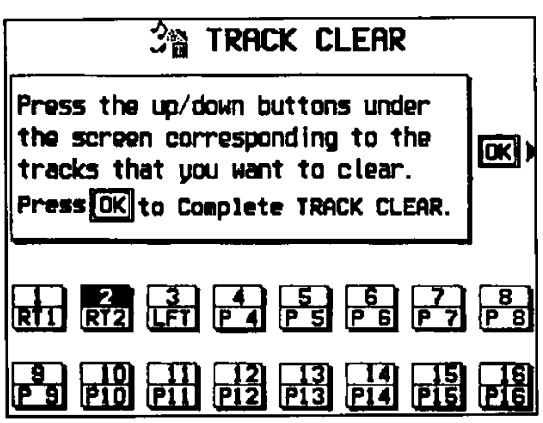


1. Use the SONG NO/ALL < and > buttons to specify the number of the song to erase.
- The total amount of **SEQUENCER** memory or current song memory used is shown as a percentage (%) to the right of the song name.
- If ALL is selected, all the songs recorded in the **SEQUENCER** will be erased.

2. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.
- If the YES button is pressed, "COMPLETED!" appears on the display, the specified songs are erased, and this instrument returns to the normal performance mode.

TRACK CLEAR

Erase the contents of a specific track.

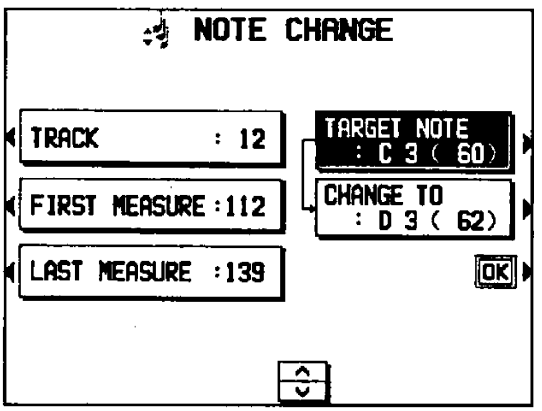


1. Use the buttons below the display to select the track or tracks you wish to clear.
- On the display, the selected tracks are highlighted.
- To erase the MASTER track, follow the MASTER RECORD procedure. (Refer to page 75.)

2. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.
- If the YES button is pressed, "COMPLETED!" appears on the display, and the specified tracks are erased.

NOTE CHANGE

Change of pitch of specified notes.



1. Select TRACK. Use the ∧ and ∨ buttons to select the track you wish to edit.
- If ALL is selected, all tracks will be edited.
- The MASTER track cannot be selected.

2. Select FIRST MEASURE. Use the ∧ and ∨ buttons to specify the start point (measure number) of the note change.

3. Select LAST MEASURE. Use the ∧ and ∨ buttons to specify the end point (measure number) of the note change.

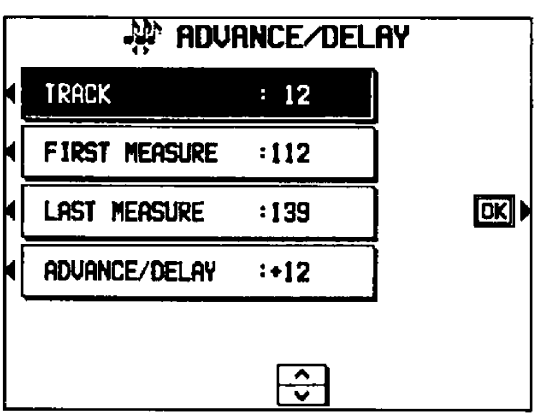
4. Select TARGET NOTE. Use the ∧ and ∨ buttons to specify the pitch of the note you wish to change.
- The number next to the note name is its note number.

5. Select CHANGE TO. Use the ∧ and ∨ buttons to specify the pitch you wish to change to.

6. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.

ADVANCE/DELAY

Speed up or delay the sound production of specified performance data.



1. Select TRACK. Use the ∧ and ∨ buttons to select the track you wish to edit.
- If ALL is selected, all tracks will be edited.
- The MASTER track cannot be selected.

2. Select FIRST MEASURE. Use the ∧ and ∨ buttons to specify the start point (measure number) of the change.

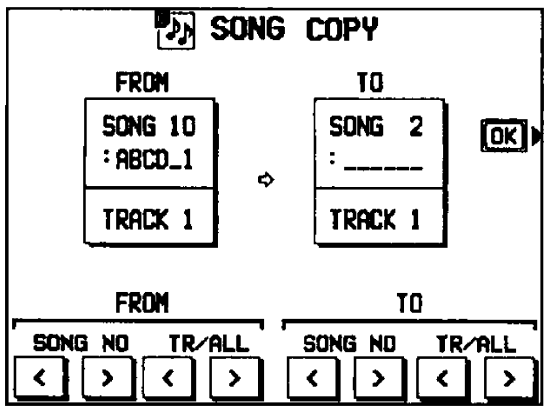
3. Select LAST MEASURE. Use the ∧ and ∨ buttons to specify the end point (measure number) of the change.

4. Select ADVANCE/DELAY. Use the ∧ and ∨ buttons to accelerate or delay the timing of the sound production (–96 to +96).
- A + value causes the notes to sound later, and a – value causes the notes to sound earlier.

5. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.

SONG COPY

Copy the recorded data from specific tracks of a song.

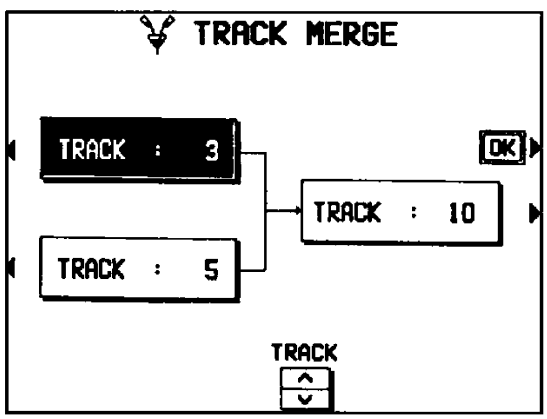


1. On the FROM side, use the SONG NO < and > buttons to specify the song number to copy from.
2. On the FROM side, use the TR/ALL < and > buttons to specify the number of the track to copy from.
   - If ALL is selected, all the tracks of the specified song number will be copied.
3. On the TO side, use the SONG NO < and > buttons to specify the song number to copy to.
4. On the TO side, use the TR/ALL < and > buttons to specify the number of the track to copy to.
   - If ALL is selected, the data will be copied to all the tracks of the specified song number.
5. Press the OK button.
   - The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.
   - The track assignment settings are also copied.

TRACK MERGE

Merge the recorded contents of two tracks (source tracks) and store the merged contents in a third track (destination track).

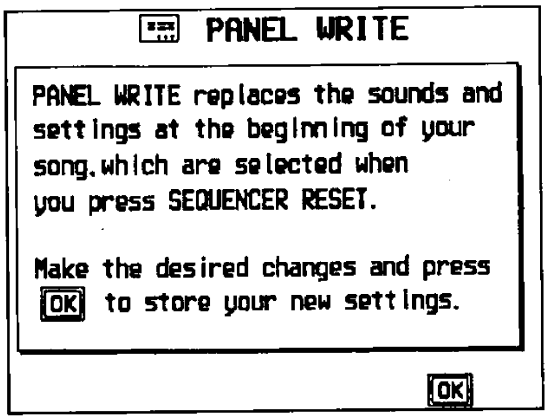
- When the TRACK MERGE function is executed, the data is erased from the two source tracks.



1. Select the two source tracks (left half of the display).
   - The MASTER track cannot be selected.
   - Use the buttons on the left side of the display to select one of the source tracks, and use the TRACK ∧ and ∨ buttons to specify the track number. Repeat for the other source track.
   - If the part assigned to the upper source track ("upper" meaning its position on the TRACK MERGE display) is different from the part assigned to the lower source track, when the parts are merged in the destination track, the new track is assigned the same part as the upper track.
2. Select the destination track (right half of the display).
   - Press the button on the right side of the display to select the destination track, and use the TRACK ∧ and ∨ buttons to specify the track number.
3. Press the OK button.
   - The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.

PANEL WRITE

You can change the panel status which is in effect at the beginning of the song. These are the settings which are recalled when the **SEQUENCER RESET** button is pressed.

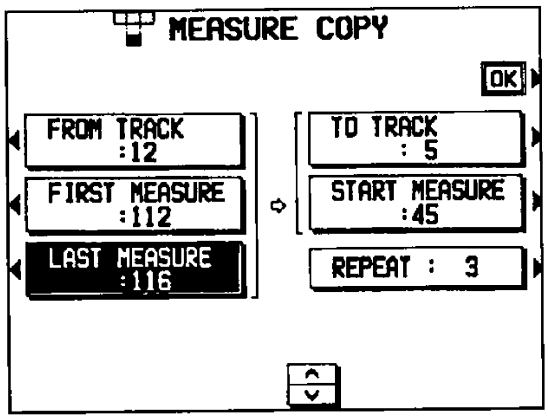


1. Use the panel buttons to change to the desired panel settings.

2. Press the OK button.
- "COMPLETED!" is shown on the display.
- PANEL WRITE is automatically activated at the beginning of the REALTIME/STEP RECORD, or when a panel setting is changed during recording stop.

MEASURE COPY

Copy recorded data of specified measures to a specified point.
- On the destination track, the new data replaces the current measure contents.



1. Select FROM TRACK. Use the ∧ and ∨ buttons to specify the source track.
- Track 17 is the MASTER track.
- If ALL is selected, the specified measures are copied to all tracks at the same time.

