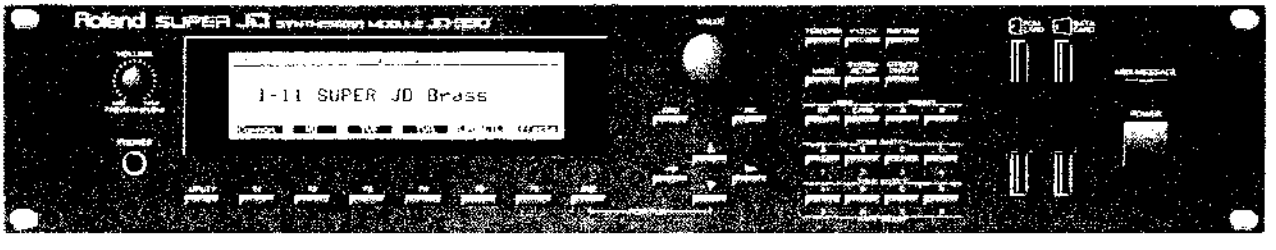
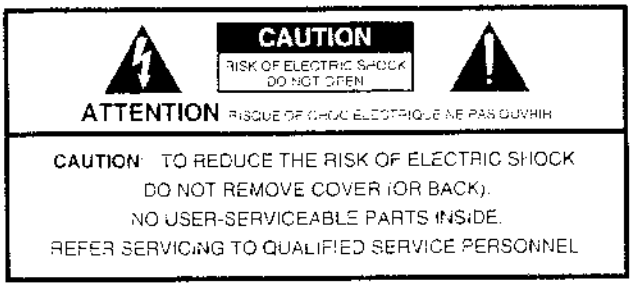
Roland

SUPER JD
SYNTHESIZER MODULE

JD-990

Owner's Manual II (REFERENCE)





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 manufacturer.
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 a 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 out 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.

For Canada

For Polarized Attachment Plug

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

ATENTION: POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU' AU FOND.

SAVE THESE INSTRUCTIONS

For the U.K.

IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.

BLUE : NEUTRAL
BROWN : LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:
The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.
The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

Roland SUPER JD

Synthesizer Module JD-990

Owner's Manual II

(Reference)

Before You Begin...

This volume of the Owner's Manual is intended for those of you who have already read the User's Guide, or who are already familiar with synthesizers. Refer to these pages if you run across an operation you don't understand or if you would like to know more about a certain parameter.

Table of Contents

Features

A High Quality Sound Module

The JD - 990 contains 195 high - quality PCM Waveforms from the JD - 800 engine, including synth sounds, processed samples, one-shot and looped Waveforms. And you can get an almost unlimited variety from these Waveforms with PCM filtering and processing, including ring modulation and oscillator sync.

Three Different Play Modes

The JD - 990 can be played in one of three different modes (Performance, Patch, or Rhythm Set), depending on how you want to use it. The Patch mode is for playing the JD - 990 like a standard synth sound expansion module, and the Performance mode is for playing it as a multi - timbral sound source.

Large Display

The large display lets you check on all the pertinent parameters at one time, and gives you higher resolution screens for more intuitive editing.

A Variety of Outputs

There are four different stereo outs on the JD - 990: MIX OUT, and DIRECT OUT 1, 2 and 3. This gives you the capability to do some sophisticated mixing by outputting each sound from a different jack and applying outboard effects independently.

Two Different Ways to Edit Sounds

There are two different types of editing screens you can work from: the regular one for detailed editing and the new Palette screen for displaying all the Tone settings of one parameter at once. You can change between screens as the need arises, which makes editing a breeze.

Digital Effects

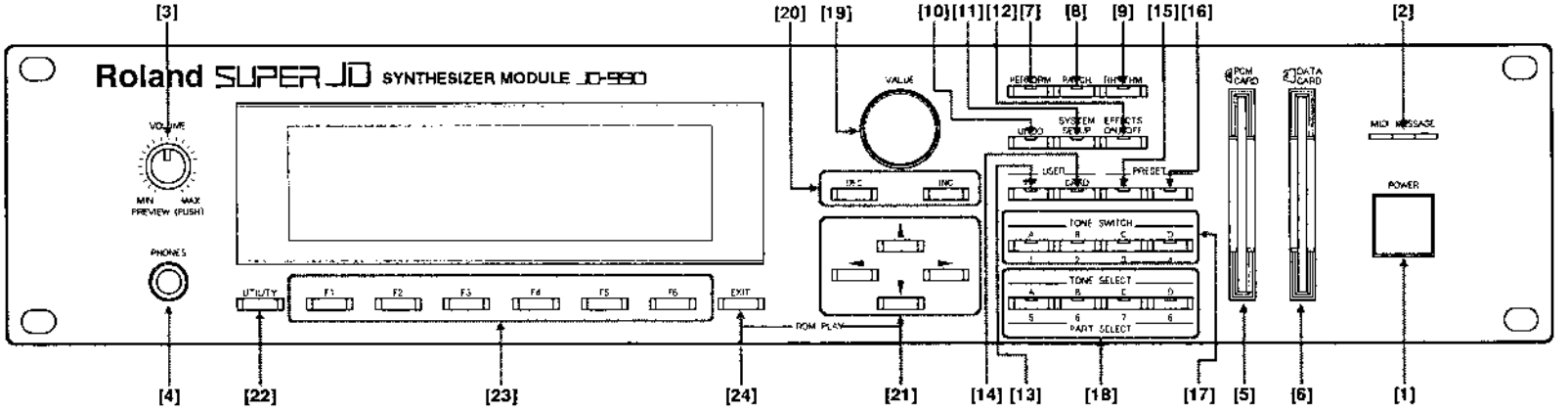
The JD - 990 comes with a powerful new DSP (Digital Signal Processing) chip built in. This chip provides a wide variety of effects capabilities that can be freely adjusted and inserted into the effects chain wherever you wish. The eight on-board effects include a three band graphic equalizer, distortion, phaser, spectrum, enhancer, chorus, delay, and reverb.

Expandability

You can add even more sounds to the JD - 990 by installing an Expansion Board. There are also slots provided for bringing in sound data from conventional DATA Cards or PCM Cards. Two PCM Card series are currently available: the SO - JD80, and SO - PCM1 series.

PANEL DESCRIPTIONS

< FRONT PANEL >



[1] POWER Switch
Turns the unit on and off.

[2] MIDI MESSAGE Indicator
Lights to show that MIDI messages are being received.

[3] [VOLUME] Knob
Adjusts the overall volume from the MIX OUT and PHONES jacks (but does not affect the DIRECT OUT jacks). Also, you can press the [VOLUME] knob to "preview" (play a note of) the currently selected Patch without a MIDI controller hooked up.

[4] PHONES Jack
Plug in headphones (RH - 20/80/120) here. Make sure that you use headphones with an input impedance between 8 and 150 ohms.

[5] PCM CARD Slot
Insert a PCM Card (containing new PCM Waveforms) here.

[6] DATA CARD Slot
Insert a DATA Card (for storing Patch data) here.

[7] [PERFORM] Button
Press this button to select the Performance mode (☞ P. Base - 28).

[8] [PATCH] Button
Press this button to select the Patch mode (☞ P. Base - 16).

[9] [RHYTHM] Button
Press this button to select the Rhythm set mode (☞ P. Base - 24).

[10] [UNDO] Button
Press this button to put the edited value back to its original value (☞ P. Base - 21).

[11] [SYSTEM SETUP] Button
Press this button to make settings that will affect overall system functions (☞ P. Base - 34).

[12] [EFFECTS ON/OFF] Button
Press this button to turn Group A, Chorus, Delay and Reverb effects ON and OFF (☞ P. Base - 35).

[13] USER [INT] Button
Press this button to select a Performance, Patch, or Rhythm Set from Internal memory (☞ P. Base - 16, 24, 28).

[14] USER [CARD] Button
Press this button to select a Performance, Patch, or Rhythm Set from a DATA Card (☞ P. Base - 16, 24, 28).

[15] PRESET [A] Button
Press this button to select a Performance, Patch, or Rhythm Set from Preset A (☞ P. Base - 16, 24, 28).

[16] PRESET [B] Button
Press this button to select a Performance, Patch, or Rhythm Set from Preset B (☞ P. Base - 16, 24, 28).

[17] TONE SWITCH Buttons [1] — [4]
Press these buttons to select which of the four Tones will sound (☞ P. Base - 18). In Performance mode, these act like Part Select buttons (☞ P. Base - 31).

[18] TONE SELECT Buttons [1] — [4]
Press these buttons to select which of the four Tones to edit (☞ P. Base - 18). In Performance mode, these act like Part Select buttons (☞ P. Base - 31).

[19] [VALUE] Knob
Rotate this knob to change the value of whatever parameter is currently indicated by the cursor.
Furthermore, rotating the knob while pressing it will cause the value to change drastically.

[20] [INC] and [DEC] Buttons
Used to change parameter values.
Press [INC] to increase the value by one, and [DEC] to decrease the value by one.

[21] Cursor Buttons
Used to move the cursor (highlighted) left, right, up, and down.

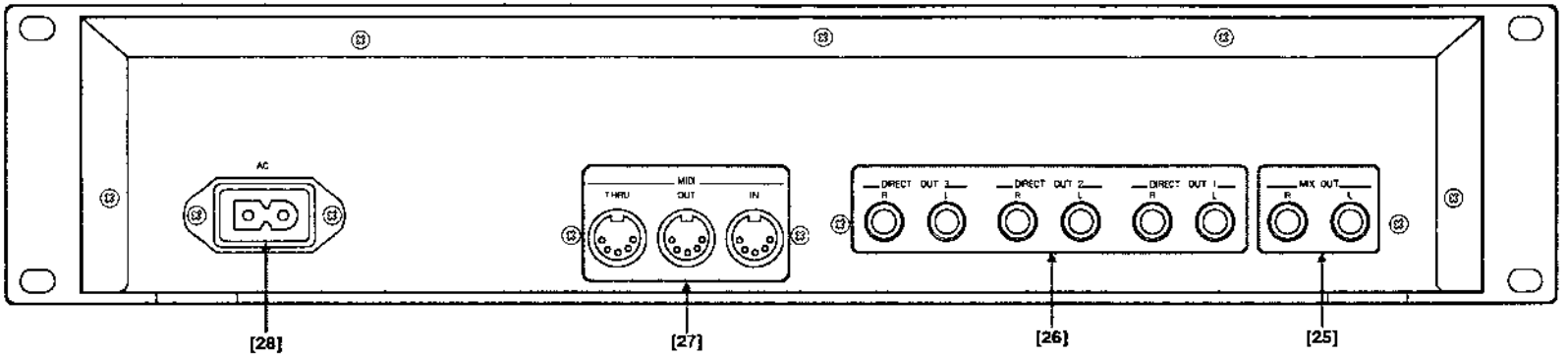
[22] [UTILITY] Button
Press this button to perform Patch Write, Copy, and Bulk Dump operations (☞ P. Base - 35).

[23] Function Buttons [F1] — [F6]
Press these buttons to select the screens in each mode and to initiate the various functions.

[24] [EXIT] Button
Press this button to back up one screen, or close a window in a screen.

PANEL DESCRIPTIONS

< REAR PANEL >



[25] MIX OUT Jacks

Stereo outs for the audio signal to an amp or mixer. The effects and direct sound are mixed and output. Plug into either the L or R jack for mono output.

[26] DIRECT OUT 1, 2, 3 Jacks

Stereo outs that work in Performance mode or Rhythm Set mode. Outputs only direct (dry) sound with no effects. Use these outputs when you want to run the direct sound through an external effects processor and not use the internal effects. There is no signal at these jacks in Patch mode.

[27] MIDI Connectors (IN/OUT/THRU)

Connect external MIDI devices to these connectors.

[28] AC Inlet

Connect the included AC power cord here.

How to Use This Manual

The JD - 990 manual consists of two volumes:

User's Guide This volume explains the basic functions and procedures for using the JD - 990. Read this User's Guide if this is your first experience with the unit, and especially if this is your first experience with synth modules in general.

Reference Chapter 1 of this volume gives you an overview of all the JD - 990's functions. The following chapters, they classify and explain each function in detail. Read the Reference volume after looking through the User's Guide. Or, if you are already quite familiar with synthesizer modules, you may want to skip the User's Guide and dig right in here.
Please be sure to read chapter 1. Refer to the rest of this volume if you run across an operation you don't understand or if you would like to know more about a certain parameter.

Symbols Used in the Text

We've used some symbols in our explanations to make them a little more concise. If you run across one which is unfamiliar, flip back to this page and refresh your memory.

A word with [ ] around it symbolizes the button of that name on the panel. For example, [PATCH] stands for the Patch button.

If you see something like CURSOR [◀] [▶], that means to press either button, as appropriate.

Important tips or precautions are marked with "*."

And if you see (☞P. **), that means to refer to page ** of the Reference volume.

The actual appearance of the Display (such as Patch Name) may differ from that shown in manuals.

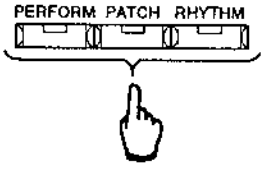
The name of button to be pressed to select the screen shown in the Display is indicated at the top of the manual page in chapters 2—7.

Chapter 1

Overview of the JD - 990 and Basic Operations

[1] Layout of the JD-990

The JD - 990 can be roughly divided into three modes.
First there's the Performance mode, combining 7 Patches and 1 Rhythm Set into one musical unit (called a 'Performance'). Then the Patch mode, where the JD - 990 plays a single Patch. Finally, the Rhythm Set mode, where each key on the keyboard plays a different percussion sound.



Performance Mode

In this mode you select a Patch for each Part to give more body and power to the sound, or make up an ensemble from a variety of different instruments. You can change a variety of the Performance mode settings using the Function buttons.
This is the mode to select when the JD - 990 is 'slaved' to an external sequencer and you want to layer several Parts (i.e., layer two or more Patches) to make a really thick and powerful sound.

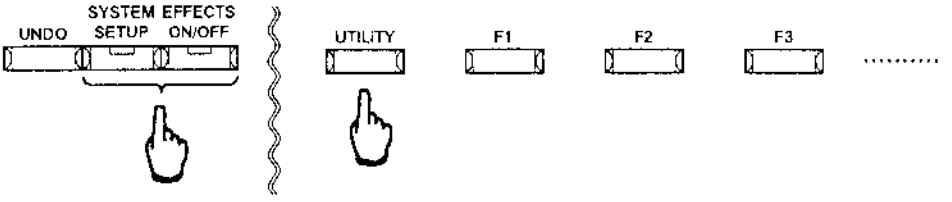
Patch Mode

In this mode you call up and play one Patch at a time. You can also edit the selected Patch with the Function buttons.
This is the mode to select when you want to use the JD - 990 for standard synthesizer performances (when you want to play just one sound).

Rhythm Set Mode

In this mode you select a Rhythm Set, a collection of percussion sounds with each one assigned to a key (or keys) on the keyboard. Each of these sounds can be edited using the Function buttons.
This is the mode to select when you want to play the JD - 990 like a drum machine, using keys instead of pads.

In addition, there are three functions, System Setup, Effects On/Off, and Utility. These functions help you to create sounds.



System Setup

You can make system settings (i.e., overall tuning, LCD contrast, MIDI switches, etc.) that will affect all modes (regardless of the current mode). Press [SYSTEM SETUP], to show the system setting parameters. When you press [EXIT], the unit will return to the Play Mode.

Effects On/Off

You can turn the effects ON and OFF easily (regardless of the current mode). Press [EFFECTS ON/OFF], to show the current effects status. When you press [EXIT], the unit will return to the previous display.

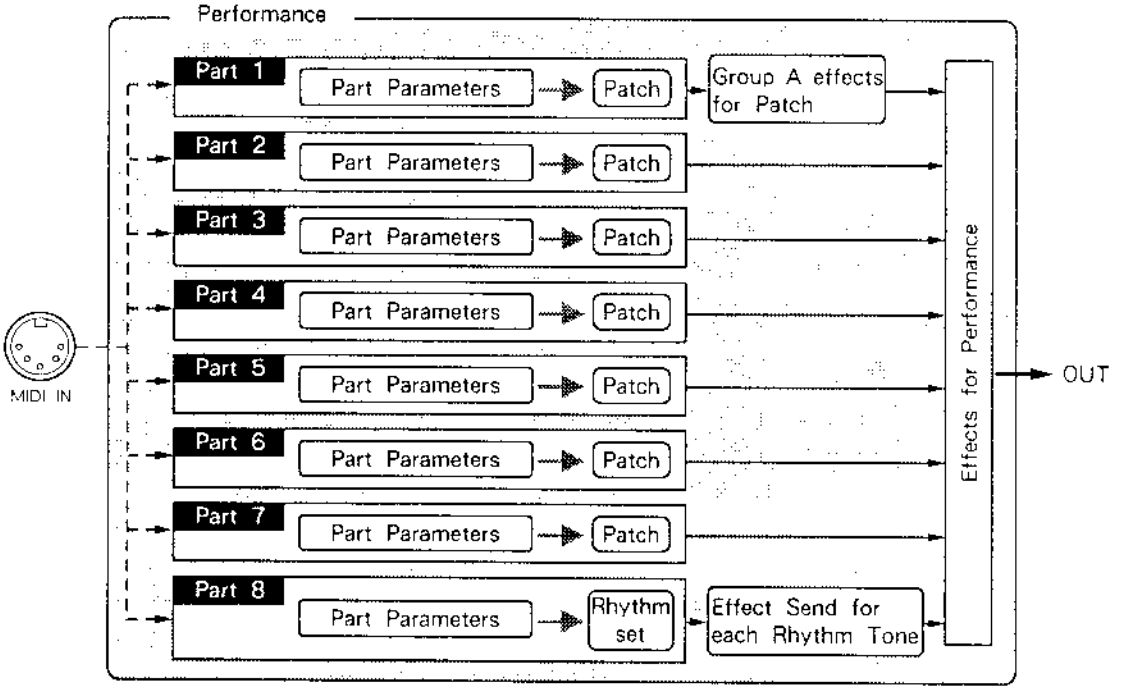
Utility

Using this function, you can store edited Patches into memory and copy certain data from one location to another. Press [UTILITY] to display six utility menus. Then, select the one you want to open. When you press [EXIT], the unit will return to the previous display.

For further information, refer to the Parameter Reference "System Setup" (☞P. Sys – 1), "Effects ON/OFF" (☞P. FX – 1) and "Utility" (☞P. Util – 1).

Performance

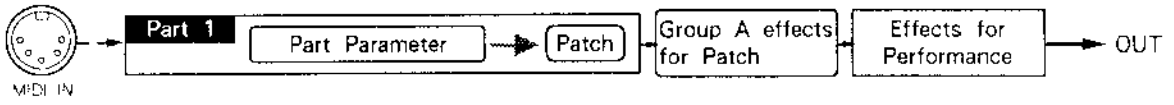
In Performance mode you have at your disposal an ensemble that uses 7 Patches and a Rhythm Set. And in Performance edit you can make adjustments to the volume and pitch differences between Parts that will affect the overall sound of the Performance.



Parts 1—7 are synthesizer voices, and Part 8 is the Rhythm Part.

The structure of each Part is as follows:

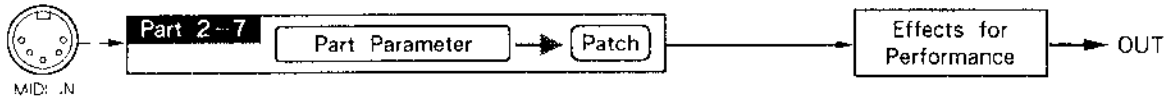
Part 1 (Super Synthesizer Part)



If a Patch uses Group A effects, assign it to Part 1. Group B effects setting, however, are ignored in this mode. Instead, Performance effects setting are used. Should the Patch use Group A effects, please assign it to Part 1.

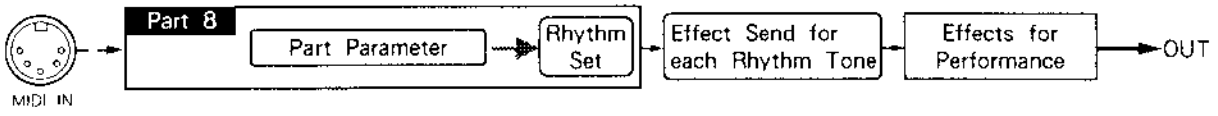
* When you select a Patch which includes Group A effects for Part 1, Tone Panning should be ignored.

Part 2—7 (Synthesizer Part)



You can assign a Patch to Parts 2 to 7.
You need to set Performance effects (Chorus, Delay and Reverb) for each Patch, however. For these Parts, Patch effect settings are ignored.

Part 8 (Rhythm Set Part)



You can assign a Rhythm Set to Part 8.
You need to set Performance effects (Chorus, Delay and Reverb) for the Rhythm Set. In this mode, Rhythm Set effects settings are ignored. Performance effects are overridden. However, FX Mode and FX Send Level values of each note set in Rhythm Set mode is effective.

Patch

The Patch is the basic unit of sound on the JD - 990. Let's take a moment to explain how Patches and Tones are related.

A Patch is a combination of up to four Tones. Each Tone starts out as a Waveform that has various kinds of filtering and processing applied to make it part of a Patch. Actually, you could make a Patch from a single Tone, but you can get more varied and interesting sound textures by combining a number of Tones together, so why not?!

In terms of how the Tones are combined, there are six different types of structures. In Type 1, Tones A—D are handled independently, whereas in Types 2—6, Tones A and B, and Tones C and D are paired to make new sounds.

WG (Wave Generator)

The Wave Generator creates the basic Waveform by reading from those stored in internal memory, or an (optional) PCM Card, or an Expansion Board. The pitch of the basic Waveform can also be controlled here. This is the most basic step toward determining the overall shape (and ultimately, the sound) of the Waveform.

TVF (Time Variant Filter)

The timbre (tone color) of the basic Waveform from the WG is processed here. This is done by cutting and boosting certain frequency components of the Waveform.

TVA (Time Variant Amplifier)

The Time Variant Amplifier controls the output volume of the sound.

ENV (Envelope Generator)

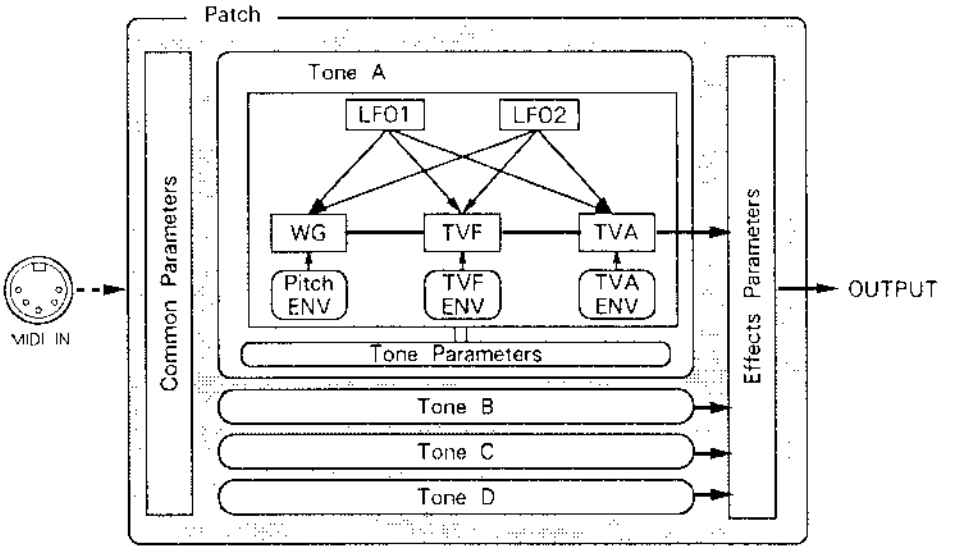
The Envelope Generator adds time-dependent variation in pitch, cutoff frequency, and/or level to the action of the WG, TVF, and TVA.

LFO (Low Frequency Oscillator)

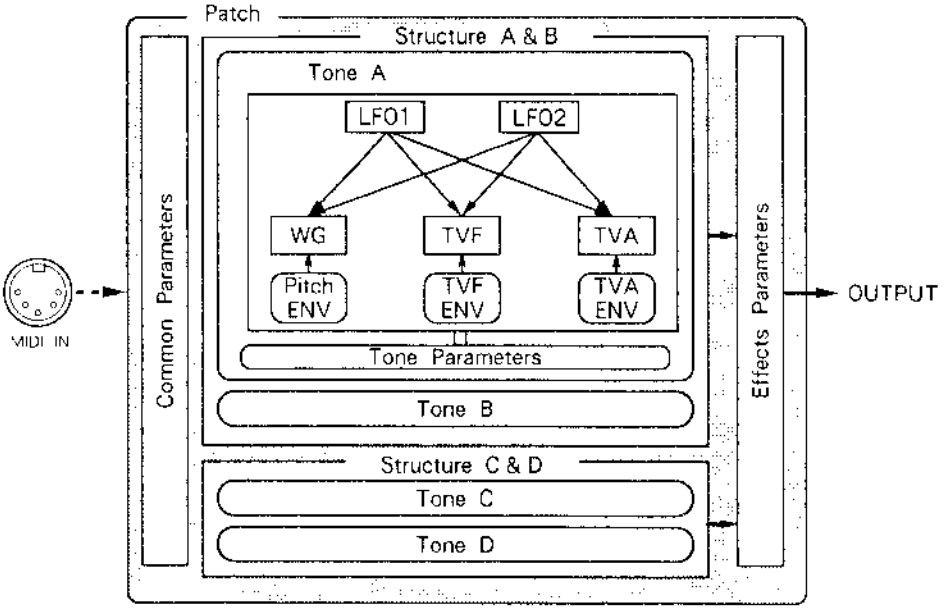
The LFO adds a periodic variation in pitch, cutoff frequency, and/or level to the action of the WG, TVF, and TVA. This adds an expressive 'vibrato' to the sound.

Overall Patch settings (like Name and Equalizer) are called "Common" parameters. Effect settings for each of the Tones that make up a sound are called "Effects" parameters.

<When selecting structure Type 1>



<When selecting structure Types 2—6>

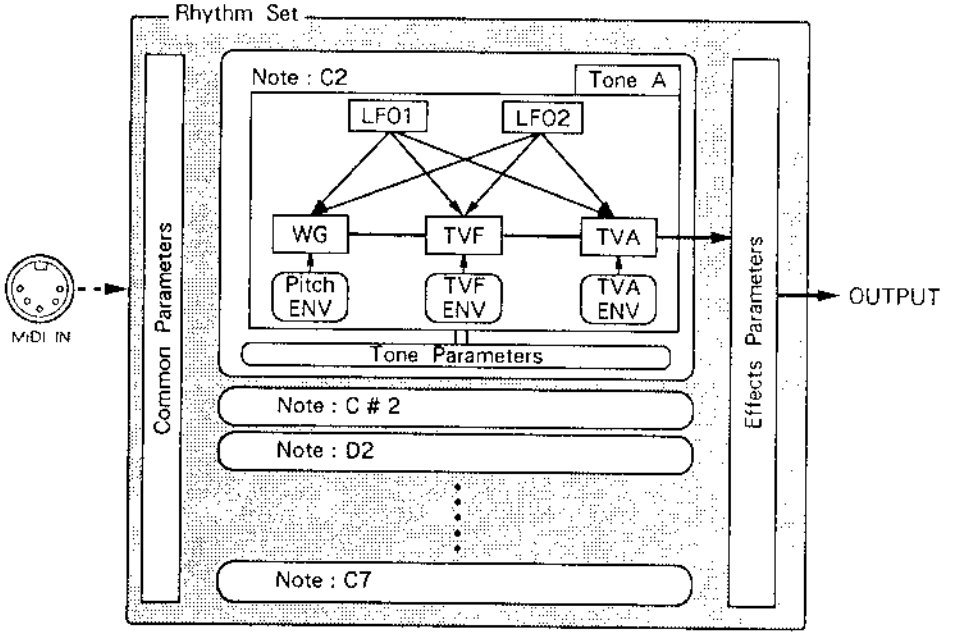


*See page Ptch – 17 of the Parameter Reference section for more about the different structure types.

Rhythm Set

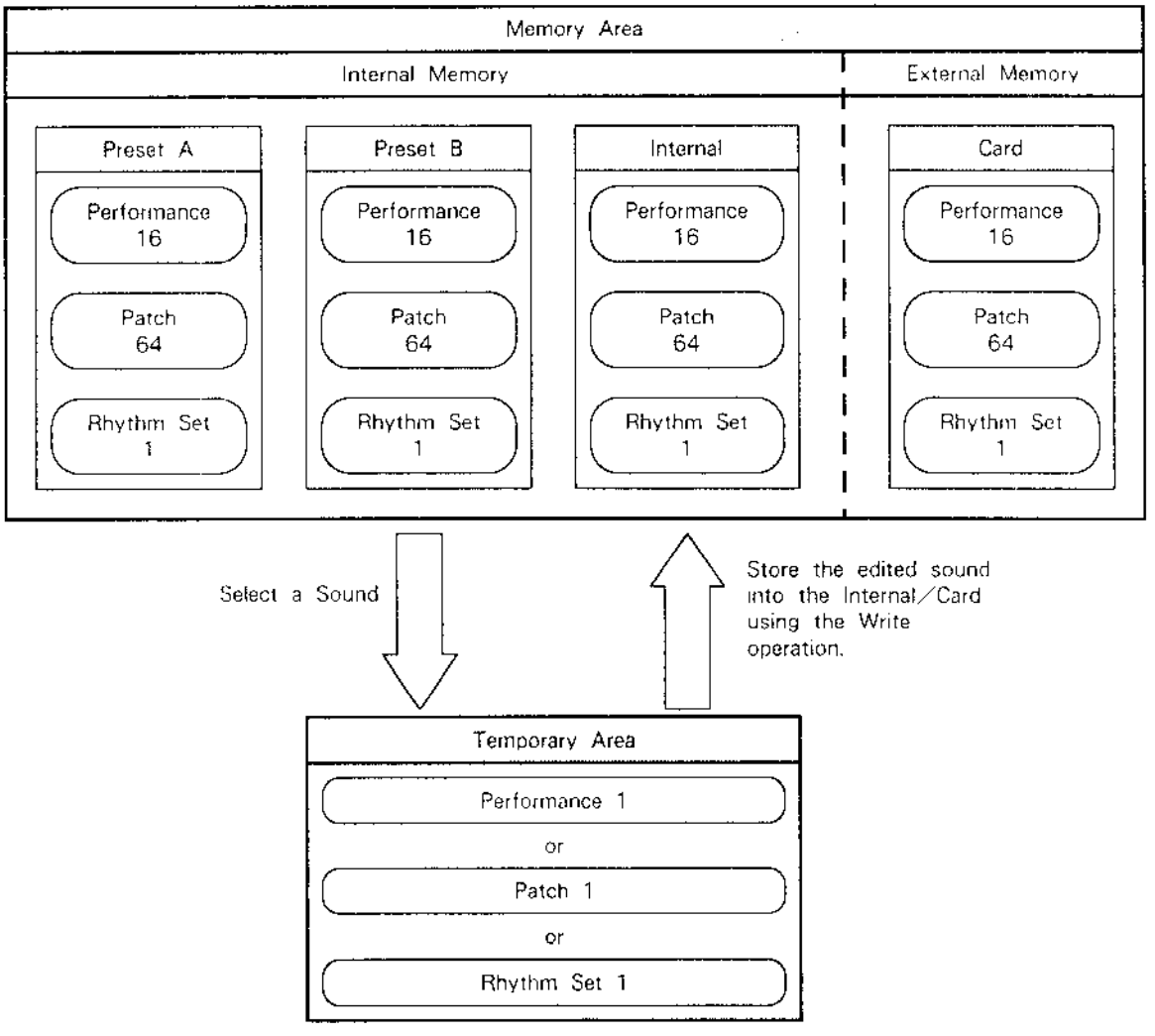
In the Rhythm Sets, each note on the keyboard corresponds to a different percussion sound. As with a Patch, the Tone is the basic unit here.

