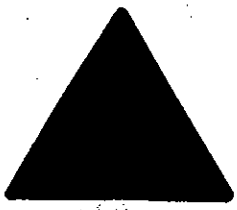
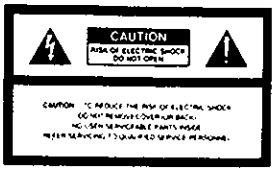
Roland

MIDI LINEAR SYNTHESIZER

D-50

Owner's Manual
Advanced
MIDI Implementation
D-50 Edit Map
D-50 Sound Chart





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.

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.

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK OR INJURY TO PERSONS.

IMPORTANT SAFETY INSTRUCTIONS

WARNING When using electric products, basic precautions should always be followed, including the following;

1. Read all the instructions before using the product.
2. Do not use this product near water- for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
3. This product should be used only with a cart or stand that is recommended by the manufacture.
4. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss.
   Do not operate for a long period of time at a high volume level or at level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
5. The product should be located so that its location or position does not interfere with its proper ventilation.
6. The product should be located away from heat sources such as radiators, heat registers or other products that produce heat.
7. The product should avoid using in where it may be effected by dust.
8. The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.
9. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
10. Do not tread on the power-supply cord.
11. Do not pull the cord but hold the plug when unplugging.
12. When setting up with any other instruments, the procedure should be followed in accordance with instruction manual.
13. Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
14. The product should be serviced by qualified service personnel when;
    A: The power-supply cord or the plug has been damaged; or
    B: Objects have fallen, or liquid has been spilled into the product; or
    C: The product has been exposed to rain; or
    D: The product does not appear to operate normally or exhibits a marked change in performance; or
    E: The product has been dropped, or the enclosure damaged.
15. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

SAVE THESE INSTRUCTIONS

ADVARSEL!

Lithiumbatteri. Eksplosionsfare.
Udskiftning må kun foretages af en sagkyndig, og som beskrevet i servicemanual.

VARNING!

Lithiumbatteri. Explosionsrisk.
Får endast bytas av behörig servicetekniker.
Se instruktioner i servicemanualen.

ADVARSEL!

Lithiumbatteri. Fare for eksplotion.
Må bare skiftes av kvalifisert tekniker som beskrevet i servicemanualen.

VAROITUS!

Lithiumparisto. Räjähdysvaara.
Pariston saa vaihtaa ainoastaan alan ammottimies.

WARNING

THIS APPARATUS MUST BE EARTH GROUNDED.

The three conductors of the mains lead attached to this apparatus are identified with color as shown in the table below, together with the matching terminal on the UK type power plug. When connecting the mains lead to a plug, be sure to connect each conductor to the correct terminal, as indicated.
"This instruction applies to the product for United Kingdom."

MAINS LEADS		PLUG
Conductor	Color	Mark on the matching terminal
Live	Brown	Red or letter L
Neutral	Blue	Black or letter N
Grounding	Green-Yellow	Green, Green-Yellow, letter E or symbol

Bescheinigung des Herstellers /Importeurs

Hiermit wird bescheinigt, daß der/die/das

ROLAND LINEAR SYNTHESIZER D-50

(Gerat, Typ Bezeichnung)

in Übereinstimmung mit den Bestimmungen der

Amtsbl. Vfg 1046 / 1984

(Amtsblattverfügung)

funk-entstört ist.

Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerates angezeigt und die Berechtigung zur Überprufung der Serie auf Einhaltung der Bestimmungen eingeraumt.

Roland Corporation Osaka / Japan

Name des Herstellers /Importeurs

RADIO AND TELEVISION INTERFERENCE

Warning - This equipment has been verified to comply with the limits for a Class B computing device pursuant to Subpart J, of Part 15, of FCC rules. Operation with non certified or non verified equipment is likely to result in interference to radio and TV reception.

The equipment described in this manual generates and uses radio frequency energy. If it is not installed and used properly, that is, in strict accordance with our instructions, it may cause interference with radio and television reception.

This equipment has been tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J, of Part 15, of FCC Rules. These rules are designed to provide reasonable protection against such a interference in a residential installation. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by the following measure:

- Disconnect either devices and their input output cables one at a time. If the interference stops, it is caused by either the other device or its I/O cable.

These devices usually require Roland designated shielded I/O cables. For Roland devices you can obtain the proper shielded cable from your dealer. For non Roland devices, contact the manufacturer or dealer for assistance.

If your equipment does cause interference to radio or television reception, you can try to correct the interference by using one or more of the following measures:

- Turn the TV or radio antenna until the interferences stops.
- Move the equipment to one side or the other of the TV or radio.
- Move the equipment farther away from the TV or radio.
- Plug the equipment into an outlet that is on a different circuit than the TV or radio. (That is, make certain the equipment and the radio or television set are on circuits controlled by different circuit breakers or fuses.)
- Consider installing a rooftop television antenna with coaxial cable lead in between the antenna and TV.

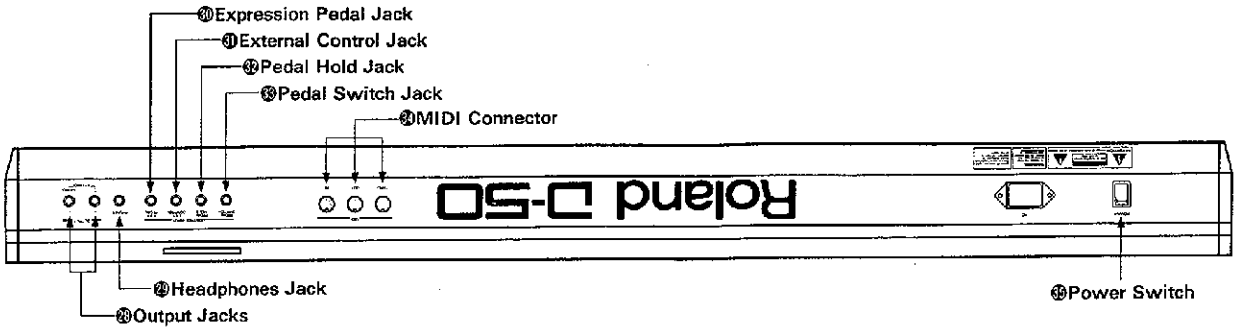
If necessary, you should consult your dealer or an experienced radio/television technician for additional suggestions. You may find helpful the following booklet prepared by the Federal Communications Commission:

How to Identify and Resolve Radio-TV Interference Problems.

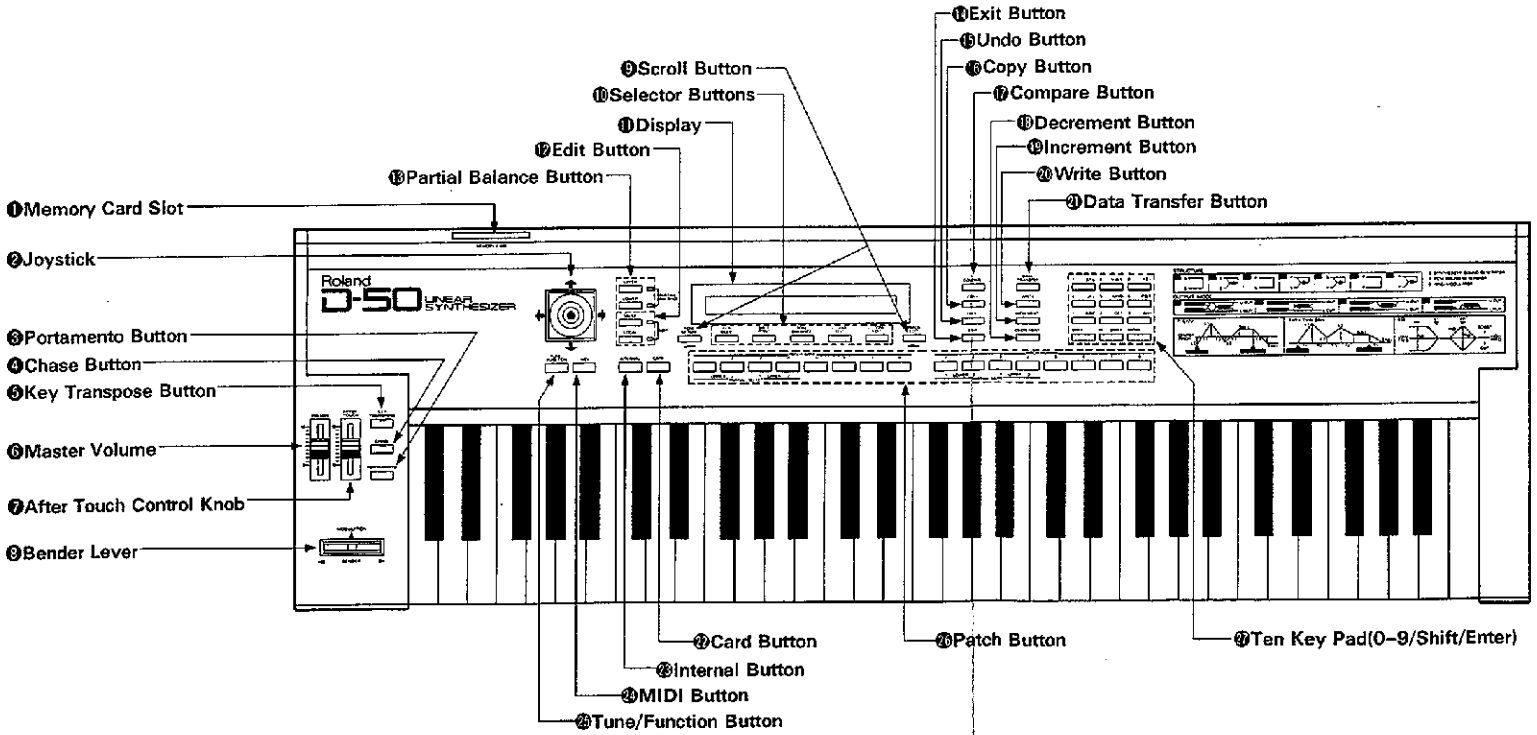
This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 004-000-00345-4

Please read the separate volume "MIDI", before reading this owner's manual.

Rear Panel



Front Panel



The Roland D-50 is a 61 key, 16 voice polyphonic programmable linear synthesizer.

FEATURES

- The D-50 can store up to 64 different patch programs.
- The D-50's LA sound source allows warm analog-type sounds as well as sharp attack digital-type sounds.
- Digital equalization, chorus and reverb effects are also built in.
- Each sound (Patch) can have different performance controlling functions (Factors).
- The data stored in the D-50's internal memory can be saved onto a Memory Card.
- The optional Programmer PG-1000 can be used for quicker and easier sound synthesis.

CONTENTS

IMPORTANT NOTES

Power

- The appropriate power supply for this unit is shown on its name plate. Please make sure that the line voltage in your country meets the requirement.

- Please do not use the same socket used for any noise generating device (such as a motor or variable lighting system.)

- This unit might not work properly if turned on immediately after being turned off. If this happens, simply turn it off and turn it on again after waiting a few seconds.

- It is normal for this unit to become hot while being operated.

- Before setting up this unit with other devices, turn this unit and all the other units off.

- When disconnecting the power plug from the socket, do not pull the cord but hold the plug to avoid damaging the cord.

- If the unit is not to be used for a long period of time, unplug the cord from the socket.

- Operating this device near a neon or fluorescent lamp may cause noise interference. If so, change the angle or the position of the device.

- Avoid using this device in extreme heat, humidity or where it may be affected by dust or vibration.

- Use a mild detergent for cleaning. Do not use solvents such as thinner.

- The D-50 features a memory back-up system that retains the data even when switched off. The battery that supports the back-up circuit should be replaced **every five years.** Call Roland for battery replacement.(The first replacement may be required before five years, depending on how much time had passed before you purchased the device.

- To avoid accidental erasure or loss of data, please make a data memo, or save the data onto a Memory Card. If it happens to be erased while the device is being repaired, there is no way to restore the data.

*** When the battery is low, the Display defaults as shown below, and the data in the memory may be lost.**

```
Check Internal Battery
```

1 OUTLINE OF THE D-50

The ROLAND D-50 is very different from any other synthesizer, past or present, and as such heralds the dawn of a new era in synthesis. In the past, synthesizers have progressed through several very diffrent stages. Firstly, there were ANALOG synthesizers, which relied on a variety of components, such as, VCO's, VCF's, and VCA's. These analog building blocks were relatively easy to understand and program, and they could produce sounds of remarkable warmth and character. However, when it came to accurately simulating acoustic sounds, the process could easily become too involved.

On the other hand, the next breed of synthesizers, known as DIGITAL synthesizers, could easily simulate acoustic sounds, yet they were far more difficult to program. Furthermore, the digital technology behind these instruments seemed to imply that a different type of sound should occur. In general, just as an analog synthesizer would be described as "warm" in character, the digital counterpart was very often "thin". Essentially, the two types complemented each other, one being easy to program, the other capable of accurate simulation.

The ROLAND D-50 has now changed all that. Thanks to a new custom disigned Integrated Circuit known as the 'LA CHIP'. Here, LA stands for Linear Arithmetic synthesis which is the heart of the new technology. LA synthesis involves a great many technological advances resulting not only in a superior sound quality but also an improved ease of programming. In this way, Roland has succeeded in maintaining a high degree of familiarity to the user despite the technical wizardry involved.

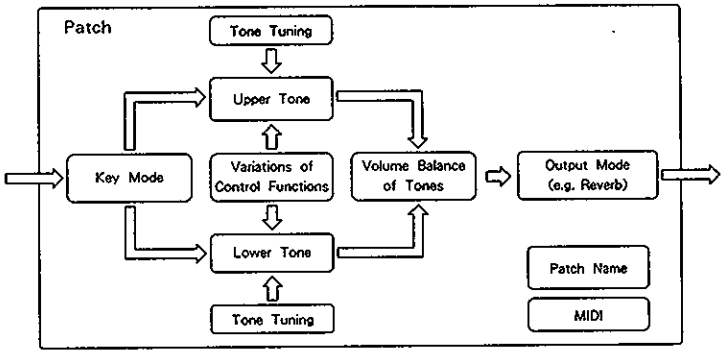
To explain the D-50 in a very simple manner, we must begin by saying that it is the next step in DIGITAL synthesizers. This means that the sound is entirely computer generated. In fact, the D-50 has four distinct sections :

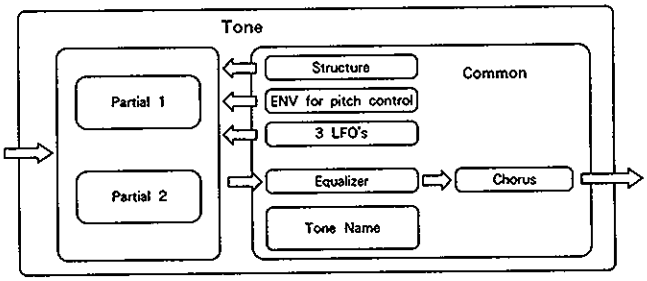
1. A Digital Synthesizer
2. A Digital Equalizer
3. A Digital Chorus section

and 4. A Digital Reverberation section.

Moreover, these four sections occur entirely within the DIGITAL DOMAIN, resulting in a sound quality far beyond that of four similar units combined. Consequently, the musician can take advantage of a complete instrument, one that requires no additional effects or processing.

However, the true power of LA Synthesis lies within the Digital Synthesizer section of the D-50. Remember, first of all, that this is a totally digital instrument, even though the sound would seem to suggest far more. Through LA synthesis, the D-50 appears to have four powerful synthesizers built in. Each of these hypothetical synthesizers could behave like a conventional analog syntheizer, or a PCM sampled synthesizer. Consequently, they are referred to as PARTIALS, since they are far more than just a pure synthesizer. These Partials are combined in pairs to form a TONE. A Tone could either be a mix of the two Partials, or they could take advantage of the LA version of cross modulation. In this way, some of today's more popular digital sounds are remarkably easy to achieve.



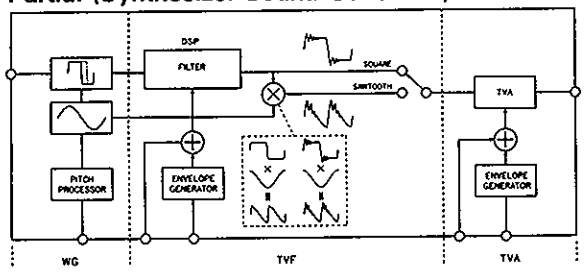


During live performance, you can easily select a PATCH, which is the combination of two Tones, together with programmed E.Q., chorus and reverberation. These other parameters are referred to as COMMON parameters since they are common to both Tones. Throughout the process of programming the D-50, the operation remains simple and logical. Even so, to further improve the ease with which sound can be created, an optional programmer, the PG-1000 is available, which graphically displays all the parameters of the D-50, making it exceptionally simple to operate.

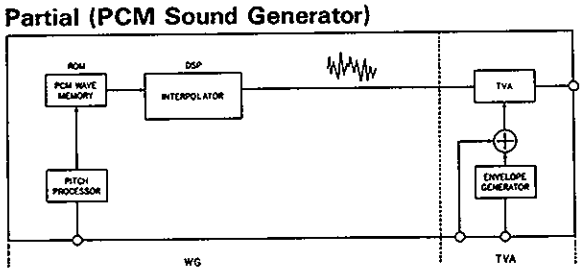
However, it is the performance characteristics such as after-touch, and the control of every aspect of the sound that makes the D-50 a totally new instrument. These things and a sound that can only be described as unique, the LA sound.

Partial Block Diagram

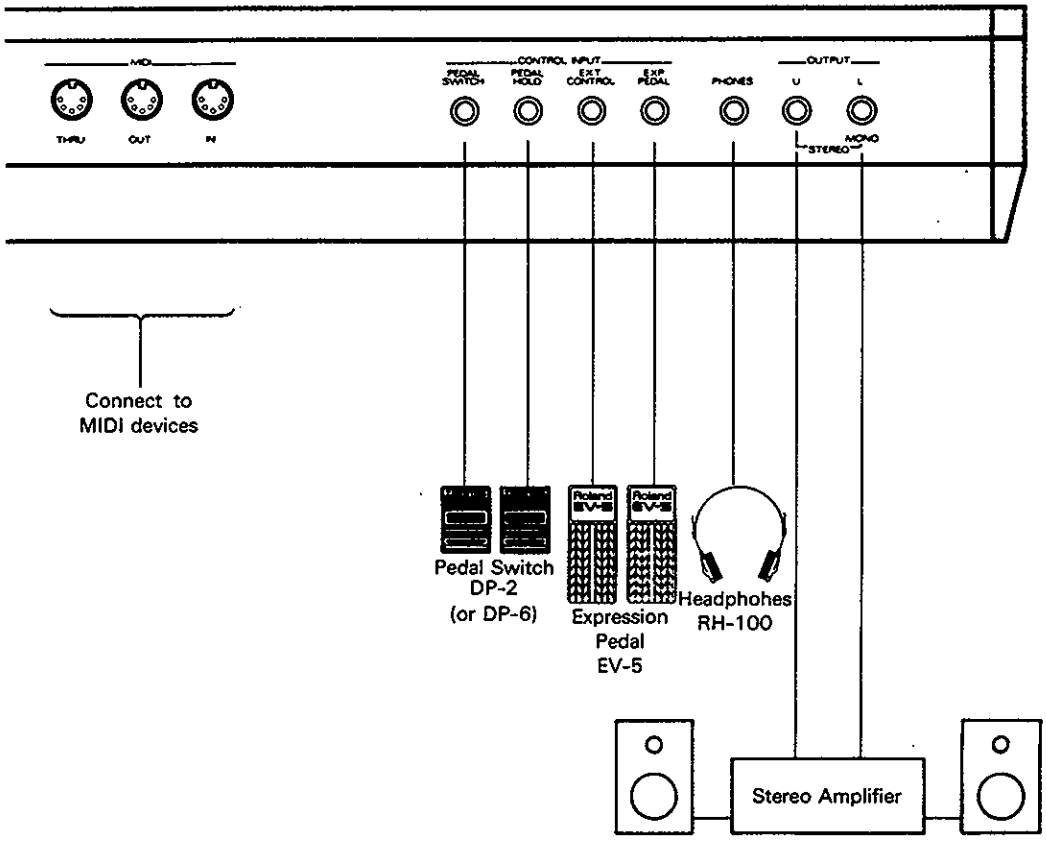
Partial (Synthesizer Sound Generator)



Partial (PCM Sound Generator)

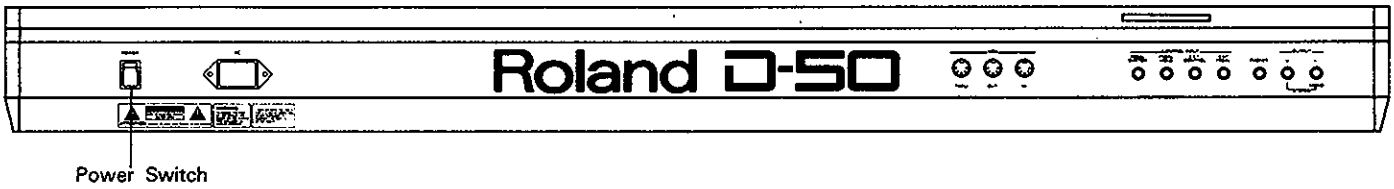


2 CONNECTION



3 PLAY MODE

Make sure that the D−50 is correctly and securely connected with the other devices, then turn the D−50 on.



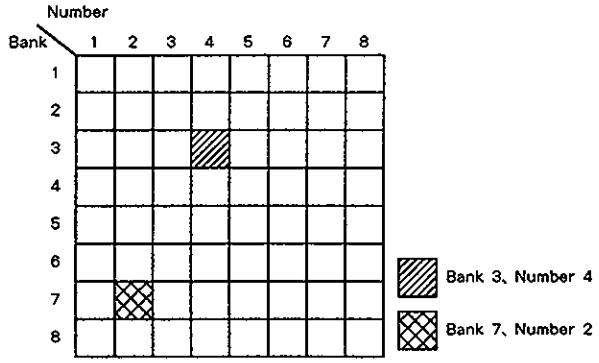
The Display responds as shown below.

```
******  Linear Synthesizer  D-50  ******
                        Roland Corporation
```

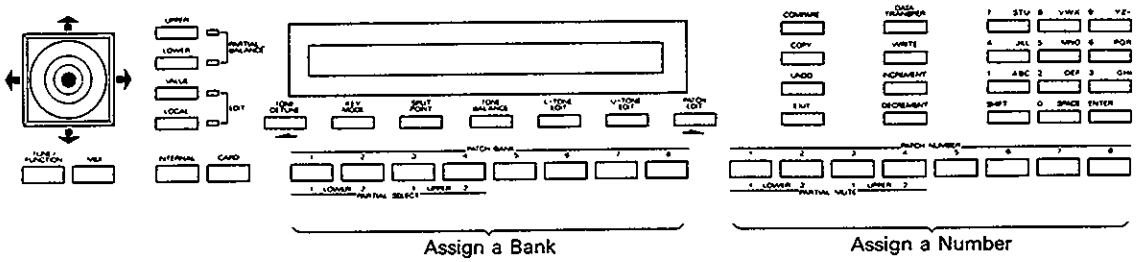
```
I-11 ********************     U: **********
 WHOLE    SP C4    Bal 50     L: **********
```

1. Patch Selection

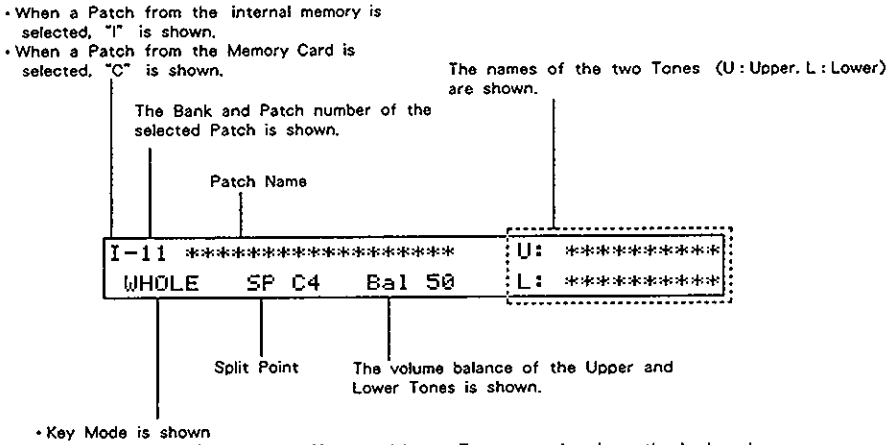
The D−50 retains 64 different Patches. A Patch is represented by a Bank Number (1 to 8) and a Patch Number (1 to 8).



To select a Patch, assign the relevant Bank and Patch number.



The Display shows the selected Patch.



3 Key Modes

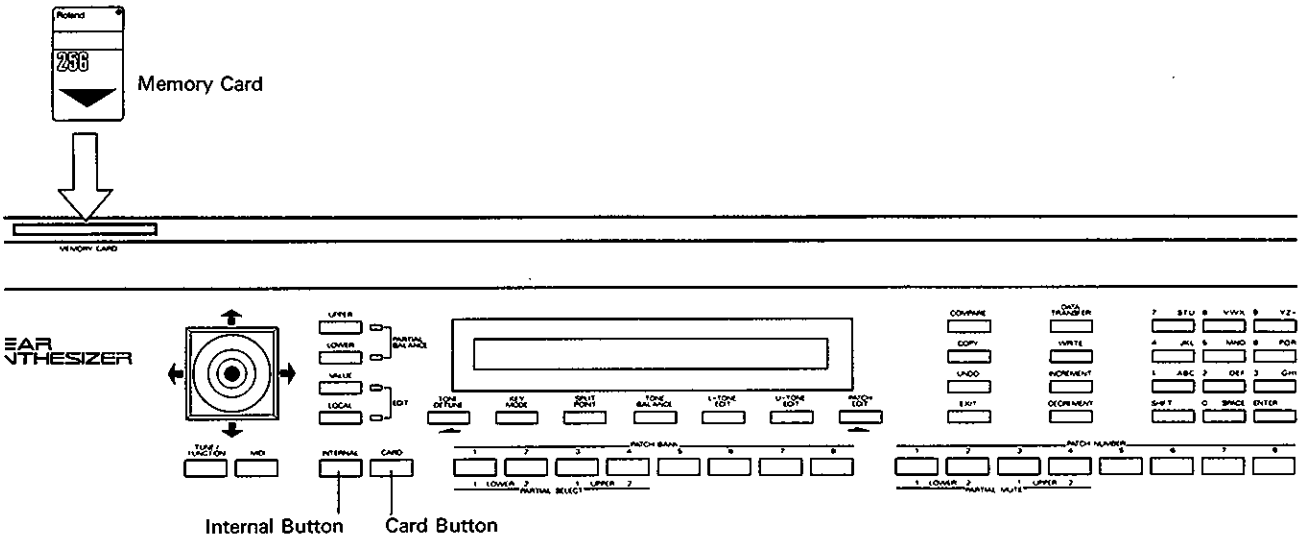
WHOLE	The Upper Tone is played on the entire keyboard in 16 voice polyphony.
DUAL	Both Upper and Lower Tones are played by each key in 8 voice polyphony.
SPLIT	This mode divides the keyboard of the D-50 into upper and lower sections where two different Tones can be used. Each section of the keyboard is 8 voice polyphonic. (Middle C=C4)

*Some other special Key Modes are also provided.

[MEMORY CARD]

Up to 64 different Patches can be stored on one Memory Card (M-256D). You can save the sounds you have made onto a Memory Card and recall them later.

Connect the Memory Card securely and correctly as shown in the diagram.



To call a Patch on the Memory Card, simply push the Card Button. To return to the Internal Memory mode, push the Internal Button.

***The Patches preprogrammed on the supplied Memory Card (ROM) can be restored even if rewritten with new Patches.**

***Please be sure to use the correct Memory Card (e.g. the supplied Memory Card, M−256D, etc.).**

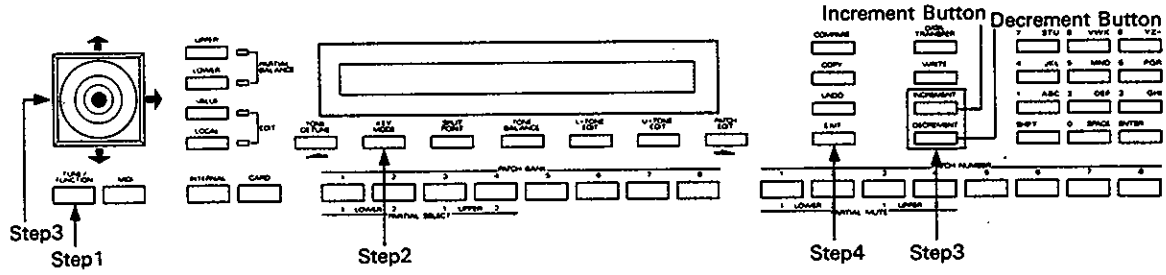
***If you use a Memory Card that contains data for equipment other than the D−50, the following error message will be shown in the Display for a few seconds.**

```
Illegal Card
```

***The optional memory card M−256D comes from the manufacturer without any data programmed on it, therefore, if you try to read data from it, the above error message is shown for a few seconds, indicating that the memory card cannot be used. To avoid this, it is required to copy the D−50's data onto the memory card before using it, as explained on page 65 "a. Patch Transfer to the Memory Card" in the different volume ADVANCED.**

2. TUNING

The D−50 can be tuned to other musical instruments.(Master Tune)

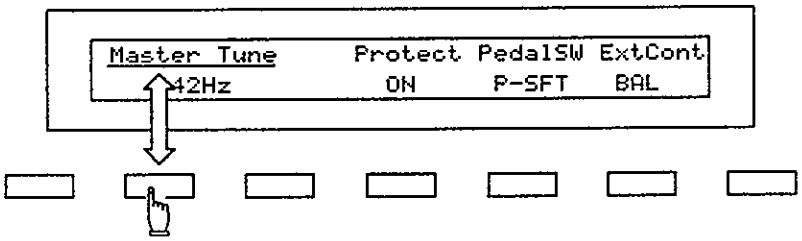


Step 1 **Push the Tune/Function Button.**

The Display will change.

Master Tune	Protect	PedalSW	ExtCont
442Hz	ON	P-SFT	BAL

Step 2 **Select "TUNING" using the appropriate Selector Button.**



This flashes when the corresponding Selector Button is pressed.

Master Tune	Protect	PedalSW	ExtCont
442Hz	ON	P-SFT	BAL

Step 3 **Tune the D−50 as follows.**

For fine tuning, use the Increment Button and the Decrement Button. Holding the Increment Button down raises the pitch, and the Decrement Button lowers pitch.

To change pitch drastically, move the Joystick right and left. Movement to the right raises pitch.

The number shown in the Display is the frequency of the standard pitch (A=440). The number in the Display changes in 1Hz steps, but the pitch actually changes almost continuously.

Step 4 **Push the Exit Button, and the Display returns to the normal Play mode indication.**

The Master Tuning you have set is retained in memory even after the unit is turned off.

3. CONTROL FUNCTIONS

Control Functions can be effectively used for changing the sound during live performance.

***How each Control Function actually affects the sound differs depending on the individual Patch (Tone). Some Patches may not be affected at all.**

[Key Transpose Button]

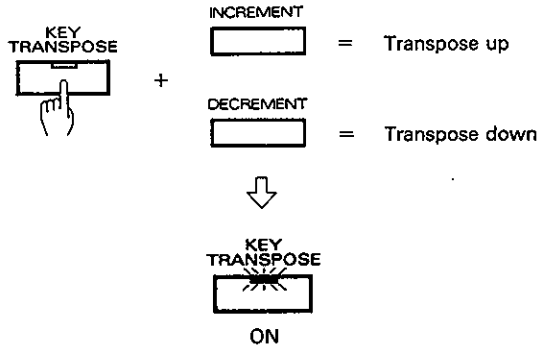
This function transposes the entire keyboard in semi-tone steps, allowing you to play the same keyboard in different keys.

While holding the Key Transpose Button down, the Display shows as below.

```
Key Transpose = 00
```

If the value is set to other than zero, the indicator of the Key Transpose Button will light up.

While holding the Key Transpose Button down, push the Increment or Decrement Button to set a value −12 to +12 (±1 octave)



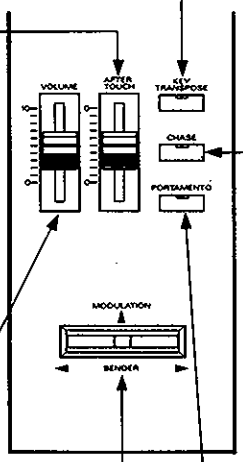
*The Key Transpose you have set will be retained even after the unit is turned off.

[Aftertouch Control Knob]

Aftertouch is the function that causes any change when the key is pushed harder after playing it in a normal manner. The change caused by the aftertouch includes pitch, vibrato, timbre and volume. The maximum effect of the aftertouch is set individually in each Patch or Tone, but the overall sensitivity can be changed with this Knob.

[Master Volume Knob]

This controls the volume of the sounds sent from the Output Jack and the Headphone Jack.



[Chase Button]

The Chase function can output either Lower Tone slightly later than the Upper Tone which you have played. The Chase function is available in the Whole or Dual Key mode. When this function is used in some Patches, delay or sound-on-sound like effects can be obtained.

Pushing the Chase Button turns the function on, and pushing it again turns it off.

If the Chase Button is pushed in a Key Mode other than Whole or Dual, the Display responds as shown below without the Chase function being turned on.

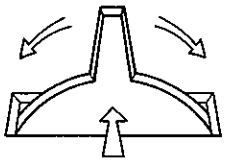
```
Set Key mode  WHOLE or DUAL
```

[Bender Lever]

Using the Bender lever, you can change the pitches, or create a vibrato effect.

Pushing it to the left lowers the pitch.

Pushing it to the right raises the pitch.



Pushing it forward(in the direction of MODULATION) generates vibrato effects.

[Portamento Button]

Portamento is a slide from one pitch to another, and is often used for violin performance.

Pushing the Portamento Button turns the function on, and pushing it again turns it off.

[Velocity]

Velocity refers to dynamics, controlling volume, pitch and timbre. This allows piano-like performance.

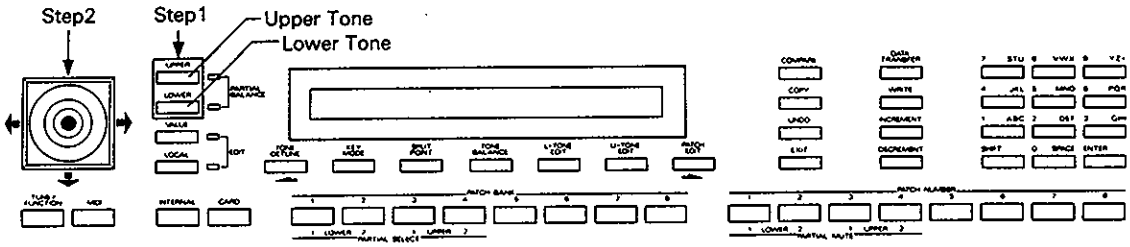
[Partial Balance]

Using the Joystick, the following two volume balance controls can be adjusted at the same time.

- Volume balance of the two Partial sounds of either Tone : Upper or Lower.
- Volume balance of the Upper and the Lower Tones.

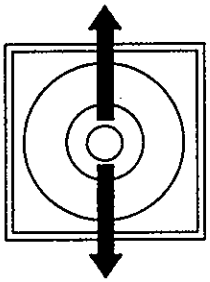
Partial Balance drastically changes the generated sounds.

Step 1 **Select either Tone with the Partial Balance Button.**

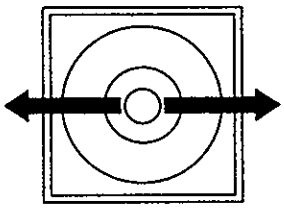


Pushing the button will light up the corresponding indicator.

Step 2 **By moving the Joystick, adjust the volume balance of the two Partial sounds and the Tones.**

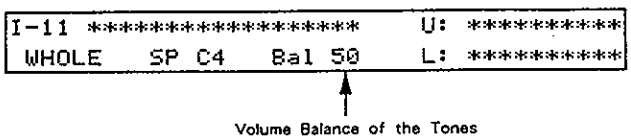


Volume balance of two Tones changes.



Volume balance of the selected Tone's Partials changes.

The volume balance of the Tones is shown in the Display.



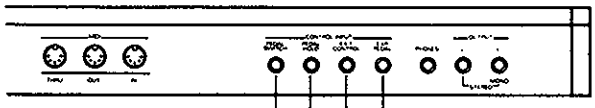
Volume Balance of the Tones

***The volume balance you have set here is not automatically written into memory, and therefore will be erased when another Patch is selected.**

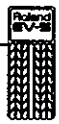
***To write the Patch with a new Partial Balance setting, follow the "Writing Procedure" on page 28.**

[Pedal Control]

By connecting a pedal to the Control Input Jack, you can control various functions with the pedal.



Pedal Switch
(DP-2, DP-6)



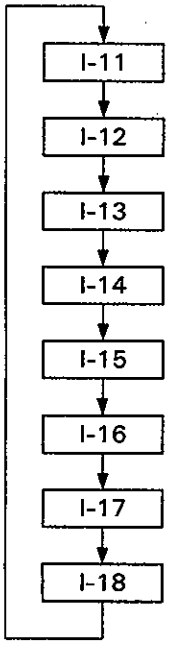
Expression Pedal
(EV-5)

[Pedal Switch]
The connected pedal switch can control the function (parameter)which is selected in the Control Functions.

