V50

DIGITAL SYNTHESIZER

Operating Manual

YAMAHA

SUPPLEMENTAL MARKING INFORMATION

This information on safety is provided to comply with U.S.A. laws, but should be observed by users in all countries.

Yamaha Digital Musical Instrument Products will have either a label similar to the graphic shown below or a molded/stamped facsimile of the graphic on its enclosure. The explanation of these graphics appears on this page. Please observe all cautions indicated.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

FCC INFORMATION

While the following statements are provided to comply with FCC Regulations in the United States, the corrective measures listed below are applicable worldwide.

This series of Yamaha professional music equipment uses frequencies that appear in the radio frequency range and if installed in the immediate proximity of some types of audio or video devices (within three meters), interference may occur. This series of Yamaha professional music equipment has been type tested and found to comply with the specifications set for a class B computing device in accordance with those specifications listed in subpart J of part 15 of the FCC rules. These rules are designed to provide a reasonable measure of protection against such interference. However, this does not guarantee that interference will not occur. If your professional music equipment should be suspected of causing interference with other electronic devices, verification can be made by turning your professional music equipment off and on. If the interference continues when your equipment is off, the equipment is not the source of interference. If your equipment does appear to be the source of the interference, you should try to correct the situation by using one or more of the following measures:

Relocate either the equipment or the electronic device that is being affected by the interference. Utilize power outlets for the professional music equipment and the device being affected that are on different branch (circuit breaker or fuse) circuits, or install AC line filters.

In the case of radio or TV interference, relocate the antenna or, if the antenna lead-in is 300 ohm ribbon lead, change the lead-in to a co-axial type cable.
If these corrective measures do not produce satisfactory results, please contact your authorized Yamaha professional products dealer for suggestions and/or corrective measures.
If you cannot locate a franchised Yamaha professional products dealer in your general area contact the Electronic Service Department, Yamaha Corporation of America, 6600 Orangethorpe Ave., Buena Park, CA 90620, U.S.A.

If for any reason, you should need additional information relating to radio or TV interference, you may find a booklet prepared by the Federal Communications Commission helpful:
"How to Identify and Resolve Radio — TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402 — Stock No. 004-000-00345-4.

IMPORTANT NOTICE FOR THE UNITED KINGDOM

Connecting the Plug and Cord

IMPORTANT. The wires in this mains lead are coloured in accordance with the following code:

BLUE : NEUTRAL

BROWN : LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

V50 DIGITAL SYNTHESIZER

Operating Manual

INTRODUCTION

Thank you for purchasing the Yamaha V50 Digital Synthesizer. The V50 is a MIDI-equipped synthesizer utilizing FM tone generation. In addition to its synthesizer functions, the V50 features a built-in sequencer and rhythm machine, and can act as an all-in- one music production system.

In order to make full use of the V50's capabilities and enjoy long and trouble-free use, please read this manual carefully before use.

FEATURES

Some of the V50's many features are:

- **FM tone generation**
  Sound is produced using Yamaha's unique FM tone generation technology (4 operator, 8 algorithm). One of 8 waveforms can be selected for the output of each operator, for a wide variety of sounds.
- **16-note/8-timbre simultaneous notes**
  In single play mode a single voice can be played with up to 16 simultaneous notes, and in performance play mode the 16 notes can be distributed among up to eight different voices. In addition, DVA (dynamic voice allocation) mode will automatically determine the maximum number of simultaneous notes for each voice, allowing you to concentrate on your playing.
- **100 preset voices and performances**
  100 voices and 100 performances are built into the permanent memory of the V50 covering a wide variety of sounds from piano to brass to special effects.
- **100 voice and performance memories**
  100 voice memories and 100 performance memories are provided for you to store your own creations.
- **8-track 16000-note (approximate) sequencer**
  In addition to the rhythm tracks, an 8-track sequencer is built into the V50. By recording musical parts track by track you can build up an ensemble of up to 8 instruments using just a single V50. Up to 8 songs (within a total of approximately 16000 notes) can occupy the V50's memory and be played back in succession.
- **Rhythm machine with PCM-recorded sounds**
  A rhythm machine with 61 PCM-recorded sounds is built in. In addition to traditional drum kit instruments, the 61 sounds include ethnic instruments and synthesized percussion. These sounds can be used in synchronization with the sequencer playback.
- **Card slot, disk drive**
  Voice and performance data, and data for the sequencer and rhythm machine can be stored on card or floppy disk. (However, sequencer data cannot be stored on card.) An MDR function is provided, allowing you to store system exclusive data from external MIDI devices on a V50 disk.
- **Micro tuning**
  Tunings other than the conventional equal temperament can be used. Tunings such as Werkmeister and 1/4 tone are built in, and you can program the pitch of each key to create your own tunings.
- **Performance effects**
  Three performance effects are built in; delay, pan, and chord. Four settings of each effect can be memorized.
- **Digital effects**
  A digital effects unit is built in, providing effects such as digital reverb and digital delay. An effect can be specified for each voice or performance, allowing you to use a digital effect as part of the voice or performance data.
- **User-editable power-on character display**
  You can specify a greeting message to be displayed whenever the power is turned on.

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PRECAUTIONS

The V50 is a precision electronic instrument. To ensure long and trouble-free use, please read the following precautions.

Location
Avoid placing the V50 in direct sunlight, or in locations where it will be subjected to temperature extremes, moisture, excessive dust, or heavy vibration.

Handling
Avoid applying excessive force to the switches, dropping or rough handling of the unit. While the circuitry is of reliable integrated circuit design, the V50 should be treated with care.

Power cable
Always grip the plug directly when removing it from an AC outlet. Removing the plug from the AC outlet by pulling the cable can result in damage to the cable, and possibly a short circuit. It is also a good idea to disconnect the V50 from the AC outlet if you don't plan to use it for an extended period of time.

Turning the power on
If one or more devices are connected to the V50 via MIDI cable, turn on the power switches starting with the transmitting devices (keyboards, sequencers, etc.)

Connections
To avoid damage to speakers, make all audio connections with the power of the V50 and other units turned off.

MIDI cables
Use cables specifically intended for MIDI. Using MIDI cables longer than 15 meters (45 feet) can result in data errors.

Cleaning
Use only a mild detergent on a cloth, and dry with a soft cloth. Never use solvents (such as benzine or thinner) since they can melt or discolor the finish.

Electrical storms (lightning)
Computer circuitry, including that in the V50, is sensitive to voltage spikes. For this reason, the V50 should be turned off and unplugged from the AC outlet in the event of an electrical storm. This precaution will minimize the chance that a high voltage spike caused by lightning will damage the unit.

Electromagnetic fields
Computer circuitry is also sensitive to electromagnetic radiation. Television sets, radio receivers, transmitters and transceivers, and wireless microphone or intercom systems are all potential sources of such radiation. The V50 should not be placed too close to such devices.

Backup battery
The V50 has a backup battery that allows it to retain its voice and performance data even when disconnected from the AC outlet. The life of this battery is approximately 5 years. When the backup battery runs low, the first line of the LCD will show "Change int battery!". When the backup battery runs completely out, the voice and performance data will be lost, so immediately save the data to an optional RAM card or to disk. Contact the dealer where you purchased your V50 or a Yamaha service center to have the battery replaced. When the battery is replaced, the voice and performance data will be lost, so be sure to store the data to RAM card or disk.

Floppy disk drive
When moving the V50, be sure to insert the included dummy disk or an ordinary floppy disk (only if the data is not essential) into the disk drive to protect the floppy disk drive heads.

Floppy disks
Use 3.5" 2DD (double sided double density) disks. NEVER remove the disk while the drive is accessing the disk (when the disk LED is on). Do not leave disks where there is a strong magnetic field (near speakers or video monitors), or in direct sunlight. Do not bend or put pressure on disks. Do not open the disk shutter and touch the disk surface. We recommend that you copy (backup) important data on one or more disks.

HOW TO USE THIS MANUAL

This manual is divided into chapters 1—6 and an appendix.

If you are using the V50 for the first time, we suggest you read chapter 1. This will give you a basic understanding of all operations. You can refer to the remaining chapters as necessary, when you want to take full advantage of the V50's functions.

Chapter	Subject	First-time users	Experienced FM users	Experienced V50 users
1. Introducing the V50	Important points to know when using the V50, and basic operation	Please read this section		Not absolutely necessary to read
2. Performance Edit	Explains how to edit a performance	Read when you want to edit a performance		Read when necessary
3. Voice Edit	Explains how to edit a voice	Read when you want to edit a voice	Skim through	Read when necessary
4. Using the rhythm machine	Explains how to use the rhythm machine	Read when you want to use the rhythm machine		
5. Using the sequencer	Explains how to use the sequencer	Read when you want to use the sequencer		
6. Utility functions	Explains how to store, use the disk and card, and make MIDI settings	Read when necessary		
Appendix	Explains the preset voices	Read when necessary		
MIDI format	Explains the MIDI data format of the V50	Read when necessary		

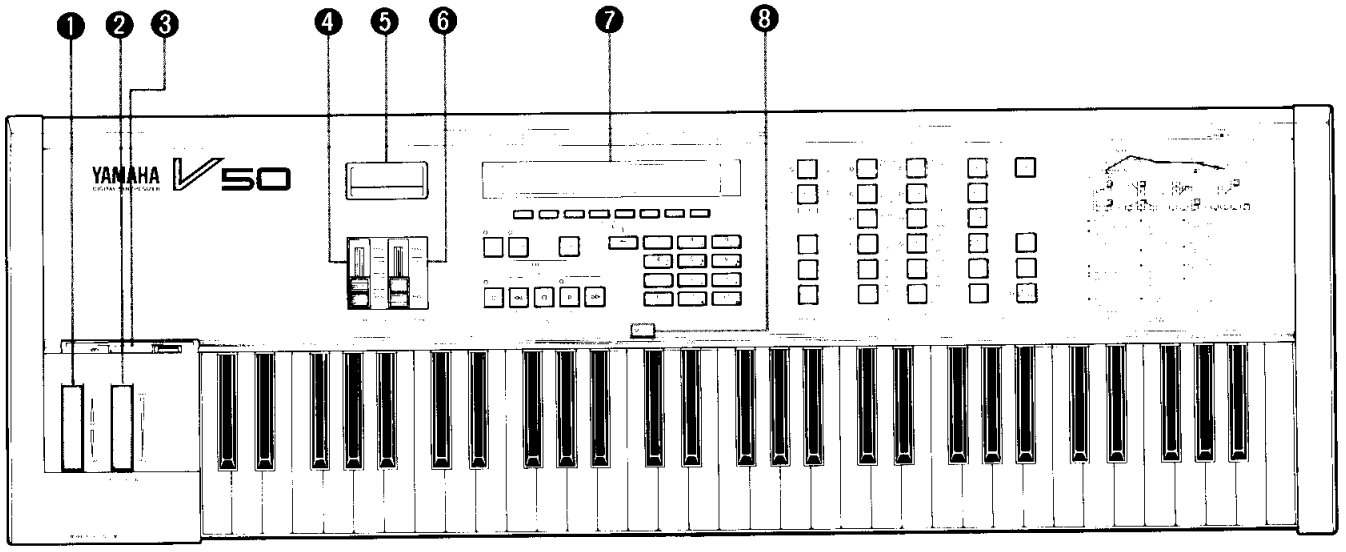
CHAPTER 1. INTRODUCING THE V50

This chapter begins with explaining the parts of the V50, and then tells how to make connections and play the sounds. To take full advantage of the V50, please be sure to read this chapter.

FRONT AND REAR PANELS

We begin by explaining the various parts of the V50. The use of each section will be explained in chapter 2 and later chapters. Here we will give simple explanations of what each part does.

The keyboard



1 Pitch bend wheel (PITCH)
This raises or lowers the pitch while playing. When you release the wheel, it will return to the center position (the normal pitch). Rotating the wheel away from you will raise the pitch, and rotating the wheel toward you will lower the pitch.

2 Modulation wheel (MODULATION)
This regulates the amount of cyclic change in tone (wah-wah), cyclic change in volume (tremolo), or cyclic change in pitch (vibrato). Rotating the wheel away from you will cause a deeper effect, and rotating it all the way towards you will result in no effect.

3 Floppy disk drive
This is where you insert a 3.5" floppy disk to store voice or performance data, or data from the sequencer or rhythm machine. Insert the disk with the label facing up, from the end with the metal shutter. To remove the disk, press the button at the lower right of the drive.

4 Volume slider (VOLUME)
This slider regulates the volume. Moving the slider all the way towards you results in a volume of 0, and moving it all the way away from you will result in full volume.

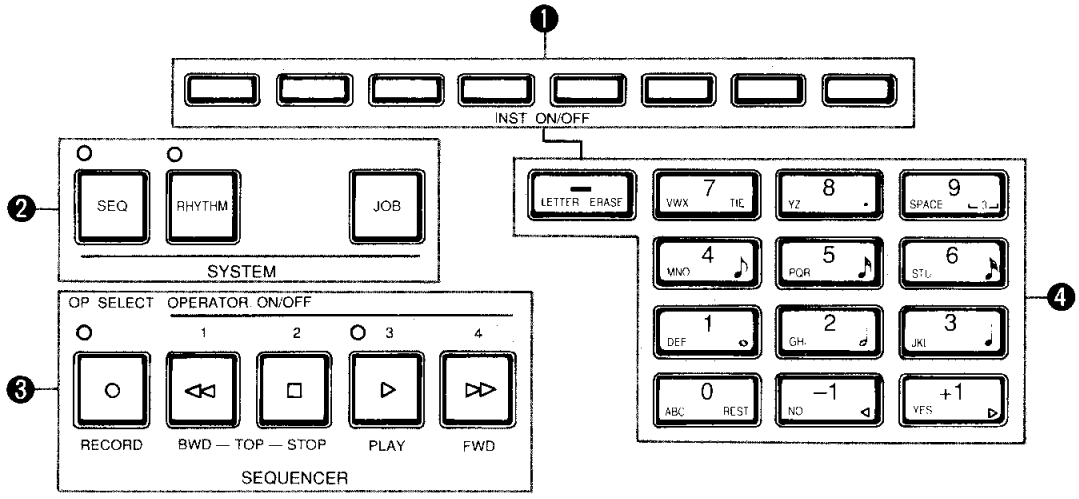
❺ **Data entry slider (DATA ENTRY/TEMPO)**
This slider is used when setting various data to enter larger or smaller numbers or turn settings off or on. While the rhythm machine or sequencer is playing, this slider regulates the tempo.

❻ **Card slot (CARD)**
This is the slot in which to insert a RAM or ROM card. Cards can be used to save voice, performance, or rhythm data. Turn the power off before inserting or removing a card.

❼ **Display**
This displays the names of selected voices or performances, data values, on/off settings, etc.

❽ **C3 key mark**
Each key of the keyboard has a name consisting of an alphabetical character A – G and a number –2 – 8 indicating the octave. (For example G-1, C#1, E4, G5, A6, etc.) This mark indicates the position of C3.

Key panel (the keys below the display)



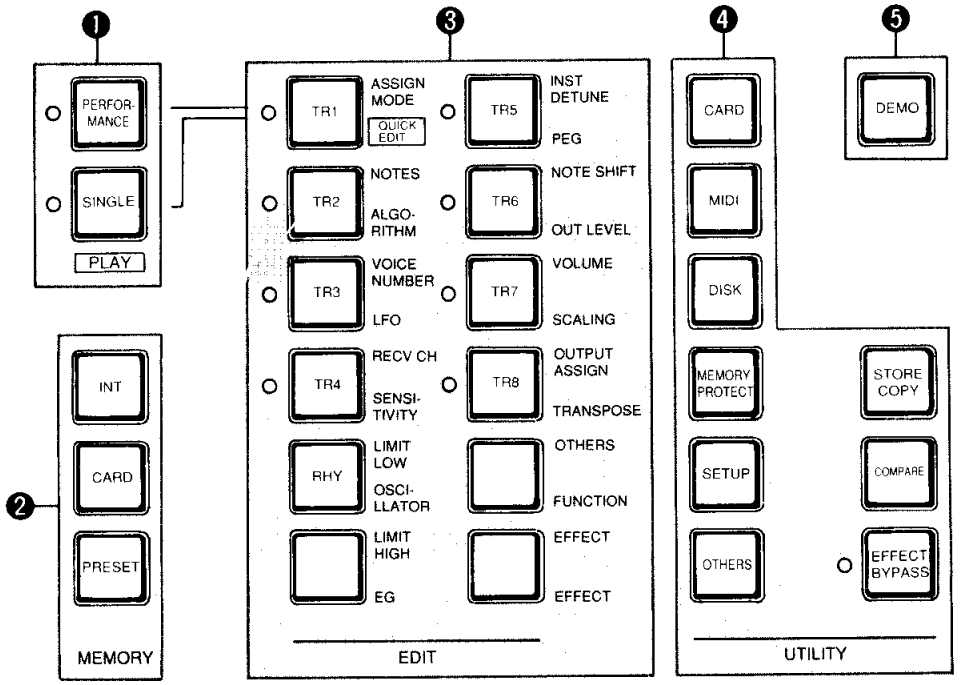
❶ **Function keys**
These keys have various functions when editing voices or performances, or editing sequencer or rhythm machine data. The display will indicate the current function of each key.

❷ **System keys**
These are used with the sequencer or rhythm machine, or when editing sequencer or rhythm machine data. When you press [SEQ] you will enter sequencer play mode. When you press [RHYTHM] you will enter rhythm play mode (pattern play mode or song play mode). In sequencer or rhythm machine mode, pressing [JOB] will display menus of various settings for each mode.

❸ **Sequencer, rhythm machine keys**
In sequencer or rhythm machine mode, you can start, stop, and move backwards or forward with these keys, just as with the controls on a cassette recorder. Pressing [□] and [◁◁] together will move to the beginning of the song. In rhythm pattern mode, this will move to the beginning of the pattern. When editing a voice, the [◁◁], [□], [▷], and [▷▷] keys will switch operators 1, 2, 3, and 4 off or on. [○] selects the operator to be edited.

❹ **Numeric keys**
Use these keys to specify voice or performance numbers, or values for various settings. They are also used to enter characters for a voice name, etc., and to specify the note length when recording a sequence. The [–1] [+1] keys are also used when replying to prompts in the display.

Key panel (the keys to the right of the display)



1 Play keys
These keys are used to switch between performance play and single play modes.
Press [PERFORMANCE] to change to performance play mode. Press [SINGLE] to change to single play mode.

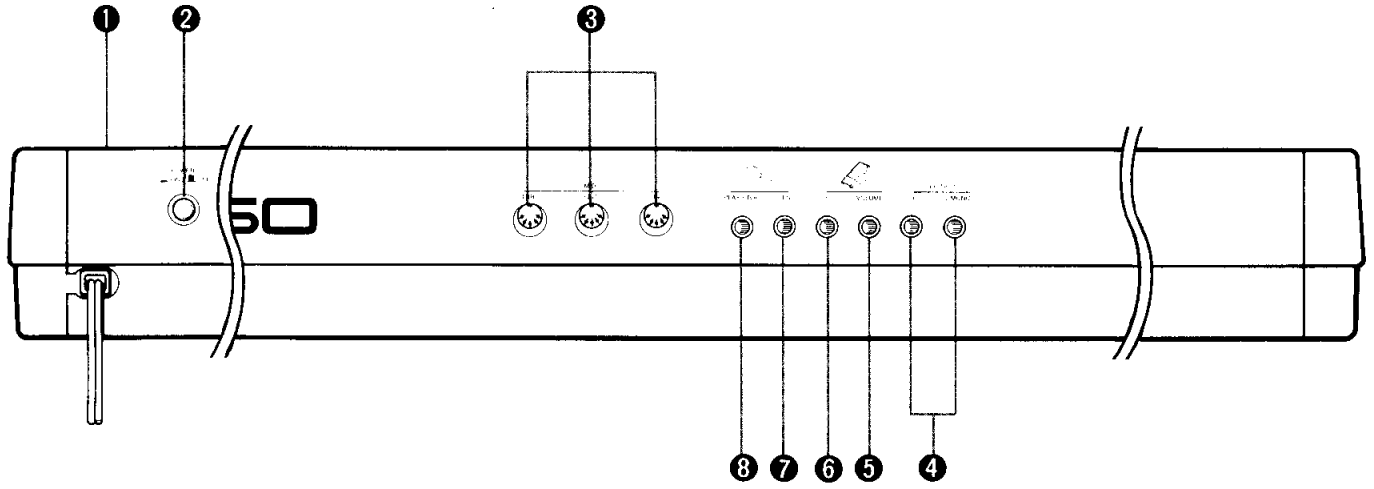
2 Memory keys
These keys select between "Preset", "Card", or "Internal" voices, performances, and rhythm patterns. (However, there are no "Card" rhythm patterns.)

3 Edit keys
When editing voices or performances, these keys specify the parameter to be edited. During sequencer playback, these keys switch each track on/off. They are also used to select tracks for recording.

4 Utility keys
These keys are used when making various settings or for various operations affecting the entire V50.

5 Demo key
Use this key to play the preset V50 demo.

Rear panel



❶ **Power cable**
Insert this plug into an AC outlet of the correct voltage.

❷ **Power switch (POWER)**
This is the power switch. The power is on when this switch is pressed in. The front panel display will light when the power is turned on.

❸ **MIDI terminals (IN, OUT, THRU)**
Connect MIDI cables to these terminals. IN receives MIDI signals, OUT transmits MIDI signals, and THRU re-transmits the MIDI signals that were received at the IN terminal.

❹ **Audio Outputs (L/MONO, R)**
These jacks output the sound. If you have two amplifiers, connect the left channel to L/MONO and the right channel to R. If you have only one amplifier, connect it to L/MONO.

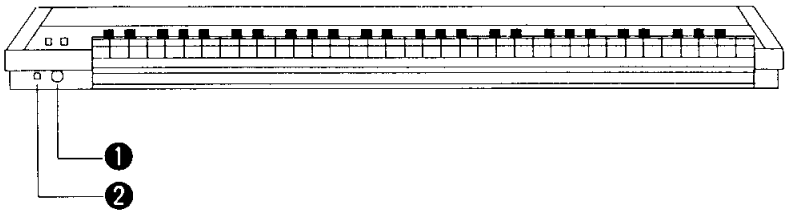
❺ **Volume pedal jack (VOLUME)**
An optional volume pedal can be connected here.

❻ **Foot controller jack (FC)**
An optional foot controller (FC7, FC9, etc.) can be connected here to regulate tone, pitch, or volume.

❼ **Foot switch jack (FS)**
An optional foot switch (FC4, FC5, etc.) can be connected here to turn sustain (sustaining notes) or the portamento (smoothly changing pitch) on/off.

❽ **Sequencer switch jack (PLAY/STOP)**
An optional foot switch (FC4, FC5, etc.) can be connected here to start or stop sequencer playback. (This will function in the same way as the front panel keys [▷] and [□] but not while recording.)

Front side



❶ **Headphone output (PHONES)**
A pair of stereo headphones can be connected here. The connector is a standard stereo headphone output jack, and corresponds to the rear panel L and R output jacks. (Use headphones of 8 – 150 ohms impedance.)

❷ **Breath controller jack (BREATH CONT)**
An optional breath controller (BC1, BC2) can be connected here to affect volume or tone according to the force of your breath.

CONNECTIONS

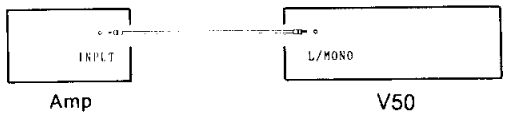
To produce sound, you must connect the V50 to an external amp/speaker system or use a pair of headphones. This section shows some typical setups. (The "amps" in the diagram refer to a keyboard amp that has a speaker built in.)

Note:

Be sure to turn the power of both units off before connecting the V50 to the amp. Failing to do so can damage the amp.

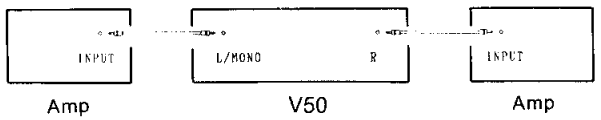
Using a single amp

When using just one amp, connect the L/MONO jack to the input of the amp as shown in the figure.



Using two amps

When using two amps, connect the L/MONO output jack to the amp for the left channel, and the R output jack to the amp for the right channel.



Equipment that can be connected to the V50 outputs

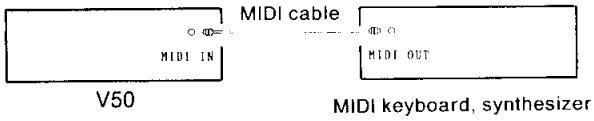
The example above uses keyboard amps (speakers with built-in amps), but other types of equipment can be connected to the V50 outputs, as follows.