The structure of a Rhythm Set is basically the same as a Patch, except that each percussion instrument sound is composed of one Tone (Tone A) only.



[2] JD-990 Memory

There are two parts to the sound engine of the JD-990: a memory area, where the Tone data is stored, and a temporary area, where the selected Tone is generated and output. When a Tone is selected with a MIDI Program Change message, or by pushing a front panel button, the selected Tone is read from memory and moved to the temporary area where it is then output.



Performance, Patch and Rhythm Set editing are all done in the temporary area. When you're finished with this editing you must store the edited product back into memory using the Write operation.

* The 'stuff' you put in the temporary area is, as the name implies, not permanent. If you switch to a new Patch or turn off the power, all the data there is lost.

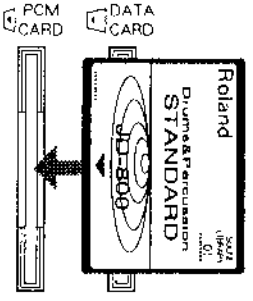
[3] Memory Cards and Expansion Boards

On the JD - 990, you can load PCM Waveforms and Performance/Patch/Rhythm Set data from optional Memory Cards. There is also the option of dramatically expanding your selection of PCM Waveforms by installing an Expansion Board.

Using PCM Cards

PCM Cards contain Waveform data, the basic building blocks of Tones. Not all Cards contain the same number of Waveforms, however.

There are two different types of PCM Cards that you can use here: Cards made for the JD - 800 (SO - JD80 Series WAVEFORM Cards) and those for the JV - 80 (SO - PCM1 Series).



Be sure you insert these Cards into the PCM Card slot with the label side facing left.

* PCM Cards are called WAVEFORM Cards on the JD - 800.
* Some Waveforms on certain PCM Cards may already be contained in the JD - 990's memory
* PCM Cards for the JV - 80 (SO - PCM1 Series) contain Patches which use the waves on the card. You can also copy this Patch data to the Temporary area using the Card/Load Parameter function in the Utility menu. For more information, refer to P.Util – 17.

Caution !	Some Waves in PCM Cards for the JV - 80 (SO - PCM1 series) are triggered backwards by the JV - 80. However, the JD - 990 does not have the ability to play these Waves backwards. The difference in sound is obvious.

Using DATA Cards

DATA Cards contain Performance, Patch and Rhythm Set data. There are two different kinds of DATA cards:

ROM (Read Only Memory) Cards

These cards contain data which can only be read (data on the card cannot be edited). You can use cards for both the JD - 800 (PN - JD80 Series) and JV - 80 (PN - JV80 Series). The JD - 990 recognizes data as follows:

DATA Card for the JD-800 (PN-JD80 Series)

Multi Mode setting	Recognized as Performance C01. (C02 — C16 will be the same as C01.)
Patches in Single Mode : C11 — C88	Recognized as Patch C11 — C88.
Special Setup	Recognized as Rhythm Set CARD.

* Data from cards in this series is directly compatible with the JD - 990's architecture.
* When you execute the Utility function "Card Load ALL," the Master Tune, Effects On/Off (Effect Master Switch), and Mix Out EQ in the JD - 800 System Setup parameters will be loaded in the JD - 990 System Setup. The other System Setup parameters in the JD - 990 will remain unchanged.

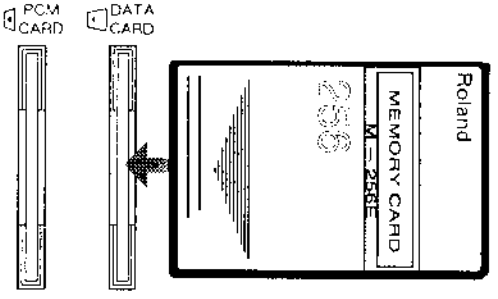
DATA Card for the JV-80 (PN-JV80 Series)

Performance C01 — C16	Recognized as Performance C01 — C16.
Patches : C11 — C88	Recognized as Patch C11 — C88.
Rhythm Set included in a Performance	Recognized as Rhythm Set Card.

* The JD - 990 converts data from this card series to a form it can handle. For more information, see "Internal Wave Number Correspondence Between JV - 80 and JD - 990" at the end of this manual.
* The sound of the revised data may be different from that in the JV - 80.
* The Utility function cannot be executed, because the structure of the JV - 80 parameters is not the same as that of the JD - 990. If you try to execute the Utility function, "JV - 80 DATA Card (Play Only)" will be displayed.

RAM (Random Access Memory) Cards

You can save data to/load data from these Cards, so they are primarily used to store/load the Performance/Patch/Rhythm Set data that you create in the temporary area. (The M - 256E RAM Card can be purchased separately for this purpose.)

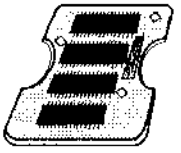


Be sure you insert these Cards into the DATA Card slot with the label side facing left.

* You can also use a new RAM card (M - 256E) to save data after the card has been initialized by the JD - 990 (and a battery has been properly installed in the card). Refer to the Utility function:Card Format (☞P. Util – 17).
The message "Improper DATA Card" will be displayed when you select a Patch from an unformatted Card.

Using Expansion Boards

An Expansion Board contains additional Waveform data; the heart of any Tone. With one of these boards installed in your JD - 990, you can access a greater number of Waveforms. (The actual number of Waveforms depends on the board.)

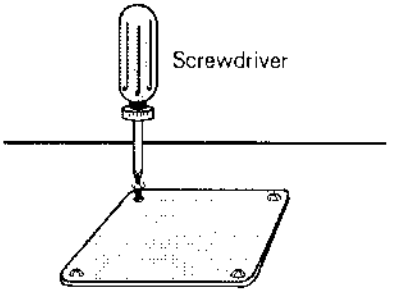


* Some Waveforms in an Expansion Board may already be contained in the JD - 990's memory.
* You can copy this Patch data to the Temporary area using the Card/Load Parameter function in the Utility Menu (same as PCM Cards: SO - PCM1 Series). For more information, refer to P. Util – 17.

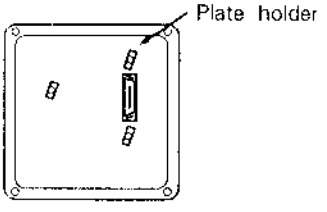
Caution !	Some Waves in Expansion Boards for the JV - 80 (SR - JV80 series) are triggered backwards by the JV - 80. However, the JD - 990 does not have the ability to play these Waves backwards. The difference in sound is obvious.

[Installing the Expansion Board]

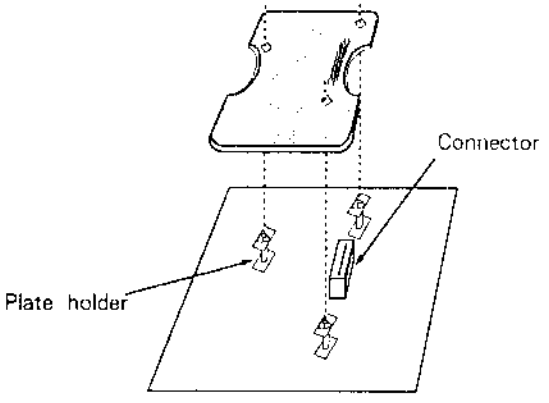
1. Turn the power off and remove the cover on the top of the JD - 990 (four screws).



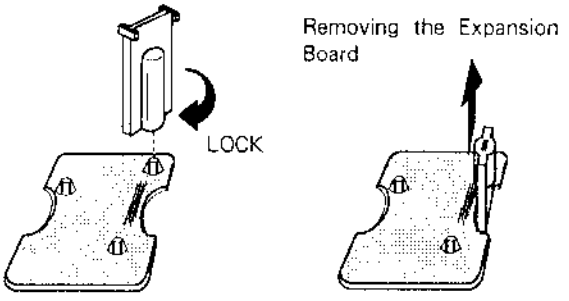
2. Place the plate holder as shown in the illustration.



3. Firmly insert the connector of the Expansion Board into the connector of the JD - 990. Make sure that the three plate holders protrude through the Expansion Board.



4. Using the included locking tool, rotate all three plate holders in the LOCK direction in order to secure the Expansion Board.
In order to remove the Expansion Board, rotate the plate holder in the UNLOCK direction, then remove the board by pulling the locking tool up.
Finally, use the four screws to replace the cover.



5. Check that the Expansion Board has been installed correctly.
If an Expansion Board is installed correctly, the message "EXPANDED" will be displayed in the lower right hand corner when powering up.
If you don't see this message when powering up, try installing the Expansion Board again.

[4] Basic Operations in Patch Mode

Selecting a Patch

The Patch groups in the JD - 990 are organized into 4 groups: INTERNAL, CARD, PRESET A and PRESET B. There are 64 Patches in each group for a total of 256 sounds from which to choose (assuming that you have a DATA card inserted into the DATA CARD slot).

INT (INTERNAL)
This is where you'll store the sounds which you create.

CARD This is where you'll call up Patches stored on DATA cards.

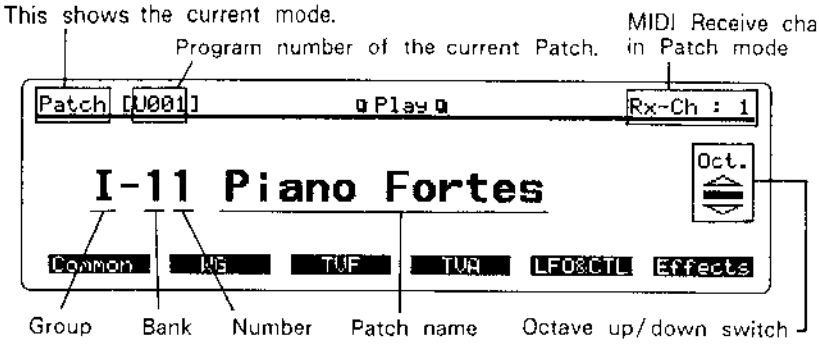
PRESET A/B These are the ROM (Read Only Memory) Patches that cannot be erased or overwritten.

The Patches stored in the module can be selected using the following procedure.

1. Press [PATCH] to select the Patch mode.

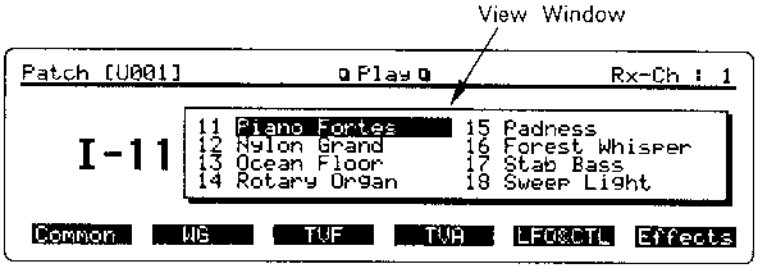
2. Press the [INT], [CARD], [PRESET A] or [PRESET B] button for whichever Patch group you require.

3. You can move through the Patch numbers by rotating the [VALUE] knob. Or, if you wish to step through them one at a time, press the [INC] or [DEC] button.



A Patch is identified by a combination of a Bank (1—8) and a Number (1—8). You can select a Patch in following order: I11 → I12 → I13 → ... → I18 → I21 → ...I88 (→ C11 - → ... → C88) - → A11 → ... → A88 → B11 → ... → B88.

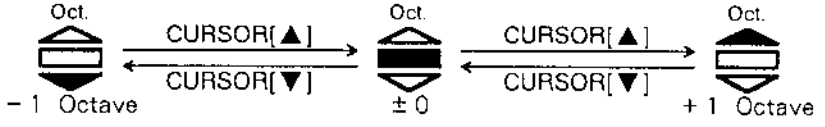
Pressing the [VALUE] knob opens up the "View Window" that lets you see the eight Patches in a Bank. Pressing the [VALUE] knob again will change Bank number.



You can change the Patch with either the [VALUE] knob and [INC][DEC] buttons or the CURSOR [▲], [▼], [◀] and [▶] buttons while the window is opened.
Press [EXIT] to close the View Window.

Octave Up/Down Switch

This is a quick method to shift octaves on the JD - 990. In the Play screen (without the view window open), pressing CURSOR [▲] shifts the pitch one octave higher. (pressing [▼] shifts the pitch one octave lower.)



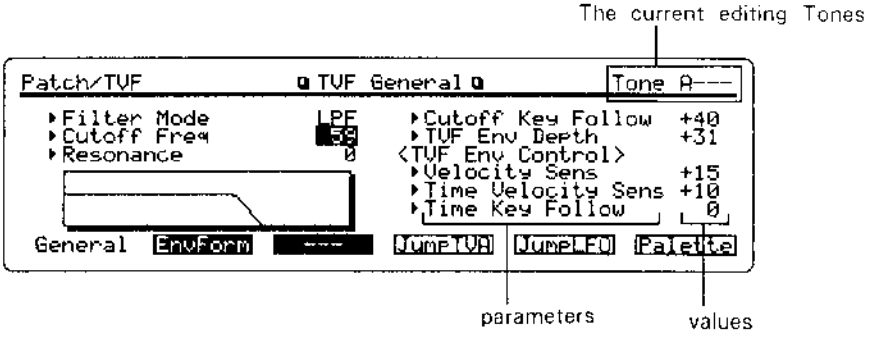
If you perform the Patch Write procedure (☞P. Util − 3), this parameter will also be stored as a Patch Common parameter.

Patch Editing

There are two different screens you can use in editing a Patch. The one you choose will depend on the kind of editing job you're doing. And if you need to, you can switch between these screens as you work.

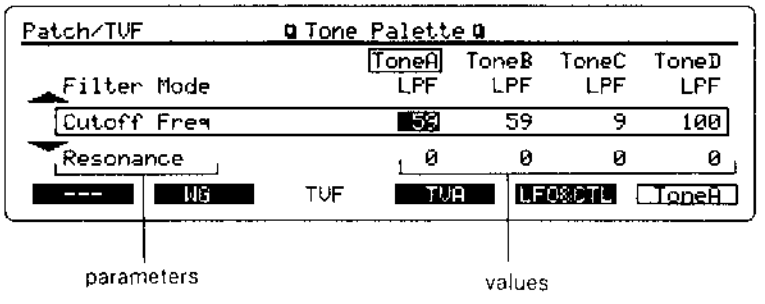
Tone Edit Screen

This screen displays several of the parameters for a single Tone. Select the parameter you want to edit with the Function buttons.

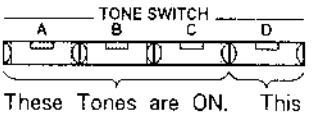


Edit Palette Screen

This screen displays the value of the same parameter for the four different Tones in a Patch. You can enter this screen from Tone Editing by pressing the [F6] Palette button.



Tone Switch Buttons

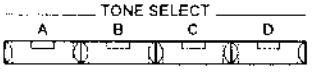


The four Tones in a Patch can be turned ON and OFF using the four [TONE SWITCH] buttons.

When creating a new Patch, this parameter determines what Tones will be used. And you can use this during Tone editing to check on the sound of an individual Tone in the Patch.

Each press of the button switches the Tone ON and OFF, and this works in Play mode as well as Edit mode. The Tone is ON when the indicator is on.

Tone Select Buttons

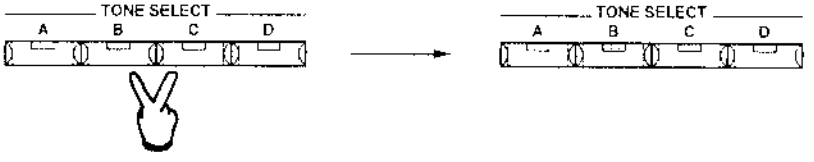


Press one of the [TONE SELECT] buttons to select the Tone you want to edit (the [TONE SELECT] buttons function only during editing).
In the Tone Edit screen, you press the button for the Tone you want to edit (its indicator will light) and switch to the editing screen for that Tone. The selected Tone is shown in the upper right hand corner of the screen.

Press TONE SELECT [C]. You'll select Tone C.

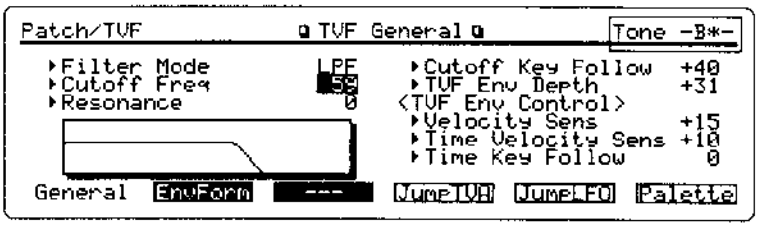
You can edit multiple Tones at once. To select more than one Tone, press and hold a [TONE SWITCH] button and then press other [TONE SWITCH] buttons. Parameters displayed are the ones of the first Tone selected. " * " is displayed for the remaining Tones indicating that they have also been selected and edited.

For example, press TONE SELECT [C] while holding TONE SELECT [B], if you want to edit Tone B and C at the same time.

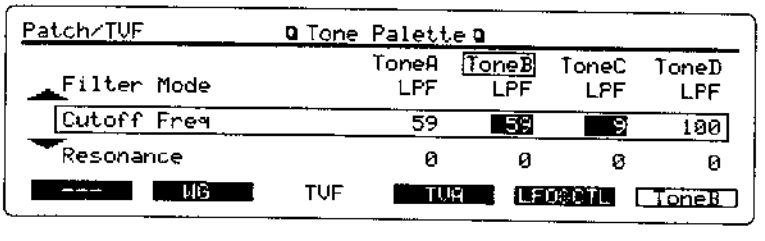


Press TONE SELECT [C] while holding TONE SELECT [B]. You'll select Tone B and C together.

The display shows " – B * – " in the upper right hand corner, and Tone B's parameters are displayed. If you increase (or decrease) a Tone B parameter value, the corresponding Tone C parameter will change by an equal amount. This allows you to maintain the existing balance between the two Tones.

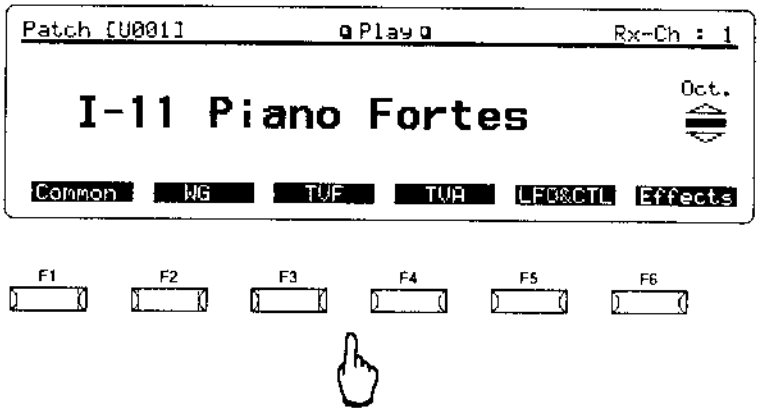


You can use the [TONE SELECT] buttons works the same way as in the Palette screen. You can see that the selected Tones are highlighted.

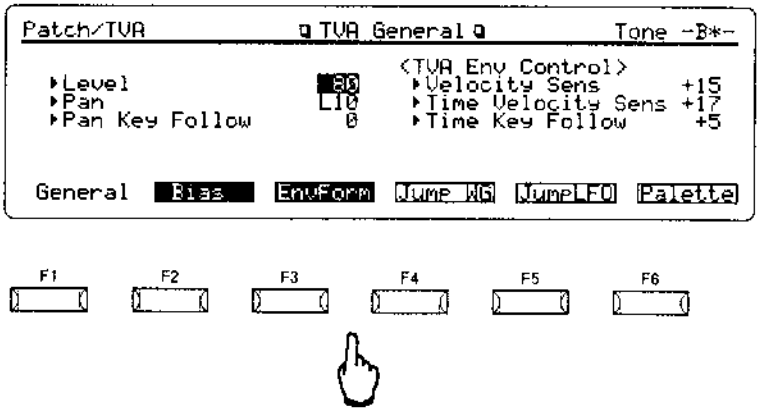


Tone Edit — Basic Operation

1. Pressing [F1]—[F6] in the Patch Play screen takes you to the corresponding parameter block.
   Pressing the button displays the menu of functions for the block you select.



2. Select the menu item you want with [F1]—[F6].



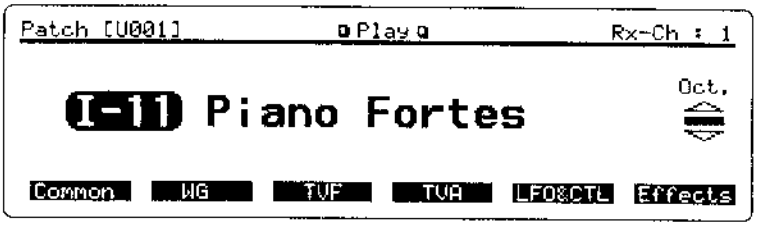
3. Select the Tone you want to edit using the [TONE SELECT] buttons when you pressed one of [F2] — [F5] at step 1.
   Remember, you can select more than one Tone here.

4. Use the CURSOR buttons [▲], [▼], [◀] and [▶] to move the cursor to the parameter you want to set.

5. Set the value with the [VALUE] knob or the [INC]/[DEC] buttons. When more than one Tone is selected, if you change one parameter value, the corresponding parameter values for the other Tone(s) will also be changed to maintain the relative balance.
   You can change the values drastically if you rotate the [VALUE] knob while pressing it.
   When more than one Tone is selected, you can see it in the upper right hand corner of the display.
   For an example, if Tones A, B and D are selected, and the current Tone is A, you will see "A ∗ – ∗ ." Pressing the [VALUE] knob, in this case, sets Tones B and D's values to that of Tone A.

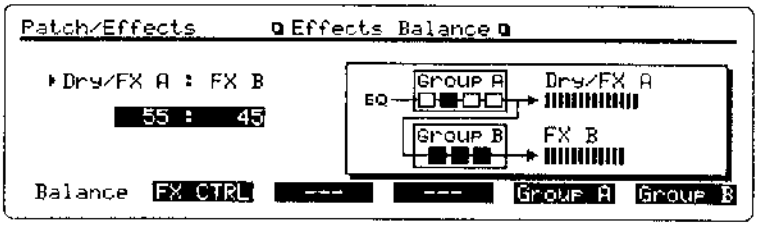
6. Repeat steps 1—5 until you get the Patch edited the way you want it. Save the results in internal memory or on a DATA Card with the Write operation (☞P. Util – 3).

* When you return the play screen without using the Write procedure, the Bank/Number display will be highlighted. This means that the Patch has been edited.



7. When you want to return to the Play screen, press [EXIT].

* Some of the Effects menus are especially detailed (i.e., press [F6] (Effects) from the Play screen, then select the [F5] (Group A) or [F6] (Group B) menus). In that case, you'll have to press the [EXIT] button twice to return to the Play screen.

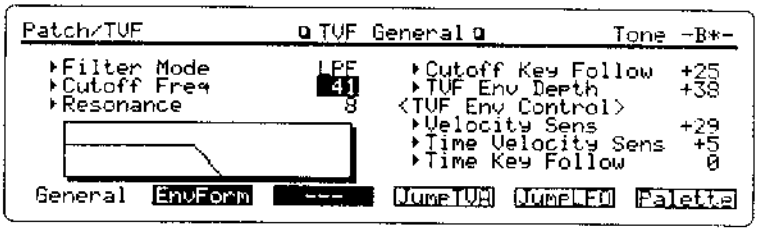


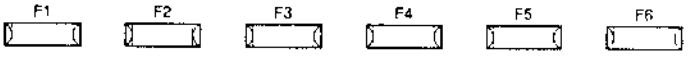
Undo Function	Pressing [UNDO] nullifies the editing result of the selected parameter. Pressing the button again recalls the edited value ("REDO" function).

Jump Function	[F4] and [F5] are assigned as 'jump' buttons in the WG or TVF or TVA or LFO&CTL menus. [F4] switches the display as follows: the WG → TVF → TVA screen in order. [F5] alternates the display as follows: WG ⟷ LFO&CTL or TVF ⟷ LFO&CTL or TVA ⟷ LFO&CTL. These functions are very convenient in Tone editing.

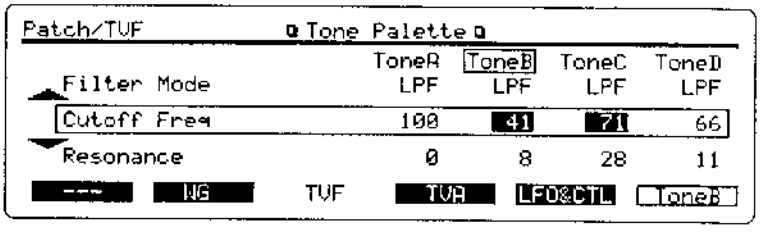
Edit Palette — Basic Operation

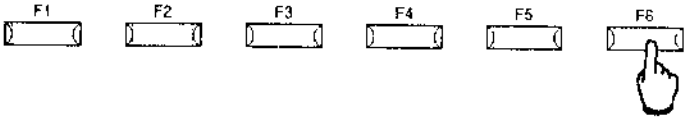
1. You can get into the Palette screen to edit a certain parameter block whenever the word "Palette" is displayed above [F6] during Tone Editing.
   Move the cursor to the parameter you want to edit.





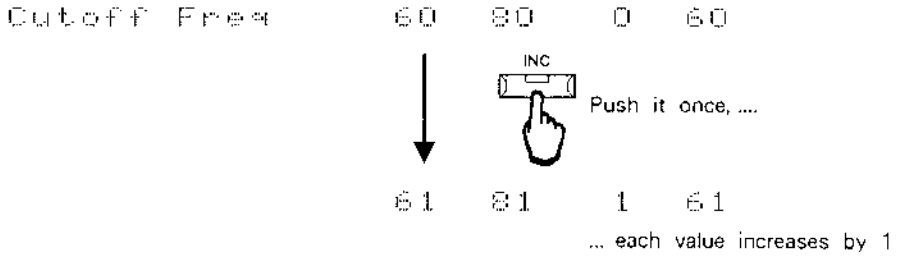
2. Press [F6] (Palette).
   This takes you to the Palette screen for the parameter indicated by the cursor.





3. Select the Tone you want to edit using the [TONE SELECT] buttons.
   Remember, you can select more than one Tone here. The ones you select have their values highlighted in the screen.

4. Set the value with the [VALUE] knob or the [INC]/[DEC] buttons. When more than one Tone is selected, if you change one parameter value, the corresponding parameter values for the other Tone(s) will also be changed to maintain the relative balance.
You can change the values drastically if you rotate the [VALUE] knob while pressing it.
If you press the [VALUE] knob once, you can set all Tone parameter values to the one marked "□".
Ex.) When Tone A, B, C and D are selected.

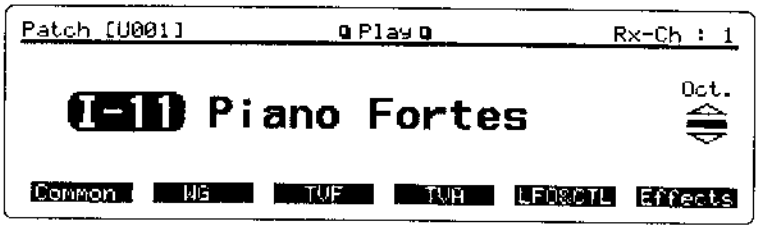


5. Press CURSOR [▲] [▼] to step through the parameters in the order they are displayed in the Tone Edit screen. To return to that screen, press [F6].

6. Repeat steps 1—5 until you get the Patch the way you want it. Save the results in internal memory or on a DATA Card with the Write operation (☞P. Util – 3).

If you press [EXIT] while in the Palette screen, you will be returned to the Play screen.

* When you return to the Play screen without using the Write procedure, the Bank/Number display will be highlighted. This means that the Patch has been edited.



* The Undo function can also be used in the Palette screen.

[5] Basic Operations in Rhythm Set Mode

Selecting a Rhythm Set

The Rhythm Sets in the JD - 990 are organized into 4 groups: INTERNAL, CARD, PRESET A and PRESET B. There is one Rhythm Set in each group for a total of 4 sets from which to choose (assuming that you have a DATA card inserted into the DATA CARD slot).

INT (INTERNAL)
This is where you'll store the sounds which you create.

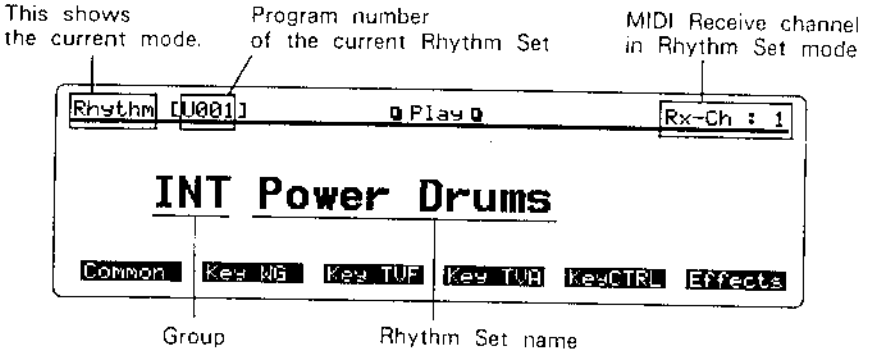
CARD This is where you'll call up Rhythm Set stored on DATA cards.

PRESET A/B These are ROM (Read Only Memory) Rhythm Sets that cannot be erased or overwritten.

The Rhythm Sets stored in the module can be selected using the following procedure.

1. Press [RHYTHM] to select the Rhythm Set mode.

2. Press the [INT],[CARD],[PRESET A] or [PRESET B] button for whichever Rhythm Set you require.



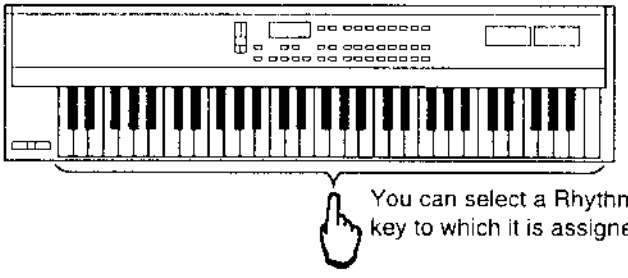
You can move through Rhythm Sets by rotating the [VALUE] knob. Or, if you wish to step through them one at a time, press the [INC] or [DEC] button.