2. Select FIRST MEASURE. Use the ∧ and ∨ buttons to specify the start point (measure number) on the source track.

3. Select LAST MEASURE. Use the ∧ and ∨ buttons to specify the end point (measure number) on the source track.

4. Select TO TRACK. Use the ∧ and ∨ buttons to specify the destination track.

5. Select START MEASURE. Use the ∧ and ∨ buttons to specify the start point (measure number) on the destination track.

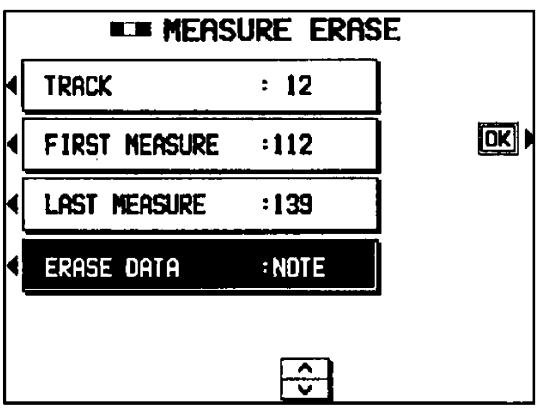
6. Select REPEAT. Use the ∧ and ∨ buttons to specify the number of times the specified measures are to be repeated.
- The measures will be repeated the specified number of times.

7. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.
- Note that if the END command is included in the source data, it is also copied. Any data following the END command is not copied.

MEASURE ERASE

Erase the recorded contents of specific measures. You can also specify which type of data is to be erased.

- Note that only the contents of the measures are erased, not the measures themselves; the length of the performance remains the same.



1. Select TRACK. Use the ∧ and ∨ buttons to specify the track number.
- Track 17 is the MASTER track.
- If ALL is selected, data is erased from the specified measures of all the tracks at one time.

2. Select FIRST MEASURE. Use the ∧ and ∨ buttons to specify the start point (measure number).

3. Select LAST MEASURE. Use the ∧ and ∨ buttons to specify the end point (measure number).

4. Select ERASE DATA. Use the ∧ and ∨ buttons to specify the type of data to be erased.

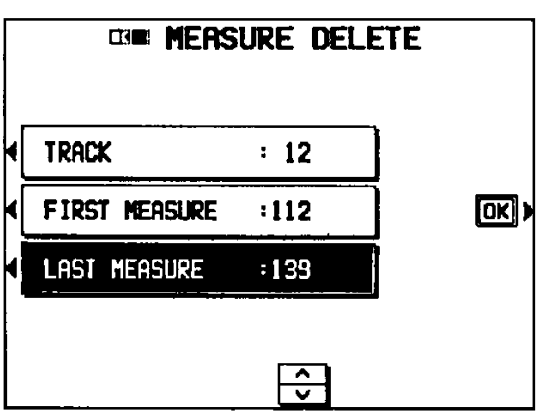
   ALL: All data is erased.
   NOTE: Only note data. (excluding the MASTER track)
   CONTROL: Only control data (volume, effect and other panel settings as well as selection changes) is erased.

5. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.

MEASURE DELETE

Delete specified measures from a track.

- The length of the performance accordingly decreases by the number of deleted measures.



1. Select TRACK. Use the ∧ and ∨ buttons to select the track from which measures are to be deleted.
- Track 17 is the MASTER track.
- If ALL is selected, the specified measures are deleted from all the tracks at one time.

2. Select FIRST MEASURE. Use the ∧ and ∨ buttons, to specify the first measure to delete.

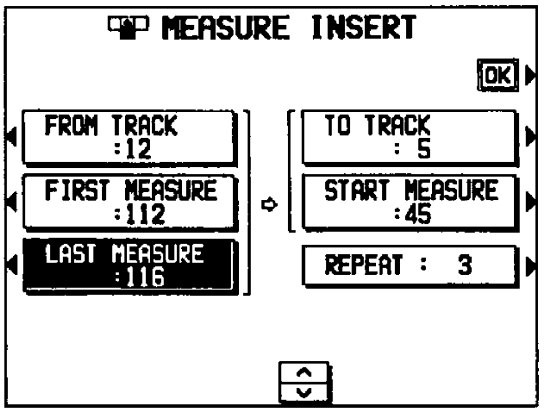
3. Select LAST MEASURE. Use the ∧ and ∨ buttons to specify the last measure to delete.

4. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.

MEASURE INSERT

Insert specified measures at a specified point.

- The length of the performance accordingly increases by the number of inserted measures.



1. Select FROM TRACK. Use the ∧ and ∨ buttons to select the source track.
- Track 17 is the MASTER track.
- If ALL is selected, the measures are inserted in all tracks at the same time.

2. Select FIRST MEASURE. Use the ∧ and ∨ buttons to specify the first measure on the source track from which to copy.

3. Select LAST MEASURE. Use the ∧ and ∨ buttons to specify the last measure on the source track from which to copy.

4. Select TO TRACK. Use the ∧ and ∨ buttons to specify the destination track.

5. Select START MEASURE. Use the ∧ and ∨ buttons to specify the insert point on the destination track.

6. Select REPEAT. Use the ∧ and ∨ buttons to specify the number of times the specified measures are to be inserted.
- The measures will be inserted the specified number of times.

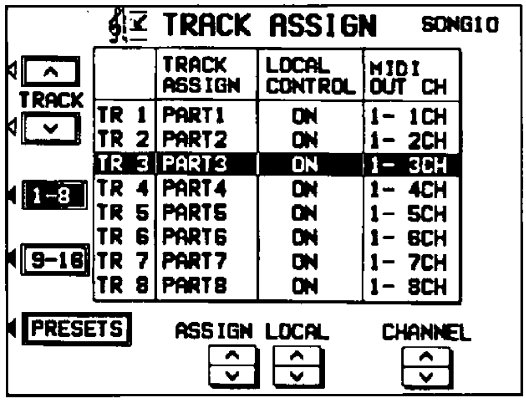
7. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.
- Note that if the END command is included in the source data, it is also inserted. Any data following the END command is not inserted.

Track Assign

Each **SEQUENCER** part is already assigned to a track number. However, you can use the TRACK ASSIGN function to assign parts to tracks as you wish.

1. Select the song number. (Refer to page 67.)

2. On the SEQUENCER menu display, select TRACK ASSIGN.
- The display looks similar to the following.



3. Use the TRACK ∧ and ∨ buttons to select the track.
- Use the 1–8 buttons to access the setting display for tracks 1 to 8, the 9–16 buttons for tracks 9 to 16.

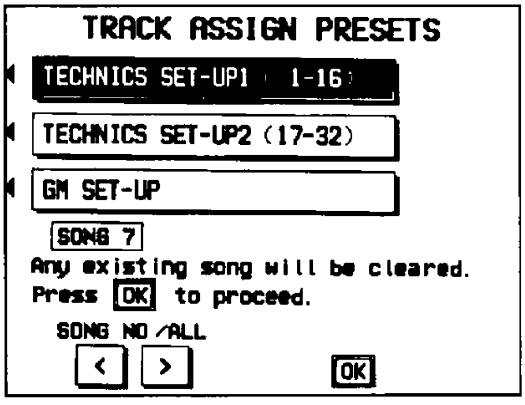
4. Use the ASSIGN ∧ and ∨ buttons to select the part for the specified track (PART 1–32).
- You can use the LOCAL ∧ and ∨ buttons to turn the LOCAL CONTROL on or off, and the CHANNEL ∧ and ∨ buttons to assign the BASIC CHANNEL. The number preceding the channel number (1 or 2) is the MIDI terminal number.

5. Repeat steps 3 and 4 for the other tracks, as desired.

■ **TRACK ASSIGN PRESET**

A preset track assignment can be selected.

1. On the TRACK ASSIGN display, press the PRESETS button.
- The display looks similar to the following.



2. Use the SONG NO/ALL < and > buttons to select the song number for which the preset track assignment will be effective.
- If ALL is selected, the track assignment is effective for all the songs.

3. Select the track assign mode.
- Select from the following modes.

TECHNICS SET-UP1: Factory-preset settings. (Refer to page 68.)

TECHNICS SET-UP2: This setting will ensure that performance parts and recording parts do not conflict, for example, when performing with **SOUND** (PART 1) and **COMBINATION** (PART 1 to 8) while playing back a sequencer.

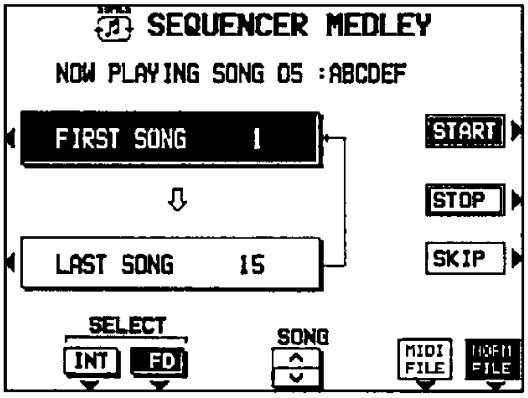
GM SET-UP: The optimum track assignment for creating GENERAL MIDI data (track 10: GM drum sounds).

4. Press the OK button.
- "COMPLETED!" is shown on the display and the selected track assign mode is enabled.
- You can confirm the track assignment settings on the TRACK ASSIGN display.

Sequencer Medley

You can have the songs on a disk played back continuously in order.