- Combination amp/speaker units
- Multitrack recorders or cassette decks. However, be sure to use the line inputs. Connecting the output of the V50 to the mic inputs could damage the equipment. When connecting to a cassette deck etc., you will need an adaptor to convert the phone plug into the pin plug that is found on most cassette decks.
- Mixers (e.g., the MV802 or DMP7). Be sure to use the line inputs.

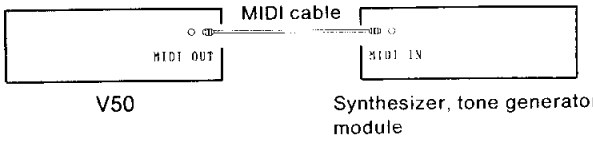
Connecting other equipment via MIDI

Here are some ways to connect other equipment to the V50 using the MIDI terminals.

- Controlling the V50 from another MIDI device (a keyboard or synthesizer such as the KX or DX series).



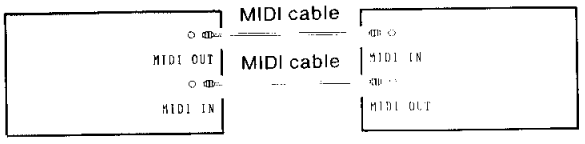
- Controlling another MIDI device (a synthesizer or tone generator module such as the DX or TX series) from the V50.



Note:

This is also how you will make connections when using the V50 sequencer to control external synthesizers or tone generator modules.

- Connecting an external sequencer (such as the QX series) and using it to record and playback.



There are many other ways to make MIDI connections, depending on your equipment and needs.

The MIDI THRU terminal re-transmits the MIDI signals received at MIDI IN. This makes it possible for more than one MIDI device to be controlled at once.

MAKING SOUND

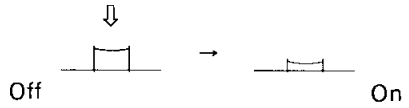
Now that connections are complete, we will explain how to make some sounds.

Turn the power on

Turn on each device in your setup in the following order.

(1) Check the following four items.
  (1) Are all power cables correctly inserted into an AC outlet?
  (2) Are all connections correct?
  (3) Are the amplifiers set to minimum volume?
  (4) Is the V50 volume slider set to MIN?

(2) The round button on the right side of the rear panel is the power switch. Press it in to turn the V50 power on.



The display will light up, and show the following message. (You can modify the message in the lower line of the display as explained on page 22.)

```
**** YAMAHA Digital Synthesizer V50 ****
>>>>       Nice to meet you !!       <<<<
```

In a short time this will change to a display similar to the following.

```
PF100 "V"Lead 1  EFCT=Dly L/R: 40 Tch= 1
  P09/ P09/P20/ P20 /P20/ P21 /P21/ P21
```

* This display will be whatever was displayed when the V50 was last turned off, so details may be slightly different.

(3) Turn the amp (keyboard amp, etc.) power on. (The amp power is turned on last to protect the speakers from possible damage.)

Note:

- When several MIDI devices are connected, turn them on beginning with the transmitting device.
- When turning the power off, reverse this order —i.e. turn off the amp, and then turn off the V50.

Any sound?

Now we will produce some sound.

(1) Raise the volume of the amp. (The manual for your amp will give details.)
(2) Gradually raise the volume slider to increase the V50 volume.
(3) Press a key.

Is the V50 sounding? If not, check the following.
(1) Is the power of the V50 and the amp turned on?
(2) Are the V50 and the amp correctly connected?
(3) Are the volumes of V50 and amp raised?

If after checking these three items you still hear no sound, try the steps given on the following page. If you still hear no sound, see page 122.

Now let's try out the various sounds of the V50.

TRY OUT THE SOUNDS

When you purchase the V50, the following 200 sounds are available for you to play.
(1) 100 preset performances
(2) 100 preset voices

Later, we will explain what a "voice" and "performance" is. For now, just try playing the sounds.

Note:

In addition to these presets, there are 100 internal performances and 100 internal voices. At the time of purchase, these contain the same sounds as the preset voices and performances.

100 preset performances

(1) Press [PERFORMANCE], located at the right of the display. If the display already shows something similiar to the following, there is no need to press [PERFORMANCE], and you can move on to step (2).

If "PF..." is already displayed

```
PFI00 "U"Lead 1  EFCT=Dly L/R: 40 Tch= 1
  P09/ P09/P20/ P20 /P20/ P21 /P21/ P21
```

(2) Press [PRESET]. The display will show "PF??".

```
PFP?? "U"Lead 1  EFCT=Dly L/R: 40 Tch= 1
  P09/ P09/P20/ P20 /P20/ P21 /P21/ P21
```

(3) Use the numeric keys to enter a two-digit number. The 100 preset performances are numbered 00 – 99. For example if you press [0], [0], the display will indicate that preset performance 00 has been selected, as follows.

```
PFP00 "U"Lead 1  EFCT=Dly L/R: 40 Tch= 1
  P09/ P09/P20/ P20 /P20/ P21 /P21/ P21
```

- Play the keyboard and you will hear the sound of preset performance 00.

(4) Using the same proceedure as in step (3), use the numeric keys to enter a different two-digit number to select another performance. Play the keyboard and you will hear a different sound.

```
PFP12 WarmStrgs  EFCT=RevPlat: 60 Tch= 1
  P33/ P33/  * /  * /  * /  * /  * /  *
```

(5) This time press [–1] [+1].

- Pressing [+1] will increment to the next performance.
- Pressing [–1] will decrement to the previous performance.
- For instance if preset performance 12 is selected, pressing [+1] will select preset performance 13.

```
PFP13 "U"String2 EFCT=RevHall: 71 Tch= 1
  P00/ P00/  * /  * /  * /  * /  * /  *
```

As you have learned, there are two ways to select numbers; by directly entering the number using the numeric keys, or by incrementing or decrementing the currently selected number using [–1] [+1].

Preset performances from 94 – 99 are intended for multi-timbral playback using the V50 sequencer. When playing the keyboard with these performances selected, some of the sounds may be identical to other performances, and not all of the instruments shown in the lower line of the display will sound in response to the V50 keyboard.
The polyphony of each performance will depend on how voices are combined, and the performance effects that are used.

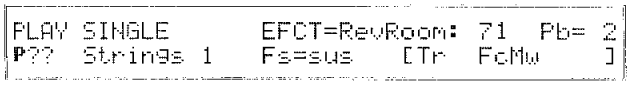
100 preset voices

(1) Press [SINGLE], located at the right of the display. If the display already shows something similiar to the following, there is no need to press [SINGLE], and you can move on to step (2).

If "PLAY SINGLE" is already displayed

```
PLAY SINGLE      EFCT=RevRoom: 71  Pb= 2
I00  Strings 1   Fs=sus    [Tr  FcMw    ]
```

(2) Press [PRESET]. The lower left of the display will show "P??", as follows.



- Select a preset voice number (00 – 99) in the same way as you selected a preset performance. Use the numeric keys to directly enter a two-digit number, or use [–1] [+1] to step through preset performances one by one.

This should give you an idea of the types of sounds the V50 can produce. Using the simple procedures you have just learned, you will be able to select and play a variety of sounds. Those who want to take full advantage of the V50 can continue reading to learn more.

Pressing [PERFORMANCE] when already in performance play mode, or pressing [SINGLE] when already in single play mode will make the display show "Sending PC No.---". The display will return to normal when you release the button. This function allows you to transmit a "Program Change" message from MIDI OUT. This function is meaningless when using the V50 by itself. For details, see page 103.

Note:

Since voice and performance memories are numbered from 00 to 99, selecting a memory usually requires you to enter a two-digit number. However, the "Bank Hold" feature allows you to select memories by pressing a single button. While holding [–], press [7]. to turn Bank Hold on. When Bank Hold is on, pressing a single numeric key will immediately select the memory in the group of 10's that is currently selected. For example if memory 23 was selected when you turned Bank Hold on, pressing [9]. would immediately select 29, and pressing 4 would immediately select 24. While holding [–], press [8]. to turn Bank Hold off.

DEMONSTRATION PLAYBACK

Playing interesting sounds is not all you can do with the V50. Next we will explain how to hear a demo playback that uses the V50 sequencer and rhythm machine, which should give you an idea of the possibilities of the V50.

There are two types of demo: demos stored in the memory of the V50 and demos stored on disk. We will give separate explainations how to load each type.

When you load demo data, the data already in the V50 will be replaced by the demo data. When you select "Demo Disk", "Chain Play", or "V.Edit", the internal voice and performance data will also be replaced. If V50 memory already contains data that you don't want to loose, save the data to card or disk.

Playing the internal demo

Here's how to playback the internal demo.

(1) Press [DEMO] to get the following display.

```
UT  DEMO>      Select one !
>ROM Play >Disk Play >ChainPlay >V. Edit
```

(2) Press the [ ] (function key) located under "> ROM Play" in the display.

```
UT  DEMO>      Select one !
>ROM Play >Disk Play >ChainPlay >V. Edit
```

The upper line of the display will ask "Are you sure?".

```
UT  DEMO>  ROM Play      Are you sure?
 All data will be changed !    [No] [Yes]
```

(3) Press the function key ([ ]) below [YES]. After displaying "*** BUSY ***" for a short time, the following display will appear.

```
UT  DEMO>  Select song & push  START
▶Song 1 : Victory !       >START>STOP>EXIT
```

(4) Use [−1] [+1] to select the demo song. The song titles will be shown in the lower line of the display.

(5) Press [▷] to begin playing the demo song. To stop playback, press [□]. To resume playback, press [▷] again. Press [□] and [▷] together to return to the beginning of the song.

Playing the disk demo

Here's how to playback the disk demo. (Not only the demo data included with the V50, but *any* data you save to disk by selecting "ALL" can be loaded and played using the procedures explained here.)

(1) Press [DEMO] to get the following display.

```
UT  DEMO>      Select one !
>ROM Play >Disk Play >ChainPlay >V. Edit
```

(2) Insert the demo disk into the disk drive. (Making sure that the label is facing up, and the metal shutter is pointing toward the drive, push the disk in until you hear it click into place.)

(3) Press the [ ] (function key) located under "> Disk Play" in the display.

```
UT  DEMO>      Select one !
>ROM Play >Disk Play >ChainPlay >V. Edit
```

The upper line of the display will ask "Are you sure?".

(4) Press the function key ([ ]) below [YES].

```
UT  DEMO> Disk Play      Are you sure?
 All data will be changed !    [No] [Yes]
```

After displaying "*** BUSY ***" for a short time, you will get the following display.

```
UT  DEMO>  Select song & push  START
▶Song 1 : Fusion          >START>STOP>EXIT
```

(5) Use [−1] [+1] to select the song. The song titles will be shown in the lower line of the display.

(6) Press [▷] to begin playing the demo song. To stop playback, press [□]. To resume playback, press

[▷] again. Press [□] and [▷] together to return to the beginning of the song.

In step (3), pressing the [ ] (function key) located under "Chain Play" will make all the demo songs play sucessively, starting with the first. Also, if this data has been saved by selecting "ALL" when saving sequencer data, as later explained, you can use the same steps with disks other than the included demo disks. However only the "ALL" files at the beginning of the disk can be selected by this "Disk Play" function.

Voice edit demo

Here's how to execute the voice edit demo.

- As already explained above, press [DEMO], and then press the [ ] (function key) located under "V.Edit" in the display.
- The display will show "Are you sure?".
- Press the [ ] (function key) located under "Yes".
- The voice edit demo will begin.
- Use the data entry slider to adjust the speed of the voice edit demo.

BASIC CONCEPTS OF THE V50

By now you probably have a basic idea of the possibilities of the V50. Reading this section will give you more detailed knowledge.

Internal structure of the V50

The V50 contains three devices; a synthesizer, rhythm machine, and sequencer. In general, you may think of them as being independent of each other.

Synthesizer ... A device that produces various sounds using an FM tone generator. The synthesizer can be thought of as consisting of the "keyboard" on which you play, and the "tone generator" which actually produces the sounds.

Rhythm machine ... A device that contains PCM recordings of actual rhythm instrument sounds. The wide variety of sounds include traditional drum kit instruments, synthesized drums, and ethnic instruments.

Sequencer ... A device to record an actual musical performance. A musical performance recorded in this way can be played back at any time.

Four play modes

Just as the internal structure of the V50 can be divided into synthesizer, rhythm machine, and sequencer, the play modes of the V50 can be divided into the following four modes.

(1) Performance play mode
Play performances (combinations of more than one voice). Details of "voices" and "performances" are given on page 18.

(2) Single play mode
Play just one voice at a time.

(3) Rhythm machine play mode
Play rhythm patterns or songs (combinations of rhythm patterns). Chapter 4 has details of rhythm machine operation.

(4) Sequencer play mode
Play back a recorded musical performance. Chapter 5 has details of sequencer operation.

BASIC OPERATION OF THE V50

First we will explain basic operations when playing or editing voices, performances, the sequencer, or rhythm machine. Operations can be broadly divided into the following.

- *Switching modes*
- *Using the function keys to select an operation*
- *Setting numbers*
- *Entering characters*

Switching modes

Here's how to switch between performance play mode, single play mode, rhythm machine mode, and sequencer mode.

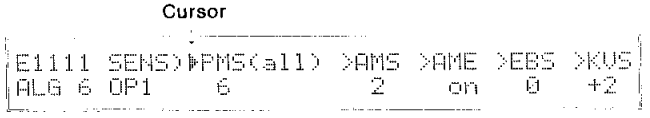
Note:

- You cannot switch modes while using the compare function when editing a voice or performance.
- If you press [SINGLE] when already in single play mode, or press [PERFORMANCE] when already in performance play mode, the display will show "** Sending PC No ---" as long as you continue holding the switch. This allows you to send a program change message as explained on page 103.

- To select performance play mode, press [PERFORMANCE]. The performance last used in performance play mode will be selected. Now you can press [PRESET], [INT], or [CARD], and use the numeric keys or [−1] [+1] to select another performance.
- To select single play mode, press [SINGLE]. The voice last used while in single play mode will be selected. Now you can press [PRESET], [INT], or [CARD], and use the numeric keys or [−1] [+1] to select another voice.
- To select rhythm machine mode, press [RHYTHM]. (You will enter rhythm pattern play mode or rhythm song play mode.)
- To select sequencer mode, press [SEQ].

Using the function keys to select operations

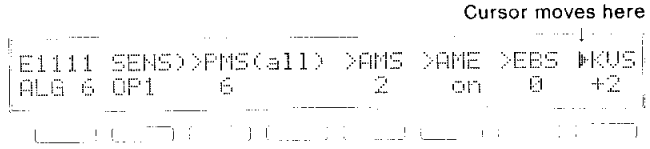
Use the function keys to select various items or functions from the menu displayed while editing or playing each mode. The following display gives an example using the voice edit Sensitivity setting.



If you want to modify the "KVS" setting (key velocity sensitivity), press the function key at the far right.

The cursor will move to "KVS", and you will be able to modify the KVS setting as we will explain in the next section.

In some cases, pressing a function key located below a " > ~ ~ " in the lower line will show an additional menu. The concept to remember is that each function key is related to the lower line of the display.



Setting numerical values

When playing or editing in each mode, here's how to set numerical values for various items shown in the display. There are three ways to set numerical values.

(1) Using the numeric keys
Directly input the value using the [0] – [9] keys and the [–] key. The number of decimal places for each value will differ. If you need to enter a single-digit number in an item that has two decimal places, add a "0" to the beginning of the value. (For example, if you want to input a value of 8 in an item that has a range of 0 – 99, press [0] then [8].) If you enter a value that is larger than the maximum, the maximum value will be displayed.

(2) Using the data entry slider
Moving the data entry slider will modify the value between its minimum and maximum range.

(3) Using [–1] [+1]
Pressing [–1] will decrease the value by one. Pressing [+1] will increase the value by one.

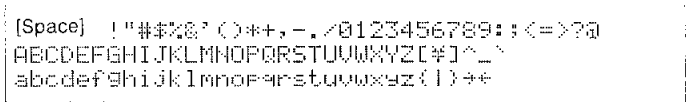
When entering numerical values, use the method most appropriate for each situation. Settings with on/off values (instead of numbers) can be made using methods (2) or (3).

Inputting characters

Here's how to enter names for voices or performances, or song names for the rhythm machine or sequencer. When entering characters, the lower line of the display will show a "←" and "→". The function keys below these arrows will move the cursor (an underline), indicating where the next character will be input.

(1) Using the numeric keys
Use the [0] – [9] keys and the [–] key to directly input characters. There are three characters printed on the lower left of each key. For example the key [0] has "ABC" printed on it. The first time you press this key, "0" will be entered. Press it a second time for "a", press it a third time for "b", and press it a fourth time for "c". The [–] (LETTER) key switches between uppercase and lowercase letters. When inputting lowercase letters the display will be "name". When inputting uppercase letters the display will be "NAME". The [9] key enters a space.

(2) Using the data entry slider
Moving the data entry slider will scroll through the following characters.



(3) Using [–1] [+1]
Pressing [–1] [+1] will move through the characters shown above.

When entering characters, use the method (or combination of methods) most appropriate for each situation.

"Voice" and "performance" are important words to understand when learning about the V50. Please take the time to understand them thoroughly.

Voices

In the V50, the word "voice" is used to mean "a certain sound". For example, the V50 contains a "piano voice", a "guitar voice", and so on. Each voice has a number and name, which are known as "voice numbers" and "voice names". Voices can be thought of in the following groups.

- **Preset voices**
  The V50 contains 100 voices, which are called "preset voices". It is not pssible to erase or rewrite these preset voices.
- **Internal voices**
  100 voices that you may create can be stored in the V50. These are called "internal voices". It is possible to modify a preset voice and store it as an internal voice.
- **Card voices**
  100 voices can be stored in a RAM card, and used in the same way as preset or internal voices. These voices are called "card voices". ROM cards (commercially available cards with voices already written into them) are also refered to as card voices.

Types of voice

Types of voice	Voice numbers	Number
Preset voices	P00 ~ P99	100 voices
Internal voices	I00 ~ I99	100 voices
Card voices	C00 ~ C99	100 voices

* Card voices can be used only when a card is inserted in the card slot.

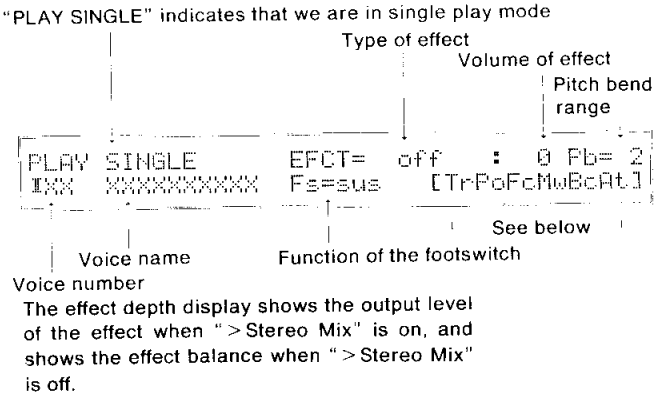
Single play mode and maximum simultaneous notes

We have learned that a voice is "a certain sound". Playing with just one sound is called "single play mode". In single play mode, you can select any one of the preset, internal, or card voices (if a card is inserted in the card slot).

In single play mode, you will be able to play chords of up to 16 notes. When you press the 17th key, the note you played first will disappear, and the newly played note will sound. (This is called "last-note priority".) Another way to describe an instrument that can play a chord of up to 16 notes is to say that the instrument has "16-note polyphony", or that the instrument is "16-note polyphonic".

Single play mode display

In single play mode the display will show the following information.



TrPoFcMwBcAt has the following meaning.

Tr..... Displayed when transpose is set to a value other than C3.
Po ..... Displayed when portamento time is set to a value greater than 0.
Mw .... Displayed when settings allow volume, tone, pitch, etc. to be controlled by the modulation wheel.
Bc ..... Displayed when settings allow volume, tone, pitch, etc. to be controlled by the breath controller.
At ..... Displayed when settings allow volume, tone, pitch, etc. to be controlled by aftertouch.

Single play mode LEDs

When you play the keyboard in single play mode, the LED at the left of TR1 will light briefly (approximately 0.2 seconds).

Performances

In the V50, the word "performance" is used to mean "a combination of several voices". For example, playing the keyboard might sound a piano voice and a guitar voice at the same time, or different voices might sound over different areas of the keyboard. As with voices, each performance has a "performance name" and a "performance number". When using the sequencer to play several voices at once, you will use a performance.

Performances can be divided into the following.

- **Preset performances**
  The V50 contains 100 performances, which are called "preset performances". It is not possible to erase or rewrite these preset performances.
- **Internal performances**
  100 performances that you may create can be stored in the V50. These are called "internal performances". It is possible to modify a preset performance and store it as an internal performance.
- **Card performances**
  100 performances can be stored in a RAM card, and used in the same way as preset or internal performances. These performances are called "card performances".

Types of performance

Types of performance	Performance numbers	Number
Preset performances	P00 ~ P99	100 performances
Internal performance	I00 ~ I99	100 performances
Card performances	C00 ~ C99	100 performances

* Card performances can be used only when a card is inserted in the card slot.

Performance play mode and maximum simultaneous notes

We have learned that playing just one voice at a time is called "single play mode". We have also learned that playing preset, internal, or card performances is called "performance play mode".

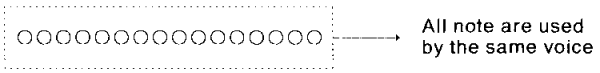
Note:

The preset sounds of the V50 are designed to be most effective when played in a performance. Except when editing a voice, we suggest that you usually play the V50 in performance play mode.

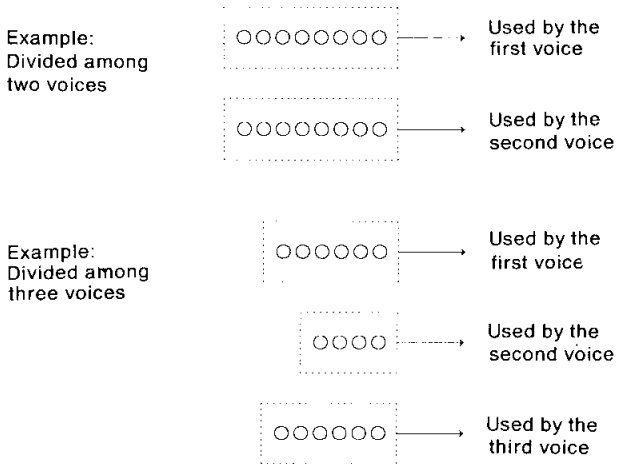
We explained above that the maximum number of notes that can be played simultaneously is 16. This is also the maximum number of notes that can be played in performance play mode. To put it another way, a performance is a setup that determines which voices these 16 notes will play. This is illustrated in the following figure.

Single play mode and performance play mode

If we use "○" to indicate the capability to produce one note, single play mode would look as follows.



In contrast, performance play mode can divide up the 16 notes among more than one voice.



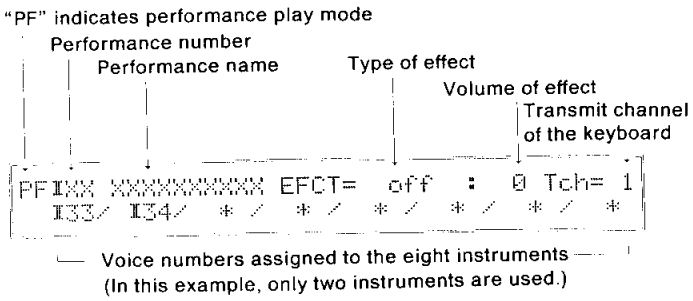
In performance play mode, the V50 uses eight "instruments", to which "note-producing capability" is assigned. This means that up to eight different voices can be used at once.

Note:

In addition to assigning "note-producing capability" to each instrument, it is also possible to make the V50 do this automatically. See page 24.

Performance play mode display

In performance play mode, the display will show the following information.



Performance play mode LEDs

When you play the keyboard in performance play mode, the LED to the left of [TR1] – [TR8] will briefly (about 0.5 seconds) blink green, to indicate the corresponding instrument 1 – 8 that is sounding.

Switching instruments on/off

In performance play mode it is possible to switch an instrument on or off. While pressing [–], press the function key ([ ]) below the instrument that you want to switch off. The voice display will change to "xxx", and that instrument will no longer sound. When you play the keyboard while an instrument is turned off, the corresponding LED to the left of [TR1] – [TR8] will blink red. Turn the instrument back on again in the same way that you turned it off.

Note:

Turning an instrument on/off is temporary, and selecting another performance will turn the instruments back on.

If you turn all the instruments in a performance off, there will be no sound.