Rhythm Set Editing

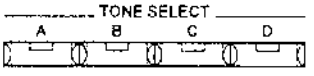
A Rhythm Set uses only Tone A, so you would edit it in the Tone Edit screen (i.e., there is no Edit Palette for Rhythm Set sounds).

Selecting the Note You Want to Edit

You select the particular Rhythm Set percussion sound (note) that you want to edit by playing the corresponding key on a connected MIDI keyboard. The selected Note Number will be displayed in the screen. If you have no MIDI keyboard connected, you can select a Tone using the [TONE SELECT] buttons.



You can select a Rhythm Tone by pressing the key to which it is assigned.



[TONE SELECT A] Each press of this button takes you to the note one octave down from where you are.

[TONE SELECT B] Each press of this button takes you to the next note a semi-tone down from where you are.

[TONE SELECT C] Each press of this button takes you to the next note a semi-tone up from where you are.

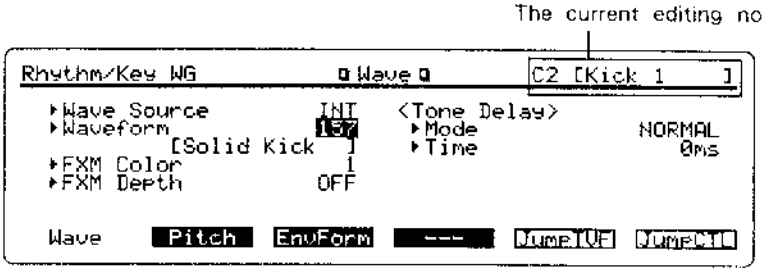
[TONE SELECT D] Each press of this button takes you to the next note one octave up from where you are.

* It is convenient that the [TONE SELECT] buttons are used to confirm the setting of each note (Rhythm Tone) or to sound with the Preview function (☞ P. Sys – 12).
* The [TONE SELECT] buttons don't light in the Rhythm Set mode.

[Editing procedure]

The procedure for Rhythm Set editing is the same as for Patch editing.

1. Press [F1]—[F6] in the Rhythm Set Play screen to go to the corresponding parameter block.



2. Select the menu item you want with [F1]—[F6].

3. Select the Note which you want to edit by pressing the key on the keyboard or using TONE SELECT buttons [A]—[D] when you pressed one of [F2] — [F5] at step 1. (☞P. Base – 25)

4. Use the CURSOR buttons [▲], [▼], [◀] and [▶] to move the cursor to the parameter you want to set.

5. Set the value with the [VALUE] knob or [INC]/[DEC] buttons. You can step through the values even faster by pushing in the [VALUE] knob as you turn it.

6. Repeat steps 1—5 until you get the Rhythm Set the way you want it. Save the results in internal memory or on a DATA Card with the Write operation (☞P. Util – 3).

7. When you want to return to the Play screen, press [EXIT].

* When you return to the Play screen without using the Write procedure, the Bank display will be highlighted. This means that the Rhythm Set has been edited.

Undo Function	Pressing [UNDO] nullifies the editing result of the selected parameter. Pressing the button again recalls the edited value ("REDO" function).

Jump Function	[F5] and [F6] are assigned as 'jump' buttons in the Key WG or Key TVF or Key TVA or KeyCTRL menus. [F5] switches the display as follows: the Key WG → Key TVF → Key TVA. [F6] alternates the display as follows: Key WG ⟷ KeyCTRL or Key TVF ⟷ KeyCTRL or Key TVA ⟷ KeyCTRL. These functions are very convenient in Tone editing.

[6] Basic Operations in Performance Mode

Selecting a Performance

The Performances in the JD - 990 are organized into 4 groups: INTERNAL, CARD, PRESET A and PRESET B. There are 16 Performances in each group for a total of 64 from which to choose (assuming that you have a DATA card inserted into the DATA CARD slot).

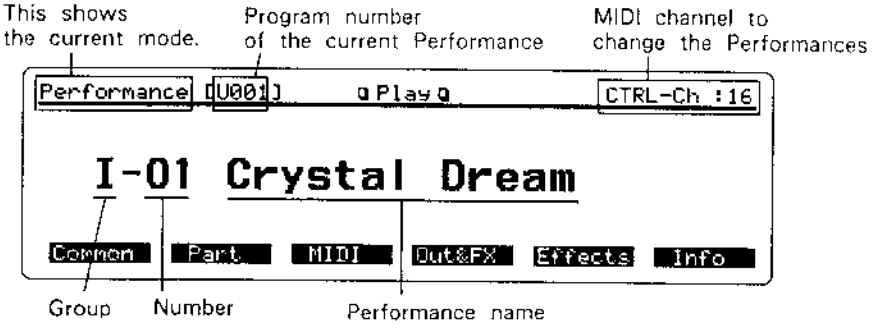
INT (INTERNAL)
This is where you'll store the sounds which you create.

CARD — This is where you'll call up Performances stored on DATA cards.

PRESET A/B — These are ROM (Read Only Memory) Performances that cannot be erased or overwritten.

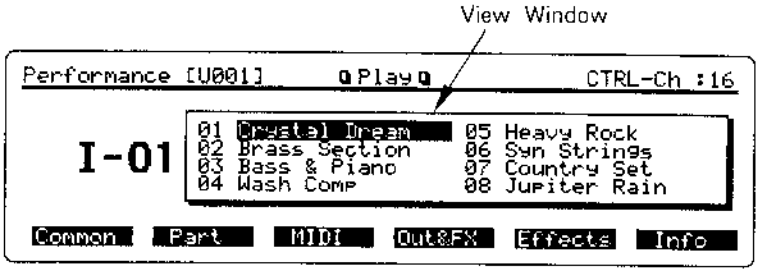
The Performances stored in the module can be selected using the following procedure.

1. Press [PERFORM] to select the Performance mode.
2. Press the [INT], [CARD], [PRESET A] or [PRESET B] button for whichever Performance group you require.
3. You can move through Performances by rotating the [VALUE] knob. Or, if you wish to step through them one at a time, press the [INC] or [DEC] button.



You can select Performances in the following order: I01 → I02 → I03 → ... → I16(→ C01 → ... → C16) → A01 → ... → A16 → B01 → ... → B16.

Pressing the [VALUE] knob opens up the "View Window" that lets you see eight Performances at a time. Pressing the [VALUE] knob will change eight Performances in order.



You can also change the Performance using either the [VALUE] knob and [INC][DEC] buttons or the CURSOR[▲], [▼], [◀] and [▶] buttons while the window is open.

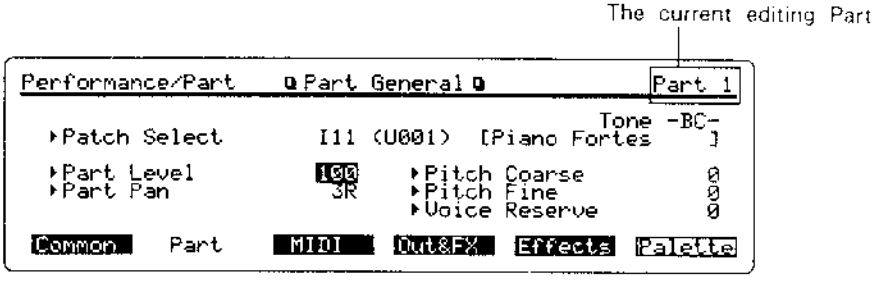
Press [EXIT] to close the View Window.

Performance Editing

There are two screens for editing Performances. Use whichever is most convenient for a particular editing job. You can switch from one screen to the other as needed.

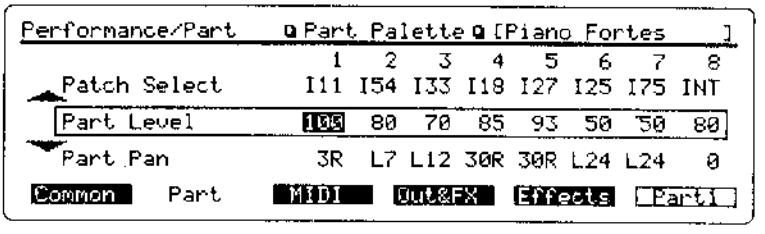
Part Edit Screen

This screen displays the parameter blocks of a single Part. Select the parameter you want to edit with the Function buttons.



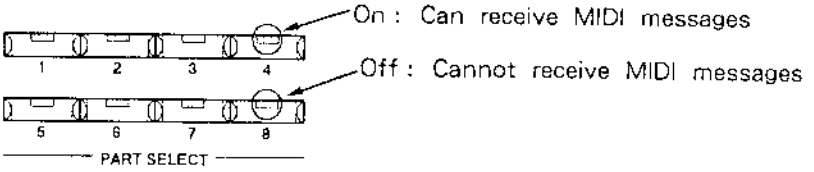
Edit Palette Screen

This screen displays the value of the same parameter for the eight different Parts in a Performance. You can enter this screen from Part Editing by pressing [F6] (Palette).



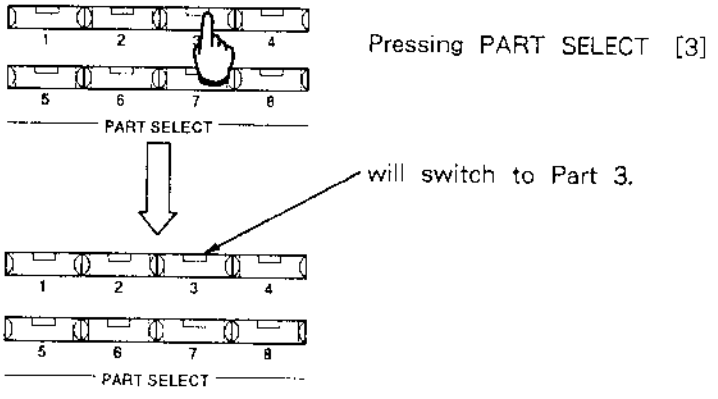
The PART SELECT Buttons

The [PART SELECT] buttons are MIDI Receive switches that control whether a Part will be able to receive and play MIDI messages in the Play mode. When on (the indicator is lit), the JD - 990 receives and responds to MIDI note messages, Program change messages, etc. When off (indicator is dark), that Part will not receive MIDI messages.



[PART SELECT] buttons blink when receiving MIDI messages.

This is used to select the Part you want to edit in Edit mode. The indicator lights will switch automatically when you enter the Edit screen. Press the button for the Part you want to edit (to turn on the indicator light) and switch to the editing screen for that Part. Unlike the situation in Patch editing, however, you can only change parameter values for one Part at a time. (One of the buttons will always be on.)



[Part Edit]

1. Press [F1] — [F5] from the Performance screen to go to the corresponding parameter block.

* For more about [F6] (Info), see page App. – 3.

2. Use the CURSOR buttons [▲], [▼], [◀] and [▶] to move the cursor to the parameter you want to set.

3. Select the Part which you want to edit using [PART SELECT] when you pressed one of [F2] — [F4] at step 1.

4. Set the value with the [VALUE] knob or the [INC]/[DEC] buttons. You can step through the values even faster by pushing in the [VALUE] knob as you turn it.

5. Repeat steps 1—4 until you get the Performance settings to your liking. Save the results in internal memory or on a DATA Card with the Write operation (☞P. Util – 3).

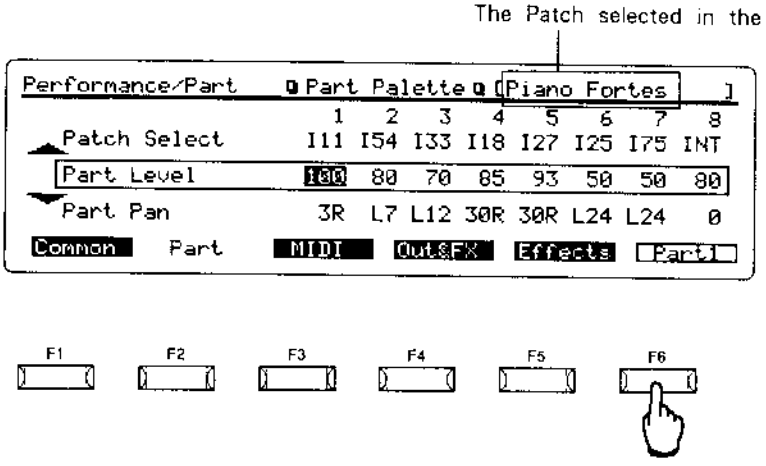
6. When you want to return to the Play screen, press [EXIT].

   * When you return to the play screen without using the Write procedure, the Number display will be highlighted. This means that the Part has been edited.

[Edit Palette]

1. You can get into the Palette screen to edit a certain parameter block whenever the word "Palette" is displayed above [F6] during Part Editing. The cursor should be on the parameter you want to edit in the Palette screen.

2. Press [F6] (Palette). This takes you to the Palette screen for the parameter indicated by the cursor.



3. Select the Part you want to edit using the [PART SELECT] buttons.

4. Set the value with the [VALUE] knob or [INC]/[DEC].
   You can step through the values even faster by pushing in the [VALUE] knob as you turn it.

5. Press CURSOR [▲] [▼] to step through the parameters in the order they are displayed in the Part Edit screen. To return to that screen, press [F6].
   If you press [EXIT] at this point, you will be returned to the Play screen.

6. Repeat steps 1—5 until the Performance sounds the way you want it to. Save the results in internal memory or on a DATA Card with the Write operation (☞P Util – 3).

Undo Function	Pressing [UNDO] nullifies the editing result of the selected parameter. Pressing the button again recalls the edited value ("REDO" function).

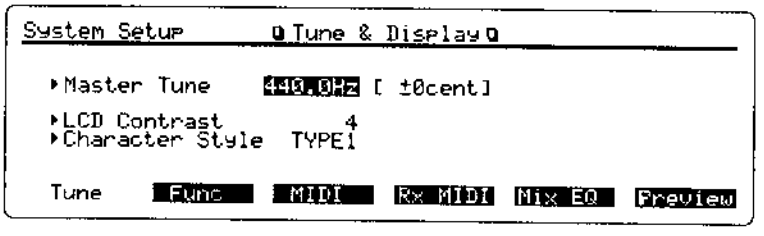
[7] System Setup

System Setup contains the parameters that are common to all three modes; Performance, Patch, and Rhythm Set. This includes things such as overall tuning, LCD contrast, MIDI message settings, etc.
The System Setup includes the primary settings for a number of parameters. That is, System Setup takes priority. When it says a certain parameter is turned off, it's off, no matter what the more detailed Patch settings might indicate.

How to Make Settings

1. Press [SYSTEM SETUP] from Performance, Patch, or Rhythm Set Play mode to select the System Setup menu.

2. Press any one of [F1] — [F6] to indicate which parameter block to go to.



3. Use the CURSOR buttons [▲] [▼] [◀] [▶] to move the cursor to the parameter you want to set.

4. Set the value with the [VALUE] knob or [INC]/[DEC] . You can step through the values even faster by pushing in the [VALUE] knob as you turn it.

5. When you're finished making settings, press [EXIT].
You'll be returned to the Play screen for whatever mode you're in.

* System Setup settings are immediately stored in memory and remain in effect even after you turn off the JD - 990. There is no need to save these settings with the Write operation.

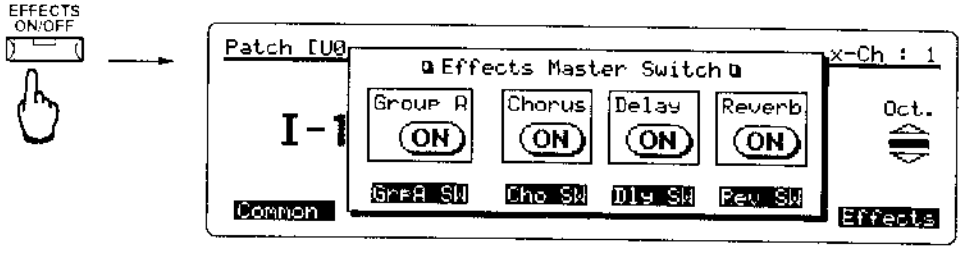
[8] Windows

A "Window" is a little screen in the display that pops up temporarily over top of another. The operation of displaying this Window is called "opening" it, and when you're done you "close" the Window.

[EFFECTS ON/OFF] and [UTILITY] open Windows on the JD - 990; [EXIT] closes them.

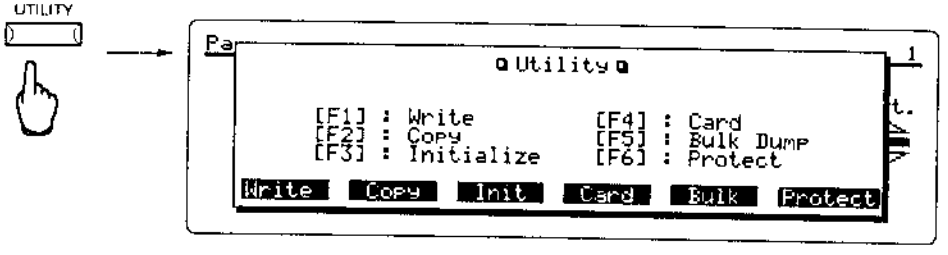
[EFFECTS ON/OFF]

In this Window, you can set which of the JD - 990's effects are ON and which are OFF.



[UTILITY]

The various data functions for all three modes, like saving to internal memory, Card, or bulk dumps, are handled here.



* For further information, see Parameter Reference "Effects ON/OFF" (☞P. FX – 1), "Utility" (☞P. Util – 1).

[9] About MIDI

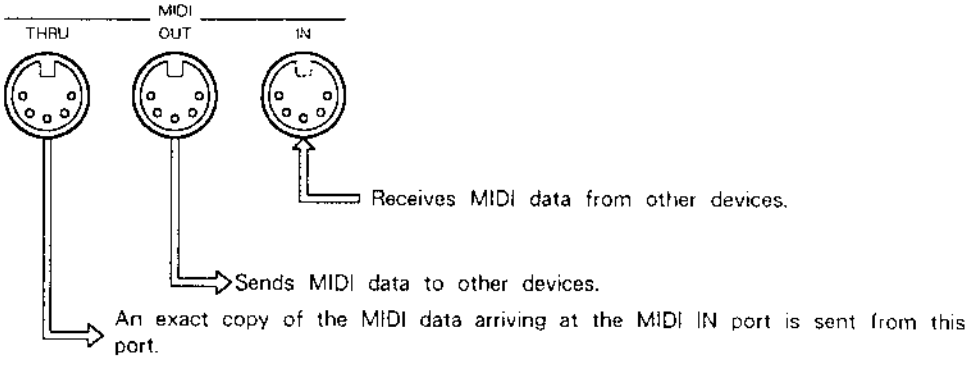
A sound module is just like a keyboard synthesizer, but without the keyboard; it's the sound-producing "engine" inside the synth. It is the module that receives MIDI signals from external devices and actually plays the sounds.
First we'll give you a little background information about MIDI and MIDI messages, and how they relate to the JD - 990.

What is MIDI ?

MIDI (pronounced middy) stands for Musical Instrument Digital Interface. MIDI is a world - wide standard that allows musical instruments and computers to exchange musical data.
MIDI does not transmit the sound of an instrument, but rather 'messages' in digital form that tell the receiving instrument to "do something". These are known as MIDI messages.

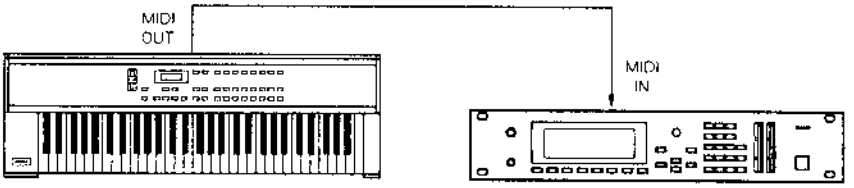
MIDI Connections

MIDI data exchange is done via three connectors: IN, OUT, and THRU. Special MIDI cables must be used to make the connections.



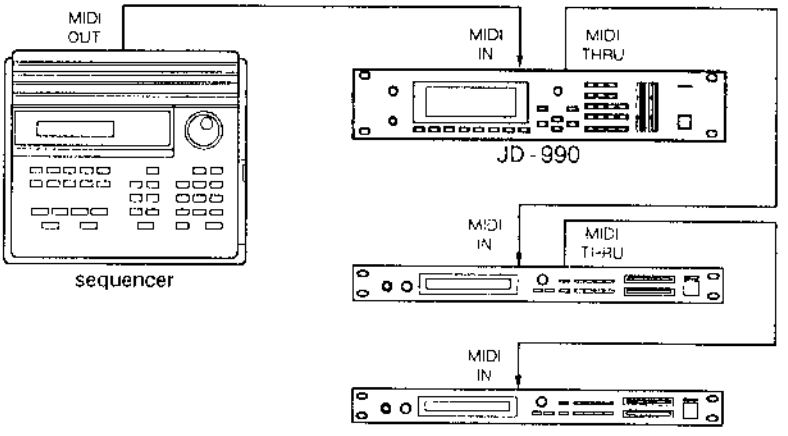
Playing the JD-990 from a Keyboard or Sequencer

If you want to "layer" sounds from the JD-990 with sounds from another synth, you'll need to "slave" it to that synth so that they both play exactly in sync. Control the JD-990 from an external synth or sequencer by hooking it up as shown below.



Controlling More Than Two MIDI Devices At Once

The MIDI THRU connector is used to "daisy chain" several MIDI devices together so that they all receive the same MIDI data stream, as shown below.



However, four or five devices connected this way is about the limit. Time delays and signal degradation increase the more devices you have connected, causing "glitches" and incorrectly transmitted data. If you must connect three or more MIDI instruments together, consider buying some kind of MIDI THRU box or patch bay, such as the Roland A-880.

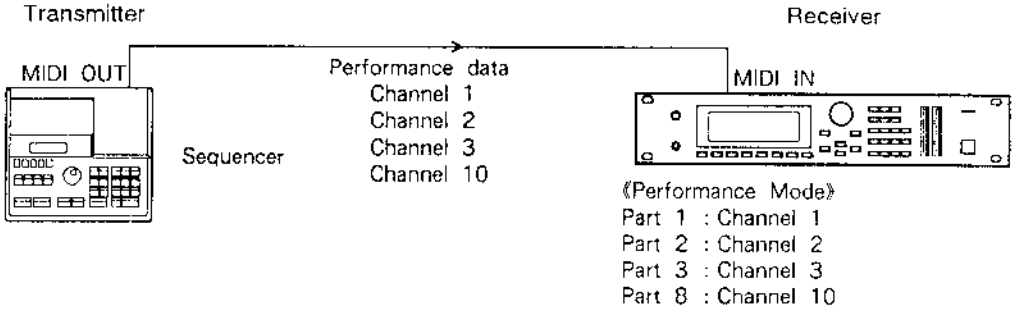
MIDI Channels

MIDI uses "MIDI Channel" in the exchange of data.

A variety of performance data can be exchanged only if the channels of the transmitter and the receiver match.

For example, the performance data transmitted on channel 1 can sound only if the receiving device (or Part) is also set to channel 1.

In addition, if you use a sequencer, each connected MIDI device will play its own part by recording performance data on different MIDI channels.



Each Part will be played by a different channel of data.

MIDI messages used by the JD-990

Each aspect of a keyboard synth performance has a special type of MIDI message to describe it. The JD - 990 can handle the following kinds of MIDI messages.

Channel Voice Messages :
- Note
- Aftertouch
- Pitch Bend
- Program Change
- Control Change

Channel Mode Messages :
- Reset All Controllers
- All Notes Off

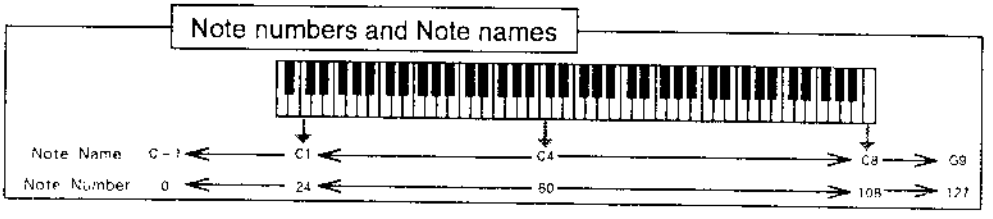
System Exclusive Messages

Note Messages

A Note message contains four bits of information about the note itself, as it was played on the keyboard:

Which key (Note Number);
How hard (Velocity);
Exactly when was it pressed (Note On); and
Exactly when was it released (Note Off).

Note Numbers (0—127) indicate the position of a key, with Middle C (C4) being number 60. The JD - 990 will respond to and play Note messages from an external device.



Aftertouch Messages

Aftertouch messages contain information about how hard you press on a key after it has been played. This finger pressure can control different synth parameters, letting you add additional expressiveness to a performance.

There are two kinds of aftertouch: channel aftertouch and polyphonic aftertouch.

Channel aftertouch means the aftertouch effect is applied to all the notes on that MIDI channel when you vary the pressure on a certain key. In polyphonic aftertouch though, only the key (note) on which you change the pressure is affected.

Pitch Bend Messages

Manipulations of the pitch bend lever (or wheel) are converted into MIDI messages and transmitted. Pitch benders continuously and smoothly change the pitch of a note over a wide range. The JD - 990 will receive and respond to pitch bend messages .

Program Change Messages

These messages transmit information about switching Patches and Tones. Whenever a Patch or Performance number is sent to the JD - 990 in the form of a Program Change message, it switches to that numbered Patch or Performance.

In order to access all 256 Tones from an external device, the JD - 990 first looks for a Bank Select message (Control Change #0) to signal whether the following Group number refers to the first 128 Tones or the last 128 Tones in memory.

JD - 990 Program Numbers and MIDI Program Numbers

Patch

Internal (INT) |Control Change #0 = 80|

PRESET A |Control Change #0 = 81|

Bank \ Number	1	2	3	4	5	6	7	8
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 [Control Change #0 = 80]
PRESET B [Control Change #0 = 81]

Bank \ Number	1	2	3	4	5	6	7	8
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	88	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

Performance

Internal/Card [Control Change #0 = 80]
Preset A/B [Control Change #0 = 81]

Performance Number	Program Change Number
I01—16	1—16
C01—16	65—80
A01—16	1—16
B01—16	65—80

Rhythm Set

Internal/Card [Control Change #0 = 80]
Preset A/B [Control Change #0 = 81]

Rhythm Set	Program Change Number
INT	1
CARD	65
PRESET A	1
PRESET B	65

Control Change Messages

These messages transmit data about "controllers": modulation wheels, hold pedals, or external controllers of vibrato, hold, volume, pan, and other things that can add more expressiveness to your playing. Each kind of controller is identified by a number, as described below.

There are certain parameter settings that control how the JD - 990 receives and responds to Control Change messages.

Bank Select (Control Change # 0)

These messages transmit information about switching Banks. On the JD - 990, a value of 80 or 81 switches you between the User Memory and Preset banks of Patches. A Program Change message follows the Bank Select message to specify which Performance, Patch, or Rhythm Set to switch to.

Modulation (Control Change # 1)

These messages transmit information about tremolo and wah - wah effects. The JD - 990 can also be set to provide other kinds of effects that are controllable with Modulation messages.

Breath (Control Change # 2)

These messages transmit information about tremolo and wah - wah effects using the external breath controller. The JD - 990 can also be set to provide other kinds of effects that are controllable with Breath messages.

Foot (Control Change # 4)

These messages transmit information about tremolo and wah - wah effects using the external foot controller. The JD - 990 can also be set to provide other kinds of effects that are controllable with Foot messages.

Portamento Time (Control Change # 5)

These messages control the time it takes from the start of a Portamento (Control Change #65) change to when it reaches the next pitch.

Volume (Control Change # 7)

These messages control changes in output volume.

Pan (Control Change # 10)

These messages control the position of the sound in the stereo field.

Expression (Control Change # 11)

These messages also control changes in the output volume. The JD - 990 can also be set to provide other kinds of effects that are controllable with Expression messages.

Hold 1 (Control Change # 64)

These messages sustain the sound from the time the ON (value from 64 to 127) is received, until an OFF (value from 0 to 63) is received.

Portamento (Control Change # 65)

When an ON (value from 64 to 127) is received, the current note will glide smoothly in pitch up to the next note played.

Effect 1 (Control Change # 91)

These messages control changes in effect level.

RPN (Control Change # 100, # 101)

These messages contain information on Bend Range, Master Fine Tuning and Master Coarse Tuning. The range of this variation is set by data entry.

Data Entry (Control Change # 6, # 38)

The value for the parameter specified by the RPN message.

* For more details about the actual data, refer to the MIDI Implementation.

Reset All Controllers

This message forces all controller and control change messages from their current values to some reset value. It may happen that song data calls for changes to some of these values during the course of a song. The Reset All Controllers message will erase 'leftover' data of this kind and gives you a "clean slate" when you jump from the middle of a song back to the beginning.

All Notes Off

This message sends out a command to turn all sounding notes off. If, however, Hold 1 is turned ON, the notes will continue to sound until a Hold 1 OFF is received.

System Exclusive Message

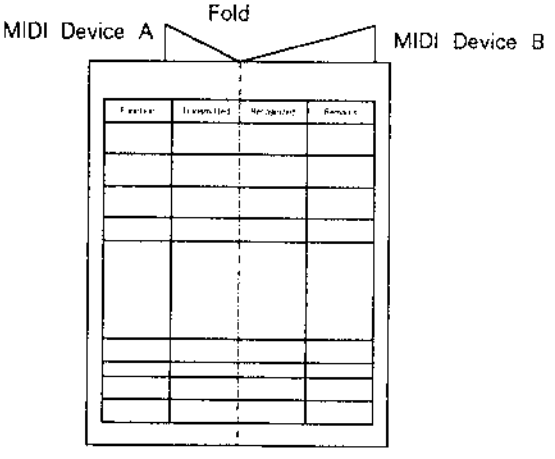
System Exclusive (SysEx) messages are designed to allow compatible machines made by the same manufacturer to exchange proprietary Patch data or other nifty features. You see, if all you could ever do with the MIDI standard is exchange the same data as everyone else, there would be no way for manufacturers to implement their own distinctive and innovative features. So each manufacturer now has its own fixed format for SysEx messages to exchange things like Patch data, etc.

The JD - 990 can also receive and recognize some of the Exclusive messages for the JD - 800. Tone parameter data of Patches and Special Setup, Temporary Patch dump data and Temporary Special Setup dump data can be received. Furthermore, you can also edit the JD - 990 data using the Exclusive messages for the JD - 800.

* There's more information about this in the section called "MIDI Implementation" on page App. – 44.

MIDI Implementation Chart

MIDI has made it possible for a wide variety of devices to exchange information, but it is not always true that all types of MIDI messages can be exchanged between all types of devices.
The important thing to keep in mind when using MIDI is that the slave device must be able to 'understand' what the master is 'saying.' In other words, the MIDI messages must be common to both master and slave.
To help you quickly determine what types of MIDI messages can be exchanged between master and slave, the Operation Manual of each MIDI device includes a MIDI Implementation chart.



Specific MIDI message can be exchanged only if there is an " ○ " in both the Transmission column of the master and the Reception column of the slave device.