1. On the SEQUENCER menu display, select MEDLEY.
- The display looks similar to the following.



2. Use the SELECT buttons to specify the song you wish to have played.
- Press the INT button to specify medley play of songs in this instrument's **SEQUENCER**, or press the FD button to specify songs on the floppy disk.
- Note that if FD is selected and medley play is executed, all song data (SONG 1–10) currently stored in the **SEQUENCER** memory is erased. However, if only Standard MIDI File data is selected for medley play, the **SEQUENCER** memory will not be erased.

3. If FD is selected, use the MIDI FILE/NORM FILE button to select the kinds of files for medley play.
- Select MIDI FILE to play Standard MIDI Files (FORMAT 0 only), or select NORM FILE to play Technics files.

4. Select FIRST SONG. Use the SONG ∧ and ∨ buttons to specify the first song you wish to have played.

5. Select LAST SONG. Use the SONG ∧ and ∨ buttons to specify the last song.

6. Press the START button.
- The songs in the specified range are played back.
- If you press the SKIP button during medley play, the song currently playing will stop, and playback continues from the next song.

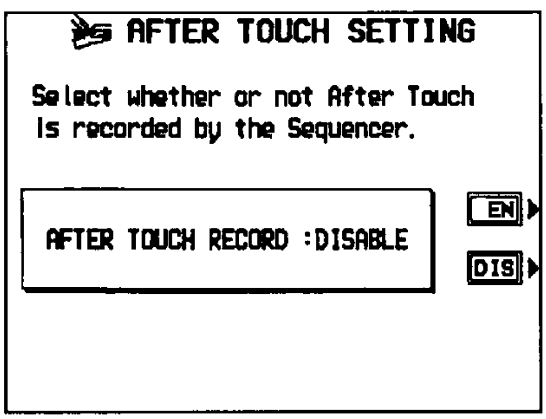
7. To stop medley play, press the STOP button.
- Features and operation of the built-in Disk Drive are explained in Part VIII: Disk Drive.

After Touch

Specify whether or not AFTER TOUCH data is recorded. The AFTER TOUCH applies a special effect to the sound depending on how hard the keys are being pressed.

1. Select the song number. (Refer to page 67.)

2. On the SEQUENCER menu display, select AFTER TOUCH SET.
- The display looks similar to the following.



3. Press the EN or DIS button to specify if the aftertouch data is recorded.

   ENABLE: Aftertouch data is recorded with the performance.

   DISABLE: The data is not recorded (factory-preset setting).

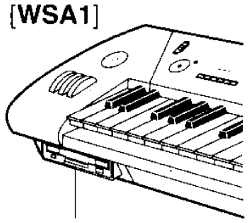
Part VIII Disk Drive

Outline of the Disk Drive function

The Disk Drive enables you to store **SEQUENCER** data (**WSA1**), sound data, etc. for future use.

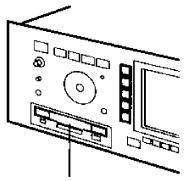
Disk Drive features

[WSA1]



Disk Drive

[WSA1R]



Disk Drive

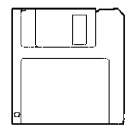
Internal memory

- **SEQUENCER (WSA1)**
- SOUND data
- COMBINATION data
- PANEL settings
- MIDI settings

etc.

SAVE →

← LOAD



Floppy disk

■ Data handling (TECHNICS File)

The storable internal memory of this instrument is fixed at a limited capacity, but the Disk Drive expands the storable memory infinitely by allowing you to store this data on floppy disks. You may choose to store only **SEQUENCER** or **SOUND** data, for example, and you can specify exactly what kind of data you wish to load into your instrument's memory from the disk.

- You can use 3.5 inch 2DD (720 KB) or 2HD (1.44 MB) disks.

■ Playback of commercial software (Standard MIDI File)

Disks recorded using the Disk Drive of this instrument can, of course, be played back on your instrument. But this instrument also reads song data from disks recorded in the Standard MIDI File format, enabling you to play commercial song disks on this instrument. In addition, by saving this instrument's **SEQUENCER** data in the Standard MIDI File format, you can play it back on an external sequencer.

About Standard MIDI Files

"Standard MIDI File" is a standardized format which makes it possible for music data to be exchanged among different sequencers. Data stored in this format on sequencers of different models can be played back on this instrument, and vice versa.

- Only files with the ".MID" extension can be loaded.
- No more than 320 KB of data can be loaded into this instrument.

Warning: Standard MIDI Files ensure the compatibility of data such as NOTE ON/OFF, VELOCITY, PROGRAM NUMBER. It does not guarantee 100% faithful reproduction of recorded music which is replete with such data. For exact playback of music, it may be necessary to perform extensive adjustments of all the sound generator settings. As you the listener are the ultimate judge of what sounds best, you should perform such adjustments to your satisfaction.

■ File formats

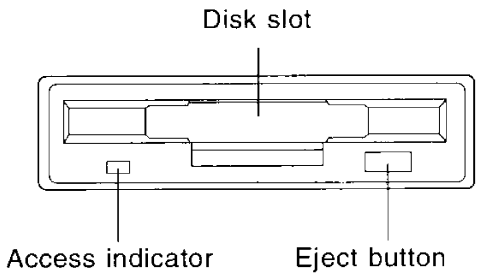
Specific formats are handled as follows.

		SAVE	LOAD
TECHNICS File		○	○
Standard MIDI File	FORMAT 0	○	○
	FORMAT 1	×	○

FORMAT 0:
There is one track on the disk, and it contains the 16 MIDI channels.

FORMAT 1:
There is an unlimited number of tracks on the disk, each of which can contain the 16 MIDI channels.

Main parts of the Disk Drive

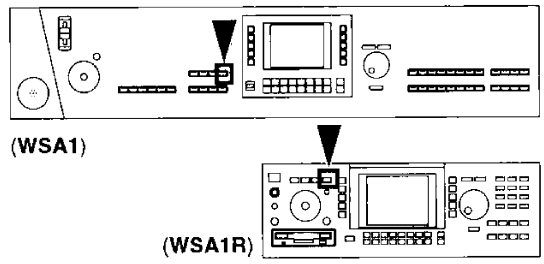


Eject button
Press to remove the disk from the Disk Drive.

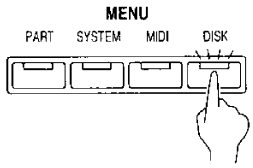
Access indicator
Lights when data is being loaded from or saved to a disk.

- To prevent data loss, do not remove the disk from the Disk Drive or turn off the power when the access indicator is lit.

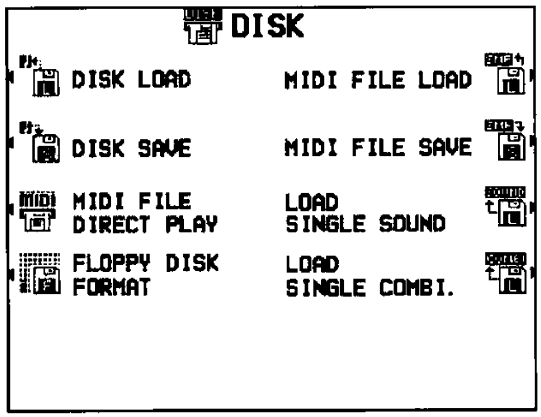
Outline of procedure



1. In the **MENU** section, turn on the **DISK** button.



- The display changes to the following.



(WSA1)

2. Select a menu item to access the corresponding display.

DISK LOAD (page 93)
Load data in the Technics File format from a disk into this instrument's memory.

DISK SAVE (page 97)
Save data from this instrument's memory to a disk, in the Technics File format.

MIDI FILE DIRECT PLAY (page 95)
Immediate playback of disk data which is in the Standard MIDI File format (FORMAT 0).

MIDI FILE LOAD (WSA1) (page 94)
Load Standard MIDI File data into this instrument's memory.

MIDI FILE SAVE (WSA1) (page 98)
Save data from this instrument's memory to a disk in the Standard MIDI File format.

LOAD SINGLE SOUND (page 94)
Load the desired **SOUND** data from a disk into a specific **USER** area.

LOAD SINGLE COMBI (page 94)
Load the disired **COMBI** data from a disk into a specific USER area.

FLOPPY DISK FORMAT (page 96)
Format new disks or erase the contents of recorded disks so they can be used by this instrument.

3. Perform the setting procedure (explained on the following pages).

4. When you have finished setting the functions, turn off the **DISK** button.

Loading data

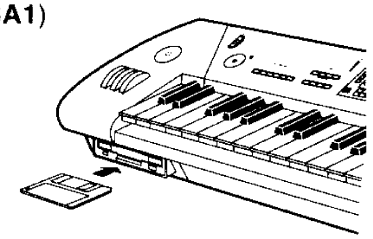
Recall (load) the data from the disk to the instrument's memories.
WARNING: The load procedure causes any data which is currently stored in the relevant memories to be erased.

DISK LOAD

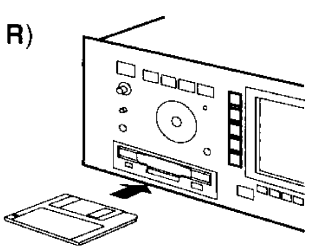
Load data which was saved in the Technics File format.

1. Insert the disk with the stored data into the Disk Drive.

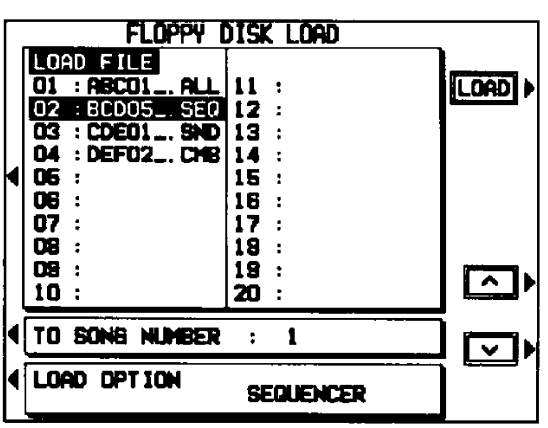
(WSA1)



(WSA1R)



2. On the DISK menu display, select DISK LOAD.
- The display looks similar to the following.



3. Select the LOAD FILE box. Use the ∧ and ∨ buttons to select the file on the floppy disk you wish to load (copy) to this instrument's memories.
- The file name is shown next to each file number.