When to use single play or performance play mode

By now you probably understand the difference between single play mode and performance play mode. Here are a few points to help you decide when to use each mode.

Single play mode

(1) When you want to use just one voice
(2) When you are using a sequencer or external keyboard to play just one voice

Performance play mode

(1) When you want several voices to sound when a single key is pressed
(2) When you want to play different voices from different areas of the keyboard (This is known as "keyboard split".)
(3) When you are using a sequencer to play several voices at once.

There are many other ways to use the two modes, depending on your setup and musical needs.

EFFECTS

The V50 has a built-in digital effects unit. This effects unit contains the following functions.

Number	Effect
0	Off
1	Reverb Hall (RevHall)
2	Reverb Room (RevRoom)
3	Reverb Plate (RevPlate)
4	Delay
5	Delay L/R (Dly L/R)
6	Stereo Echo (StEcho)
7	Distortion Rev. (DistRev)
8	Distortion Echo (DstEcho)
9	Gate Reverb (GateRev)
10	Reverse Gate (RvsGate)
11	Early Ref (E.Ref)
12	Tone Control (Tone)
13	Delay & Reverb (DlyRev1)
14	Delay L/R & Rev (DlyRev2)
15	Dist. & Delay (DistDly)
16	Church
17	Club
18	Stage
19	Bath Room
20	Metal
21	Tunnel
22	Doubler 1
23	Doubler 2
24	Feed Back Gate
25	F. Back Reverse
26	Feed Back E/R
27	Delay & Tone1
28	Dly L/R & Tone1
29	Tone Control 2
30	Delay & Tone2
31	Dly L/R & Tone2
32	Distortion

These effects can be used on the synthesizer (performance, voice) and also on the rhythm machine. Each voice and performance can have its own effect settings, allowing you to select the effect that that sounds best for each voice or performance. However since the V50 has only one effects unit, if you use the sequencer, rhythm machine, and keyboard at the same time, the same effect will apply to all.

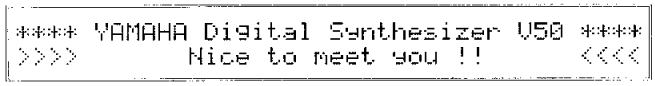
Pressing BYPASS (located at the lower right of the panel) will temporarily turn the effect off/on. When the LED is off, effect bypass is off (effect is on).

Note:

As you will learn later, each performance includes a "performance effect". This has nothing to do with the effects unit explained here. Be sure not to confuse these two.

CHANGING THE POWER-ON DISPLAY

When you purchased the V50, the following message will appear for about 2 seconds each time the power is turned on.



You can modify the lower line of this display to whatever message you like, for example your name or the name of your band.

(1) While pressing DEMO, press STORE/COPY to get the following display.

(2) Input your message of up to 40 characters into the lower line of the display. (Page 17 explains how to input characters.) The next time the power is turned on, your message will be displayed.

COMPATIBILITY WITH OTHER DEVICES

Data compatibility with other devices

V50 data is compatible with other Yamaha devices as follows.

Voice data is compatible with the DX11, YS100, YS200, B200, TQ5, DX21, DX100, TX81Z, and WT11. However, when V50 data is transmitted to one of these devices, functions not found on these devices will be ignored. For example, if V50 voice data is transmitted to a DX11, the V50 effect data will be ignored.

Sequence data saved to disk by the QX5FD can be read by the V50 disk, and the V50 can also receive sequence data from the QX5FD via MIDI bulk dump. However QX5FD data such as macro data and relative tempo will be ignored by the V50.

Cartridges

By attaching an optional ADP2 adaptor, you will be able to use the ROM or RAM cartridges for the Yamaha DX11 in the V50 cartridge slot. A cartridge connected in this way can be used to read data. However it is not possible to store V50 data to a cartridge (i.e., save).

CHAPTER 2. PERFORMANCE EDIT

This chapter explains how to create and edit performances.

ABOUT PERFORMANCE EDITING

Here we will explain the procedure for editing a performance. When you are in performance play mode, press an editing key ([TR1] – [TR8], [RHY], [ ]) to enter performance edit mode.

There are two main ways to edit a performance.

(1) Modify an already existing performance to create a new performance.
(2) Create a completely new performance from scratch.

When using method (1), select the performance to start with in performance play mode, and then begin editing. When using method (2), use the "Init" function in [OTHERS] to set a performance to an initial state, and then begin editing.

Note:

When you finish editing a performance, don't forget to store the newly created performance. Page 119 explains how.

If after editing a performance you select another performance without storing the data you edited, the performance will return to its original data. If this happens, you can use the "Recall" function in [OTHERS] to recall the data you were working on. This function is explained on page 117.

- While editing a performance, the "Compare" function allows you to compare the sound you are now working on with the original data. This function is explained on page 121.
- While editing a performance, you can hold [–] and press one of the function keys [ ] under the display to turn off an instrument you don't wish to hear, just as in performance play mode. To turn the instrument back on, repeat this procedure. This is provided as a convenience while editing a performance. It is not possible to store a performance with a instrument turned off. (When you store it, the instrument will be turned back on.)

Assign mode, performance name

Press [TR1] (ASSIGN MODE).

(1) Assign mode

■ **Function**
Set the key assign.

■ **Settings**
normal, alternate, DVA

■ **Explanation**
This determines the instrument that will be played when a key is pressed.

normal
Normal assign is when each instrument plays as it receives data on its own receive channel (see page 25). The maximum number of notes for each instrument will be determined by the note setting (see page 24).

alternate
Alternate assign is when instruments with the same receive channel as instrument 1 will play alternately.

DVA
Dynamic Voice Allocation is when each instrument plays in response to data on its own receive channel (see page 25). The maximum number of notes for each instrument will be determined *automatically* as needed. When using a sequencer to play the V50 it is usually a good idea to set the assign mode to DVA.

Note:

When using alternate assign, the keyboard transmit channel (see page 99) must match the receive channel of instrument 1.

Data such as control change, pitch bend, and aftertouch will be received on the receive channel of instrument 1, and will apply to each instrument that is alternate assigned.

When this mode is changed, settings for Max Note and Reserve Notes will be set to match the number of instruments being used.

Performance name

■ **Function**
Give a name to a performance

■ **Settings**
Up to 10 characters

■ **Explanation**
Use this function to give a name to a performance. (Page 17 explains how to enter characters.) When editing an existing performance, the original performance name will be displayed. When editing a performance from an initialized condition, the initialized name will be displayed.

Notes

Press [TR2] (NOTES).

If assign mode has been set to normal or alternate

The upper line will show the receive channel and voice of the instrument where the cursor is located.

■ **Function**
Set the maximum number of notes for each instrument

■ **Settings**
0 – 16 (total of all instruments must not be greater than 16)

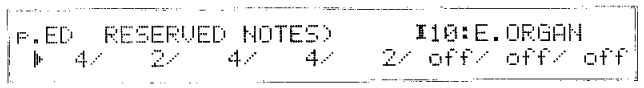
■ **Explanation**
This determines the maximum number of notes that an instrument will be able to play simultaneously. For example, if maximum notes is set at 4, the instrument will be able to play chords with up to 4 notes. When you play a fifth note, the first- played note will disappear, and the last played note will sound.

Note:

When using a voice whose envelope generator is set to a low RR (release rate) so that the sound lingers for a while after the key is released, it is a good idea to set a slightly higher maximum notes setting for that voice. This will prevent the decay from being cut off unnaturally.

If assign mode has been set to DVA

The upper line will show the voice of the instrument where the cursor is located.



■ **Function**

Set the number of reserved notes for each instrument.

■ **Settings**

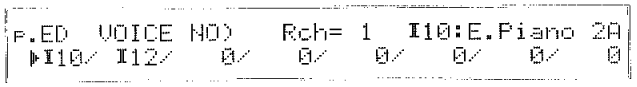
off, 0 – 16 (total of all instruments must not be greater than 16) ("off" indicates that the instrument is not used. "0" indicates that 0 notes are reserved.)

■ **Explanation**

When more than 16 keys are being pressed, these settings determine the minimum number of notes reserved (i.e., guaranteed) for each instrument.

Voice number

Press TR3 (VOICE NUMBER). The upper line of the display will show the receive channel and voice of the instrument where the cursor is located.



■ **Function**

Select the voice to be used by each instrument.

■ **Settings**

I00 – I99, P00 – P99, C00 – C99

■ **Explanation**

This selects the voice to be used by each instrument.

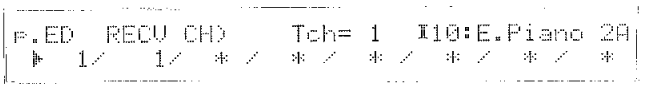
Note:

A voice number cannot be selected for an instrument whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

Also, card voices cannot be used in an internal performance. Internal performances can use only preset voices and internal voices. In the same way, card performances cannot use internal voices. Card performances can use only preset voices and card voices.

Receive channel

Press TR4 (RECV CH). The upper line of the display will show the keyboard transmit channel, and the voice of the instrument where the cursor is located.



■ **Function**

Set the MIDI channel received by each instrument.

■ **Settings**

1-16, omn

■ **Explanation**

Each instrument will sound only when data arrives on the channel specified here. When "omn" is selected, the instrument will sound in response to data arriving on any channel.

Normally, the V50 keyboard transmits on channel 1. When creating a performance to be played from the V50 keyboard (not from the sequencer or an external keyboard), be sure to set the receive channel of all instruments to 1 or "omn" (omni). (It is possible to change the V50 keyboard transmit channel.)

When using the sequencer, make sure that the receive channel of each instrument matches the transmit channel of each track of the sequencer.

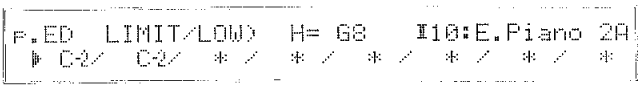
Note:

A receive channel cannot be set for instruments whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

If assign mode is set to alternate assign, only the receive channel of instrument 1 will be used.

Note limit (low)

Press RHY (LIMIT/LOW). The upper line of the display will show the note limit (high) setting and voice of the instrument where the cursor is located.



■ **Function**

Set the keyboard playing range (lower limit) of each instrument.

■ **Settings**

C-2 – G8

■ **Explanation**

Each instrument will play notes over the range specified by this note limit (low) and the next note limit (high). Notes outside of this range will not be played.

Normally, the low note limit is set to C-2 and the high note limit is set to G8. When creating a performance with key splits so that different voices are played by different areas of the keyboard, change the low and high note limits. For example, if you want instrument 1 to be played by notes from C-2 up to B2, and instrument 2 to be played by notes from C3 up to G8, set the low/high limits of instrument 1 to C-2/B2, and the low/high limits of instrument 2 to C3/G8.

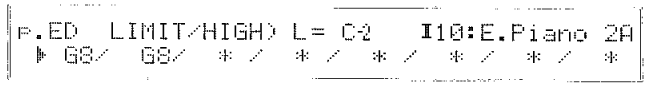
Note:

A note limit cannot be set for instruments whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

When using key splits, make sure that the receive channel of each instrument matches the transmit channel.

Note limit (high)

Press [ ] (LIMIT/HIGH). The upper line of the display will show the note limit (low) setting and voice of the instrument where the cursor is located.



■ **Function**

Set the keyboard playing range (upper limit) of each instrument.

■ **Settings**

C-2 – G8

■ **Explanation**

Each instrument will play notes over the range specified by the previously discussed note limit (low) and this limit (high). Notes outside of this range will not be played.

Normally, the low note limit is set to C-2 and the high note limit is set to G8. When creating a performance with key splits so that different voices are played by different areas of the keyboard, change the low and high note limits.

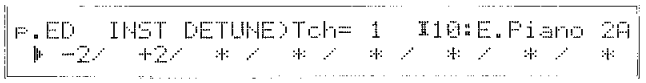
Note:

A note limit cannot be set for instruments whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

When using key splits, make sure that the receive channel of each instrument matches the transmit channel.

Detune

Press [TR5] (INST DETUNE). The upper line of the display will show the keyboard transmit channel, and the voice of the instrument where the cursor is located.



■ **Function**

Slightly change the tuning of each instrument.

■ **Settings**

–7 – +7

■ **Explanation**

When this is set to 0, the instrument will play the correct pitch for the key that was pressed. If you are creating a performance that plays more than one instrument for each note, slightly detuning each instrument will create a natural chorus effect, giving a spacious feel to the sound. Especially when layering two or more of the same voice, detuning can make some very "fat" sounds.

Note:

Detune cannot be set for instruments whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

If the performance plays more than one instrument for each note, make sure that the receive channel of each instrument matches the transmit channel.

This detune function is intended to change the *relative* pitch of the instruments. Setting all instruments to the same detune value will not be useful.

Note shift

Press TR6 (NOTE SHIFT). The upper line of the display will show the keyboard transmit channel, and the voice of the instrument where the cursor is located.

■ **Function**

Transpose the pitch of each instrument in half-steps.

■ **Settings**

−24 — +24

■ **Explanation**

When note shift is set to 0, the instrument will play the pitch specified by the note message that arrives on its record channel. When note shift is set −1 — −24 the pitch will be lower, and when set +1 — +24 the pitch will be higher.

This setting is in units of a half-step. For example, if set to −12 the pitch will be one octave lower, and if set to +24 the pitch will be two octaves higher.

This note shift function can be useful when you need to play a song in a different key than usual, or when you need to play notes that are higher or lower than your keyboard extends. Another way to use note shift when playing more than one voice at once is to shift the voices apart to form a chord, or to play parallel octaves.

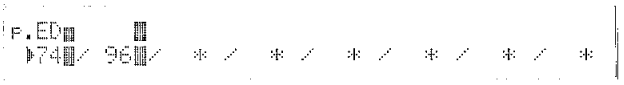
Note:

Note shift cannot be set for instruments whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

If the performance plays more than one instrument for each note, make sure that the receive channel of each instrument matches the transmit channel.

Volume

Press TR7 (VOLUME).



■ **Function**

This determines the volume of each instrument.

■ **Settings**

0 – 99

■ **Explanation**

0 is a minimum volume, and 99 is maximum volume. (The vertical bar at the right of each number graphically indicates the volume for each instrument.) This setting determines the volume balance of the instruments in a performance.

Note:

Volume cannot be set for instruments whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

When a control change message that affects volume is received by an instrument, its volume will be changed.

Output assign

Press TR8 (OUTPUT ASSIGN). The upper line of the display will show the keyboard transmit channel, and the voice of the instrument where the cursor is located.

■ **Function**

Set the output for each instrument.

■ **Settings**

off, L, R, L + R

■ **Explanation**

When output assign is set to "off", that instrument will not sound. When set to L, that instrument will sound from the L output, and when set to R, from the R output. When set to L + R, it will sound from both L and R outputs.

Note:

Output assign cannot be set for instruments whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

When only the L output is connected, both L and R will be sent from the L output.

The performance effect "pan" applies only to instruments set to either L or R. ("pan" will not apply to instruments whose output assign is set to L + R.)

LFO select

Press [ ] (OTHERS). (There is also a key marked "OTHERS" in the utility section, but in this chapter we will be refering to the OTHERS key in the edit section.

When this indicator appears in the display, you can press the same key (in this case, the [ ] (OTHERS) key) to get a different screen.

■ Function

Select the LFO to be used by each instrument.

■ Settings

off, 1, 2, vib

■ Explanation

The V50 has two LFOs and eight vibrato generators. Here you select which of these will be used by each instrument. (The LFO is explained on page 41.)

The LFO settings used in the two lowest numbered instruments (i.e., instruments not set to a notes setting of 0) are available for use by the eight instruments.

LFO settings can be selected for each voice from the following.

off..... The voice will not be affected by an LFO.

1..... The voice will use the LFO settings of the first instrument in the performance (the instrument shown at the far left of the display).

2..... The voice will use the LFO settings of the second instrument in the performance.

vib..... The voice will use its own LFO settings, but AMS settings (for tremolo or wah-wah) will be ignored, and only pitch modulation will be used. The LFO waveform will be set to triangle, and PMS to approximately 5.

Note:

LFO cannot be set for instruments whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

If there is only one instrument whose maximum notes setting is greater than 0, you will be able to select only "off" or the number of the instrument itself. (If you try to select other values, "–" will be displayed, and the result will be the same as if you had selected "off".)

If the maximum notes settings for instruments 1 or 2 are set to 0 (or when DVA is used, a reserved note setting of "off"), the "1" or "2" in the above explanation and display will be replaced by the lowest-numbered instruments that are set to a non-zero note setting.

Micro tuning on/off

Press [ ] (OTHERS) twice. The upper line of the display will show the currently selected type of micro tuning.

■ Function

Select whether or not to use micro tuning for each instrument.

■ Settings

off, on

■ Explanation

Each instrument can be assigned to use a selected micro tuning. (Use the next function to select a micro tuning.)

off..... The instrument will not use micro tuning, and will play the standard equal tempered scale.

on..... The instrument will use the micro tuning selected for this performance (see the next function). Aside from equal temperament, only one micro tuning can be used in a performance.

Note:

Micro tune on/off cannot be set for instruments whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

It is not possible to use two or more tunings (other than equal temperament) in one performance.

Micro tuning select

Press [ ] (OTHERS) three times.

■ Function

Select the micro tuning to be used in this performance.

■ Settings

Octave, Full Kbd., 1: Equal – 11: 1/8 Tone.

■ Explanation

This selects the micro tuning that will be used by an instrument whose micro tuning on/off (the previously explained function) is set to "on".

As shown in the following chart, 2 original micro tunings created by you, and 11 preset micro tunings are available.

For preset micro tunings 2 – 5, you will also be able to set the key (tonic) of the tuning to match the key signature of the piece you will be playing.

Note:

If in the previously explained micro tuning on/off function, no instruments have been set to micro tuning "on", selecting a micro tuning here will have no effect.

No.	Temperament	Key	Comments
	User octave	–	You can create your own original tuning as explained on page 114.
	User full	–	
1	Equal temperament	–	The "compromise" tuning used for most of the last 200 years of Western music, and found on most electronic keyboards. Each semitone is exactly 1/12th of an octave, and music can be played in any key with equal ease. However, none of the intervals are perfectly in tune.
2	Pure major	C – B	This tuning is designed so that most of the intervals (especially the major third and perfect fifth) in the major scale are pure. (This means that other intervals will be correspondingly out of tune.) You need to specify the key (C – B) you will be playing in. Since the V50 allows you to memorize a micro tuning for each performance, you can store identical performances with micro tunings of different keys, and transpose at the touch of a button.
3	Pure minor	A – G#	The same as Pure Major, but designed for the minor scale.
4	Mean tone	C – B	This is an adjustment of the Pure and Pythagorean tunings. The interval between the root and fifth is tuned slightly flat, so that the interval between the root and second degree is exactly halfway between a major and minor pure second — i.e., an average or "mean".
5	Pythagorean	C – B	This scale is derived by tuning pure perfect fifths upward from the root. This causes the octave to be flat, so one of the fourths is mistuned to compensate. (In the key of C, the A♭ – E♭ interval.)
6	Werckmeister	–	Andreas Werckmeister, a contemporary of Bach, designed this tuning so that keyboard instruments could be played in any key. Each key has a unique character.
7	Kirnberger	–	Johan Philipp Kirnberger was also concerned with tempering the scale to allow performances in any key.
8	Vallotti & Young	–	Francescantonio Vallotti and Thomas Young (both mid-1700s) devised this adjustment to the Pythagorean tuning in which the first six fifths are lower by the same amount.
9	1/4 shifted equal	–	The Equal Tempered scale shifted upward one quarter step.
10	1/4 tone	–	Twenty-four equally spaced notes per octave. (Play twenty-four notes to move one octave.)
11	1/8 tone	–	Forth-eight equally spaced notes per octave. (Play forty-eight notes to move one octave.)

Performance effect select

Press [ ] (OTHERS) four times.

■ **Function**
Select a performance effect.

■ **Settings**
off, delay1, pan1, chord1, ... delay4, pan4, chord4

■ **Explanation**
This setting determines the effect used by this performance.
There are three types of effect, and four memories (four different settings) for each type of effect. I.e., the V50 remembers a total of 12 different performance effects. (To set each effect memory, see page 111.) Select one of the twelve performance effects from the following.

delay (1 – 4)
You will hear an "echo" or "delayed repeat" of the same note (or a different note) that you played.

pan (1 – 4)
When both L and R outputs are used, the sound will move from side to side.

chord (1 – 4)
Playing a single note will produce a chord.

- Page 111 explains how to set the performance effect memories.
- If you set the performance effect to "off", there will be no effect.
- The "delay" and "chord" performance effects apply only to the lowest-numbered instrument that is sounding.
- The "pan" performance effect applies to all instruments whose output assign is either L or R.

Note:

If the maximum notes setting is less than the number of notes in the chord of the "chord" performance effect memory, the chord will not sound correctly.

Instruments whose output assign is set "off" or "L + R" will not be affected by the "pan" performance effect.

This "performance effect" has no connection with the "DSP effect" discussed in the following item. Please do not confuse them.

Effect on/off

Press [EFFECT]. The upper line of the display will show the type of currently selected effect. If [BYPASS] is pressed (the LED is lit), the display will show "BYPASS".

■ **Function**
Turn the effect on/off for each instrument.

■ Settings
off, on

■ Explanation
When set to "on", the selected effect (see the next function) will apply to that instrument.

Note:

Effect on/off cannot be set for instruments whose maximum note setting is 0 (or when DVA is used, whose reserved note setting is "off").

Effect select, effect balance

Press [EFFECT] twice. If [BYPASS] is pressed (the LED is lit), the display will show "BYPASS".

(1) Effect select

■ **Function**
Select the type of effect to use.

■ **Settings**
Select one of the following types of effect.

0: off
No effect

1: Reverb Hall
Reverberation of a large hall

2: Reverb Room
Reverberation of a smaller room

3: Reverb Plate
Reverberation typical of a plate reverb unit

4: Delay
Delayed sound

5: Delay L/R
Delayed sound spread to left/right

6: Stereo Echo
Echo spread left/right

7: Distortion Rev.
Combination of distortion and reverb

8: Distortion Echo
Combination of distortion and echo

9: Gate Reverb
Reverberation with "artificially" fast cutoff

10: Reverse Gate
Reverberation simulating backwards tape playback

11: Early Ref
Adds early acoustic reflections to the sound

12: Tone Control 1
Three band equalizer

13: Delay & Reverb
Combination of delay and reverb

14: DelayL/R & Rev.
Combination of delay L/R and reverb

15: Dist. & Delay
Combination of distortion and delay

16: Church
Reverberation simulating a church

17: Club
Reverberation simulating a music club

18: Stage
Reverberation simulating a larger live music club

19: Bath Room
Reverberation simulating a bathroom

20: Metal
Metallic reverberation

21: Tunnel
Reverberation simulating a tunnel

22: Doubler 1
Doubling effect

23: Doubler 2
Doubling effect (spread left and right)

24: ~~Feed~~ Back Gate
Gate reverb with feedback

25: ~~F.~~ Back Reverse
Reverse gate with feedback

26: ~~Feed~~ Back E/R
Early reflections with feedback

27: Delay & Tone1
Combination of delay and tone control 1

28: Dly L/R & Tone1
Combination of delay L/R and tone control 1

29: Tone Control 2
Tone control using low pass filter and high pass filter

30: Delay & Tone2
Combination of delay and tone control 2

31: Dly L/R & Tone2
Combination of delay L/R and tone control 2

32: Distortion
Distortion effect

Note:
Settings for "Balance", "Out Level" and "Stereo Mix" will vary for each effect.

(2) Effect balance

■ **Function**
Set the volume balance of the unprocessed sound and the effect.

■ **Settings**
0% – 100%

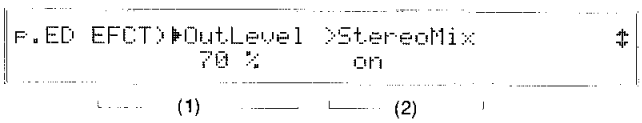
■ **Explanation**
As you increase the setting, the effect sound will become louder. As you decrease the setting, the unprocessed sound will become louder.

Note:
At a setting of 0% the effect will not be heard, and you will hear only the unprocessed sound. At a setting of 100% the unprocessed sound will not be heard, and you will hear only the sound of the effect.

Since the number keys enter two-digit numbers, it is not possible to directly enter a value of 100. If you need to enter a value of 100, use the data entry slider or −1/+1 keys after entering 99.

Effect output level, stereo mix

Press [EFFECT] three times. (If effect select is turned off, you will not be able to select this function.)



(1) Effect output level

■ **Function**
Set the output volume of the effect.