Chapter 2

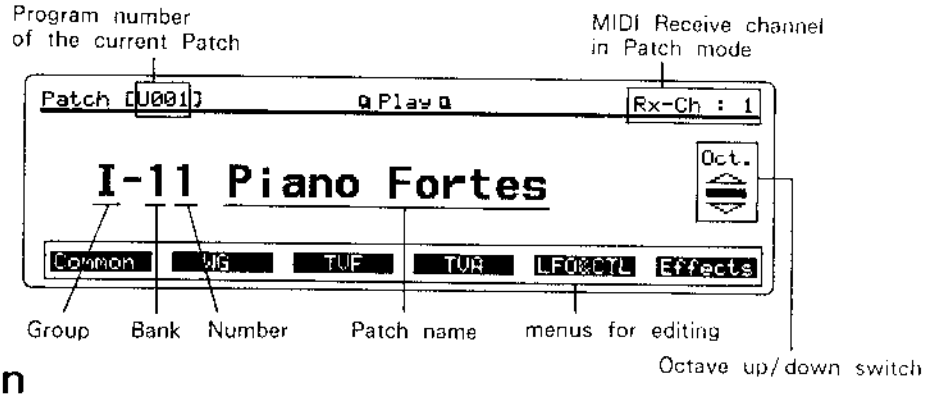
Parameter Reference

— PATCH —

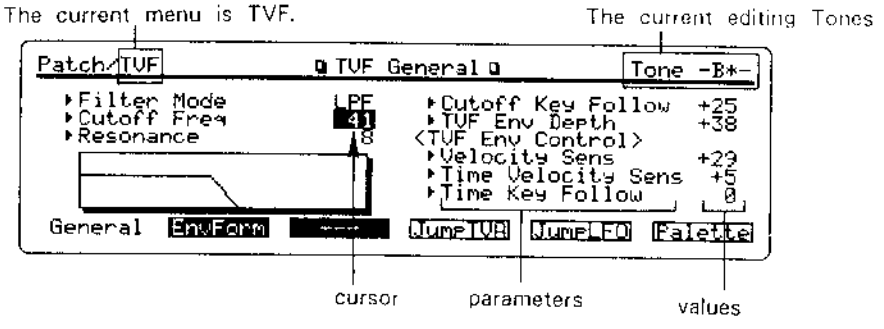
Patch Mode Screens

In this section, we'll talk about the Play and Edit screens and what they do.

Play Screen



Edit Screen



A Patch Edit can be roughly divided into six blocks:

Common The parameters here specify general things about the Patch that are not covered in the parameters for each individual Tone.

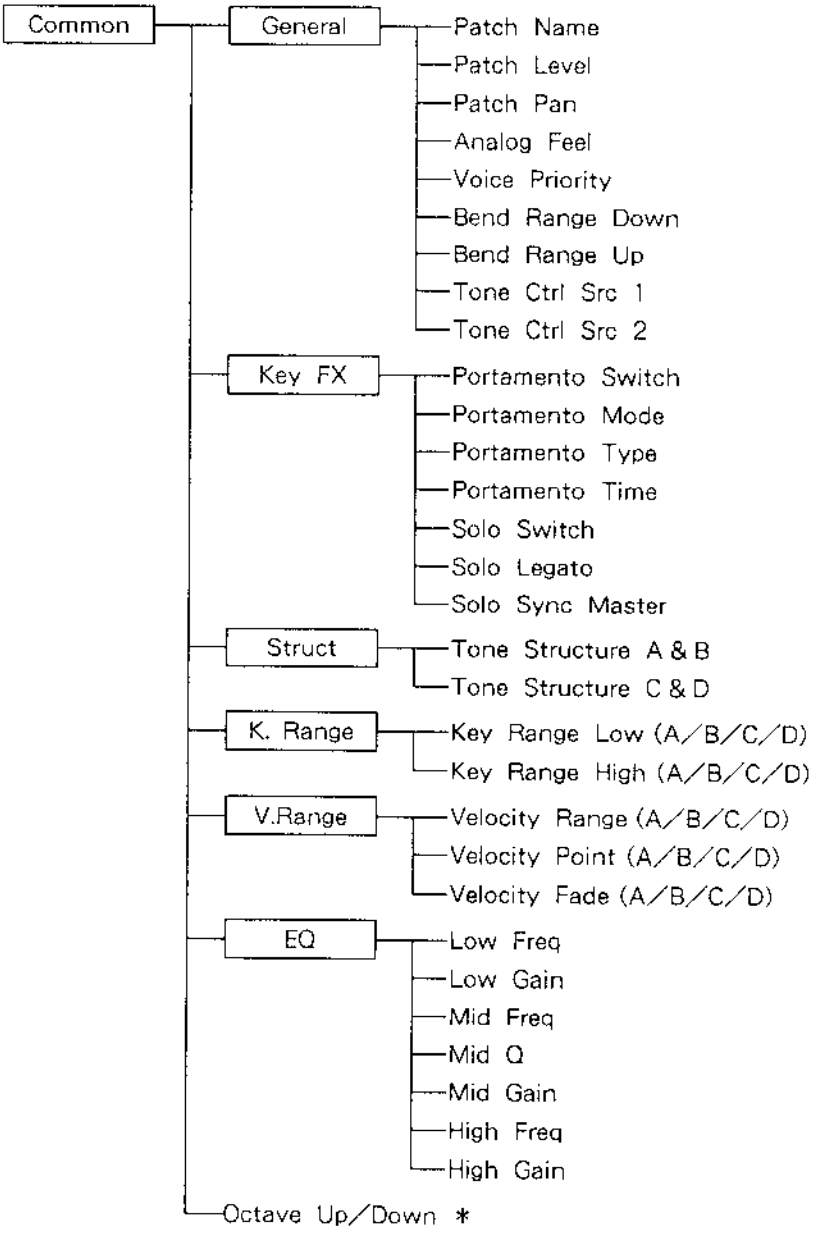
WG Short for Wave Generator. This is where you select the basic Waveform for a Tone and control its pitch.

TVF Short for Time Variant Filter, a filter whose characteristics can be changed dynamically to change the color and texture (timbre) of the Tone.

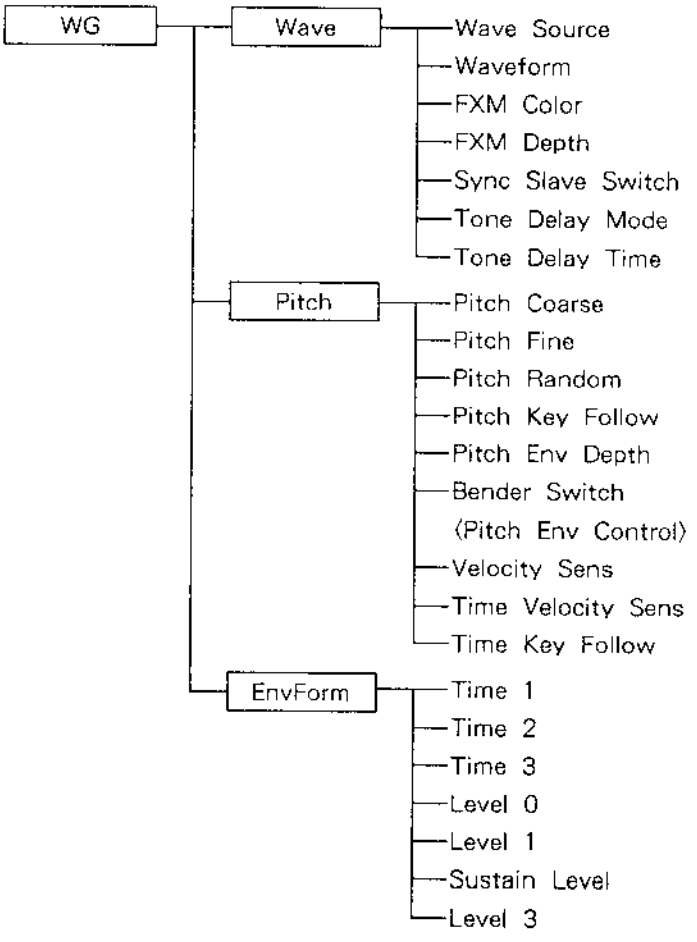
TVA Short for Time Variant Amplifier, an amplifier with dynamically variable output volume that can be set for each Tone.

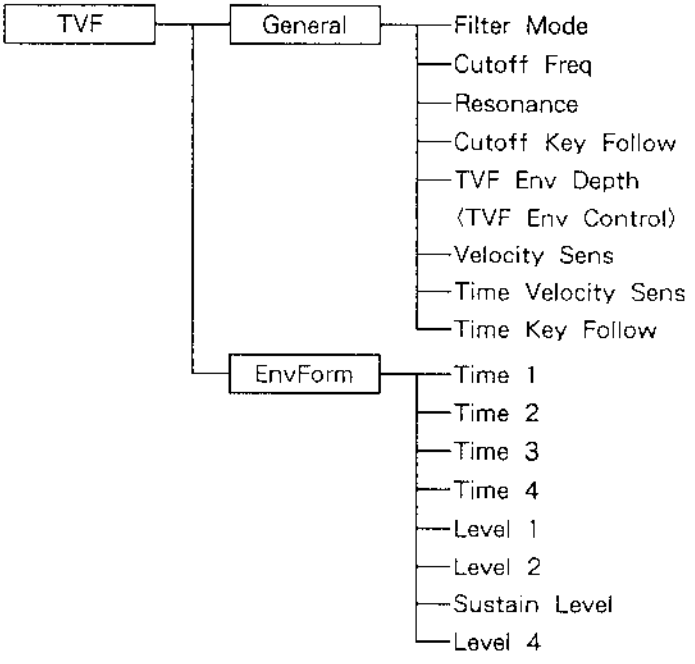
LFO and CTL The first is short for Low Frequency Oscillator, which applies modulation to the Tone to simulate vibrato, wah, or tremolo effects. The second stands for Control, which specifies how MIDI messages from the MIDI IN jack are to be handled.

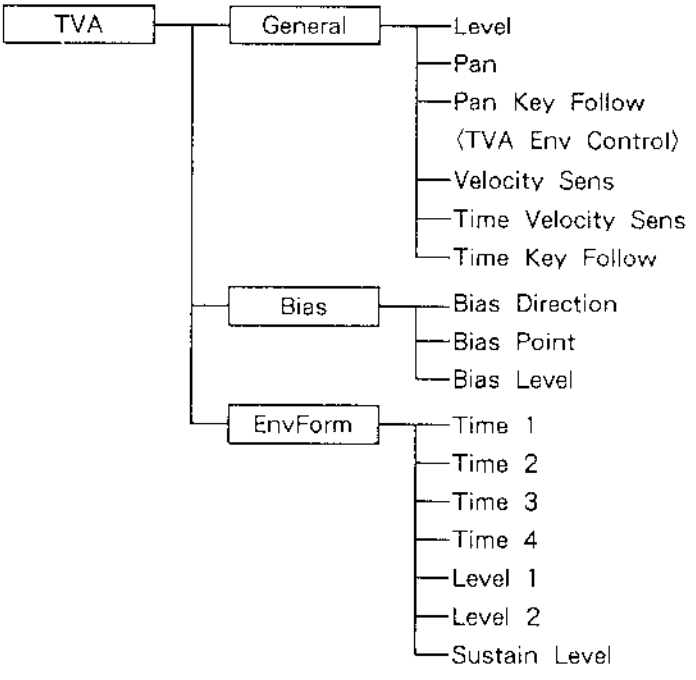
Effects Specifies the effects that will be applied to a Patch. There are a total of seven built - in effects, divided into those that affect and process the direct sound (Group A), and those that create an effect sound which is later mixed with the direct sound (Group B).

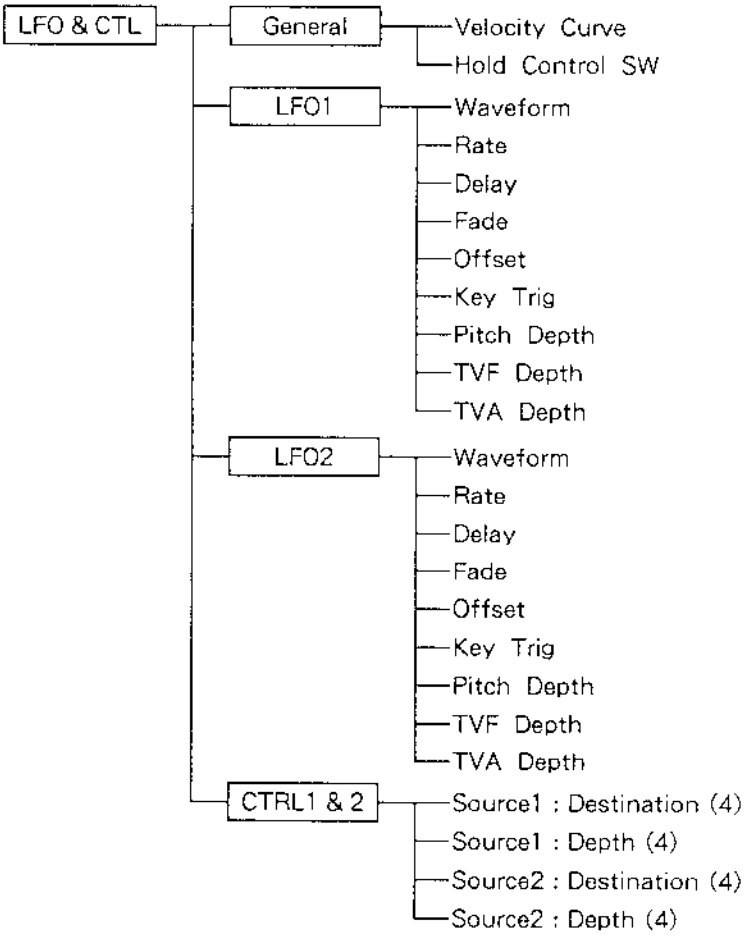


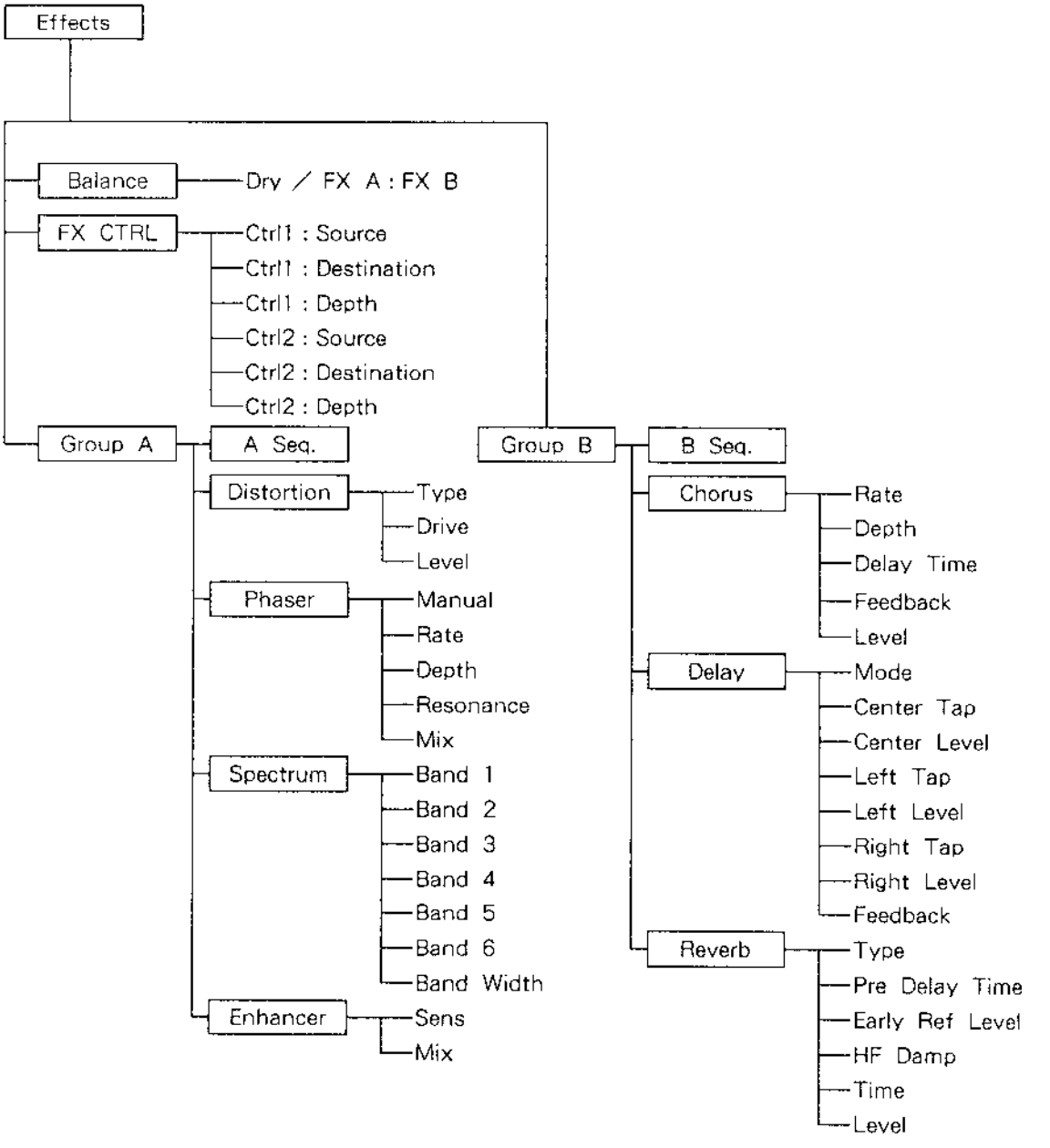
* Octave Up/Down can be set in the Play Screen. Values are -1, 0, +1 and can be stored by performing the Write operation. For more information, see page Base – 17.


WG
Wave
Wave Source
Waveform
FXM Color
FXM Depth
Sync Slave Switch
Tone Delay Mode
Tone Delay Time
Pitch
Pitch Coarse
Pitch Fine
Pitch Random
Pitch Key Follow
Pitch Env Depth
Bender Switch
(Pitch Env Control)
Velocity Sens
Time Velocity Sens
Time Key Follow
EnvForm
Time 1
Time 2
Time 3
Level 0
Level 1
Sustain Level
Level 3


TVF
General
Filter Mode
Cutoff Freq
Resonance
Cutoff Key Follow
TVF Env Depth
(TVF Env Control)
Velocity Sens
Time Velocity Sens
Time Key Follow
EnvForm
Time 1
Time 2
Time 3
Time 4
Level 1
Level 2
Sustain Level
Level 4


TVA
General
Level
Pan
Pan Key Follow
(TVA Env Control)
Velocity Sens
Time Velocity Sens
Time Key Follow
Bias
Bias Direction
Bias Point
Bias Level
EnvForm
Time 1
Time 2
Time 3
Time 4
Level 1
Level 2
Sustain Level

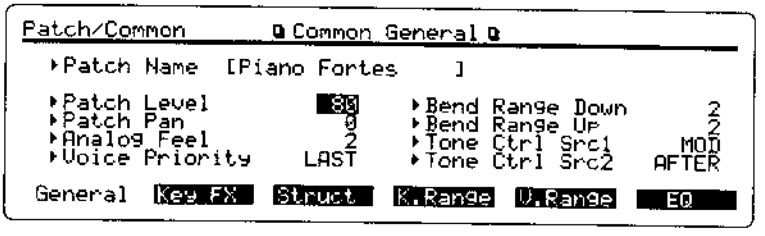

LFO & CTL
General
Velocity Curve
Hold Control SW
LFO1
Waveform
Rate
Delay
Fade
Offset
Key Trig
Pitch Depth
TVF Depth
TVA Depth
LFO2
Waveform
Rate
Delay
Fade
Offset
Key Trig
Pitch Depth
TVF Depth
TVA Depth
CTRL1 & 2
Source1 : Destination (4)
Source1 : Depth (4)
Source2 : Destination (4)
Source2 : Depth (4)


Effects
Balance
Dry / FX A : FX B
FX CTRL
Ctrl1 : Source
Ctrl1 : Destination
Ctrl1 : Depth
Ctrl2 : Source
Ctrl2 : Destination
Ctrl2 : Depth
Group A
A Seq.
Distortion
Type
Drive
Level
Phaser
Manual
Rate
Depth
Resonance
Mix
Spectrum
Band 1
Band 2
Band 3
Band 4
Band 5
Band 6
Band Width
Enhancer
Sens
Mix
Group B
B Seq.
Chorus
Rate
Depth
Delay Time
Feedback
Level
Delay
Mode
Center Tap
Center Level
Left Tap
Left Level
Right Tap
Right Level
Feedback
Reverb
Type
Pre Delay Time
Early Ref Level
HF Damp
Time
Level

Common

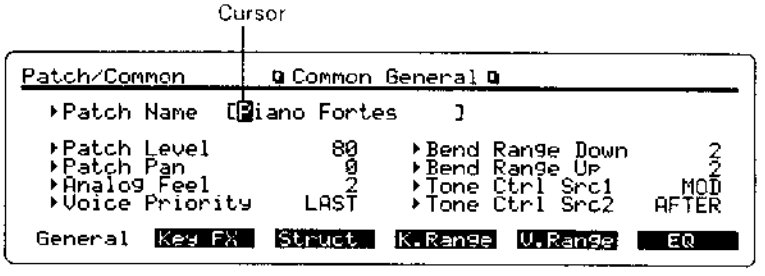
General

This includes naming Patches, setting overall Patch volume, and bend range.



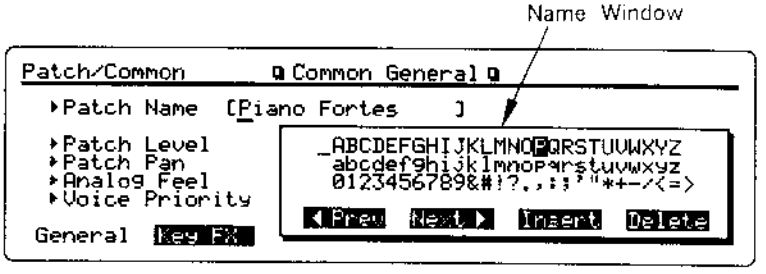
Patch Name

(Space, A — Z, a — z, 0 — 9, &#!?.,:;'"*+ - /<=>)
This is where you can name a Patch.
Move the cursor with CURSOR[◀][▶], and select characters with the [VALUE] knob or [INC][DEC] buttons. When you have selected the characters you want, press CURSOR [▶] to move to the next character space.



When you name a Patch in the name window you can see all the available characters at a glance.

Press the [VALUE] knob to open the name window. Select characters with CURSOR [▲], [▼], [◀] and [▶]. [VALUE] knob and [INC][DEC] buttons can also be used to select characters. When you have selected the character you want, press [F4](Next▶) to move to the next character place.



There is a menu in the lower part of the window which displays the function names of the Function buttons.

◀Prev : Move to the previous character space.
Next▶ : Move to the next character space.
Insert : Insert a space at the underline, moving all following characters back one.
Delete : Delete the character under the underline, moving all following characters up one space.

Press [EXIT] to close the name window.

Patch Level 0 — 100

Sets the overall volume of a Patch. Larger numbers correspond to higher volumes.

Hint

Patch Level can be used to adjust the volume balance between Patches.
Even though the maximum value possible is 100, the loudest you should set the Patch Level is 80 or 90. That way when the volume of a Patch is changed by something like hall reverb, for example, you have some headroom to play with in getting the proper balance.
If you want a Patch to be louder still, there's always the [VOLUME] knob!

Patch Pan L50 — 0 — 50R

Sets the stereo position of the Patch. L50 means "hard" left, 0 is the center position, and 50R is hard right. The Pan can be set independently for each Tone within a Patch.

Analog Feel 0 — 100

Adds a "very subtle pitch modulation" to the basic Waveform.

Hint

The effect generated by this parameter almost falls within the realm of the 'psychoacoustic' meaning that the effect is felt more than it is heard. The impression you receive from using Analog Feel is completely subjective so careful experimentation is definitely in order.

PATCH + F1 (Common) + F1 (General)

Voice Priority LAST, LOUDEST

This setting controls what will happen when you try to exceed the maximum polyphony of the unit.

LAST : When you try to play more than 24 voices at once, the most recently played voices have priority. The voices which have been playing the longest are cut (in sequence) and given to the newest voices.

LOUDEST : When you try to play more than 24 voices at once, the loudest voices have priority. The voices are cut (in sequence) from softest to loudest, and given to the newest voices — with the following exception. The lowest notes (in pitch) are always given priority.

Hint

Loudest voice priority works better for piano performances. This is because the LAST setting tends to first cut off Tones that are being sustained with the Hold pedal, resulting in a rather unnatural sound. Also, prioritizing the lowest bass note means the music will hold together better, without the loss of presence you would feel if the bottom were suddenly to drop out of a piece of music.

Note

In Performance mode, only voices that are over and above the Voice Reserve setting for a Part (page Pfom -- 6) can be "stolen" to play new notes. As long as there are fewer voices sounding than the number set by Voice Reserve, none will be stolen. Otherwise, if stealing is necessary within a Part, it will be done as per the Patch Voice Priority selected for that Part.

Bend Range Down

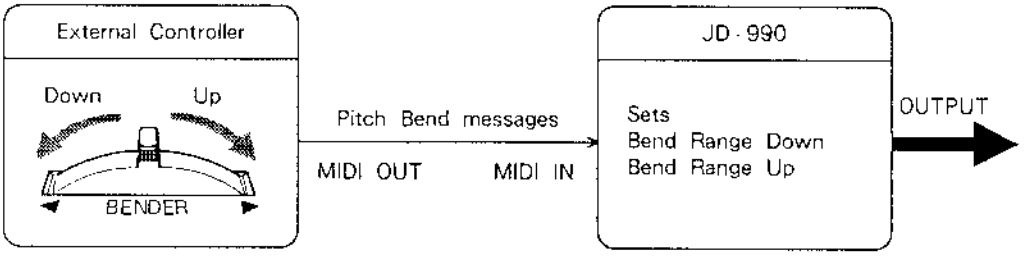
0 — 48

This parameter sets how much the pitch will drop when you push a Pitch Bend Lever to the left (or a Pitch Bend Wheel downward). Each unit is a semi-tone, so the maximum setting of 48 means a drop of 4 octaves.

Bend Range Up

0 — 12

This parameter sets how much the pitch will rise when you push a Pitch Bend Lever to the right (or a Pitch Bend Wheel upward). Each unit is a semi-tone, so the maximum setting of 12 means a rise of an octave.



Hint A Bend Range Up of 2 is just about right for simulating note bends on a guitar.

Tone Ctrl Src 1 (Tone Control Source 1)

MOD, AFTER, EXP, BREATH, P.BEND, FOOT

Tone Ctrl Src 2 (Tone Control Source 2)

MOD, AFTER, EXP, BREATH, P.BEND, FOOT

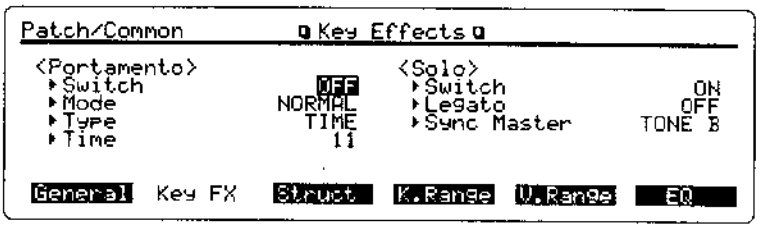
You can assign up to two MIDI controllers to control the sounds on the JD-990 by altering WG, TVF and TVA parameters in real time. The assignment is made in the LFO & CTL Control 1&2 screen.

MOD : Modulation messages (Control Change # 1)
AFTER : Aftertouch messages
EXP : Expression messages (Control Change # 11)
BREATH : Breath messages (Control Change # 2)
P.BEND : Pitch Bend messages
FOOT : Foot messages (Control Change # 4)

PATCH + F1 (Common) + F2 (Key FX)

Key FX

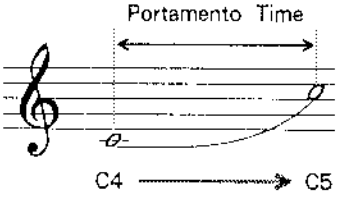
This includes Portamento and Solo effects.



Portamento Switch

OFF, ON

Portamento gives you a smooth glide in pitch between the current note and the next note you play. Portamento is turned ON and OFF in each Patch with this switch.



Portamento can be turned ON in the Solo mode to give a smooth sliding effect reminiscent of a violin playing style. Portamento can also be used in the Polyphonic mode (when playing chordal accompaniments).

Portamento Mode

NORMAL, LEGATO

This setting controls how your playing style will affect the Portamento.

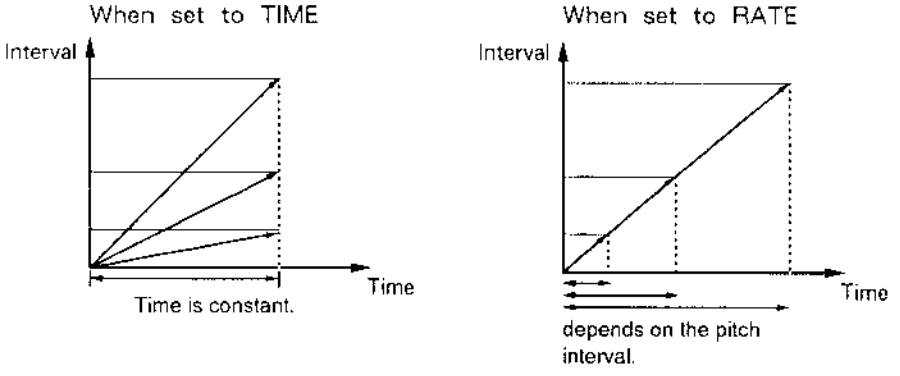
NORMAL : You will get a Portamento glide in between every note you play.

LEGATO : You will only get Portamento when you play in a legato style, i.e., not releasing a key until after you have played the next key.

Portamento Type

TIME, RATE

This setting controls the type of Portamento that is used.
The TIME setting means that the time it takes to glide up to the next pitch is the same, regardless of the interval between the notes.
The RATE setting means that the note will glide up to the next pitch at a uniform rate, so that the Portamento will take less time for notes that are close on the keyboard, and longer when the interval is wider.



Portamento Time

0 — 100

This parameter sets the time it takes for the pitch to change. Larger values mean longer times.

PATCH + F1 (Common) + F2 (Key FX)

Solo Switch OFF, ON

Turns Solo ON and OFF for a given Patch. Solo means only the most recent key you press will sound. This is useful when simulating woodwind and brass instruments (which play only one note at a time), or for synth lead voices.

Note

When the Solo Switch is ON, the JD - 990 also responds to "off - velocity" and the sound you hear will change depending on how fast you release a key after pressing it. For example, play the C4 key and hold it, then strike the E4 key. Now, this is the Solo mode, so when you let up off the E4 key you'll hear the C4 note again. But you can control the velocity with which this second C4 sounds by how fast you release the E4 key! Releasing it quickly gives you a sharp attack, or you can ease back down to the C4 by releasing the E4 key slowly.