4. Select the LOAD OPTION box. Use the ∧ and ∨ buttons to specify the kind of data you wish to load from the disk to your instrument.

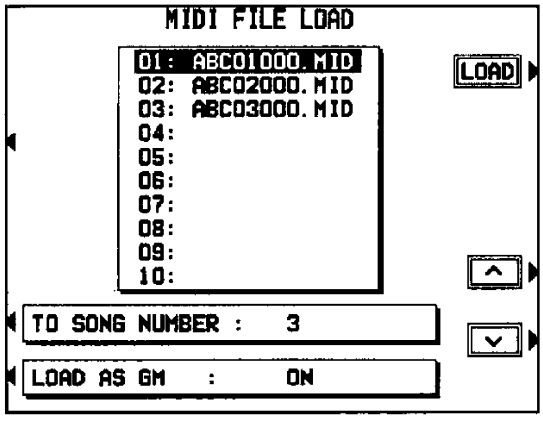
ALL: All the following data from the disk is loaded.
SEQUENCER (**WSA1**): Only **SEQUENCER** data
SOUND: Only SOUND data
COMBINATION: Only COMBINATION data
PANEL: Only the panel settings include PART, SYSTEM, MIDI, RE-MAP, DRUM MAP, etc.
MIDI SETTING: Only MIDI data of each part and common
SOUND REMAP: Only SOUND RE-MAP data
COMBI REMAP: Only COMBINATION RE-MAP data
DRUM MAP: Only DRUM MAP data

- The option which was specified during the SAVE procedure is automatically selected. Skip this step if you do not wish to change the selection.
- **WSA1**: If the OPTION was set to SEQUENCER, select the TO SONG NUMBER box. Use the ∧ and ∨ buttons to select the song number in the instrument's memories to which you wish to have the file loaded (copied).
- **SEQUENCER** data is loaded one song at a time. However, if you load a file for which the SAVE OPTION was set to ALL, **SEQUENCER** songs 1 to 10 are loaded at once.

5. Press the LOAD button.
- The LOAD operation begins. The LOAD operation may continue for up to 40 seconds.
- When the operation has been successfully completed, "COMPLETED!" is shown on the display.
- If song data was loaded, you can press the **START/STOP** button to begin playback.

MIDI FILE LOAD (WSA1)

Load data which was saved in the Standard MIDI File (SMF) format.



1. Select the file list box. Use the ∧ and ∨ buttons to select the file.

2. Select the TO SONG NUMBER box. Use the ∧ and ∨ buttons to select the song.
- Data is loaded one song at a time.

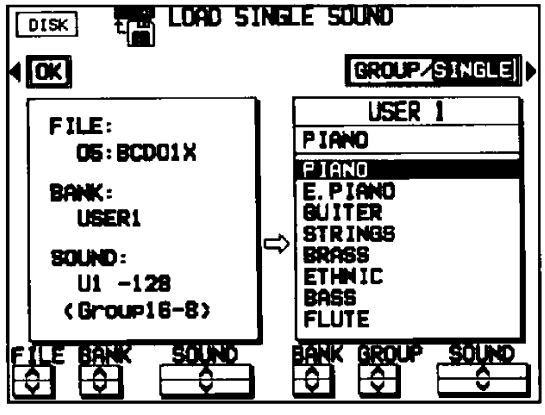
3. Select the LOAD AS GM box, and use the ∧ and ∨ buttons to specify whether or not to load the song as GENERAL MIDI (GM) (ON/OFF).
- If playback is executed with the setting set to ON, RE-MAP 3 of the SOUND mode is selected for the sound.

4. Press the LOAD button.
- The LOAD operation begins.
- When the operation has been successfully completed, "COMPLETED!" is shown on the display.

- Press the **START/STOP** button to begin playback.

LOAD SINGLE SOUND /COMBINATION

Load the desired **SOUND/COMBINATION** data from a disk into a specific USER area.



(LOAD SINGLE SOUND)

1. Use the GROUP/SINGLE button to select the mode.

   SINGLE: Data is loaded for a single SOUND.
   GROUP: Data is loaded for a GROUP at one time.

2. On the left part of the display, select the source to load from.
- Use the FILE ∧ and ∨ buttons to select a filename.

3. On the right part of the display, select the location to load to.
- If SINGLE was selected, use the SOUND/COMBI ∧ and ∨ buttons to select a sound.

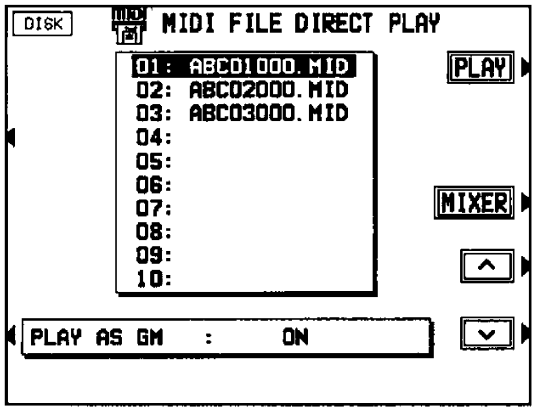
4. Press the OK button.
- The LOAD operation begins.
- When the operation has been successfully completed, "COMPLETED!" is shown on the display.

Playing commercial disks

Standard MIDI File format song data (FORMAT 0 only) can be played back directly from a disk. The usual LOAD operation is not necessary, so playback is quicker.

MIDI FILE DIRECT PLAY

1. On the DISK menu display, select MIDI FILE DIRECT PLAY.
- The display looks similar to the following.



2. Select the song list box, and use the ∧ and ∨ buttons to select the filename to play back.

3. Select the PLAY AS GM box, and use the ∧ and ∨ buttons to specify whether or not to play the song as GENERAL MIDI (GM) (ON/OFF).
- If playback is executed with the setting set to ON, RE-MAP 3 of the SOUND mode is selected for the sound.

4. Press the PLAY button.
- The selected song begins to play.
- To adjust the settings for each part, press the MIXER button on the display.
- The PLAY button becomes the STOP button. Press this button if you wish to stop playback before it has finished.

- You can use the same procedure to play back other songs on the disk.
- The song stops if you exit this display during playback.

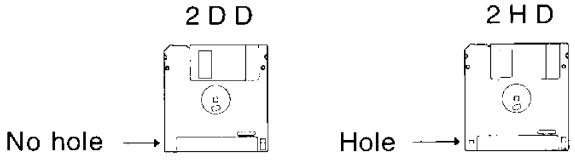
- Direct play is possible only from FORMAT 0 disks. Direct play from FORMAT 1 disks is not possible.
- **WSA1**: To play FORMAT 1 disks, follow the MIDI FILE LOAD procedure (page 94).

Formatting a disk

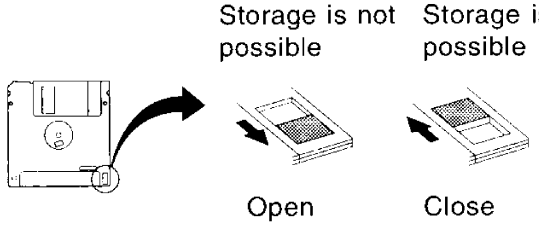
New disks can be used only after they have been formatted. Follow the procedure below to format a new disk or erase the contents of a recorded disk.

DISK FORMAT

- This procedure clears the entire contents of the disk.
- Reformat a disk if it cannot be saved to or loaded from properly because of exposure to a magnetic field.
- You can use 3.5 inch 2DD (720KB) or 2HD (1.44MB) disks.
- Be sure to specify the type of format which is suitable for the disk.
- How to distinguish the two disk types:

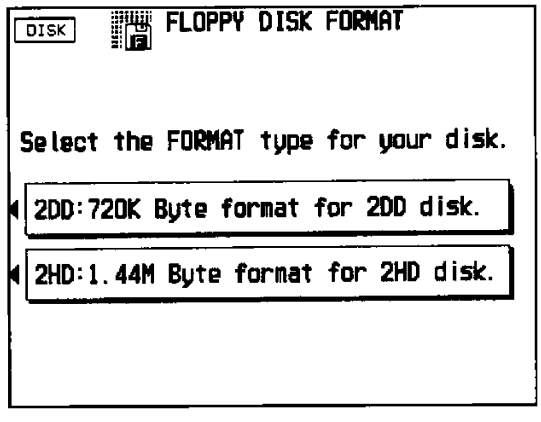


- Although 2HD disks can hold more data and are convenient for quick loading and saving, 2DD disks are generally used for musical instruments. Therefore, you may not be able to use your 2HD disk data with other musical instrument models.
- To format the disk, the write-protect window must be closed, as illustrated.