■ **Settings**

0% – 100%

■ **Explanation**

This determines the combined volume of the unprocessed sound and the effect explained in the previous function. 100% is maximum, and at 0% there will be no sound.

Note:

At a setting of 0% you will hear neither the unprocessed sound nor the effect sound. (However if the stereo mix explained in the next function is "on", you will hear only the unprocessed sound.) If this level is too high, the sound may distort. If so, lower the level.

(2) Stereo mix

■ **Function**

Add the sound from the effects unit to the unprocessed stereo mix.

■ **Settings**

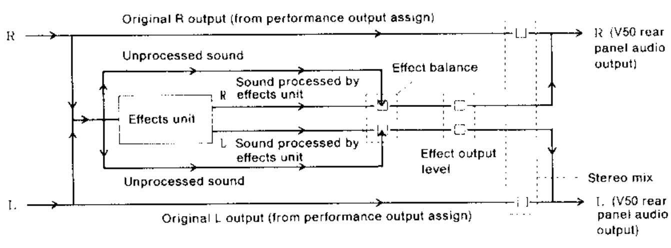
off, on

■ **Explanation**

The input signal to the effects unit is monaural. This means that when stereo mix is set to "off", instruments in a performance will be heard in mono even if their output assign setting is L or R.

By setting stereo mix to "on", the effect sound (monaural) will be *added* to the unprocessed L/R performance mix (stereo). This allows you to retain the stereo image while using an effect. (This will make the stereo field appear a bit narrower.)

The following diagram shows the flow of the unprocessed and effect signals.



Effect parameters

Press [EFFECT] four times. (If effect select is turned off, you will not be able to select this function.)

```
P.ED EFCT>▶Time       >LPF       >Delay     ‡
           2.6sec      1.25kHz    0.1ms
```

■ **Function**

Make individual adjustments for each effect.

■ **Settings**

Each type of effect has different settings (see following chart).

■ **Explanation**

This is where you make individual adjustments for each effect, as shown in the following chart. It is also possible to copy the settings for an effect from another performance or voice (see page 120).

Settings for 1: Reverb Hall, 2: Reverb Room, 3: Reverb Plate, 16: Church, 17: Club, 18: Stage, 19: Bath Room, 20: Metal

Parameter	Settings	Comment
Time	0.3 sec–10.0 sec	Specify the time it takes for the reverb to decay. Long settings (long reverb times) cause a slower decay.
LPF	1.25 KHz–12.0KHz, thru	Specify the low pass filter settings. Frequencies above the specified setting will be removed. When "thru" is selected, this filter will not be used.
Delay	0.1 ms–50 ms	Specify the time until the first reflection (the beginning of reverberation). As this setting is increased, there will be a longer wait before reverberation begins.

Settings for 4: Delay

Parameter	Settings	Comment
Time	0 ms–300 ms	Specify the time until the first delayed sound. As this setting is increased, there will be a longer wait before the delayed sound appears.
FB Delay	0 ms–300 ms	Specify the time between repeats (i.e., "feed back") of the delayed sound. As this setting is increased, there will a longer time between one delayed sound and the next.
FB Gain	0%–99%	Specify the amount of feedback. For a setting of 0%, there will be only a single delayed sound.

Settings for 5: Delay L/R, 6: Stereo Echo

Parameter	Settings	Comment
Lch Dly	0 ms–300 ms	Specify the delay time for the left channel. As this setting is increased, there will be a longer wait until the first delayed sound from the left channel.
Rch Dly	0 ms–300 ms	Specify the delay time for the right channel. As this setting is increased, there will be a longer wait until the first delayed sound from the right channel.
FB Gain	0%–99%	Specify the amount of feedback. For a setting of 0%, there will be only a single delayed sound.

Settings for 7:Distortion Rev.

Parameter	Settings	Comment
Time	0.3 sec–18.3 sec	Specify the time it takes for the reverb to decay. Long settings (long reverb times) cause a slower decay.
Dist.	0%–100%	Specify the amount of distortion. Higher settings will cause more distortion.
Reverb	0%–100%	Specify the amount of reverb. This determines the balance of reverb and distortion.

Settings for 8: Distortion Echo, 15: Dist. & Delay

Parameter	Settings	Comment
Time	0 ms–300 ms	Specify the time until the first delayed sound. As this setting is increased, there will be a longer wait before the delayed sound appears.
FB Gain	0%–99%	Specify the amount of feedback. For higher settings, there will be more delay repeats.
Dist.	0%–100%	Specify the amount of distortion. Higher settings will cause more distortion.

Settings for 9: Gate Reverb, 10: Reverse Gate, 11: Early Ref

Parameter	Settings	Comment
Size	0.5–3.2	Specify the size of a hypothetical room. Larger settings will cause a more spacious effect.
LPF	1.25 KHz–12.0 KHz, thru	Specify the low pass filter settings. Frequencies above the specified setting will be removed. When "thru" is selected, this filter will not be used.
Delay	0.1 ms–50 ms	Specify the time until the effect begins. As this setting is increased, there will be a longer wait before the delayed sound appears.

Settings for 12: Tone Control

Parameter	Settings	Comment
Low	–12dB–+12dB	Low frequency control (shelving band pass filter at 800Hz). Positive settings boost, and negative settings cut.
Middle	–12dB–+12dB	Middle frequency control (presence band pass filter at 1260Hz). Positive settings boost, and negative settings cut.
High	–12dB–+12dB	High frequency control (shelving band pass filter at 3KHz). Positive settings boost, and negative settings cut.

Settings for 13: Delay & Reverb

Parameter	Settings	Comment
RevTime	0.3 sec.–10.0 sec	Specify the time it takes for the reverb to decay. Long settings (long reverb times) cause a slower decay.
Delay	0 ms.–152 ms	Specify the delay time. As this setting is increased, there will be a longer wait before the delayed sound appears.
FB Gain	0%.–99%	Specify the amount of delay feedback. As this setting is increased, there will be more delay repeats.

Settings for 14: DelayL/R & Rev.

Parameter	Settings	Comment
RevTime	0.3 sec.–10.0 sec	Specify the time it takes for the reverb to decay. Long settings (long reverb times) cause a slower decay.
Lch Dly	0 ms.–300 ms	Specify the delay time for the left channel. As this setting is increased, there will be a longer wait until the first delayed sound appears from the left channel.
Rch Dly	0 ms.–300 ms	Specify the delay time for the right channel. As this setting is increased, there will be a longer wait until the first delayed sound appears from the right channel.

Settings for 21: Tunnel

Parameter	Settings	Comment
RevTime	0.3 ms–10.0 ms	Specify the time it takes for the reverb to decay. Long settings (long reverb times) cause a slower decay.
Delay	0.1 ms–300 ms	Specify the delay time. As this setting is increased, there will be a longer wait before the delayed sound appears.
FB Gain	0%–99%	Specify the amount of delay feedback. As this setting is increased, there will be more delay repeats.

Settings for 22: Doubler 1

Parameter	Settings	Comment
DlyTime	0.1 ms–50 ms	Specify the time until the delayed sound. As this setting is increased, there will be a longer wait before the delayed sound appears.
HPF	160 Hz– 1000 Hz, thru	Specify the high pass filter setting. Frequencies below the specified frequency will be cut.
LPF	1.25KHz–12.0KHz	Specify the low pass filter setting. Frequencies above the specified frequency will be cut.

Settings for 23: Doubler 2

Parameter	Settings	Comment
Lch Dly	0.1 ms–50 ms	Specify the delay time for the left channel. As this setting is increased, there will be a longer wait before before the delayed sound appears from the left channel.
Rch Dly	0.1 ms–50 ms	Specify the delay time for the right channel. As this setting is increased, there will be a longer wait before before the delayed sound appears from the right channel.
LPF	1.25KHz–12.0KHz	Specify the low pass filter setting. Frequencies above the specified frequency will be cut.

Settings for 24: ~~Feed Back~~ Gate, 25: ~~F. Back~~ Reverse, 26: ~~Feed Back~~ E/R

Parameter	Settings	Comment
Size	0.5–3.2	Specify the size of a hypothetical room. Larger settings will cause a more spacious effect.
LPF	1.25KHz–12.0KHz	Specify the low pass filter setting. Frequencies above the specified frequency will be cut.
FB Gain	0%–99%	Specify the amount of delay feedback. As this setting is increased, there will be more delay repeats.

Settings for 27: Delay & Tone1, 28: Dly L/R & Tone1, 30: Delay & Tone2, 31: Dly L/R & Tone2

Parameter	Settings	Comment
Bril	0–12	Specify the brightness of the sound. Larger settings will result in a brighter sound.
Delay	0.1 ms–300 ms	Specify the delay time. As this setting is increased, there will be a longer wait before the delayed sound appears.
FB Gain	0%–99%	Specify the amount of delay feedback. As this setting is increased, there will be more delay repeats. For a setting of 0%, there will be no second or subsequent delay sound.

Settings for 29: Tone Control 2

Parameter	Settings	Comment
HPF	160Hz – 1000Hz, thru	Specify the high pass filter setting. Frequencies below the specified frequency will be cut.
Middle	-12dB–+12dB	Mid range control. + is boost, – is cut. (This is a presence-type band pass filter with the frequency fixed at 1260Hz.)
LPF	1.25KHz–12.0KHz	Specify the cutoff frequency for the low pass filter. Frequencies above the specified frequency will be cut.

Settings for 32: Distortion

Parameter	Settings	Comment
Dist.	0%–100%	Specify the amount of distortion. Higher settings will cause more distortion.
HPF	160 Hz– 1000 Hz, thru	Specify the high pass filter ting. Frequencies below the specified frequency will be cut.
LPF	1.25KHz–12.0KHz	Specify the cutoff frequency for the low pass filter. Frequencies above the specified frequency will be cut.

CHAPTER 3. VOICE EDIT

This chapter explains how to create and modify voices. You will learn to use FM tone generation to make your own original sounds.

THE BASICS OF FM TONE GENERATION

Here we will briefly explain the FM tone generator system used in the V50 and in most Yamaha synthesizers.

Operators

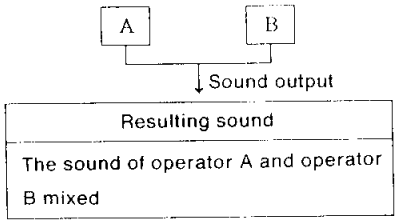
The heart of FM synthesis is the "operator". An operator is an oscillator — a device that produces a signal. The V50 has four of these operators, and a voice is created using these four operators. Each operator can be controlled in three ways.

Output level ..... The level (volume) of the signal produced by the operator
Pitch ..... The pitch of the signal produced by the operator
Waveform ..... The shape of the signal produced by the operator

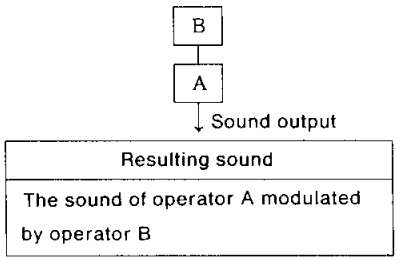
Combinations of operators

We have mentioned that these four operators are combined to make a voice. To keep things simple, we will be using only two operators in our example. There are two ways in which these two operators (A and B) can be arranged.

(1) Two operators arranged horizontally



(2) Two operators arranged vertically



In the case of (1), the two sounds of the operators A and B are mixed. In the case of (2), the upper operator B modulates the sound of the lower operator A. The sound you hear is the modulated sound of operator A, and operator B cannot be heard. To summarize,

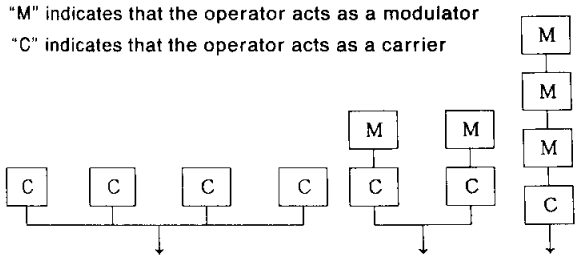
Arranged horizontally .... Both operators produce sound.
Arranged vertically ..... The upper operator modifies the sound of the lower operator. The lower operator produces sound.

Carrier and modulator

When arranged vertically, the two operators act in two entirely different ways; either as a "carrier" or as a "modulator".

Modulator..... An operator which modulates the sound of another operator (B in the diagram).
Carrier ..... An operator which produces sound (A in the diagram).

When arranged horizontally, both operators act as carriers. (They both produce sound.) The V50 has four operators. When these four operators are arranged in various ways, each operator acts either as a carrier or as a modulator as shown in the following diagram.



When all operators are arranged horizontally, each one acts as a carrier. When all operators are arranged vertically, the lowest one acts as a carrier and the other three act as modulators.

Algorithm

An arrangement of operators is called an "algorithm". The V50 has eight algorithms. These eight algorithms (numbered 1 – 8) are shown on the right side of the front panel. Each operator in an algorithm is numbered 1 – 4. Page 40 explains the characteristic sounds possible with each algorithm.

Factors determining the tone of a voice

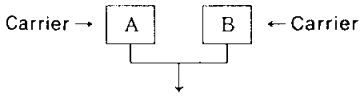
There are many settings that affect the tone of a voice, but the following six are the most important.

(1) Algorithm (ALGORITHM)

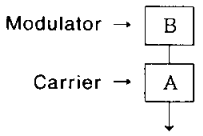
It is important to choose an appropriate algorithm for the sound you want to create. This selection determines whether each operator acts as a carrier or as a modulator.

(2) Output level of each operator (OUTPUT LEVEL)

The output level of a carrier operator will determine volume, and the output level of a modulator operator will determine the brightness of the sound produced by the operator (carrier) it is modulating.



The output levels of operators A and B determine the mixture (balance) of the two sounds.



The output level of operator B determines the brightness of the sound produced by operator A. The output level of operator A determines the volume.

Pitch of each operator (OSCILLATOR FREQUENCY)

The resulting tone is affected by the relative pitch of the operators.

Waveform of each operator

Each operator can produce one of 8 different waveforms. Each waveform has a different harmonic content (a different tone), allowing you to select the most suitable waveform for the sound you want.

Envelope generator (ENVELOPE GENERATOR)

All instruments (piano, organ, brass, etc.) have a characteristic rise and fall in the sound. To simulate this, each operator has a function that regulates its output over time. This is known as the "envelope generator", or "EG" for short.

It will take a bit of practice to use these six elements to create the sound you want, but as you become more experienced you will find that creating voices is enjoyable and rewarding.

ABOUT VOICE EDITING

Broadly speaking, there are two ways to edit voices.

(1) Partially modify an existing voice to create a new voice.
(2) Create a completely new voice from scratch.

When first learning how to edit voices, it will be easier to start with method (1). You can modify internal, card, or preset voices. Remember that the voice you create can be stored only as an internal voice or card voice. (It is not possible to store a voice into preset voice memory.)

When using method (1), enter single play mode and select the voice you want to edit. When using method (2), you must first create an "initialized" voice using the [OTHERS] function "Init" (initialize) (see page 117).

Note:

After editing a voice, do not forget to store it (see page 119). If after editing a voice, you select another voice without storing the voice you edited, your edits will be replaced by the previous voice data. However, you can recall the data you were editing by using the recall function in [OTHERS] (see page 117).

Initialized voice

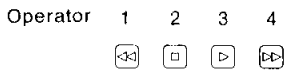
"Initialized" means that many of the settings are set to their minimum or most basic value. The initialized voice will produce the simplest possible sound (a sine wave) from operator 1.

While editing a voice, you can compare the results of your editing with the original voice by using the "compare" function (see page 121).

OPERATOR ON/OFF

Whenever you are editing a voice, the upper left of the display will show a row of numbers such as "1111"

From left to right, these indicate whether operators 1 – 4 are on ("1") or off ("0"). Operators can be turned on/off using [◁◁] (operator 1), [□] (operator 2), [▷] (operator 3), and [▷▷] (operator 4).



When an operator is turned off, that operator will not produce a signal. This means that if you turn all four operators off, there will be no sound at all.

Turning an operator on/off is often useful when you need to check the sound of just one operator, or check the effect of an operator that is acting as a modulator.

Note:

This operator on/off function is provided as a convenience when editing. It is not posible to store a voice with an operator turned off. (The voice will be stored with all operators turned on.) If a certain operator is unnecessary in the voice you are creating, you can set its output level to 0 (see page 48).

About quick edit

"Quick edit" is not one of the settings within a voice. It is a function which allows you to make several settings at the same time. For instance, it allows you to adjust the envelope generator or the output level of all operators at once. It is very useful when making minor overall modifications to a voice.

The indicator displayed to the right of the "→" shows the relative change. Initially, the indicator will show that nothing has been changed, and that the settings are in their original state. As you move the data entry slider or use the [−1] [+1] buttons, you will see the indicator change as follows.

If you leave quick edit mode and then return to quick edit mode, the indicator will show ⌖ again, and you can use quick edit to modify the settings from the new "original" state. The exact value for each operator is displayed at the right.

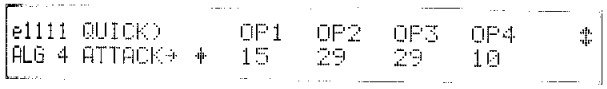
Note:

Remember that quick edit is not one of the settings within a voice, and there is no "quick edit" value which is stored as part of the voice.

The quick edit data range is approximately ±50. This means that for some settings, the minimum or maximum values may not be reached even though the quick edit setting is at minimum or maximum.

Quick edit (attack)

Press [TRI] (QUICK EDIT).



■ Function

Simultaneously modifies the AR and D1R of all operators.

■ Explanation

If you decrease the value below the initial position of the indicator, the envelope generator AR (ATTACK RATE) and D1R (DECAY 1 RATE) settings for all operators will be reduced, resulting in a slower attack. If you increase the value, the AR and D1R will be increased, resulting in a faster attack. (The display shows only the AR for each operator.)

Note:

When you use this quick edit function, the envelope generator AR and D1R of all operators will be changed.

Quick edit (release)

Press [TRI] (QUICK EDIT) twice.

■ Function

Simultaneously modifies the RR of all operators.

■ Explanation

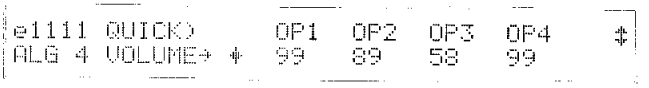
If you decrease the value below the initial position of the indicator, the envelope generator RR (RELEASE RATE) settings for all operators will be reduced, resulting in a slower decay. If you increase the value, the RR will be increased, resulting in a faster decay. (The display shows the RR for each operator.)

Note:

When you use this quick edit function, the envelope generator RR of all operators will be changed.

Quick edit (volume)

Press [TRI] (QUICK EDIT) three times.



■ Function

Simultaneously modifies the output level of all operators that are acting as carriers.

■ Explanation

If you decrease the value below the initial position of the indicator, the output level settings for all operators that are acting as carriers will be reduced, resulting in a lower volume. If you increase the value, the output level settings will be increased, resulting in a louder volume. (The display shows the output level values for each operator.)

Note:

When you use this quick edit function, the output level of all operators acting as carriers will be changed.

Quick edit (brilliance)

Press [TR1] (QUICK EDIT) four times.

■ **Function**

Simultaneously modifies the output level of all operators that are acting as modulators.

■ **Explanation**

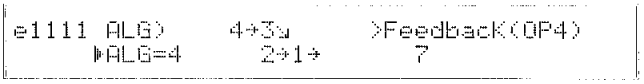
If you decrease the value below the initial position of the indicator, the output level settings for all operators that are acting as modulators will be reduced, resulting in a more muted tone. If you increase the value, the output level settings will be increased, resulting in a brighter tone. (The display shows the output level values for each operator.)

Note:

When you use this quick edit function, the output level of all operators acting as modulators will be changed.

Algorithm, feedback

Press [TR2] (ALGORITHM).



(1) (2)

(1) Algorithm

■ **Function**

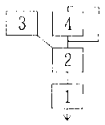
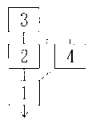
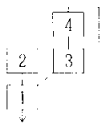
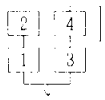
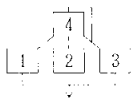
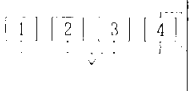
Select the algorithm to use.

■ **Settings**

1 – 8

■ **Explanation**

The algorithm is an arrangement of the 4 operators. The eight algorithms are printed on the upper right of the front panel. Select one of the following algorithms.

	**Algorithm 1:** Since all four operators are arranged vertically, this algorithm is especially suitable for sounds with complex harmonics, such as string or acoustic piano sounds. For example, frequency ratio settings of 1.00:1.00:3.00:5.00 would be suitable for an electric guitar or bass.
	**Algorithm 2:** As with algorithm 1, this algorithm is suitable for creating sounds with complex harmonics. In addition to being suitable for struck strings or pianos, the feedback of operator 4 can be used to create a unique brass sound. It may be useful to start with frequency ratio settings of 1.00:1.00 for operators 1 and 2, and try out various settings for operators 3 and 4.
	**Algorithm 3:** This algorithm is good for resonant brass sounds or strings with emphasis on the sound of the bow. Use operators 1 and 4 to create the basic part of the sound, and operator 3 to create the "resonance" or "bow scrape". Try frequency settings of 2.82 or 3.14 for operator ???.
	**Algorithm 4:** As with algorithm 3, this algorithm allows you to add interesting details to realistic sounds. Since there is no feedback on operator 2, it is suitable for flute and other wind sounds. Set the output level of operator 4 to 99 to create noise, and use it as the breath sound of a flute.
	**Algorithm 5:** This algorithm has two carriers, and allows you to create detuned strings or electric pianos. Another possibility is using operators 1 and 2 to make a flute sound, and operators 3 and 4 to make a brass sound. This may be the algorithm with the broadest possibilities.
	**Algorithm 6:** Since the feedback of operator 4 applies to operators 1, 2, and 3, it is the algorithm most suited for brass sounds. Giving operators 1, 2, and 3 the same EG settings and making the AR of operator 4 a bit slower will create an effective brass sound. This algorithm is also useful for creating powerful synth lead sounds.
	**Algorithm 7:** This algorithm has three carriers, and operators 1 and 2 will produce the exact sound of the selected waveform. Organs are a good possibility, and you can try making a click sound with operator 4, or making a hard electric organ by using operators 3 and 4 to create distortion.
	**Algorithm 8:** All operators will produce the exact sound of the waveform selected for each, making this algorithm especially suitable for organ sounds. Modifying frequency and detune will give interest to the sound.

(2) Feedback

■ **Function**

Set the feedback level.

■ **Settings**

0 – 7

■ **Explanation**

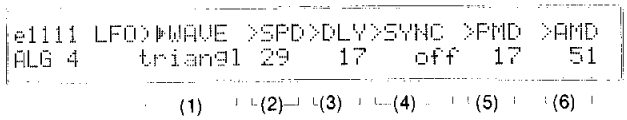
Feedback is a function that allows the output of operator 4 to modulate operator 4 itself. Raising the feedback level has an effect similar to connecting two operators as carrier and modulator, and will increase the brightness of the sound. This is especially useful when making voices such as brass or strings, or noise effects. If feedback is set to 0, the operator will function in the same way as the other operators without feedback.

Note:

Feedback will have no effect unless the output level of operator 4 is raised.

LFO (wave, speed, delay, key sync, PMD, AMD)

Press TR3 (LFO).



The LFO causes repeating change in tone, volume, or pitch.

Repeating change in tone (wah): The tone will alternately become brighter and softer.

Repeating change in volume (tremolo): The volume will alternately become louder and softer.

Repeating change in pitch (vibrato): The pitch will alternately become higher and lower.

(1) Wave

■ **Function**

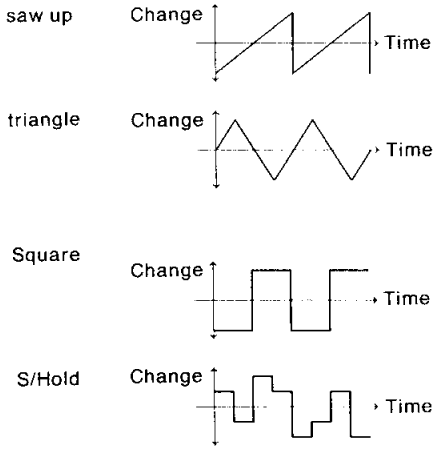
Select a waveform or "shape" for the repeating change.

■ **Settings**

saw up, square, triangle, S/Hold

■ **Explanation**

The wave selected here will determine the "shape" of the vibrato, tremolo, or wah. Select from the following four waveforms. S/Hold (sample and hold) causes random change.