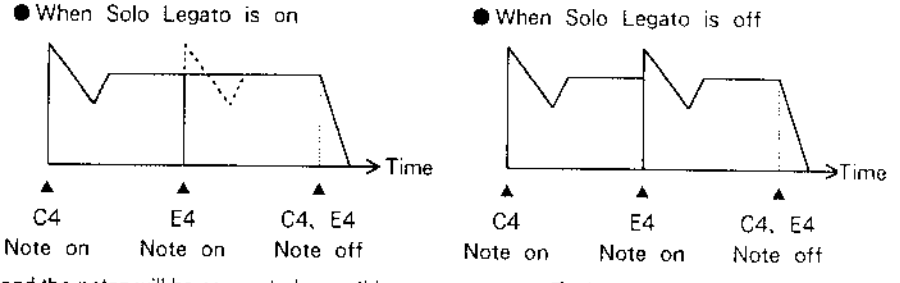
Solo Legato OFF, ON

This setting controls how sound will be produced when the Solo Switch is ON.
ON means when you play with a legato style, each note will be 'connected' to the next.
OFF means that, no matter how you play the keys, a distinct sound is produced for each note.

*Certain TVF/TVA Envelope decay settings may cause some notes not to play at all when Solo Legato is ON.

Hint

Legato is a playing style in which the release of one note overlaps with the attack of the next, so that there are no breaks or gaps in the sound. This is especially effective for simulating a violin played in a legato style.



Attack will fade, and the notes will be connected smoothly.

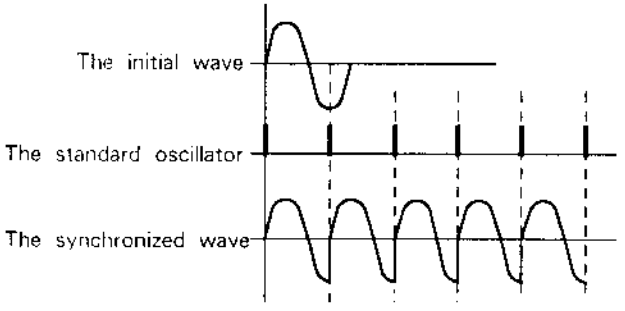
Each note has an attack.

Solo Sync Master

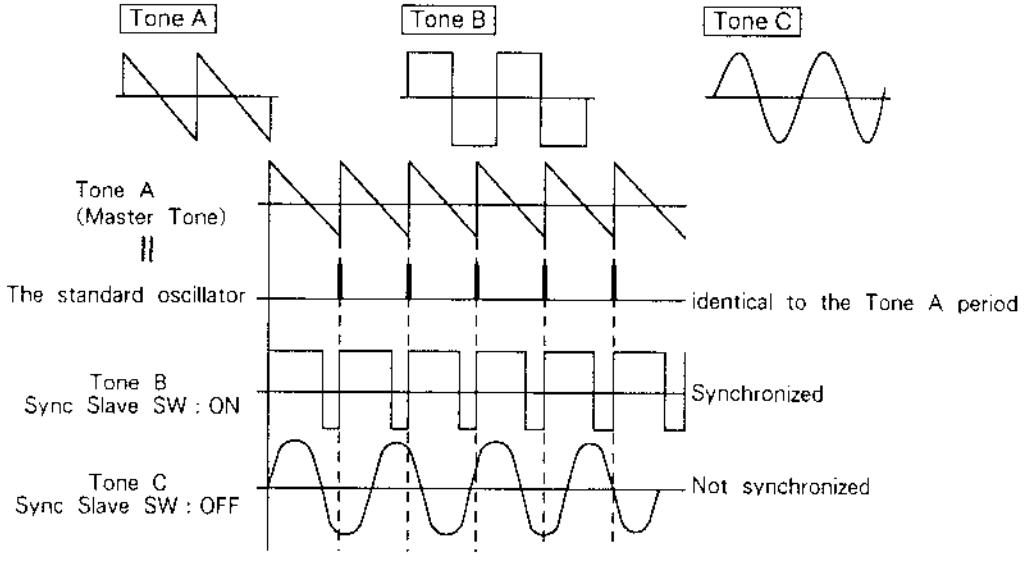
OFF, TONE A/B/C/D

The JD - 990 can digitally simulate the synchro function of an analog synthesizer.
Synchro is a function which lets you create a new Waveform by forcing the initial Waveform to return to the beginning of its cycle at some point in time.

When using a sine wave



On the JD - 990, the standard oscillator period (cycle) is locked to the frequency of some Tone. A setting of TONE A here makes the standard oscillator period identical to the Tone A period, as shown in the diagram. Then, whether or not it is locked to the standard oscillator period is determined for each Tone by the WG/Wave Sync Slave Switch (☞P. Ptch – 31).



This lets you create effective, thick, attention-getting sounds for Solo Play. It also works especially well with bass sounds.

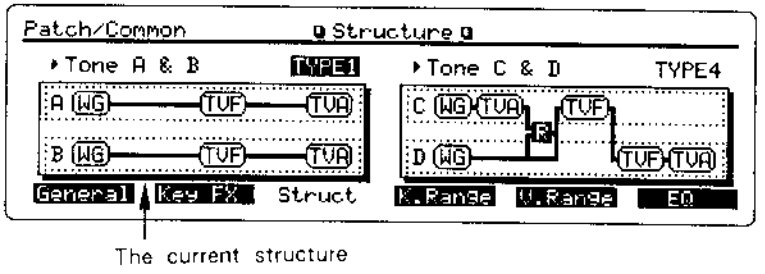
* This only works when Solo is ON.
* It will not work if the Tone Switch for the selected Master Tone is turned OFF.

PATCH + F1 (Common) + F2 (Key FX)

Note	One way of using Sync is to set the pitch with the Master Tone (standard oscillator), then modify the timbre with the Sync Tone. For example, when you select Tone A to be the Master, it is effective to control the Pitch Bend or the Modulation with Tone B. Using the LFO or Portamento is also effective.

Structure

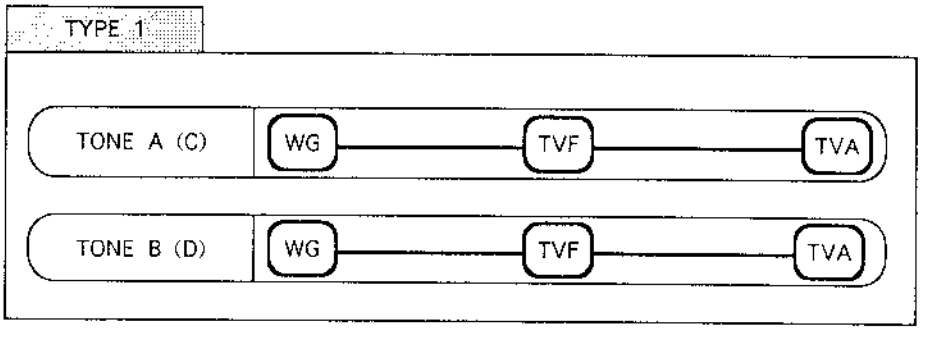
Structure includes the parameters which determine the makeup of each Tone, in particular, how Tones A and B, or Tones C and D are to be combined. There are six different Structures. Selecting a different Structure can completely change the way a Patch sounds.



Tone A & B Tone structure A & B TYPE 1 — 6
Tone C & D Tone structure C & D TYPE 1 — 6

The different Structure TYPEs are described below.

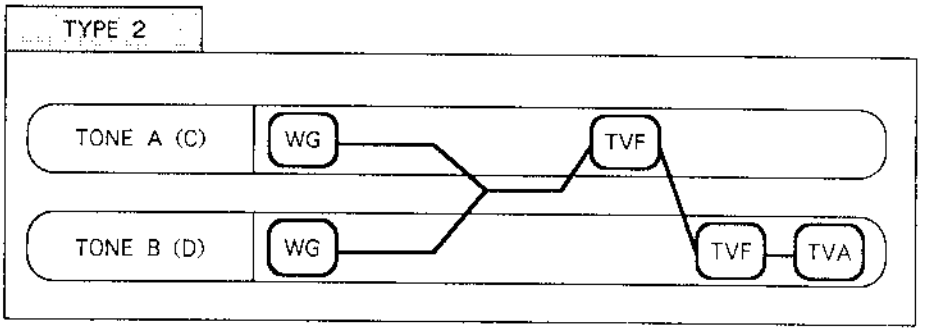
TYPE 1 The Tones are completely independent. Use this when you want to get in the maximum number of PCM sounds, or create highly layered Patches with a different sound for each Tone.



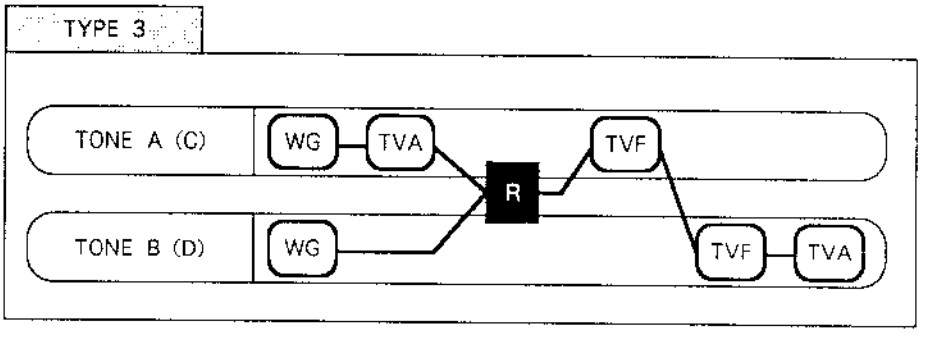
* JD - 800 Patches are played back using TYPE 1.

PATCH + F1 (Common) + F3 (Struct)

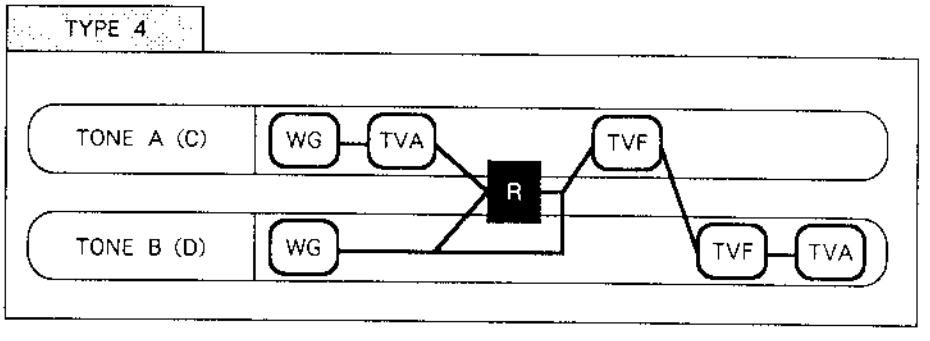
TYPE 2 The filters for the first Tone (A or C) and second Tone (B or D) are layered. The TVA for the first Tone is ignored, and volume is controlled by the TVA for the second Tone. Filter characteristics are intensified by layering them in this manner.



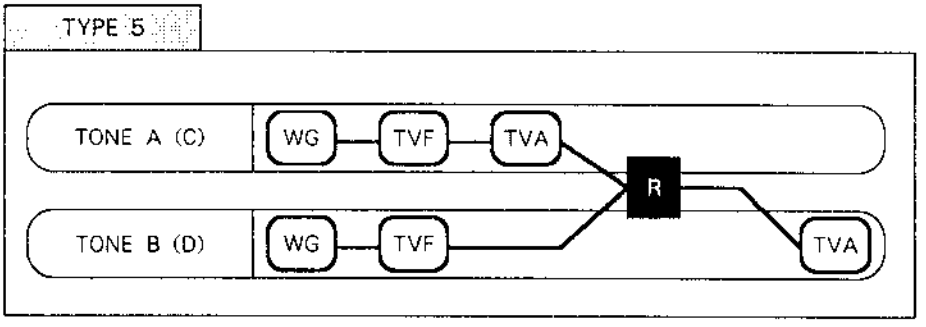
TYPE 3 The first Tone is passed through the Ring Modulator (☞P. Ptch – 21) to augment its overtone structure and the filters for the two Tones are layered. Ring Modulation depth is adjusted by controlling the balance between the two Tones with the first Tone's TVA.



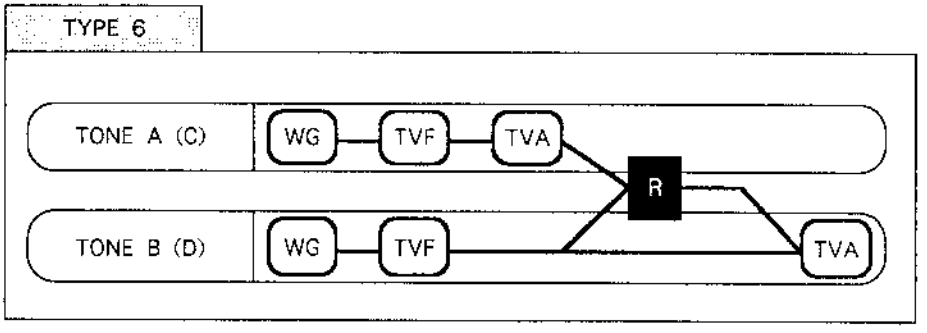
TYPE 4 The first and second Tones are passed through the Ring Modulator to add overtones, then mixed with the original second Tone, and finally the filters for the two Tones are layered. You can control the volume of the Ring Modulated sound during mixing using the TVA for the first Tone.



TYPE 5 The first and second Tones are passed through the filters first, then through the Ring Modulator to add overtones. This gives you a different effect from TYPE 3.
Ring Modulation depth is adjusted by controlling the balance between the two Tones with the first Tone's TVA.



TYPE 6 The first and second Tones are passed through filters first, then through the Ring Modulator, and finally mixed with the second Tone. This gives you a different effect from TYPE 4. You can control the volume of the Ring Modulated sound during mixing using the TVA for the first Tone.



*For TYPEs 2 — 6, if you turn OFF one of the Tones in a pair, the other Tone is sounded as a TYPE 1.

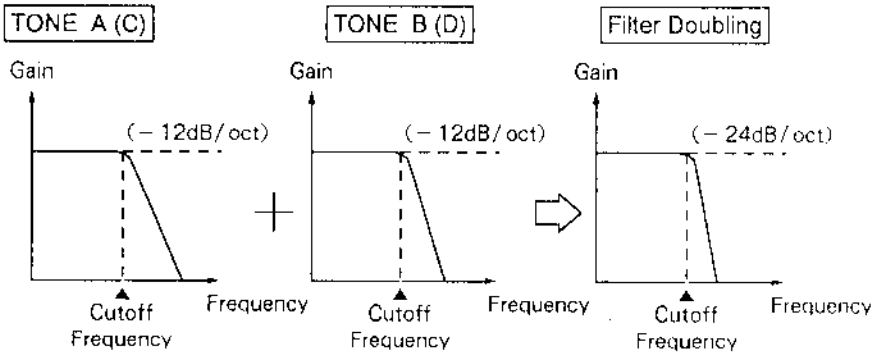
PATCH + F1 (Common) + F3 (Struct)

Hint 1 Filter Doubling

In TYPEs 2, 3 and 4, the TVFs for the two Tones are layered, i.e., connected in series to create a double filter. This feature can be exploited to create a variety of interesting effects.

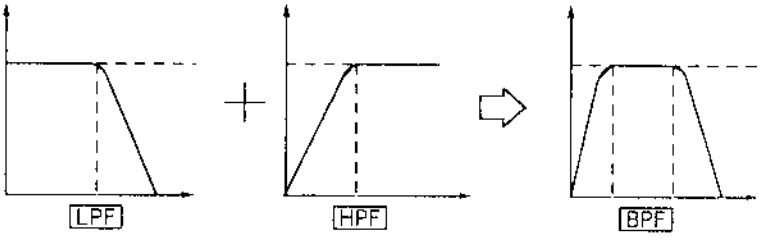
For example, if you set all TVF parameters identically for the two Tones, the resulting filter action will be twice as pronounced, twice as intense as before, with even more filtering in the region beyond the cutoff frequency.

Using an LPF (Low Pass Filter)

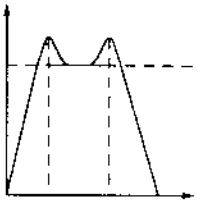


... will make the sound even bolder.

Now let's say you make one of these an LPF and the other an HPF (High Pass Filter). If you set the HPF cutoff frequency lower than the LPF cutoff here, you effectively have a BPF (Band Pass Filter). Setting high Resonance values on both filters will give you a truly bizarre "twin peaks" kind of sound!



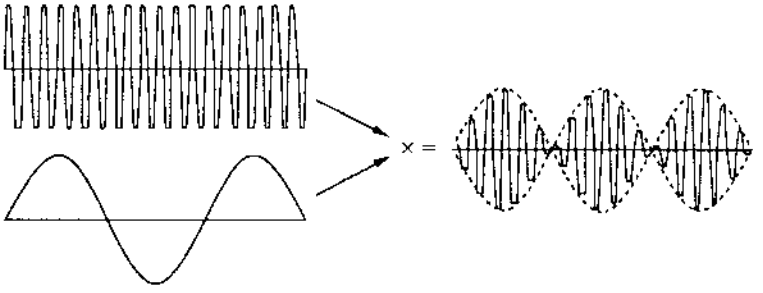
Adding Resonance to the LPF and HPF...



Hint 2

Ring Modulation

Ring Modulation combines two Tone Waveforms to create a new one with new (non-integer) overtones that were not contained in either of the original Waveforms. (In general, if you start with non-sinusoidal Waveforms, the harmonic components will not be evenly spaced in the spectrum). This creates a metallic-sounding resonance without much of a sense of pitch to it, since the overtone structure is different for each possible pitch of the Waveform.



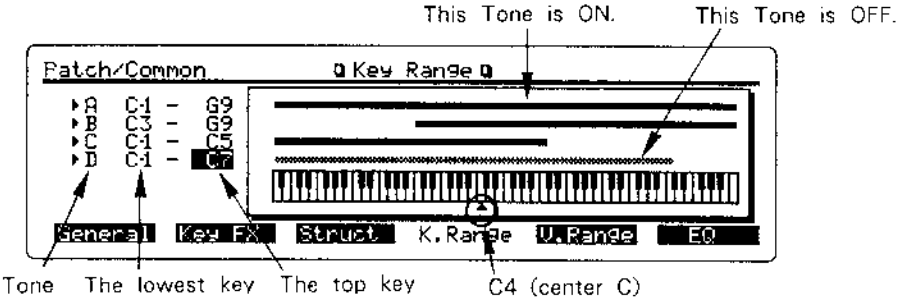
This is the ideal tool for creating metallic bell-like timbres.

The "pitch purity" or sense of pitch you get from the sound can be increased in TYPEs 4 and 6 by increasing the amount of second Tone in the mix with the Ring Modulated sound. You can also soften or mellow the Ring sound somewhat in TYPEs 5 and 6 by running the sound through an LPF before sending it to the Ring Modulator.

PATCH + F1 (Common) + F4 (K.Range)

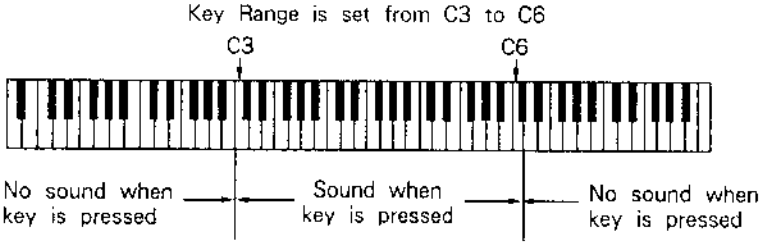
Key Range

You can set the range of keys that will play a given Tone.
You will use this when creating Patches to make keyboard Layers, Splits, and Zones.
The display shows an 88 note keyboard.



Each Tone is displayed with, of course, the bass on the left and the treble on the right.

You can set the range from C − 1 to G9, displayed as a line.

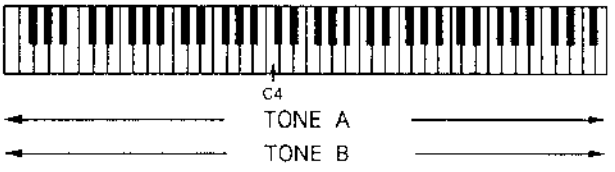


* TVA Bias settings (Direction, Point, Level) (☞ P. Ptch − 56) can cause certain notes not to sound, even though they fall within the Key Range. If that's the case, try setting Bias Level to zero and see if the notes become playable.
* The JD - 990 won't let you set it so that the lowest key of the Key Range is higher than the top key.

Hint

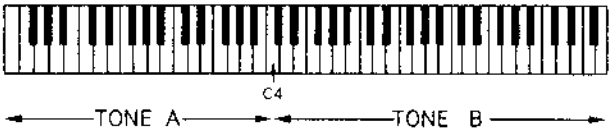
Layer

You "Layer" two Tones by assigning them to the same Key Range, so that both Tones sound every time you press a key in that range.



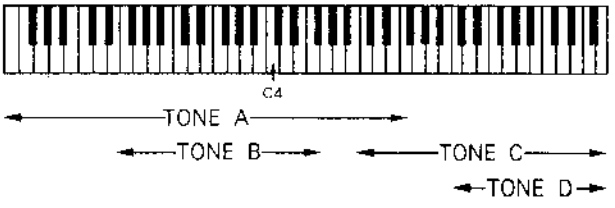
Split

You create a keyboard "Split" by dividing the Key Range between two (or more) Tones, so that part of the keyboard plays one Tone, another part of the keyboard plays a different Tone, etc.



Zone

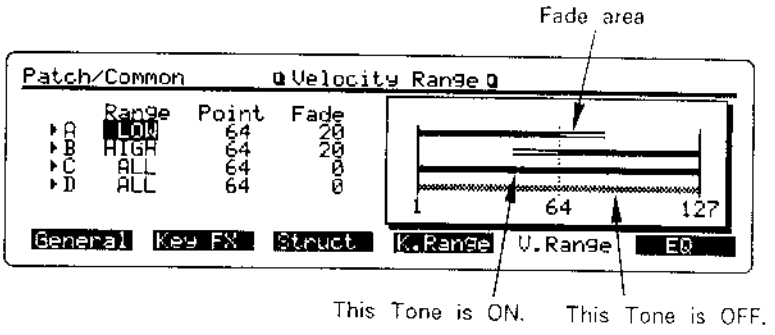
In a "Zone," you can combine four Tones with any Key Range setting you like.



PATCH + F1 (Common) + F5 (V.Range)

Velocity Range

This sets the range of velocities for each Tone.



Velocity Range

ALL, LOW, HIGH

Whether or not a note sounds will depend on the velocity with which it is played.

ALL : Plays notes with all velocities.
LOW : Plays only those notes with velocities less than the Velocity Point.
HIGH : Plays only those notes with velocities higher than the Velocity Point.

Velocity Point 1 — 127

This parameter is the velocity threshold between LOW and HIGH when LOW or HIGH is selected under Velocity Range.

Velocity Fade 0 — 127

This parameter sets the fade width from the Velocity Point for each Tone when LOW or HIGH is selected under Velocity Range.

NOTE

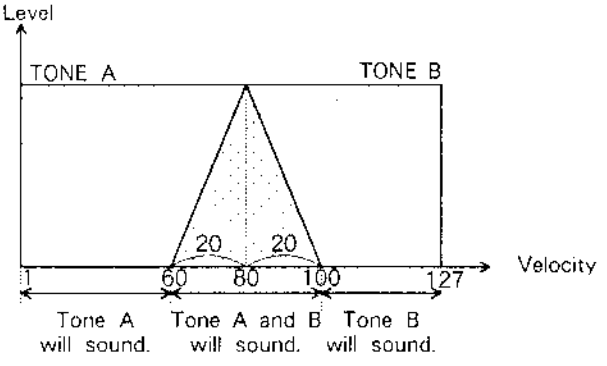
Set things up as follows to create a Velocity Crossfade effect, where the volume balance between two Tones will change, depending on how hard (with what velocity) a key is played.

Tone A

Velocity Range : LOW
Velocity Point : 80
Velocity Fade : 20

Tone B

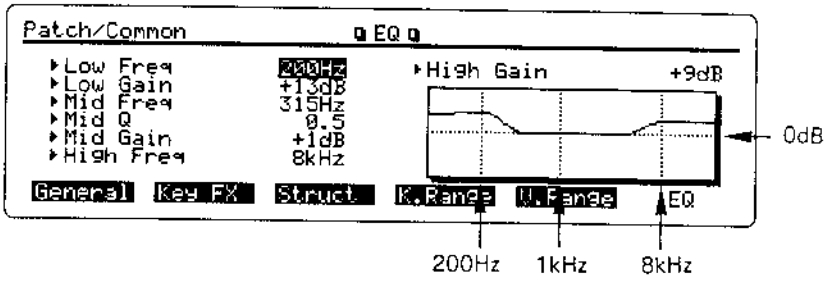
Velocity Range : HIGH
Velocity Point : 80
Velocity Fade : 20



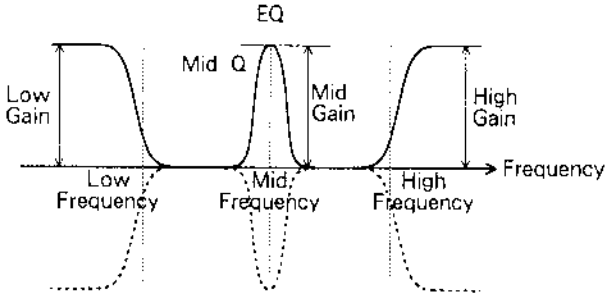
PATCH + F1 (Common) + F6 (EQ)

EQ

This parameter sets the overall equalization of a Patch.
An equalizer is a type of tone control that increases or decreases the volume level of specific frequencies.

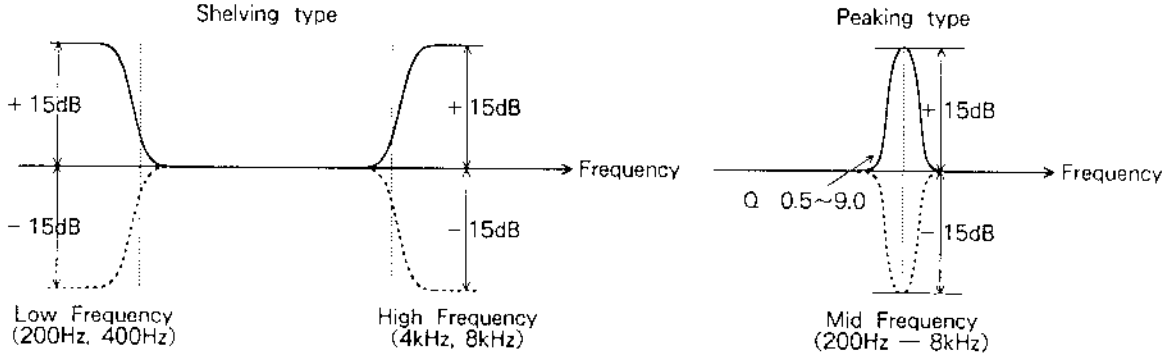


The JD - 990 uses a "shelving" type equalizer in the high and low frequency ranges, and a "peaking" or parametric EQ in the midrange.



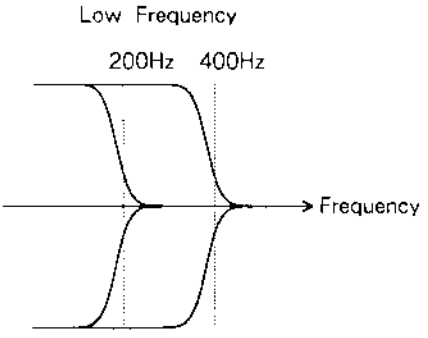
Shelving EQ : Raises or lowers the signal level in the frequency range above (or below) the value set in High Freq (Low Freq).

Peaking EQ : Raises or lowers the signal level in the frequency range centered around the value set in Mid Freq, with a width defined by the Mid Q setting.



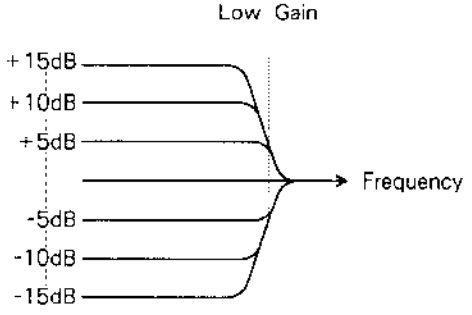
Low Freq (Low Frequency) 200Hz, 400Hz

This parameter sets the frequency at which bass boost or rolloff becomes effective.



Low Gain – 15dB — +15dB

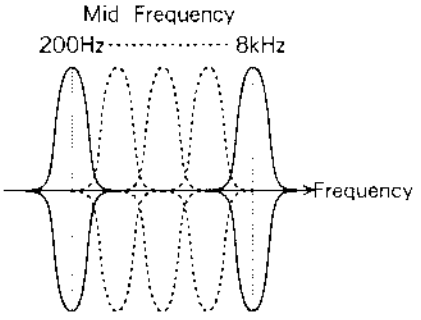
This parameter sets the amount by which the bass level is increased/decreased beginning at the frequency set in Low Freq.



PATCH + F1 (Common) + F6 (EQ)

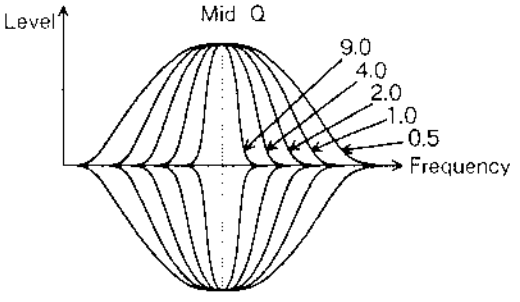
Mid Freq (Mid Frequency) 200, 250, 315, 400, 500, 630, 800Hz 1, 1.25, 1.6, 2, 2.5, 3.15, 4, 5, 6.3, 8 kHz

This parameter sets the central frequency for mid-level boost/cut.



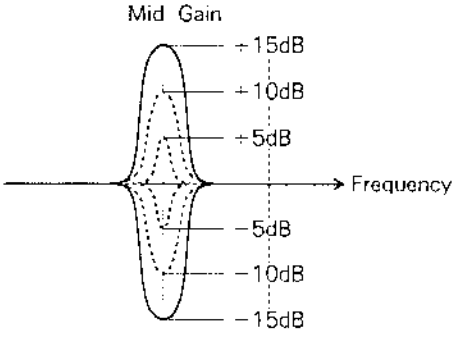
Mid Q 0.5, 1.0, 2.0, 4.0, 9.0

This parameter sets the "Q" of the boost/cut around the central frequency set in Mid Freq; that is, how wide a frequency range will be affected by the boost or cut. Larger values make this range narrower, with a more intense and noticeable boost/cut around the central frequency.



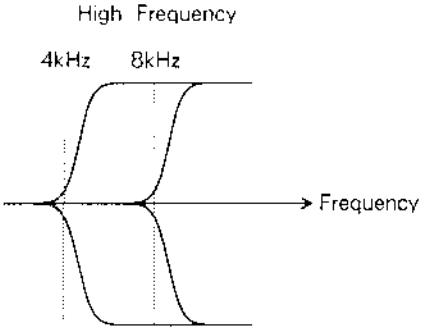
Mid Gain – 15dB — +15dB

This parameter sets the amount by which the level is boosted or cut around the frequency set in Mid Freq. Positive values boost the mid-range frequencies.