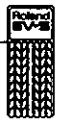
* Patch Shift function is selected by the manufacturer.

The Patch Shift function allows you to change the Patch Numbers sequentially.

(e. g.)



[Expression Pedal]
This controls the volume of sound.



Expression Pedal
(EV-5)

[External Control]
A function selected in the Control Functions can be controlled.

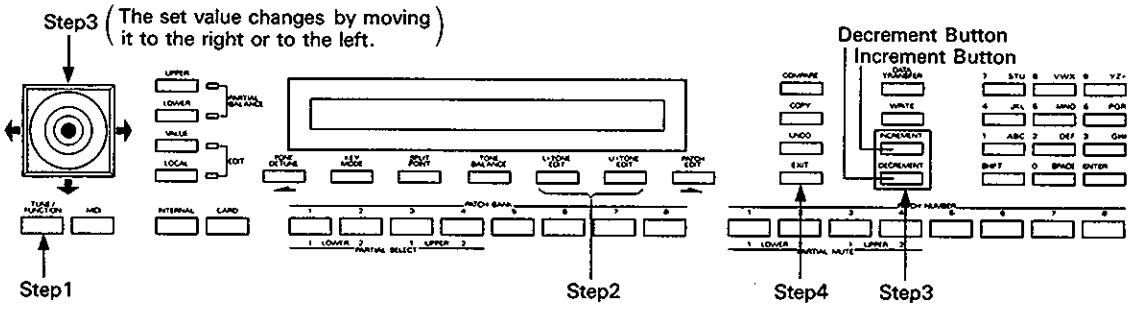
* Tone Volume Balance is selected by the manufacturer.

Pedal Switch
(DP-2, DP-6)

[Pedal Hold Sustain]
Turns on or off the Hold effect, which allows the sound to be held even after the key is released.

● **Changing Control Functions**

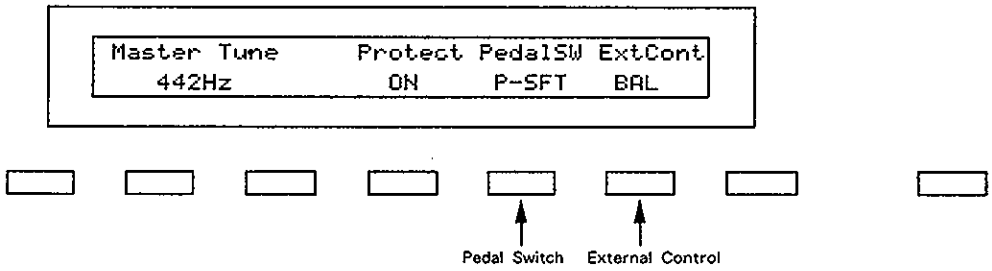
Each of the pedals connected to the Pedal Switch Jack and the External Control Jack can work differently, depending upon which function is assigned to each pedal.



Step 1 **Push the Tune/Function Button.**

The Display changes.

Step 2 **By using the appropriate Selector Button, select the pedal to which you wish to assign a function.**



Pushing the button will cause the function currently assigned to the pedal to flash.

Step 3 **By using the Joystick, or the Increment and Decrement Buttons, select the function to be asssigned.**

The functions which can be assigned to each pedal are shown below.

Pedal Switch

Control Function	Description
P–SFT (Patch Shift)	Increases the Patch Number.
PORTA (Portamento)	Turns the Portamento effect on or off.
CHASE (Chase)	Turns the Chase effect on or off.
OFF	The D–50 cannot be controlled, but the connected MIDI device can be controlled. (See page 52 "MIDI" in the Advanced Course.)

External Control

Control Function	Description
BAL (Tone Balance)	Controls the volume balance of the Upper and the Lower Tones.
AFTER (Aftertouch)	Controls the Aftertouch effect.
MOD (Modulation)	Controls the vibrato effect.
OFF	The D–50 is not controlled, but the connected MIDI device can be controlled. (See page 52 "MIDI" in the Advanced Course.)

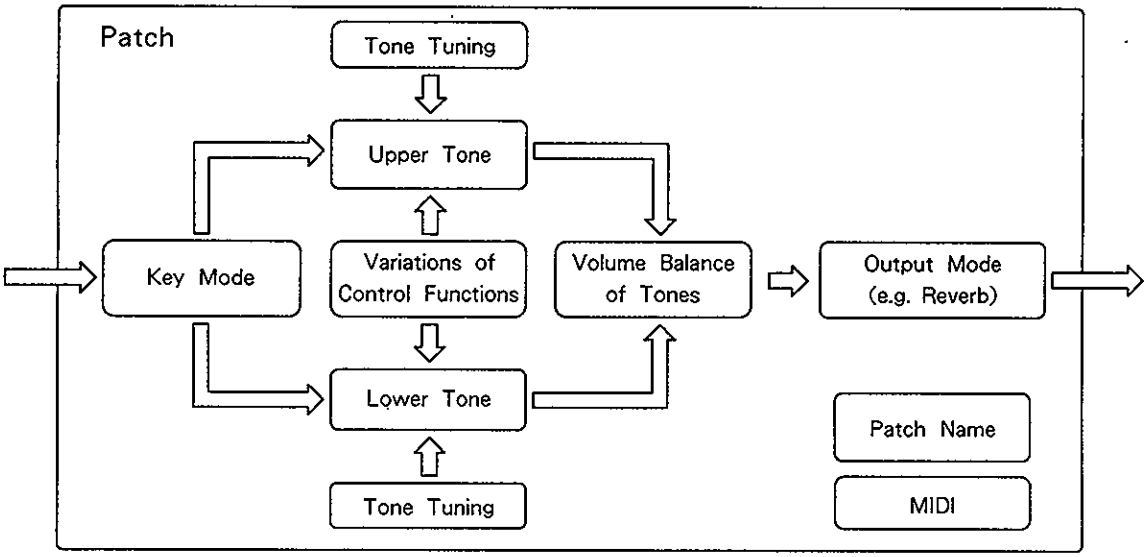
＊The Control Function set here will be retained even after the unit is turned off.

＊When AFTER is selected in the External Control section, aftertouch cannot be controlled by the keyboard.

4 EDITING PERFORMANCE CONTROLLING FUNCTIONS

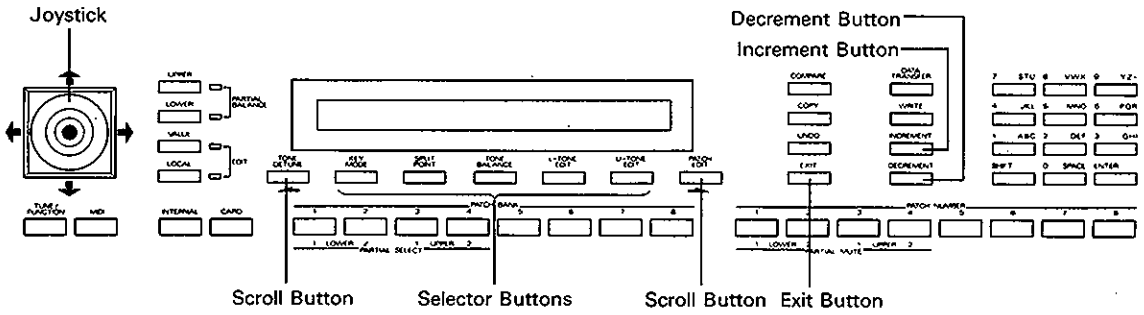
The performance controlling functions (we call them "**Factors**" in this manual) in each Patch can be edited by taking the following procedure.

A Patch consists of several Factors as shown below.



1. BASIC EDITING OPERATION

The Display shows several Factors at a time. If necessary, Scroll up or down the Display to find the Factor to be edited by using the Scroll Buttons. Then push the Selector Button that is located under the Factor you wish edit, and the Factor flashes showing that it can be now edited. To return to the Play mode Display, simply push the Exit Button.



How to change the value of a Factor

●To change the value drastically, use the Joystick. Moving the Joystick to the right will increase the number.

＊Usually, moving the Joystick forward and backward does not affect the value.

●To change the value slightly, use the Increment and the Decrement Buttons. Pushing the Increment Button increases the number and pushing the Decrement Button decreases it.

To return to the Play mode Display, you may need to push the Exit Button several times.

＊The edited data will be erased when a new Patch is selected.

＊To retain the edited data in memory, follow the "Writing Procedure" on page 29.

＊The D—50 does not allow you to change Patches unless it is turned to the Play mode by pushing the Exit Button. This is to reduce the possibility of accidental erasure of the edited data caused by pushing a Patch Button by mistake.

[Compare]

This function can be used while editing. While you are editing a Patch, you may want to call the original Patch, to compare it with your edited version.

Step 1 **Push the Compare Button.**

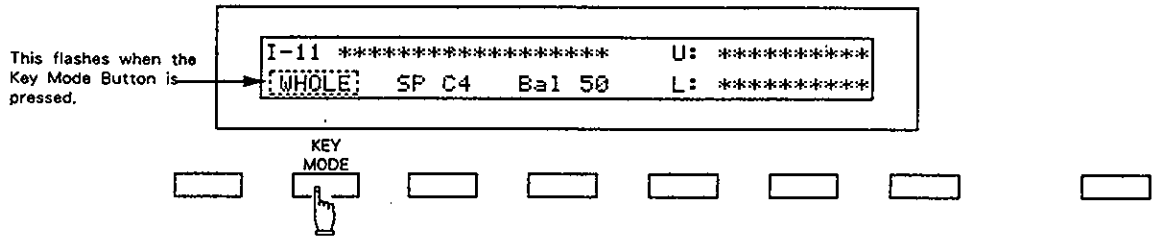
The Display responds as shown below, and the original Patch is heard by playing the keyboard.

Step 2 **Push the Compare Button again, and the edited Patch is retrieved.**

2. KEY MODE

Key Mode refers to how the Upper and Lower Tones are played on the keyboard.

Step 1 **Push the Selector Button (Key Mode).**



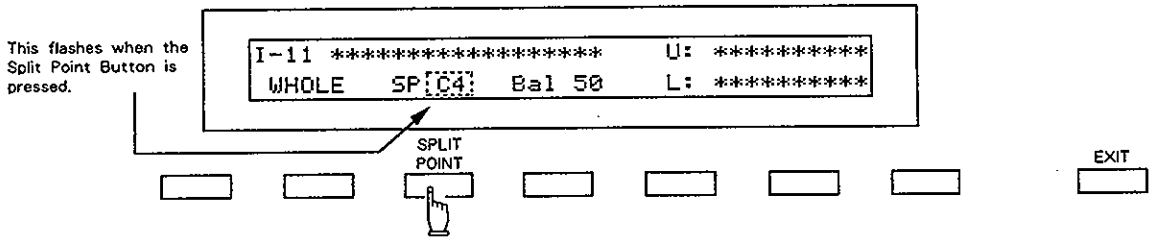
Step 2 **Select any of the following nine Key Modes using the Joystick.**

Key Mode	Description
WHOLE	Upper Tone can be played in 16 voice polyphony.
DUAL	Both Upper and Lower Tones are played by each key in 8 voice polyphony.
SPLIT	The Split mode divides the keyboard into upper and lower sections, where two different Tones can be played in 8 voice polyphony. That is, the D-50 works like two 8 voice synthesizers. The Split Point (where the keyboard is divided into two sections) is shown next to the Key Mode indication.
SEP (Separate)	This mode is effective when an external MIDI device is controlling the D-50. (See page 52 "MIDI" in the Advanced Course.)
WHOL-S (Whole Solo)	The Upper Tone is monophonic.
DUAL-S (Dual Solo)	Both Upper and Lower Tones are monophonic.
SPL-US (Split Upper Solo)	The Upper Tone is monophonic, and the Lower Tone is 8 voice polyphonic.
SPL-LS (Split Lower Solo)	The Lower Tone is monophonic, and the Upper Tone is 8 voice polyphonic.
SEP-S (Separate Solo)	This mode is effective when an external MIDI device is controlling the D-50. (See page 52 "MIDI" in Advanced Course.)

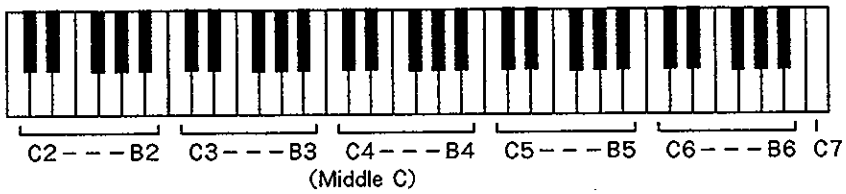
● **Changing the Split Point**

The Split Point can be changed as follows.

Step 1 **Push the Selector Button (SPLIT POINT).**



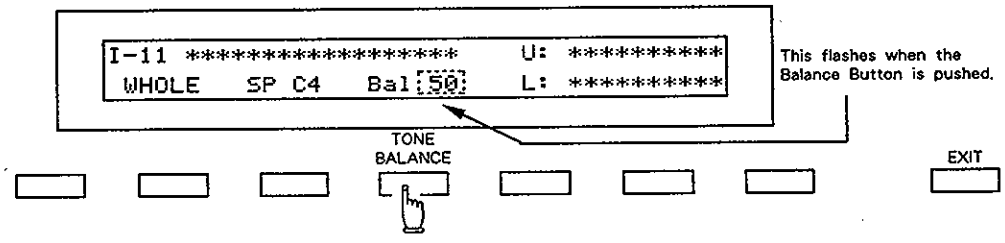
Step 2 **Using the Joystick, set the Split Point represented by a note name..**



3.VOLUME BALANCE OF THE TONES

The volume balance of the Upper and the Lower Tones can be changed as follows.

Step 1 **Push the Selector Button (TONE BALANCE).**

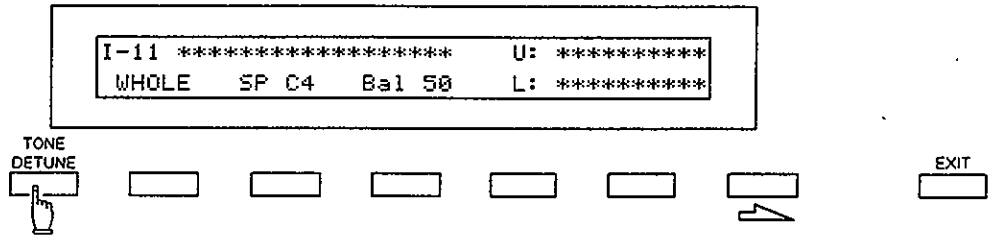


Step 2 **Change the value with the Joystick.**

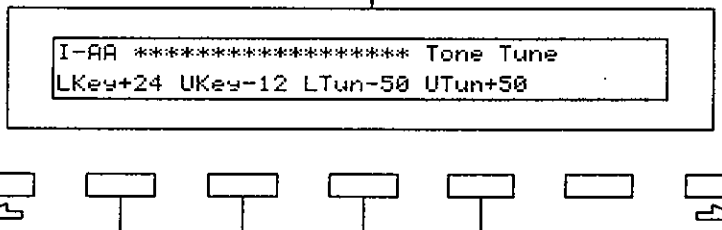
4.TONE DETUNE

The relative pitch of the Upper and the Lower Tones can be separately set. By setting slightly different pitches, a detune effect can be obtained. Also, by lowering the pitch of the Upper Tone, and raising the pitch of the Lower Tone, the pitches of the two Tones can become exactly the same.

Step 1 : Push the left Scroll Button.



Step 2 : Select the parameter to be edited with the Selector Button and edit it with the Joystick.



Key Shift of the Lower Tone
This allows you to shift the pitch of the Lower Tone in semi-tone steps from -24 to +24 (±2 octave).

Key Shift of the Upper Tone
This allows you to shift the pitch of the Upper Tone in semi-tone steps from -24 to +24 (±2 octave)

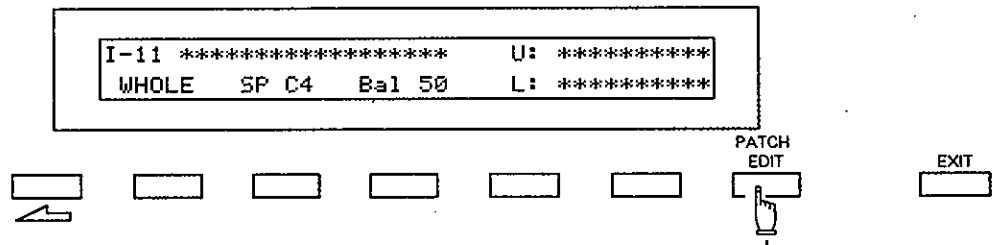
Fine Tuning of the Upper Tone
This allows you to tune the pitch of the Upper Tone from -50 to +50 (approx. ±50 cents).

Fine Tuning of the Lower Tone
This allows you to tune the pitch of the Lower Tone from -50 to +50 (approx. ±50 cents)

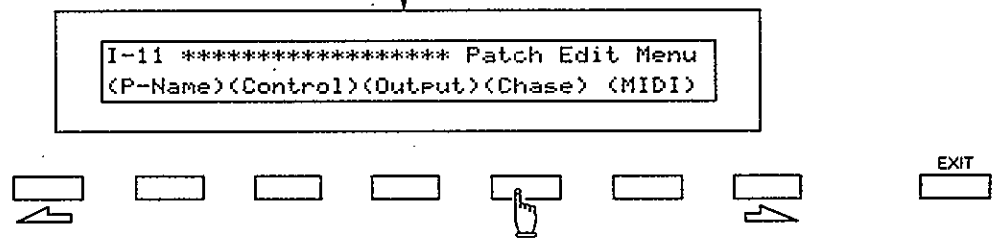
5. CHASE PLAY

The Chase Play function makes it possible to output the Lower Tone slightly later than the Upper Tone which is actually played on the keyboard. This function, however, is only available in Dual or Whole mode.

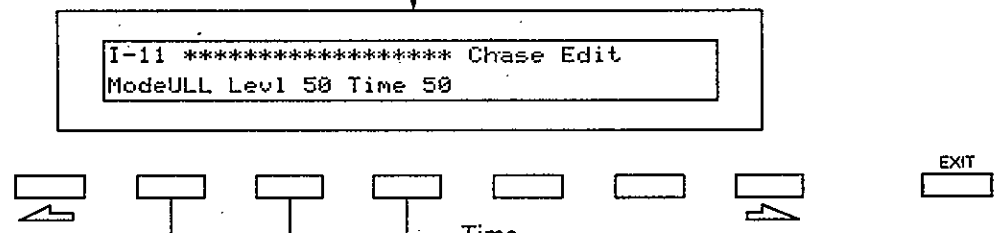
Step 1 : Push the right Scroll Button.



Step 2 : Select "Chase" with the corresponding Selector Button.



Step 3 : Select the parameter you want to edit with the Selector Button and edit it with the Joystick



Time

This adjusts the sounding time from 0 to 100.
Higher value is longer time.

Mode

This sets how the Tones sound.

●When the Key Mode is Dual, the following choices are available.
UL The Upper Tone then the Lower Tone is played.
ULL The Upper, then the Lower is repeated.
ULU The Upper, the Lower and the Upper Tone alternate.

●When the Key Mode is Whole, the following choices are available.
UL The Upper Tone is played twice.
ULL Upper Tone is repeated.
ULU Upper Tone is repeated.

Level

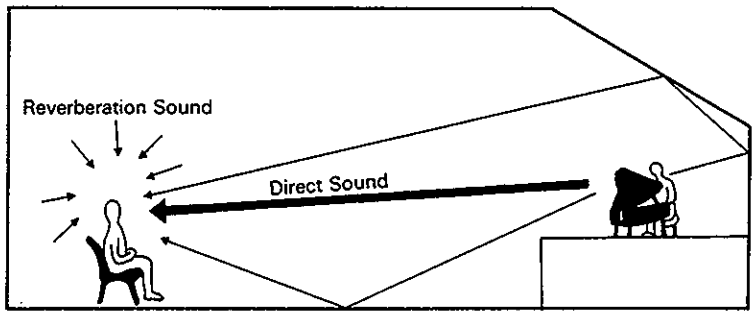
This sets the volume of the chase sound, from 0 to 100.

＊Depending on the Chase Level and Velocity, the number of repeats of the delayed sound differ, If "TVA Velocity Sens" (page 43) is set to 0, the sound does not decay but repeats with the same time.

6. OUTPUT MODE

The Output Mode determines how the Tones take on the reverb effect, and how the Tones appear at the outputs.

■A sound reverberated in an acoustic environment consists of three parts. First, you hear the direct sound as it travels from the source outward. Next the early reflection resounds once, or several times, from the walls, ceiling, and floor. Finally, you hear the reverberated sound as it reflects many times in the environment.

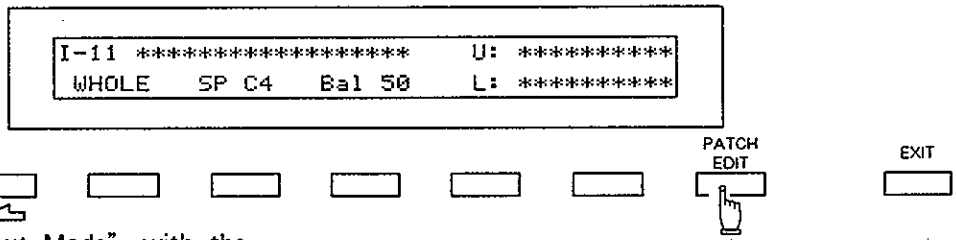


REVERB TYPE

1	Small Hall
2	Medium Hall
3	Large Hall
4	Chapel
5	Box
6	Small Metal Room
7	Small Room
8	Medium Room
9	Medium Large Room
10	Large Room
11	Single Delay (102ms)
12	Cross Delay (180ms)
13	Cross Delay (224ms)
14	Cross Delay (148-296ms)
15	Short Gate (200ms)
16	Long Gate (480ms)

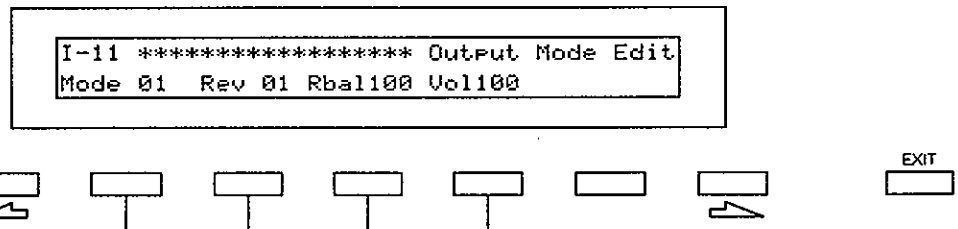
17	Bright Hall
18	Large Cave
19	Steel Pan
20	Delay (248ms)
21	Delay (338ms)
22	Cross Delay (157ms)
23	Cross Delay (252ms)
24	Cross Delay (274-137ms)
25	Gate Reverb
26	Reverse Gate (360ms)
27	Reverse Gate (480ms)
28	Slap Back
29	Slap Back
30	Slap Back
31	Twisted Space
32	Space

Step 1 : Push the right Scroll Button.



Step 2 : Select "Output Mode" with the corresponding Selector Button.

Step 3 : Select the parameter to be edited with the Selector Button and edit it with the Joystick.



Total Volume

This sets the volume of both Tones from 0 to 100, and therefore adjusts the volume difference between Patches.

Reverb Balance

This sets the volume balance of reverb and direct sounds from 0 to 100.

100 The volume of the reverb sound=maximum, the volume of the direct sound=0.

|

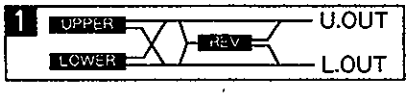
0 The volume of the reverb sound=0, the volume of the direct sound=maximum.

Output Mode

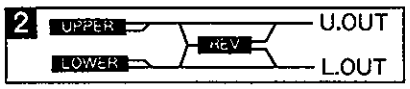
This selects one of the following four output modes.

Reverb Type

This selects one of the 32 reverb types.(See page 25.)



Stereo reverb works on the mixed sound of Upper and Lower Tones, and is sent out in stereo.



The Mixture of Upper and Lower takes on stereo reverb, and the direct sound is sent out separately for Upper and Lower.

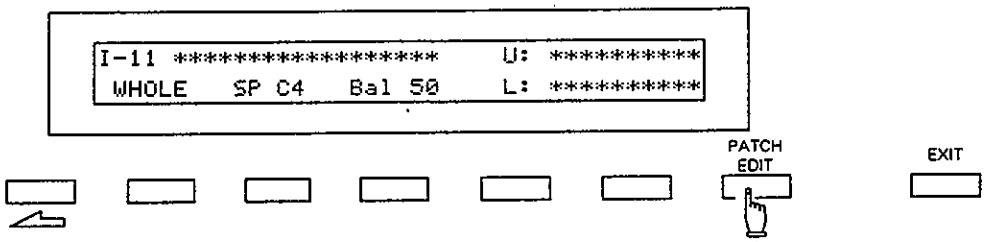
Only the Upper Tone takes on reverb. Upper and Lower Tones are sent out separately.

Only the Lower Tone takes on reverb. Upper and Lower Tones are sent out separately.

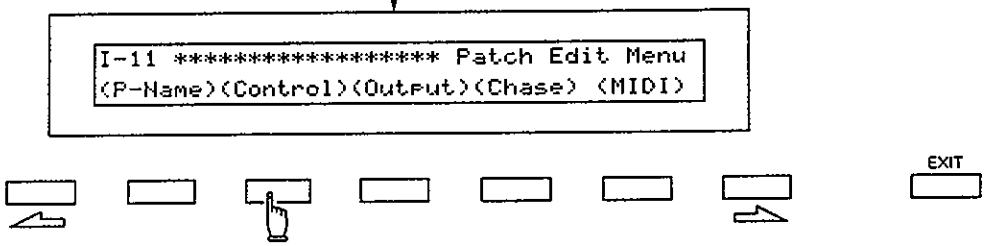
7. PATCH CONTROL

Patch Controls determine how the Control Functions actually affect the Upper and the Lower Tones.

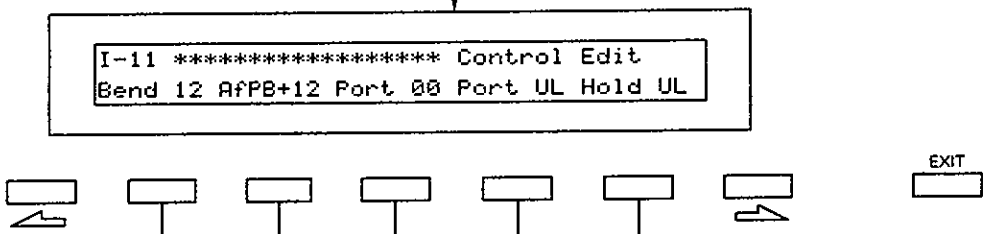
Step 1 : Push the right Scroll Button



Step 2 : Select "Control" with the corresponding Selector Button.



Step 3 : Select the Control function to be edited and change the value with the Joystick.



Bender Range

This sets the variable range of the pitch change caused by moving the Bender lever right and left from 0 to 12 (1 octave).

*The variable range set here may result differently depending on the setting of the Tone Parameters.

Aftertouch, Pitch Bender

This sets the sensitivity of the aftertouch effect on pitch. −12 to +12 are valid. Higher values mean higher sensitivity. A Minus setting decreases the pitch, and a plus setting increases it.

Portamento Time

This sets the Portamento time from one note to another. 1 to 100 are valid. Higher values make the time longer.

Hold Mode

This selects the Tone that should take on the Pedal Hold effect.

U Pedal Hold works on the Upper Tone.
L Pedal Hold works on the Lower Tone.
UL Pedal hold works on the both Tones.
*When the Key mode is Whole, Pedal Hold always works whichever of the above three modes may be selected.

Portamento Mode

This selects the Tone that should take on the Portamento effect.

U Pedal Hold works on the Upper Tone.
L Pedal Hold works on the Lower Tone.
UL Pedal hold works on the both Tones.
*When the Key Mode is Whole, Portamento always works whichever of the above three modes may be selected.

5 WRITING

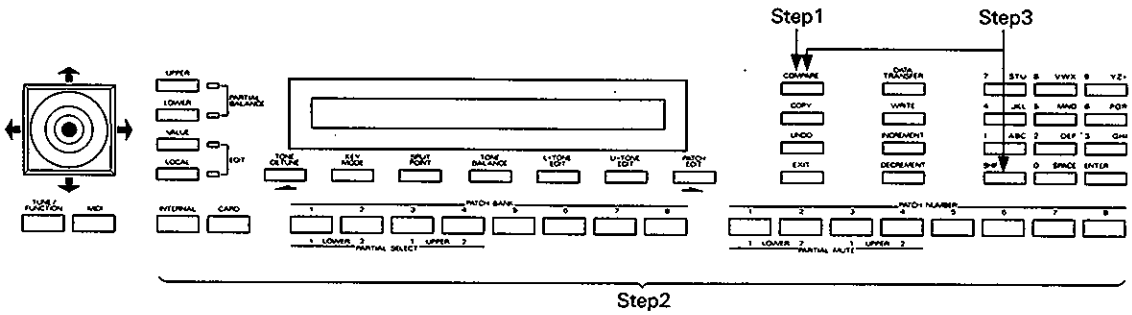
The edited data does not automatically rewrite the previous data, and therefore will be erased when a different Patch is selected, or the unit is turned off. To retain the edited data, take the following writing procedure, either into the internal memory or onto the Memory Card.

***When using a Memory Card (RAM) for the first time, be sure to write the data in the internal memory onto the Memory Card as shown in "Patch Transfer to the Memory Card" on page 65 in a separate book, "Advanced". If you take the writing procedure without doing this, the Display shows "Illegal Card" for a few seconds and writing is not done. This "Illegal Card" message is also shown when you are using a Mmeory Card that contains the data other than D–50's.**

```
Illegal Card
```

[SELECTING A MEMORY LOCATION]

Writing a new Patch inevitably erases an existing Patch, so you may wish to listen to several Patches before deciding which Patch should be sacrificed for the new Patch. You can do it using the Compare Button.



Step 1 **Push the Compare Button.**

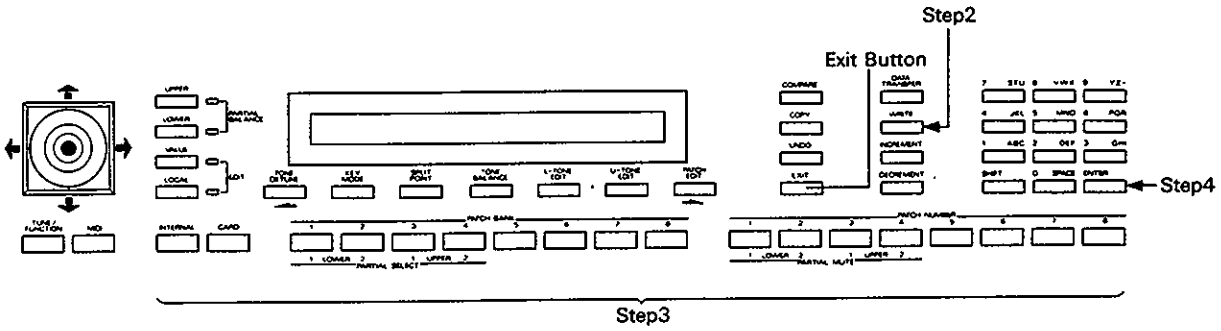
The Display responds as shown below.

```
************ Compare ************
```

Step 2 **As you change Patches, listen to the sound, selecting the Patch Number to be erased.**

Step 3 **WHILE HOLDING THE SHIFT KEY DOWN, push the Compare Button. This recalls the edited data at the selected Patch Number.**

[WRITING PROCEDURE]

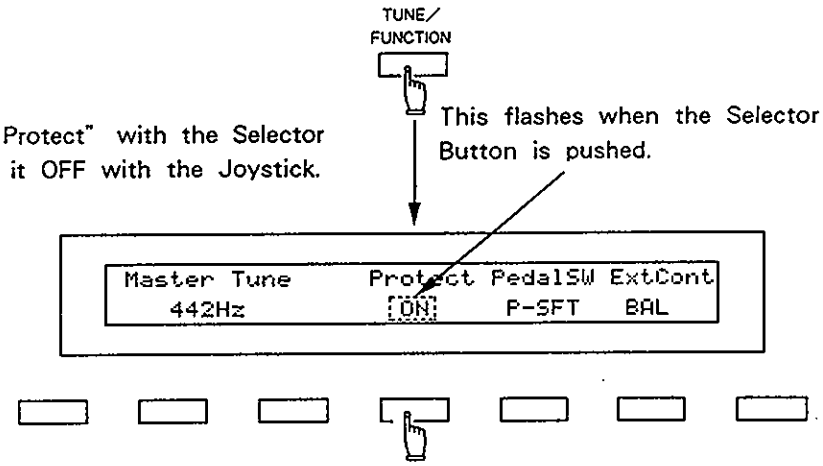


Step 1 **Set Memory Protect to OFF.**

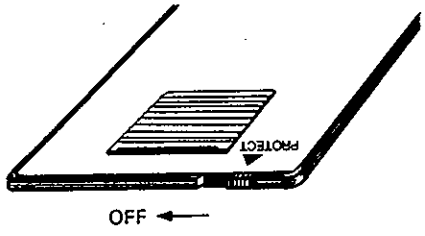
●To write the data into the internal memory, set the Memory Protect of the D−50 to OFF as follows.

1 : Push the Tune/Function Button.

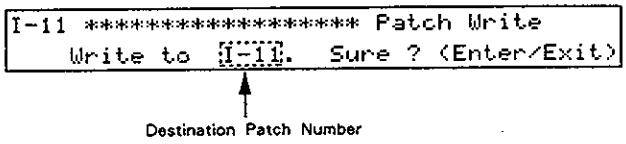
2 : Select "Memory Protect" with the Selector Button and turn it OFF with the Joystick.



●To write the data onto the optional Memory Card (M−256D), set the Protect Switch of the Memory Card to OFF as follows.



Step 2 **Push the Write Button.**



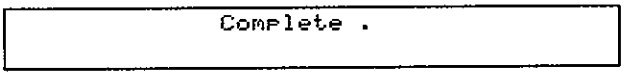
Step 3 **If you wish to rewrite the Patch, skip the following two procedures and go to step 4, but if you wish to write the edited Patch to a different Patch number, change the destination Patch number as follows.**

- To write the Patch into the internal memory of the D–50, push the Internal Button, and to write onto the Memory Card, push the Card Button.
- Assign the Bank and Number of the destination Patch by using the Patch Buttons.

To leave the writing mode, simply push the Exit Button.

Step 4 **Push the Enter Key.**

When writing is completed, the Display responds as shown below and then returns to the Play mode indication.



***If the Display does not respond as in the above indication, see "Error Messages" on page 74 in the Advance Course, and repeat the writing procedure carefully.**

Step 5 **Return the Memory Protect to ON.**
(as in Step 1.)

Memory Protect is the function that protects the existing data from accidental erasure. Be sure to set Memory Protect to ON except when writing new data.

***When the unit is turned off and on again, the Memory Protect is automatically returned to ON.**

SPECIFICATIONS

D−50 : 16 Voice Polyphonic Linear Synthesizier

Memory Capacity : 64 Patches
16 Reverb Types

[Front Panel]

Memory Card Slot
Joystick
Chase Button
Key Transpose Button
Master Volume
Scroll Buttons × 2
Selector Buttons × 2
Edit Buttons (Value, Local)
Partial Buttons (Upper, Lower)
Compare Button
Copy Button
Undo Button
Exit Button
Data Transfer Button
Write Button
Increment Button
Decrement Button
Card Button
Internal Button
MIDI Button
Tune/Function Button
Patch Buttons (Bank 1 to 8, Number 1 to 8)
Ten Key Pad (o to 9, Shift, Enter)

[Display]

Two Line 40 digit LCD (back−lit)

[Indicators]

Portamento
Chase
Key Transpose
Edit (Value)
Edit (Local)
Partial Balance (Upper)
Partial Balance (Lower)

[Rear Panel]

Output Jack (mono, stereo)
Headphones Jack
Expression Pedal Jack
External Control Jack
Pedal Hold Jack
Pedal Switch Jack
MIDI Connectors (IN, OUT, THRU)

Dimensions :
974 (W) ×332 (D) ×94 (H) mm
38−3/8"×13−1/16"×3−11/16"

Weight : 10.5kg/23lb 3oz

Power Consumption : 22W

Accessories : Owner's Manual
Guide Book "MIDI"
Memory Card (ROM)
Edit Map
Connection Cable LP−25

[Options]

Stereo Headphones RH−100
Expression Pedal EV−5
Pedal Switch DP−2, DP−6
MIDI/SYNC Cable MSC−07,15,25,50,100
Programmer PG−1000
Memory Card (RAM) M−256D
Case AB−D50
Stand KS−8

Roland

MIDI LINEAR SYNTHESIZER

D-50

Owner's Manual

ADVANCED

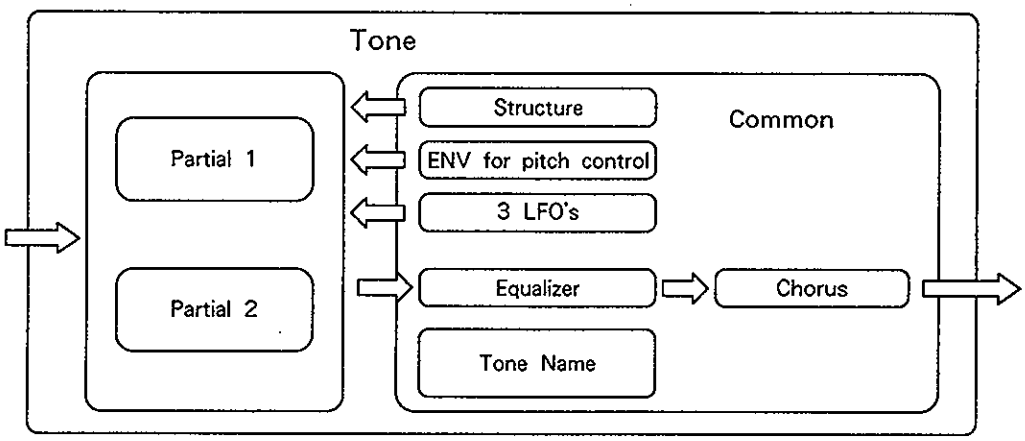
ADVANCED COURSE

CONTENTS

1 OUTLINE OF TONE PARAMETERS

1. THE BASIC CONCEPT OF A TONE

A Tone consists of **two Partials** (Partials 1 and 2) and a **Common** block.