(2) Speed

■ **Function**

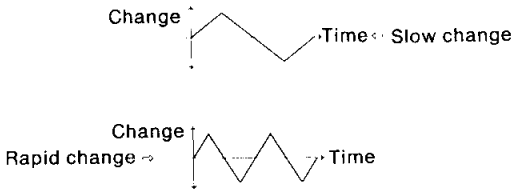
Set the speed of the repeating change (vibrato, tremolo, wah).

■ **Settings**

0 – 99

■ **Explanation**

A value of 0 gives the slowest change, and as the value is increased, the speed of change increases.



(3) Delay

■ **Function**

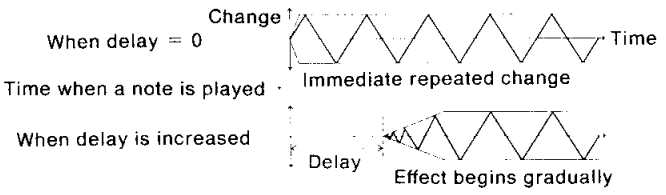
Set how soon the repeated change will begin.

■ **Settings**

0 – 99

■ **Explanation**

A value of 0 makes the repeated change begin immediately (i.e., no LFO delay), and as the value is increased, the repeated change will begin more gradually, as shown in the diagram.



(4) Key sync

■ **Function**

Make the LFO start from the same position for each note.

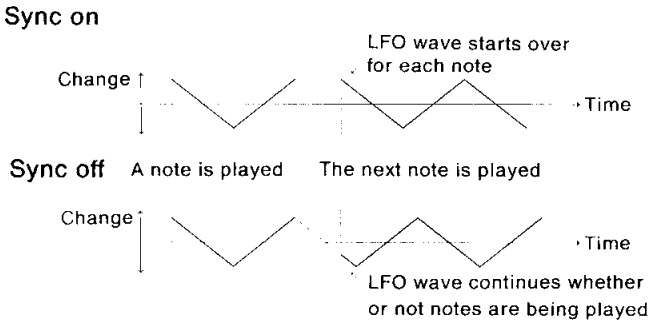
■ **Settings**

off, on

■ **Explanation**

When key sync is on, the LFO waveform will start over again from the same position each time you play another note. When key sync is off, the LFO waveform will continue repeating in the same way whether or not notes are being played.

If you want each new note to have the same type of attack, set key sync on. When simulating rotary speakers, phasers, etc., set key sync off.



(5) PMD

■ **Function**

Set the depth of vibrato (pitch modulation).

■ **Settings**

0 – 99

■ Explanation

A setting of 0 gives minimum effect, a setting of 99 gives maximum effect.

There will be times when you want a voice to always have vibrato, and other times when you want to be able to bring in vibrato using a modulation wheel or breath controller. This PMD setting is the depth of vibrato that will *always* be present in the voice. If you want to bring in vibrato using a modulation wheel or breath controller, leave this PMD setting at 0.

Note:

When the sensitivity setting for PMS (see page 43) is at 0, there will be no vibrato even if you raise the PMD value.

If you want to bring in vibrato using a modulation wheel or breath controller, raise the pitch setting (MW Pitch, BC Pitch, etc.) for that controller.

Ways to add vibrato

Type of vibrato	PMD setting	PMS setting	* setting
Always present	raised	raised	0
Add using a controller	0	raise	raise

* indicates

When using the foot controller
□ (FUNCTION) FC Pitch setting
When using the modulation wheel
□ (FUNCTION) MW Pitch setting
When using the breath controller
□ (FUNCTION) BC Pitch setting
When using aftertouch
□ (FUNCTION) AT Pitch setting

(6) AMD

■ **Function**

Set the depth of tremolo or wah.

■ **Settings**

0 – 99

■ **Explanation**

A setting of 0 gives minimum effect, a setting of 99 gives maximum effect.

There will be times when you want a voice to always have tremolo or wah, and other times when you want to be able to bring in tremolo or wah using a modulation wheel or breath controller. This AMD setting is the depth of tremolo or wah that will *always* be present in the voice. If you want to bring in tremolo or wah using a modulation wheel or breath controller, leave this AMD setting at 0.

When the AMS of an operator acting as a carrier is raised, this AMD setting regulates tremolo.

When the AMS of an operator acting as a modulator is raised, this AMD setting regulates wah.

Note:

When the sensitivity setting for AMS (see page 43) is at 0 or off, there will be no tremolo or wah even if you raise this AMD value.

If you want to bring in tremolo or wah using a modulation wheel or breath controller, raise the amplitude setting (MW Amplitude, BC Amplitude, etc.) for that controller.

Ways to add tremolo

	AMD setting	AMS setting		* setting
		Carrier	Modulator	
Always present	Raise	on	off	0
Add using a controller	0	on	off	Raise

* indicates
When using the foot controller
[▫](FUNCTION) FC Amplitude setting
When using the modulation wheel
[▫](FUNCTION) MW Amplitude setting
When using the breath controller
[▫](FUNCTION) BC Amplitude setting
When using aftertouch
[▫](FUNCTION) AT Amplitude setting

Sensitivity (PMS, AMS, AME, EBS, KVS)

Press [TR4] (SENSITIVITY).

```
e1111 SENS>▶PMS(all) >AMS >AME >EBS >KVS
ALG 4 OP1     5          1    off    0    +2
        (1)            (2)   (3)   (4)   (5)
```

(1) PMS (pitch modulation sensitivity)

■ Function
Determine the overall depth of vibrato

■ Settings
0−7

■ Explanation
A setting of 0 gives no effect, and a setting of 99 gives maximum effect.

This determines the overall depth of the vibrato resulting from the LFO settings for PMD (see page 41) and the pitch settings for each controller.
For details of how to add vibrato, see page 42.

> **Note:**
> If PMD and the pitch settings of the controllers (modulation wheel, breath controller, etc.) are 0, this PMS setting will have no effect.

(2) AMS (amplitude modulation sensitivity)

■ Function
Determine the overall depth of tremolo or wah.

■ Settings
0−3

■ Explanation
A setting of 0 gives no effect, and a setting of 99 gives maximum effect.

This determines the overall depth of the tremolo or wah resulting from the LFO settings for AMD (see page 42) and the amplitude settings for each controller. For details of how to add tremolo or wah, see page 42.

> **Note:**
> If operator output levels are set extremely low, this AMS setting will not have very much effect.

(3) AME (amplitude modulation enable)

■ Function
Determine which operators will be affected by amplitude modulation.

■ Settings
off, on

■ Explanation
This determines the operators that will be affected by amplitude modulation. Repeatedly press [○] to step through the operators, and program the values for each.

If AME is turned on for an operator that is acting as a carrier, tremolo (change in volume) will result. If AME is turned on for an operator that is acting as a modulator, wah (change in tone) will result.

> **Note:**
> If AMS is 0, there will be no effect even if AME is turned on. In the same way, even if AMS is raised, there will be no effect if AME is turned off.
>
> This AMS setting will have no effect unless AMD or the amplitude value for one or more controllers (modulation wheel, breath controller, etc.) is raised.
>
> Some settings may cause small amounts of noise.

(4) EBS (EG bias sensitivity)

■ Function
Allow aftertouch or breath controller to affect tone and volume.

■ Settings
0−7

■ Explanation
A setting of 0 gives no effect, and a setting of 7 gives maximum effect.

When using using aftertouch or breath controller to modify the volume or tone, raise this setting. (This is not a repeating change like tremolo or wah.) For example if this setting is raised for an operator that is acting as a modulator, and the aftertouch AT EG Bias setting is raised, pressing down on the keyboard after playing a note (i.e., "aftertouch") would affect the tone.

This EG bias sensitivity setting is made independently for each of the four operators. Repeatedly press [○] to step through operators 1→2→3→4, and program the values for each.

When this value is raised for a carrier operator, aftertouch or breath control can affect the volume. When this value is raised for a modulator operator, aftertouch or breath controller can affect the tone.

Note:

If the AT EG Bias setting (see page 53) or the BC EG Bias setting (see page 52) are not raised, this EBS setting will have no effect.

When the EBS for an operator is raised, the overall output level of that operator will decrease. Aftertouch or breath controller will then be able to raise or lower the output level of the operator, and affect the volume or tone.

(5) KVS (key velocity sensitivity)

■ **Function**

Allow the force (velocity) of a note to affect operator output level.

■ **Settings**

−7—+7

■ **Explanation**

Settings of +1—+7 will make the volume (or brightness) increase as you play more strongly. Settings of −1—−7 will make the volume (or brightness) decrease as you play more strongly.

This key velocity sensitivity setting is made independently for each of the four operators. Repeatedly press [○] to step through operators 1→2→3→4, and program the values for each.

When the key velocity sensitivity for a carrier operator is raised, the force with which a note is played will affect the volume. When the key velocity sensitivity for a modulator operator is raised, the force with which a note is played will affect the tone.

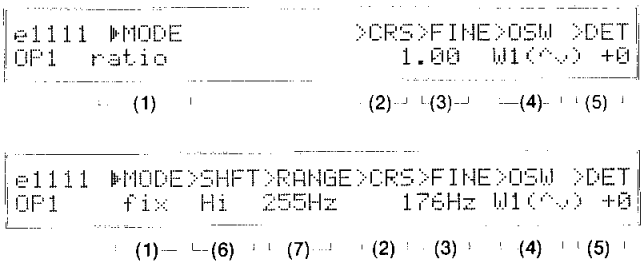
Note:

If the operator output level is extremely low, this setting will have little effect.

"Key velocity" is actually detected by measuring the "speed" at which you play a note.

Oscillator
(mode, coarse, fine, wave, detune, shift, range)

Press [RHY] (OSCILLATOR).



Oscillator settings determine the pitch and waveform that is output by each operator. These oscillator settings are made independently for each of the four operators. Repeatedly press [○] to step through operators 1→2→3→4, and program the values for each.

The items in the display will depend on the setting of the oscillator's mode (see (1), below). If "ratio" has been selected, (2)−(5) will be displayed. If "fix" has been selected, (2)−(7) will be displayed.

(1) Mode

■ **Function**

Select the mode of each operator's oscillator.

■ **Settings**

fix, ratio

■ **Explanation**

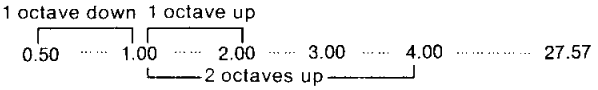
Select one of the following two modes.

fix mode

The same pitch will be produced no matter which note you play. This is often convenient when making special effects, or percussion instruments. Specify the pitch in Hz (hertz: the number of times the waveform repeats every second).

ratio mode

The note you play will determine the pitch that is produced. Use this mode when creating normal, pitched instruments. With a setting of 1 representing an A3 pitch of 440Hz, specify the pitch over a range of 0.50 − 27.57. Modifying this setting will change the pitch as shown in the diagram.



(2) Coarse

■ **Function**
Set the approximate frequency (pitch)

■ **Settings**
0.5 – 27.57 in ratio mode, 8 – 32640 in fix mode.

■ **Explanation**
This determines the approximate pitch produced by the operator. (Make exact settings using the next item, (3) Fine.)

Note:
For fix mode, the "range" and "shift" settings give you additional control over the range of the fixed frequency. See page 44.

(3) Fine

■ **Function**
Set the exact frequency (pitch).

■ **Settings**
0.5 – 27.57 in ratio mode, 8 – 32640 in fix mode.

■ **Explanation**
This adjusts the exact pitch produced by the operator. (The size of each step will depend on the frequency range selected by the coarse setting.)

(4) Wave

■ **Function**
Select the wave produced by each operator.

■ **Settings**
W1 – W8

■ **Explanation**
Select one of the following eight waves.

(5) Detune

■ **Function**
Make fine adjustments in the pitch of each operator.

■ **Settings**
−3 ~ +3

■ **Explanation**
When this is set to 0, the operator will produce the exact pitch indicated by the coarse and fine frequency settings. Detune allows you to make fine adjustments in the pitch of each operator. The exact range will differ for different pitches, but in the case of C3, a detune setting of -3 results in a pitch change of -2.6 cents, and a setting of +3 results in a pitch change of +2.6 cents. (1 cent is 1/100 of a half step.)

By setting slight differences in the pitch of operators, you can create chorusing effects to broaden the sound.

Note:
Detune is intended to create differences in the *relative* pitches of the operators. Setting all operators to the same detune setting is not very useful.

(6) Shift

■ **Function**
In "fix" mode, select a broad frequency range.

■ **Settings**
LO, HI

■ **Explanation**
When LO is selected, the fix range will be 1Hz – 100Hz. When HI is selected, the fix range will be 255Hz – 32KHz.

(7) Range

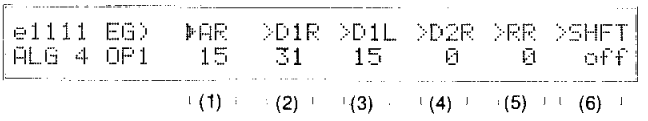
■ **Function**
In "fix" mode, select a frequency range.

■ **Settings**
When shift = LO, 1Hz – 100Hz, when shift = HI, 255Hz – 32KHz

■ **Explanation**
When shift is set to LO, a range of 1Hz – 100Hz can be selected. When shift is set to HI, a range of 255Hz – 32KHz can be selected.

Envelope generator (AR, D1R, D2L, D2R, RR, shift)

Press [ ] (EG).



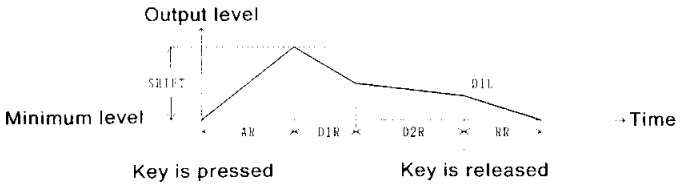
The envelope generator changes the output level of each operator over time, and creates changes in volume and tone from the time the note is played to when the sound disappears. Two words are especially important to understand when setting the envelope generator.

Rate ..... The speed of change from one level to another level.
Level .... An output level.

These envelope generator settings are made separately for each operator 1 – 4. The number of the operator currently being set is shown in the lower left of the display. Repeatedly press [○] to step through operators 1→2→3→4, and make settings for each.

As shown in the diagram, an envelope generator uses four "rates" and one "level" to modify the output of each operator over time. (A similar diagram is printed on the right side of the V50 front panel.)

It is possible to copy the settings of an envelope generator to another operator (see page 120).



Attack rate (AR) ..... The speed of the change from minimum to maximum level, starting when a key is pressed.
Decay 1 Rate (D1R) ..... The speed of the change from maximum to D1L level, starting when maximum level is reached.
Decay 2 Rate (D2R) ..... The speed of the decay from D1L level.
Release Rate (RR)..... The speed of the decay starting when the key is released.
Decay 1 Level (D1L)..... The level after decaying from the maximum level.

These settings result in a change as follows.

(1) When a key is pressed, the output level rises at the rate of AR to the maximum level.
(2) When the maximum level is reached, the output level decreases at the rate of D1R to the level D1L.
(3) While the key remains depressed, the level will continue to decrease at the rate of D2R.
(4) When the key is released, the level will decrease at the rate of RR.

(1) AR

■ **Function**
Set the rate at which the output level rises to maximum.

■ **Settings**
0 – 31

■ **Explanation**
A setting of 0 is infinitely slow, and a setting of 31 is the fastest attack.

(2) D1R

■ **Function**
Set the rate at which the level decreases to D1L.

■ **Settings**
0 – 31

■ **Explanation**
Higher settings create a greater feeling of attack, and lower settings create a slower decay.

Note:
If the D1L is close to the maximum of 15, this D1R setting will have little effect.

(3) D1L

■ **Function**
Set the level to which the output will decay after reaching maximum.

■ **Settings**
0 – 15

■ **Explanation**
When D2R is 0, this D1L level will be the level of the sustained sound.

(4) D2R

■ **Function**
Set the rate at which the level decreases after reaching D1L.

■ **Settings**
0 – 31

■ **Explanation**
When this D2R is 0, the output will stay at the D1L level as long as the key is depressed.

(5) RR

■ **Function**
The rate of the decay after the key is released.

■ **Settings**
1 – 15

■ **Explanation**
Larger settings result in a faster (shorter) decay.

(6) Shift (EG shift)

■ **Function**
Select the width of change produced by the envelope generator.

■ **Settings**
off, 48, 24, 12

■ **Explanation**

This EG shift setting selects the level difference between maximum and minimum levels.

off..... The minimum level of the EG is 96dB below the maximum level.

48..... The minimum level of the EG is 48dB below the maximum level.

24..... The minimum level of the EG is 24dB below the maximum level.

12..... The minimum level of the EG is 12dB below the maximum level.

Settings of 12 – 48 will mean that the operator will be producing sound even when no key is pressed. (This is normally used on modulator operators.)

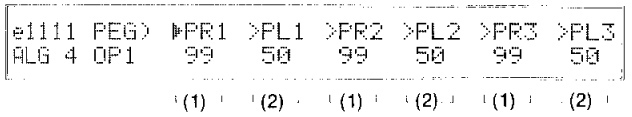
Note:

If a setting other than "off" is used on an operator that is functioning as a carrier, the sound will continue even when no key is pressed.

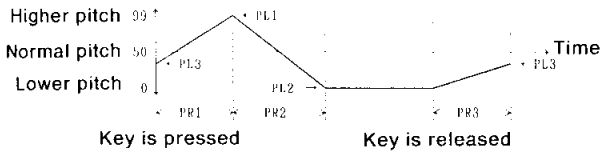
Operator 1 is permanently set to "off".

Pitch envelope generator (PR1, PL1, PR2, PL2, PR3, PL3)

Press [TR5] (PEG)



The pitch envelope generator modifies the pitch over time. It applies to the entire voice (all operators). The pitch envelope generator uses three rates and three levels, as shown in the diagram.



PR1..... Rate of pitch change from PL3 to PL1 starting when key is pressed.

PR2..... Rate of pitch change from PL1 to PL2.

PR3..... Rate of pitch change to PL3 starting when key is released.

PL1..... Pitch level moved toward when key is pressed.

PL2..... Pitch level maintained while key remains pressed.

PL3..... Pitch level moved toward when key is released.

(1) PR1, PR2, PR3

■ **Function**

Set the rates of PEG pitch change.

■ **Settings**

0 – 99

■ **Explanation**

Higher settings result in faster change. Lower settings result in slower change.

PR1 is the rate of pitch change from PL3 to PL1 starting when the key is pressed.

PR2 is the rate of pitch change from PL1 to PL2.

PR3 is the rate of pitch change to PL3 starting when the key is released.

(2) PL1, PL2, PL3

■ **Function**

Set the levels of PEG pitch change.

■ **Settings**

0 – 99

■ **Explanation**

A setting of 50 is the correct pitch of the key that was pressed. A setting of 99 is 4 octaves higher, and a setting of 0 is 4 octaves lower.

When you press the key, the pitch will move toward PL1.

If you continue pressing the key, the pitch level PL2 will be maintained.

When you release the key, the pitch will move toward PL3.

Note:

If the pitch envelope generator is used to create extreme variations in pitch, it will be difficult to hear the "true" pitch of the sound.

If extremely high or low pitch levels are set, the pitch change may appear uneven.

Output level

Press TR6 (OUT LEVEL)

```
@1111 OUT LEVEL)▶OP1 >OP2 >OP3 >OP4
ALG 4            99   89   58   99
```

■ **Function**

Set the output level for each operator.

■ **Settings**

0 – 99

■ **Explanation**

At a setting of 0 there will be no output, and a setting of 99 is maximum.

The output level of an operator that is acting as a *carrier* will determine the volume. The output level of an operator that is acting as a *modulator* will determine the tone of the operators below it.

If you do not need to use an operator, you can set its output level to 0.

Note:

If you set the output level of all carrier operators to 0, there will be no sound.

Keyboard scaling (rate)

Press TR7 (SCALING)

```
@1111 SCALING)  ▶OP1 >OP2 >OP3 >OP4   ↕
ALG 4  RATE       1    0    0    1
```

Keyboard rate scaling adjusts the rate of change of the envelope generator for each operator across the keyboard.

■ **Function**

Set how the envelope generator rates are adjusted across the keyboard.

■ **Settings**

0 – 3

■ **Explanation**

A setting of 0 has almost no rate scaling effect, and a setting of 3 has maximum scaling effect. The following diagram shows the result of keyboard rate scaling.

When low notes are played, the envelope changes gradually, and when high notes are played, the envelope changes rapidly.

If keyboard rate scaling is applied to carrier operators, low notes will have a gradual attack and a long release, and high notes will have a sharp attack and short release. If keyboard rate scaling is applied to modulator operators, low notes will have a slow change in tone, and high notes will have a rapid change in tone.

Keyboard scaling (level)

Press TR7 (SCALING) twice.

```
@1111 SCALING)  ▶OP1 >OP2 >OP3 >OP4   ↕
ALG 4  LEVEL     +17  +36   +0   -20
```

■ **Function**

Set how the output level of each operator is adjusted across the keyboard.

■ **Settings**

– 99 +99

■ **Explanation**

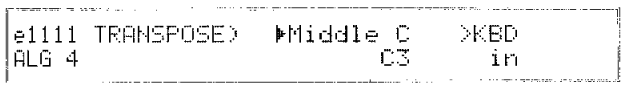
A setting of 0 has no effect, and 99 or – 99 have maximum effect. The following diagram shows the result of keyboard level scaling for a setting of +1 – +99. (Settings of – 1 – 99 will have the opposite effect.)

Low notes will have a higher output level, and high notes will have a lower output level.

If keyboard level scaling is applied to carrier operators, higher notes will have lower volume. If keyboard level scaling is applied to modulator operators, higher notes will have softer tone.

Transpose

Press [TR8] (TRANSPOSE)



■ **Function**
Transpose the pitch played by C3 in half steps.

■ **Settings**
C1 – C5

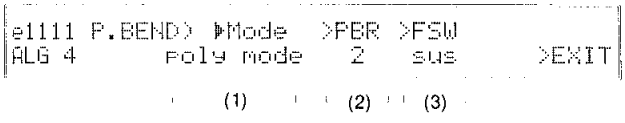
■ **Explanation**
The V50 front panel has a mark indicating "C3", located roughly at the center of the keyboard. This transpose function modifies the pitch played by the C key below the "C3" mark.

Normally this is set to C3.

Pressing a key C1 – C5 will specify the new transpose setting.

Poly/mono mode select, pitch bend wheel range, foot switch

After pressing [ ] (FUNCTION), press the [ ] below "PBetc" in the display.



Press the [ ] below " > EXIT" in the display to return to the previous display.

(1) Poly/mono mode select

■ **Function**
Select poly or mono mode.

■ **Settings**
poly mode, mono mode

■ **Explanation**
In poly mode you can play chords. (Last note priority is used.) In mono mode only one note at a time will sound.

(2) Pitch bend wheel range

■ **Function**
Set the range of pitch change produced by the pitch bend wheel.

■ **Settings**
0 – 12

■ **Explanation**
The pitch bend wheel is located at the left of the keyboard.
It allows you to change the pitch while playing. Moving the wheel away from you will smoothly raise the pitch. Moving the wheel toward you will smoothly lower the pitch.

This pitch bend wheel range setting determines the maximum pitch change when the pitch bend wheel is moved all the way in either direction.

When this is set to 0, the pitch bend wheel will have no effect. When this is set to 12, the pitch bend wheel will have maximum effect. Pitch bend wheel range can be set from 0 – 12 in half-steps. This means that a setting of 12 will allow the pitch bend wheel to raise or lower the pitch one octave.

(3) Foot switch

■ **Function**
Select the function of the foot switch.

■ **Settings**
por, sus

■ **Explanation**
An on/off foot switch (similar to the pedal of a piano) can be connected to the V50 rear panel FS jack, and can function in one of two ways. (Use a foot switch such as the FC-4 or FC-5, sold separately.)

por (Portamento)
When portamento mode (an explanation follows) is set to "Full Time Porta", the portamento effect will apply only while the foot switch is pressed.

sus (Sustain)
When you press the foot switch while a note is pressed, and then release the note, it will continue sounding as though the key had not been released.

Note:

If portamento mode is set to "Fingered Porta", the foot switch will have no effect on portamento.

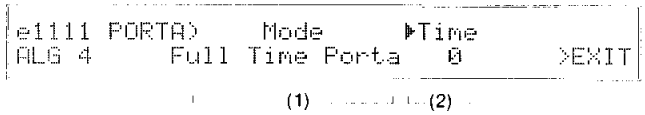
If the portamento time is set to 0, there will be no portamento effect.

In performance play mode, the foot switch setting of instrument 1 will apply.

The portamento effect will apply when a foot switch is not connected, or when the foot switch is set to "sus".

Portamento (mode, time)

After pressing [ ] (FUNCTION), press the [ ] below "Port" in the display.