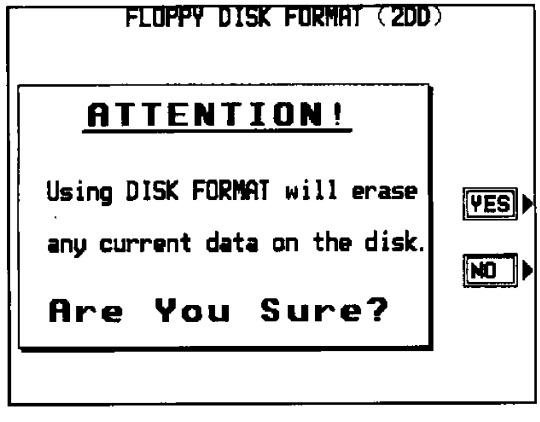


1. Insert the disk into the Disk Drive slot. Push it all the way in until you hear a click.

2. On the DISK menu display, select DISK FORMAT.
- The display changes to the following.



3. Select the type of format (2DD or 2HD).
- Be sure to select the type which is the same as your disk type.
- The display changes to the following.



4. Press the YES button to format the disk, or press the NO button to cancel the format.
- After about 1–2 minutes, formatting is completed and "FORMAT COMPLETED!" is shown on the display.

Saving data

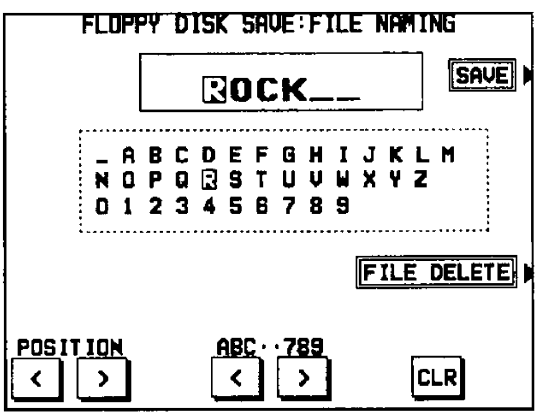
The recorded data and panel settings of this instrument can be saved on a disk.
- It is a good idea to save Technics File format data and Standard MIDI File format data in separate disks.

DISK SAVE

Save data from this instrument in the Technics File format to a floppy disk.

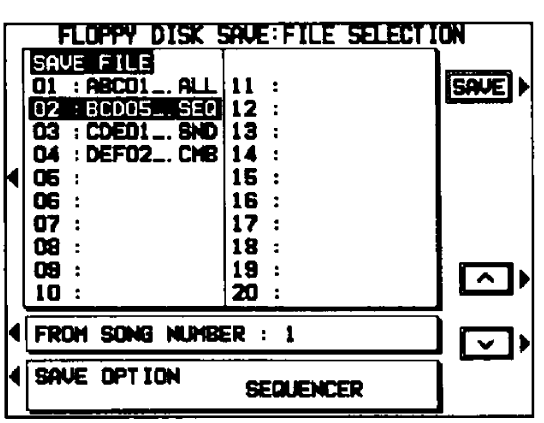
1. Insert a formatted disk into the Disk Drive slot. Push it all the way in until you hear a click.

2. On the DISK menu display, select DISK SAVE.
- The display looks similar to the following.



3. Type a name for the new data file (up to 6 characters).
- Use the POSITION buttons to highlight the character position. Use the ABC•• 789 buttons to select the alphanumeric character. Repeat these steps to type the whole name.
- To erase the name, press the CLR button.

4. Press the SAVE button.
- The display looks similar to the following.



5. Select the SAVE FILE box. Use the ∧ and ∨ buttons to select a file number (01 to 20).
- Files in which data is currently stored are indicated by the file name following the file number.
- The maximum number of files which can be saved may be less than 20 if you are saving many songs which use a lot of memory.
- More data can be saved by using a 2HD floppy disk.

6. Select the SAVE OPTION box. Use the ∧ and ∨ buttons to specify the kind of data you wish to save to the disk.

ALL: All the following data from the disk is loaded.
SEQUENCER (**WSA1**): Only **SEQUENCER** data
SOUND: Only SOUND data
COMBINATION: Only COMBINATION data
PANEL: Only the panel settings include PART, SYSTEM, MIDI, RE-MAP, DRUM MAP, etc.
MIDI SETTING: Only MIDI data of each part and common
SOUND REMAP: Only SOUND RE-MAP data
COMBI REMAP: Only COMBINATION RE-MAP data
DRUM MAP: Only DRUM MAP data

- The MASTER TUNING setting is not saved.
- **WSA1**: If the OPTION was set to SEQUENCER, select the FROM SONG NUMBER box. Use the ∧ and ∨ buttons to select the song number in the instrument's memories you wish to have saved to the floppy disk.
- **SEQUENCER** data is saved one song at a time. However, if ALL is selected for the SAVE OPTION, **SEQUENCER** songs 1 to 10 are saved at once. In this case, you can conserve memory by deleting songs you do not wish to save.

7. Press the SAVE button.
- The SAVE operation begins. The SAVE operation may continue for up to 40 seconds.
- When the operation has been successfully completed, "COMPLETED!" is shown on the display.
- If you attempt to save data to a file number in which data is currently saved, the display changes to the confirmation display. Press the NO button if you wish to cancel the procedure. When the YES button is pressed, the DISK SAVE operation begins.

About the number of files that can be saved
If the OPTION for all the songs is set to ALL, you can save about 2 files on one 2DD floppy disk, or 4 files on one 2HD floppy disk (**WSA1**: Even fewer files may be saved depending on the length of the song recorded in the **SEQUENCER**).
- To conserve memory, select the appropriate OPTION for the kind of data you wish to save.

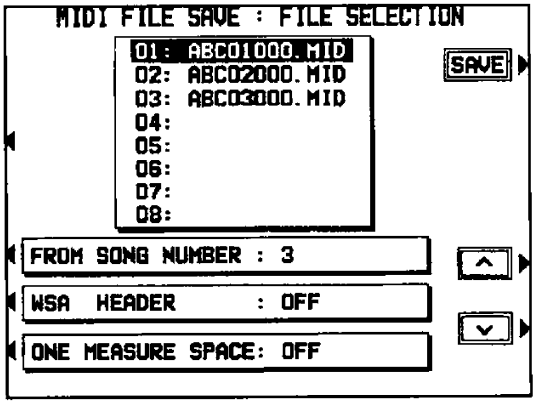
FILE delete
To erase a song from a disk, on the FILE NAMING display, press the FILE DELETE button. Then on the FILE SELECTION display, select the number of the song you wish to erase, and press the DEL button. The display changes to the confirmation display. Press the YES button to erase the song, or press the NO button to cancel the procedure.

MIDI FILE SAVE (WSA1)

The data from this instrument's **SEQUENCER** can be saved to a floppy disk in the Standard MIDI File (SMF) format. (Standard MIDI Files are most commonly saved on 2DD floppy disks.) Data saved on this instrument can then be used on another instrument.

1. Type a name for the new data file (up to 8 characters).
- Use the POSITION buttons to highlight the character position. Use the ABC••789 buttons to select the alphanumeric character. Repeat these steps to type the whole name.
- To erase the name, press the CLR button.
- Avoid using the numbers from 01 to 20 as the first two letters of the name.

2. Press the SAVE button.
- The display looks similar to the following.



3. Select the file list box. Use the ∧ and ∨ buttons to select the name of the file in which to save the data.
- To save in a new file, select a blank line.

4. Select the FROM SONG NUMBER box. Use the ∧ and ∨ buttons to select the song number in the instrument's memories you wish to have saved to the floppy disk.
- Data is saved one song at a time.

5. Select the WSA HEADER box, and use the ∧ and ∨ buttons to select ON or OFF.
- Select ON to save the sound, volume and other settings for each part as data at the beginning of the file.

6. Select the ONE MEASURE SPACE box, and use the ∧ and ∨ buttons to select ON or OFF.
- When there is various data other than performance data stored at the beginning of a file, the start of playback may be delayed. This can be avoided by inserting a one-measure space before the beginning of the performance. Select ON to insert a one-measure space. Select OFF if you do not wish to insert the space.
- When set to ON, a space is added each time a file is saved. Therefore, if you have already saved a file once with the ONE MEASURE SPACE set to ON, please set it to OFF each time the file is subsequently saved.

7. Press the SAVE button.
- The SAVE operation begins.
- When the operation has been successfully completed, "COMPLETED!" is shown on the display.
- If you attempt to save data to a file number in which data is currently saved, the display changes to the confirmation display. Press the NO button if you wish to cancel the procedure.

FILE delete

To erase a song from a disk, on the FILE NAMING display, press the FILE DELETE button. Then on the FILE SELECTION display, select the number of the song you wish to erase, and press the DEL button. The display changes to the confirmation display. Press the YES button to erase the song, or press the NO button to cancel the procedure.

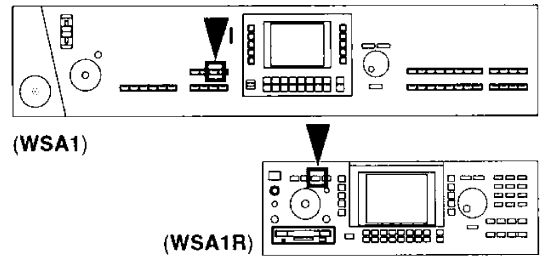
- When performing the MIDI FILE SAVE procedure with GENERAL MIDI set to ON, track 10 should be used for the DRUM sounds.

Part IX MIDI

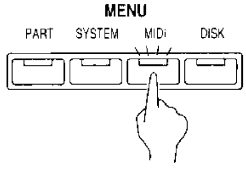
Profile

Select the various settings which are used for MIDI operation of this instrument.