Each Partial (Partial 1 and Partial 2) can have one of two sound generators (**a Synthesizer sound source** or **a PCM sound source**). So you can think of the D-50 having powerful synthesizers built in. Each of these hypothetical synthesizers could behave like a conventional analog synthesizer, or a PCM sampled synthesizer. Any combination of two synthesizers can achieve some remarkable cross-modulation effects, so characteristic of today's purely digital sounds.

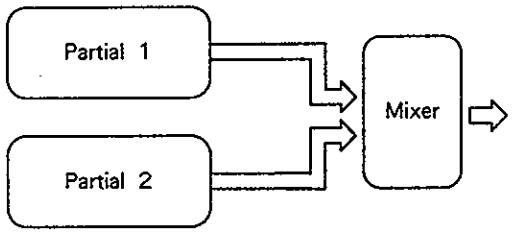
Some Common parameters apply to both Partials (Partial 1 and 2). **"Structure"** is one of the Common parameters. It decides which of the two sound generators is used for each Partial. Other Common parameters are an ENV for pitch, three LFO modules, equalizer, chorus, etc.

[STRUCTURE]

Structure, which is one of the Common parameters, determines which two of the hypothetical synthesizers (**a synthesizer sound generator or a PCM sound generator**) are to be used as Partial 1 and Partial 2.

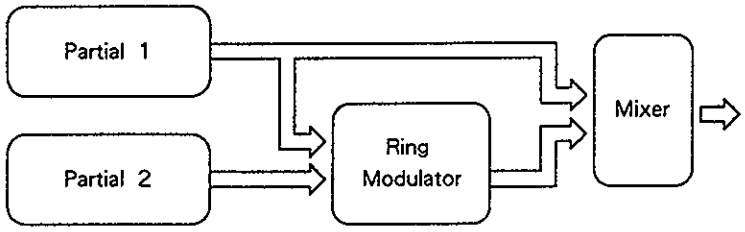
A "Synthesizer sound generator" works like a conventional analog type synthesizer with an oscillator, a filter, an amplifier and two ENV's. A PCM sound generator provides 100 different PCM sampled sounds.

These two Partial sounds (Partial 1 and Partial 2) can simply be mixed as shown below.

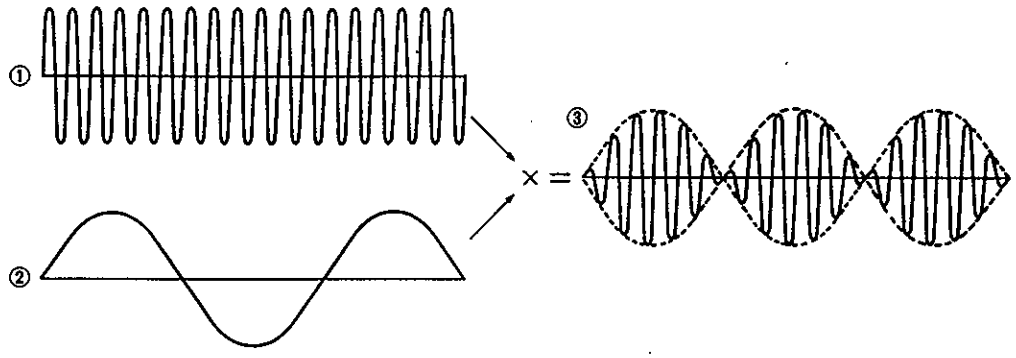


By mixing two Partials, fatter sounds can be obtained. This is effective for making strings or organ type sounds.

Or Partial 1 can be mixed with the ring-modulated sound of Partials 1 and 2.



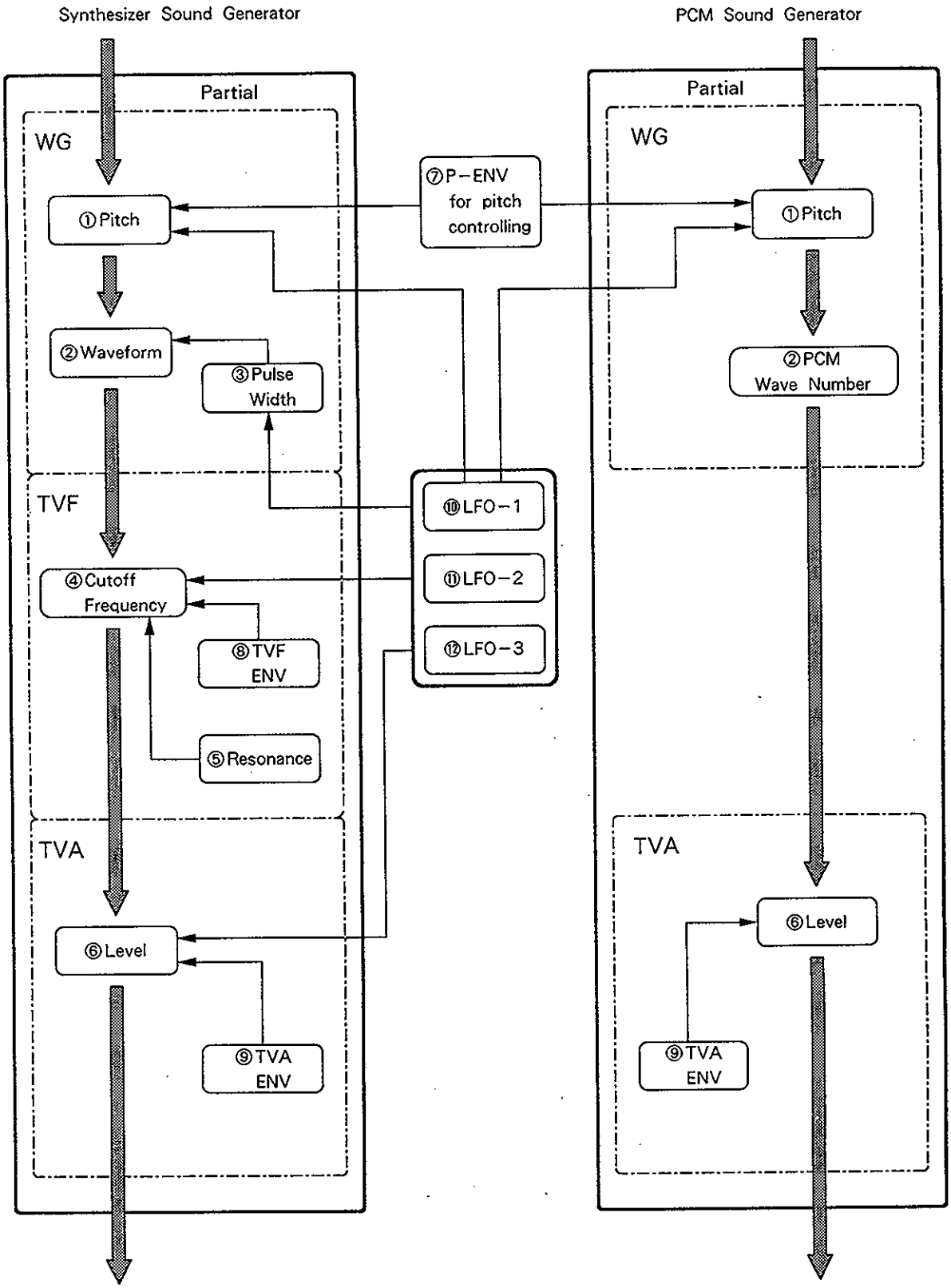
The Ring Modulator multiplies two sounds, creating an unusual and metallic sound that contains complicated harmonics. For instance, two waveforms (① and ②) are multipled and waveform ③ is created. This is effective for making metallic sounds.



2. STRUCTURE OF TONE PARAMETERS

Depending on which generators are selected in the Partial Block, greatly different Tone Parameters will be used. Some Tone Parameters used for the Synthesizer sound generators are irrelevant to the PCM generator (see the diagram below).

In a Structure with Ring modulation, some parameters of Partial 2 are automatically set to those of Partial 1. See page 22 "Tone Parameters" for a detailed explanation.


Synthesizer Sound Generator
PCM Sound Generator
Partial
WG
①Pitch
②Waveform
③Pulse Width
TVF
④Cutoff Frequency
⑤Resonance
⑧TVF ENV
TVA
⑥Level
⑨TVA ENV
⑦P-ENV for pitch controlling
⑩LFO-1
⑪LFO-2
⑫LFO-3
Partial
WG
①Pitch
②PCM Wave Number
TVA
⑥Level
⑨TVA ENV

a. WG (Wave Generator)

In the WG (Wave Generator), the pitch and waveform are controlled.

①Pitch

The basic pitch of a Partial (sound generator) can be set here. The pitch is a Common parameter, and is therefore controlled by ⑦ P–ENV and ⑩ LFO–1.

②Waveform (PCM Wave Number)

This selects the waveform of the sound source. When a synthesizer sound generator is selected, the waveform can be controlled by the ③ Pulse Width controls.

③Pulse Width

This changes the waveform of the sound source. The pulse width is controlled by any LFO (=Common parameter).

b. TVF (Time Variant Filter)

This filter passes lower frequency harmonics and cuts off the higher ones. By changing the cutoff point and the resonance, the waveform changes.

④Cutoff Frequency

This sets the cutoff point. The cutoff point can be controlled by ⑧TVF ENV and any LFO (=Common parameter).

⑤Resonance

This emphasizes the cutoff point, making more unusual or electronic sounds.

c. TVA (Time Variant Amplifier)

This controls the volume of the Partial.

⑥Level

This determines the volume of the sound. When a synthesizer sound generator is used, the level can be controlled with the ⑨ TVA ENV and any LFO (Common parameter). When a PCM sound generator is used, the ⑨TVA ENV controls the level.

d. ENV (Envelope Generator)

This generators a control signal (envelope curve) which controls the pitch, timbre and volume of each Partial (sound generator).

⑦P-ENV
This is the ENV which controls pitch. It can be set for two selected Partial at once.

⑧TVF ENV
This ENV controls the cutoff point, and can be set for each Partial separately.

⑨TVA ENV
This ENV controls the volume level. This can be set for each Partial separately.

e. LFO (Low Frequency Oscillator)

This oscillator generates low frequencies only.
Any of the three LFO's can be used for the two Partials, Vibrato, PWM growl or tremolo effects can be obtained using these LFO's.

***A different LFO can be used for each section or a PARTIAL.**

⑩LFO-1
This can control ①Pitch, ③Pulse Width, ④Cutoff Frequency or ⑥Level.

⑪LFO-2
This can control ③Pulse Width, ④Cutoff Frequency or ⑥Level.

⑫LFO-3
This can control ③Pulse Width, ④Cutoff Frequency or ⑥Level.

2 EDITING

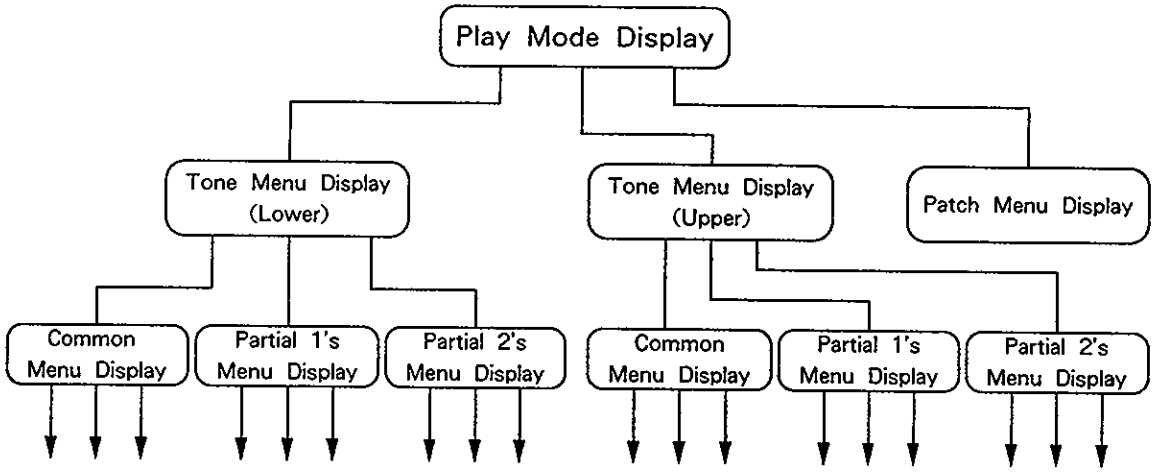
The D−50 features various parameters which can be edited, thereby synthesizing new sounds. However, it does not feature knobs or switches on its front panel. Instead, there are two methods of editing: one is achieved by calling each parameter with the relevant buttons, and changing the value with the Joystick, or Increment and Decrement Buttons, the other is by using the optional programmer PG−1000, which has all the necessary panel controls.

For quicker and easier editing or synthesizing from scratch, the PG −1000 may be essential.

***The editing procedure does not automatically rewrite the existing program, the appropriate writing procedure, on page 18 must be taken.**

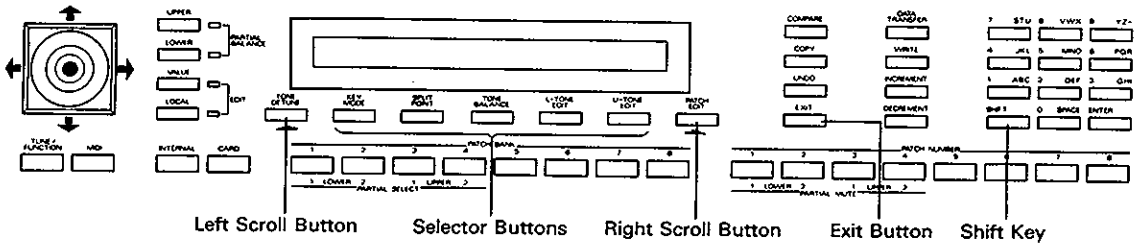
1. CALLING A PARAMETER

A number of Patch Factors and Tone Parameters are shown in a Menu Display at the same time. There are several Menu Displays as shown below. Each parameter shown in a Menu Display contains



several more parameters.

You can select any parameter you want by using the corresponding Selector Button or Scroll Button.



The following explains how each button works. The Menu Display and parameter which each button leads to are shown in the supplied Edit Map. Please thoroughly study the map.

● **Selector Buttons**

These can be used to select one of the parameters shown in the Display. Simply push the relevant Selector Button, and its current value will flash in the Display.

● **Scroll Buttons**

These buttons can be used to scroll through more parameters in the same menu group.

Pushing the far-right Scroll Button calls the next parameter group, and the left Scroll Button returns to the previous parameter group.

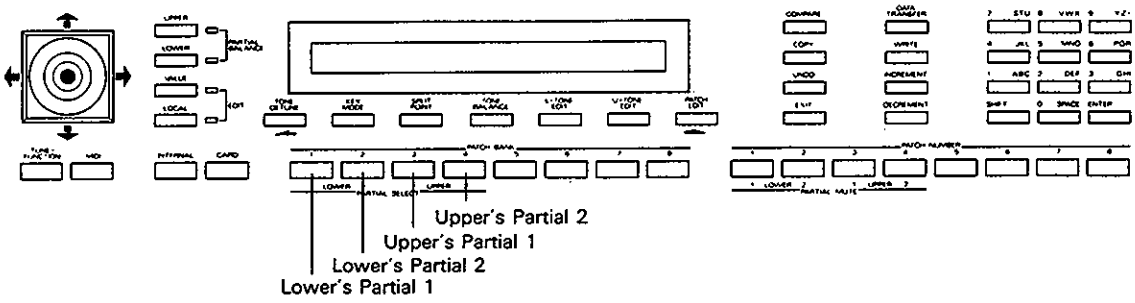
● **Exit Button**

This button can be used to leave the parameter currently called and go back to its Menu Display. To go back to the Play Mode Display, hold down the Shift Key while pressing the Exit Button.

[CHANGING PARTIAL DISPLAYS]

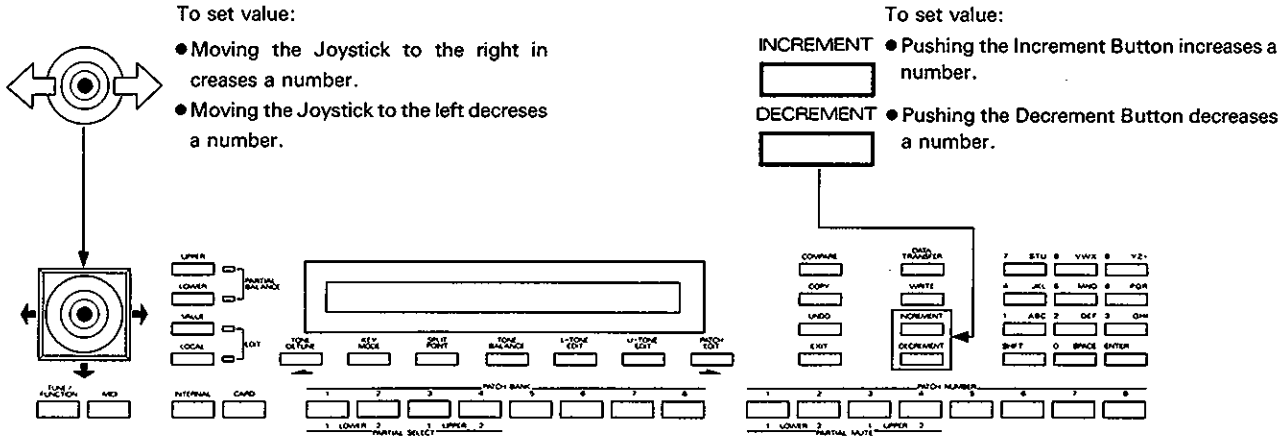
While editing a parameter of one Partial, you can call the Display of the same parameter for a different Partial.

The Patch Buttons 1 to 4 can select Partials as shown below.



2. CHANGING VALUES

Normally, the Joystick is used to change the value drastically, and the Increment and the Decrement Buttons for fine adjustment.

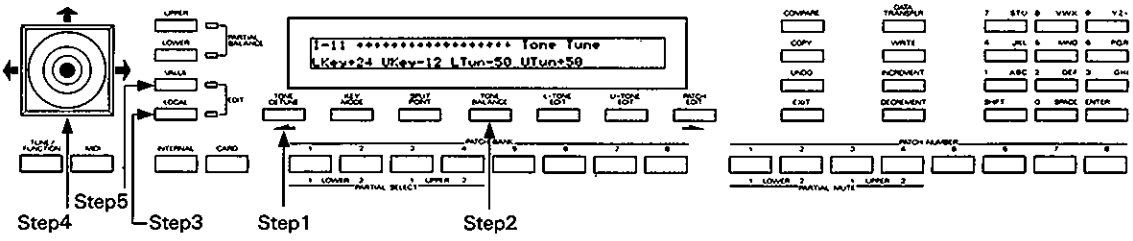


The following are rather special ways of changing values.

a. Local Edit

This function allows you to change the values of two adjacent parameters at the same time with the Joystick. This can be effectively used for simultaneously changing two values which affect one another.

[e.g.] **Tone Detune (Fine Tuning of the Upper and the Lower Tones)**

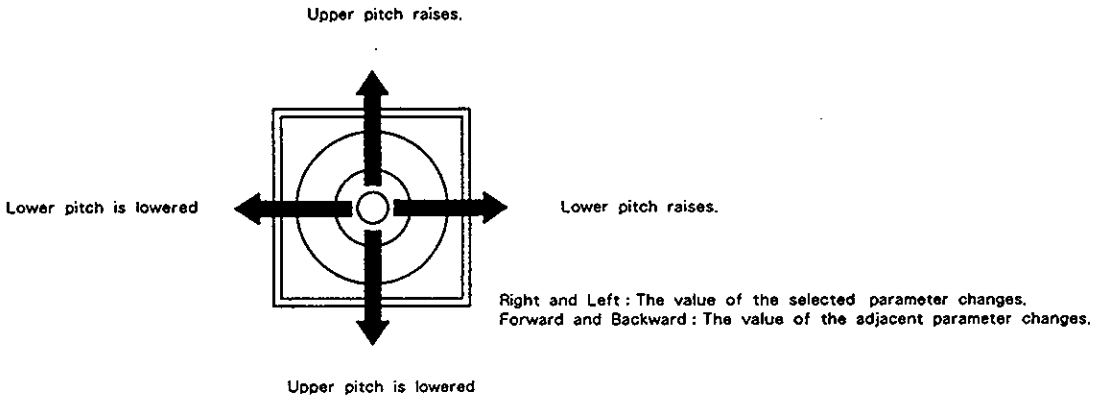


Step 1 Push the far-left Scroll Button (TONE DETUNE) to change to the Display you want.

Step 2 Assign the left parameter (Lower Tone) of the two adjacent parameters with the corresponding Scroll Button.

Step 3 Push the LOCAL Button. (The indicator lights up.)

Step 4 With the Joystick, change the value.



When the Joystick is returned to the center position, the value returns to the original value. The variable range is narrow so that the value can be subtly adjusted.

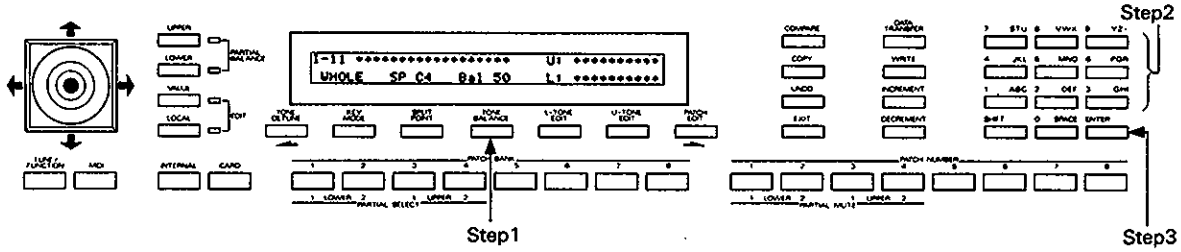
***When there is no parameter to the right of the parameter assigned with the Selector Button in step 2, only the assigned parameter is edited.**

Step 5 To return the Joystick to its narmal function, push the VALUE Button.

b. Ten Key Pad

The Ten Key Pad is mainly used for editing the names of Patches or Tones, but also can set the values of some parameters (factors). The parameters which can be edited with the Ten Key Pad are shown in "Tone Parameters" on page 22.

[e.g.] **Changing the volume balance of two Tones from 50 to 25.**



Step 1 Using the Selector Button, select "Volume Balance".

Step 2 With the Ten Key Pad, select 25.

Step 3 Hit the Enter Key.

*If you fail to push the Enter Key, the value you have set will be erased.

*If you choose an incorrect value, the Display will respond as shown below for a few seconds.

```
Input Data Error
      Cancel ...
```

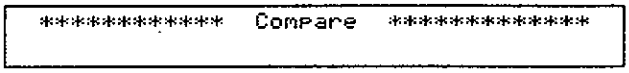
3. USEFUL FUNCTIONS FOR EDITING

a. Compare

While editing a parameter, you may wish to hear the original sound before it was edited. The D–50's Compare function allows you to call the original Patch without erasing the edited sound.

Step 1 **Push the Compare Button once.**

The Display responds as shown below, and the original sound may be heard by playing the keyboard.



Step 2 **Push the Compare Button again, and the edited sound will come back.**

In this Compare mode, the edited sound is temporarily saved, and therefore remains even after calling a different Patch.(This does not apply when the D–50 is turned off.) Hold the Compare Button down while pushing the Shift Key, and the edited sound will be recalled.

***When the Display shows the Compare mode indication, editing cannot be achieved.**

b. Undo

The Undo function returns the current value of the parameter to the original value before being edited. This only refers to the last parameter that has been adjusted.

Simply push the Undo Button.

c. Copy

The Copy function can copy the parameters of a Tone or Block to a different location.

● Tone Copy

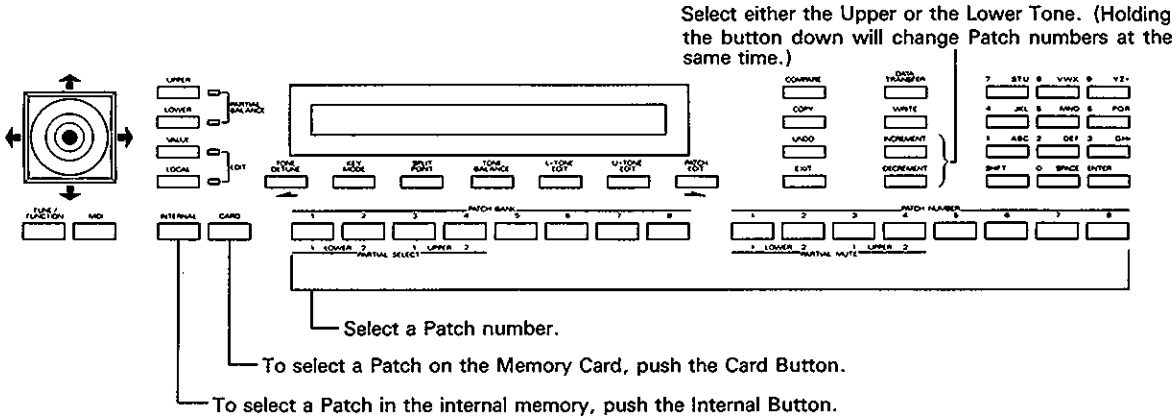
A Tone from another Patch can be copied to the Patch currently selected.

Step 1 **By pushing the appropriate Selector Button, call the Tone Copy Display. (With the aid of the Edit Map, take the following procedure.)**

To copy to the Upper Tone, call the Upper Tone Menu Display, then push the far−right Selector Button.

To copy to the Lower Tone, call the Lower Tone Menu Display, then push the far−right Selector Button.

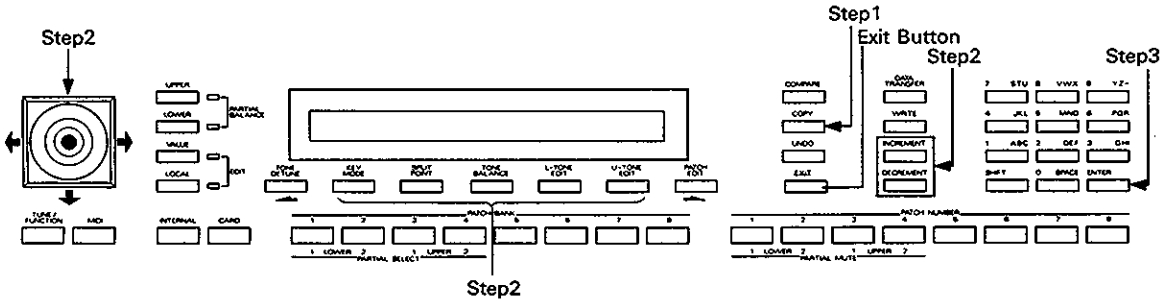
Step 2 **While actually playing the keyboard, select the Tone to be copied (Source Tone), and it will be copied to the Tone of the currently selected Patch.**



At this stage changing the Display will show the Tone Name just copied.

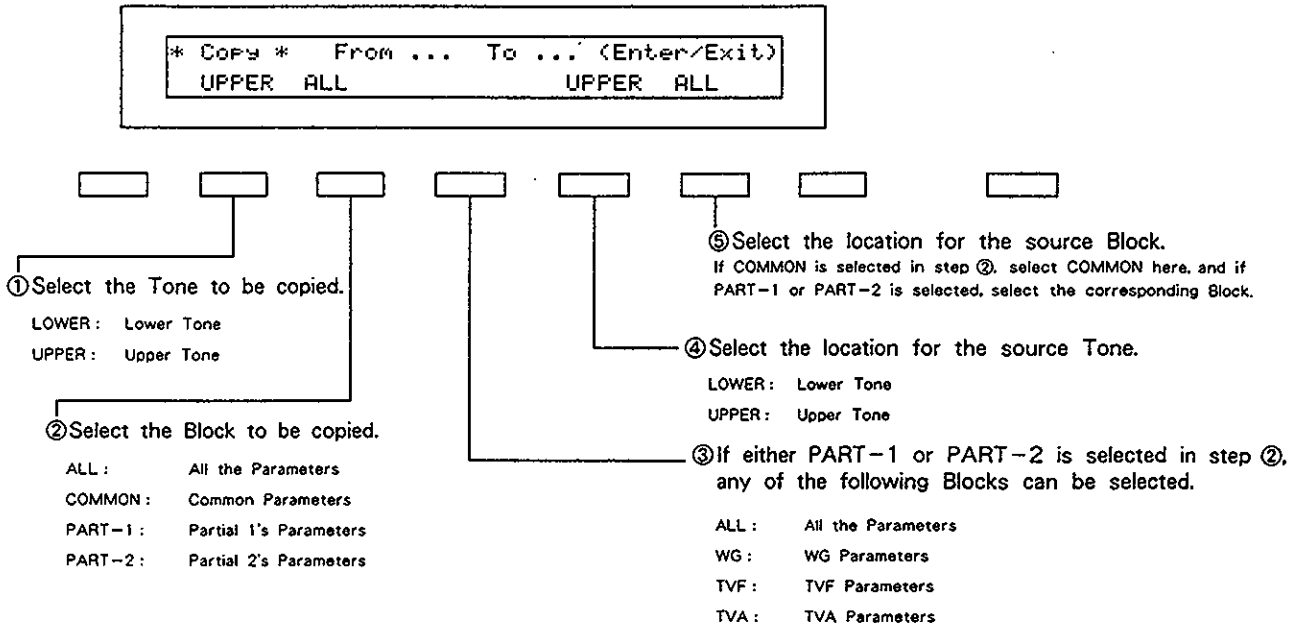
● Block Copy

A group of Tone Parameters can be copied within a Patch.



Step 1 **Push the Copy Button.**

Step 2 **Push the relevant Selector Button first, and select a source Tone, and the Block to be copied, then the destination Tone and its Block using the Joystick or Increment and Decrement Buttons as shown below ① – ⑤.**



To cancel the copying mode, simply push the Exit Button.

Step 3 **Hit the Enter Key.**

When the copy is completed, the Display responds as shown below, then returns to the Play Mode indication.

```
Complete .
```

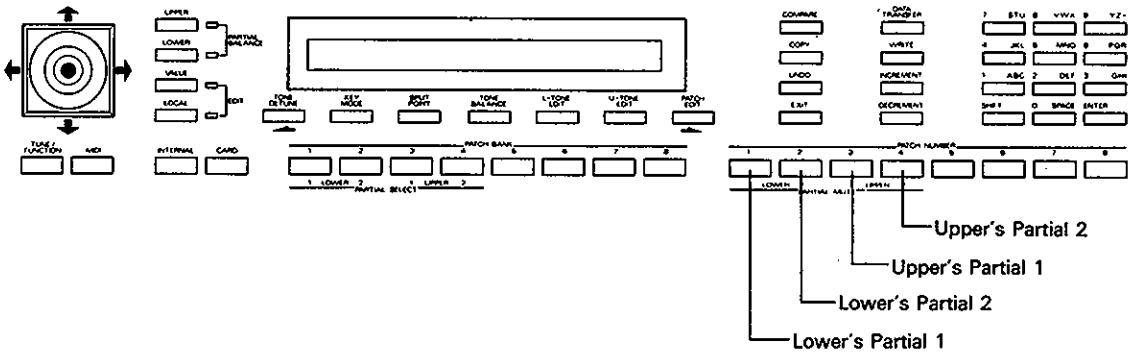
***If you try to copy a Common parameter to a Partial parameter or vice versa, the Display will show the following error message and the copying cannot be done.**

```
Data Mismatch
Cancel ...
```

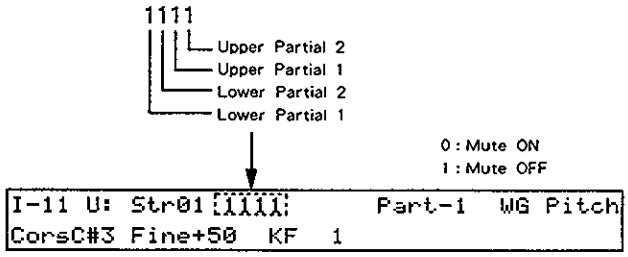
d. Partial Mute

While editing a Partial parameter, any Partial sound can be muted. This function can be done in any Partial Display.

Simply push the Patch Button (1 to 4) that corresponds to the Partial to be muted.



The mute status of all Partials is shown in any Partial Display.

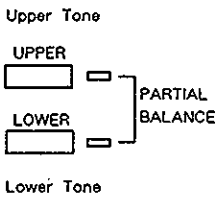


***The Partial Mute setting will be automatically written into memory by taking the Writing Procedure on page 48.**

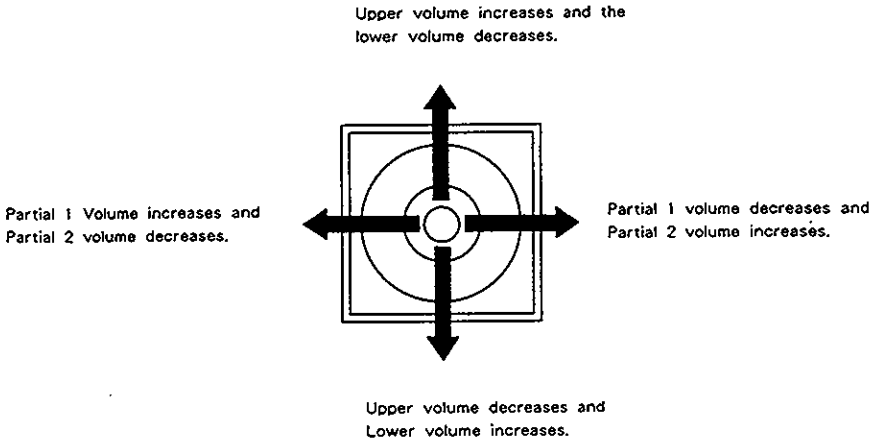
e. Partial Balance

The Partial Balance function can be obtained in any Edit Display or Play Mode Display.(Except for the Edit Display of the Patch Name and Tone Name.)

Step 1 **Select either of the Tones with the Partial Balance Button.**



Step 2 With the Joystick, set the volume balance you like.



Step 3 To return to the usual editing condition, select another parameter or change the Display.

4. SOUND CREATION

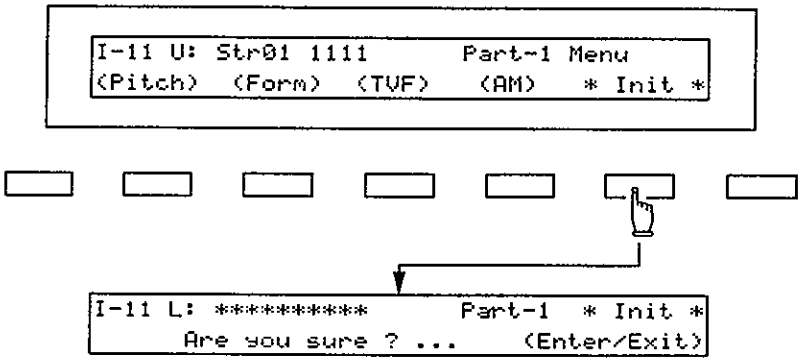
There are two methods of sound creation.

(1) Editing an existing sound.

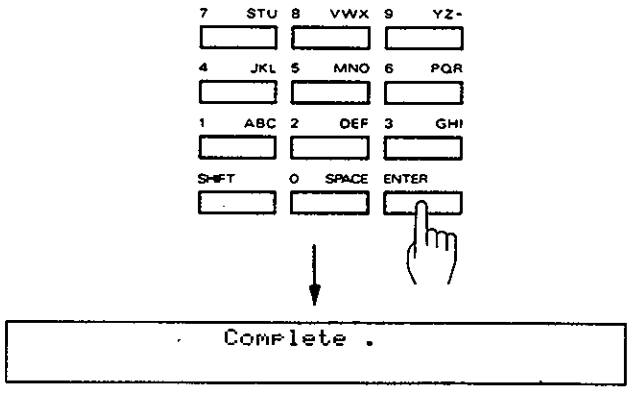
(2) Initializing all the parameters of a certain Partial and then editing the Partial.