Portamento is a smooth change from the pitch of one note to the pitch of the next played note. The portamento effect is determined by the portamento mode and the portamento time.

Press the [ ] below ">EXIT" in the display to return to the previous display.

(1) Portamento mode

■ **Function**
Select the portamento mode.

■ **Settings**
Full Time Porta, Fingered Porta

■ **Explanation**
When poly/mono mode is set to "poly", you will be able to select only "Full Time Porta". When "mono" mode has been selected, you will be able to select either "Full Time Porta" or "Fingered Porta"

Full Time Porta
Portamento will always apply.

Fingered Porta
Portamento will apply only when you play legato (press the next note before releasing the previous note).

(2) Portamento time

■ **Function**
Set the time of the portamento effect.

■ **Settings**
0 – 99

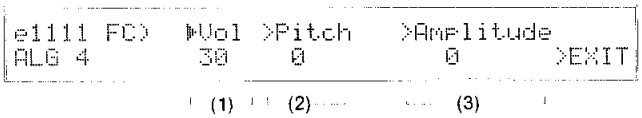
■ **Explanation**
This sets the time required for the pitch to move to the pitch of the next played key. A portamento time setting of 0 results in instant pitch change, i.e. no portamento. Higher settings of portamento time result in more gradual pitch change.

Note:

When you don't want to use portamento, set the portamento time to 0. If a foot switch is connected to the rear panel FS jack, and if the foot switch is set to "por" (Portamento), portamento will apply only while the foot switch is pressed.

Foot controller (volume, pitch, amplitude)

After pressing [ ] (FUNCTION), press the [ ] below "FC" in the display.



An optional foot controller (FC7, FC9, etc.) can be connected to the rear panel FC jack, and used to modify the depth of vibrato, tremolo, wah, etc., or adjust volume or tone while playing.

Press the [ ] below ">EXIT" in the display to return to the previous display.

(1) Volume

■ **Function**
Set the amount of volume regulated by the foot controller.

■ **Setting**
0 – 99

■ **Explanation**
This allows you to regulate volume using the foot controller. As you advance the foot controller, the volume will increase. When the setting is 0, the foot controller will have no effect, and when the setting is 99, it will have maximum effect.

Note:

If a foot controller is not connected, the result will be the same as when the foot controller is fully depressed.

If you do not want to control volume using the foot controller, set this to 0.

When a foot controller is connected to the rear panel VOLUME jack, in single play mode it will act as a volume pedal to adjust master volume independently of this setting. In performance play mode it will act as a volume pedal only for the instruments whose receive channel matches the transmit channel.

(2) Pitch

■ **Function**

Set the amount of vibrato depth regulated by the foot controller.

■ **Setting:**

0–99

■ **Explanation**

This allows you to regulate vibrato depth using the foot controller. As you advance the foot controller, the depth of vibrato will increase. When the setting is 0, the foot controller will have no effect, and when the setting is 99, it will have maximum effect.

Note:

Unless the sensitivity "P Mod Sens" setting (see page 43) is raised, raising this setting will have no effect.

If a foot controller is not connected, the result will be the same as when the foot controller is fully depressed. This means that if you raise this setting, vibrato will be applied continuously.

If you do not want to control vibrato using the foot controller, set this to 0.

(3) Amplitude

■ **Function**

Set the amount of tremolo or wah regulated by the foot controller.

■ **Setting:**

0–99

■ **Explanation**

This allows you to regulate tremolo or wah using the foot controller. As you advance the foot controller, the amount of tremolo or wah will increase. When the setting is 0, the foot controller will have no effect, and when the setting is 99, it will have maximum effect.

Note:

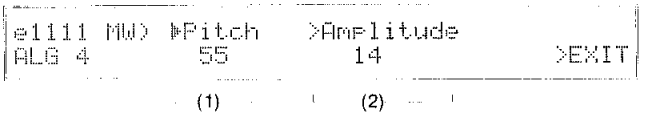
Unless the [TR4] (SENSITIVITY) AMS setting is raised, and the AME of the appropriate operators is on, raising this setting will have no effect (see page 43).

If a foot controller is not connected, the result will be the same as when the foot controller is fully depressed. This means that if you raise this setting, tremolo or wah will be applied continuously.

If you do not want to control tremolo or wah using the foot controller, set this to 0.

Modulation wheel (pitch, amplitude)

After pressing [ ] (FUNCTION), press the [ ] below "MW" in the display.



The modulation wheel is located to the left of the keyboard, and allows you to adjust the depth of vibrato, tremolo, wah, etc. while playing.

Press the [ ] below "> EXIT" in the display to return to the previous display.

(1) Pitch

■ **Function**

Set the amount of vibrato depth regulated by the modulation wheel.

■ **Setting**

0–99

■ **Explanation**

This allows you to regulate vibrato depth using the modulation wheel. As you advance the modulation wheel, the depth of vibrato will increase. When the setting is 0, the modulation wheel will have no effect, and when the setting is 99, it will have maximum effect.

Note:

Unless the sensitivity "P Mod Sens" setting (see page 43) is raised, raising this setting will have no effect.

If you do not want to control vibrato using the modulation wheel, set this to 0.

(2) Amplitude

■ **Function**

Set the amount of tremolo or wah regulated by the modulation wheel.

■ **Setting**

0–99

■ **Explanation**

This allows you to regulate tremolo or wah using the modulation wheel. As you advance the modulation wheel, the amount of tremolo or wah will increase. When the setting is 0, the modulation wheel will have no effect, and when the setting is 99, it will have maximum effect.

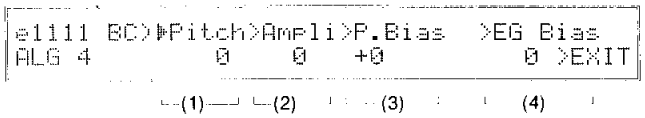
Note:

Unless the sensitivity AMS setting is raised, and the AME of the appropriate operators is on, raising this setting will have no effect (see page 43).

If you do not want to control tremolo or wah using the foot controller, set this to 0.

Breath controller (pitch, amplitude, pitch bias, EG bias)

After pressing [ ] (FUNCTION), press the [ ] below "BC" in the display.



An optional breath controller (BC1, BC2) can be connected to the BREATH CONT terminal at the left of the keyboard, and used to regulate the depth of vibrato, tremolo, wah, etc., or tone or volume while playing.

Press the [ ] below ">EXIT" in the display to return to the previous display.

(1) Pitch

■ **Function**

Set the amount of vibrato depth regulated by the breath controller.

■ **Setting**

0 – 99

■ **Explanation**

This allows you to regulate vibrato depth using the breath controller. As you blow into the breath controller, the depth of vibrato will increase. When the setting is 0, the breath controller will have no effect, and when the setting is 99, it will have maximum effect.

Note:

Unless the sensitivity "P Mod Sens" setting (see page 43) is raised, raising this setting will have no effect.

If you do not want to control vibrato depth using the breath controller, set this to 0.

(2) Amplitude

■ **Function**

Set the amount of tremolo or wah regulated by the breath controller.

■ **Setting**

0 – 99

■ **Explanation**

This allows you to regulate tremolo or wah using the breath controller. As you blow into the breath controller, the amount of tremolo or wah will increase. When the setting is 0, the breath controller will have no effect, and when the setting is 99, it will have maximum effect.

Note:

Unless the [TR4] (SENSITIVITY) AMS setting is raised, and the AME of the appropriate operators is on, raising this setting will have no effect (see page 43).

If you do not want to control tremolo or wah using the breath controller, set this to 0.

(3) Pitch bias

■ **Function**

Set how the breath controller will affect pitch.

■ **Setting**

– 50 — + 50

■ **Explanation**

This allows you to directly affect the pitch by how hard you blow into the breath controller. When the setting is 0, the breath controller will have no effect. When the setting is – 1 — – 50 blowing into the breath controller will lower the pitch, and when the setting is + 1 — + 50 blowing into the breath controller will raise the pitch. The maximum range of pitch change is approximately +/– 4 octaves.

Note:

If you do not want the breath controller to affect the pitch, set this to 0.

(4) EG bias

■ **Function**

Set how the breath controller will affect volume or tone.

■ **Settings**

0 – 99

■ **Explanation**

This allows you to affect the output level of the operators by how hard you blow into the breath controller. For a setting of 0, the breath controller will have no effect, and for a setting of 99, it will have maximum effect.

You will need to raise the sensitivity EBS setting (see page 43) for the operators that you want the breath controller to affect. If you raise the EBS setting for carrier operators, the breath controller will affect volume. If you raise the EBS setting for modulator operators, the breath controller will affect tone.

Note:

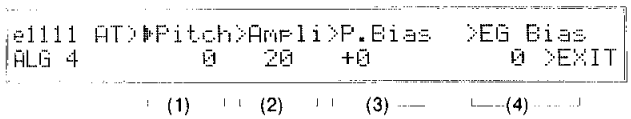
Unless the sensitivity EBS setting is raised for the operators you want to affect, the breath controller will have no effect.

Note:

If you do not want the breath controller to affect volume or tone, set this to 0.

Aftertouch (pitch, amplitude, pitch bias, EG bias)

After pressing [ ] (FUNCTION), press the [ ] below "AT" in the display.



Pressing down on the keyboard after playing a note (i.e., "aftertouch") can regulate the depth of vibrato, tremolo, or wah, and also tone, volume, or pitch while playing. Aftertouch applies equally to the entire keyboard even if you press down on only a single key.

Press the [ ] below ">EXIT" in the display to return to the previous display.

(1) Pitch

■ **Function**

Set the amount of vibrato depth regulated by aftertouch.

■ **Setting**

0 – 99

■ **Explanation**

This allows you to regulate vibrato depth using aftertouch. As you press down on the keyboard, the depth of vibrato will increase. When the setting is 0, aftertouch will have no effect, and when the setting is 99, it will have maximum effect.

Note:

Unless the sensitivity "P Mod Sens" setting (see page 43) is raised, raising this setting will have no effect.

If you do not want to control vibrato depth using aftertouch, set this to 0.

(2) Amplitude

■ **Function**

Set the amount of tremolo or wah regulated by aftertouch.

■ **Setting**

0 – 99

■ **Explanation**

This allows you to regulate tremolo or wah using aftertouch. As you press down on the keyboard, the amount of tremolo or wah will increase. When the setting is 0, aftertouch will have no effect, and when the setting is 99, it will have maximum effect.

Note:

Unless the sensitivity AMS setting is raised, and the AME of the appropriate operators is on, raising this setting will have no effect (see page 43).

If you do not want to control tremolo or wah using aftertouch, set this to 0.

(3) Pitch bias

■ **Function**

Set how aftertouch will affect pitch.

■ **Setting**

– 50 — + 50

■ **Explanation**

This allows you to directly affect the pitch using aftertouch. When the setting is 0, aftertouch will have no effect. When the setting is – 1 — – 50 aftertouch will lower the pitch, and when the setting is + 1 — + 50 aftertouch will raise the pitch. The maximum range of pitch change is approximately ±4 octaves.

Note:

If you do not want aftertouch to affect the pitch, set this to 0.

(4) EG bias

■ **Function**

Set how aftertouch will affect volume or tone.

■ **Settings**

0 – 99

■ **Explanation**

This allows you to affect the output level of the operators using aftertouch. For a setting of 0, aftertouch will have no effect, and for a setting of 99, it will have maximum effect.

You will need to raise the [TR4] (SENSITIVITY) EBS setting (see page 43) for the operators that you want aftertouch to affect. If you raise the EBS setting

for carrier operators, aftertouch will affect volume. If you raise the EBS setting for modulator operators, aftertouch will affect tone.

Note:

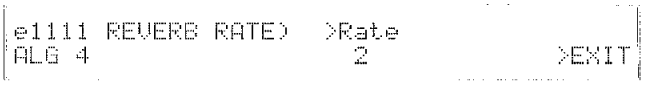
Unless the sensitivity EBS setting is raised for the operators you want to affect, aftertouch will have no effect.

Note:

If you do not want aftertouch to affect volume or tone, set this to 0.

Reverb

After pressing [ ] (FUNCTION), press the [ ] below "REVR" in the display.



Press the [ ] below " > EXIT" in the display to return to the previous display.

■ **Function**
Set a simulated reverb effect.

■ **Settings**
off, 0 – 7

■ **Explanation**
A setting of "off" gives no effect. A setting of 1 gives the most effect (long reverb) and a setting of 7 gives the shortest effect (short reverb).

Note:

This effect has no connection with the reverb produced by the V50 DSP effect unit. When the output level of operator 1 drops below a certain level (−18dB), this "reverb" effect slows the RR (RELEASE RATE) to artificially create a "reverb-type" or "simulated reverb" effect. When using this, be aware of the following points.

If the RR setting of operator 1 is low (a slow decay), the output level will take a long time to drop below −18dB, and the reverb effect will not be heard.

If the AR setting of operator 1 is 0, the output level will already be below −18dB, causing this "reverb" to start immediately, and making the sound linger for a long time.

Voice name

After pressing [ ] (FUNCTION), press the [ ] below "NAME" in the display.

Press the [ ] below " > EXIT" in the display to return to the previous display.

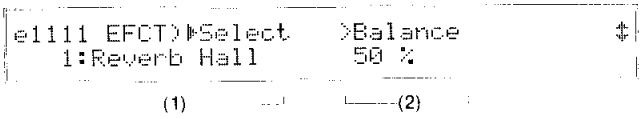
■ **Function**
Set a voice name.

■ **Settings**
Up to 10 characters

■ **Explanation**
This allows you to set a voice name for the voice you are editing. Page 17 explains how to enter characters.

Effect select, effect balance

Press [ ] (EFFECT).



(1) Effect select

■ **Function**
Select the type of DSP effect to use with this voice.

■ **Settings**
off, or one of the following types of effect

■ **Explanation**
Select one of the following types of effect.

0: off
No effect

1: Reverb Hall
Reverberation of a large hall

2: Reverb Room
Reverberation of a smaller room

3: Reverb Plate
Reverberation typical of a plate reverb unit

4: Delay
Delayed sound

5: Delay L/R
Delayed sound spread to left/right

6: Stereo Echo
Echo spread left/right

7: Distortion Rev.
Combination of distortion and reverb

8: Distortion Echo
Combination of distortion and echo

9: Gate Reverb
Reverberation with "artificially" fast cutoff

10: Reverse Gate
Reverberation simulating backwards tape playback

11: Early Ref
Adds early acoustic reflections to the sound

12: Tone Control
Simulated equalizer

13: Delay & Reverb
Combination of delay and reverb

14: DelayL/R & Rev.
Combination of delay L/R and reverb

15: Dist. & Delay
Combination of distortion and delay

16: Church
Reverberation simulating a church

17: Club
Reverberation simulating a music club

18: Stage
Reverberation simulating a larger live music club

19: Bath Room
Reverberation simulating a bathroom

20: Metal
Metallic reverberation

21: Tunnel
Reverberation simulating a tunnel

22: Doubler 1
Doubling effect

23: Doubler 2
Doubling effect (spread left and right)

24: Feed Back Gate
Gate reverb with feedback

25: F. Back Reverse
Reverse gate with feedback

26: Feed Back E/R
Early reflections with feedback

27: Delay & Tone1
Combination of delay and tone control 1

28: Dly L/R & Tone1
Combination of delay L/R and tone control 1

29: Tone Control 2
Tone control using low pass filter and high pass filter

30: Delay & Tone2
Combination of delay and tone control 2

31: Dly L/R & Tone2
Combination of delay L/R and tone control 2

32: Distortion
Distortion effect

(2) Effect balance

■ **Function**
Set the volume balance of the effect and the unprocessed sound.

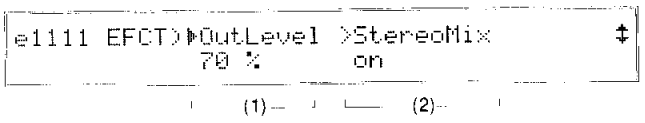
■ **Settings**
0% – 100%

■ **Explanation**
Higher settings will increase the volume of the effect (processed sound). Lower settings will increase the volume of the unprocessed sound.

Note:
At a setting of 0%, no effect (processed sound) will be heard. At a setting of 100%, you will hear only the effect, and the direct unprocessed sound will not be heard.

Effect output level, stereo mix

Press [ ] (EFFECT) twice. (If the previous item effect select has been set to "off", this will not be displayed.)



(1) Effect output level

■ **Function**
Adjust the volume of the effect and unprocessed sound.

■ **Settings**
0% – 100%

■ **Explanation**
The combined volume of the effect and the unprocessed sound is adjusted by this setting. 100% is maximum, and at 0% there will be no sound.

Note:
At a setting of 0%, neither the unprocessed nor the processed sound will be heard. (However if the next item stereo mix is on, then only the unprocessed sound will be heard.)

Note
If the DSP sound is distorted, decrease the (DSP) Effect Output Level or the Synthesizer Volume.

(2) Stereo mix

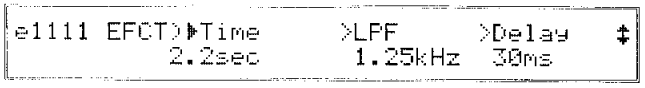
■ **Function**
Mix the processed sound with the unprocessed stereo sound.

■ **Settings**
off, on

■ **Explanation**
When this setting is on, the effect processed sound will be combined with the unprocessed sound. (Note that if this setting is off, the performance effect PAN will have no effect.)

Effect parameters

Press [ ] (EFFECT) three times. (If the previous item effect select has been set to "off", this will not be displayed.)



■ **Function**
Make detailed settings for the effect.

■ **Settings**
Each type of effect has different settings.

■ **Explanation**
Make detailed settings for the effect as explained in the charts on page 32.

It is possible to copy effect settings to another performance or voice (see page 120).

■ **Function**
Make detailed settings for the effect.

■ **Settings**
Each type of effect has different settings.

■ **Explanation**
Make detailed settings for the effect as explained in the charts on page 32.

It is possible to copy effect settings to another performance or voice (see page 120).

CHAPTER 4. USING THE RHYTHM MACHINE

This chapter will explain how to use the V50 rhythm machine.

ABOUT THE RHYTHM MACHINE

The rhythm machine tone generator

The tone generator of the rhythm machine uses the following 61 rhythm instruments.

BD 1	GateSD	F. Tom4	Crash	TimblH	Ago HI
BD 2	E. SD	E. Tom1	FMprc1	TimblL	Ago LO
BD 3	Rim 1	E. Tom2	FMprc2	WhstlS	Tambrn
H. BD	Rim 2	E. Tom3	FMprc3	WhstlL	Claves
GateBD	Tom 1	E. Tom4	GlsCsh	CgaHMT	Cstnt
E. BD	Tom 2	HHclos	BellTr	CgaHOP	VbrSlp
SD 1	Tom 3	HHopen	TimpnH	Cga LO	
SD 2	Tom 4	HH1/4o	TimpnL	Bgo HI	
PiclSD	F. Tom1	HHpdl	Claps	Bgo LO	
H. SD 1	F. Tom2	Ride	Shaker	CuicaH	
H. SD 2	F. Tom3	Edge	Cowbel	CuicaL	

The rhythm machine tone generator is completely independent of the synthesizer tone generator, and is not affected by the number of notes being played by the synthesizer. Up to 8 notes can be produced simultaneously by the rhythm machine tone generator.

Rhythm patterns and rhythm songs

When learning to use the V50 rhythm machine, it is important to understand what we mean by "rhythm pattern" and "rhythm song". A rhythm song is a song consisting of many rhythm patterns, as in the following example.

For our example, we will create three rhythm patterns as follows.

1 [boom tap tap tap]..... (1 measure)
2 [ding ding chacha ding]..... (1 measure)
3 [dum ta dum ta dum dum tata tata]..... (2 measures)

We can connect these three rhythm patterns in the order of "1, 2, 1, 2, 1, 2, 3" to create a rhythm song as follows.

Measure 1 (rhythm pattern 1)				Measure 2 (rhythm pattern 2)				Measure 3 (rhythm pattern 1)				Measure 4 (rhythm pattern 2)			
boom	tap	tap	tap	tick	tick	chacha	tick	boom	tap	tap	tap	tick	tick	chacha	tick

Measure 5 (rhythm pattern 1)				Measure 6 (rhythm pattern 2)				Measures 7 and 8 (rhythm pattern 3)							
boom	tap	tap	tap	tick	tick	chacha	tick	dum	ta	dum	ta	dum	dum	tata	tata

Rhythm patterns

A rhythm pattern is a phrase 1 to 4 measures long. There are two types of rhythm patterns; preset patterns and internal memory patterns.

Preset patterns
Basic rhythm patterns preset which are ready to use. They will remain even when the power is turned off. 100 patterns are provided, numbered P00 – P99.

Internal patterns
Rhythm patterns which you may program. They will not remain in memory after the power is turned off. 100 patterns can be programmed, numbered I00 – I99.

Rhythm songs

Specify the playing order of several rhythm patterns to create a rhythm song. Up to 8 rhythm songs can be created.

Note:
The internal patterns and rhythm songs you create will not remain in memory after the power is turned off. If you want to keep the data you create, save it to disk or card (see page 97, 105).

The rhythm machine and sequencer

If sequencer data exists for the song selected when playing a rhythm song, the sequencer song will play together with the rhythm song.

If you want to play just the rhythm song by itself, press [TR1] – [TR8], in sequencer mode to turn the sequencer tracks off, or select a song for which no sequencer data exists.

Since the rhythm machine can use patterns of differing time signatures, when a rhythm song with patterns of differing time signatures is played together with a sequencer song, it is possible that the measure numbers of the rhythm mode and sequencer mode will not match.

PLAYING RHYTHM PATTERNS

This is where you play rhythm patterns (preset patterns or internal patterns).

Note:
When the power is turned on, internal patterns are blank. To create internal patterns, see page 60.

(1) First press [RHYTHM]. You will get the following display (pattern play).

```
PTN PLAY> ▶Pattern  Time  Bar>Tempo>KBD
>toSONG     I00     4/4    2   120  RHY
```

If the display is as follows (song play), press the [ ] below "toPTN" to get the display shown above.

```
SONG PLAY>▶SONG     >Meas>Part>Tempo>KBD
>toPTN  1 :NewSong   001  001  120  RHY
```

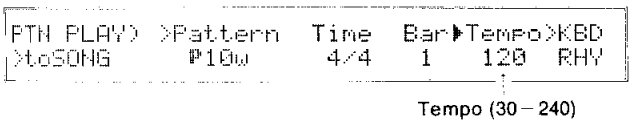
(2) Making sure that the cursor is located at "Pattern", select the pattern you want to play. Press [INT] or [PRESET] to switch between preset patterns and internal patterns. For example, if you have selected preset pattern 10, the display will be as follows.

```
PTN PLAY> ▶Pattern  Time  Bar>Tempo>KBD
>toSONG     P10w    4/4    1   120  RHY
```

Selected pattern number

In this example, the "w" displayed after the "P10" indicates that data has been written into this pattern number. Pattern numbers not followed by a "w" have no data in them.

(3) Move the cursor to ">Tempo", and specify the playback tempo. The tempo is expressed as the number of quarter notes per minute. 30 is the slowest tempo, and 240 is the fastest tempo.



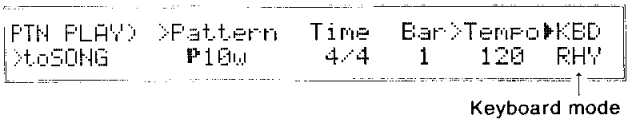
Tempo (30 – 240)

(4) Move the cursor to "> KBD", and select the function of the keyboard (the keyboard mode). This determines what the keyboard will do while you are playing rhythm patterns. Select from the following two choices.

RHY ..... The keyboard will play the rhythm sounds that have been assigned (arranged) across the keyboard.

SYN ..... The keyboard will play the performance or voice that was selected before you pressed [RHY].

When you enter record mode, you will automatically be able to hear the rhythm sounds. (I.e., you will temporarily be in rhythm machine mode.)



Keyboard mode

(5) Press [▷]. When playback starts, the "> toSONG" display will disappear, and the selected rhythm pattern will be repeatedly played back. The [TR1] – [TR8]. LEDs will light according to the instruments used. You can play the keyboard as specified in step (4).

(6) Press [□]. Pattern playback will stop immediately. To resume playback, press [▷]. To playback from the beginning, first press [◁◁] and [□] together, and then press [▷].

While playing rhythm patterns, you can do the following.

Change rhythm pattern numbers

Move the cursor to "Pattern" and select the next rhythm pattern. When the pattern currently being played finishes playing, the newly selected pattern will begin playing. (The rhythm pattern number of the newly selected pattern will blink until it actually begins playing.)