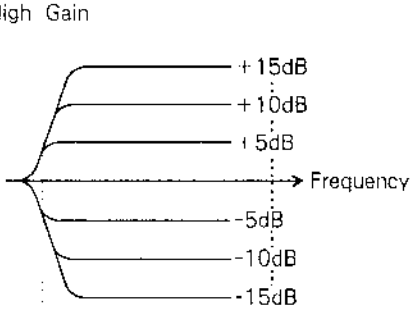
High Freq (High Frequency) 4 kHz, 8 kHz

This parameter sets the frequency at which treble boost or cut becomes effective.



High Gain -15db — +15dB

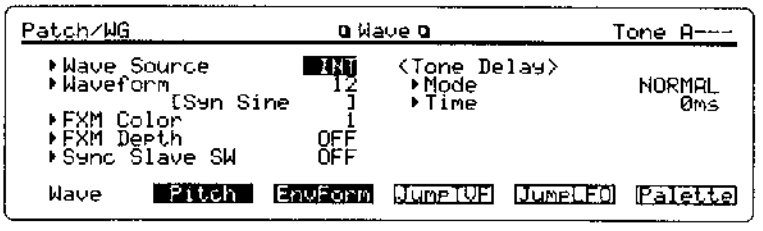
This parameter sets the amount by which the treble is boosted or cut beginning at the frequency set in High Freq. Positive values boost the treble frequencies.



WG

Wave

This is where you select the basic Waveform for a Tone and apply effects to it.



Wave Source

INT, CARD, EXP

This selects the source of the Waveform:

INT : Stored in the JD - 990's internal memory
CARD: Stored on a PCM Card
EXP : Stored on an Expansion Board

* When you set this to "CARD," Waveform names included on a CARD aren't displayed unless the PCM Card is inserted in the slot. Same for the Expansion Board. For more about using PCM Cards, see page Base – 10, or page Base – 13 for more about Expansion Boards.
* The JD - 990 can use JD - 800 WAVEFORM Cards (SO - JD80 Series) and JV - 80 PCM Cards (SO - PCM1 Series).

Waveform

This selects the basic Waveform for a Tone, the most fundamental parameter setting of all. Both Wave Number and Wave Name are displayed.

The different Cards and Boards contain different numbers of Waveforms. The JD - 990 itself has 195 Waveforms stored in memory.

* Check out the "Waveform List" at the back of the manual (☞P. App. – 36) for more about the JD - 990's Waveforms.

FXM Color 1 — 8

FXM stands for Frequency Cross Modulation, which is applied to the selected Waveform to create and add new overtones. It's perfect for adding "grunge" to sounds that are otherwise too pure and sweet.
FXM Color controls the overall feel of this sound, with large values giving you a more 'gritty' sound and small values lending a more metallic quality.

FXM Depth OFF, 1 — 100

This parameter controls the intensity of the FXM effect, with 100 being maximum intensity.

Sync Slave SW

OFF, ON

This parameter sets whether or not to lock with the Sync Master Tone set in Common/Key FX (☞ P. Ptch − 15). The Sync function is enabled when the Solo Switch (☞ P. Ptch − 14) in Common/Key FX is turned ON.

Tone Delay Mode

NORMAL, HOLD, K - OFF N, K - OFF D, PLAYMATE

This parameter delays the start of a Tone. There are four types:

NORMAL : The Tone will be delayed by the Tone Delay Time, even if a Key Off message is subsequently received.
HOLD : The Tone will be delayed only until a Key Off is received. If this happens before the Delay Time has elapsed, the delayed note will not sound at all.
K - OFF N : (KEY - OFF NORMAL) The delay sound starts after the key is released.
K - OFF D : (KEY - OFF DECAY) TVA envelope starts when the key is on, and the delay sound starts after the key is released.
PLAYMATE : The amount of delay is determined by the amount of time between the previous and current Key On (as long as this is 5 seconds or less) multiplied by the Playmate Tone Delay Time percentage.

[PATCH] + [F2] (WG) + [F1] (Wave)

Tone Delay Time

0 — 5.0s; NORMAL, HOLD, K - OFF N, K - OFF D,
0 — 254%; PLAYMATE

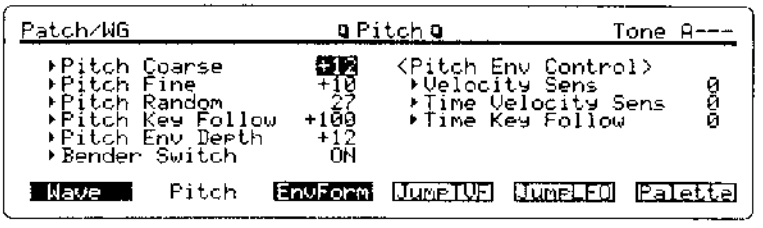
This parameter sets the amount of time from reception of a Key On to the sounding of the Tone (or, if "K - OFF N" or "K - OFF" D is selected, from the reception of a Key Off message). This delay time can be set anywhere from 0 to 5.0s.

You can change the value as follows:
from 0 to 1.0 s : in 10ms increments
from 1.0 to 3.0 s : in 0.1s increments
from 3.0 to 4.0 s : in 0.2s increments
from 4.0 to 5.0 s : in 0.5s increments

When Tone Delay Mode is set to PLAYMATE, a setting of 100% means the Delay Time will be the same as the time between reception of the previous Key On and the Key On that triggered this Tone. A setting of 200% means the Delay Time will be double this.

Pitch

This parameter controls the fundamental pitch of the Waveform.



Pitch Coarse

– 48 — +48

This parameter sets the fundamental pitch of a Waveform over a range of four octaves, up or down, in semi-tone increments. Once you determine the basic pitch here, you can make finer adjustments with the Pitch Fine parameter. Each Pitch Coarse unit is a semi-tone, i.e., the interval between adjacent keys on the keyboard, so 12 units corresponds to a full octave up or down.

Hint

You can really thicken the sound of a Tone by layering it with the identical Tone pitch-shifted down one full octave. This effect is called "octave unison," and is especially effective for synth lead sounds.

You can also get a Rock Organ kind of sound by layering four identical Tones pitch shifted by – 12, 0, +7 and +12 semi-tones.

Pitch Fine

– 50 — +50

This parameter adjusts the pitch set by Pitch Coarse up or down 50 cents (in 1 cent units). A semi-tone is equal to 100 cents.

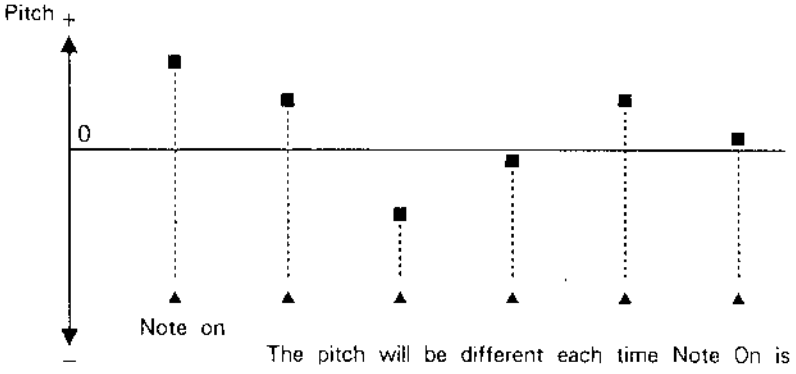
Hint

You can get a chorusing kind of effect called "detuning" by combining two identical Tones but pitch-shifting one of them by a small amount (say, +/ – 3 cents) with Pitch Fine.

PATCH + F2 (WG) + F2 (Pitch)

Pitch Random 0 — 100

This parameter adds a certain amount of pitch instability to the voicing. The oscillators on conventional analog synthesizers did not always generate perfect pitch, and this created a gentle phasing sound that is impossible to mimic with digital synths and their perfect-pitch voices. Pitch Random is designed to overcome this and recapture some of that natural analog phasing.



The pitch will be different each time Note On is received.

The higher the value, the broader the random changes in pitch.

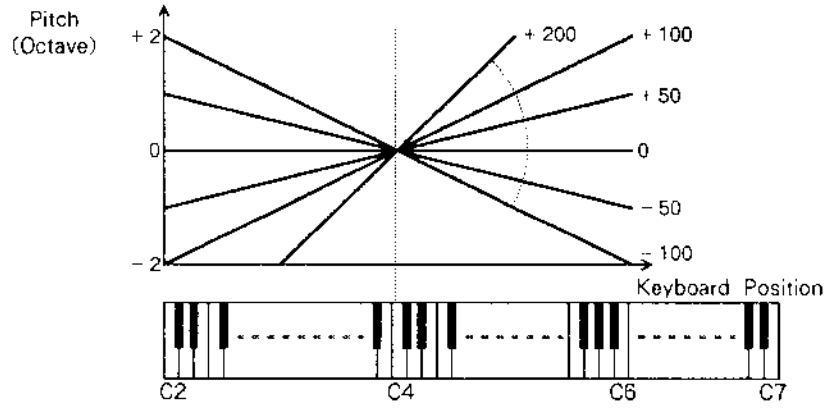
* Pitch Random effects the pitch the moment it is played. If you want the pitch of a note to change dynamically over time, you should use the Pitch Envelope setting (☞ P. Ptch – 39) or LFO.

Pitch Key Follow

– 100, – 50, – 20, – 10, – 5, 0, + 5, + 10, + 20, + 50, + 98, + 99, + 100, + 101, + 102, + 150, + 200 %

This parameter determines how much the pitch of a Tone will change as you play up or down the keyboard. A setting of +100% gives you the normal keyboard situation, where playing up twelve keys gives you a sound one octave higher, etc. A setting of +200% means playing up 12 keys gives you a sound two octaves higher; 0% means you get the same pitch no matter what key you play; and – 100% is like playing a mirror image of the keyboard, where (get this!) playing up 12 keys gives you a sound one octave lower.

Unless you have some special effect in mind, it's best to leave this set at the normal, +100% value.



Handy Trick

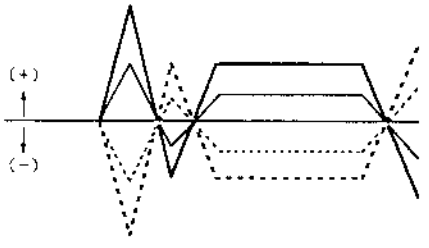
A real acoustic piano plays slightly sharp in pitch as you move up the keyboard, or flat as you move down. You can simulate this by setting Pitch Key Follow to a value very slightly above the normal setting, say 101% or 102%.

And if you want to simulate the microtonal pitch variations of certain ethnic instruments or percussion sounds that do not use the 12 tone Western scale, try setting Pitch Key Follow to something like 10% or 20%.

Pitch Env Depth

(Pitch Envelope Depth) – 12 — +12

This parameter acts like a multiplying factor to adjust the amount of pitch variation applied by the Pitch Envelope (☞ P. Ptch – 39). Larger positive values apply greater pitch variation as specified by the Pitch Envelope. Negative values do the same, but with the inverse of the Pitch Envelope (i.e., takes the pitch down when the Pitch Envelope says to raise it). A value of zero means there is no pitch variation at all from the envelope.



PATCH + F2 (WG) + F2 (Pitch)

Bender Switch OFF, ON

This parameter determines whether or not your Pitch Bend Lever (or Wheel) will actually trigger pitch variations. ON means it will, OFF means it will not. You can set this independently for different Tones, so that if you set Tone A ON and Tone B OFF, a push on the Pitch Bend lever will drop the pitch of Tone A but leave Tone B unchanged.

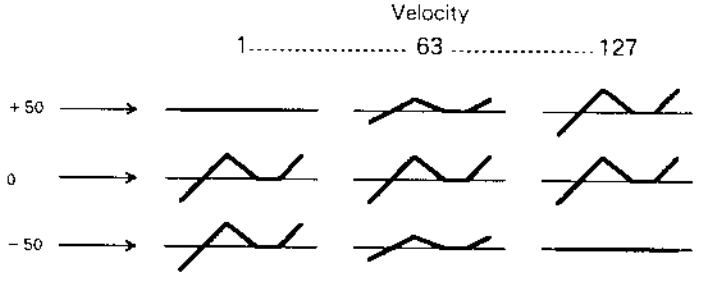
* The amount by which the pitch of Tone A will be changed is set by the Common/General parameter called Bend Range (☞P. Ptch – 11).

⟨Pitch Env Control⟩

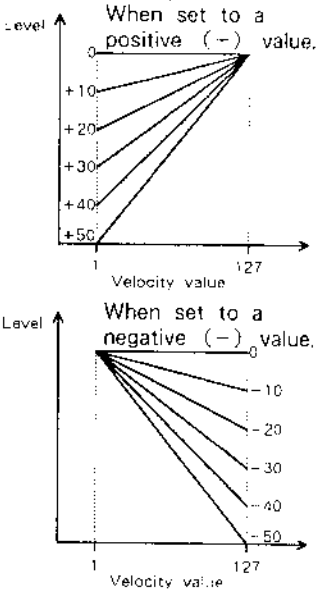
This parameter specifies how pitch and the dynamic pitch/time variations specified by the Pitch Envelope will be controlled by, e.g., the velocity with which a note is played.

Velocity Sens – 50 — +50

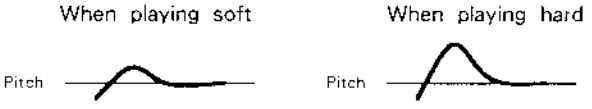
This parameter will vary the Pitch Envelope levels at L0, L1, Ls, and L3 as a function of the velocity. Positive values indicate that higher velocities translate into larger variations of the Pitch Envelope level. Negative values indicate that higher velocities translate into smaller variations in the Pitch Envelope level. A value of 0 means that the Pitch Envelope does not change, no matter what the velocity.



The levels (L0/L1/Ls/L3) of the envelope will be affected by velocity. The times will not be affected.



Handy Trick There is a slight pitch instability the moment woodwind and brass instruments begin to sound. This instability is more pronounced the harder the player blows on the instrument. You can simulate this effect on the JD - 990 by setting Velocity Sens to about +50, so that the pitch will change more at higher velocities (playing harder on the keyboard) than at lower velocities.

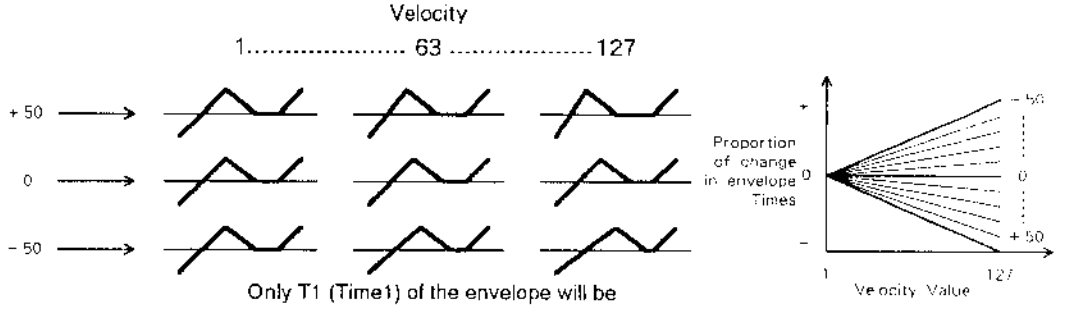


Time Velocity Sens

- 50 — +50

This varies T1 on the Pitch Envelope as a function of velocity.

Positive values mean the harder you play (the greater the velocity), the greater the change in T1. Negative values mean the harder you play, the less the change in T1. A value of 0 means that T1 does not vary with velocity.



Only T1 (Time1) of the envelope will be affected by velocity. The Levels will not be affected.

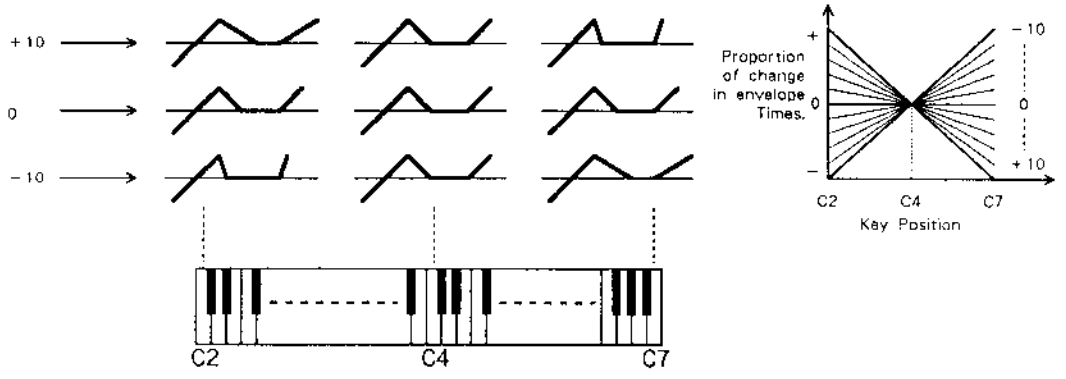
PATCH + F2 (WG) + F2 (Pitch)

Time Key Follow

−10 — +10

This varies T2 and T3 on the Pitch Envelope as a function of keyboard position.

Positive values mean that T2 and T3 become shorter the higher you play up the keyboard. Negative values indicate the T2 and T3 times become longer the higher you play up the keyboard. A value of 0 means that T2 and T3 do not change as a function of where you play on the keyboard.



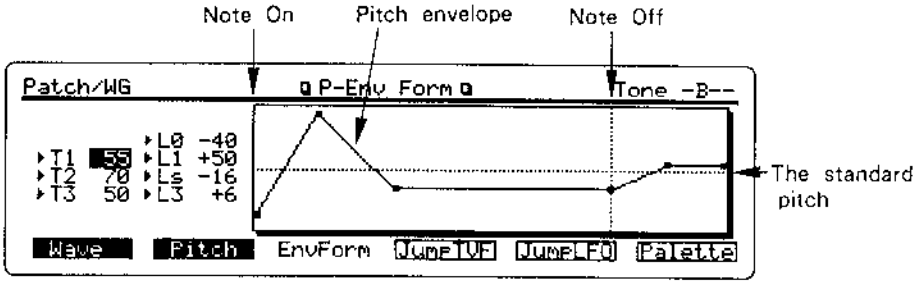
T2 and T3 (Time2 and Time3) of the envelope will be affected by velocity. The Levels will not be affected.

* The default setting of Key Follow is C4, meaning the further you get from C4, the more the values will change.

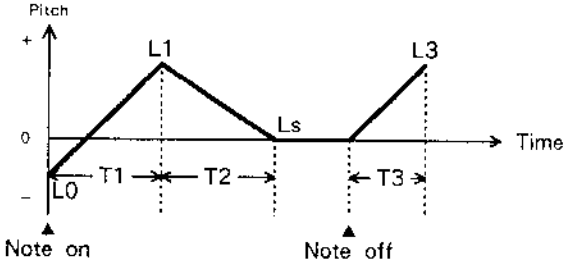
Handy Trick	Acoustic instruments settle onto pitch more quickly the higher the pitch of the note. You can simulate this faster response by setting Time Key Follow to a positive value, so that the dynamic variations of the Pitch Envelope happen more quickly as you move towards higher pitches.

P - Env Form

P - Env varies the initial pitch (specified by the Pitch parameters) over time.



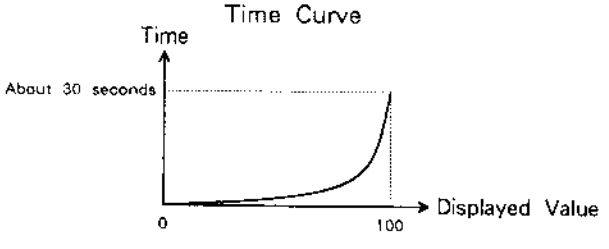
The diagram shown on the right side of the display is the Pitch Envelope corresponding to the value of the settings. If the settings change, the Pitch Envelope will also change accordingly.



T1／T2／T3 (Time1/Time2/Time3) 0 — 100

Sets the T1, T2 and T3 of the Pitch Envelope, the amount of time between one pitch and the next (e.g., between L1 and L2). Larger values mean longer times.

The values in the display correspond to actual time as per the following diagram.



* The value of T1 will depend on the velocity if Time Velocity Sens is set to anything other than zero.
* T2 and T3 will depend on keyboard position if Time Key Follow is set to anything other than zero.

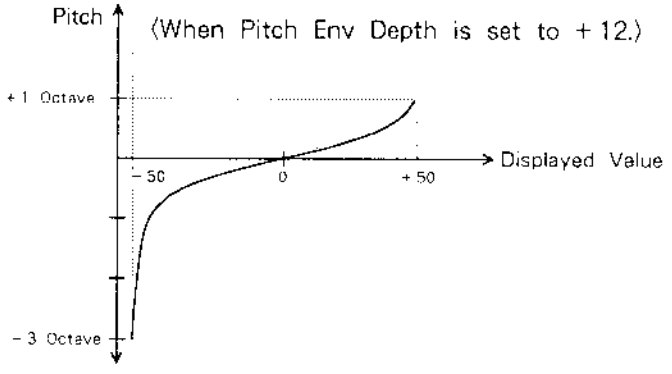
PATCH + F2 (WG) + F3 (EnvForm)

L0/L1/Ls/L3

(Level0/Level1/Sustain Level/Level3) – 50 — +50

Sets the amount of change from the starting pitch at the points L0, L1, Ls (sustain level) and L3 of the Pitch Envelope. (The starting pitch is set by the Pitch Coarse and Fine, and Key Follow parameters.) Positive values will raise the pitch by as much as one octave. Negative values will lower the pitch by as much as three octaves. Zero applies no change to the starting pitch.

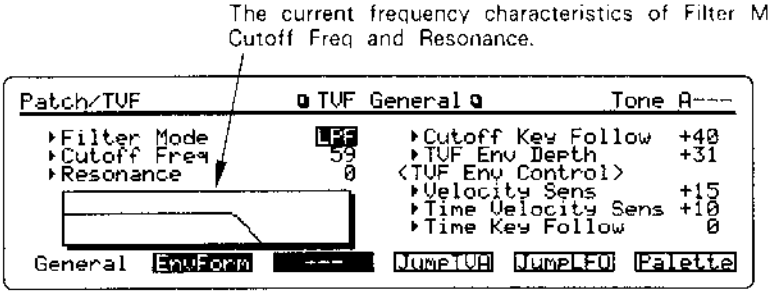
The L0/L1/Ls/L3 values in the display correspond to actual pitch as per the following diagram.



TVF

General

These parameters control basic sound processing.



Filter Mode

LPF, BPF, HPF

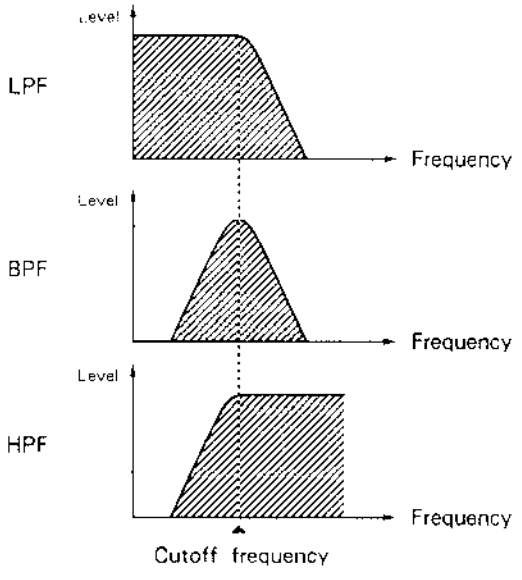
This parameter selects the type of filter. Each type of filter cuts out a certain region of frequencies to make the sound brighter or darker.

The three filter types are as follows:

LPF (Low Pass Filter) : Generally used to cut everything above the cutoff frequency. This drops the treble and tends to make the sound rounder and more mellow.

BPF (Band Pass Filter) : This cuts everything except in the immediate vicinity of the cutoff frequency. Ideal for bringing out a distinctive quality in the sound.

HPF (High Pass Filter) : Cuts everything below the cutoff frequency. This is useful when making up percussion sounds that peak in the treble range.



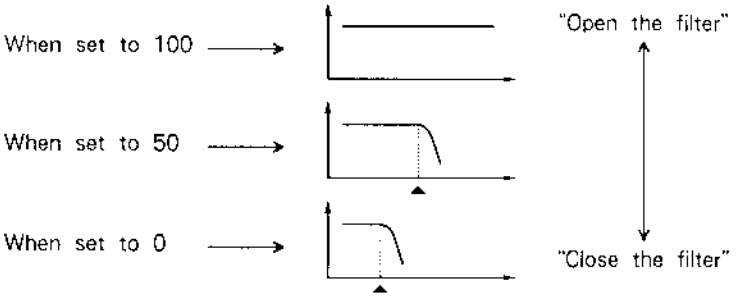
PATCH + F3 (TVF) + F1 (General)

Cutoff Freq (Cutoff Frequency) 0 — 100

Sets the cutoff frequency for the filter selected above.

The Cutoff Freq specifies the point above (below) which the filter begins cutting out harmonics in the overtone structure. The larger the value, the higher this point.

Using Low Pass Filter

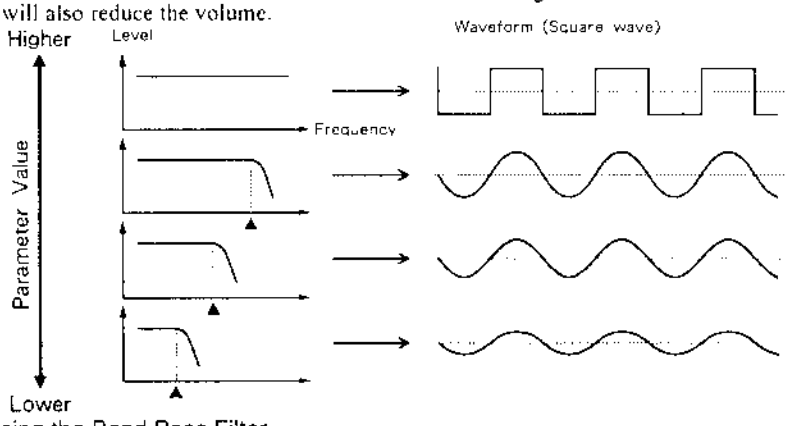


* For Low Pass Filters, we talk about "opening" the filter by raising the cutoff frequency, and "closing" the filter by lowering it.

Hint

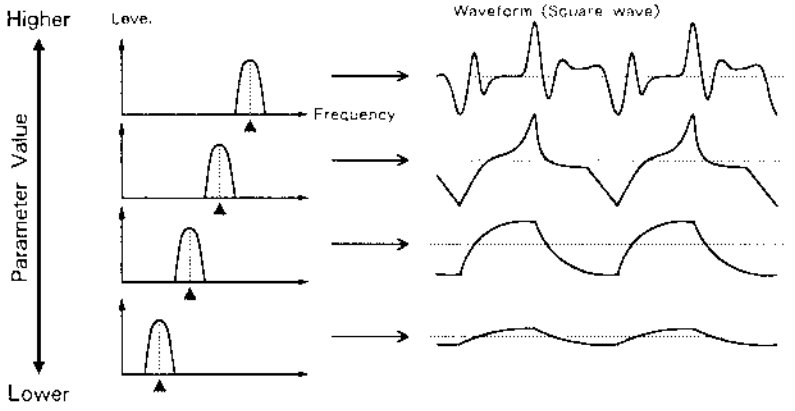
Using the Low Pass Filter

With the LPF, the lower you set the Cutoff Freq, the more upper harmonics will be attenuated and the rounder and more mellow the resulting sound. At the same time though, it will also reduce the volume.



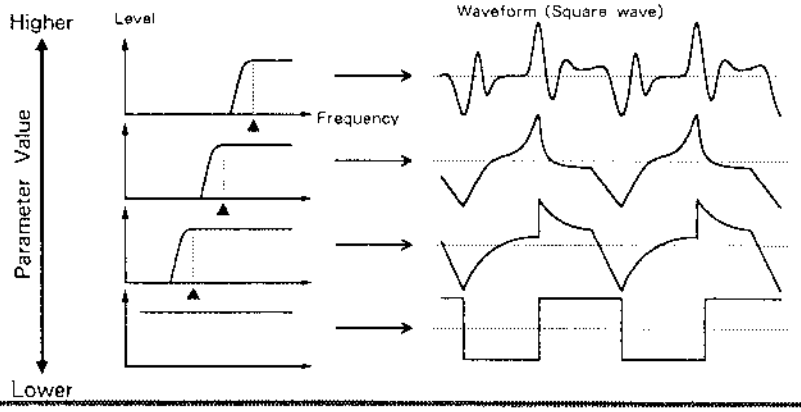
Using the Band Pass Filter

The BPF allows only those harmonics to sound that are in a certain range around the Cutoff Freq. So, depending on the Waveform, it is possible to set Cutoff Freq so that the sound is completely or almost completely wiped out and will not sound at all. If the sound suddenly disappears on you during editing, this could be one reason for it.



Using the High Pass Filter

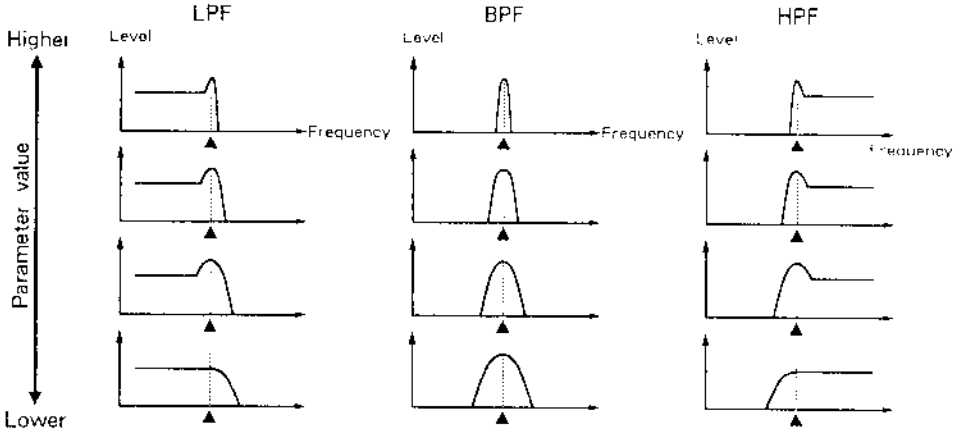
With the HPF, the higher you set the Cutoff Freq the more low order harmonics will be attenuated, and the brighter the resulting sound. You're also cutting out the fundamental frequency and, as with the BPF, you may set things so that no sound at all is produced, especially with certain Waveforms that do not have strong upper harmonics.



PATCH + F3 (TVF) + F1 (General)

Resonance 0 — 100

Adds a distinctive "synthy" quality to the sound by boosting the harmonics in a certain range around the frequency specified by Cutoff Freq. The larger this value, the more intense the effect.