How to initialize a Partial :

Step 1 **Call the Menu Display of the Partial to be initialized, then assign "* Init *" with the Selector Button.**



Step 2 **Push the Enter Key, and all the parameters of the selected Partial will be initialized, the Display will show as below for a few seconds.**

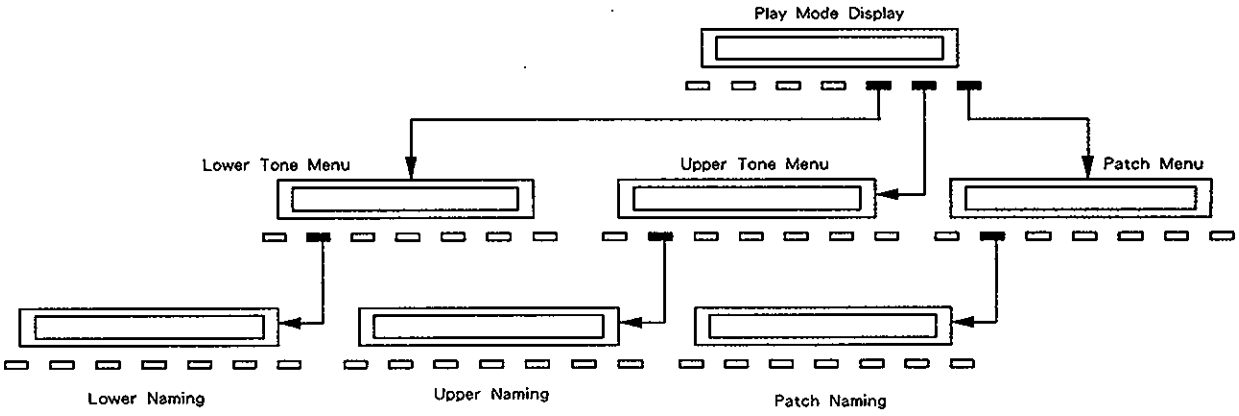


5. NAMING

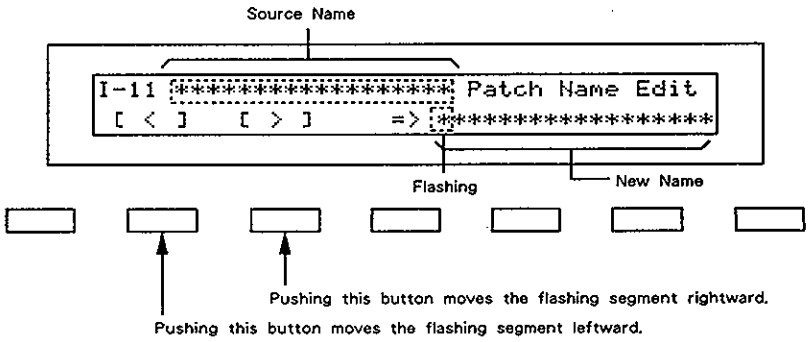
Editing Patch or Tone names is called Naming in this manual.

- A Patch name can have up to 18 letters.
- A Tone name can have up to 10 letters.

Step 1 **Call the Naming Display.**

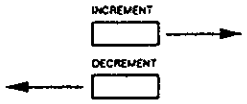


Step 2 **Push the appropriate Selector Button to move to the letter you wish to change, and the letter flashes.**

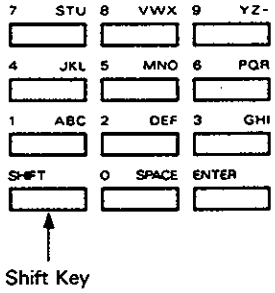


Step 3 **Change the letters by either of the following methods.**

[Using the Joystick/Increment Button, Decrement Button]

Available Letters	SPACE ↓ Hyphen ↓ _ABC ····· XYZabc ····· xyz123 ···· 890-
Joystick	
Increment Button Decrement Button	

[Using the Ten Key Pad]



● **Assigning a number**
Push the key that is marked with the number you want once.

● **Assigning a capital letter**
Push the key that includes the letter you want several times, until the correct letter appears.

● **Assigning a small letter**
While holding the Shift Key down, push the the key that includes the letter you want, (as for capital letters.)

● **Space/Hyphen**
Push the 0 key twice for a space.
Push the 9 key four times for a hyphen.

Step 4 **Repeat Steps 2 and 3 as many times as necessary.**

3 TONE PARAMETERS

This section describes all about the Tone Parameters.

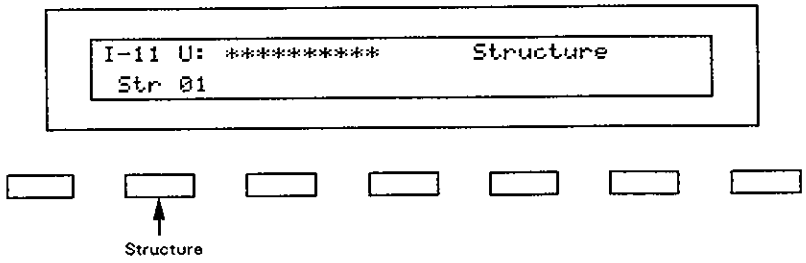
Each Display is numbered as shown in the Edit Map.

***The parameters which can be set with the Ten Key Pad have the 10 key marks as shown below.**
10 key

1. COMMON PARAMETERS

a. Structure

[Display 16]



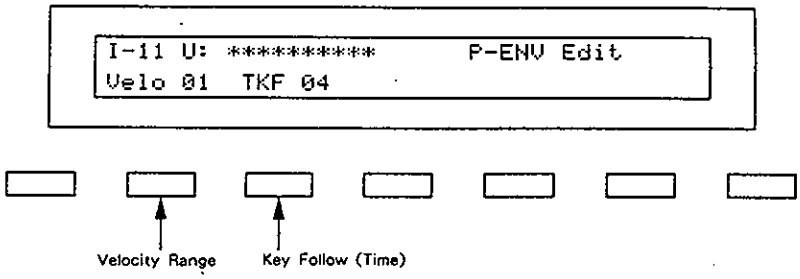
● Structure Number 10 key
Select one of the following seven Structures.

S (Synthesizer Sound Generator)
P (PCM Sound Generator)
R (Ring Modulator)

Structure Number	Partial 1	Partial 2	Combination of two Partials	Block Diagram
1	S	S	Mixture of Partial 1 and Partial 2.	S, S
2	S	S	Mixture of Partial 1 and ring-modulation.	S, S, R
3	P	S	Mixture of Partial 1 and Partial 2.	P, S
4	P	S	Mixture of Partial 1 and ring-modulation.	P, S, R
5	S	P	Mixture of Partial 1 and ring-modulation.	S, P, R
6	P	P	Mixture of Partial 1 and Partial 2.	P, P
7	P	P	Mixture of Partial 1 and ring-modulation.	P, P, R

b. P–ENV

[Display 17]



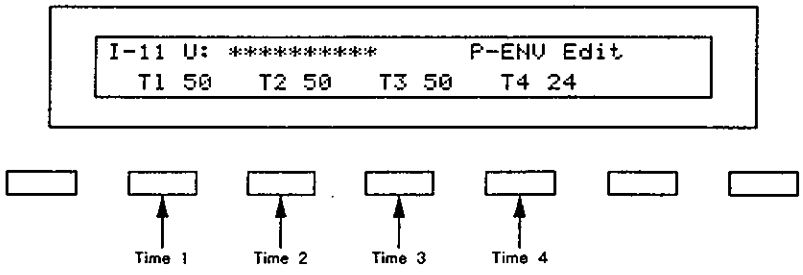
● **Velocity Range** **10 key**

This sets the maximum effect of the velocity that controls the pitch of the P–ENV. 0 to 2 are valid. At higher values, the keybord velocity has a greater, effect on the envelope..

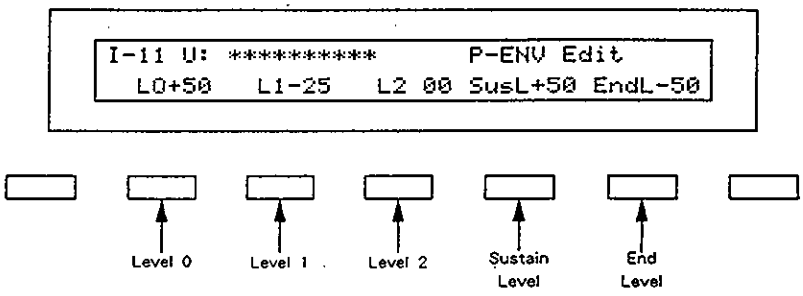
● **Key Follow (Time)** **10 key**

This sets the time of the P–ENV depending on the key played 0 to 4 are valid. Higher values change the time more drastically.

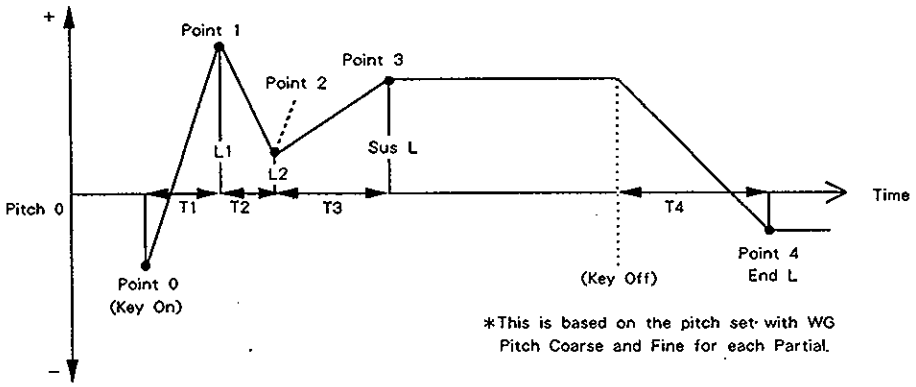
[Display 18]



[Display 19]



The envelope curve is determined by times and levels.



● **Time 1** **10 key**

This sets the time needed from point 0 (the moment the key is pressed) to point 1. 0 to 50 are valid.

● **Level 0**

This sets the pitch created the moment a key is pressed from −50 to +50.

● **Time 2** **10 key**

This sets the time needed from point 1 to point 2. 0 to 50 are valid.

● **Level 1**

This sets the pitch of the point 1 from −50 to +50.

● **Time 3** **10 key**

This sets the time needed from point 2 to point 3. 0 to 50 are valid.

● **Level 2**

This sets the pitch of the point 2 from −50 to +50.

● **Sustain Level**

This sets the pitch of point 3 from −50 to +50.

● **Time 4** **10 key**

This sets the time needed from the moment the key is released to point 4. 0 to 50 are valid.

● **End Level**

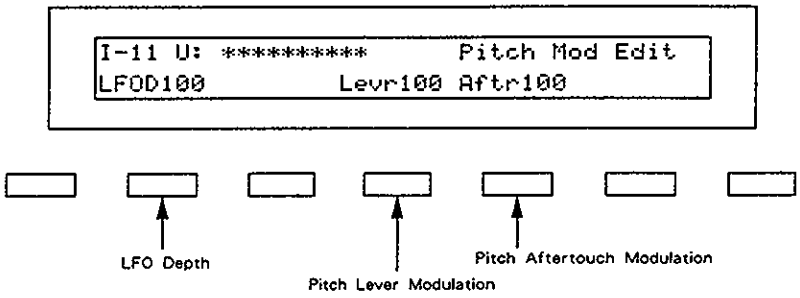
This sets the pitch of point 4 from −50 to +50.

*If the Levels of two adjacent points are set to similar values, the time between these two points may prove to be shorter than what is actually set, or even zero.

Velocity Range	Level	Range
0	+50	+1 octave
	−50	−1 octave
1	+50	+1.5 octave
	−50	−1.5 octave
2	+50	+2 octave
	−50	−2 octave

c. Pitch Modulation

[Display 20]



*Depending on how the LFO in WG modulation (Display 27) is set, the vibrato set here may have no effect at all. Higher values deepen the effect.

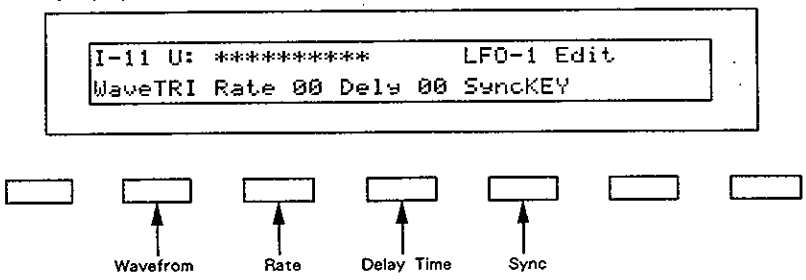
● **LFO Depth** **10 key**
This sets the depth of LFO−1, that controls the WG pitch. 0 to 100 are valid.

● **Pitch Lever Modulation** **10 key**
This sets the sensitivity of the vibrato depth controlled by the bender lever from 0 to 100. Higher values deepen the effect.

● **Pitch Aftertouch Modulation** **10 key**
This sets the sensitivity of the vibrato depth controlled by aftertouch from 0 to 100. Higher values deepen the vibrato effect.

d. LFO

[Display 21-23]



***The parameters of LFO-2 (Display 22) and LFO-3 (Display 23) can be set like LFO-1, except for a few parameters.**

● Waveform

This selects the waveform of the LFO.

Display	Waveform
TRI (Triangle)	
SAW (Sawtooth)	
SQU (Square)	
RND (Random)	Waveform changes randomly.

● Rate 10 key

This sets the rate (frequency) of the LFO from 0 to 100. Higher values quicken the rate.

● Delay Time 10 key

This sets the time needed for the LFO to appear, from the moment a key is pressed. 0 to 100 are valid. Higher values increase the delay time.

● Sync

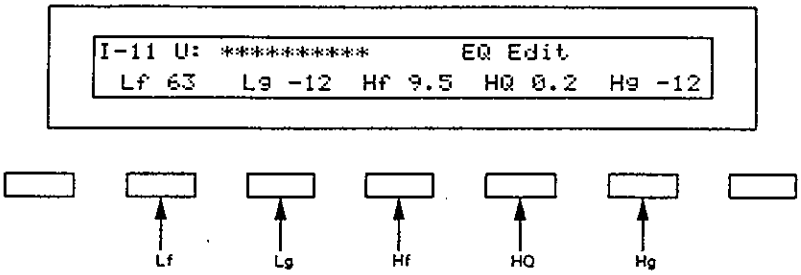
This selects the timing of the LFO oscillation as follows.

Display	Description
OFF	LFO does not sync to the keyboard.
ON	When a key is played after all keys have been released, the LFO begins its wave generating process form the beginning.
KEY	LFO begins its wave generation form the beginning each time a new key is played.

*For LFO-2 and LFO-3, "KEY" cannot be selected.

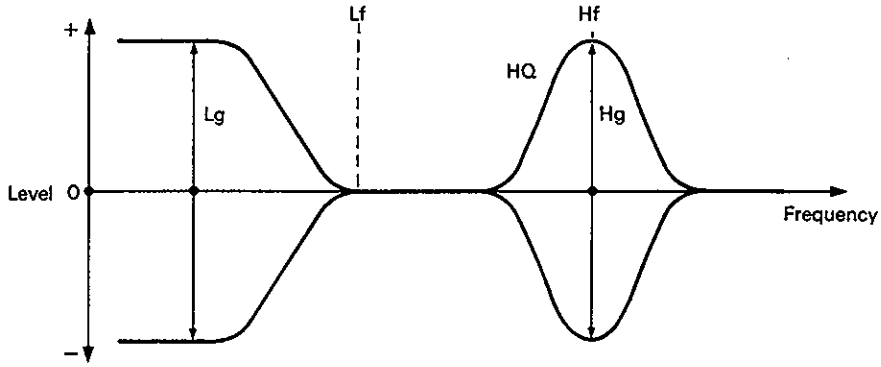
e. Equalizer

[Display 24]



In the equalizer section, the frequency characteristic of the sound can be modified.

The Equalizer consists of the following parameters.

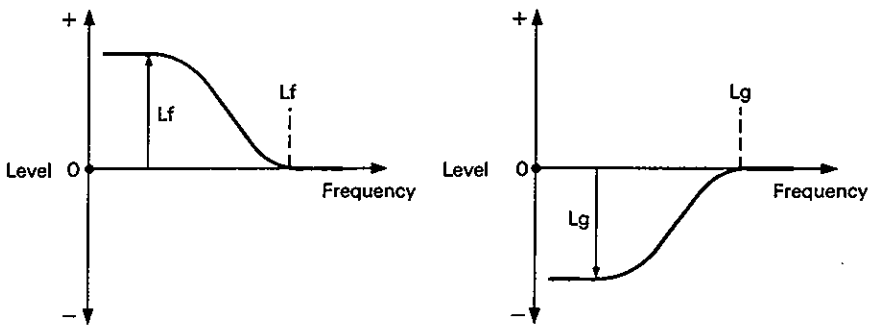


● **Lf**

This sets the frequency where the gain is altered in the low to middle range. 63Hz to 840Hz (16 points) are valid.

● **Lg**

This sets the gain of the lower Frequencies in 1dB steps, from −12 to +12dB (25 points). "+" settings raise the gain, and "−" settings lower it.

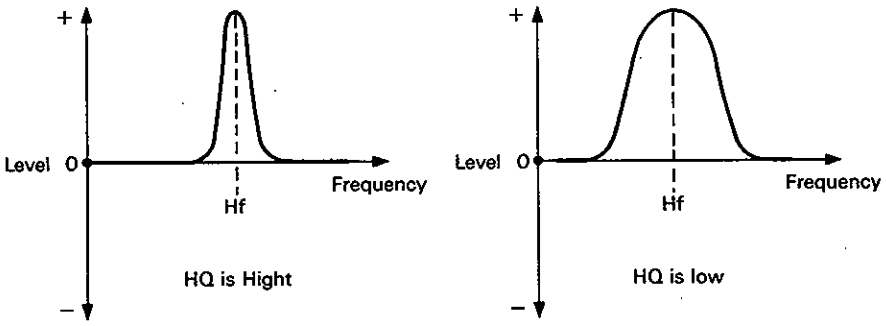


● **Hf**

This sets the frequency where the gain is altered in the middle to high range, from 250Hz to 9.5kHz (22 points).

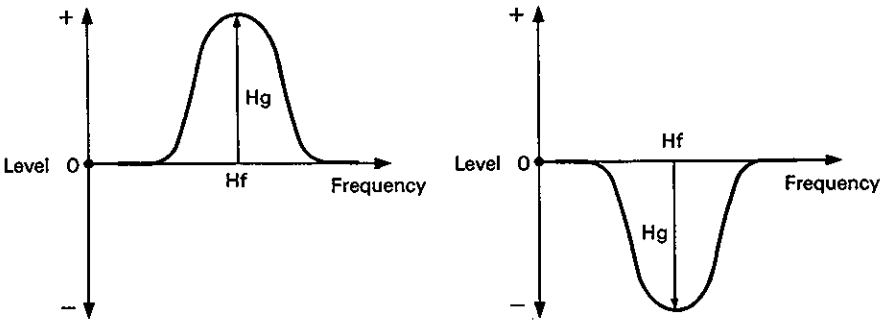
● **HQ**

This sets the width of the frequency band where the gain is boosted or cut from 0.3 to 6.0 (9 points). With a higher value, the frequency band is narrower, and vice versa.



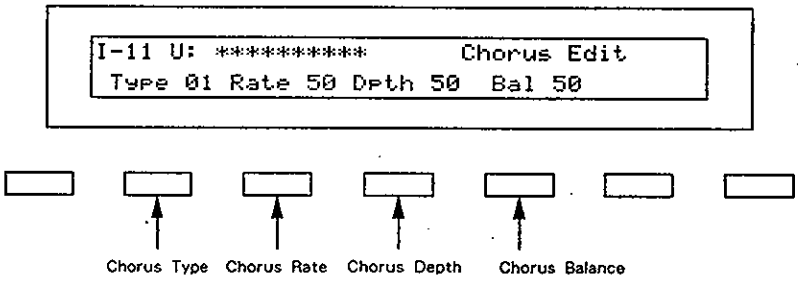
● **Hg**

This sets the gain of the Hf frequency from −12 to +12dB (in 1dB step, 25 points). "+" settings raise the gain and "−" settings lower it.



f. Chorus

[Display 25]



● Chorus Type **10 key**

This selects one of the 8 basic chorus effects.

1	Chorus 1
2	Chorus 2
3	Flanger 1
4	Flanger 2
5	Feedback Chorus
6	Tremolo
7	Chorus Toremolo
8	Dimension

● Chorus Rate **10 key**

This sets the rate of the chorus effect, from 0 to 100. Higher values quicken the rate.

● Chorus Depth **10 key**

This sets the depth of the chorus effect, from 0 to 100. Higher values deepen the effect.

● Chorus Balance **10 key**

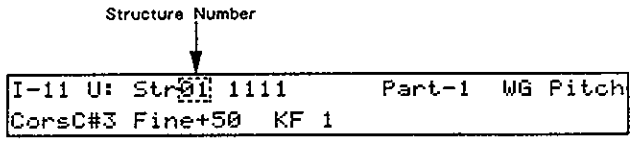
This sets the volume balance of the chorus sound and normal sound, from 0 to 100.

100 Only the chorus sound is heard.
〜
50 Chorus sound = Normal sound
〜
0 Only the normal sound is heard.

2. PARTIAL PARAMETERS

[Restriction of the available parameters caused by Structure]

Depending on what Structure is used, the available parameters may be different. So, first check the Structure number shown in the Partial Display, then set the parameters.



(1) In some Structures, some parameters included in a Partial that uses a PCM sound generator are invalid. The following mark is shown when the parameters apply even for PCM sounds.

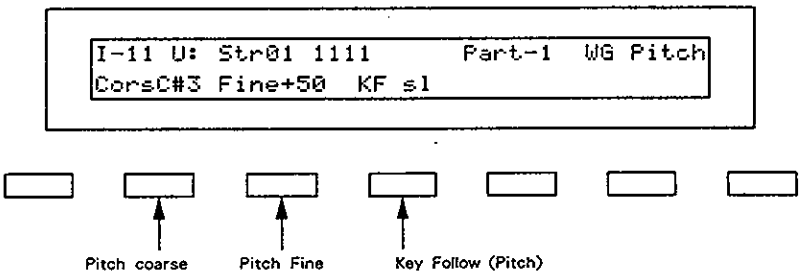
PCM

(2) In some Structures which use Ring Modulation, some parameters in Partial 2 will automatically become the same as for Partial 1. Therefore, the values shown in the Display are irrelevant with the actual values. The following mark is shown for such parameters.

Ring ☒

a. WG Pitch

[Display 26]



● **Pitch Coarse** PCM

This sets the standard pitch of a Partial in semi-tone steps from C1 to C7.

＊The standard pitch is the pitch at C4 (middle C) key.

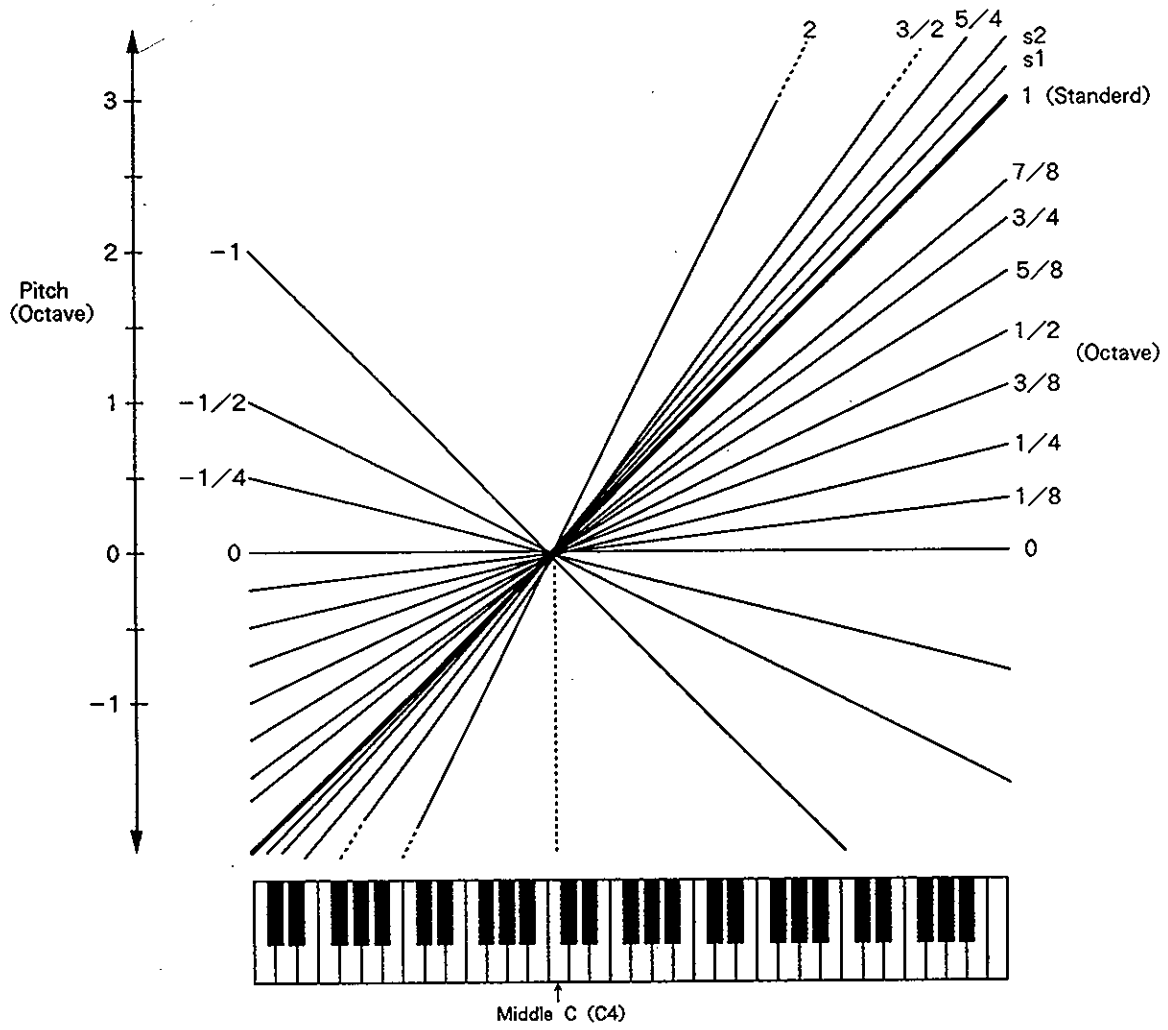
● **Pitch Fine** PCM

The standard pitch can be altered over about ±50cents from −50 to +50.

● **Key Follow (Pitch)** PCM

Usually, the keyboard of a synthesizer assigns a semi-tone to each key. This parameter can change the pitch ratio as shown below.

The value represents how many octaves are changed over 12 keys.



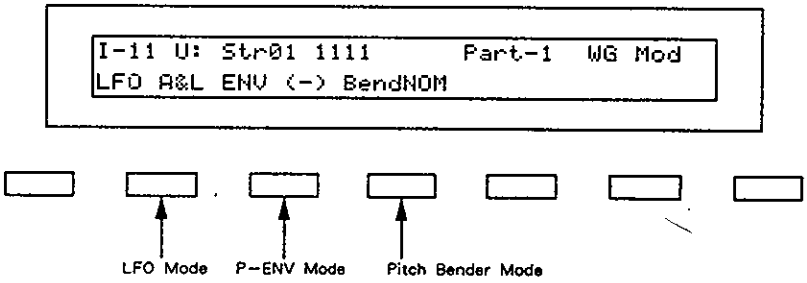
***s1 or s2 may be selected for slightly stretching octaves.**

s1 : Pitch 1 cent higher than one octave.

s2 : Pitch 5 cents higher than one octave.

b. WG Modulation

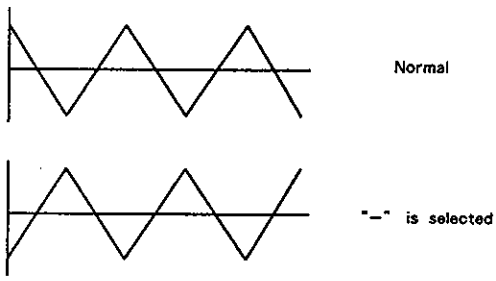
[Display 27]



●LFO Mode PCM

This selects one of the following four vibrato modes.

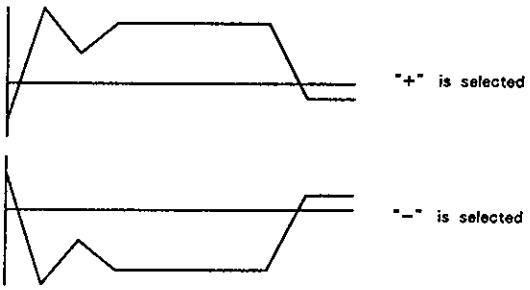
Display	Description
OFF	No vibrato is obtained.
(+)	Vibrato is on.
(−)	Vibrato is on but inverted.
A&L	Vibrato can be obtained only by Aftertouch and Bender Lever.



●P−ENV Mode PCM

This selects one of the following three modes, determining how the pitch is controlled by P−ENV.

Display	Description
OFF	No alteration.
(+)	Pitch changes with the set P−ENV curve.
(−)	Pitch changes with the P−ENV curve inverted.



● **Bender Mode** PCM

This selects how the pitch is controlled by the bender lever as follows.

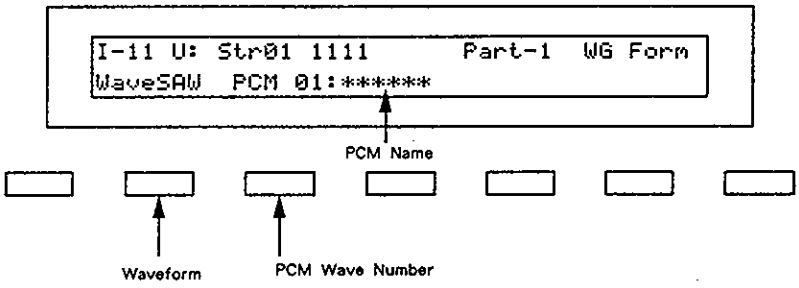
Diaplay	Description
OFF	No pitch alteration by moving the Lever right or the left.
KEY	Pitch changes within the Bender range, set in Patch Factors, plus Key Follow (Pitch) of WG. (See the example shown right.)
NOM	Pitch changes within the Bender range, set in Patch Factors.

[Example]

If the Bender renge is set to 12 (1 octave), and the Key Follow (Pitch) of WG is set to 2, the maximum pitch change caused by moving the Bender lever is 2 octaves. When the Key Follow (Pitch) of WG is set to zero, there is no pitch change caused by the Bender lever.

c. WG Waveform

[Display 28]



● **Waveform**

This selects the waveform of the synthesizer sound generator.

Display	Waveform
SQU (Square)	
SAW (Sawtooth)	

***A sawtooth waveform is produced by processing a square waveform at the TVF, that is, all the waveforms are square at WG even when a sawtooth is selected.**

● **PCM Wave Number** PCM 10 key

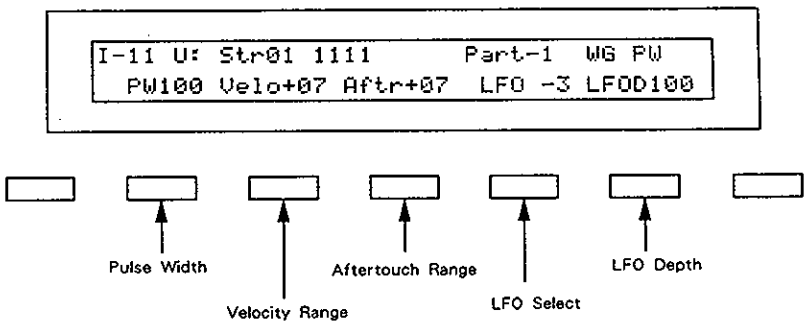
This selects one of the 100 different sampled waves of the PCM sound generator. Each sample is named (PCM name) as shown on the next page :

- 1~47 (One-Shot sounds are programmed.)
- 48~76 (Looped sounds are programmed.)
- 77~100 (Some of the sounds 1 to 76, are combined and looped.)

Number	Display	PCM Name	Number	Display	PCM Name
1	Marmba	Marimba	51	EP_lp1	Electric Piano (Loop 1)
2	Vibes	Vibraphone	52	EP_lp2	Electric Piano (Loop 2)
3	Xylo1	Xylophone 1	53	CLAV1p	Clavi (Loop)
4	Xylo2	Xylophone 2	54	HC_lp	Harpsichord (Loop)
5	Log_Bs	Log Bass	55	EB_lp1	Electric Bass (Loop 1)
6	Hammer	Hammer	56	AB_lp	Acoustic Bass (Loop)
7	JpnDrm	Japanese Drum	57	EB_lp2	Electric Bass (Loop 2)
8	Kalmba	Kalimba	58	EB_lp3	Electric Bass (Loop 3)
9	Pluck1	Pluck 1	59	EG_lp	Electric Guitar (Loop)
10	Chink	Chink	60	CELLlp	Cello (Loop)
11	Agogo	Agogo	61	VIOLlp	Violine (Loop)
12	3angle	Triangle	62	Reedlp	Leed (Loop)
13	Bells	Bell's	63	SAXlp1	Sax (Loop 1)
14	Nails	Nail File	64	SAXlp2	Sax (Loop 2)
15	Pick	Pick	65	Aah_lp	Aah (Loop)
16	Lpiano	Low Piano	66	Ooh lp	Ooh (Loop)
17	Mpiano	Mid Piano	67	Manlp1	Male (Loop 1)
18	Hpiano	High Piano	68	Spect1	Spectrum 1 (Loop)
19	Harpsi	Harpsichord	69	Spect2	Spectrum 2 (Loop)
20	Harp	Harp	70	Spect3	Spectrum 3 (Loop)
21	OrgPrc	Organ Percussion	71	Spect4	Spectrum 4 (Loop)
22	Steel	Steel Strings	72	Spect5	Spectrum 5 (Loop)
23	Nylon	Nylon Strings	73	Spect6	Spectrum 6 (Loop)
24	Eguit1	Electric Guiter 1	74	Spect7	Spectrum 7 (Loop)
25	Eguit2	Electric Guitar 2	75	Manlp2	Male (Loop 2)
26	Dirt	Dirty Guitar	76	Noise	Noise (Loop)
27	P_Bass	Pick Bass	77	Loop01	
28	Pop	Pop Bass	78	Loop02	
29	Thump	Thump	79	Loop03	
30	Uprite	Upright Bass	80	Loop04	
31	Clarnt	Clarinet	81	Loop05	
32	Breath	Breath	82	Loop06	
33	Steam	Steamer	83	Loop07	
34	FluteH	High Flute	84	Loop08	
35	FluteL	Low Flute	85	Loop09	
36	Guiro	Guiro	86	Loop10	
37	IndFlt	Indian Flute	87	Loop11	
38	Harmo	Flute Harmonics	88	Loop12	
39	Lips1	Lips 1	89	Loop13	
40	Lips2	Lips 2	90	Loop14	
41	Trumpt	Trumpet	91	Loop15	
42	Bones	Trombones	92	Loop16	
43	Contra	Contrabass	93	Loop17	
44	Cello	Cello	94	Loop18	
45	VioBow	Violin Bow	95	Loop19	
46	Violns	Violins	96	Loop20	
47	Pizz	Pizzicart	97	Loop21	
48	Drawbr	Draw bars (Loop)	98	Loop22	
49	Horgan	High Organ (Loop)	99	Loop23	
50	Lorgan	Low Organ (Loop)	100	Loop24	

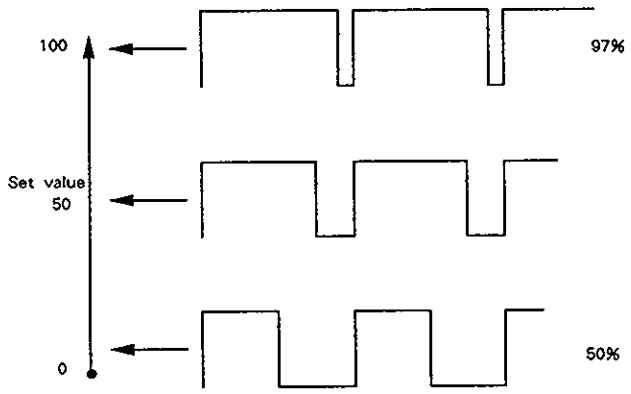
d. WG Pulse Width

[Display 29]



●Pulse Width **10 key**

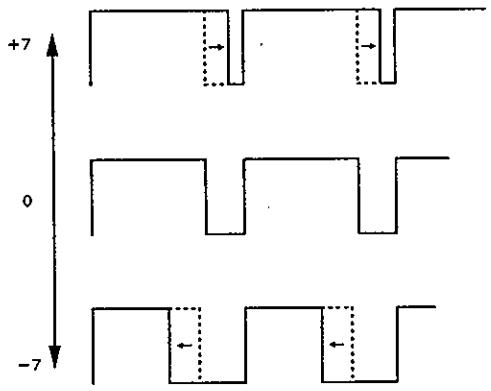
A square waveform has exactly the same width, up and down but a Pulse Width waveform has different widths. The ratio of upper width to lower is called pulse width. 0 to 100 are valid for setting the pulse width. Depending on the set pulse width value, the harmonic content of the sound changes greatly.