Change tempo

Move the cursor to "Tempo" and modify the tempo. Moving the data entry slider while pressing [RHYTHM] will also modify the tempo.

Change keyboard mode

Move the cursor to "> KBD" and change the setting to select whether the keyboard will play rhythm sounds or synthesizer sounds. This setting is effective only when in rhythm mode.

Whether the keyboard plays rhythm sounds or synthesizer sounds is determined by the transmit channel of the keyboard and the receive channel of each section. However, if this keyboard mode is set to "RHY", the keyboard will always play rhythm sounds when in rhythm mode *regardless* of the transmit channel and receive channel settings.

While playing back the rhythm machine, pressing [PERFORMANCE] or [SINGLE] will move to performance play mode or single play mode while continuing to play the rhythm machine. (In performance play mode and single play mode you will be able to select or edit performances or voices when in synthesizer edit mode.) To stop rhythm machine playback, press [PERFORMANCE], [SINGLE] or [RHYTHM] and then [□].

Note:

When in pattern mode, pressing [▷] will not start sequencer song playback. This means that when you stop pattern playback, return to sequencer mode, and press [▷], the sequencer playback and the rhythm pattern playback may go out of synchronization. To avoid this, press [◁◁] or [▷▷] when you enter sequencer mode, to reset the measure position. This will automatically adjust the rhythm pattern playback position.

When the rhythm machine is in song mode, the rhythm machine playback will automatically play the sequencer song, so there is no need for this operation.

Realtime recording and step recording

There are two ways to create rhythm patterns.

Realtime recording
While listening to the click sound, play the keyboard to record a rhythm pattern in realtime.

Step recording
Using a bar graph that divides a measure into small steps (32nd notes), specify the timing for each rhythm instrument to play.

You can use any combination of these two methods. For instance, you might record the bass drum and hi-hat using step recording, and record the snare and toms using realtime recording, or use step recording to edit a pattern that was recorded in realtime.

Use the recording method most appropriate for each situation.

Before you begin recording

In both realtime recording and step recording, the parts you record will modify the existing pattern by adding or deleting sounds. For example, if a certain pattern contains a bass drum part of "dum dum dum dum", you may select this pattern and record additional sounds to this pattern.

Rhythm pattern recording can be divided into the following two situations.

(1) Recording a rhythm pattern from scratch.
You can record into a rhythm pattern that contains no data. If a pattern contains no data, a "w" will not be shown in the display. Patterns with a "w" indication such as "100w" have already been recorded.)

(2) Record using a rhythm pattern that has already been recorded.
You can record to a previously recorded rhythm pattern to modify it. The procedure will differ slightly depending on whether the pattern is an preset pattern or an internal pattern.

Recording using a preset pattern: Select a preset pattern number (P00 – P99) and begin recording. However, it is not possible to store your newly recorded data into a preset pattern. When you finish recording (after you press [□]), you will be asked which internal pattern you want to write the data into. Specify an internal pattern number I00 – I99 to write the pattern into. The preset pattern you used will not be modified in any way.

Recording using an internal pattern: Select an internal pattern number (I00 – I99) and begin recording. When you finish recording, the selected internal pattern will be replaced by the newly recorded pattern. If you want to record a new pattern while keeping the original pattern, use the pattern "copy" job (see page 66) to copy the original pattern to another location before recording.

To record a pattern in realtime, use the following procedure.

(1) Press [RHYTHM] to enter pattern play mode. (There is no need to do this if you are already in pattern play mode.) If you enter song play mode instead, press the [ ] below ">toPTN" in the display. The display will show as follows.

```
PTN PLAY) ▶Pattern  Time  Bar>Tempo>KBD
>toSONG     I00      4/4   1   120  RHY
```

(2) Press [○], and you will be ready to record.

```
P.REC)>PTN >Time >Bar >Tempo >Qntz
▶Real  I00   4/4   1    120   1/16 >EXIT
```

You can press the [ ] below ">EXIT" in the display to return to the previous display.

(3) Make settings for the following six recording conditions.

Record mode .. Select "Real" (realtime recording) or "Step" (step recording). In this example we will select "Real".

PTN..... Select the pattern (I00 – I99 or P00 – P99) you want to record.

Time ..... Select a time signature from 1/4 – 8/4, 1/8 – 16/8, 1/16 – 32/16. However, if you are recording an already existing pattern, you will not be able to change the time signature.

Bar..... Set the length of the pattern (1 – 4 measures, i.e., "bars"). However if you are recording into an already existing pattern, you will not be able to change the pattern length.

Tempo ..... Set the tempo of the pattern (30 – 240 quarter notes per minute). Tempo can be changed after you start to record.

Qntz..... Specify quantization. Quantization automatically corrects minor errors in timing. Select from 1/4, 1/6, 1/8, 1/12, 1/16, 1/24, 1/32, or "off". When "off" is selected, quantization will not be used. (Notes will be recorded with an accuracy of 1/48th of a quarter note.) Quantization can be changed after you start to record, allowing you to use different quantization settings when recording each sound.

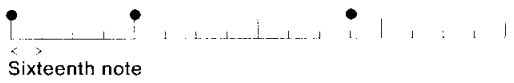
About quantization

These examples show how quantization would correct minor timing errors if you recorded a pattern with a 4/4 time signature, playing notes at the timing indicated by "o" in the following diagram.

If quantization was set to "1/4", the notes would be moved to the nearest quarter note.

If quantization was set to "1/8", the notes would be moved to the nearest eighth note.

If quantization was set to "1/16", the notes would be moved to the nearest sixteenth note.



Note:

When recording triplets, use a quantization setting such as "1/12" or "1/24".

(4) Play the keyboard to hear the location of the sound you want to use. Each of the 61 notes of the keyboard has a different sound assigned to it. So you won't have to hunt for the correct sound while recording, make sure of the location of each sound you will be using.

(5) Press [▷]. The metronome (click) will begin sounding with the time signature you selected.

(6) Play the notes to sound the desired rhythm instruments at the correct timing. There is no need to play all the instruments at once. As the pattern repeats, you can add each instrument one by one. For example, you might record the bass drum first, next the hi-hat, etc.

If necessary, you can adjust the tempo and quantization. However quantization will become effective on the *next* repetition of the pattern. (The

newly selected quantization value will blink until it actually becomes effective.)

For patterns that are two or more measures (bars) long, check the "Bar" display while recording. 1 indicates the first measure, 2 indicates the second measure, and so on.

If you make a mistake, use [−] (ERASE). While pressing [−] (ERASE), play the note at the beat you wish to erase. The note will be erased from that point in the pattern. While pressing [−], you can continue holding down a note to erase it from the entire pattern.

(7) Press [□]. This will stop realtime recording. You will automatically return to pattern play mode.

When you press [▷], the pattern you just recorded will play.

If you want to modify or correct the pattern, repeat steps (2) − (7).

If you have been recording a preset pattern, you will get the following display.

```
P.REC) Store Pattern
        ▶ptnI**                    >GO >EXIT
```

Select the internal pattern number in which to store your new pattern, and press the [ ] below "> GO". A message of "Are you sure?" will appear, so press [+1]. This completes realtime pattern recording.

STEP RECORDING

Use the following proceedure to step record a rhythm pattern.

(1) Press [RHYTHM] to enter pattern play mode. (There is no need to do so if you are already in this mode.) If you enter song play mode, press the [ ] below "> toPTN" in the lower left of the display. You will get the following display.

```
PTN PLAY) ▶Pattern  Time  Bar>Tempo>KBD
 >toSONG     I00     4/4    2   120  RHY
```

(2) Press [○]. You are now ready to record.

```
P.REC)>PTN >Time >Bar >Tempo >Qntz
 ▶Real  I00   4/4   2    120   1/16 >EXIT
```

Pressing the [ ] below "> EXIT" will return you to the previous display.

(3) Make settings for the following six recording conditions.

Record mode
Select "Real" (realtime recording) or "Step" (step recording). In this example we will select "Step".

PTN
Select the pattern (I00 − I99 or P00 − P99) you want to record.

Time
Select a time signature from 1/4 − 8/4, 1/8 − 16/8, 1/16 − 32/16. However if you are recording an already existing pattern, you will not be able to change the time signature.

Bar
Set the length of the pattern (1 − 4 measures, i.e., "bars"). However, if you are recording an already existing pattern, you will not be able to change the pattern length.

Tempo
Set the tempo of the pattern (30 − 240 quarter notes per minute). Tempo can be changed after you start to record.

Qntz
Specify quantization. Quantization automatically corrects minor errors in timing. Select from 1/4, 1/6, 1/8, 1/12, 1/16, 1/24, 1/32, or "off". When "off" is selected, quantization will not be used. (Notes will be recorded with an accuracy of 1/48th of a quarter note.) Quantization can be changed after you start to record, allowing you to use different quantization settings when recording each sound.

(4) Press [▷] to get the following display.

```
Bar1:♩ |-------+-------+-------+-------|
 ptnI00  ▶Qntz  >BD1              +     +
```

Step recording is done using this "bar graph" display.

(5) Select the quantize setting, and play the desired sounds from the keyboard. (This procedure will be

explained in detail in the next section.) Repeat this procedure to record each sound.

(6) Press [□] to end step recording. You will return to pattern play mode for the pattern you just recorded. When you press [▷], the pattern you just recorded will play.

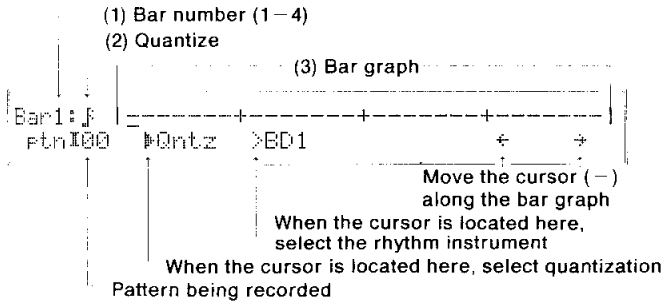
If you decide to modify or correct the pattern, repeat steps (2)–(6).

If you have been recording using a preset pattern, you will get the following display.

Select a pattern number to write your newly recorded pattern into, and press the [ ] below ">GO". You will get a message of "Are you sure?", so press [+1]. This completes step recording.

USING THE BAR GRAPH

First we will explain the various items in the bar graph display. The bar graph shows the following information.



(1) Bar number

This shows the number of bars (measures) in this pattern. The bar graph (3) displays one measure at a time, so when creating a pattern of 2 or more measures, this number will indicate where you are in the pattern.

(2) Quantize

This shows the quantize setting you specified in the ">Qntz" setting before pressing [▷]. To change the quantize setting while recording, move the cursor to ">Qntz" and press one of the following keys.

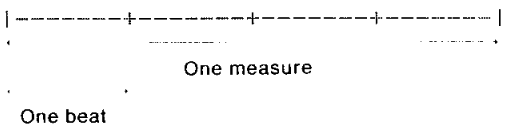
[3] (♩) ..... Set quantization to 1/4 (quarter note)
[4] (♪) ..... Set quantization to 1/8 (eighth note)
[5] (♬) ..... Set quantization to 1/16 (sixteenth note)
[6] (𝅘𝅥𝅯𝅘𝅥𝅯) ..... Set quantization to 1/32 (thirty-second note)
[9] (𝅘𝅥𝅯³) ..... Set quantization to 1/6, 1/12, or 1/24.
When quantization is set to 1/4 (♩), pressing this key will set quantization to 1/6 (♩³).
When quantization is set to 1/8 (♪), pressing this key will set quantization to 1/12 (♪³).
When quantization is set to 1/16 (♬), pressing this key will set quantization to 1/24 (♬³).
Pressing this key again will erase the ³ symbol.
[0] ..... Turn quantization off.

Note:

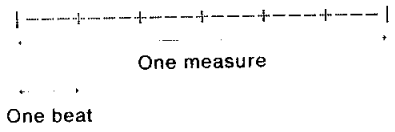
Quantization can be modified only when the cursor (–) is at the beginning of the bar graph. If the cursor is anywhere else when you modify the quantization, the displayed quantization value will blink (indicating that it is not yet active) until you return the cursor to the beginning of the bar graph.

(3) Bar graph

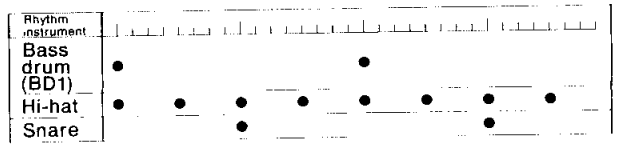
The bar graph displays the data of a single rhythm instrument for one measure. For example, if the time signature is 4/4, the bar graph will be as follows.



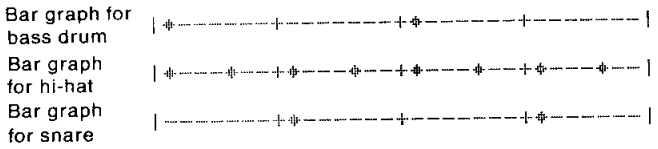
Or, if the time signature is 6/8, the bar graph will be as follows.



Each "−" or "+" indicates a 32nd note. This bar graph will display only a single instrument at a time. Suppose you are recording a rhythm pattern with three parts as shown in the following diagram.

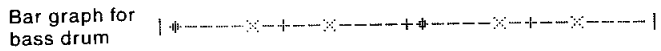


In this case you would input the bass drum, hi-hat, and snare as shown in the following three bar graphs.



The "◆" indicates a sound at a 32nd note interval.

Nearly any type of rhythm (in 32nd note steps) can be entered in this way. However, 32nd notes cannot create triplets or subtle rhythmic effects of playing slightly ahead of or behind the beat. In these situations where you need even finer rhythmic control, a 32nd note can be divided into six steps. For example, the following bar graph shows a bass drum entered as two steps of a triplet (♩ ³).



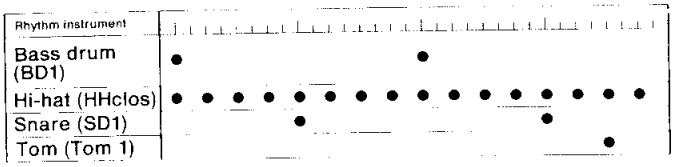
The "X" indicates that the actual timing of the note not precisely on an interval of a 32nd note, but is "several 1/6ths of a 32nd note" after the indicated position. Since the bar graph is in steps of a 32nd note, the precise actual position is indicated by a special character (see below).

When entering a pattern with quantize turned off, each of these 32nd notes will be subdivided into 6 steps. Pressing the [ ] switches below the "←" and "→" will move the cursor backwards and forwards through the pattern in steps of 1/6 of a 32nd note. The following special characters will indicate your exact position.

1 .... 1/6 position
2 .... 2/6 position
⋮ ⋮
6 .... 6/6 position

Press [◀◀] or [▶▶] to move the cursor in steps of a 32nd note.

Here is an example of using step recording to create a pattern. We will be creating the following 4/4 pattern of one measure.

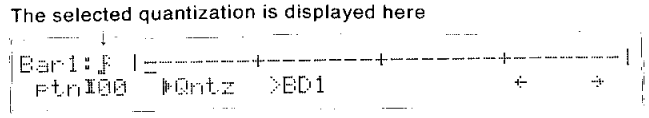


We begin with the following display.

(1) Set quantize: As you can see from the chart, the rhythm pattern in our example does not use 32nd notes. The shortest intervals are the 16th notes of the hi-hat, so we will use 16th note quantization to enter this pattern.

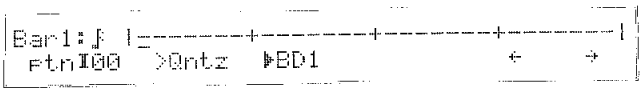
Make sure that the cursor is at "Qntz" (quantize) and press [5] (♪). (Quantize can also be set when making the recording condition settings in the previous display.)

The selected quantization is displayed here

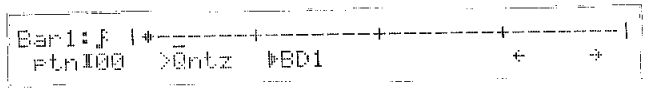


Press the [ ] keys below the "←" and "→" in the display, and notice how the cursor (_) moves to left and right. Since we have set quantization to 1/16, the cursor will skip every other "−" (32nd note). Before you continue, move the cursor back to the beginning of the bar graph.

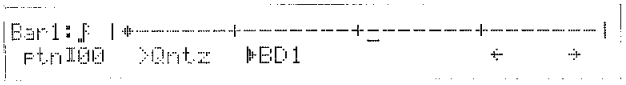
(2) Input the bass drum pattern: Move the cursor (▶) to ">BD1" to get the following display.



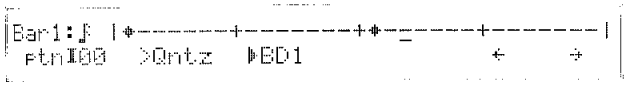
Play the A1 note on the keyboard. (In this example we assume that the rhythm assign (see page 69) is set to PRESET 1.) A ◆ appears where the cursor (_) was, and a bass drum note is input for the first beat.



Press the [ ] under the "→" seven times. The cursor (_) will move to the third beat.



Play the A1 note (BD1) again, entering a bass drum note at the third beat. The display will show as follows.

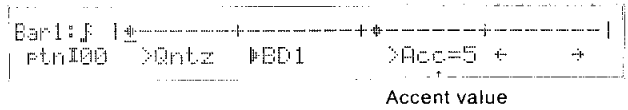


A bass drum has now been input on the first and third beats.

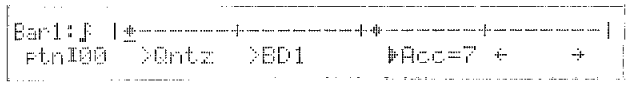
If you make a mistake

If you input a note in the wrong position, move the cursor (_) to the position of the wrong ◆, and play the same note again while pressing [−] (ERASE). The ◆ will disappear, and the wrong note will be erased.

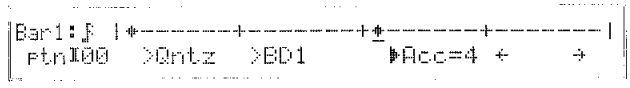
Move the cursor (_) back to the first beat to get the following display.



This "Acc" (accent) setting determines the dynamics force (volume) of that note. You can give each note a different volume from 0 (minimum) to 7 (maximum). In this example, we will set the bass drum of the first beat to 7, and the bass drum of the third beat to 4. With the cursor at the first beat, set "Acc = 7".

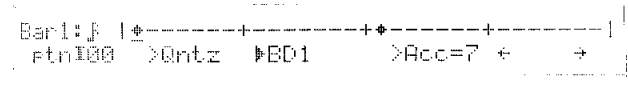


Move the cursor to the third beat and set "Acc = 4".

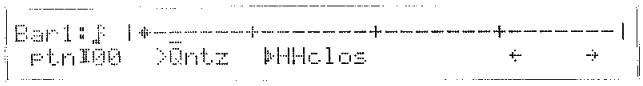


This completes the bass drum input for the pattern.

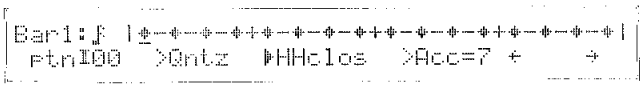
(3) Next we will input the hi-hat pattern. Move the cursor (_) to the beginning of the measure.



Play the note A2 (HHclos) on the keyboard. The instrument will change to hi-hat, and a hi-hat will be entered in the first beat. If at this time the cursor (▶) is at the position of the instrument name, the graph display wil change to show that instrument.

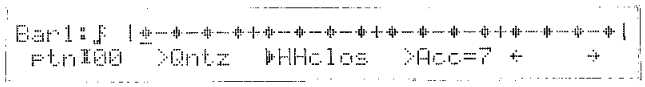


Input the hi-hat pattern in the same way as you input the bass drum pattern.

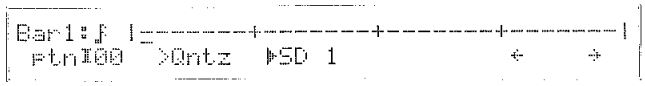


If necessary, add an accent to each note.

(4) Next we will enter the snare pattern. Move the cursor (_) to the beginning of the measure, and move the cursor (▶) to the instrument name position.

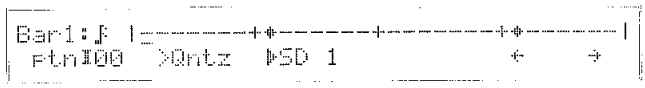


While pressing the [ ] below the instrument name, play the F#1 note (SD1) on the keyboard. The display will automatically switch to show the snare drum pattern.



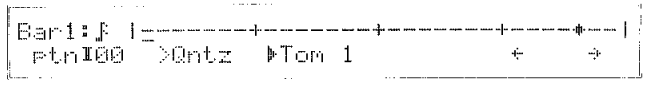
In this way, playing a note while pressing the [ ] below the instrument name will switch instruments without recording a note into the pattern.

Input the snare pattern as follows.



If necessary, add an accent to each note.

(5) Using the same proceedure, enter the tom (Tom 1: F2 key) pattern.



If necessary, add an accent to each note. Then press [□].

This completes our pattern.

Note:

In this example we have entered the entire pattern without changing the quantize setting, but it is also possible to change the quantize setting while recording a pattern. If quantize is changed, it will become effective from the next measure, and will blink until it becomes effective.

In this example, we have assumed that the rhythm instruments are assigned to the keyboard as when rhythm assign is set to "PRESET 1".

PATTERN JOB FUNCTIONS

There are many ways to edit the patterns you create. We will start our explanation of pattern editing from the following display.

```
PTN PLAY> ▶Pattern  Time  Bar>Tempo>KBD
>toSONG     I00w    4/4    1   120  RHY
```

If you are in song play mode, press the [ ] below "> toPTN", entering pattern mode. Press [JOB] to get the following display.

```
PATTERN JOB SELECT>        Select one !
     >Copy>Clr>Setup>Inst>Asgn      >EXIT
```

Pressing the [ ] below "> EXIT" will return to the previous display.

Copy

Press the [ ] below "> COPY".

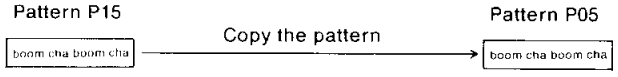
```
PTN COPY>
 ▶ptnI00w→ ptn***  →  ptnI**   >GO >EXIT
```

■ **Function**

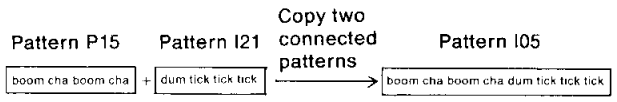
Copy a pattern to another pattern number.

■ **Explanation**

When only one pattern is specified as the copy source, the pattern will be copied to the internal pattern memory you specify.



If you specify two patterns as the copy source, the specified patterns will be connected and copied to the destination. (The total measures of the two source patterns will be the length of the new destination pattern.)



Copy sources may be preset patterns or internal patterns. After specifying the source pattern(s) and the destination pattern, press the [ ] below "> GO".

You will get a message of "Are you sure?". When you press [+1], pattern copy will be executed.

Note:

It is not posible to copy patterns to preset pattern memory.

When copying two patterns to another pattern, the two source patterns must have the same time signature. Also, the total length of the two source patterns must not exceed four measures. If the two source patterns contain an unusually large number of notes, it may be impossible to copy them to another pattern.

Clear

Press the [ ] below " > CLR".

(1) Pattern clear

■ **Function**
Clear the contents of the specified pattern.

■ **Explanation**
When you press the [ ] below " > Pattern", the pattern number will be displayed. After specifying the pattern number, press the [ ] below " > GO", and you will be asked "Are you sure?". When you press [+1], the specified pattern will be cleared.

Note:
It is not possible to clear a preset pattern.

(2) Instrument clear

■ **Function**
Clear only a specified instrument from a pattern.

■ **Explanation**
Press the [ ] below " > Inst", and the pattern number and the instrument to be cleared will be displayed. After specifying the pattern number and the name of the instrument to be cleared, press the [ ] below " > GO", and you will be asked "Are you sure?". When you press [+1], the specified pattern will be cleared.

Note:
It is not possible to execute this function for a preset pattern.

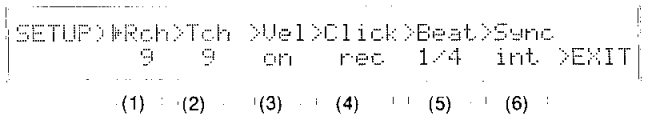
(3) All pattern clear

■ **Function**
Clear all internal pattern memories.

■ **Explanation**
Press the [ ] below " > All", and you will be asked "Are you sure?". When you press [+1], all the internal pattern memories will be cleared.