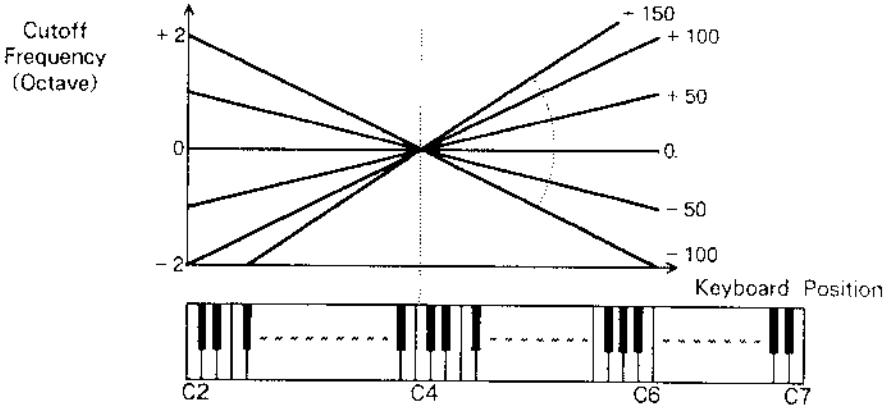


* Setting this value too high may overdrive the oscillator and cause distortion.

Cutoff Key Follow

− 100 — +150%

In most instruments, the timbre produced changes slightly with pitch. You can simulate this using Cutoff Key Follow. Positive values increase (and negative values decrease) the cutoff frequency as you move up the keyboard from C4. A value of 0 means the cutoff frequency remains the same no matter what key you press.

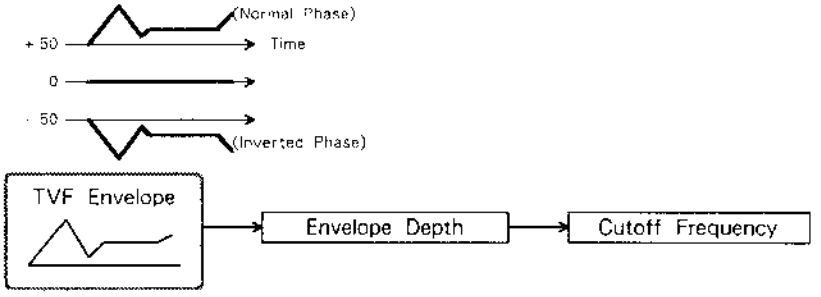


* Setting this to a large positive or negative value means that there may be certain ranges on the keyboard where this Tone will no longer sound (because most of its harmonic content has been attenuated by the filter).

TVF Env Depth

(TVF Envelope Depth) — 50 — +50

Sets the intensity of the TVF effect. Positive values mean the envelope is applied to vary the overall TVF level. Negative values mean the inverse envelope is used. A setting of 0 means the envelope will have no effect on the TVF.



* The TVF Envelope has no effect in the following cases: Cutoff Freq is set to 100 and TVF Env Depth is positive; Cutoff Freq is set to 0 and TVF Env Depth is negative.

Handy Trick	The only trick to know here is that positive Depth values will lower the cutoff frequency, and negative values will increase it. Try this for yourself, and you'll soon see how the TVF Envelope idea works.

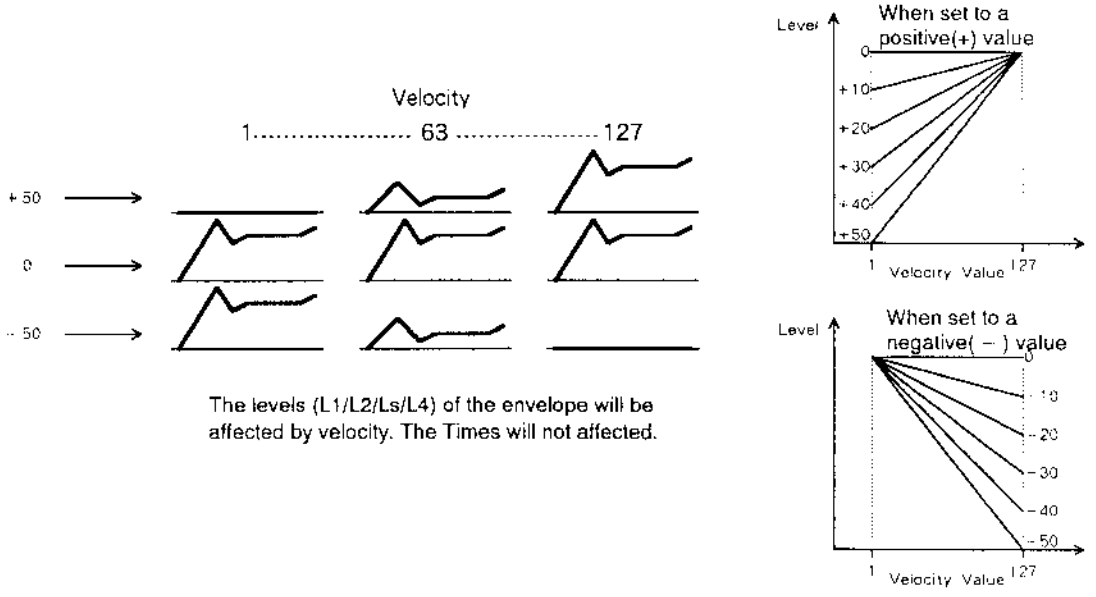
PATCH + F3 (TVF) + F1 (General)

⟨TVF Env Control⟩

This parameter specifies how the dynamic cutoff frequency variations specified by the TVF. The Envelope will be controlled by the velocity with which a note is played.

Velocity Sens – 50 — +50

This parameter will vary the TVF Envelope levels at L1, L2, Ls, and L4 as a function of the velocity. In acoustic instruments, the timbre itself will change in certain ways at different playing volumes. This effect can be simulated using Velocity Sens.
Positive values indicate that higher velocities translate into larger variations of the TVF Envelope level at each point. Negative values mean that higher velocities translate into smaller variations in the TVF Envelope levels. A value of 0 means that the TVF Envelope does not change, no matter what the velocity.



The levels (L1/L2/Ls/L4) of the envelope will be affected by velocity. The Times will not affected.

*The velocity value used here has already been passed through (and modified by) the Velocity Curve.

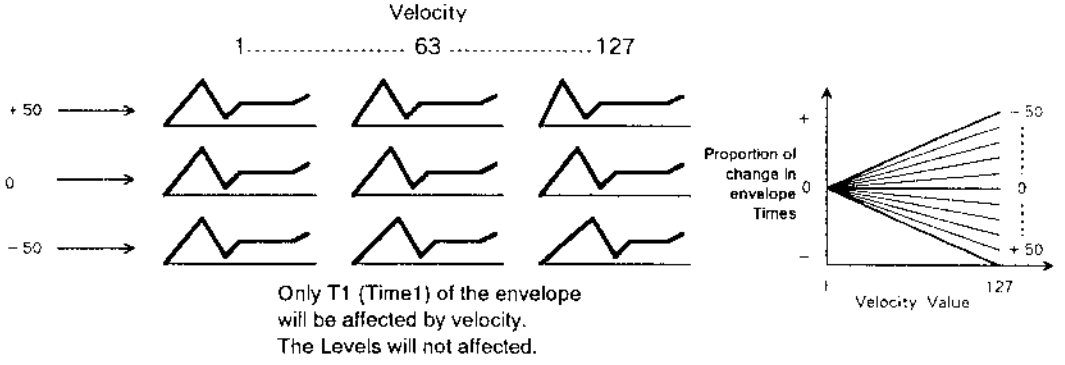
Handy Trick	Set this to +50, just to try the effect and see what it's like. When you play softly on the keys, the sound will be dark and muffled, and brightens considerably the harder you play.

Time Velocity Sens

– 50 — +50

This parameter varies T1 on the TVF Envelope as a function of velocity.

Positive values mean the harder you play (the greater the velocity), the greater the change in T1. Negative values mean the harder you play, the less the change in T1. A value of 0 means that T1 does not vary with velocity.



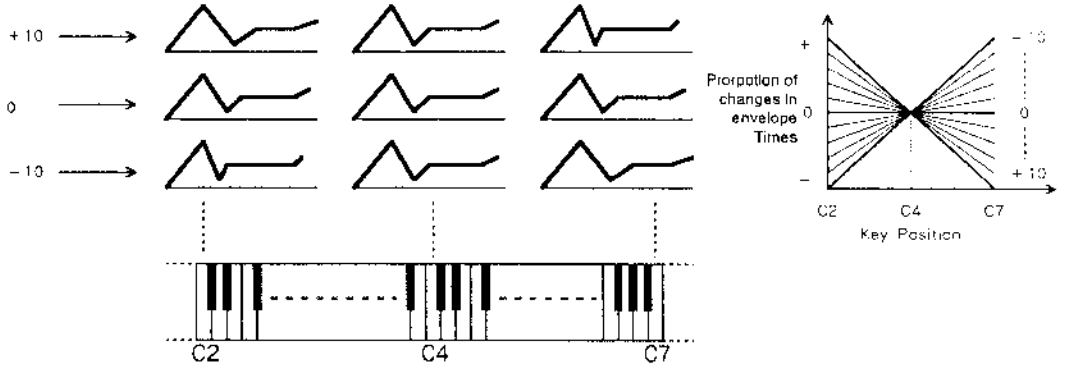
* The velocity value used here has already been passed through (and modified) by the Velocity Curve.

PATCH + F3 (TVF) + F1 (General)

Time Key Follow

(– 10 — +10)

This parameter varies T2, T3 and T4 on the TVF Envelope as a function of keyboard position. Positive values mean that the T2, T3 and T4 times become shorter the higher you play on the keyboard. Negative values indicate T2, T3 and T4 become longer the higher you play on the keyboard. A value of 0 means that T2, T3 and T4 do not change, no matter where you play on the keyboard.



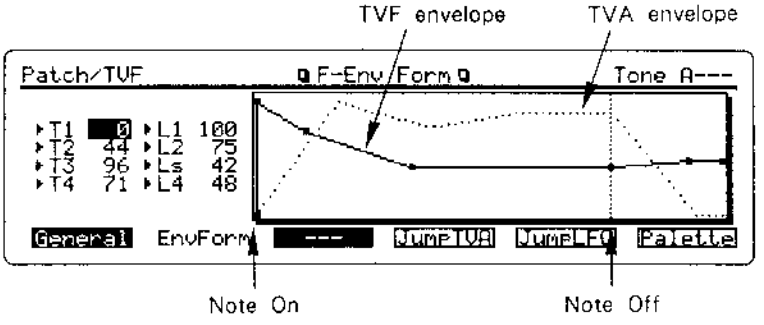
T2, T3 and T4 (Time2, Time3 and Time4) of the envelope will be affected by velocity. The Levels will not affected.

*The default setting of Key Follow is C4, meaning the further you get from C4, the more the values will change.

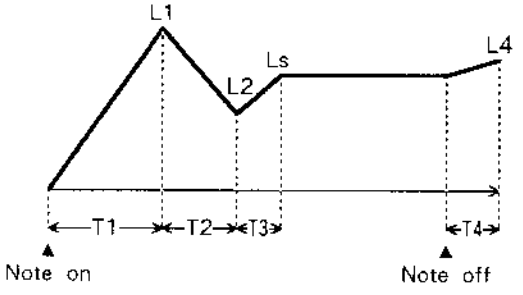
Handy Trick	On a piano, the timbre varies quite dramatically with pitch. This can be simulated on the JD - 990 by setting Time Key Follow to positive values.

F - Env Form

F - Env varies the cutoff frequency dynamically (over time).



* The diagram shown on the right side of display is the TVF Envelope corresponding to the value of the settings. If the settings change, the TVF Envelope will also change accordingly.
The TVF is indicated by the solid line; TVA by the broken line.

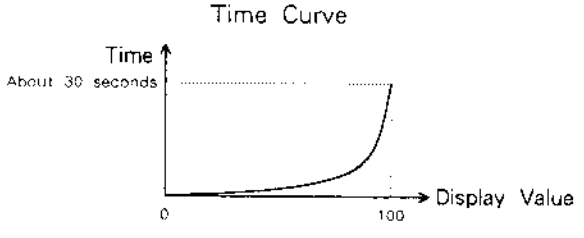


T1/T2/T3/T4

(Time1/Time2/Time3/Time4) 0 — 100

Sets T1, T2, T3 and T4 of the TVF Envelope; the amount of time between one cutoff frequency and the next (e.g., between L1 and L2). Larger values mean longer times.

The values in the display correspond to actual time as per the following diagram.



* The value of T1 will depend on the velocity if Time Velocity Sens is set to anything other than zero.
* T2, T3 and T4 will depend on keyboard position if Time Key Follow is set to anything other than zero.

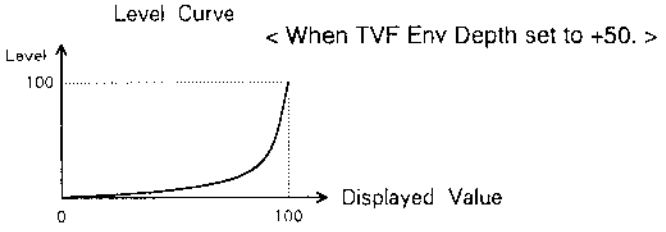
PATCH + F3 (TVF) + F2 (EnvForm)

L1／L2／Ls／L4

(Level1/Level2/Sustain Level/Level4) 0 — 100

Sets the amount of change from the starting cutoff frequency at each of the points L1, L2, Ls (sustain level) and L4 of the TVF Envelope. The greater this value, the wider the change in cutoff frequency.

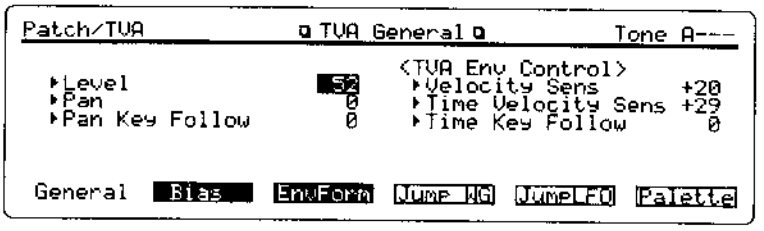
The L1/L2/Ls/L4 values in the display correspond to actual times according to the following diagram.



TVA

General

These parameters control the volume of the Tone.



Level

0 — 100

This parameter sets the volume of a Tone. You can also use this to adjust the balance with other Tones. The larger this value, the higher the volume.

* The overall Patch volume is set in the Common parameter Patch Level (p.Ptch -- 9).

Pan

L50 — 50R, RND, ALT - L, ALT - R

Determines the position of the sound in the stereo field.
L50 means "hard" left (panned all the way to the left), 0 indicates the sound seems to be coming from the center of the sound field, and 50R means hard right panning. RND means that each time you play a new note, it will appear at some random position in the stereo field. ALT - L means that each time you play a note, that note will alternate between hard left and hard right. The ALT - R setting is the same but starts with a hard right position instead.

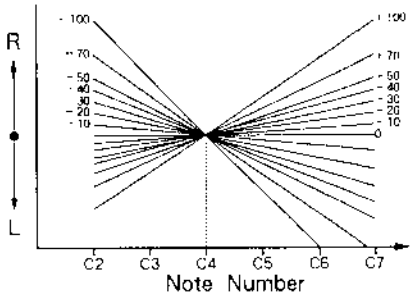
Hint	You can really "spread out" a chord by playing it with Pan set to RND, so that each note in the chord shows up in a different place in the stereo field. And try this: set one Tone in a Patch to ALT - L, the other to ALT - R, so that the Tones "ping - pong" right and left in the sound field.

PATCH + F4 (TVA) + F1 (General)

Pan Key Follow

-100, -70, -50, -40, -30, -20, -10, 0,
+10, +20, +30, +40, +50, +70, +100

This parameter sets it so Pan is controlled by the key you press on the keyboard.
Positive values mean that the Pan goes further right the higher you play on the keyboard (starting from C4). Negative values mean the Pan goes further left the higher you play. A setting of zero turns off Pan Key Follow; the pan will stay the same no matter what key you press.



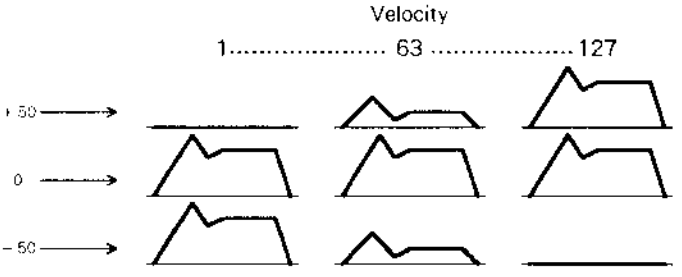
PATCH + F4 (TVA) + F1 (General)

⟨TVA Env Control⟩

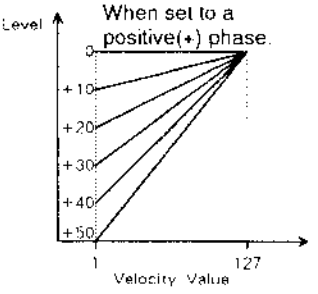
This parameter specifies how the dynamic variation in volume levels specified by the TVA Envelope will be controlled by the velocity with which a note is played.

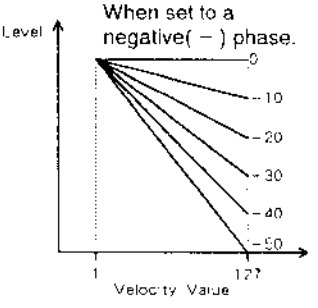
Velocity Sens – 50 — +50

This parameter will vary the TVA Envelope levels at L1, L2, and Ls as a function of the velocity. This means the volume will change depending on how hard you play the keys.
Positive values indicate that higher velocities translate into higher TVA Envelope levels at each point. Negative values mean that higher velocities translate into lower TVA Envelope levels. A value of 0 means that the TVA Envelope levels do not change, no matter what the velocity.



The levels (L1/L2/Ls) of the envelope will be affected by velocity. The Times will not affected.





* The velocity value used here has already been passed through (and modified) by the Velocity Curve.

Handy Trick	Positive values give you the normal playing situation you would expect: playing harder gives you more volume. A large value of Velocity Sens here will make the difference between loud and soft more and more pronounced.

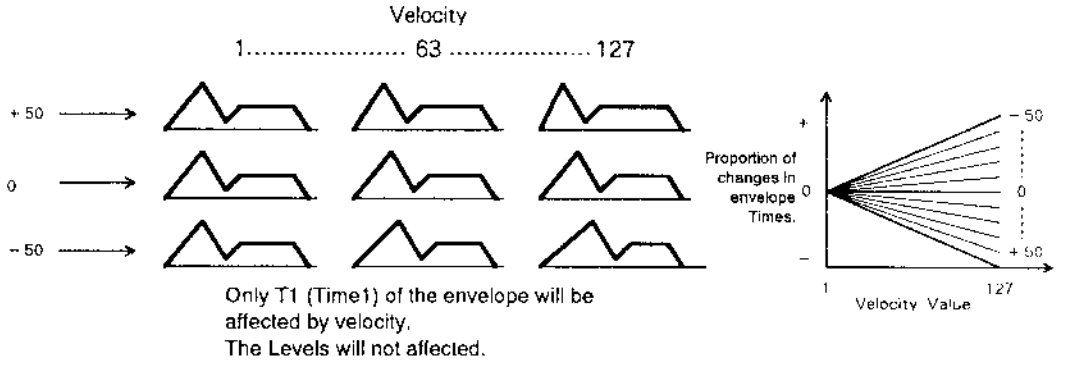
PATCH + F4 (TVA) + F1 (General)

Time Velocity Sens

– 50 — +50

This parameter varies T1 of the TVA Envelope as a function of velocity.

Positive values mean the harder you play (the greater the velocity), the greater the change in T1. Negative values mean the harder you play, the less the change in T1. A value of 0 means that T1 does not vary with velocity.

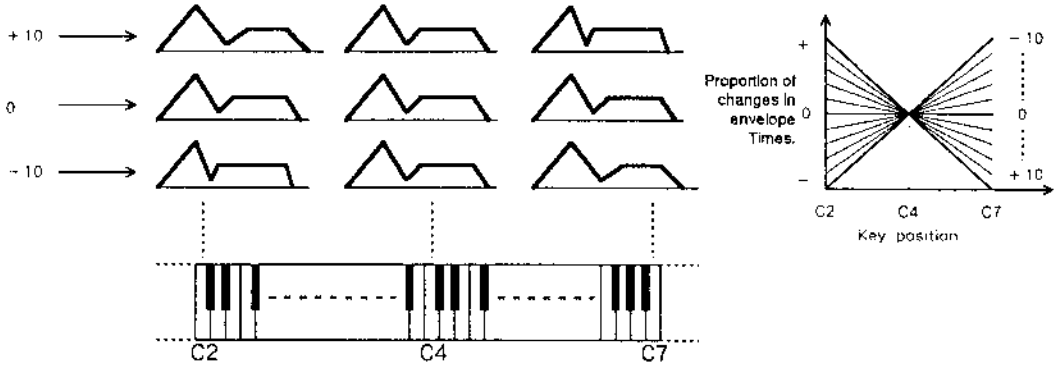


*The velocity value used here has already been passed through (and modified by) the Velocity Curve.

Time Key Follow

– 10 — +10

This parameter varies T2, T3 and T4 of the TVA Envelope as a function of keyboard position. Positive values mean that the T2, T3 and T4 times become shorter the higher you play on the keyboard. Negative values indicate T2, T3 and T4 become longer the higher you play on the keyboard. A value of 0 means that T2, T3 and T4 do not change, no matter where you play on the keyboard.



T2, T3 and T4 (Time2, Time3 and Time4) of the envelope will be affected by velocity.
The Levels will not be affected.

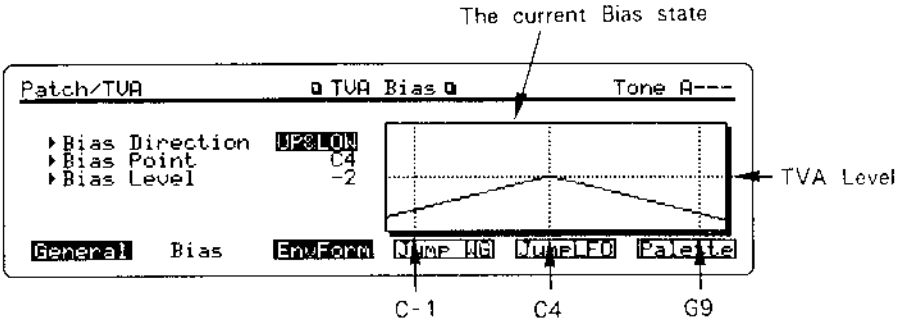
* The default setting of Key Follow is C4, meaning the further you get from C4, the more the values will change.

Hint	A positive value of this parameter can be used to simulate the rapid decay in volume as one plays up the keyboard (toward higher pitches) on an acoustic piano.

PATCH + F4 (TVA) + F2 (Bias)

Bias

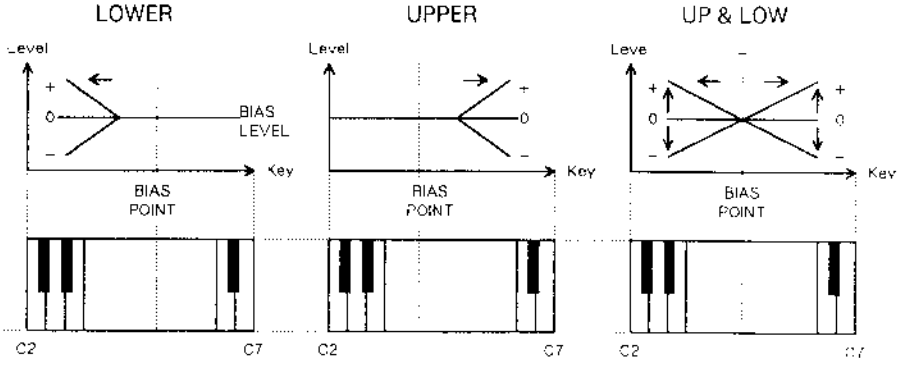
For certain acoustic instruments, the volume changes as you move up or down in pitch. You can simulate this with a proper setting of Bias Direction, Bias Point, and Bias Level.



Bias Direction LOWER, UPPER, UP&LOW

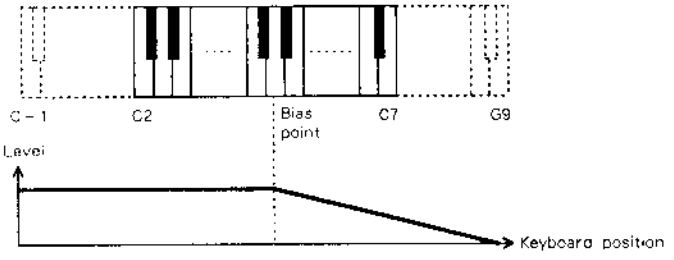
This parameter is used when you want the volume to depend on where you play the keyboard. Keyboard position is specified as up or down from the Bias Point, a setting described next.

LOWER : The volume level changes as you go down from the Bias Point.
UPPER : The volume level changes as you go up from the Bias Point.
UP&LOW : The volume level changes as you go either up or down from a central Bias Point.



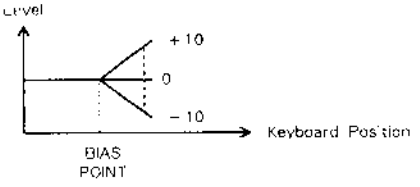
Bias Point C−1 — G9

This parameter sets the starting key on the keyboard from which the volume changes as you move up or down the keyboard.

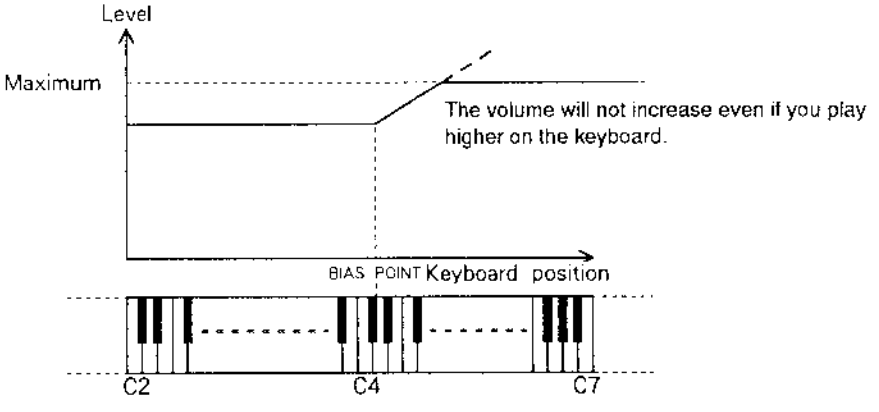


Bias Level − 10 — +10

This parameter specifies how much the volume will change as you move up or down the keyboard from the Bias Point. Positive values mean the volume will increase, and negative values mean the volume will decrease as you move up the keyboard. A value of 0 means the volume will not change at all.



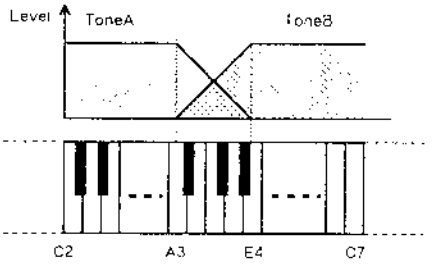
* The maximum volume cannot be exceeded even if the Bias Level is set to a large positive value.



PATCH + F4 (TVA) + F2 (Bias)

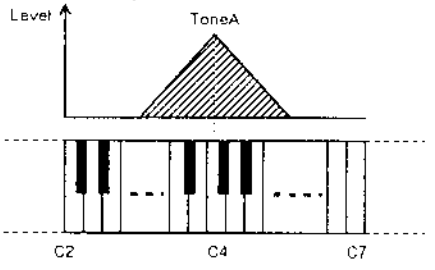
Hint

○A layering of two Tones (where one blends smoothly into the next as you move up the keyboard (Key Crossfade)) can be accomplished by using two Tones in a Patch, setting one to UPPER and the other to LOWER.



	Bias		
	Direction	Point	Level
Tone A	UPPER	A3	−10
Tone B	LOWER	E4	−10

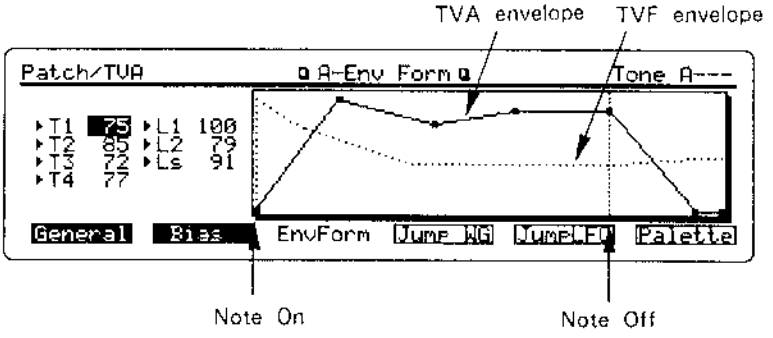
○You can make the Tone 'peak' in just a certain frequency region (area on the keyboard) using UP&LOW.



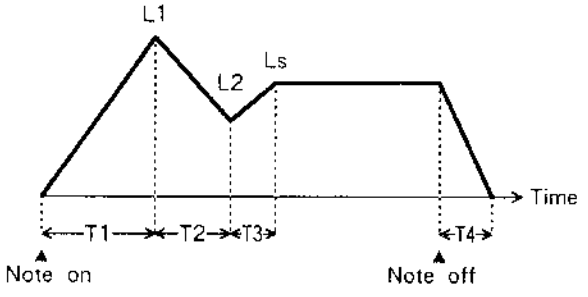
	Bias		
	Direction	Point	Level
ToneA	UP & LOW	C4	−10

A - Env Form

A - Env specifies how the volume will vary over time.



* The diagram shown on the right side of display is the TVA Envelope corresponding to the value of the settings. If the settings change, the TVA Envelope will also change accordingly.
The TVA is indicated by the solid line; TVF by the broken line.

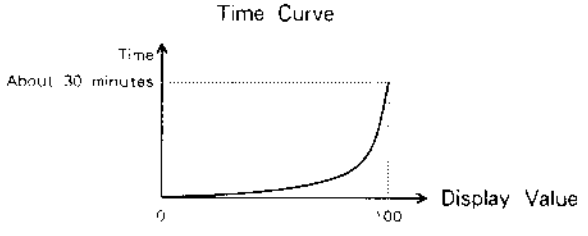


T1/T2/T3/T4

T1/T2/T3/T4 (Time1/Time2/Time3/Time4) 0 — 100

Sets T1, T2, T3 and T4 of the TVA Envelope; the amount of time between one level and the next (e.g., between L1 and L2). Larger values mean longer times.

The numbers in the display correspond to actual times as per the following diagram.



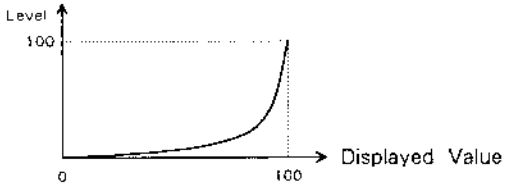
* The value of T1 will depend on the velocity if Time Velocity Sens is set to anything other than zero.
* T2, T3 and T4 will depend on keyboard position if Time Key Follow is set to anything other than zero.

PATCH + F4 (TVA) + F3 (EnvForm)

L1／L2／Ls　L1/L2/Ls (Level1/Level2/Sustain Level)　0 — 100

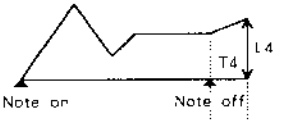
Sets the TVA Envelope at L1, L2, and Ls (sustain level). This specifies the volume level at each point. The greater this value, the greater the volume.
The L1/L2/Ls values in the display correspond to actual times according to the following diagram.