***When a sawtooth is selected with WG Waveform, pulse width 50% raises the pitch by an octave.**

●Velocity Range

This sets the senitivity of the velocity that controls the pulse width from −7 to +7. With "−" values, the pulse width becomes smaller by playing the keyboard harder, and with "+" values, the pulse width becomes wider by playing the keyboard harder.



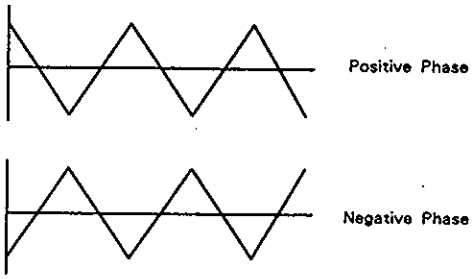
● **Aftertouch Range** Ring ☒

This sets the sensitivity of the aftertouch that controls the pulse width from −7 to +7. With "−" values, the pulse width becomes smaller with stronger aftertouch, and with "+" values, the pulse width becomes wider with stronger aftertouch.

● **LFO Select** Ring ☒

Pulse Width Modulation (PWM) means changing the pulse width periodically. LFO Select decides which of the LFO's is to be used for modulating the pulse width.

Display	LFO (Phase)
+1	LFO−1 (+)
−1	LFO−1 (−)
+2	LFO−2 (+)
−2	LFO−2 (−)
+3	LFO−3 (+)
−3	LFO−3 (−)

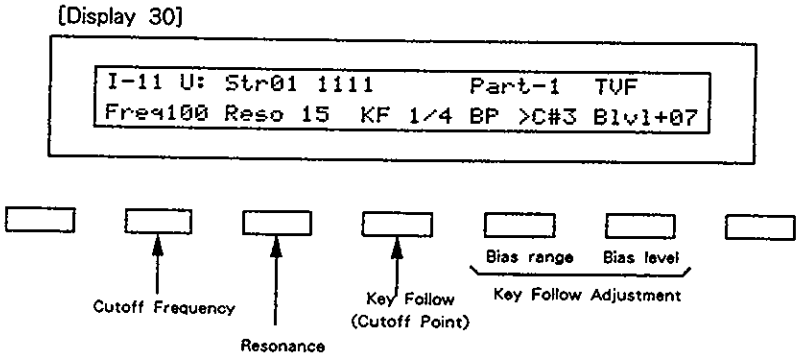


● **LFO Depth** Ring ☒ 10 key

This sets the depth of the PWM from 0 to 100. Higher values deepen the effect.

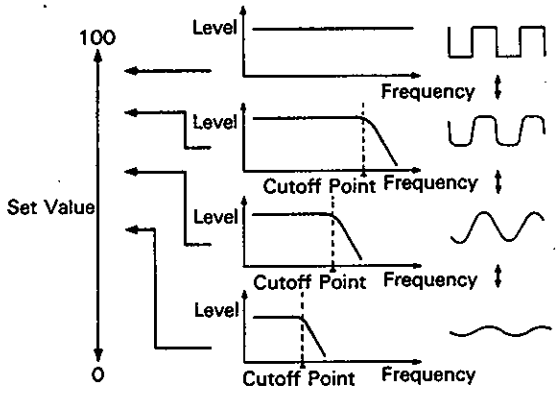
e. TVF

[Display 30]



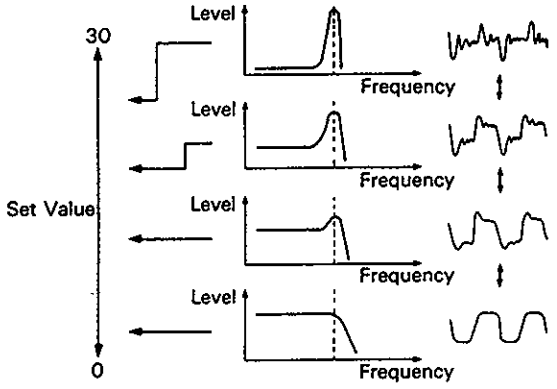
● **Cutoff Frequency** **10 key**

This sets the cutoff point of the TVF from 0 to 100. As you lower the value, higher frequencies are removed and the waveform gradually become an approximation of a sine wave, then the sound will finally fade out.



● **Resonance** **10 key**

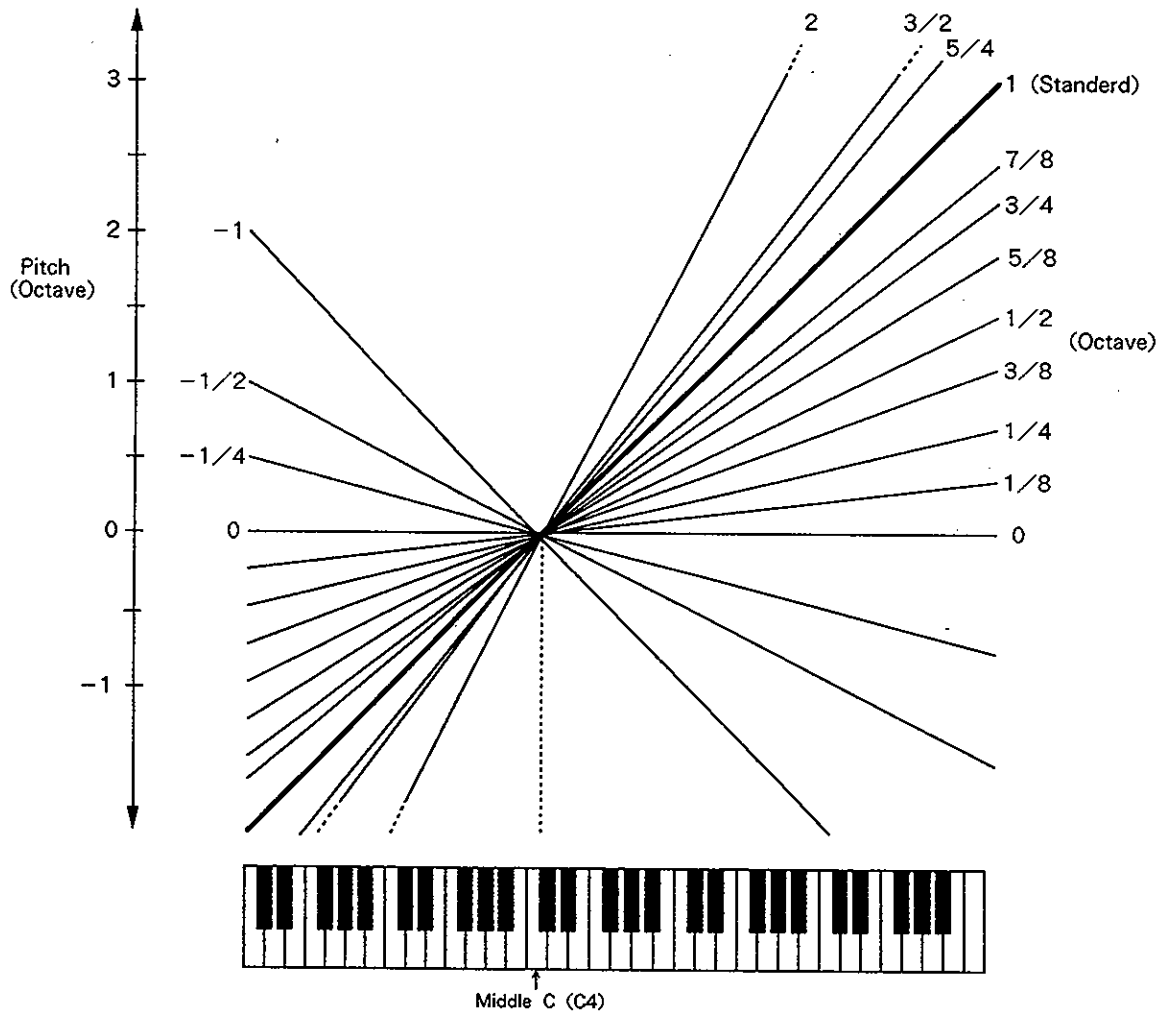
This boosts the cutoff point from 0 to 30. As you increase the value, specific harmonics are emphasized and the sound will become more unusual, more electronic in nature.



● **Key Follow (Cutoff Point)**

Key Follow can change the cutoff point depending on the key played.

Just like the Key follow of WG pitch, the value represents how many octaves change over 12 keys.



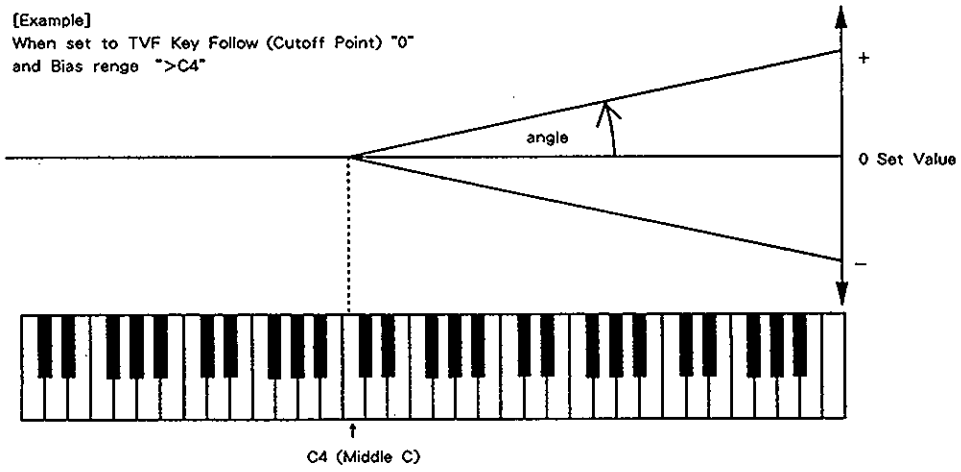
[Key Follow Adjustment]

You can add a further change (=bias level) to the Key Follow curve, and set the range (bias range) where the bias level is valid.

●The bias range is where the bias level is valid on the keyboard. It can be set with the bias point (where the bias range begings) and bias direction (< or >) from <A1 to <C7 and from >A1 to >C7 in semi−tone steps.

[e.g.] **>C4 : The bias level is only valid on the keyboard above the C4 key.**
<C4 : The bias level is only valid on the keyboard below the C4 key.

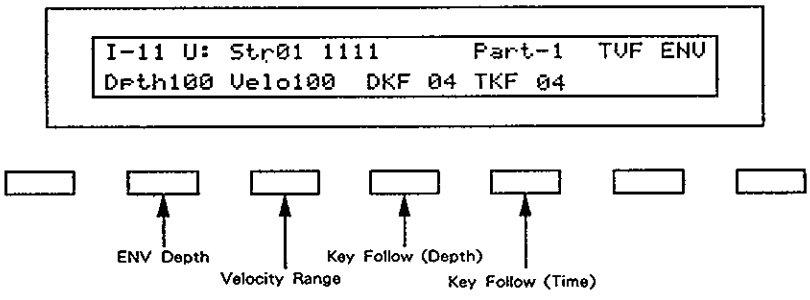
●The bias level can be set from −7 to +7. "+" values raise the curve, and "−" value lower the curve.



＊The curve in the picture represents the Key Follow value with the bias level added.

f. TVF ENV

[Display 31]



● **ENV Depth** **10 key**

This sets the depth of the TVF ENV modulation that changes the TVF Cutoff Point. 0 to 100 are valid. Higher values deepen the effect.

● **Velocity Range** **10 key**

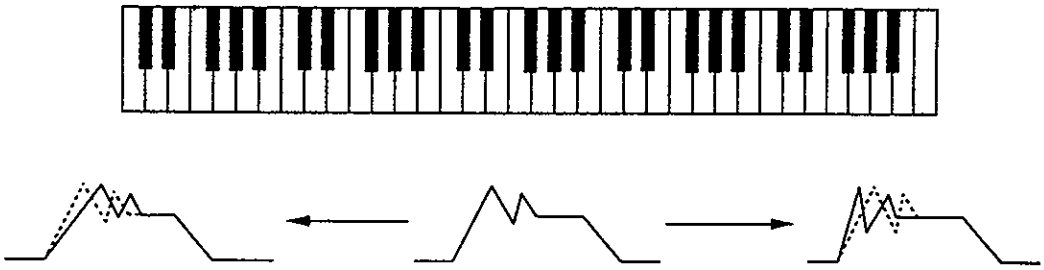
This sets the sensitivity of the velocity that controls the depth of the TVF ENV. 0 to 100 are valid. At higher values, the effect is deeper by playing harder.

● **Key Follow (Depth)** **10 key**

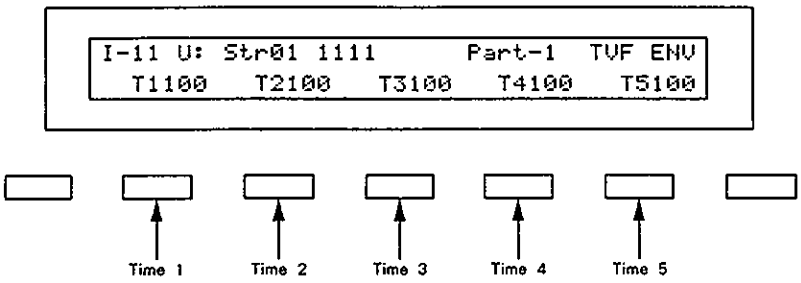
This can change the TVF ENV depth depending on the key played. 0 to 4 are valid, higher values change the depth more drastically.

● **Key Follow (Time)** **10 key**

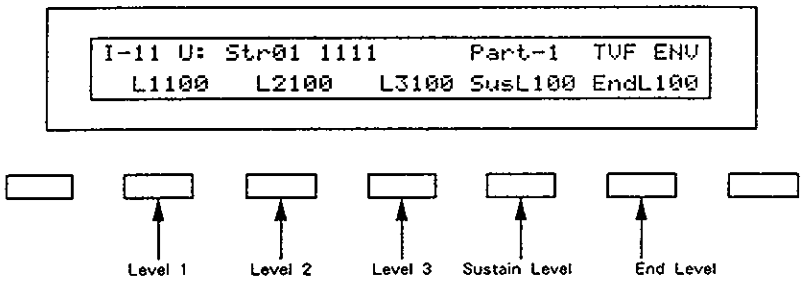
This can change the time of the TVF ENV depending on the key played. 0 to 4 are valid, higher values change the time more drastically.



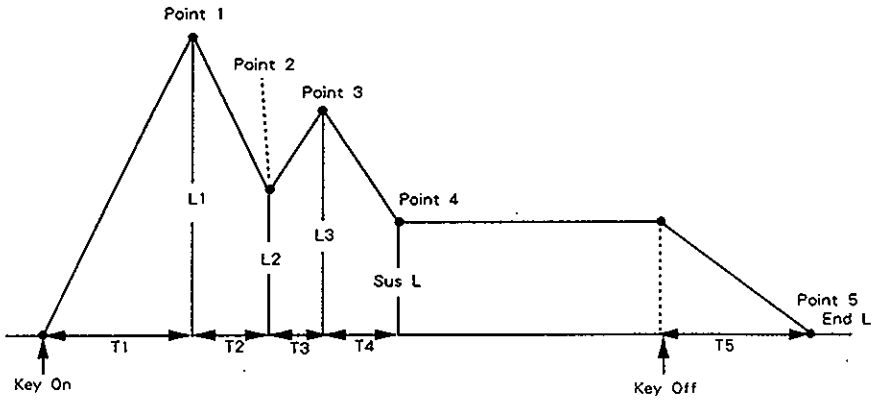
[Display 32]



[Display 33]



An envelope curve is determined by times and levels.



● **Time 1** **10 key**

This sets the time needed to reach point 1 from the moment the key is pressed. 0 to 100 are valid.

● **Level 1** **10 key**

This sets the level of point 1 from 0 to 100.

● **Time 2** **10 key**

This sets the time needed to reach point 2 from point 1. 0 to 100 are valid.

● **Level 2** 10 key
This sets the level of point 2 from 0 to 100.

● **Time 3** 10 key
This sets the time needed to reach point 3 from point 2. 0 to 100 are valid.

● **Level 3** 10 key
This sets the level of point 3 from 0 to 100.

● **Time 4** 10 key
This sets the time needed to reach point 4 from point 3. 0 to 100 are valid.

● **Sustain Level** 10 key
This sets the level of point 4 from 0 to 100.

● **Time 5** 10 key
This sets the time needed to reach point 5 from the moment the key is released. 0 to 100 are valid.

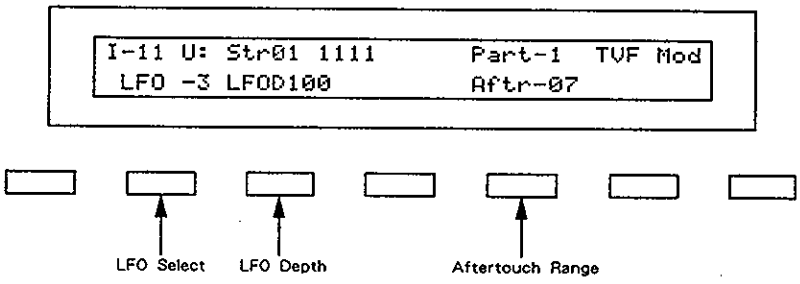
● **End Level**
To lower the level after releasing the key, set this to 0, and to raise the level, set it to 100.

***The End Level is retained until you release and play the key again.**

***If the Levels of two adjacent points are set to similar values, the time between these two points may prove to be shorter than what is actually set, or even zero.**

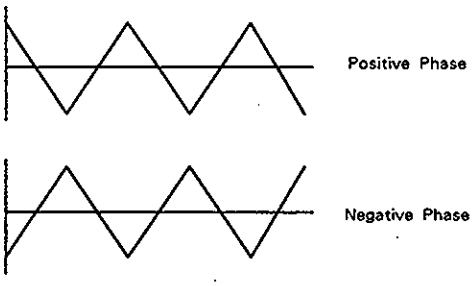
g. TVF Modulation

[Display 34]



● **LFO Select** Ring ☒
This selects the LFO that changes the cutoff point periodically (creating growl effects).

Display	LFO (Phase)
+1	LFO-1 (+)
-1	LFO-1 (-)
+2	LFO-2 (+)
-2	LFO-2 (-)
+3	LFO-3 (+)
-3	LFO-3 (-)



● **LFO Depth** Ring 10 key

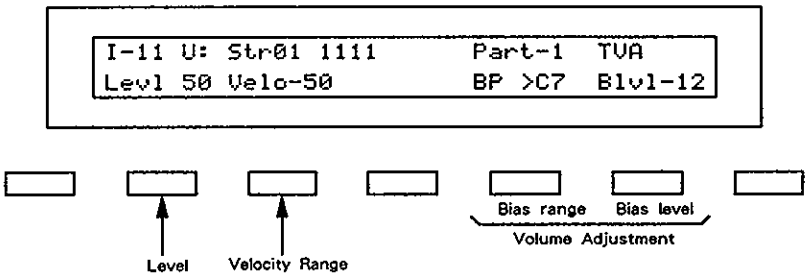
This sets the depth of a growl effect from 0 to 100. Higher values deepen the effect.

● **Aftertouch Range** Ring

This sets the sensitivity of the aftertouch that controls the cutoff point from −7 to +7. "−" values lower the cutoff point by stronger Aftertouch, and "+" values raise it.

h. TVA

[Display 35]



● **Level** PCM 10 key

This sets the volume of a Partial from 0 to 100.

***Higher values may cause sound distortion. If so, lower the value.**

***Even when the Level is set to zero here, the sound may not be completely muted if the TVA ENV curve is high.**

● **Velocity Rnage** PCM

This sets the sensitivity of the velocity that controls the volume of the sound. −50 to +50 are valid. "−" values lower the level by harder playing, and "+" values raise the level by harder playing.

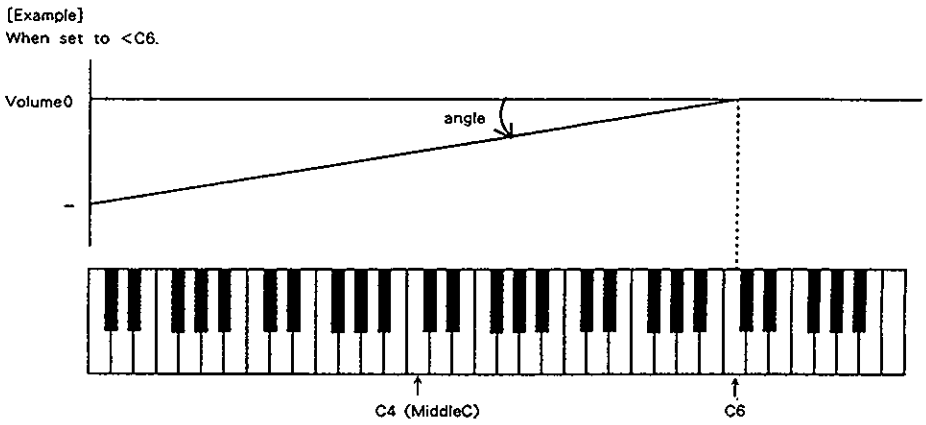
[Volume Adjustment] PCM

You can change the overall volume of the keyboard (=bias level) from the set level, and set the range (bias range) where the bias level is valid.

●The bias range is where the bias level is valid on the keyboard. It can be set with the bias point (where the bias range begins) and bias direction (< or >) from <A1 to <C7 and from >A1 to >C7 in semi-tone steps.

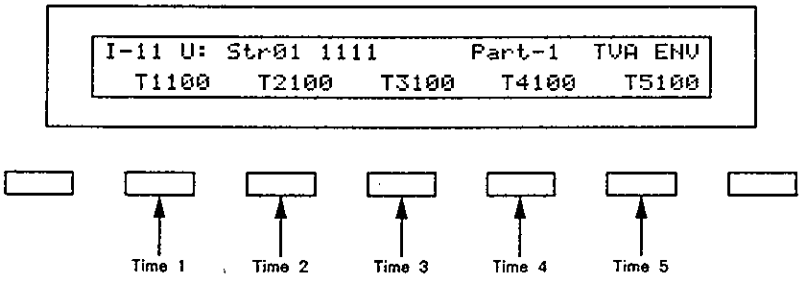
[e.g.] **>C4 : The bias level is only valid on the keyboard above the C4 key.**
<C4 : The bias level is only valid on the keyboard below the C4 key.

●The curve (bias level) can be set from −12 to +0. Lower values make the curve steeper.

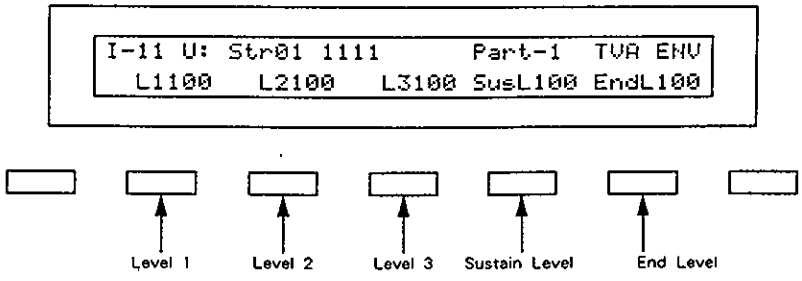


i. TVA ENV

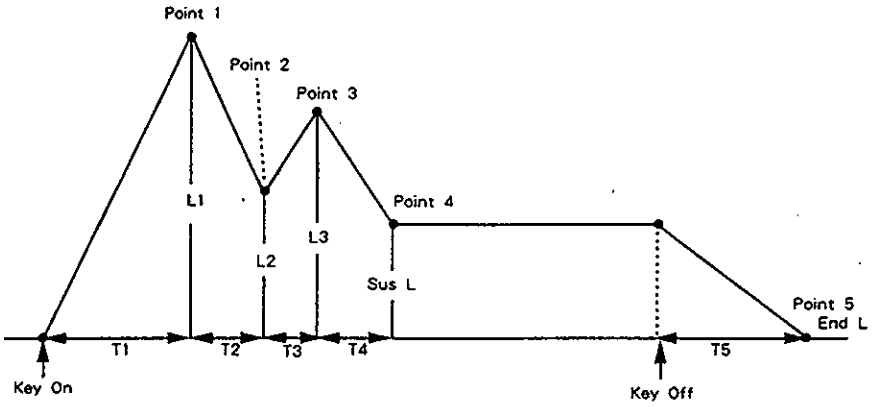
[Display 36]



[Display 37]



An envelope curve is determined by times and levels.



● **Time 1** PCM 10 key
This sets the time needed to reach point 1 from the moment the key is pressed. 0 to 100 are valid.

● **Level 1** PCM 10 key
This sets the level of point 1 from 0 to 100.

● **Time 2** PCM 10 key
This sets the time needed to reach point 2 from point 1. 0 to 100 are valid.

● **Level 2** PCM 10 key
This sets the level of point 2 from 0 to 100.

● **Time 3** PCM 10 key
This sets the time needed to reach point 3 from point 2. 0 to 100 are valid.

● **Level 3** PCM 10 key
This sets the level of point 3 from 0 to 100.

● **Time 4** PCM 10 key
This sets the time needed to reach point 4 from point 3. 0 to 100 are valid.

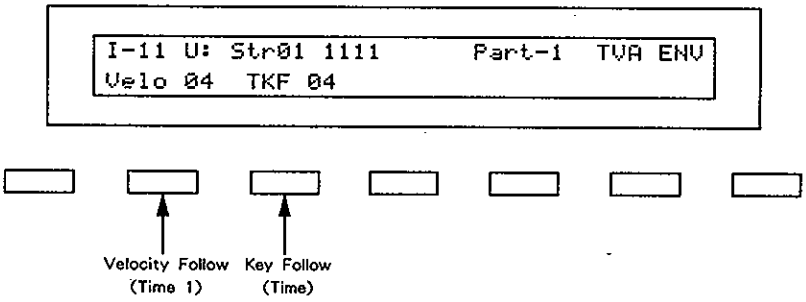
● **Sustain Level** PCM 10 key
This sets the level of point 4 from 0 to 100.

● **Time 5** PCM 10 key
This sets the time needed to reach point 5 from the moment the key is released. 0 to 100 are valid.

● **End Level** PCM
To lower the level after releasing the key, set this to 0, and to raise the level, set it to 100. The End Level remains until the key is released and played again. That is, at a value of 100, the sound remains. However, the PCM Sound Generator's One-shot sounds do not remain even when set to 100.

***If the Levels of two adjacent points are set to similar values, the time between these two points may prove to be shorter than what is actually set, or even zero.**

[Display 38]

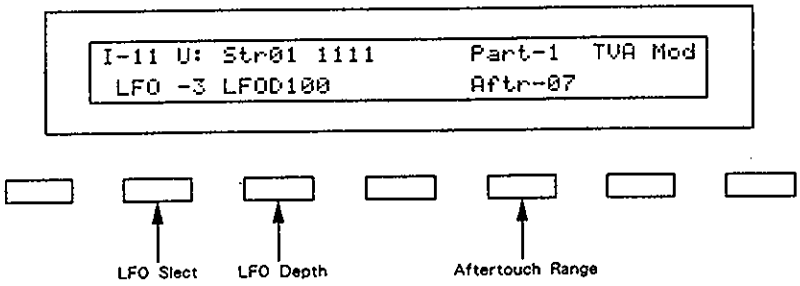


● **Velocity Follow (Time 1)** PCM 10 key
This sets the sensitivity of the velocity that controls the "Time 1" of the TVA ENV from 0 to 4. Increasing the sensitivity shortens "Time 1", by stronger playing.

● **Key Follow (Time)** PCM 10 key
This can change the time of the TVA ENV depending on the key played. 0 to 4 are valid. Higher values change the time more drastically.

j. TVA Modulation

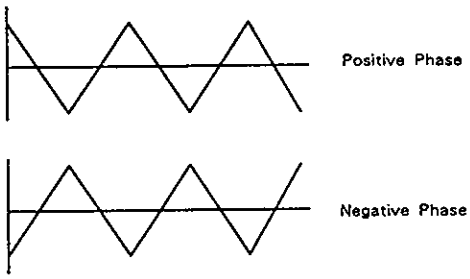
[Display 39]



● **LFO Select** Ring ☒

This selects the LFO that changes the volume periodically (tremolo effects).

Display	LFO (Phase)
+1	LFO-1 (+)
-1	LFO-1 (-)
+2	LFO-2 (+)
-2	LFO-2 (-)
+3	LFO-3 (+)
-3	LFO-3 (-)



● **LFO Depth** Ring ☒ 10 key

This sets the depth of the tremolo effect from 0 to 100. Higher values deepen the effect.

● **Aftertouch Range** Ring ☒

This sets the sensitivity of the aftertouch that controls the volume from −7 to +7. "−" values lower the volume by stronger aftertouch, and "+" values increase the volume by stronger aftertouch.

4 WRITING

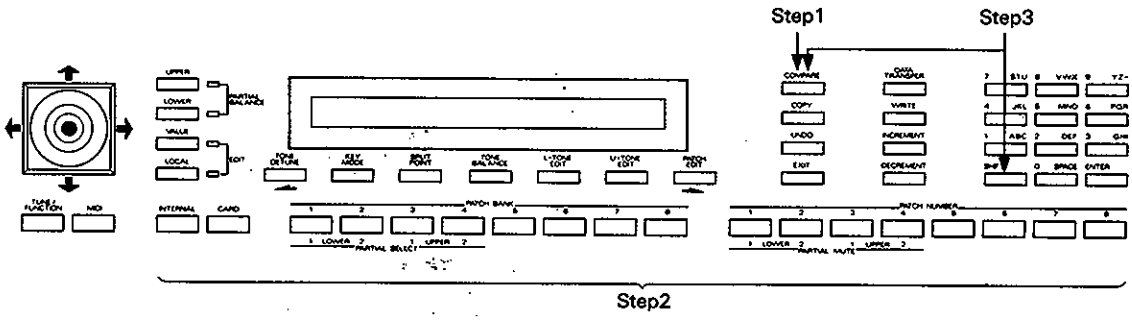
The edited data does not automatically rewrite the previous data, and therefore will be erased when a different Patch is selected, or the unit is turned off. To retain the edited data, take the following writing procedure, either into the internal memory or onto a Memory Card.

***When using a Memory Card (RAM) for the first time, be sure to write the data in the internal memory onto the Memory Card as shown in "Patch Transfer to the Memory Card" on page 65. If you take the writing procedure without doing this, the Display shows "Illegal Card"for a few seconds and writing is not done. This "Illegal Card" message is also shown when you are using a Mmeory Card that contains the data other than D–50's.**

```
Illegal Card
```

[SELECTING A MEMORY LOCATION]

Writing a new Patch inevitably erases an existing Patch, so you may wish to listen to several Patches before deciding which Patch should be sacrificed for the new Patch. You can do it using the Compare Button.



Step 1 **Push the Compare Button.**

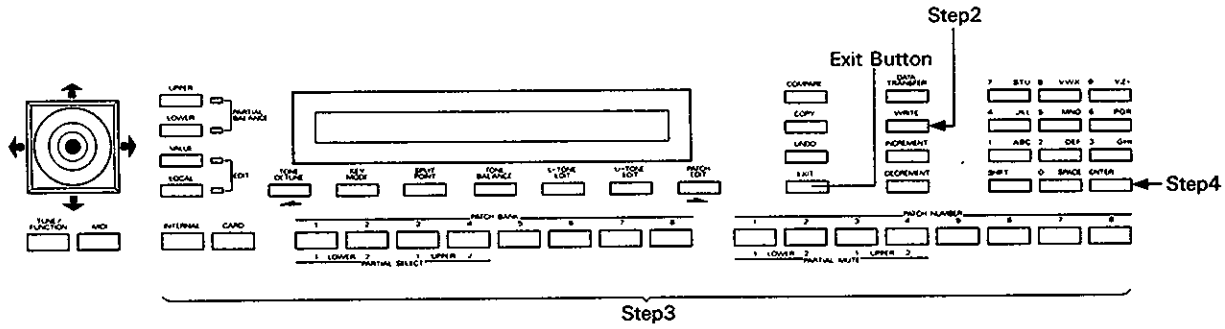
The Display responds as shown below.

```
************ Compare ************
```

Step 2 **As you change Patches, listen to the sound, selecting the Patch Number to be erased.**

Step 3 **WHILE HOLDING THE SHIFT KEY DOWN, push the Compare Button. This recalls the edited data at the selected Patch Number.**

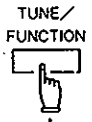
[WRITING PROCEDURE]



Step 1 **Set Memory Protect to OFF.**

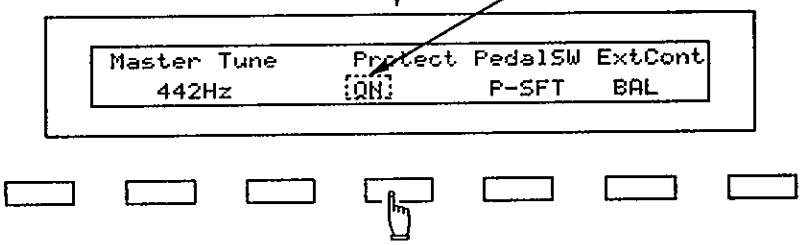
●To write the data into the internal memory, set the Memory Protect of the D−50 to OFF as follows.

1 : Push the Tune/Function Button.

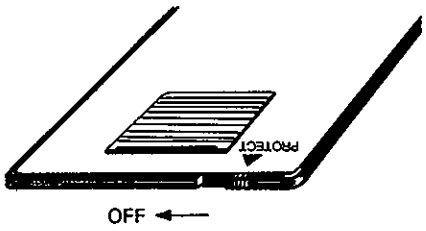


2 : Select "Memory Protect" with the Selector Button and turn it OFF with the Joystick.

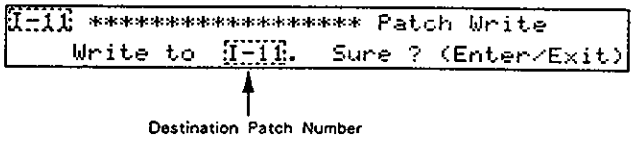
This flashes when the Selector Button is pushed.



●To write the data onto the optional Memory Card (M−256D), set the Protect Switch of the Memory Card to OFF as follows.



Step 2 **Push the Write Button.**



Step 3 **If you wish to rewrite the Patch, skip the following two procedures and go to step 4, but if you wish to write the edited Patch to a different Patch number, change the destination Patch number as follows.**

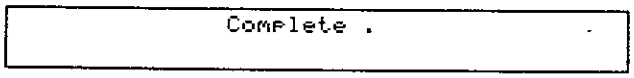
●To write the Patch into the internal memory of the D–50, push the Internal Button, and to write onto the Memory Card, push the Card Button.

●Assign the Bank and Number of the destination Patch by using the Patch Button.

To leave the writing mode, simply push the Exit Button.

Step 4 **Push the Enter Key.**

When the writing is completed, the Display responds as shown below, and then returns to Play mode.



***If the Display does not respond as above, see "Error Messages" on page 74 , and repeat the writing procedure carefully.**

Step 5 **Return the Memory Protect to ON.**
(As in Step 1.)

***Memory Protect is the function that protects the existing data from accidental erasure. Be sure to set the Memory Protect ON except when writing new data.**

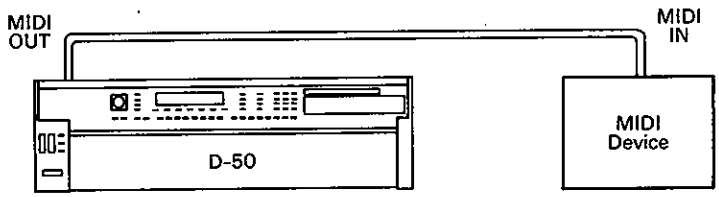
***When the unit is turned off and on again, the Memory Protect is automatically returned to the ON position.**

5 MIDI

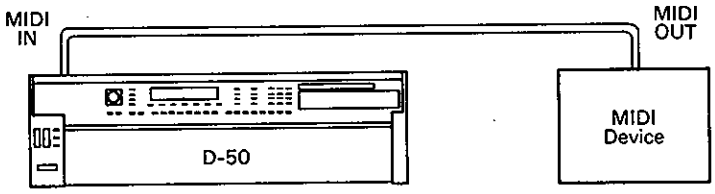
Please Read the separate booklet "MIDI" as well as the following explanation on MIDI.

1. CONNECTION

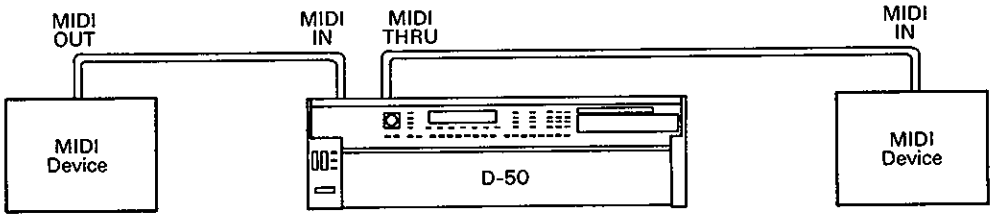
● The D-50 controlling an external MIDI device.