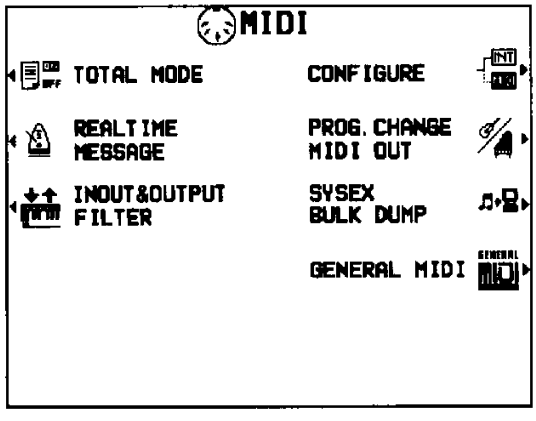
Outline of the procedure



1. In the **MENU** section, turn on the **MIDI** button.



- The display changes to the following.



2. Select a menu item to access the corresponding setting display.

TOTAL MODE (page 101)
Set the functions which are common to all parts.

REALTIME MESSAGES (page 102)
Make the REALTIME COMMANDS and CLOCK settings.

INPUT&OUTPUT FILTER (page 102)
Various settings related to transmission and reception of data.

CONFIGURE
Settings related to keyboard connections for each part, including when MIDI data is transmitted, and how each part is assigned to the keyboard.

- The procedure is the same as the CONFIGURE settings for COMBINATION EDIT. (Refer to page 46). However, there is no setting for KEY LAYER or VEL LAYER. In addition, you can select from PARTs 1 to 32.

PROG. CHANGE MIDI OUT (page 103)
Settings related to the transmission of PROGRAM CHANGE data.

SYSEX BULK DUMP (page 103)
Settings related to SYSTEM EXCLUSIVE data exchange.

GENERAL MIDI (page 104)
GENERAL MIDI settings.

3. Perform the setting procedures (explained on the following pages).

- The data entry controls can be used to specify the value when changing the settings. (Refer to page 7.)

4. When you have finished settings the functions, turn off the **MIDI** button.

REALTIME MESSAGE and SYSEX BULK DUMP data cannot be transmitted/received on the **MIDI 2** terminals. Please use the **MIDI 1** terminals for these functions.

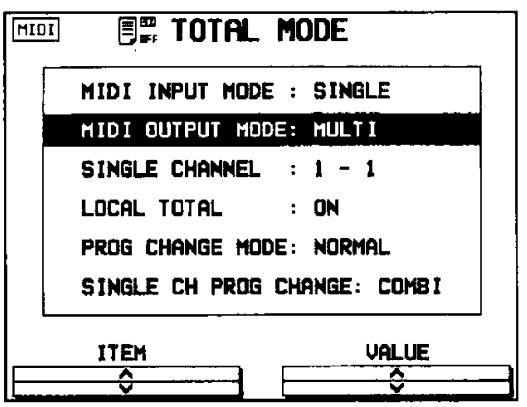
Setting the functions

Select the function, and then follow the procedure to change the settings.

TOTAL MODE

Set the functions which are common to all parts.

- Settings for each part, such as the MIDI channel, are performed on the MIXER display. (Refer to page 53.)



1. Use the ITEM ∧ and ∨ buttons to select an item.

MIDI INPUT MODE
Select the mode for receiving MIDI data.

MULTI: Data is received on the corresponding channel for each part.
SINGLE: The data received on the MIDI channel which is designated as the SINGLE CHANNEL is used as the performance data for this instrument.
OMNI: Data from all channels is treated as though received on the SINGLE CHANNEL. (This mode is convenient for checking the instrument connections.)

MIDI OUTPUT MODE
Select the mode for transmitting MIDI data.

MULTI: Data is transmitted on the corresponding channel for each part.
SINGLE: Performance data is transmitted on the channel which is designated as the SINGLE CHANNEL.

SINGLE CHANNEL
Basic channel setting for when the SINGLE mode is selected (1-1 to 1-16).

- The **MIDI 1** terminals are used when the mode is set to SINGLE.

LOCAL TOTAL
The local control setting for the entire instrument (ON/OFF).

- When set to OFF, the performance from this instrument does not sound from this instrument's sound generator.

PROG CHANGE MODE
Select the PROGRAM CHANGE mode.

NORMAL: PROGRAM CHANGE numbers are transmitted/received in accordance with the numbers shown on the display.
TECH: The SOUNDs in the **ROM** bank are transmitted/received following standardized Technics numbers. (**WSA1**: The **SEQUENCER** records and plays back these numbers.)

- In case of **RE-MAP**, those sounds become the indicated numbers.

SINGLE CH PROG CHANGE
Set the PROGRAM CHANGE mode for when the SINGLE mode is selected.

COMBI: During a performance in the combination mode, PROGRAM CHANGE numbers on the SINGLE CHANNEL are transmitted/received as the combination change data.
SOUND: During a performance in the combination mode, PROGRAM CHANGE numbers on the SINGLE CHANNEL are transmitted/received as sound change data for the part assigned to that channel.

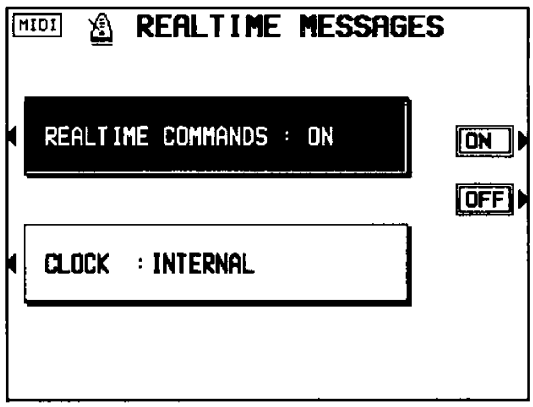
2. Use the VALUE ∧ and ∨ buttons to change the setting.

3. Repeat steps 1 and 2 for other functions as desired.

REALTIME MESSAGES

Enable or disable the exchange of **START/STOP** data (REALTIME COMMANDS), and select the CLOCK mode.

- REALTIME MESSAGE data cannot be transmitted/received on the **MIDI 2** terminals. Please use the **MIDI 1** terminals for this function.



1. Select a function (REALTIME COMMANDS or CLOCK).

2. Use the ∧ and ∨ buttons, or the ON and OFF buttons, to change the setting.

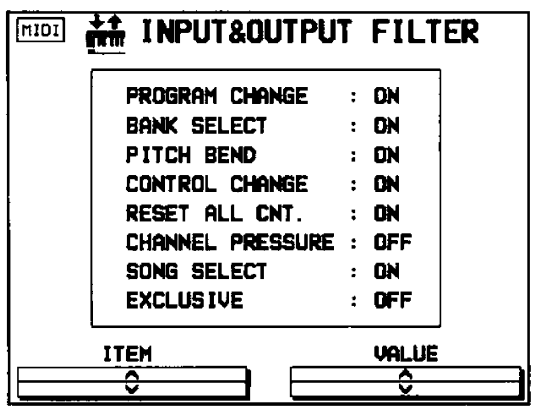
   REALTIME COMMANDS
   ON: SONG start/stop, continue, and song position pointer data can be transmitted/received.
   OFF: This data cannot be transmitted/received.

   CLOCK
   INTERNAL: This instrument's internal clock is used to control SONG playback. The clock of the connected equipment is disabled.
   MIDI: The CLOCK of the connected equipment is used to control the performance. This instrument's CLOCK is disabled.
   - **WSA1**: When MIDI is selected, the **SEQUENCER** is disabled until the CLOCK signal is received from the connected instrument.

3. Repeat steps 1 and 2 for the other function, as desired.

INPUT&OUTPUT FILTER

Various settings related to transmission and reception of data.



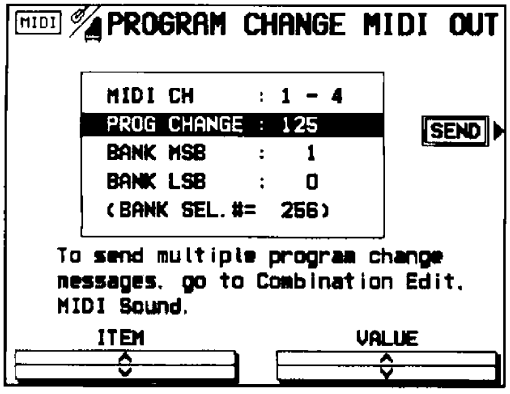
1. Use the ITEM ∧ and ∨ buttons to select a command name.

2. Use the VALUE ∧ and ∨ buttons to change the setting (ON/OFF).

3. Repeat steps 1 and 2 for other command names, as desired.

PROGRAM CHANGE MIDI OUT

Settings for transmitting PROGRAM CHANGE numbers.



1. Use the ITEM ∧ and ∨ buttons to select an item.

   MIDI CH
   The MIDI channel to transmit the data (1-1 to 1-16, 2-1 to 2-16).
   - This instrument has two sets of MIDI terminals, which are differentiated by the first number in the setting (1 or 2).

   PROG CHANGE
   The PROGRAM CHANGE number to transmit.

   BANK MSB
   BANK SELECT MSB setting (0 to 127).

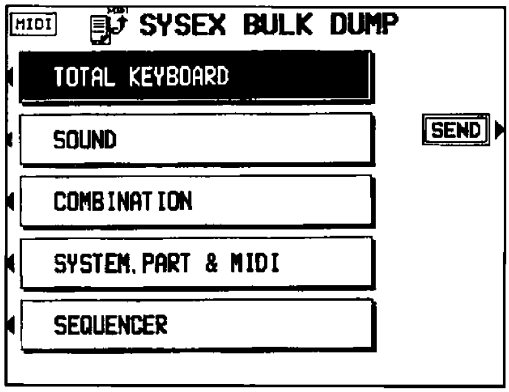
   BANK LSB
   BANK SELECT LSB setting (OFF, 0 to 127).
   - The total of bank numbers is shown in the parentheses ( ).