Setup

Press the [ ] below " > SETUP".



These settings are shared with the settings of the setup job in song play mode. They affect various overall operation of the rhythm machine, and will remain memorized even when the power is turned off.

(1) Receive channel

■ **Function**
Set the receive channel of the rhythm machine.

■ **Settings**
1 – 16, omn

■ Explanation
This specifies the MIDI channel that the rhythm machine will receive. Select a receive channel from the following.

1 – 16... The rhythm machine will produce sound only in response to data received on this channel. When controlling the rhythm machine from external MIDI devices, set this receive channel to match the transmit channel of the controlling device.

omn ..... The rhythm machine will produce sound in response to data received on any channel.

Note:
Even if the keyboard transmit channel (see page 99) and the MIDI channel received by the rhythm machine do not match, the keyboard will play the rhythm instruments while in rhythm mode *if* the "KBD" setting (see page 59) is set to "RHY".

(2) Transmit channel

■ **Function**
Set the transmit channel of the rhythm machine.

■ **Settings**
off, 1 – 16

■ **Explanation**
Set the MIDI channel transmitted by the rhythm machine. Select a transmit channel from the following.

off..... The rhythm machine will not transmit MIDI data.

1 – 16... The rhythm machine will transmit MIDI data on the specified channel. When using the rhythm machine to control an external rhythm machine, set this to the MIDI receive channel for the external rhythm machine.

(3) Velocity

■ **Function**
Determine whether or not the rhythm machine uses velocity data.

■ **Settings**
off, on

■ **Explanation**
This setting determines whether or not the velocity (the force with which you play a note) will affect the sound. When "off" is selected, notes will be played with an accent of 5. When "on" is selected, each note will be played with an accent determined by the key velocity.

(4) Click

■ **Function**
Determine when the click will be heard.

■ **Settings**
rec, play

■ **Explanation**
This setting determines when the built-in metronome will be heard. When "rec" is selected, the click will be heard only during realtime recording. When "play" is selected, the click will be heard during playback and realtime recording.

(5) Beat

■ **Function**
Set the time signature of the click.

■ **Settings**
1/4, 1/6, 1/8, 1/12, 1/24, 1/32

■ **Explanation**
This setting determines the time signature of the click. (The first beat of the measure is indicated by a higher-pitched beep.)

(6) Sync mode

■ **Function**
Select the clock (timing source) for the rhythm machine.

■ **Settings**
int, MIDI

■ **Explanation**
This setting selects what will control the tempo of the rhythm machine. Select one of the following.

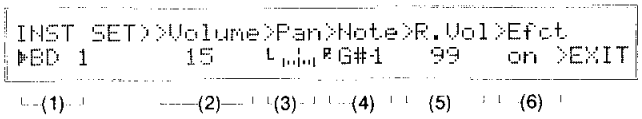
int..... Tempo will be controlled by the internal clock. Normally this is the setting you will select.

MIDI... MIDI clock signals will determine the tempo. Select this setting when you want to control the tempo of the V50 rhythm machine from an external rhythm machine.

Note:
The clock selected here applies to both the rhythm machine and the sequencer. If you select "MIDI clock" here, the sequencer will also be set to MIDI clock. This setting can also be made from the sequencer mode (see page 89).

Inst settings

Press the [ ] below " > INST".



These settings are shared with the instrument settings of the setup job in song play mode.

(1) Instrument

■ **Function**
Select the rhythm instrument you wish to set.

■ **Settings**
BD 1 – VbrSlp

■ **Explanation**
The following settings (2) – (4) are made independently for each of the 61 rhythm instruments. This is where you select the rhythm instrument for which to make settings. Voice names can also be specified by playing the keyboard.

(2) Volume

■ **Function**
Set the volume of each instrument.

■ **Settings**
0 – 15

■ **Explanation**

Set the volume of the instrument you selected in (1). 0 is minimum and 15 is maximum volume.

(3) Pan

■ **Function**

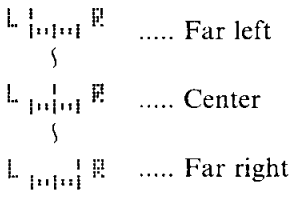
Set the pan position of each instrument.

■ **Settings**

L – R (7 steps)

■ **Explanation**

Set the pan position (the position of the sound when played in stereo) of the instrument you selected in (1) over the following seven steps.



Note:

If only the L output is connected to an amp, you will hear the sound in mono, and this setting will have no effect. (You will hear the stereo sound if listening to headphones, however.)

(4) Note

■ **Function**

Set the MIDI note number of each instrument.

■ **Settings**

C-2 – C8

■ **Explanation**

Set the MIDI note number of the instrument you selected in (1).

(5) Rhythm volume

■ **Function**

Set the volume of the entire rhythm machine.

■ **Settings**

0 – 99

■ **Explanation**

This setting determines the volume for the *entire* rhythm machine. It has no connection with the instrument selected in (1).

Use this setting to adjust the volume balance of the rhythm machine and the synthesizer. 0 is minimum, 99 is maximum volume.

Note:

The synthesizer also has a setting for overall synthesizer volume. Use these two settings to adjust the volume balance between the rhythm machine and synthesizer.

(6) Effect select

■ **Function**

Determine how effect processing will apply to the rhythm machine.

■ **Settings**

off, on, mix

■ **Explanation**

This setting has no connection with the instrument selected in (1). It affects the entire rhythm machine.

This setting determines whether the effects unit will process the sound of the rhythm machine. The same effect will apply to both the rhythm machine and the synthesizer. It is not possible to use a different effect for the rhythm machine.

Select one of the following

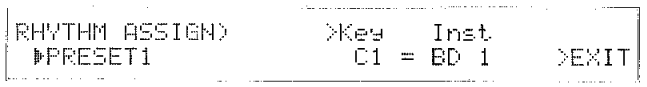
off..... The rhythm machine sound will not be processed.

on..... The rhythm machine sound will be processed, and stereo mix will not be used, meaning that all rhythm instruments will sound in the center of the stereo field.

mix..... The rhythm machine sound will be processed, and stereo mix will be used, preserving the stereo placement of the rhythm instruments.

Rhythm assign

Press the [–] below " > ASGN".



These settings are shared with the settings made in the song play mode job rhythm assign. Rhythm assign determines which rhythm instrument will sound when each key is played; i.e., the instrument layout across the keyboard. This setting is remembered even when the power is turned off.

The V50 has three "instrument layouts" in permanent memory; PRESET 1 – 3. (These cannot be modified.) PRESET 1 – 3 are set as follows.

PRESET 1 is set to match the key assignments of the Yamaha RX series rhythm programmers. However,

sounds that the RX series assigns to keys outside of the 61-note range of the V50 have been assigned within the V50 key range.

PRESET 2 has a basic drum set assigned to the third octave (the octave begining with C3). The white keys of octave 1 have bass drum sounds, the white keys of octave 2 have snare drum sounds, and the white keys of octaves 4 and 5 have toms. Percussion sounds are assigned to the black keys. (There are some exceptions.)

PRESET 3 is set to match the key assignments of the Yamaha Clavinova series. However, since the sounds themselves are different, not all assignments are the same.

Normally you will select one of these presets. In the above display, you can check the rhythm instrument assignments by moving the cursor to "Key" and playing a key. The rhythm instrument assigned to that key will be displayed.

To create your own rhythm instrument assignment, select a user assign memory USER 1 or USER 2.

Move the cursor to "Key", and select a key. Then move the cursor to "instrument" and select a rhythm instrument. You can also select "none", in which case no rhythm instrument will sound when that key is played. Repeat these steps to assign instruments to the 61 keys.

You can create two entirely different setups (USER 1 and USER 2).

This section explains how to play a rhythm song.

Note:

When the power is turned on, the rhythm song memory is empty. To play a rhythm song, you must create a rhythm song or load an existing rhythm song from card or disk. Page 72 explains how to create a rhythm song. To load rhythm data, see page 98 (from card) or page 105 (from disk).

Here we will explain the procedure for playing a song from the beginning. If you want to play a rhythm song from a measure other than the beginning, you can specify the starting measure while making settings for steps (2)–(4). (Move the cursor to ">Meas" and specify the starting measure, or press [◁◁] [▷▷] to specify the starting measure.)

(1) Press [RHYTHM] to get the following display (rhythm song play).

```
SONG PLAY> ▶SONG      >Meas Part>Tempo>KBD
>toPTN   1w:Moon       001  001   120  RHY
```

If the following display appears, press the [ ] below "toSONG" to get the above display.

```
PTN PLAY> ▶Pattern  Time  Bar>Tempo>KBD
>toSONG      I00     4/4    2   120  RHY
```

(2) With the cursor at "SONG", select one of the 8 rhythm songs.

```
SONG PLAY> ▶SONG      >Meas Part>Tempo>KBD
>toPTN   1w:Moon       001  001   120  RHY
```

Song number — Song name

The "w" after the rhythm song number indicates that data has already been written for this song. If no "w" is displayed, no data exists for that rhythm song.

(3) Move the cursor to ">Tempo" and set the playing tempo. The tempo is indicated as the number of quarter notes per minute. 30 is the slowest tempo, and 240 is the fastest tempo.

(4) Move the cursor to ">KBD" and set the function of the keyboard (the keyboard mode). This will determine what sounds the keyboard will play when you are in song play mode. Select one of the following two choices.

RHY ..... The keyboard will play the rhythm sounds assigned to each key.

SYN..... The keyboard will play the performance or voice selected before [RHY] was pressed.

(5) Press [▷] and the selected rhythm song will begin playing. The ">toPTN" display will disappear, and the currently playing measure number and pattern name will be displayed. When you play the keyboard, you will hear the sound selected in (4).

(6) Press [□] and the rhythm song will stop playing. To continue from where you stopped, press [▷]. To begin start from the beginning, press [□] and [◁◁] together, and then press [▷].

While a rhythm song is playing, you can do the following.

Change the tempo

When the cursor is at ">Tempo", you can change the tempo. You can also modify the tempo using the data entry slider while holding [RHYTHM].

Change the keyboard mode

When the cursor is at ">KBD", you can set the keyboard mode, selecting whether the keyboard will play rhythm sounds or synthesizer sounds. This setting is effective only when in rhythm mode.

Whether the keyboard plays rhythm sounds or synthesizer sounds is determined by the transmit channel of the keyboard and the receive channel of each section. If this keyboard mode is set to "RHY", the keyboard will always play rhythm sounds when in rhythm mode *regardless* of the transmit channel and receive channel settings.

While the rhythm machine is playing, you can press [PERFORMANCE] or [SINGLE] to move to performance play mode or single play mode while continuing to play the rhythm machine. (You will be able to select and edit performances or voices.) To stop rhythm machine playback, press [□]. However, when in synthesizer edit mode, return to play mode and then press [□].

CREATING RHYTHM SONGS

First we will explain some important points to remember when creating rhythm songs.

Parts and patterns

A rhythm song is created by inputting rhythm pattern numbers into "parts". These "parts" are numbered 001, 002, 003 ..., and are played back in order. Suppose we input the following rhythm patterns into the first five parts.

Part 001 = Pattern I00 (a one-measure pattern)
Part 002 = Pattern P12 (a one-measure pattern)
Part 003 = Pattern I00 (a one-measure pattern)
Part 004 = Pattern P12 (a one-measure pattern)
Part 005 = Pattern I02 (a two-measure pattern)

This would play back as follows.

Part 001	Part 002	Part 003	Part 004	Part 005
I00	P12	I00	P12	I02

Note:

Parts extend from 001 to 999. As in the above example, the number of parts in a song is not necessarily the same as the number of measures in the song.

Special non-pattern functions

We have explained that a pattern is assigned to each part, but in addition to this, repeat, volume change, tempo change, and mark data can also be assigned to a part.

(1) Repeat (begin, end)

The area surrounded by a repeat begin ‖: and repeat end :‖ mark will be played the specified number of times. Specify a repeat as follows.

[‖:] [Parts to be repeated] [:‖ × Times]
Number of repeats

The following is an example of how repeat marks can be used.

Part 001 = ‖:
Part 002 = PTN I00
Part 003 = PTN P12
Part 004 = :‖ × 2

When this song is played, the actual playback will be as follows.

Part 002	Part 003	Part 002	Part 003	Part 002	Part 003
I00	P12	I00	P12	I00	P12

First repeat Second repeat

Note:

Repeat marks can be nested as follows.
[‖:] [part] — [part] [‖:] [part] — [part] [:‖] [:‖]

(2) Volume change

This specifies a change in the rhythm machine volume during the song. Specify a volume change as follows.

[Vol + Amount of change]
The amount of change in volume
+ indicates an increase in volume,
− indicates a decrease in volume

The following is an example of how volume changes can be used.

Part 001 = PTN 100
Part 002 = Vol + 25
Part 003 = PTN P12

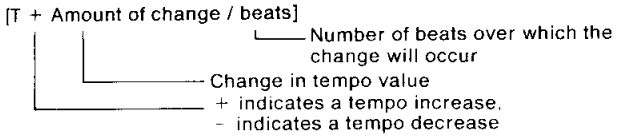
When this song is played, after playing the pattern for part 1, the volume will increase slightly, and the pattern for part 3 will be played.

Note:

Volume change is specified as an increase or decrease in the instrument setting rhythm volume (R.Vol). However it is not possible to exceed the present rhythm volume (R.Vol). If you want to raise the volume in the middle of the song, insert a volume decrease at the beginning of the song.

(3) Tempo change

This specifies a change in rhythm tempo during a song. Specify a tempo change as follows.



This can be used as in the following example.

Part 001 = PTN 100
Part 002 = T + 20/4
Part 003 = PTN P12

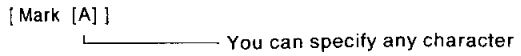
When this song is played, after the pattern of part 001 is played, the tempo will begin increasing while part 003 plays. (If the pattern used by part 003 is in a time signature of 4/4, the tempo change will end when the fourth beat ends.)

Note:

Tempo change is specified as an increase or decrease in the currently set tempo. If the tempo is already at the maximum of 240, it cannot be increased further. If tempo is already at the minimum of 30, it cannot be decreased further.

(4) Mark

It is often convenient to specify a "mark" in a song, and use the "search" function to jump to the specified location so that you can edit or playback from that point. Especially when creating long rhythm songs, it can be time-consuming to find the location you want. For example, setting a mark at the beginning of the chorus, or at the top of the second verse, will help you find sections you frequently need to locate. Specify a mark as follows.



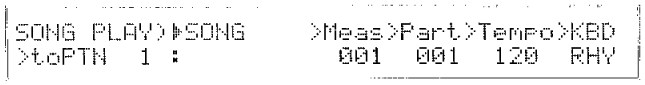
This can be used as in the following example.

Part 256 = PTN 152
Part 257 = Mark [A]
Part 258 = PTN 168

Note:

Any character can be used as a mark, and you can set as many as you like. However, only the first seven marks in the song can be searched for. To search for a part using the mark, see page 75 (while editing) or page 77 (while in play mode).

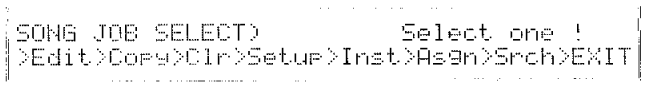
To create a rhythm song, use the rhythm edit functions in the following procedure.



If you are in pattern play mode, press the [ ] below "toSONG" to move to song play mode.

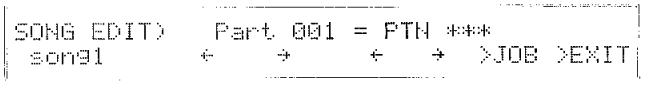
(1) Select the song number you want to create. Make sure that the cursor is located at " > SONG", and select a song 1 – 8. Songs that have already been written will be indicated by a "w" after the song number.

(2) Press [JOB] to get the following display.



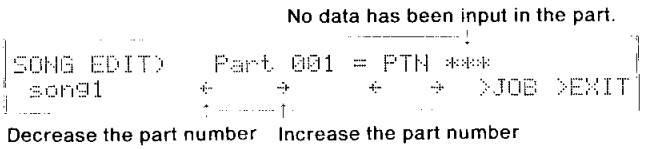
Pressing the [ ] below " > EXIT" will return you to the previous display.

(3) Press the [ ] below " > Edit" to get the following display.

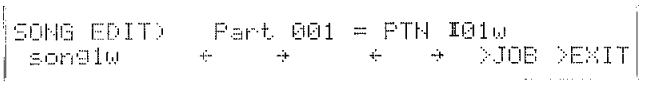


This is where you create a rhythm song. Parts for which no data has been input will be indicated by a blinking " = PTN ***".

(4) Select the part number using the [ ] keys below the left "←" and "→". When creating a new song, be sure to start with part 001.



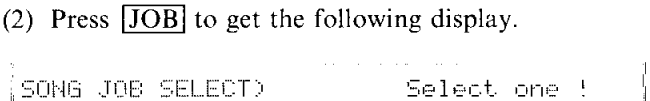
(5) Using the data entry slider, the numeric keys, or [−1] [+1], select the pattern to input. Pressing [INT] or [PRESET] will switch between internal patterns and preset patterns. Patterns will be selected as shown in the following display.



When entering repeat, volume change, tempo change, or mark data instead of a pattern, press the [ ] keys below the right "←" and "→" while the " = Pattern ***" display is blinking. The [ ] keys below the right "←" and "→" will step through " = PTN***", " 𝄆 ", " 𝄇 ×0", "Vol+0", "T+0/0", and "Mark []".

Select the data you want, and specify a number (repeat times, or amount of volume change) if necessary. Use the [ ] keys below the right "←" and "→" to move between the tempo change settings "value" and "beats".

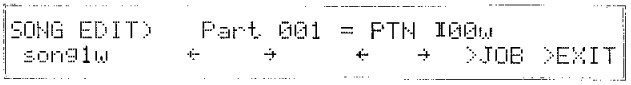
An example is shown in the following display.



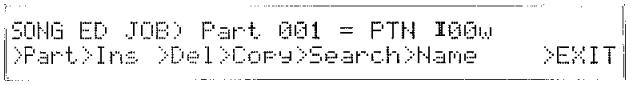
(6) Repeat steps (4) and (5) to specify the patterns for each part. The next section will explain how to delete a part that was entered by mistake, or to insert a new part between previously entered parts.

(7) When you have finished creating the rhythm song, press the [ ] below " > EXIT" twice. This ends rhythm song editing, and returns to song play mode.

While editing a rhythm song as explained in the previous section, several editing jobs can be performed. While editing a rhythm song, the display will be as follows.



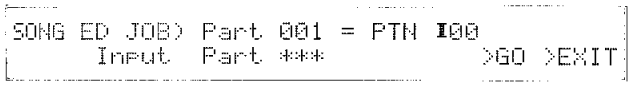
Press the [ ] below ">JOB" to get the following display.



This is where you select the editing operation.

Jump

Press the [ ] below ">Part".



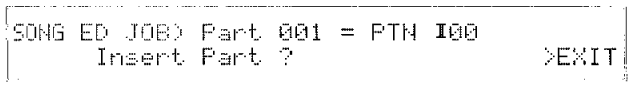
■ **Function**
Jump to a specified part number.

■ **Explanation**
Input the part number you want to jump to, and press the [ ] below ">GO".

Note:
If you specify a part number for which no data has been entered, you will jump to the part after the last entered part.

Insert

Press the [ ] below ">Ins".

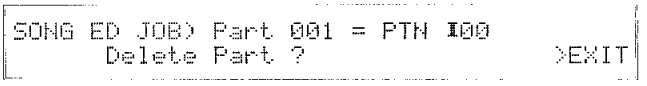


■ **Function**
Insert a part.

■ **Explanation**
This inserts a part in front of a previously entered part. The following parts will be moved back one. When you press [+1], a part will be inserted in front of the currently selected part, and "=PTN***" will begin blinking. Now you can enter a pattern number, or a repeat, volume change, tempo change, etc.

Delete

Press the [ ] below ">Del".

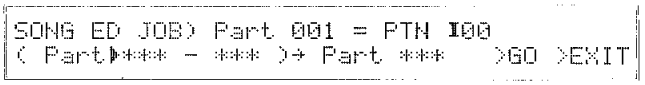


■ **Function**
Delete a part.

■ **Explanation**
This deletes the currently selected part. The following parts will be moved forward one. When you press [+1], the currently displayed part will be deleted.

Copy

Press the [ ] below ">Copy".



■ **Function**
Copy the specified range of parts to another location.

■ **Explanation**
This copies the parts specified by "(Part *** - ***)" and places them in front of the part specified in "→ Part ***". After specifying the three part numbers, press the [ ] below ">GO". When the display asks "Are you sure?", press [+1], and the parts will be copied.

Note:
If you want to copy only one part, specify the same part number for both locations of "(Part *** - ***)"

Search

Press the [ ] below ">Search".

■ **Function**
Jump to a marked part.

■ **Explanation**

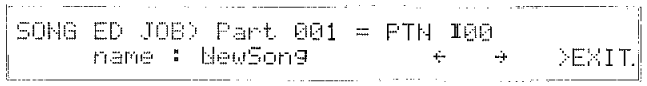
This jumps directly to a part you specified using a mark. Marks will be displayed in the lower line. Press the [ ] below the mark to which you want to jump. The display will immediately show the part that contains the mark.

Note:

If no marks have been entered, you will not be able to use the Search function.

Song name

Press the [ ] below " > Name".



■ **Function**

Give a song an 8-character name.

■ **Settings**

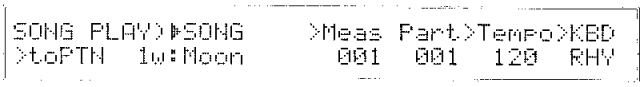
Maximum 8 characters.

■ **Explanation**

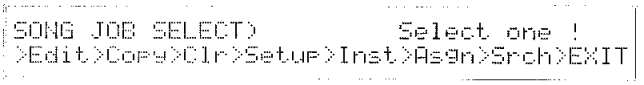
Enter a name for the song. Page 17 explains how to enter characters.

SONG JOB FUNCTIONS

Songs you create can be edited in many ways. Begin song editing from song play mode as follows.



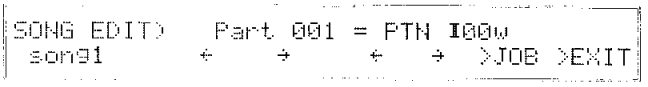
If you are not in pattern play mode, press the [ ] below " > toSONG" to enter song play mode. Press [JOB] to get the following display.



Press the [ ] below " > EXIT" to return to the previous display.

Song edit

Press the [ ] below " > Edit".



This display has been explained in *Creating Rhythm Songs* (page 72) and *Editing a rhythm song* (page 75).

Song copy

Press the [ ] below " > Copy".

■ **Function**

Copy a song to another song.

■ **Settings**

1 – 8

■ **Explanation**

Copy the song specified by the left number to the song specified by the right number. After setting the two song numbers, press the [ ] below " > GO". When "Are you sure?" is displayed, press [+1], and the song will be copied.

Note:

The original song data in the copy destination will be erased.

Song clear

Press the [ ] below " > Clr".

(1) Song clear

■ **Function**

Clear the contents of the specified song.

■ **Explanation**

When you press the [ ] below " > Song", the display will allow you to enter the song number. After specifying the song number, press the [ ] below " > GO", and you will be asked "Are you sure?". Press [+1] and the song will be cleared.

(2) Clear all songs

■ **Function**

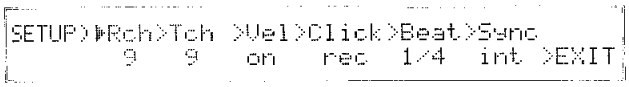
Clear all songs 1 – 8.

■ **Explanation**

When press the [ ] below " > All", you will be asked "Are you sure?". Press [+1] and all songs will be cleared.

Setup

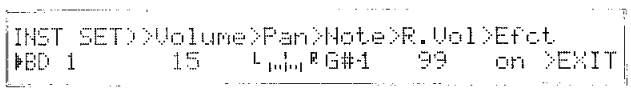
Press the [ ] below " > Setup".



Settings in this job are shared with the settings in the pattern job "Setup". For details see page 67.

Inst settings

Press the [ ] below " > Inst".



Settings in this job are shared with the settings in the pattern job "Instrument settings". For details see page 68.

Rhythm assign

Press the [ ] below " > Asgn".

Settings in this job are shared with the settings in the pattern job "Rhythm assign". For details see page 69.

Search

Press the [ ] below " > Srch".

■ **Function**

Jump to a marked part, ready to begin song play.

■ **Explanation**

This jumps directly to a marked part. Press the [ ] below the mark you want to jump to, and the display will move to the selected part.

Note:

This cannot be used if no marks have been entered.