● An external MIDI device controlling the D-50



● Using the MIDI THRU Connector



＊An exact copy of the signal fed into the MIDI IN is sent through the MIDI THRU. Using the MIDI THRU, therefore, more than one MIDI device can be controlled. Technically speaking, many devices can be controlled through MIDI THRU's, but in practice, connecting more than a few devices would cause various complications. To connect several devices, use the optional MIDI Output Selector MPU−105.

＊The signal fed into the MIDI IN is not sent from the MIDI OUT.

2. SETTING MIDI FUNCTIONS

You can change the settings of the MIDI Functions as follows.

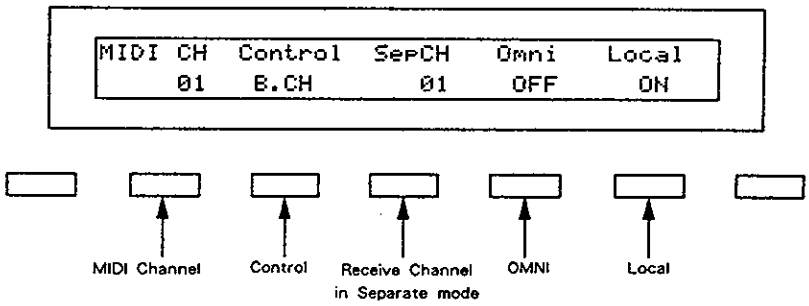
a. MIDI Functions commonly set for all Patches

Push the MIDI Button to call MIDI Functions, and select one of the four Displays [MIDI 1 to 4] with the Scroll Button.

In each Display, several MIDI Functions can be set. Call the function you wish to change with the appropriate Selector Button, then change the value with the Joystick/Increment and Decrement Buttons.

***The MIDI Function you have set is automatically written into memory, and therefore is retained even after the unit is turned off.**

[MIDI – 1]



● MIDI Channel

This sets the Basic Channel (MIDI channel on which the D–50 receives and transmits messages) from 1 to 16.

The transmit channel can be set to a different number from the Basic Channel individually for each Patch (See page 56).

● **Control**

This determines how to receive messages from an external MIDI device.

[B.CH] Basic Channel mode

When the D−50 is being controlled in Mono mode, it receives the Voice Messages (except for Note Event, Pitch Bender) on the Basic Channel from the external device.

[G.CH] Global Channel mode

When the D−50 is being controlled in Mono mode, by an extarnal device that has a Global Channel (one number smaller than the basic channel) it can receive all the Voice Messages (except for Note Event, Pitch Bender) on the Global Channel.

[MdeOFF] Mode Message OFF mode

In this mode, the D−50 does not receive the Mode messages from the external MIDI device, but is assigned to the Key mode as set on the D−50.

***How the above Control mode actually changes the Key mode set on the D−50 is explained on page 57 "Key Mode Alteration".**

● **Receive Channel in Separate Mode**

When Separate (Solo) mode is selected (see page 21 in the Basic Course), the Upper and Lower Tones can be controlled on different channels. The Lower Tone is controlled by the basic channel, and the Upper Tone is controlled by the receive channel set here. (The D−50's keyboard can control only the Upper Tone.) 1 to 16 are valid for receive channel. The receive channel of each Patch can be set to a differrent number from the channel set here. (See page 56)

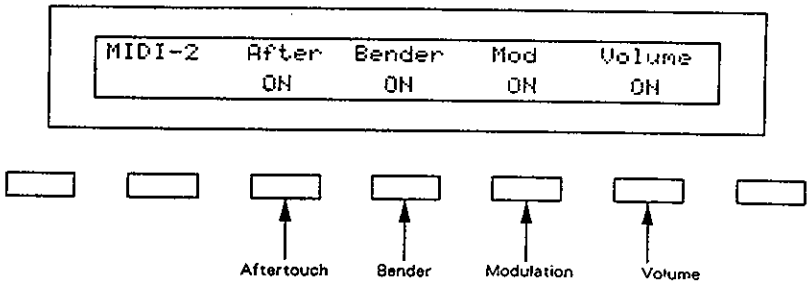
● **OMNI**

OMNI ON allows you to control the D−50 regardless of the MIDI channel of the external MIDI device.

● **Local**

Local OFF separates the keyboard section from the synthesizer section in the D−50. Therefore, Performance information is sent from the MIDI OUT, but the D−50 does not make any sound. The Performance information fed into the MIDI IN, however, can control the D−50's synthesizer section.

[MIDI – 2]



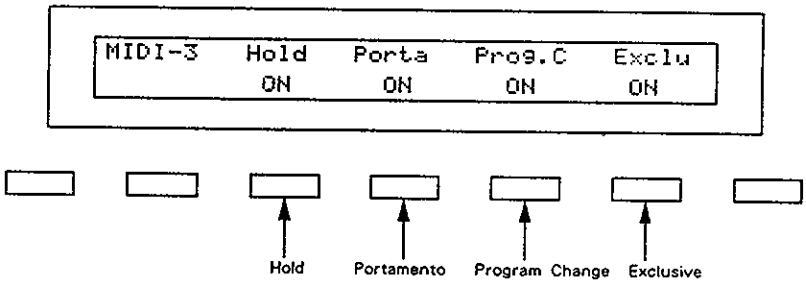
● **Aftertouch**
To receive or transmit Aftertouch messages, set this to ON.

● **Bender**
To receive or transmit Bender messages, set this to ON.

● **Modulation**
To receive or transmit Modulation messages, set this to ON.

● **Volume**
To receive or transmit Volume messages, set this to ON.

[MIDI – 3]



● **Hold**
To receive or transmit Hold messages, set this to ON.

● **Portamento**
To receive or transmit Portamento messages, set this to ON.

● **Program Change**
To receive or transmit Program Change messages, set this to ON. Program Change Numbers correspond to the D–50's Patches as shown in the table on the next page. The program change number to be transmitted can be set for each Patch separately (see page 56). Program Change messages are transmitted only when a Patch is selected by operating the D–50's panel buttons, or when the Program Change number to be transmitted is altered also on the D–50's panel. In other words, Program Change messages are not transmitted by Patch Shift with the pedal switch, or by patch selection with the Program Change messages sent from an external device.

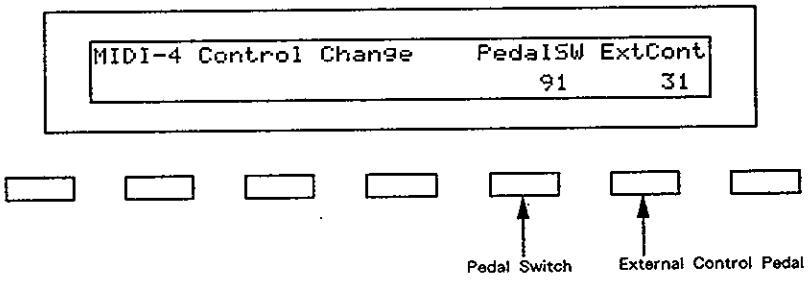
Memory	Number / Bank	1	2	3	4	5	6	7	8
Intern.	1	1	2	3	4	5	6	7	8
	2	9	10	11	12	13	14	15	16
	3	17	18	19	20	21	22	23	24
	4	25	26	27	28	29	30	31	32
	5	33	34	35	36	37	38	39	40
	6	41	42	43	44	45	46	47	48
	7	49	50	51	52	53	54	55	56
	8	57	58	59	60	61	62	63	64
Card	1	65	66	67	68	69	70	71	72
	2	73	74	75	76	77	78	79	80
	3	81	82	83	84	85	86	87	88
	4	89	90	91	92	93	94	95	96
	5	97	98	99	100	101	102	103	104
	6	105	106	107	108	109	110	111	112
	7	113	114	115	116	117	118	119	120
	8	121	122	123	124	125	126	127	128

*0 to 127 Program changes can be sent.

● Exclusive

To receive or transmit Exclusive messages (Roland ID Number only), set this to "ON" or "P–Dump".
Normally, this is set to "ON". "P–Dump" (Patch Dump) should be selected to record patch data into a device that can record Exclusive Messages, such as a computer, the MC–500 (microcomposer), etc. When set to "P–Dump", the Patch you select is transmitted to an external device. However, it cannot be transmitted by Patch Shift with the pedal switch, or by patch selection with the Program Change messages sent from an external device.

[MIDI–4]



The external MIDI device can be controlled with the pedal switch or external control pedal.

● Pedal Switch

With the pedal switch, the Controls from 64 to 95 can be controlled. See the MIDI Implementation Chart at the back of the owner's manual.

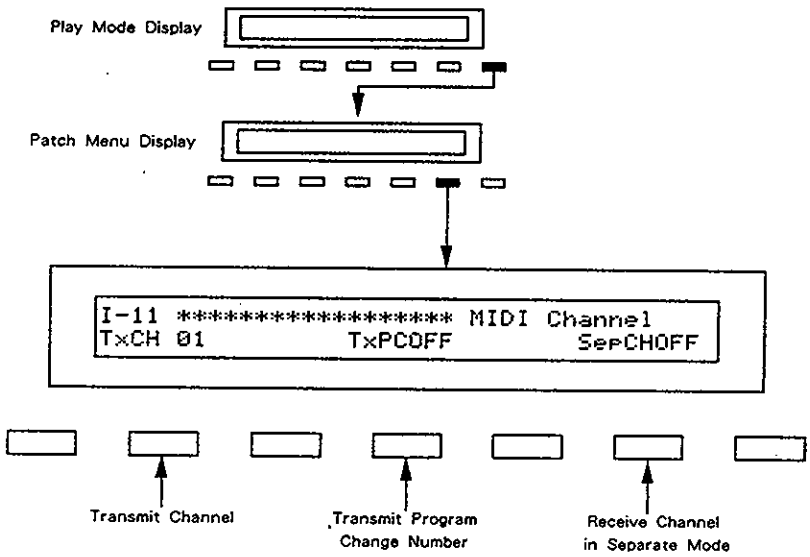
● External Control Pedal

With the external control pedal, Controls from 0 to 31 can be controlled. See the MIDI Implementation Chart at the back of the owner's manual.

b. MIDI Functions individually set for each Patch

***The edited data does not automatically rewrite the previous Patch, and therefore will be erased when a different Patch is selected, or the unit is turned off. To retain the edited data, take the appropriate writing procedure explained on page 48 "Writing".**

Call the MIDI Display (Display 10) in the Patch Factor menu, then call the necessary parameter with the Selector Button, and set the value with the Joystick/Increment and Decrement Buttons.



● Transmit Channel

The transmit channel of each Patch can be set to a different number from the basic channel. B and 1 to 16 are valid. At B, the channel number is the same as the Basic Channel.

● Transmit Program Chnage Number

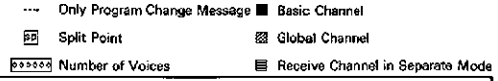
A Program Change number to be transmitted can be set for each Patch individually. OFF and 1 to 100 are valied. At OFF, the Program Change number preprogramed in each Patch shown in the table on page 55 is transmitted.

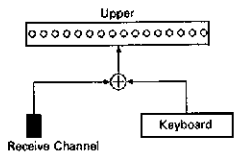
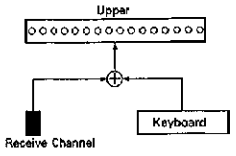
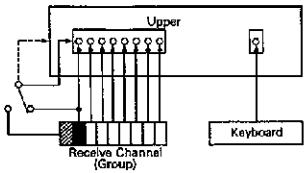
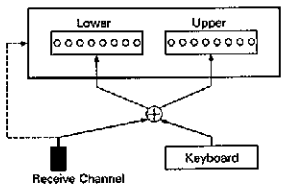
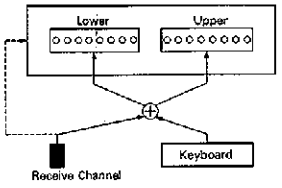
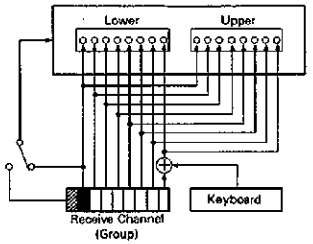
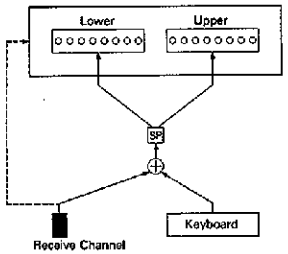
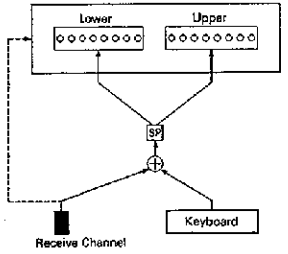
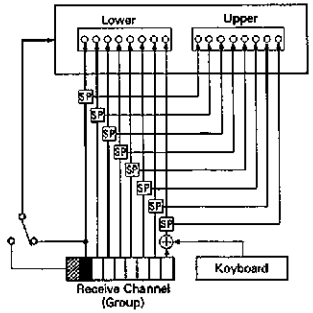
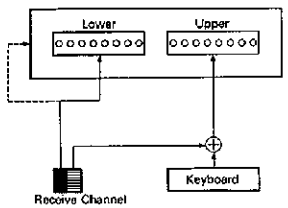
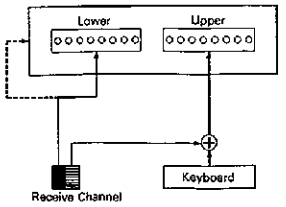
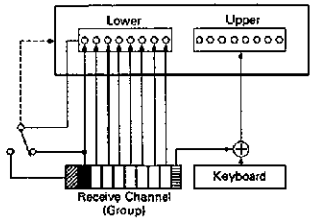
● Receive Channel in Separate Mode

A receive MIDI channel in Separate mode can be set for each Patch individually. OFF and 1 to 16 are optional. At OFF, the receive channel set in "MIDI Functions commonly set for all Patches" on page 53 is used.

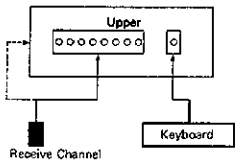
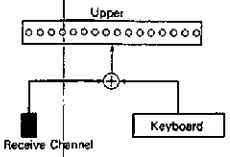
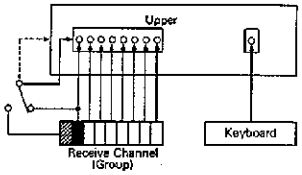
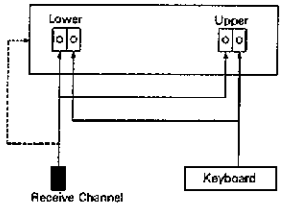
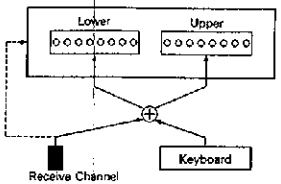
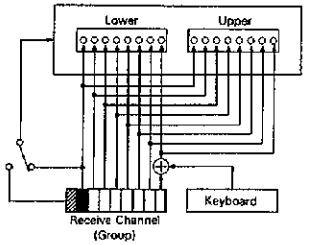
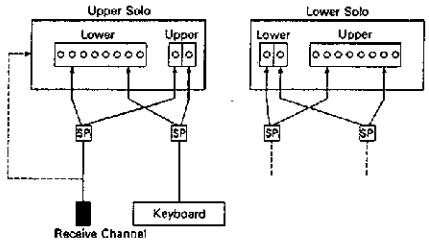
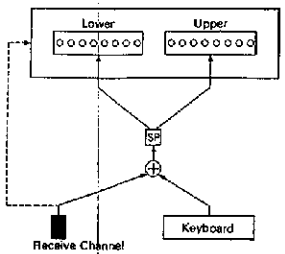
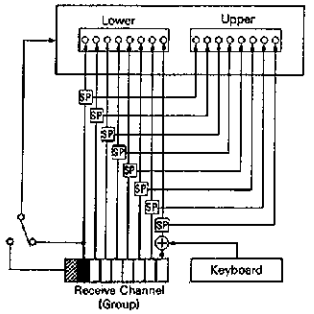
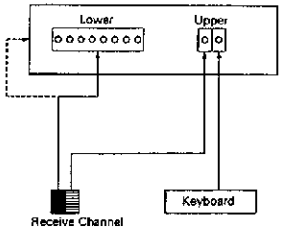
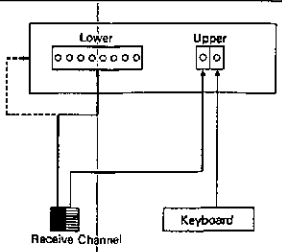
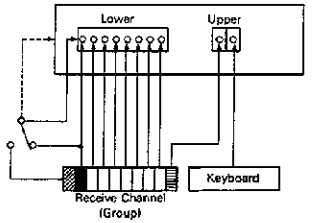
3. KEY MODE ALTERATION

When the D–50 is being controlled by an external MIDI device, the Key mode selected in each Patch affects how the Tones are played and how the Control messages run as shown in the following pictures.



Key Mode	Mode Message Off (CONTROL of MIDI Functions)	Operating in Poly Mode	Operating in Mono Mode
Whole			
Dual			
Split			
Separate			

Only Program Change Message ■ Basic Channel
SP Split Point ▨ Global Channel
Number of Voices ▤ Receive Channel in Separate Mode

Key Mode	Mode Message Off (CONTROL of MIDI Functions)	Operating in Poly Mode	Operating in Mono Mode
Whole Solo			
Dual Solo			
Split Upper Solo/ Lower Solo			
Separate Solo			

4. DATA TRANSFER WITH MIDI

Using the Roland MIDI Exclusive messages, the data can be transferred from one D−50 to another D−50. Sending data is called Bulk Dump, and receiving data is called Bulk Load.

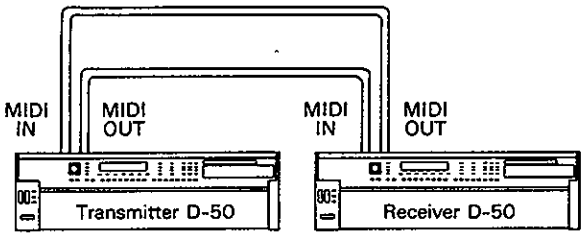
The Bulk Dump and Bulk Load processes function whether the Exclusive switch in the MIDI Functions is ON or OFF.

There are two methods of data transfer via MIDI ; Handshake and One−way.

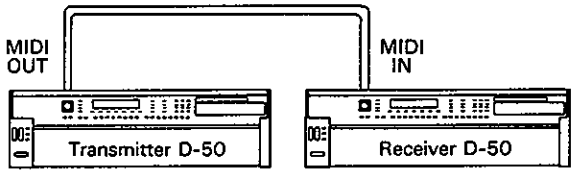
Handshake allows you to verify whether the receiver is ready to receive the data, while one−way transmits the data without confirming the condition of the receiver. The D−50 can select either of the two methods.

CONNECTION

<Handshake Connection>



<One-way Connection>



step 1 Set the Basic Channel of the receiver to the same number as the transmitter's.

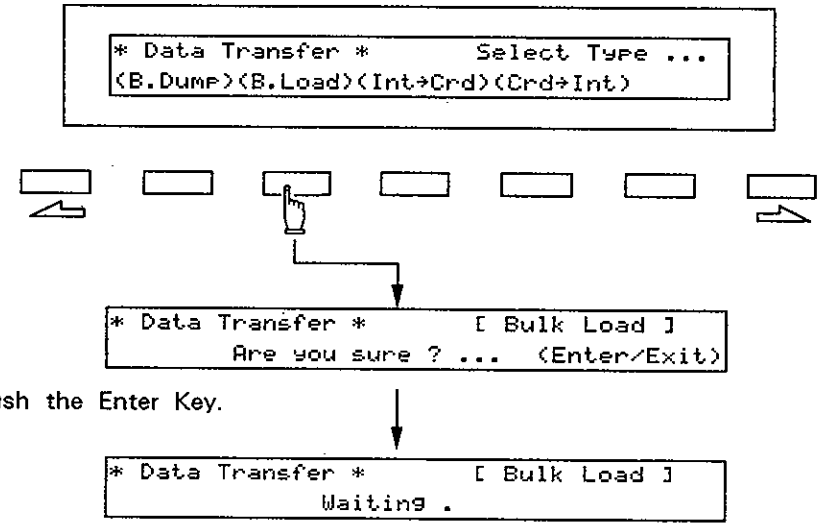
step 2 Set the Memory Protect of the receiver to OFF.(See page 49)

step 3 Push the Transfer Buttons on both the transmitter and receiver devices.

step 4 **Set the receiver to the awaiting signal mode.**

● Handshake Mode

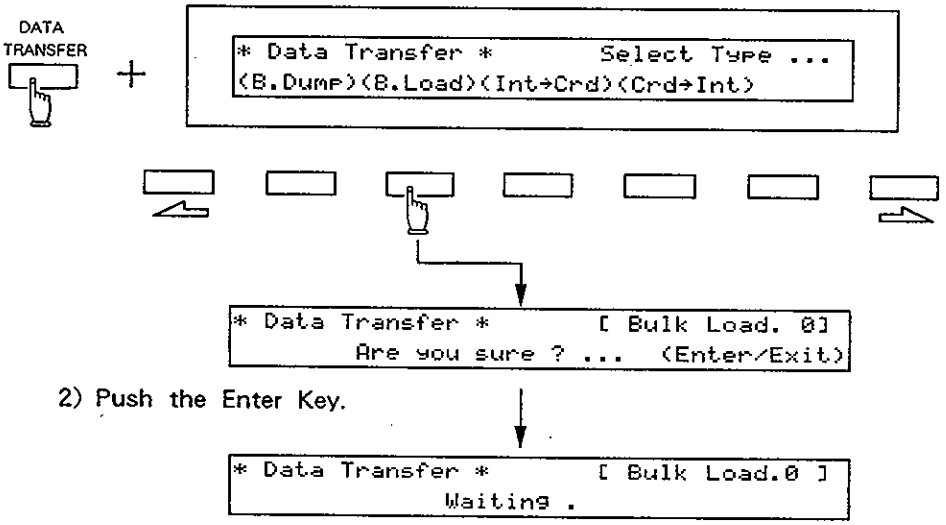
1) Select "B. Load" with the corresponding Selector Button.



2) Push the Enter Key.

● One-way Mode

1) While holding the Data Transfer Button down, push the Selector Button that corresponds to "B. Load".

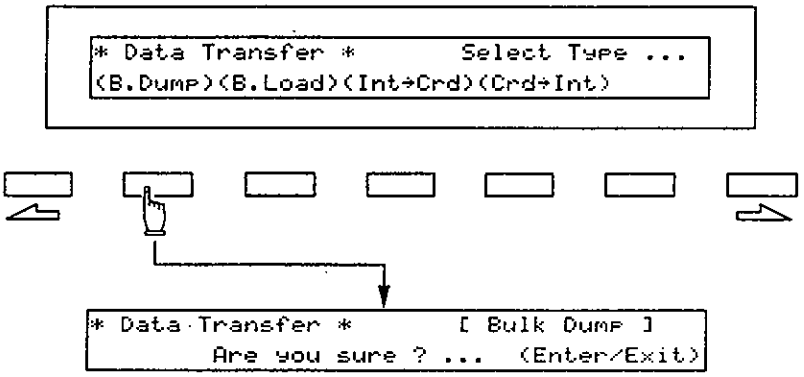


2) Push the Enter Key.

step 5 **Set the transmitter to the signal–sending mode.**

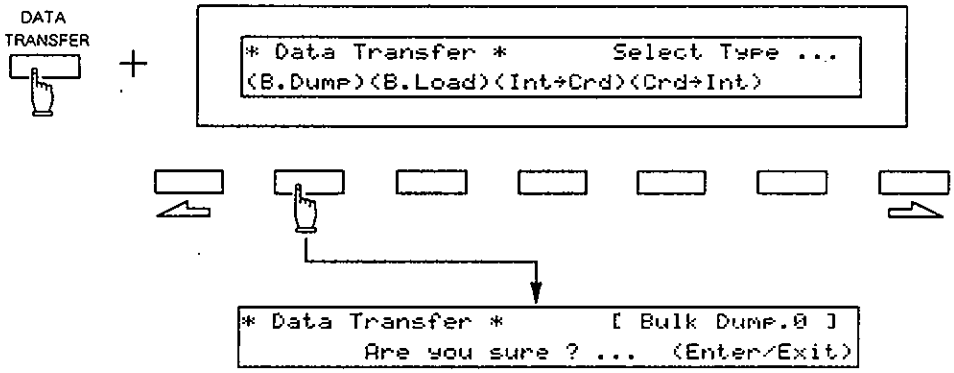
● Handshake Mode

Select "B. Dump" with the corresponding Selector Button.



● One–way Mode

While holding the Data Transfer Button down, push the Selctor Button that corresponds to "B. Dump".



step 6 **Push the Enter Key on the transmitter, and the data is transferred.**

When the data is correctly transferred, the Diplay responds as shown below.

● Handshake Mode
[Transmitter]

```
* Data Transfer *        [ Bulk Dump ]
                Complete .
```

[Receiver]

```
* Data Transfer *        [ Bulk Load ]
                Complete .
```

● One−way Mode
[Transmitter]

```
* Data Transfer *        [ Bulk Dump.0 ]
                Complete .
```

[Receiver]

```
* Data Transfer *        [ Bulk Load.0 ]
                Complete .
```

***When the data fails to be transferred correctly, the Display responds with :**

```
    MIDI  Communication  Error
```

Push the Exit Button, then check if the connections are correctly and securely made.

step 7 **To return the Display to the play mode, push the Exit Buttons on both the receiver and transmitter devices.**

step 8 **Return the Memory Protect of the receiver to ON.**

6 DATA TRANSFER WITH MEMORY CARD

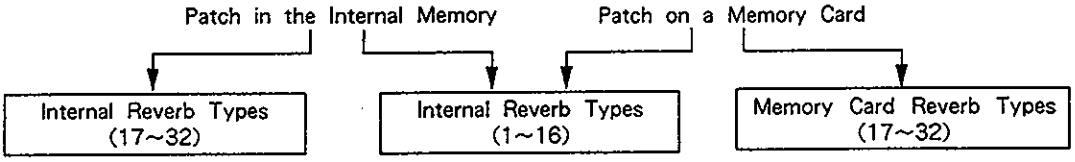
The entire Patch data written in the D-50's memory can be saved on the Memory Card, and the data on the Memory Card can be loaded into the D-50's internal memory.

The data (Reverb Types) on the sound library (ROM Memory Card) can be copied to the D-50, or from the D-50 to the optional Memory Card (M-256D).

***Please be sure to use the specified Memory Card, such as the supplied Memory Card or M-256D.**

[Available Reverb Types]

A Memory Card can store up to 16 different Reverb Types (17 to 32), as well as 64 Patches. Available Reverb Types differ depending on which Patch is currently in use, Patch in the internal memory or on a Memory Card.

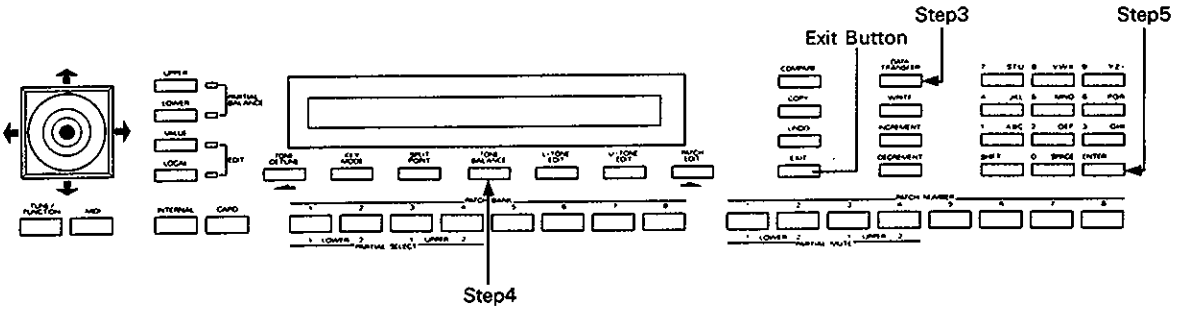


"Patch Trancefer" transfers Reverb Types 17 to 32 at the same time, and "Reverb Type Copy" can copy a Reverb Type to any of the 17 to 32 Reverb Types.

1. PATCH TRANSFER

a. Patch Transfer to the Memory Card

All the 64 Patches stored in the D-50's internal memory can be saved onto the optional Memory Card (M-256D) at once. At the same time, 17 to 32 Reverb Types are saved.



step 1 **Connect the Memory Card to the D-50.**

step 2 **Set the Protect Swith on the Memory Card to the OFF position.**

step 3 **Push the Data Transfer Button.**

```
* Data Transfer *          Select Type ...
(B.Dump)(B.Load)(Int→Crd)(Crd→Int)
```

step 4 **Select "INT→CARD" with the corresponding Selector Button.**

```
* Data Transfer *          [ Int → Card ]
        Are you sure ? ...   (Enter/Exit)
```

To cancel the data transfer mode, simply push the Exit Button.

***When you write data onto a Memory Card for the first time, pushing the button will show the following indication for a few seconds, but please carry on the procedure.**

```
        Illegal Card
```

step 5 **Hit the Enter Key.**

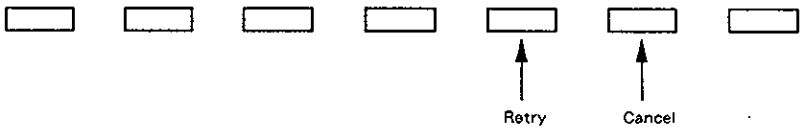
When the data transfer is completed, the Display changes to as below, then returns to the Play Mode indication.

```
              Complete .
```

step 6 **Return the Protect Switch on the Memory Cartridge to the ON position.**

***When the data fails to be transferred to the Memory Card properly, the Display responds with :**

```
* Data Transfer *          [ Int → Card ]
      Verify Error .       (Retry) (Cancel)
```

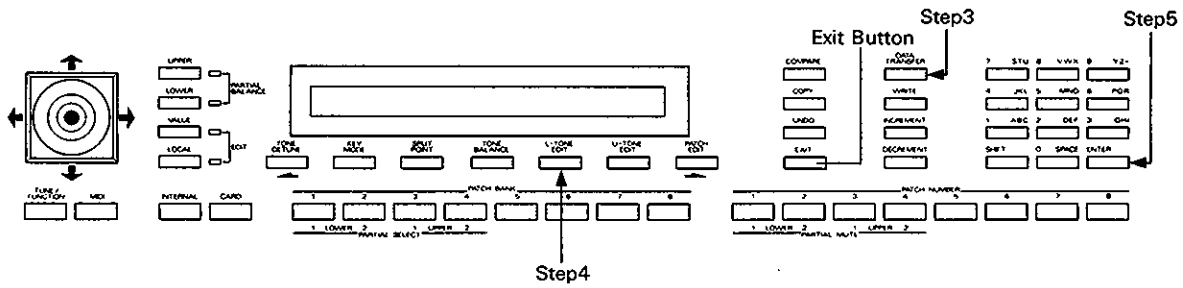


To transfer the data onto the Memory Card again, assign RETRY with the Selector Button and repeat the transfer procedure after carefully reading the instructions of the Memory Card.

To leave this mode, select CANCEL with the Selector Button.

b. Patch Transfer to the Internal Memory

All the 64 Patches data stored on the Memory Card can be loaded to the D−50's internal memory.
At the same time, Reverb Types (17−32) are loaded.



step 1 **Connect the Memory Card to the D−50.**

step 2 **Turn the Memory Protect of the D−50 to OFF.(See page 49.)**

step 3 **Push the Data Transfer Button.**

```
* Data Transfer *          Select Type ...
(B.Dump)(B.Load)(Int→Crd)(Crd→Int)
```

step 4 **Select "CARD → INT" with the corresponding Selector Button.**

```
* Data Transfer *          [ Card → Int ]
       Are you sure ? ...   (Enter/Exit)
```

To cancel the data transfer mode, simply push the Exit Button.

step 5 **Hit the Enter Key.**

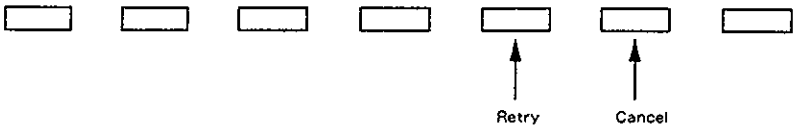
When the data transfer is completed, the Display changes as below, then returns to the Play Mode indication.

```
                Complete .
```

step 6 **Return the Memory Protect of the D−50 to ON.**

***When the data fails to be transferred to the D−50 properly, the Display responds with :**

```
* Data Transfer *          [ Int → Card ]
     Verify Error .        (Retry) (Cancel)
```



To transfer the data from the Memory Card again, assign RETRY with the Selector Button and repeat the transfer procedure after carefully reading the instructions of the Memory Card.

To leave this mode, select CANCEL with the Selector Button.

2. COPYING A REVERB TYPE

On the optional Sound Library Memory Card (ROM), 32 reverb types (1 to 32) are programmed. 16 (17 to 32) of these reverb types can be copied to the D−50's internal memory. Also, the reverb types written in the D−50's memory can be copied to the optional Memory Card (M−256D).

a. Copying from a Memory Card to the D−50

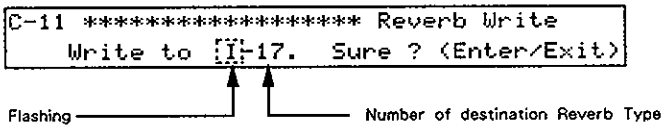
step 1 Connect the Sound Library Memory Card (ROM) to the D−50.

step 2 Turn the Memory Protect of the D−50 to OFF.(See page 49.)

step 3 Call any Patch on the Memory Card.

step 4 Call the Output Mode Display (Display 8), and select one of the Reverb Types (17 to 32) to be copied.

step 5 While holding the Shift Key down, push the Write Button.



step 6 Push the Internal Button.

step 7 Push the center Selector Button.(The number of the destination Reverb Type flashes.)

step. 8 Using the Joystcik/Increment and Decrement Buttons, select the destination Reverb Type (17 to 32) to be replaced with the one called from the Memory Card.

step 9 Hit the Enter Key.

step 10 Return the Memory Protect to ON.

b. Copying from the D-50 to a Memory Card

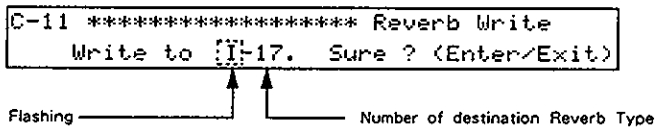
step 1 Connect the Memory Card (M-256D) to the D-50.

step 2 Set the Protect Switch on the Memory Card to the OFF position.

step 3 Select any Patch in the D-50.

step 4 Call the Output Mode Display (Display 8), and select one of the Reverb Types (17 to 32) to be copied.

step 5 While holding the Shift Key down, push the Write Button.



step 6 Push the Card Button.

step 7 Push the center Selector Button.(The number of the destination Reverb Type flashes.)

step 8 Using the Joystick/Increment and Decrement Buttons, select the destination Reverb Type (17 to 32) to be replaced with the one called from the D-50.

step 9 Hit the Enter Key.

step 10 Return the Protect Switch to the ON position.