2. Use the VALUE ∧ and ∨ buttons to change the setting.

3. Press the SEND button.
   - The specified PROGRAM CHANGE numbers are transmitted.

SYSEX BULK DUMP

This instrument's internal data can be transmitted to and received from another **WSA1**/**WSA1R** or other MIDI equipment with the BULK DUMP function as SYSTEM EXCLUSIVE data.
- Sound is not generated from this instrument during this procedure.
- SYSEX BULK DUMP data cannot be transmitted/received on the **MIDI 2** terminals. Please use the **MIDI 1** terminals for this function.



(**WSA1**)

■ **Transmitting**

1. Follow the procedure necessary to prepare the receiving instrument for data reception.

2. Use the buttons on the left side of the display to select the type of data to transmit.

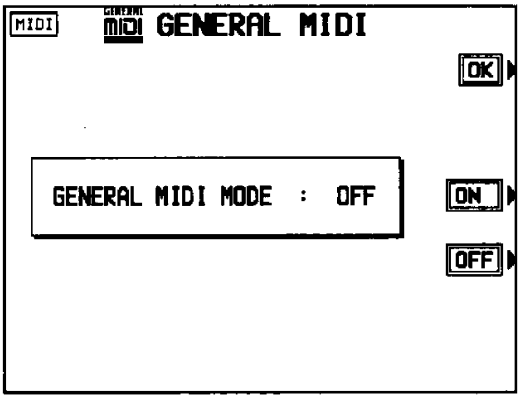
3. Press the SEND button.
   - Transmission begins. During transmission, the transmitting status is shown on the display.

■ **Reception**

After accessing this display on this instrument, follow the transmission procedure on the transmission side.
- During reception, the receiving status is shown on the display.

GENERAL MIDI

GENERAL MIDI (GM) is the standard which enables MIDI data exchange between different models or equipment of different manufacture: Program change numbers and their corresponding sounds, percussion instrument sounds, note numbers, etc. are data compatible between equipment using this standard.



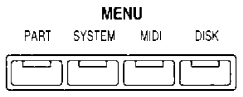
1. Use the ON and OFF buttons to specify whether or not this instrument should be compatible with GENERAL MIDI standard instruments.

- If ON is selected, the status of this instrument changes to the GENERAL MIDI status, and the sounds and operations which can be selected are limited. In addition, in some cases the arrangement of percussion sounds on the keyboard changes.

2. Press the OK button.
- The confirmation display appears. Press the YES button to execute the function, or press the NO button to cancel the function.

Warning
If a song which was created with GENERAL MIDI set to OFF is played back with GENERAL MIDI set to ON, the sounds and drum map will not be played back correctly. The same is true when a song created with GENERAL MIDI set to ON is played back with GENERAL MIDI set to OFF.

MIDI emergency reset
During a MIDI performance, if you encounter trouble (for example, an endlessly sustained tone), you should press the four **MENU** buttons (**PART**, **SYSTEM**, **MIDI** and **DISK**) at the same time to resolve the problem.



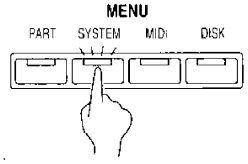
In this case, the following will also happen:
MIDI OUT: ALL NOTE OFF, RESET ALL CONTROLLER data is output from all MIDI OUT channels.
MIDI IN: Received NOTE and CONTROLLER data is initialized.

Initialize

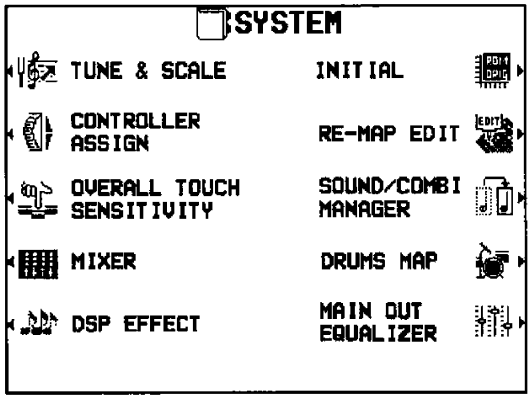
This instrument has many settable functions and storable memories. However, you can return the settings and memory to the factory-preset status.

INITIAL

1. In the **MENU** section, turn on the **SYSTEM** button.

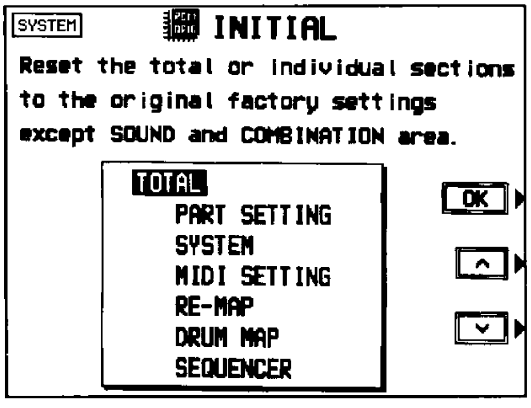


- The display looks similar to the following.



(WSA1)

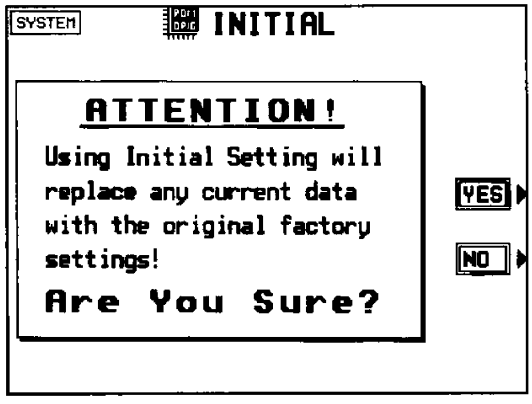
2. Select INITIAL.
- The display looks similar to the following.



(WSA1)

3. Use the ∧ and ∨ buttons to specify which memories are to be initialized.

4. Press the OK button.
- The display changes to the confirmation display. Press the YES button if you wish to execute the initialization. Press the NO button if you wish to cancel the procedure.



- When you press the YES button, initialization begins. When initialization is completed, the instrument returns to the normal performance mode.
- SOUND and COMBINATION data is preserved.

■ You can also reset all the instrument's settings with the following procedure: Turn off the **POWER** button once. Then, while pressing the **REALTIME CREATOR 1**, **2** and **3** buttons at the same time (**WSA1**) or the **REALTIME CREATOR 1-6** button and **RESET** button at the same time (**WSA1R**), turn the **POWER** button on again. (SOUND and COMBINATION data is preserved.)

About the backup memory

The panel settings and the MIDI settings, etc. are maintained in the backup memory for about one week after the power to this instrument is turned off.

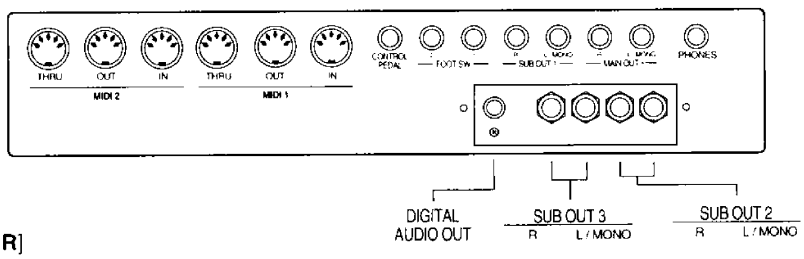
WSA1: **SEQUENCER** data is maintained for about 80 minutes.

- If you wish to keep the memory contents, before you turn off the instrument, use the SAVE procedure to store the desired data on a disk for recall at a later time.
- The backup memory does not function until the power has been on for about 10 minutes.
- SOUND and COMBINATION data is not erased when the power is turned off, or even after a long time has passed. If you wish to reset the **USER** banks to the factory-preset status, follow the DISK LOAD procedure to load the **SOUND/COMBI** data from the accessory disk.

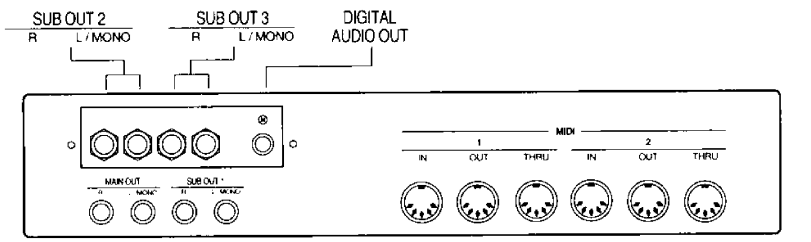
Connections and options

Connections (on the rear panel)

[WSA1]



[WSA1R]



MIDI
These terminals are for connection to other MIDI instruments.

CONTROL PEDAL (WSA1)
The optional SZ-E2 Expression Pedal (sold separately) can be connected to this terminal to control various functions. (Refer to page 52.)

FOOT SW 1, 2 (WSA1)
Optional SZ-P1 Foot Switches (sold separately) can be connected to these terminals to control various functions. (Refer to page 52.)

- The polarity setting can be adjusted. (Refer to page 52.)

SUB OUT1 (output level 1.5 Vrms, 600 Ω)
This terminal is for sub output. To output monaural signals, connect the external equipment to the **L/MONO** terminal. (Do not connect the **R** terminal.)

MAIN OUT (output level 1.5 Vrms, 600 Ω)
This terminal is for main output. To output monaural signals, connect the external equipment to the **L/MONO** terminal. (Do not connect the **R** terminal.)

PHONES (WSA1)
For connecting headphones.

- **WSA1R**: This terminal is found on the front of the unit.