7 APPENDIX TABLES

1. PATCH FACTOR TABLE

Display	Factor	Value	Reference Page Number: Basic course	Reference Page Number: Advanced course
Play Mode	Key Mode	Whole, Dual, Split, Separate, Whole−S, Dual−S, Split−US, Split−LS, Separate−S	10、21	57
	Split Point	C2, C#2 ••• C7	10、22	
	Tone Balance	0 ••• 100	15、22	
Tone Tune	L−Tone Key Shift	−24 ••• 0 ••• +24	23	
	U−Tone Key Shift	−24 ••• 0 ••• +24	23	
	L−Tone Fine Tune	−50 ••• 0 ••• +50	23	
	U−Tone Fine Tune	−50 ••• 0 ••• +50	23	
Patch Name	1 ••• 18 (←) (→)	SPACE, A ••• Z、 a ••• z, 1 ••• 0, −	20	
Control	Bender Range	0 ••• 12	27	
	After Touch (Pitch Bender)	−12 ••• 0 ••• +12	27	
	Portamento Time	0 ••• 100	27	
	Portamento Mode	U, L, UL	27	
	Hold Mode	U, L, UL	27	
Output	Output Mode	1 ••• 4	26	
	Reverb Type	1 ••• 32 (17 ••• 32 Change Type)	26	68、69
	Reverb Balance	0 ••• 100	26	
	Total Volume	0 ••• 100	26	
Chase	Chase Mode	UL, ULL, ULU	24	
	Chase Level	0 ••• 100	24	
	Chase Time	0 ••• 100	24	
MIDI Channel	Transmit CH	Basic CH, 1~16		56
	Transmit Program Change No.	Off, 1 ••• 100		56
	Separate Mode Receive CH	Off, 1 ••• 16		56

2. TONE PARAMETER TABLE

a. Common Parameters

Display	Tone Parameters	Value	Reference Page Number: Basic course	Reference Page Number: Advanced course
Tone Name	1 ••• 10 (←) (→)	SPACE, A ••• Z, a ••• z, 1 ••• 0, −		20
Structure	Structure No.	1 ••• 7		4、22
Pitch ENV	Velocity Range	0 ••• 2		23
	Key Follow (Time)	0 ••• 4		23
Pitch ENV Time	T1 ••• T4	0 ••• 50		23、24
Pitch ENV Level	L0/L1/L2/ Sustain Level/End Level	−50 ••• 0 ••• +50		23、24
Pitch Modulation	LFO Depth	0 ••• 100		25
	Picth Lever Modulation	0 ••• 100		25
	Pitch After Touch Modulation	0 ••• 100		25
LFO−1	Waveform	Triangle, Sawtooth, Square, Random		25、26
	Rate	0 ••• 100		25、26
	Delay Time	0 ••• 100		25、26
	Sync.	Off, On, Key		25、26
LFO−2	Waveform	Triangle, Sawtooth, Square, Random		25、26
	Rate	0 ••• 100		25、26
	Delay Time	0 ••• 100		25、26
	Sync.	Off, On		25、26
LFP−3	Waveform	Triangle, Sawtooth, Square, Random		25、26
	Rate	0 ••• 100		25、26
	Delay Time	0 ••• 100		25、26
	Sync.	Off, On		25、26
EQ	Lf	63, 75, 88, 105, 125, 150, 175, 210, 250, 300, 350, 420, 500, 600, 700, 840		27
	Lg	−12 ••• 0 ••• +12		27
	Hf	250, 300, 350, 420, 500, 600, 700, 840, 1.0, 1.2, 1.4, 1.7, 2.0, 2.4, 2.8, 3.4, 4.0, 4.8, 5.7, 6.7, 8.0, 9.5		27、28
	HQ	0.3, 0.5, 0.7, 1.0, 1.4, 2.0, 3.0, 4.2, 6.0		27、28
	Hg	−12 ••• 0 ••• +12		27、28
Chorus	Chorus Type	1 ••• 8		29
	Chorus Rate	0 ••• 100		29
	Chorus Depth	0 ••• 100		29
	Chorus Balance	0 ••• 100		29

*Partial Mute=On/Off of each Partial (indicated in any Partial Parameter Display)
Partial Balance= (not indicated in the Display)

b. Partial Parameters

Display	Tone Parameters	Value	Reference Page Number: Basic course	Reference Page Number: Advanced course
WG Pitch	Coarse	C1, C#1 ••• C7		30
	Fine	−50 ••• 0 ••• +50		30
	Key Follow	−1, −1/2, −1/4, 0, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 5/4, 3/2, 2, sl, s2		30、31
WG Modulation	LFO Mode	Off, (+), (−), A&L (After Touch & Lever)		32
	P−ENV Mode	Off, (+), (−)		32
	Bender Mode	Off, Key Follow, Normal		32、33
WG Waveform	Waveform	Square, Sawtooth		33
	PCM Wave No.	1 ••• 100 (PCM Name)		33、34
WG Pulse Width	Pulse Width	0 ••• 100		35
	Velocity Range	−7 ••• 0 ••• +7		35
	After Touch Range	−7 ••• 0 ••• +7		35、36
	LFO Select	+1、−1、+2、−2、+3、−3		35、36
	LFO Depth	0 ••• 100		35、36
TVF	Cutoff Frequency	0 ••• 100		36、37
	Resonance	0 ••• 30		36、37
	Key Follow	−1, −1/2, −1/4, 0, 1/8, 1/4, 3/8, 1/2, 5/8, 3/4, 7/8, 1, 5/4, 3/2, 2		36、38
	Bias Point/Bias Direction	<A1 ••• <C7, >A1 ••• >C7		36、39
	Bias Level	−7 ••• 0 ••• +7		36、39
TVF ENV	Depth	0 ••• 100		39、40
	Velocity Renge	0 ••• 100		39、40
	Key Follow (Depth)	0 ••• 4		39、40
	Key Folow (Time)	0 ••• 4		39、40
TVF ENV Time	T1 ••• T5	0 ••• 100		41、42
TVF ENV Level	L1/L2/L3/ Sustain Level	0 ••• 100		41、42
	End Level	0, 100		41、42
TVF Modulation	LFO Level	+1, −1, +2, −2, +3, −3		42、43
	LFO Depth	0 ••• 100		42、43
	After Touch Range	−7 ••• 0 ••• +7		43
TVA	Level	0 ••• 100		43
	Velocity Range	−50 ••• 0 ••• +50		43
	Bias Point/Bias Direction	<A1 ••• <C7, >A1 ••• >C7		43、44
	Bias Level	−12 ••• 0		43、44
TVA ENV Time	T1 ••• T5	0 ••• 100		44~46
TVA ENV Level	L1/L2/L3/ Sustain Level	0 ••• 100		44~46
	End Level	0、100		44、46
TVA ENV	Velocity Follow (Time1)	0 ••• 4		46
	Key Follow (Time)	0 ••• 4		46
TVA Modulation	LFO Select	+1, −1, +2, −2, +3, −3		47
	LFO Depth	0 ••• 100		47
	After Touch Range	−7 ••• 0 ••• +7		47

3. MIDI FUNCTION TABLE

Display	MIDI Functions	Value	Reference Page Number	
			Basic course	Advanced course
MIDI-1	MIDI CH	1 ••• 16		52
	Control	Basic CH, Global CH, Mode Message Off		52、53
	Separate Mode Receive CH	1 ••• 16		56
	Omni	Off、On		52、53
	Local	Off、On		52、53
MIDI-2	After Touch	Off、On		54
	Bender	Off、On		54
	Modulation	Off、On		54
	Volume	Off、On		54
MIDI-3	Hold	Off、On		54
	Portamento	Off、On		54
	Program-Change	Off、On		54
	Exclusive	Off、On、Patch Dump		54
MIDI-4 Control Change	Pedal SW	64 ••• 95		55
	External Control	0 ••• 31		55

4. ERROR MESSAGE TABLE

Display	Discription
Check Internal Battery	The back-up battery in the D-50 is low. Consult your local Roland Service Department.
Check Card's Battery	The back-up battery (CR 2016) in the optional Memory Card (M-256D) is low. Replace it with a new one as shown in the instructions of the Memory Card.
Int Memory Protected	You have tried to write data into the D-50's memory with the Memory Protect on the D-50 set to ON. Set Memory Protect to OFF.
Card Memory Protected	You have tried to write data onto the Memory Card with the Memory Protect Switch on the Memory Card in the ON position. Set it to OFF.
Card Not Ready	The Memory Card is not connected securely.
Set key mode WHOLE or DUAL	You pushed the Chase Button in a mode other than Whole or Dual Key Mode. Select the Whole or Dual Key Mode.
Input Data Error Cancel ...	You have assigned a value that exceeds the valid range.
Data Mismatch Cancel ...	The destination Block you have selected differs from the source Block. Reselect the appropriate Block, and repeat Block Copy.
MIDI Communication Error	Data is not transferred properly. Push the Exit Button, check if the connections are correctly and securely made and repeat the transfer procedure.
Verify Error . (Retry) (Cancel)	Data is not properly loaded or saved between the internal memory of the D-50 and the Memory Card. Read the instructions of the Memory Card, push the relevant Selector Button (Retry) and carefully repeat the loading or saving. To leave the transfer mode, push the relevant Selector Button (Cancel).
Illegal Card	This is shown when you are using a brand-new card or the card that contains the data for other than the D-50.

5. SAMPLE NOTE

Patch No._____

Patch Name_____

Key Mode	
Split Point	
Tone Balance	

L-Key Shift	
U-Key Shift	
L- Fine Tune	
U-Fine Tune	

Bender Range	
After(Pitch Bender)	
Portamento Time	
Portamento Mode	
Hold Mode	

Output Mode	
Reverb Type	
Reverb Balance	
Total Volume	

Chase Mode	
Chase Level	
Chase Time	

MIDI TxCH	
MIDI TxProg.C	
MIDI SepCH	

Used Tone

Upper_____

Lower_____

Patch No._____

Patch Name_____

Key Mode	
Split Point	
Tone Balance	

L-Key Shift	
U-Key Shift	
L-Fine Tune	
U-Fine Tune	

Bender Range	
After(PitchBender)	
Portamento Time	
Portamento Mode	
Hold Mode	

Output Mode	
Reverb Type	
Reverb Balance	
Total Volume	

Chase Mode	
Chase Level	
Chase Time	

MIDI TxCH	
MIDI TxProg.C	
MIDI SepCH	

Used Tone

Upper_____

Lower_____

Patch No._____

Patch Name_____

Key Mode	
Split Point	
Tone Balance	

L-Key Shift	
U-Key Shift	
L-Fine Tune	
U-Fine Tune	

Bender Range	
After (Pitch Bender)	
Portamento Time	
Portamento Mode	
Hold Mode	

Output Mode	
Reverb Type	
Reverb Balance	
Total Volume	

Chase Mode	
Chase Level	
Chase Time	

MIDI TxCH	
MIDI TxProg.C	
MIDI SepCH	

Used Tone

Upper_____

Lower_____

Tone Name_____ Used Patch No._____

[Common Parameters]

Structure No.	

Partial Mute	

Pitch ENV

Velocity	
KF(Time)	

		Lo	
T1		L1	
T2		L2	
T3		SusL	
T4		EndL	

LFO

	1	2	3
Wave			
Rate			
Delay			
Sync.			

Pitch Modulation

LFO Depth	
Lever Mod	
After Mod	

EQ

Lf	
Lg	
Hf	
HQ	
Hg	

Chorus

Type	
Rate	
Depth	
Balance	

[Partial Parameters 1/2]

WG

		1	2
WG Pitch	Coarse		
	Fine		
	KF(Pitch)		
WG Modu-lation	LFO Mode		
	P-ENV Mode		
	Bender Mode		
WG Wave Form	Wave Form		
	PCM No.		
WG Pulse Width	PW		
	Velocity		
	After Touch		
	LFO Select		
	LFO Depth		

TVF

		1	2
TVF	Frequency		
	Resonance		
	KF(Freq)		
	Bias Point/ Bias Direction		
	Bias Level		
TVF ENV	Depth		
	Velocity		
	KF(Depth)		
	KF(Time)		
TVF ENV	T1		
	T2		
	T3		
	T4		
	T5		
TVF ENV	L1		
	L2		
	L3		
	SusL		
	EndL		
TVF Modulat-ion	LFO Select		
	LFO Depth		
	After Touch		

TVA

		1	2
TVA	Level		
	Velocity		
	Bias Point/ Bias Direction		
	Bias Level		
TVA ENV	Velocity (T1)		
	KF(Time)		
TVA ENV	T1		
	T2		
	T3		
	T4		
	T5		
TVA ENV	L1		
	L2		
	L3		
	SusL		
	EndL		
TVA Modulat-ion	LFO Select		
	LFO Depth		
	After Touch		

Roland

D-50

MIDI Implementation

Roland Exclusive Messages

1. Data Format for Exclusive Messages

Roland's MIDI implementation uses the following data format for all exclusive messages (type IV):

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
CMD	Command ID
[BODY]	Main data
F7H	End of exclusive

MIDI status : F0H, F7H

An exclusive message must be flanked by a pair of status codes, starting with a Manufacturer-ID immediately after F0H (MIDI version1.0).

Manufacturer-ID : 41H

The Manufacturer-ID identifies the manufacturer of a MIDI instrument that triggeres an exclusive message. Value 41H represents Roland's Manufacturer-ID.

Device-ID : DEV

The Device-ID contains a unique value that identifies the individual device in the multiple implementation of MIDI instruments. It is usually set to 00H - 0FH, a value smaller by one than that of a basic channel, but value 00H - 1FH may be used for a device with multiple basic channels.

Model-ID : MDL

The Model-ID contains a value that uniquely identifies one model from another. Different models, however, may share an identical Model-ID if they handle similar data.

The Model-ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Model-IDs, each representing a unique model:

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

Command-ID : CMD

The Command-ID indicates the function of an exclusive message. The Command-ID format may contain 00H in one or more places to provide an extended data field. The following are examples of valid Command-IDs, each representing a unique function:

01H
02H
03H
00H, 01H
00H, 02H
00H, 00H, 01H

Main data : BODY

This field contains a message to be exchanged across an interface. The exact data size and contents will vary with the Model-ID and Command-ID.

2. Address-mapped Data Transfer

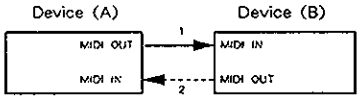
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory-resident records--waveform and tone data, switch status, and parameters, for example--to specific locations in a machine-dependent address space, thereby allowing access to data residing at the address a message specifies.

Address-mapped data transfer is therefore independent of models and data categories. This technique allows use of two different transfer procedures : one-way transfer and handshake transfer.

One-way transfer procedure (See Section3 for details.)

This procedure is suited for the transfer of a small amount of data. It sends out an exclusive message completely independent of a receiving device status.

Connection Diagram

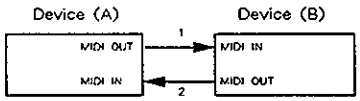


Connectionat point2 is essential for "Request data" procedures. (See Section3.)

Handshake-transfer procedure (See Section4 for details.)

This procedure initiates a predetermined transfer sequence (handshaking) across the interface before data transfer takes place. Handshaking ensures that reliability and transfer speed are high enough to handle a large amount of data.

Connection Diagram



Connectionat points1 and 2 is essential.

Notes on the above two procedures

*There are separate Command-IDs for different transfer procedures.
*DevicesA and B cannot exchange data unless they use the same transfer procedure, share identical Device-ID and Model ID, and are ready for communication.

3. One-way Transfer Procedure

This procedure sends out data all the way until it stops when the messages are so short that answerbacks need not be checked.
For long messages, however, the receiving device must acquire each message in time with the transfer sequence, which inserts intervals of at least 20milliseconds in between.

Types of Messages

Message	Command ID
Request data 1	RQ1 (11H)
Data set 1	DT1 (12H)

Request data # 1 : RQ1 (11H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.
On receiving an RQ1 message, the remote device checks its memory for the data address and size that satisfy the request.

If it finds them and is ready for communication, the device will transmit a "Data set 1 (DT1)" message, which contains the requested data. Otherwise, the device will send out nothing.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
11H	Command ID
aaH	Address MSB
:	:
	LSB
ssH	Size MSB
:	:
	LSB
sum	Check sum
F7H	End of exclusive

*The size of the requested data does not indicate the number of bytes that will make up a DT1 message, but represents the address fields where the requested data resides.
*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
*The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
*The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Data set 1 : DT1 (12H)

This message corresponds to the actual data transfer process. Because every byte in the data is assigned a unique address, a DT1 message can convey the starting address of one or more data as well as a series of data formatted in an address - dependent order.

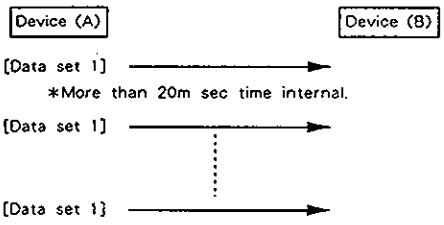
The MIDI standards inhibit non-real time messages from interrupting an exclusive one. This fact is inconvenient for the devices that support a "soft-through" mechanism. To maintain compatibility with such devices, Roland has limited the DT1 to 256 bytes so that an excessively long message is sent out in separate segments.

Byte	Description
F0H	Exclusive
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ddH	Data
⋮	⋮
sum	Check sum
F7H	End of exclusive

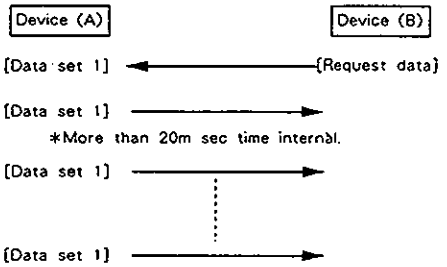
*A DT1 message is capable of providing only the valid data among those specified by an RQ1 message.
*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
*The number of bytes comprising address data varies from one Model-ID to another.
*The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Example of Message Transactions

● Device A sending data to Device B
Transfer of a DT1 message is all that takes place.



● Device B requesting data from Device A
Device B sends an RQ1 message to Device A. Checking the message, Device A sends a DT1 message back to Device B.



4. Handshake - Transfer Procedure

Handshaking is an interactive process where two devices exchange error checking signals before a message transaction takes place, thereby increasing data reliability. Unlike one-way transfer that inserts a pause between message transactions, handshake transfer allows much speedier transactions because data transfer starts once the receiving device returns a ready signal.

When it comes to handling large amounts of data--sampler waveforms and synthesizer tones over the entire range, for example--across a MIDI interface, handshaking transfer is more efficient than one-way transfer.

Types of Messages

Message	Command ID
Want to send data	WSD (40H)
Request data	RQD (41H)
Data set	DAT (42H)
Acknowledge	ACK (43H)
End of data	EOD (45H)
Communication error	ERR (4EH)
Rejection	RJC (4FH)

Want to send data : WSD (40H)

This message is sent out when data must be sent to a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of the data to be sent.

On receiving a WSD message, the remote device checks its memory for the specified data address and size which will satisfy the request. If it finds them and is ready for communication, the device will return an "Acknowledge (ACK)" message.
Otherwise, it will return a "Rejection (RJC)" message.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
40H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ssH	Size MSB
⋮	⋮
	LSB
sum	Check sum
F7H	End of exclusive

*The size of the data to be sent does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the data should reside.
*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
*The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
*The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Request data : RQD (41H)

This message is sent out when there is a need to acquire data from a device at the other end of the interface. It contains data for the address and size that specify designation and length, respectively, of data required.

On receiving an RQD message, the remote device checks its memory for the data address and size which satisfy the request. If it finds them and is ready for communication, the device will transmit a "Data set (DAT)" message, which contains the requested data. Otherwise, it will return a "Rejection (RJC)" message.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
41H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ssH	Size MSB
⋮	⋮
	LSB
sum	Check sum
F7H	End of exclusive

*The size of the requested data does not indicate the number of bytes that make up a "Data set (DAT)" message, but represents the address fields where the requested data resides.
*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
*The same number of bytes comprises address and size data, which, however, vary with the Model-ID.
*The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Data set : DAT (42H)

This message corresponds to the actual data transfer process. Because every byte in the data is assigned a unique address, the message can convey the starting address of one or more data as well as a series of data formatted in an address-dependent order.

Although the MIDI standards inhibit non-real time messages from interrupting an exclusive one, some devices support a "soft-through" mechanism for such interrupts. To maintaincompatibility with such devices, Roland has limited the DAT to 256bytes so that an excessively long message is sent out in separate segments.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
42H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ddH	Data
⋮	⋮
sum	Check sum
F7H	End of exclusive

*A DAT message is capable of providing only the valid data among those specified by an RQD or WSD message.
*Some models are subject to limitations in data format used for a single transaction. Requested data, for example, may have a limit in length or must be divided into predetermined address fields before it is exchanged across the interface.
*The number of bytes comprising address data varies from one model ID to another.
*The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

Acknowledge : ACK (43H)

This message is sent out when no error was detected on reception of a WSD, DAT, "End of data (EOD)", or some other message and a requested setup or action is complete. Unless it receives an ACK message, the device at the other end will not proceed to the next operation.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
43H	Command ID
F7H	End of exclusive

End of data : EOD (45H)

This message is sent out to inform a remote device of the end of a message. Communication, however, will not come to an end unless the remote device returns an ACK message even though an EOD message was transmitted.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
45H	Command ID
F7H	End of exclusive

Communications error : ERR (4EH)

This message warns the remote device of a communications fault encountered during message transmission due, for example, to a checksum error. An ERR message may be replaced with a "Rejection (RJC)" one, which terminates the current message transaction in midstream.

When it receives an ERR message, the sending device may either attempt to send out the last message a second time or terminate communication by sending out an RJC message.

Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
4EH	Command ID
F7H	End of exclusive

Rejection : RJC (4FH)

This message is sent out when there is a need to terminate communication by overriding the current message. An RJC message will be triggered when :

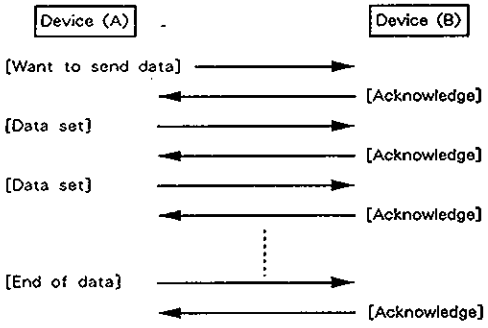
- a WSD or RQD message has specified an illegal data address or size,
- the device is not ready for communication.
- an illegal number of addresses or data has been detected.
- data transfer has been terminated by an operator.
- a communications error has occurred.

An ERR message may be sent out by a device on either side of the interface. Communication must be terminated immediately when either side triggers an ERR message.

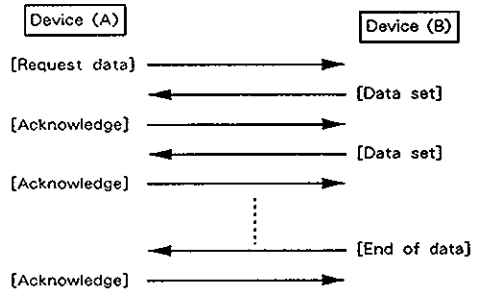
Byte	Description
F0H	Exclusive status
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
4FH	Command ID
F7H	End of exclusive

Example of Message Transactions

●Data transfer from device (A) to device (B).

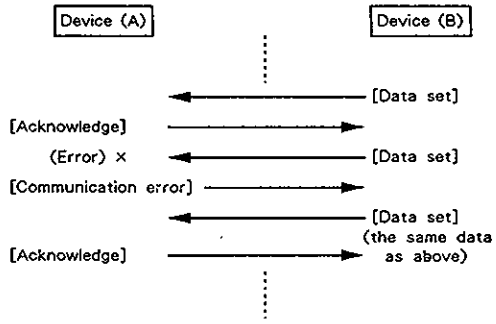


●Device (A) requests and receives data from device (B).

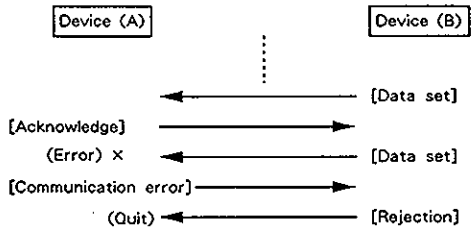


●Error occurs while device (A) is receiving data from device (B).

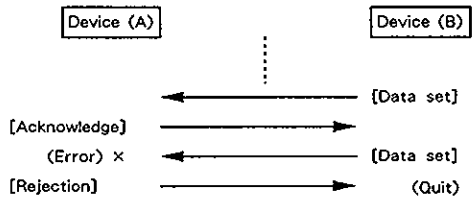
1) Data transfer from device (A) to device (B).



2) Device (B) rejects the data re-transmitied, and quits data transfer.



3) Device (A) immediately quits data transfer.



8−16 VOICE DIGITAL KEYBOARD

MODEL D−50

MIDI Implementation Chart

Date : Jun. 05. 1987

Version : 2.10

Function...		Transmitted	Recognized	Remarks
Basic Channel	Default	1−16	1−16	Memorized
	Changed	1−16	1−16	
Mode	Default	Mode 3	Mode 1, 3, 4	Memorized
	Messages	POLY, OMNI OFF	MONO,POLY,OMNI ON/OFF	
	Altered	*********	Mode 2 → Mode 1	
Note Number		24−108	0−127	
	True Voice	*********	12−108	
Velocity	Note ON	○	○ v=1−127	
	Note OFF	× 9n v=0	×	
After Touch	Key's	×	×	
	Ch's	*	*	
Pitch Bender		*	* 0−12 semi	9 bit resolution
Control Change	1	*	*	Modulation
	5	*	*	Portamento Time
	7	*	*	Volume
	0−31	○	○ (0, 2−4, 8−31)	Ext Control
	6, 38	×	**	Data Entry (MSB, LSB)
	64	*	*	Hold 1
	65	*	*	Portamento SW
	64−95	○	○ (66−95)	Pedal Switch
	100, 101	×	** (0, 1)	RPC (LSB, MSB)
Prog Change		* 0−127	* 0−127	
	True #	*********	0−127	
System Exclusive		*	*	
System Common	Song Pos	×	×	
	Song sel	×	×	
	Tune	×	×	
System Real Time	Clock	×	×	
	Commands	×	×	
Aux Message	Local ON/OFF	×	○	Memorized
	All Notes OFF	○ (123)	○ (123−127)	
	Active Sense	×	○	
	Reset	×	×	
Notes		* Can be set to ○ or × manually, and memorized. ** RPC=Registered parameter control number. RPC#0 : Pitch bend sensitivity RPC#1 : Master fine tuning Parameter values are given by Data Entry.		

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

○ : Yes
× : No

MODEL D-50

MIDI Implementation Chart (Separate CH)

*Recognized if key mode in patch function is 'Sep' or 'Sep-S'.

Function...		Transmitted	Recognized	Remarks
Basic	Default		1-16	Memorized
Channel	Changed		1-16	
Mode	Default		Mode 3, 4 (M=1)	Memorized
	Messages		×	
	Altered	*********		
Note Number	True Voice	*********	0-127 12-108	
Velocity	Note ON		○ v=1-127	
	Note OFF		×	
After Touch	Key's		×	
	Ch's		*	
Pitch Bender			* 0-12 semi	9 bit resolution
Control Change	1		*	Modulation
	5		*	Portamento Time
	7		×	Volume
	0-31		○ (0, 2-4, 8-31)	Ext Control
	6, 38		**	Data Entry (MSB, LSB)
	64		*	Hold 1
	65		*	Portamento SW
	64-95		○ (66-95)	Pedal Switch
	100, 101		** (0)	RPC (LSB, MSB)
Prog Change	True #	*********	×	
System Exclusive			×	
System Common	Song Pos		×	
	Song sel		×	
	Tune		×	
System Real Time	Clock		×	
	Commands		×	
Aux Message	Local ON/OFF		○	Memorized
	All Notes OFF		○ (123)	
	Active Sense		○	
	Reset		×	
Notes		* Can be set to ○ or × manually, and memorized. ** RPC=Registered parameter control number. RPC#0 : Pitch bend sensitivity Parameter values are given by Data Entry.		

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

○ : Yes
× : No

8−16 VOICE DIGITAL KEYBOARD

MODEL D−50

MIDI Implementation

Date : Jun. 05. 1987

Version : 2.10

1. TRANSMITTED DATA

Status	Second	Third	Description
1001 nnnn	0kkk kkkk	0000 0000	Note OFF *1−1 kkkkkkk =12 − 108
1001 nnnn	0kkk kkkk	0vvv vvvv	Note ON kkkkkkk =24 − 108 vvvvvvv = 1 − 127
1011 nnnn	0000 0001	0vvv vvvv	Modulation depth *1−2 vvvvvvv =0 − 127
1011 nnnn	0000 0111	0vvv vvvv	Main Volume *1−2 vvvvvvv =0 − 127
1011 nnnn	000c cccc	0vvv vvvv	External control ccccc = 0 − 31 *1−3 vvvvvvv =0−127
1011 nnnn	0100 0000	0000 0000	Hold 1 OFF *1−2, *1−4
1011 nnnn	0100 0000	0111 1111	Hold 1 ON *1−2
1011 nnnn	0100 0001	0000 0000	Portamento OFF *1−2
1011 nnnn	0100 0001	0111 1111	Portamento ON *1−2
1011 nnnn	0sss ssss	0000 0000	Pedal Switch OFF sssssss = 64 − 95 *1−5
1011 nnnn	0sss ssss	0111 1111	Pedal Switch ON sssssss = 64 − 95 *1−5
1100 nnnn	0ppp pppp		Program Change *1−2, *1−6 ppppppp = 0 − 127
1101 nnnn	0vvv vvvv		Channel After Touch *1−2, *1−7 vvvvvvv = 0 − 127
1110 nnnn	0vvv vvvv	0vvv vvvv	Pitch Bend Change *1−2
1011 nnnn	0111 1011	0000 0000	All NOTES OFF *1−1
1011 nnnn	0111 1100	0000 0000	OMNI OFF *1−8
1011 nnnn	0111 1111	0000 0000	POLY ON *1−8
1111 0000	... ...	1111 0111	System exclusive *1−9

Notes :

*1−1 Even if the transmit channel is changed while the keyboard is being played, data is transmitted on the previous transmit channel.

*1−2 Transmitted if the corresponding function switch is ON.

*1−3 'ccccc' can be selected by ExtCont in MIDI function.

*1−4 Even when the transmit channel is changed while Hold Pedal is being ON, data is transmitted on the previous transmit channel.

Transmitted even when Hold Function switch is turned to OFF while the Hold Pedal is being ON.

*1−5 'sssssss' can be selected by PedalSW in MIDI function.

*1−6 Transmitted when TxPC in patch function is changed.
'ppppppp' can be selected by TxPC in patch function.

0 − 63 : Internal Memory Group
64 − 127 : Card Memory Group

*1−7 The maximum value is determined by the value of Aftertouch Volume.

*1−8 Transmitted at power−up.

When the transmit channel is changed, data is transmitted on the new channel.

*1−9 See section 5 (TRANSMITTED EXCLUSIVE MESSAGES IN NORMAL MODE), section 7 (TRANSMITTED EXCLUSIVE MESSAGES IN DATA TRANSFER MODE).

2. RECOGNIZED RECEIVE DATA (MAIN CHANNEL)

Status	Second	Third	Description
1000 nnnn	0kkk kkkk	0vvv vvvv	Note OFF,velocity ignored *2−1
1001 nnnn	0kkk kkkk	0000 0000	Note OFF *2−1 kkkkkkk = 12 − 108
1001 nnnn	0kkk kkkk	0vvv vvvv	Note ON kkkkkkk = 12 − 108 *2−1 vvvvvvv = 1 − 127
1011 nnnn	0000 0001	0vvv vvvv	Modulation Depth *2−2 vvvvvvv = 0 − 127
1011 nnnn	0000 0101	0vvv vvvv	Portamento Time *2−2 vvvvvvv = 0 − 127
1011 nnnn	0000 0110	0vvv vvvv	Data Entry MSB *2−3
1011 nnnn	0000 0111	0vvv vvvv	Main Volume *2−2,*2−4 vvvvvvv = 0 − 127
1011 nnnn	000c cccc	0vvv vvvv	External Control *2−5 ccccc = 0, 2 − 4, 8 − 31 vvvvvvv = 0 − 127
1011 nnnn	0010 0110	0vvv vvvv	Data Entry LSB *2−3
1011 nnnn	0100 0000	0vvv vvvv	Hold 1 OFF *2−2 vvvvvvv = 0 − 63
1011 nnnn	0100 0000	0vvv vvvv	Hold 1 ON *2−2 vvvvvvv = 64 − 127
1011 nnnn	0100 0001	0vvv vvvv	Portamento OFF *2−2 vvvvvvv = 0 − 63
1011 nnnn	0100 0001	0vvv vvvv	Portamento ON *2−2 vvvvvvv = 64 − 127
1011 nnnn	0sss ssss	0vvv vvvv	Pedal Switch OFF *2−6 sssssss = 66 − 95 vvvvvvv = 0 − 63
1011 nnnn	0sss ssss	0vvv vvvv	Pedal Switch ON *2−6 sssssss = 66 − 95 vvvvvvv = 64 − 127
1011 nnnn	0110 0100	0vvv vvvv	RPC LSB *2−3
1011 nnnn	0110 0101	0vvv vvvv	RPC MSB *2−3
1100 nnnn	0ppp pppp		Program Change *2−2, *2−7 ppppppp = 0 − 127
1101 nnnn	0vvv vvvv		Channel After Touch *2−2, *2−8 vvvvvvv = 0 − 127
1110 nnnn	0vvv vvvv	0vvv vvvv	Pitch Bend Change *2−2
1011 nnnn	0111 1010	0000 0000	Local OFF *2−9
1011 nnnn	0111 1010	0111 1111	Local ON *2−9
1011 nnnn	0111 1011	0000 0000	ALL NOTES OFF *2−10
1011 nnnn	0111 1100	0000 0000	OMNI OFF *2−10
1011 nnnn	0111 1101	0000 0000	OMNI ON *2−10
1011 nnnn	0111 1110	000m mmmm	MONO ON *2−10,*2−11
1011 nnnn	0111 1111	0000 0000	POLY ON *2−10,*2−11
1111 0000	... ...	1111 0111	System exclusive *2−12
1111 1110			Active Sensing

Notes :

*2−1 Note numbers outside the range 12 − 108 are transposed to the nearest octave inside this range.

*2−2 Recognized if the corresponding function switch is ON.

*2−3 RPC and value (Data Entry) are recognized as follows.

RPC#	value MSB	value LSB	Description
0	0vvv vvvv	0xxx xxxx	BEND RANGE (0−12 semitone, 1 semitone step) xxxxxxx is ignored.
1	0vvv vvvv	0vvv vvvv	MASTER TUNE (−50 − +50 cent)

*2−4 The volume of the sound can be controlled by main volume message within level which adjusted by the panel volume knob.

*2−5 'ccccc' can be selected by ExtCont in MIDI function.

Recognized as folows depending on how the ExtCont mode of Tune/Func is set.

ExtCont mode	Function
'BAL'	Tone Balance
'AFTER'	Channel pressure
'MOD'	Moduration Depth
'OFF'	------

*2-6 'sssssss' can be selected by PedalSW in MIDI function.

Recognized as follows depending on how the PedalSW mode of Tune/Func is set.

PedalSW mode	Function
'P-SFT'	Patch Shift
'PORTA'	Portamento ON/OFF
'CHASE'	Chase ON/OFF
'OFF'	-------

However, Patch Shift function is available only in Play mode. Also, Chase ON /OFF is recognized only when the key mode is Whole or Dual.

*2-7 Recognized only in play mode.
0 - 63 : Internal Memory Group
64 - 127 : Card Memory Group

*2-8 Ignored if ExtCont in Tune/Func function is 'AFTER'.

*2-9 Ignored if key mode in patch function is 'Sep' or 'Sep-S'.

*2-10 Mode Messages (123 - 127) are also recognized as ALL NOTES OFF.

MONO channel range 'mmmmm' is recognized as follows.

mmmmm	True MONO channel range
0	8
1 - 8	1 - 8
9 - 16	8
17 - 127	ignore

In MONO mode, channel of recognized each message is as follows.

	Control in MIDI function	
Message	' B.CH '	' G.CH '
Note on/off	individual	individual
Control change	basic	global
Mode message	basic	basic
Program change	basic	global
Channel After Touch	basic	global
Pitch bend change	individual	individual
Exclusive	basic	basic

*Global channel is equal to "basic channel - 1".
And if basic channel is 1, global channel is 16.

*2-11 Ignored if Control in MIDI function is 'MdeOFF'.

*2-12 See section 6 (RECOGNIZED EXCLUSIVE MESSAGES IN NOMAL MODE), section 8 (RECOGNIZED EXCLUSIVE MESSAGES IN DATA TRANSFER MODE).

3. RECOGNIZED RECEIVE DATA (SEPARATE CHANNEL)

*Recognized if key mode in patch function is 'Sep' or 'Sep-S'.

Status	Second	Third	Description
1000 nnnn	0kkk kkkk	0vvv vvvv	Note OFF,velocity ignored *3-1
1001 nnnn	0kkk kkkk	0000 0000	Note OFF *3-1 kkkkkkk=12 - 108
1001 nnnn	0kkk kkkk	0vvv vvvv	Note ON kkkkkkk=12-108 *3-1 vvvvvvv=1 - 127
1011 nnnn	0000 0001	0vvv vvvv	Modulation depth *3-2 vvvvvvv = 0 - 127
1011 nnnn	0000 0101	0vvv vvvv	Portamento Time *3-2 vvvvvvv = 0 - 127
1011 nnnn	0000 0110	0vvv vvvv	Data Entry MSB *3-3
1011 nnnn	000c cccc	0vvv vvvv	External Control *3-4 ccccc = 0, 2 - 4, 8 - 31 vvvvvvv = 0 - 127
1011 nnnn	0100 0000	0vvv vvvv	Hold 1 OFF *3-2 vvvvvvv = 0 - 63
1011 nnnn	0100 0000	0vvv vvvv	Hold 1 ON *3-2 vvvvvvv = 64 - 127
1011 nnnn	0100 0001	0vvv vvvv	Portamento OFF *3-2 vvvvvvv = 0 - 63
1011 nnnn	0100 0001	0vvv vvvv	Portamento ON *3-2 vvvvvvv = 64 - 127
1011 nnnn	0sss ssss	0vvv vvvv	Pedal Switch OFF *3-5 sssssss = 66 - 95 vvvvvvv = 0 - 63
1011 nnnn	0sss ssss	0vvv vvvv	Pedal Switch ON *3 5 sssssss = 66 - 95 vvvvvvv = 64 - 127
1011 nnnn	0110 0100	0vvv vvvv	RPC LSB *3-3
1011 nnnn	0110 0101	0vvv vvvv	RPC MSB *3-3
1101 nnnn	0vvv vvvv		Channel After Touch *3-2, *3-6 vvvvvvv = 0 - 127
1110 nnnn	0vvv vvvv	0vvv vvvv	Pitch Bend Change *3-2
1011 nnnn	0111 1010	0000 0000	Local OFF
1011 nnnn	0111 1010	0111 1111	Local ON
1011 nnnn	0111 1011	0000 0000	ALL NOTES OFF
1111 1110			Active Sensing

Notes :
*3-1 Note numbers outside the range 12 - 108 are transposed to the nearest octave inside this range.

*3-2 Received if the corresponding function switch is ON.

*3-3 RPC and value (Data Entry) are recognized as follows.

RPC#	value MSB	value LSB	Description
0	0vvv vvvv	0xxx xxxx	BEND RANGE (0-12 semitone, 1 semitone step) xxxxxxx is ignored.