■ **When an optional Output Expansion Board SY-ES1 (sold separately) is installed**

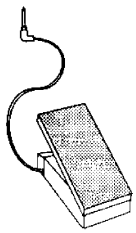
SUB OUT2, SUB OUT3
(output level 1.5 Vrms. 600 Ω)
These terminals are for sub output. To output monaural signals, connect the external equipment to the **L/MONO** terminal. (Do not connect the **R** terminal.)

DIGITAL AUDIO OUT (S/PDIF standard)
The stereo signals from the main output are output as digital signals through one connector. Connect DAT equipment, for example, to this terminal.

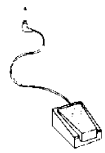
Sampling frequency: 44.1 kHz
Number of quantizating bits: 20 bit linear
Channels: 2 channels (stereo)
Connector: RCA pin jack

- Installation of the Output Expansion Board should be carried out by your dealer.

Separately sold options

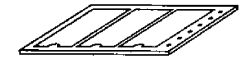


SZ-E2 (WSA1)
Expression Pedal



SZ-P1 (WSA1)
Foot Switch

SY-ES1
Output Expansion Board



SY-EW series
Wave Expansion Board

Symptoms which appear to be signs of trouble

The following changes in performance may occur in the Technics Keyboard but do not indicate trouble.

	Phenomenon	Remedy
	The buttons, keys, etc. malfunction.	• Turn off the **POWER** button once, then turn it on again. If this procedure is not successful, turn off the **POWER** button once. Then, while pressing the **REALTIME CREATOR 1**, **2** and **3** buttons at the same time (**WSA1**) or the **REALTIME CREATOR 1-6** button and **RESET** button at the same time (**WSA1R**), turn the **POWER** button on again.
Sounds and effects	No sound is produced when the keys are pressed.	• The **VOLUME** is at the minimum setting. Adjust the volume with the **VOLUME** control. • The volumes for the selected parts are set to the minimum levels. Set the volumes of the relevant parts to appropriate levels. (Refer to pages 53.) • The local control for a part performed on the keyboard is set to OFF. Set the local control to ON. (Refer to page 101.)
	Only percussive instrument sounds are produced when the keyboard is played.	• The DRUM bank is selected.
	WSA1: The volume is very low when the keyboard is played.	• The volume setting in the **SEQUENCER** contents is very low. Follow the INITIAL procedure to reset the settings. (Refer to page 105.)
	Some sounds cannot be selected.	• When the GENERAL MIDI status is set to on, The sounds which can be selected and operation which can be executed are limited. Turn the GENERAL MIDI status off to return the instrument to its normal operation. (Refer to page 104.)
	WSA1: The sound you hear is different from the sound you selected.	• This sometimes occurs when you play back **SEQUENCER** data which was created on a different model, or when MIDI data is received from a connected instrument. Select the desired sounds again.
SEQUENCER (WSA1)	You tried to store an edited sound, but it could not be stored.	• You cannot store a sound if MEMORY PROTECT is set to ON; set it to OFF. (Refer to page 58.)
	Storage is not possible.	• The remaining memory capacity of the **SEQUENCER** is 0. Follow the SONG CLEAR or TRACK CLEAR procedure to erase the memory. (Refer to page 82.)
	Multi-track storage is not possible.	• The playback track has been selected, but the **START/STOP** button has not been pressed. To record one track while listening to another (playback) track, press the **START/STOP** button to begin playback.

	Phenomenon	Remedy
Disk Drive	The Disk Drive produces a noise during recording or playback.	• This occurs when the Disk Drive is reading a disk. It does not indicate a problem.
	When the procedure to load from a disk is performed, the contents of the keyboard memory are erased.	• When performing the load operation from a disk, the keyboard memory changes to that of the data loaded from the disk. If you wish to preserve a song which is stored in the keyboard memory, save it on a disk before performing the load procedure. (Refer to page 97.)
Other	Noise from a radio or TV can be heard.	• This sometimes occurs when electrical equipment such as a radio or TV is used near the instrument. Try moving such electrical equipment further away from the instrument. • The sound may be coming from a nearby broadcast station or amateur radio station. If the sound is bothersome, consult your dealer or service center.
	The cabinet becomes warm during use.	• This instrument has a built-in power source that heats the cabinet to some degree. This is not an indication of trouble.

Error messages

No.	Contents
00	The data on the disk that you are using is for a different product.
01	An error has occurred while the disk was loading. Please try again!
02	There is no disk in the Disk Drive.
03	The file that you tried to load is empty.
05	An error has occurred while the disk was saving. Please try again!
06	The disk that you are using is write protected. Please remove the write protection and try again.
07	The disk that you are using is full. Please use another disk.
08	An error has occurred while the disk was formatting. The disk that you are using may be faulty. Please try formatting another disk.
10	The data is already copy protected.
20	A problem has occurred with your **SEQUENCER** Data. This might be due to a damaged or faulty disk.
21	Memory full
28	This song is too long to be saved as a MIDI file.
29	The MIDI file that you have tried to load exceeds the memory capacity of the **WSA** and cannot be played. The **SEQUENCER** memory has been cleared.
40	The Identification (ID) code of the system exclusive data received by the **WSA** is for a different product.
41	An error has occurred during system exclusive data reception. The data from the transmitting device may be incomplete. Please try again.
42	An error has occurred during system exclusive transmission. The data has not been received correctly. Please try again.
58	The song that you have tried to load exceeds the **WSA**'s available memory and cannot be loaded. The selected song memory has been cleared. Please clear existing songs in the instrument's memory using SONG CLEAR to make more memory available, and try again.

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Specifications

		WSA1	WSA1R
KEYBOARD		61 KEYS (WITH INITIAL/AFTER TOUCH)	—
SOUND GENERATOR		ACOUSTIC MODELING SYNTHESIS	
MAXIMUM NUMBER OF NOTES PRODUCED SIMULTANEOUSLY		64 NOTES (32 PARTS MAX.)	
SOUND		PRESET (ROM): 256 SOUNDS + 16 DRUM KITS, 128 COMBINATIONS USER: 256 SOUNDS + 4 DRUM KITS, 128 COMBINATIONS RE-MAP: 1, 2, 3 (GENERAL MIDI)	
BANK		USER 1, 2, ROM/EXT	
CONTROLLER		REALTIME CONTROLLER, REALTIME CREATOR, PITCH BEND WHEEL, MODULATION WHEEL 1, 2	REALTIME CREATOR
EDIT	SOUND	MODELING, TONE LAYER, PITCH, FILTER, AMPLITUDE, DIGITAL EFFECT, DSP EFFECT, CONTROLLER	
	COMBINATION	INTERNAL SOUND, MIDI SOUND, CONFIGURE, MIXER, DSP EFFECT	
DIGITAL EFFECT		12 TYPES	
DSP EFFECT		EFFECT 44 TYPES, REVERB 12 TYPES	
SEQUENCER		16 TRACKS RESOLUTION: 96 PULSES PER QUARTER-NOTE STORAGE CAPACITY: APPROX. 47000 NOTES (10 SONGS MAX.) INPUT MODES: REALTIME RECORD, STEP RECORD, MASTER RECORD FUNCTIONS: SONG SELECT/NAME, EDIT, TRACK ASSIGN, AFTER TOUCH SET, MEDLEY	—
PART		INTERNAL SOUND, CONFIGURE, MIDI OUTPUT FILTER, MIXER, DSP EFFECT	
SYSTEM		TUNE & SCALE, OVERALL TOUCH SENSITIVITY (WSA1), CONTROLLER ASSIGN, MIXER, DSP EFFECT, INITIAL, RE-MAP EDIT, SOUND/COMBI MANAGER, DRUMS MAP, MAIN OUT EQUALIZER	
DISK		BUILT-IN 3.5 inch FLOPPY DISK DRIVE FOR 2HD (1.44 MB), 2DD (720 KB) DISK LOAD, DISK SAVE, MIDI FILE DIRECT PLAY, DISK FORMAT, LOAD SINGLE SOUND, LOAD SINGLE COMBINATION	
MIDI		TOTAL MODE, REALTIME MESSAGE, INPUT&OUTPUT FILTER, PROGRAM CHANGE MIDI OUT, SYSEX BULK DUMP, GENERAL MIDI	
DISPLAY		LCD (320 × 240 DOTS), PAGE, CONTRAST, EXIT	
OTHERS		VOLUME, DATA ENTRY DIAL/KEYS, COMPARE	
TERMINALS		PHONES, MAIN OUT (R, L/MONO), SUB OUT (R, L/MONO), FOOT SW 1, 2, CONTROL PEDAL, MIDI (IN, OUT, THRU) × 2	PHONES, MAIN OUT (R, L/MONO), SUB OUT (R, L/MONO), MIDI (IN, OUT, THRU) × 2
POWER REQUIREMENT		110 W, 100 W (CANADA), 80 W (U.S.A. AND MEXICO)	23 W, 35 W (NORTH AMERICA)
		AC120/220/240V 50/60 Hz AC120V 60 Hz (NORTH AMERICA AND MEXICO) AC230V 50/60 Hz (NEW ZEALAND AND PHILIPPINES) AC230–240V 50/60 Hz (EUROPE)	
DIMENSIONS (W×H×D)		105.5 cm × 11.5 cm × 35.2 cm (41-17/32" × 4-17/32" × 13-27/32")	48.2 cm x 14.1 cm x 25.2 cm 18-31/32" x 5-17/32" x 9-15/16"
NET WEIGHT		13 kg (28.7 lbs.)	6.5 kg (14.3 lbs.)
ACCESSORIES		AC CORD, DEMO DISK	AC CORD, MIDI CABLE, DEMO DISK

Design and specifications are subject to change without notice.