*3-4 'ccccc' can be selected by ExtCont in MIDI function.

Recognized as follows depending on the ExtCont mode of Tune/Func.

ExtCont Mode	Function
'BAL'	------
'AFTER'	Channel pressure
'MOD'	Moduration Depth
'OFF'	------

*3-5 'sssssss' can be selected by PedalSW in MIDI function.

Recognized as follows depending on the PedalSW mode of Tune/Func.

PedalSW Mode	Function
'P-SFT'	------
'PORTA'	Portamento ON/OFF
'CHASE'	------
'OFF'	------

*3-6 Ignored if ExtCont in Tune/Func function is 'AFTER'.

4. EXCLUSIVE COMMUNICATION

4.1 Message structure

All exclusive communications are based on following structure (Roland Exclusive Format Type IV).

Byte		Description
a	1111 0000	Exclusive status
b	0100 0001	Roland ID #
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #
d	0001 0100	Model-ID # (D-50)
e	0aaa aaaa	Command-ID #
[f	0bbb bbbb	Address MSB] [ ] depend on Command-ID
[g	0ccc cccc	Address]
[h	0ddd dddd	Address LSB]
[i	0eee eeee	Data]
[	:	]
j	0fff ffff	Checksum
k	1111 0111	End of System Exclusive

Summed value of the all bytes between Command-ID and EOX (f-j) must be 00H (7 bits). It doesn't include Command-ID and EOX.

4.2 Address mapping

Address	Description			
Temporary area				
[00 - 00 - 00]	Upper	Partial-1	temp.area	*4-1, *4-4
[00 - 00 - 40]	Upper	Partial-2	temp.area	*4-1, *4-4
[00 - 01 - 00]	Upper	Common	temp.area	*4-1, *4-5
[00 - 01 - 40]	Lower	Partial-1	temp.area	*4-1, *4-4
[00 - 02 - 00]	Lower	Partial-2	temp.area	*4-1, *4-4
[00 - 02 - 40]	Lower	Common	temp.area	*4-1, *4-5
[00 - 03 - 00]	Patch		temp.area	*4-1, *4-6
Memory area				
[02 - 00 - 00]	Patch	Memory	1 - 1	*4-2, *4-3

[02 - 03 - 40]	Patch Memory	1-2	*4-2, *4-3
:	:		
	Patch Memory	8-8	*4-2, *4-3
[03 - 60 - 00]	Reverb Data	17	*4-2, *4-7
[03 - 62 - 78]	Reverb Data	18	*4-2, *4-7
:	:		
[04 - 0C - 08]	Reverb Data	32	*4-2, *4-7

* [hh-mm-ll] 'hh','mm' and 'll' are showed by hex decimal.
0hhhhhhh 0mmmmmmm 0lllllll (binary), MS bit must be 0.

Notes :

*4-1 Transmitted and recognized in NORMAL MODE.

*4-2 Transmitted and recognized in DATA TRANSFER MODE.

*4-3 Each patch memory consists of the following.

Offset	Description	
[00 - 00 - 00]	Upper Partial-1	*4-4
[00 - 00 - 40]	Upper Partial-2	*4-4
[00 - 01 - 00]	Upper Common	*4-5
[00 - 01 - 40]	Lower Partial-1	*4-4
[00 - 02 - 00]	Lower Partial-2	*4-4
[00 - 02 - 40]	Lower Common	*4-5
[00 - 03 - 00]	Patch	*4-6

*4-4 Each partial block consists of the following.

Offset	Function		Value	
0	WG Pitch	Coarse	0 - 72	(C1,C#1 - C7)
1	WG Pitch	Fine	0 - 100	(-50 - +50)
2	WG Pitch	Keyfollow	0 - 16	(-1,-1/2,-1/4,0.1/8, 1/4,3/8,1/2,5/8,3/4, 7/8,1,5/4,3/2,2,s1, s2)
3	WG Mod	LFO Mode	0 - 3	(OFF,(+),(-),A&L)
4	WG Mod	P-ENV Mode	0 - 2	(OFF,(+),(-)
5	WG Mod	Bend Mode	0 - 2	(OFF,Keyfollow,Normal)
6	WG Wave	Form	0 - 1	(Square,Sawtooth)
7	WG PCM	Wave No.	0 - 99	(1 - 100)
8	WG Pulse	Width	0 - 100	
9	WG PW	Velocity Range	0 - 14	(-7 - +7)
10	WG PW	LFO Select	0 - 5	(+1,-1,+2,-2,+3,-3)
11	WG PW	LFO Depth	0 - 100	
12	WG PW	After touch Range	0 - 14	(-7 - +7)
13	TVF	Cutoff Frequency	0 - 100	
14	TVF	Resonance	0 - 30	
15	TVF	Keyfollow	0 - 14	(-1,-1/2,-1/4,0.1/8, 1/4,3/8,1/2,5/8,3/4, 7/8,1,5/4,3/2,2)
16	TVF	Bias Point/Dir	0 - 127	(<A1-<C7,>A1->C7)
17	TVF	Bias Level	0 - 14	(-7 - +7)
18	TVF ENV	Depth	0 - 100	
19	TVF ENV	Velocity Range	0 - 100	
20	TVF ENV	Depth Keyfollow	0 - 4	
21	TVF ENV	Time Keyfollow	0 - 4	
22	TVF ENV	Time 1	0 - 100	
23	TVF ENV	Time 2	0 - 100	
24	TVF ENV	Time 3	0 - 100	
25	TVF ENV	Time 4	0 - 100	
26	TVF ENV	Time 5	0 - 100	
27	TVF ENV	Level 1	0 - 100	
28	TVF ENV	Level 2	0 - 100	
29	TVF ENV	Level 3	0 - 100	
30	TVF ENV	Sustain Level	0 - 100	
31	TVF ENV	End Level	0 - 1	(0,100)
32	TVF Mod	LFOSelect	0 - 5	(+1,-1,+2,-2,+3,-3)
33	TVF Mod	LFO Depth	0 - 100	
34	TVF Mod	After touch Range	0 - 14	(-7 - +7)
35	TVA	Level	0 - 100	
36	TVA	Velocity Range	0 - 100	(-50 - +50)
37	TVA	Bias Point	0 - 127	(<A1-<C7,>A1->C7)
38	TVA	Bias Level	0 - 12	(-12 - 0)
39	TVA ENV	Time 1	0 - 100	
40	TVA ENV	Time 2	0 - 100	
41	TVA ENV	Time 3	0 - 100	
42	TVA ENV	Time 4	0 - 100	
43	TVA ENV	Time 5	0 - 100	
44	TVA ENV	Level 1	0 - 100	
45	TVA ENV	Level 2	0 - 100	
46	TVA ENV	Level 3	0 - 100	
47	TVA ENV	Sustain Level	0 - 100	
48	TVA ENV	End Level	0 - 1	(0,100)
49	TVA ENV	Velocity Follow	0 - 4	
50	TVA ENV	Time Keyfollow	0 - 4	
51	TVA Mod	LFO Select	0 - 5	(+1,-1,+2,-2,+3,-3)
52	TVA Mod	LFO Depth	0 - 100	
53	TVA Mod	After touch Range	0 - 14	(-7 - +7)
54	Extension	(for future)	0 - 127	
55	Extension		0 - 127	
56	Extension		0 - 127	
57	Extension		0 - 127	
58	Extension		0 - 127	
59	Extension		0 - 127	
60	Extension		0 - 127	
61	Extension		0 - 127	
62	Extension		0 - 127	
63	Extension		0 - 127	

*4-5 Each common block consists of the following.

Offset	Function		Value	
0	Tone Name 1		0 - 63	(' ','A'-'Z','a'-'z', '1'-'9','0','-')
1	Tone Name 2		0 - 63	...
2	Tone Name 3		0 - 63	...
3	Tone Name 4		0 - 63	...
4	Tone Name 5		0 - 63	...
5	Tone Name 6		0 - 63	...
6	Tone Name 7		0 - 63	...
7	Tone Name 8		0 - 63	...
8	Tone Name 9		0 - 63	...
9	Tone Name 10		0 - 63	...
10	Structure No.		0 - 6	(1 - 7)
11	P-ENV	Velocity Range	0 - 2	
12	P-ENV	Time Keyfollow	0 - 4	
13	P-ENV	Time 1	0 - 50	
14	P-ENV	Time 2	0 - 50	
15	P-ENV	Time 3	0 - 50	
16	P-ENV	Time 4	0 - 50	
17	P-ENV	Level 0	0 - 100	(-50 - +50)
18	P-ENV	Level 1	0 - 100	(-50 - +50)
19	P-ENV	Level 2	0 - 100	(-50 - +50)
20	P-ENV	Sustain Level	0 - 100	(-50 - +50)
21	P-ENV	End Level	0 - 100	(-50 - +50)
22	P-Mod	LFO Depth	0 - 100	
23	P-Mod	Lever	0 - 100	
24	P-Mod	After touch	0 - 100	
25	LFO-1	Wave Form	0 - 3	(TRI,SAW,SQU,RND)
26	LFO-1	Rate	0 - 100	
27	LFO-1	Delay Time	0 - 100	
28	LFO-1	Sync	0 - 2	(OFF,ON,KEY)
29	LFO-2	Wave Form	0 - 3	(TRI,SAW,SQU,RND)
30	LFO-2	Rate	0 - 100	
31	LFO-2	Delay Time	0 - 100	
32	LFO-2	Sync	0 - 1	(OFF,ON)
33	LFO-3	Wave Form	0 - 3	(TRI,SAW,SQU,RND)
34	LFO-3	Rate	0 - 100	
35	LFO-3	Delay Time	0 - 100	
36	LFO-3	Sync	0 - 1	(OFF,ON)
37	Low EQ	Frequency	0 - 15	(63, 75, 88,105,125, 150,175,210,250,300, 350,420,500,600,700, 840)
38	Low EQ	Gain	0 - 24	(-12 - +12)
39	Low EQ	Frequency	0 - 21	(250,300,350,420,500, 600,700,840,1.0,1.2, 1.4,1.7,2.0,2.4,2.8, 3.4,4.0,4.8,5.7,6.7, 8.0,9.5)
40	High EQ	Q	0 - 8	(0.3,0.5,0.7,1.0,1.4, 2.0,3.0,4.2,6.0)
41	High EQ	Gain	0 - 24	(-12 - +12)
42	Chorus	Type	0 - 7	(1 - 8)
43	Chorus	Rate	0 - 100	
44	Chorus	Depth	0 - 100	
45	Chorus	Balance	0 - 100	
46	Partial	Mute	0 - 3	(00,01,10,11)
47	Partial	Balance	0 - 100	
48	Extension	(for future)	0 - 127	
49	Extension		0 - 127	
50	Extension		0 - 127	
51	Extension		0 - 127	
52	Extension		0 - 127	
53	Extension		0 - 127	
54	Extension		0 - 127	
55	Extension		0 - 127	
56	Extension		0 - 127	
57	Extension		0 - 127	
58	Extension		0 - 127	
59	Extension		0 - 127	
60	Extension		0 - 127	
61	Extension		0 - 127	
62	Extension		0 - 127	
63	Extension		0 - 127	

*4-6 Each patch block consists of the following.

Offset	Function	Value	
0	Patch Name 1	0 - 63	(' ','A'-'Z','a'-'z', '1'-'9','0','-')
1	Patch Name 2	0 - 63	...
2	Patch Name 3	0 - 63	...
3	Patch Name 4	0 - 63	...
4	Patch Name 5	0 - 63	...
5	Patch Name 6	0 - 63	...
6	Patch Name 7	0 - 63	...
7	Patch Name 8	0 - 63	...
8	Patch Name 9	0 - 63	...
9	Patch Name 10	0 - 63	...
10	Patch Name 11	0 - 63	...
11	Patch Name 12	0 - 63	...
12	Patch Name 13	0 - 63	...
13	Patch Name 14	0 - 63	...
14	Patch Name 15	0 - 63	...
15	Patch Name 16	0 - 63	...
16	Patch Name 17	0 - 63	...
17	Patch Name 18	0 - 63	...
18	Key Mode	0 - 8	(Whole,Dual,Split, Separate,Whole-S, Dual-S,Split-US, Split-LS,Separate-S)
19	Split Point	0 - 60	(C2,C#2 - C7)
20	Portamento Mode	0 - 2	(U,L,UL)
21	Hold Mode	0 - 2	(U,L,UL)
22	Upper Tone Key Shift	0 - 48	(-24 - +24)
23	Lower Tone Key Shift	0 - 48	(-24 - +24)
24	Upper Tone Fine Tune	0 - 100	(-50 - +50)
25	Lower Tone Fine Tune	0 - 100	(-50 - +50)
26	Bender Range	0 - 12	
27	After touch Bend Range	0 - 24	(-12 - +12)
28	Portamento Time	0 - 100	
29	Output Mode	0 - 3	(1 - 4)
30	Reverb Type	0 - 31	(1 - 32)
31	Reverb Balance	0 - 100	
32	Total Volume	0 - 100	
33	Tone Balance	0 - 100	
34	Chase Mode	0 - 2	(UL,ULL,ULU)
35	Chase Level	0 - 100	
36	Chase Time	0 - 100	
37	MIDI Transmit Channel	0 - 16	(Basic CH, 1 - 16)
38	MIDI Separate Rcv Channel	0 - 16	(OFF,1 - 16)
39	MIDI Transmit Prog. Change	0 - 100	(OFF, 1-100)
40	Extension (for future)	0 - 127	
41	Extension	0 - 127	
42	Extension	0 - 127	
43	Extension	0 - 127	
44	Extension	0 - 127	
45	Extension	0 - 127	
46	Extension	0 - 127	
47	Extension	0 - 127	
48	Extension	0 - 127	
49	Extension	0 - 127	
50	Extension	0 - 127	
51	Extension	0 - 127	
52	Extension	0 - 127	
53	Extension	0 - 127	
54	Extension	0 - 127	
55	Extension	0 - 127	
56	Extension	0 - 127	
57	Extension	0 - 127	
58	Extension	0 - 127	
59	Extension	0 - 127	
60	Extension	0 - 127	
61	Extension	0 - 127	
62	Extension	0 - 127	
63	Extension	0 - 127	

*4-7 Each reverb block (17 - 32) consists of the following.

0	0000 aaaa	Reverb data 1	
	0000 aaaa		
2	0000 aaaa	Reverb data 2	
	0000 aaaa		
	:		
	:		
374	0000 aaaa	Reverb data 188	
	0000 aaaa		

All the 188 data (376 byte) are related each other, therefore receiving or sending a part of data does not achieve anything.

5. TRANSMITTED EXCLUSIVE MESSAGES IN NORMAL MODE

5.1 Data set (One way) DT1 12H

When Request Data (RQ1) is recognized, the data within the range set with RQ-1 messages will be transmitted on the channel set with MIDI CH in MIDI Func, regardlss of the transmit channel set with TxCH in Patch Func.

When any of Patch Group, Bank or Number is changed by operating the panel of the unit and if Exclu in MIDI Func is set to P-Dump, all data in Temp. area will be transmitted on the channel set with TxCH in Patch Func.

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0001 0010	Command-ID # (DT1)	
f	0aaa aaaa	Address MSB	*5-1
g	0bbb bbbb	Address	
h	0ccc cccc	Address LSB	
i	0ddd dddd	Data	*5-1
	:		
j	0eee eeee	Checksum	
k	1111 0111	End of System Exclusive	

Notes :

*5-1 Transmitted several times in smaller portion than the total number 256 in data byte of each message acrcoding to the address size assinged with Request Data (RQ1).

6. RECOGNIZED EXCLUSIVE MESSAGES IN NOMAL MODE

6.1 Request Data (One way) RQ1 11H

Recognized if Exclu in the MIDI function is ON or P-Dump.

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0001 0001	Command-ID # (RQ1)	
f	0aaa aaaa	Address MSB	*6-1
g	0bbb bbbb	Address	
h	0ccc cccc	Address LSB	
i	0ddd dddd	Size MSB	*6-1
j	0eee eeee	Size	
k	0fff ffff	Size LSB	
l	0ggg gggg	Checksum	
m	1111 0111	End of System Exclusive	

6.2 Data set (One way) DT1 12H

Recognized if Exclu in the MIDI function is ON or P-Dump.

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0001 0010	Command-ID # (DT1)	
f	0aaa aaaa	Address MSB	*6-1
g	0bbb bbbb	Address	
h	0ccc cccc	Address LSB	
i	0ddd dddd	Data	*6-2
	:		
j	0eee eeee	Checksum	
k	1111 0111	End of System Exclusive	

Notes :

*6-1 Any address size can be assinged within the range of Temp.area.

*6-2 Number of the data bytes should not exceed 256. (except sum)

7. TRANSMITTED EXCLUSIVE MESSAGES IN DATA TRANSFER MODE

No matter what tranmit channel is selected with TxCH in Patch Func, the messages are transmitted on the channel set with MIDI CH in MIDI Func.

7.1 One way transfer

7.1.1 Data set — DT1 12H

Transmitted when 'ENTER' button is pressed in 'Bulk Dump.O' mode.

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0001 0010	Command-ID # (DT1)	
f	0aaa aaaa	Address MSB	*7-1
g	0bbb bbbb	Address	
h	0ccc cccc	Address LSB	
i	0ddd dddd	Data	*7-2
	:		
j	0eee eeee	Checksum	
k	1111 0111	End of System Exclusive	

7.2 Handshaking communication

7.2.1 Want to send data — WSD 40H

Transmitted when 'ENTER' button is pressed in 'Bulk Dump' mode.

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0100 0000	Command-ID # (WSD)	
f	0000 0010	Address MSB	*7-1
g	0000 0000	Address	
h	0000 0000	Address LSB	
i	0000 0010	Size MSB	*7-3
j	0000 1111	Size	
k	0000 0000	Size LSB	
l	0110 1101	Checksum	
m	1111 0111	End of System Exclusive	

7.2.2 Request data — RQD 41H

Transmitted when 'ENTER' button is pressed in 'Bulk Load' mode.

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0100 0001	Command-ID # (RQD)	
f	0000 0010	Address MSB	*7-1
g	0000 0000	Address	
h	0000 0000	Address LSB	
i	0000 0010	Size MSB	*7-3
j	0000 1111	Size	
k	0000 0000	Size LSB	
l	0110 1101	Checksum	
m	1111 0111	End of System Exclusive	

7.2.3 Data set — DAT 42H

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0100 0010	Command-ID # (DAT)	
f	0aaa aaaa	Address MSB	*7-1
g	0bbb bbbb	Address	
h	0ccc cccc	Address LSB	
i	0ddd dddd	Data	*7-2
	:		
j	0eee eeee	Checksum	
k	1111 0111	End of System Exclusive	

7.2.4 Acknowledge — ACK 43H

Byte		Description
a	1111 0000	Exclusive status
b	0100 0001	Roland ID #
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #
d	0001 0100	Model-ID # (D-50)
e	0100 0011	Command-ID # (ACK)
f	1111 0111	End of System Exclusive

7.2.5 End of data — EOD 45H

Byte		Description
a	1111 0000	Exclusive status
b	0100 0001	Roland ID #
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #
d	0001 0100	Model-ID # (D-50)
e	0100 0101	Command-ID # (EOD)
f	1111 0111	End of System Exclusive

7.2.6 Rejection — RJC 4FH

Byte		Description
a	1111 0000	Exclusive status
b	0100 0001	Roland ID #
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #
d	0001 0100	Model-ID # (D-50)
e	0100 1111	Command-ID # (RJC)
f	1111 0111	End of System Exclusive

Notes :

*7-1 Address of first Data set command (DT1, DAT), Want to send data (WSD) or Request data (RQD) is [02-00-00] top of memory area.

*7-2 Number of data in data set (DT1, DAT) is not exceed 256.

*7-3 Number of memory data (including reverb 17 - 32).

8. RECOGNIZED EXCLUSIVE MESSAGES IN DATA TRANSFER MODE

8.1 One way transfer

8.1.1 Data set — DT1 12H

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0001 0010	Command-ID # (DT1)	
f	0aaa aaaa	Address MSB	*8-1
g	0bbb bbbb	Address	
h	0ccc cccc	Address LSB	
i	0ddd dddd	Data	*8-2
	:		
j	0eee eeee	Checksum	
k	1111 0111	End of System Exclusive	

8.2 Handshaking communication

8.2.1 Want to send data — WSD 40H

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0100 0000	Command-ID # (WSD)	
f	0aaa aaaa	Address MSB	*8-1
g	0bbb bbbb	Address	
h	0ccc cccc	Address LSB	
i	0ddd dddd	Size MSB	*8-3
j	0eee eeee	Size	
k	0fff ffff	Size LSB	
l	0ggg gggg	Checksum	
m	1111 0111	End of System Exclusive	

8.2.2 Request data RQD 41H

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0100 0001	Command-ID # (RQD)	
f	0000 0010	Address MSB	*8-1
g	0000 0000	Address	
h	0000 0000	Address LSB	
i	0ddd dddd	Size MSB	*8-3
j	0eee eeee	Size	
k	0fff ffff	Size LSB	
l	0ggg gggg	Checksum	
m	1111 0111	End of System Exclusive	

8.2.3 Data set DAT 42H

Byte		Description	
a	1111 0000	Exclusive status	
b	0100 0001	Roland ID #	
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #	
d	0001 0100	Model-ID # (D-50)	
e	0100 0010	Command-ID # (DAT)	
f	0aaa aaaa	Address MSB	*8-1
g	0bbb bbbb	Address	
h	0ccc cccc	Address LSB	
i	0ddd dddd	Data	*8-2
:			
j	0eee eeee	Checksum	
k	1111 0111	End of System Exclusive	

8.2.4 Acknowledge ACK 43H

Byte		Description
a	1111 0000	Exclusive status
b	0100 0001	Roland ID #
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #
d	0001 0100	Model-ID # (D-50)
e	0100 0011	Command-ID # (ACK)
f	1111 0111	End of System Exclusive

8.2.5 End of data EOD 45H

Byte		Description
a	1111 0000	Exclusive status
b	0100 0001	Roland ID #
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #
d	0001 0100	Model-ID # (D-50)
e	0100 0101	Command-ID # (EOD)
f	1111 0111	End of System Exclusive

8.2.6 Communication error ERR 4EH

Byte		Description
a	1111 0000	Exclusive status
b	0100 0001	Roland ID #
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #
d	0001 0100	Model-ID # (D-50)
e	0100 1110	Command-ID # (ERR)
f	1111 0111	End of System Exclusive

8.2.7 Rejection RJC 4FH

Byte		Description
a	1111 0000	Exclusive status
b	0100 0001	Roland ID #
c	0000 nnnn	Device-ID # = MIDI basic channel where nnnn + 1 = channel #
d	0001 0100	Model-ID # (D-50)
e	0100 1111	Command-ID # (RJC)
f	1111 0111	End of System Exclusive

Notes :

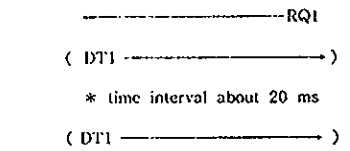
*8-1 If the assinged address exceeds Memory area, it is ignores.

*8-2 Number of data in data set (DT1, DAT) should not exceed 256.

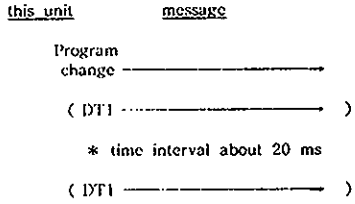
*8-3 The size that exceeds Memory area should not be assinged.

9. SEQUENCE OF COMMUNICATION

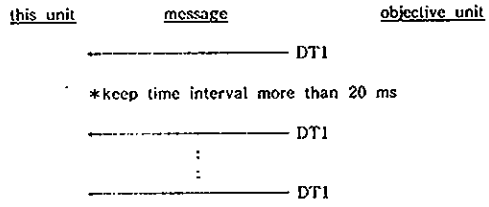
9.1 When one way request data (RQ1) is received



9.2 When any of Patch Group, Bank or Number is changed by operating the panel of the unit and if Exclu in MIDI Func is set to P-Dump, all data in Temp. area will be transmitted.

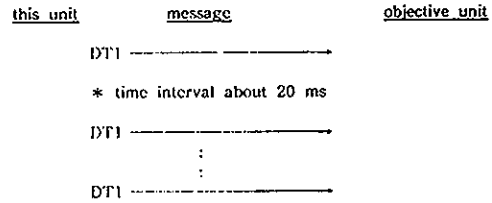


9.3 When one way data set (DT1) is received



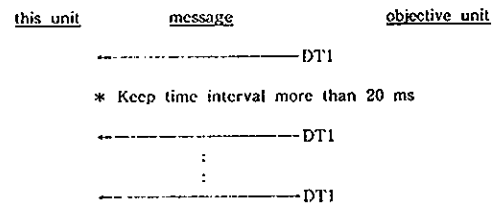
9.4 In the 'Bulk Dump' mode

Data in all memory areas, including Reverbs 17 to 32, is transmitted from the beginning.



9.5 In the 'Bulk Load' mode

Data in all memory areas, including Reverbs 17 to 32, is transmitted from the beginning.



Notes :

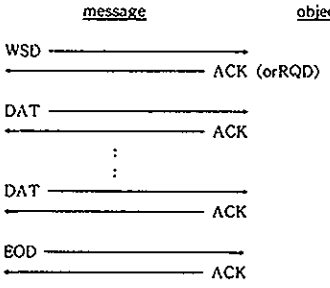
*It sends RJC and stops the sequence when it receives ERR or detects some error.

*It sends RJC when the sequence is discontinued manually.

*It stops the sequence immediately when it receives RJC.

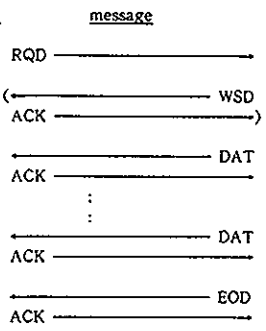
9.6 In the 'Bulk Dump' mode

When Request data (RQD) is recognized, data area defined by RQD is transferred. If not recognized, data in all memory areas, in cluding Reverbs 17 to 32 is transferred.



9.7 In the 'Bulk Load' mode

When"Want to send"data (WSD) is recognized, data area defined by WSD is transferred. If not recognixed, data in all memory areas, in cluding Reverys 17 to 32 is transferred.



Notes :

*t sends RJCand stops the sequence when it receives ERR or detects some error.

*It sends RJC when the sequence is discontinued manually.

*It stops the sequence immediately when it receives RJC.

10. HOW TO USE EXCLUSIVE MESSAGES

10.1 DataSet (DT1)

To set Pitch Coarse and Pitch Fine in Upper Partial−1, transmit the following messages to the D−50.

byte		Description
a	F0h	Exclusive status
b	41h	Roland ID#
c	00h	Device−ID# (MIDI basic channel=1)
d	14h	Model−ID# (D−50)
e	12h	Command−ID# (DT1)
f	00h	Address MSB (Pitch Coarse of Upper Partial−1)
g	00h	Address
h	00h	Address LSB
i	24h	Data (Pitch Coarse=C4)
j	32h	Data (Pitch Fine=0 (senter))
k	2Ah	Check sum
l	F7h	End of System Exclusive

When parameter's addresses are consecutive like the above example, one messages can set data for up to 256 parameters.

10.2 Request Data (RQ1)

To request the D−50 to transmit all parameters data in Temp. area, sent the following messages.

byte		Description
a	F0h	Exclusive status
b	41h	Roland ID#
c	00h	Device−ID# (MIDI basic channel=1)
d	14h	Model−ID# (D−50)
e	11h	Command−ID# (RQ1)
f	00h	Addres sMSB (top of temp. area)
g	00h	Address
h	00h	Address LSB
i	00h	Size MSB (size=448)
j	03h	Size
k	40h	SizeLSB
l	3Dh	Checksum
m	F7h	End of System Exclusive

When the data size exceeds 256 is received, D-50 deviced, the data into two and transmit them.

10.3 Want to send data (WSD)

To send only Patch memory 1−1 data, send the following want to send data (WSD) messages.

byte		Description
a	F0h	Exclusive status
b	41h	Roland ID#
c	00h	Device−ID# (MIDI basic channel=1)
d	14h	Model−ID# (D−50)
e	40h	Command−ID# (WSD)
f	02h	Address MSB (patch memory1−1)
g	00h	Address
h	00h	Address LSB
i	00h	SizeMSB (size=448)
j	03h	Size
k	40h	SizeLSB
l	3Bh	Check sum
m	F7h	End of System Exclusive

After the above messages are recongnized, the address size check of the later Data set (DAT) messages is performaed according to the address size set with these messagges.

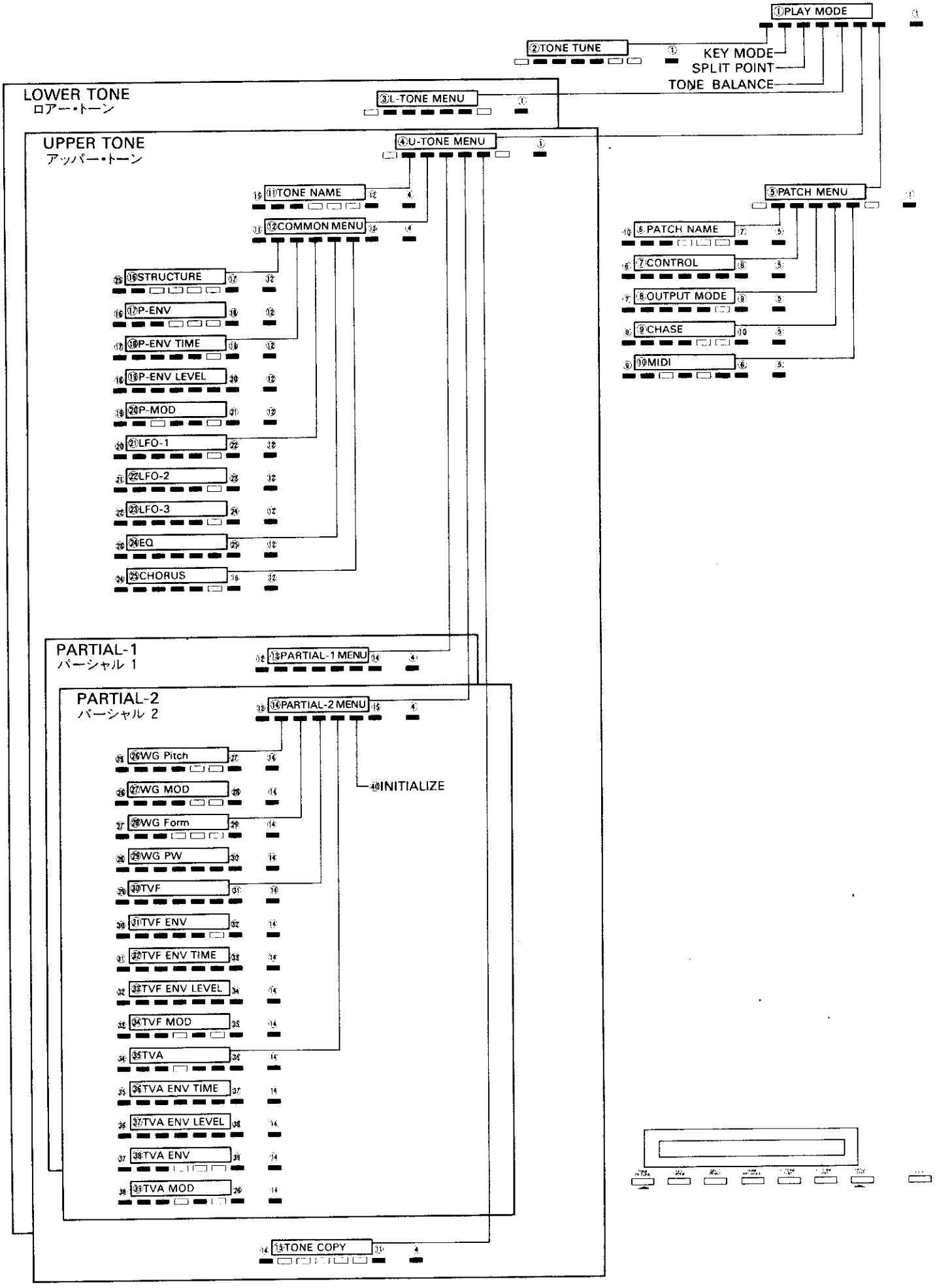
10.6 Request data (RQD)

To send only Patch memory 1−1 data, send the following Request data (RQD) messages

byte		Description
a	F0h	Exclusive status
b	41h	Roland ID#
c	00h	Device−ID# (MIDI basic channel=1)
d	14h	Model−ID# (D−50)
e	41h	Command−ID# (RQD)
f	02h	Address MSB (patchmemory1−1)
g	00h	Address
h	00h	Address LSB
i	00h	SizeMSB (size=448byte)
j	03h	Size
k	40h	SizeLSB
l	3Bh	Check sum
m	F7h	End of System Exclusive

When the above messages are recognized, the defined data area is transmitted with Dta set (DAT) messages, then End of data (EOD) is transmitted.

【D-50エディット・マップ/D-50 EDIT MAP】



DISPLAY No.	Patch Factors
①PLAY MODE	Key Mode Split Point Tone Balance
②TONE TUNE	L-Key Shift U-Key Shift L-Fine Tune U-Fine Tune
⑥Patch Name	(←) (→)
⑦Control	Bender Range After Touch (Pitch Bender) Porta Time Porta Mode Hold Mode
⑧Output Mode	Output Mode Reverb Type Reverb Balance Total Volume
⑨Chase	Mode Level Time
⑩MIDI	TxCH TxProg.C Separate CH

DISPLAY No.	Common Parameters
⑪TONE Name	(←) (→)
⑯Structure	No.
⑰P-ENV	Velocity Keyfollow(Time)
⑱P-ENV Time	T1 T2 T3 T4
⑲P-ENV Level	L0 L1 L2 Sustain Level End Level
⑳Pitch Mod	LFO Depth Pitch Lever Modulation Pitch After Touch Modulation
㉑LFO-1	Waveform Rate Delay Time Sync
㉒LFO-2	Waveform Rate Delay Time Sync
㉓LFO-3	Waveform Rate Delay Time Sync
㉔EQ	Lf Lg Hf HQ Hg
㉕Chorus	Type Rate Depth Balance

DISPLAY No.	Partial Parameters
㉖WG Pitch	Pitch Coarse Pitch Fine Keyfollow(Pitch)
㉗WG Mod	LFO Mode P-ENV Mode Bender Mode
㉘WG wave Form	Waveform PCM Wave No.
㉙WG Pulse Width	Pulse Width Velocity After Touch LFO Select LFO Depth
㉚TVF	Frequency Resonance Keyfollow [Bias Point/ Bias Direction] Bias Level
㉛TVF ENV	Depth Velocity Keyfollow(Depth) Keyfollow(Time)
㉜TVF ENV Time	T1 T2 T3 T4 T5
㉝TVF ENV Level	L1 L2 L3 Sustain Level End Level
㉞TVF Mod	LFO Select LFO Depth After Touch

DISPLAY No.	Partial Parameters
㉟TVA	Level Velocity [Bias Point/ Bias Direction] Bias Level
㊱TVA ENV Time	T1 T2 T3 T4 T5
㊲TVA ENV Level	L1 L2 L3 Sustain Level End Level
㊳TVA ENV	Velocity Follow (T1) Keyfollow(Time)
㊴TVA Mod	LFO Select LFO Depth After Touch

Roland

Roland

D-50 サウンド・チャート/D-50 SOUND CHART

W=WHOLE, D=DUAL, S=SPLIT

No. / BANK	1	2	3	4	5	6	7	8
1	Fantasia (D)	Metal Harp (D)	Jazz Guitar Duo (D)	Arco Strings (D)	Horn Section (D)	Living Calliope (D)	D-50 Voices (D)	Slow Rotor (D)
2	Digital Native Dance (D)	Bass Marimba (D)	Flute-Piano Duo (S)	Combie Strings (D)	Harpsichord Stabs (D)	Griitttarr (D)	Nylon Atmosphere (D)	Synthetic Electric (D)
3	Breathy Chiffer (D)	Gamelan Bell (D)	Slap Brass (D)	Pressure Me Strings (D)	Rich Brass (D)	Pipe Solo (D)	Soundtrack (D)	Cathedral Organ (D)
4	Shamus Theme (D)	Vibraphone (D)	Basin Strat Blues (S)	Pizzagogo (D)	Flutish Brass (D)	Pressure Me Lead (w)	Spacious Sweep (w)	Piano-Fifty (D)
5	Glass Voices (D)	Hollowed Harp (D)	Ethnic Session (D)	Jete Strings (D)	Stereo Polysynth (D)	Tine Wave (D)	Syn-Harmonium (w)	Rock Organ (D)
6	Staccato Heaven (D)	Oriental Bells (D)	E-Bass and E-Piano (S)	Legato Strings (D)	JX Horns-Strings (D)	Shakuhachi (D)	Choir (D)	Picked Guitar Duo (D)
7	Nightmare (D)	Syn Marimba (D)	Slap Bass n Brass (S)	String Ensemble (D)	Velo-Brass (w)	Digital Cello (D)	OK Chorale (D)	Pianissimo (D)
8	Intruder FX (D)	Steel Pick (D)	Synth Bass (D)	Afterthought (D)	Bones (D)	Bottle Blower (D)	Future Pad (D)	PCM E-Piano (D)

Roland