Level Curve

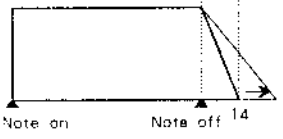


＊You can turn off the sound entirely by setting all these levels to 0.

TVF Envelope



TVA Envelope

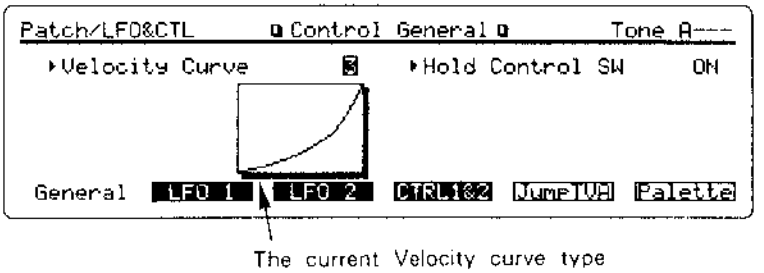


The effect of TVF envelope **T4** will be difficult to notice if TVA envelope **T4** is set longer than TVF envelope T4.

LFO & CTL

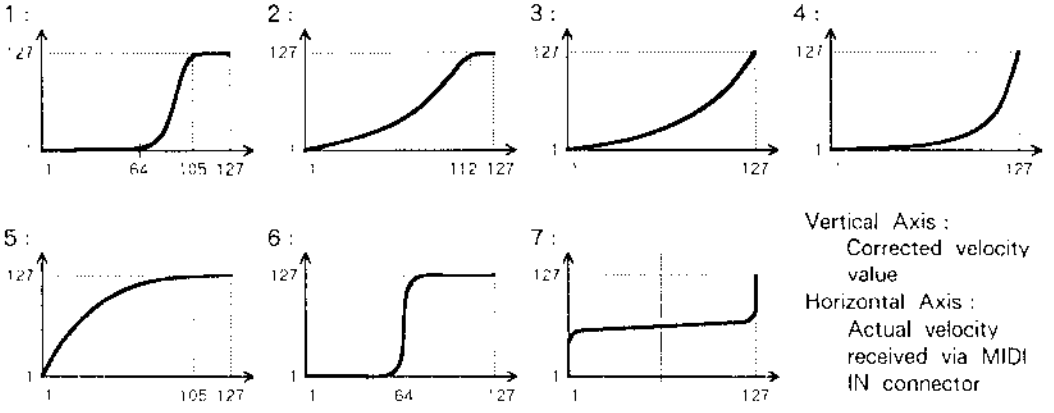
General

These parameters turn Velocity Curve and Hold Control on and off.



Velocity Curve 1 — 7

This parameter selects the kind of curve to use in compensating or altering the velocity data arriving at the MIDI IN connector (i.e., from the keyboard or other external device).



Hold Control SW

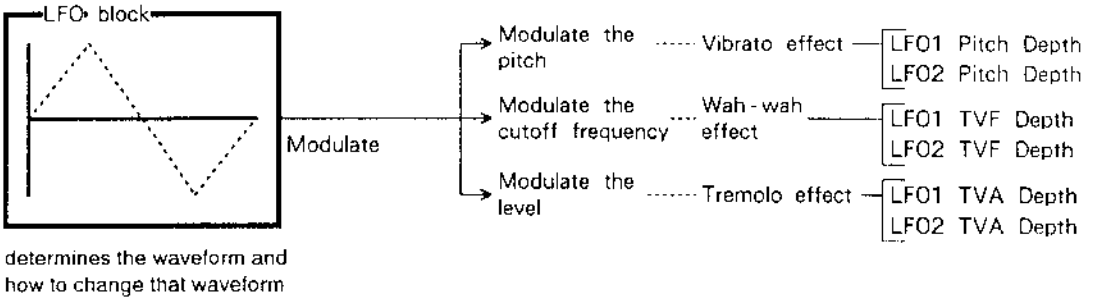
OFF, ON

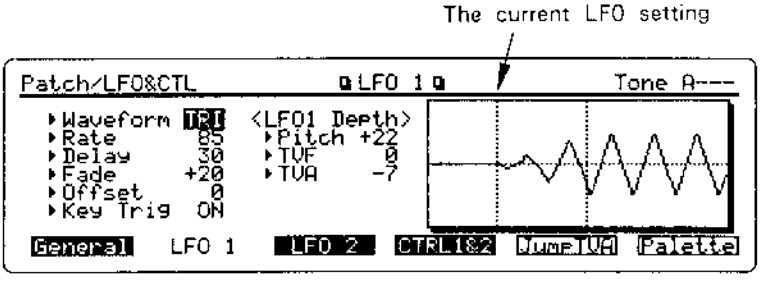
This parameter determines whether or not MIDI Hold messages received via MIDI IN will have any effect. When ON, the JD-990 will sustain a note in response to MIDI Hold messages, and when OFF, it will ignore them.

PATCH + F5 (LFO&CTL) + F2 (LFO1) (or F3 (LFO2))

LFO1 / LFO2

The LFO Waveforms can be set to modulate (control) the pitch, cutoff frequency, or level of the Tones. LFO stands for Low Frequency Oscillator, and it can be used to provide a number of modulation effects such as vibrato, wah, and tremolo. The JD - 990 has two independent LFOs you can use.

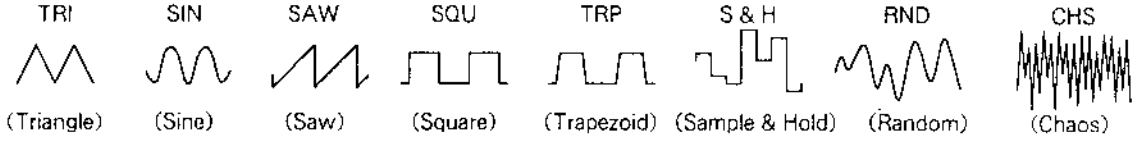




Waveform

TRI, SIN, SAW, SQU, TRP, S&H, RND, CHS

Selects the LFO Waveform.



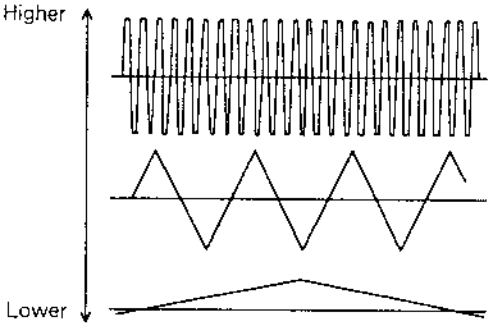
"TRI" is used most often for the vibrato effect. The others are used for a variety of special effects.

PATCH + F5 (LFO&CTL) + F2 (LFO1) (or F3 (LFO2))

Rate

0 — 100

This parameter sets the period of the LFO Waveform; how fast it varies. Larger values mean faster variations (shorter periods).

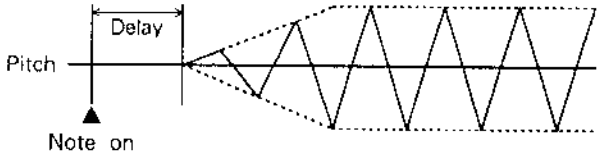


* When "CHS" is selected in Waveform, this setting will be ignored.

Delay

0 — 100, REL

This parameter specifies how long after the start of the sound the LFO modulation will start. Real players on real instrumenls tend to apply vibrato to sweeten the tone sometime after the initial attack, and vary this amount of time for expressive effect. You can simulate this on the JD - 990 with the Delay parameter.



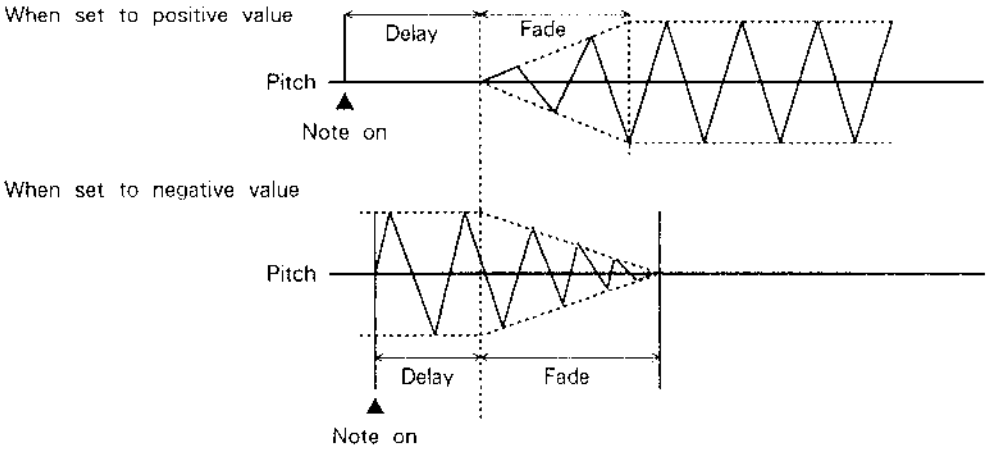
The larger this value, the longer the Delay. If set to REL, the LFO is turned on immediately after the key is released.

PATCH + F5 (LFO&CTL) + F2 (LFO1) (or F3 (LFO2))

Fade

Fade - 50 — +50

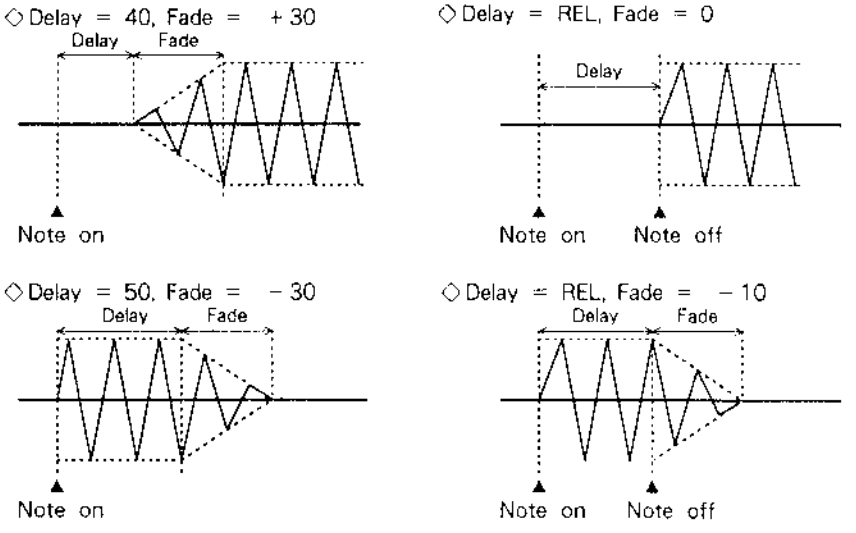
This parameter increases or decreases the width of the LFO modulation Waveform over time. You'll often hear this kind of expressive effect in real instruments, where the width of a player's vibrato will change the longer the note is held. Now you can simulate it on the JD-990 as well.



Positive values mean the width or intensity of the modulations by the selected LFO Waveform will get larger and larger 'as time goes by'. Negative values mean the modulations will tend to die out. A value of 0 means no Fade is applied.

Hint

The combination of Fade and Delay give you a lot of control over how the LFO modulation will be applied.

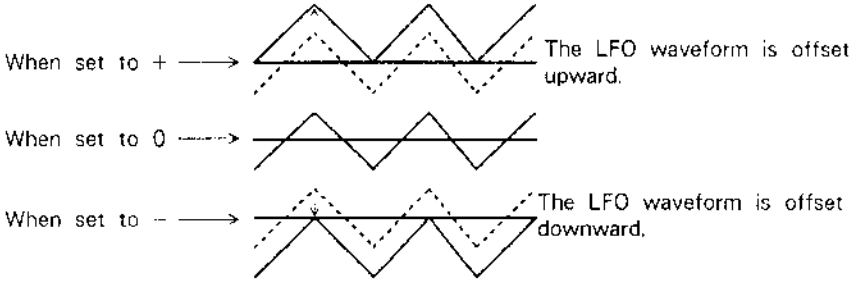


When the Fade value is negative, the LFO will be turned on at Key On and will continue for the duration of the Delay.

Offset

, 0, +

You can shift the LFO modulations up or down from the central value (pitch, cutoff frequency) with Offset. " − " shifts the LFO Waveform down so that the modulations start from the central value and go down. "+" shifts it up so that they start from the central value and go up. A setting of 0 yields no effect.



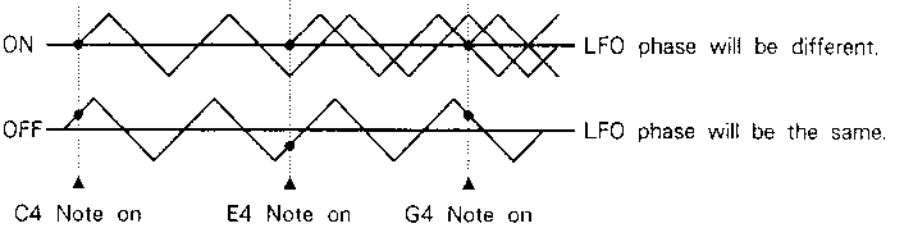
* Offset has no effect on TVA levels.

Hint

Listen closely, and you'll notice that the central pitch of a singer seems to inch up slightly during vibrato passages. You can get this kind of effect on the JD - 990 by setting Offset to "+."

Key Trig (Key Trigger) OFF, ON

This parameter sets whether or not to match or synchronize the timing of the LFO period to the pressing of a key. ON means the LFO period is "triggered" by a key (i.e., its oscillation period starts as soon as the key is pressed). OFF means that when you press a key the LFO modulation is applied, but it could be at any point in its period.



Hint

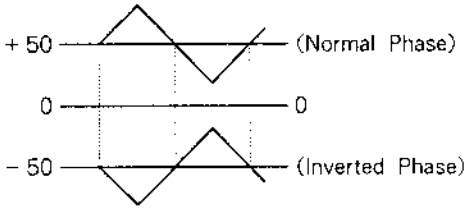
You can use this to add a chorus-like effect to chords. Just set Key Trig to ON, and each note you play (at a very slightly different time) will trigger the start of the LFO at a slightly different time. This slight phase difference is what gives you the effect. If you have this set to OFF, the LFO modulations will be perfectly in phase, regardless of the time differences in triggering the keys. This is a useful effect too, for example, in intensifying a vibrato effect.

[PATCH] + [F5] (LFO&CTL) + [F2] (LFO1) (or [F3] (LFO2))

⟨LFO1 / LFO2 Depth⟩

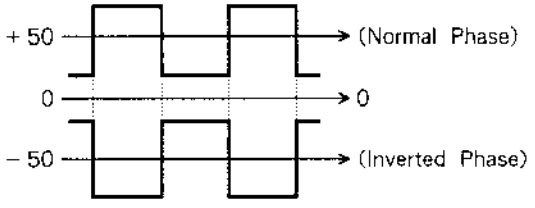
Pitch (Pitch Modulation Depth) — 50 — +50

This parameter sets the depth or intensity of the LFO vibrato effect. This vibrato is applied whenever you play a key. Positive values apply the LFO1/2 Waveform as is, negative values invert the Waveform (play it 180 degrees out of phase), and a value of zero is the same as turning it off.



TVF (TVF Modulation Depth) – 50 — +50

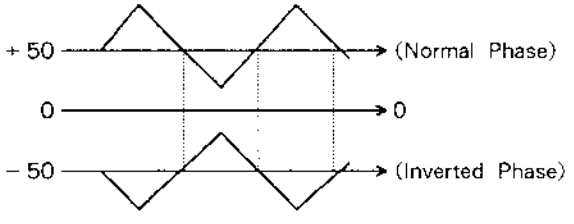
This parameter sets the amplitude of the LFO1/2 modulation that is applied to the cutoff frequency, i.e., how far the frequency varies from the Cutoff Freq. The resulting effect is called "wah" because that's sort of the sound it makes when you oscillate the cutoff frequency. Positive values apply the LFO1/2 Waveform as is, negative values invert the Waveform (play it 180 degrees out of phase), and a value of zero is the same as turning it off.



TVA (TVA Modulation Depth) – 50 — +50

This parameter sets the amplitude of the LFO1/2 modulation that is applied to control the volume of the sound. The resulting effect is called "tremolo."

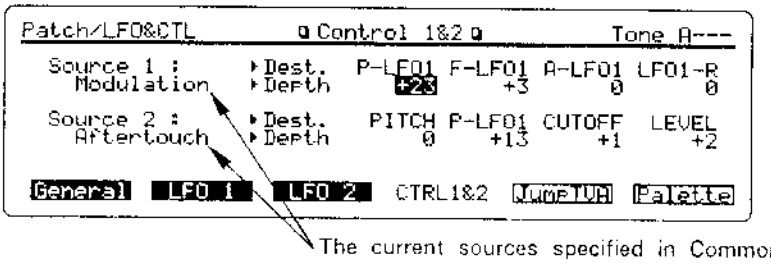
Positive values apply the LFO1/2 Waveform as is, negative values invert the Waveform (play it 180 degrees out of phase), and a value of zero is the same as turning it off.



PATCH + F5 (LFO&CTL) + F2 (CTRL1&2)

Control 1 & 2 (CTRL1 & 2)

This parameter sets how each Tone will respond to Control Source 1 and 2 specified by Common/General. You can specify up to four effects at once that will be controlled by Control 1 or 2.



Destination

Select the parameter you want to be controlled by Control Source 1 or 2 from the table below.

Destination		Depth	Remarks
Display	Meaning		
PITCH	Pitch in semi - tone units	– 50 -- + 50	When set to a positive value (+), the change is greater or higher, and when set to a negative value (–), the change is smaller or lower.
CUTOFF	Cutoff Frequency		
RES	Resonance		
LEVEL	TVA Level		
P - LFO1	LFO1 Pitch Modulation Depth	– 50 — + 50	
P - LFO2	LFO2 Pitch Modulation Depth		
F - LFO1	LFO1 TVF Modulation Depth		
F - LFO2	LFO2 TVF Modulation Depth		
A - LFO1	LFO1 TVA Modulation Depth		
A - LFO2	LFO2 TVA Modulation Depth		
LFO1 - R	LFO1 Rate	– 50 — + 50	For a positive value (+), the LFO frequency is high (fast), and for a negative value (–), the frequency is low (slow).
LFO2 - R	LFO2 Rate		

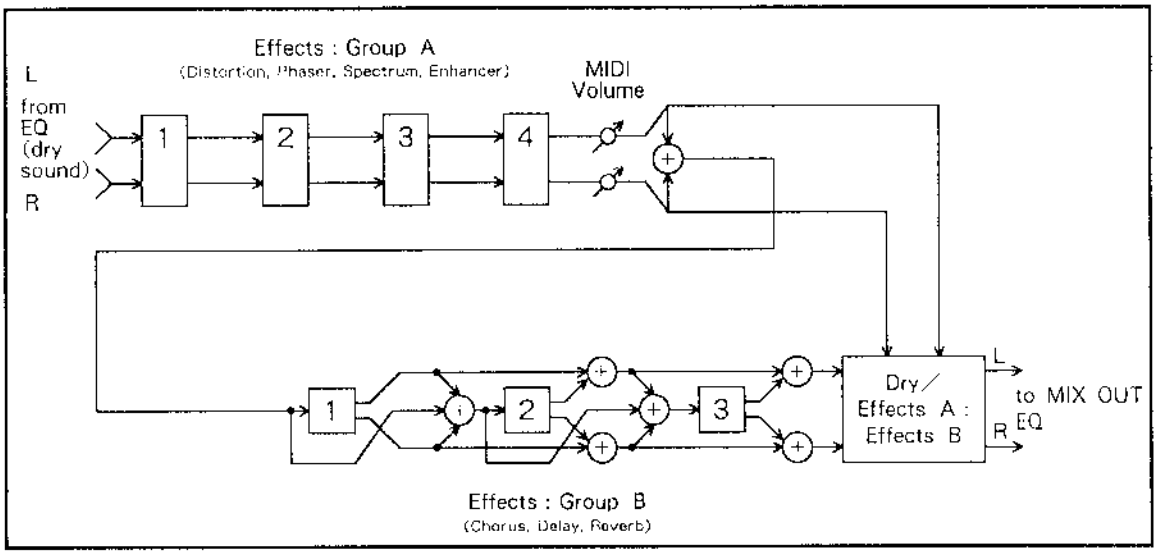
Depth

– 50 — +50

This parameter sets the sensitivity of the Control Source 1 or 2 effect.

Effects

The effects are divided into two groups; A and B. Each group is applied to the direct sound as follows.



Group A : These process the direct sound itself.

Distortion	Distorts the direct sound, adding a rich overtone structure.
Phaser	Adds a slightly out of phase copy of the signal to the original to create a moving, shimmering sound.
Spectrum	Changes the timbre by increasing/decreasing the level of specific frequencies.
Enhancer	Sharpens the contours of the direct sound to make it more prominent.

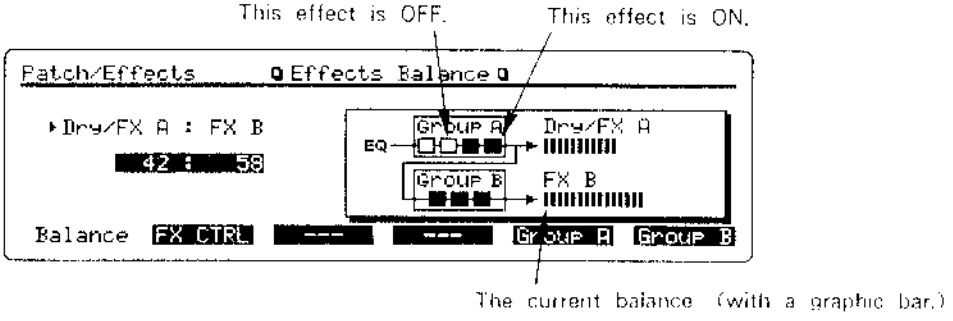
Group B : These create an effect sound which is added back to the direct sound.

Chorus	The pitch and timing of the direct sound are subtly shifted and added to the original signal to thicken and broaden the sound.
Delay	The direct sound is shifted in time and added to the original signal to create an echo-like effect.
Reverb	Complex echo sounds are added to the original signal to create reverberation.

PATCH + F6 (Effects) + F1 (Balance)

Effects Balance

This parameter sets the balance between the direct sound after it has been passed through the Group A effects (the A sound) and the corresponding Group B effect sound (the B sound).



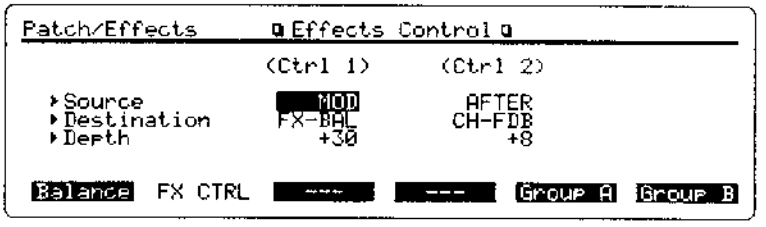
When Dry/FX A : FX B is set to 100:0, that means the sound is passed through Group A only and then output. Conversely, a Dry/FX A : FX B ratio of 0:100 means the sound is passed straight through Group A and is output with only Group B effects added.

* In the latter case, no sound at all is output if all Group B effects are turned off.

PATCH + F6 (Effects) + F2 (FX CTRL)

Effects Control (FX CTRL)

This setting specifies the way in which effect parameters can be controlled in real-time by external MIDI controllers. You can have two such controllers, each with its own set of effects parameters that it can control (Ctrl 1 and Ctrl 2).



Source

MOD, AFTER, EXP, BREATH, P.BEND, FOOT

This parameter selects the controller that will be used for real-time control of the effects settings.

MOD : Modulation messages (Control Change # 1)
AFTER : Aftertouch messages
EXP : Expression messages (Control Change # 11)
BREATH : Breath messages (Control Change # 2)
P.BEND : Pitch Bend messages
FOOT : Foot messages (Control Change # 4)

PATCH + F6 (Effects) + F2 (FX CTRL)

Destination

Determines which effect parameter (the "destination") will be controlled by the device selected by Source. Select from among the parameters shown below.

Destination		
Display	Meaning	
FX - BAL	Effects Balance	
DS - DRV	Distortion / Drive	
PH - MAN	Phaser / Manual	
PH - RAT	Phaser / Rate	
PH - DPT	Phaser / Depth	
PH - RES	Phaser / Resonance	
PH - MIX	Phaser / Mix	
EN - MIX	Enhancer / Mix	
CH - RAT	Chorus / Rate	
CH - FDB	Chorus / Feedback	
CH - LVL	Chorus / Level	
DL - FDB	Delay / Feedback	
DL - LVL	Delay / Level	*1
RV - TIM	Reverb / Time	*2
RV - LVL	Reverb / Level	

*1 Center Level, Left Level, and Right Level will be controlled simultaneously when DL - LVL is selected.

*2 If "GATE" or "REVERSE" or "FLYING1/2" is selected at Reverb Type, RV - TIM will not work.

Depth

– 50 — +50

For maximum control action of the controller (specified by Source), this parameter determines how great the change will be in the controllable effects parameter (specified by Destination). That is, it controls the sensitivity of the actions of the controller. Positive values mean it is more sensitive.

PATCH + F6 (Effects) + F5 (Group A) + F1 (A Seq.)

Group A

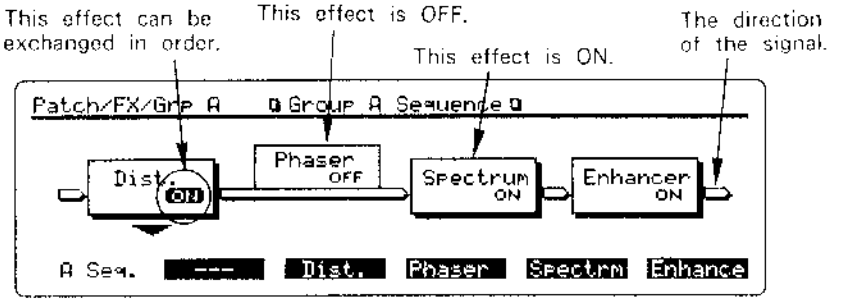
This is where you'll make the settings for each of the effects in Group A and specify their order in the signal chain.

A Seq. (Group A Sequence)

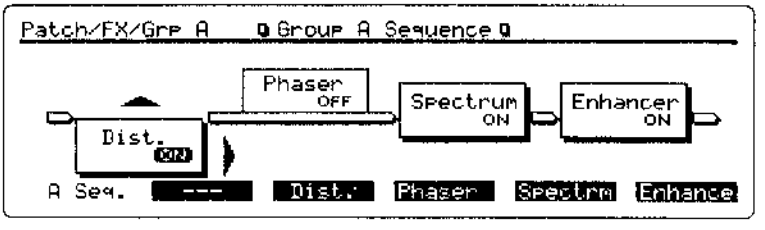
This is where you can specify the order of the effects in the signal chain. The order in which effects are applied can make a big difference in the resulting sound, even if you don't change any other parameter. Trial and error is the best way to proceed until you come up with a sound you like.

[Procedure]

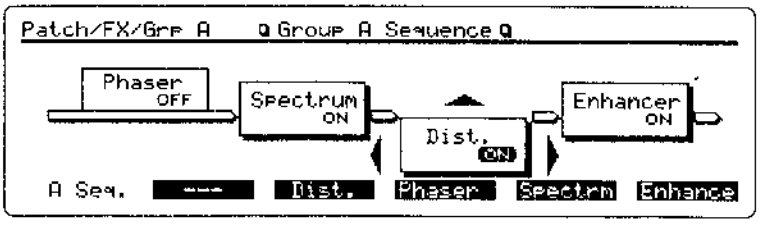
1. Turn the effect ON or OFF with [INC]/[DEC], or the [VALUE] knob. The effects which can be reordered in the effects chain will be highlighted in the On/Off part of display. Select the effect you want to change with the CURSOR [◀] [▶] buttons.



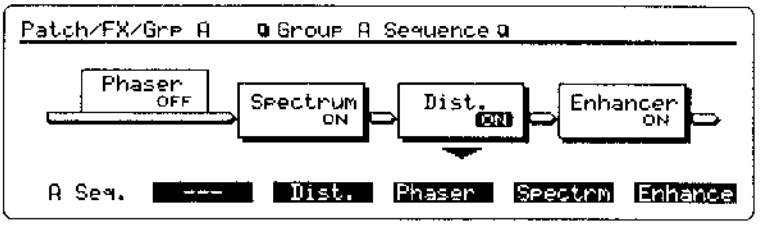
2. Press CURSOR [▼] to move the selected effect down into the chain.



3. Select the insertion point with the CURSOR [◀] [▶] buttons.



4. After you've selected the insertion point, press CURSOR [▲]. The specified effect is inserted into the signal chain.

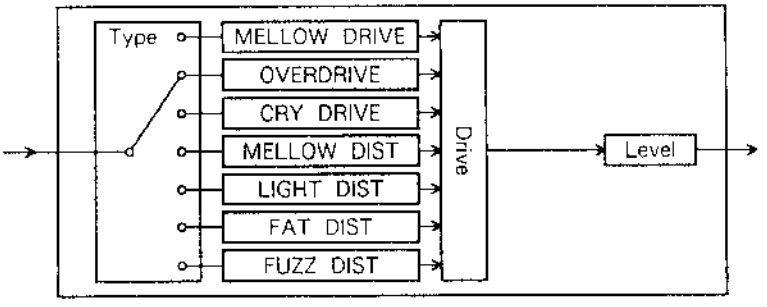


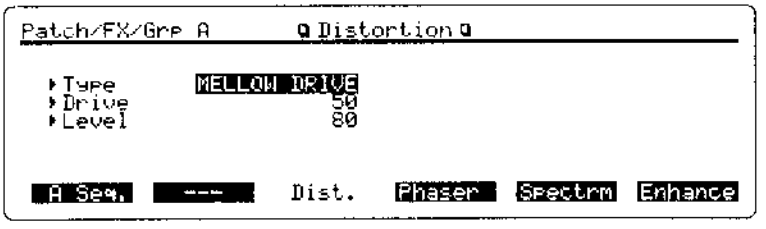
5. Repeat these steps as necessary.

PATCH + F6 (Effects) + F5 (Group A) + F3 (Dist.)

Dist. (Distortion)

Distortion generates a rich overtone structure by clipping the input direct sound Waveform. It sounds wild and crunchy, as if you were overdriving an amplifier.





Hint	This is especially effective when used sparingly for a solo lead line to make it really stand out.

Type

You have the following distortion types to choose from:

MELLOW DRIVE	: A kinder, gentler distortion; dark sounding.
OVERDRIVE	: The classic sound of an overdriven tube amp.
CRY DRIVE	: Distortion with a high-frequency boost.
MELLOW DIST	: Sounds like the distortion you'd get from a really big amp.
LIGHT DIST	: A distortion with an intense, brilliant feel.
FAT DIST	: Boosted lows and highs gives this one a thick, fat sound.
FUZZ DIST	: Like FAT DIST, but with even more distortion.

Drive

0 — 100

This parameter sets the amount of distortion that is applied to the sound. Higher values of Drive give you more and more distortion.

Level

0 — 100

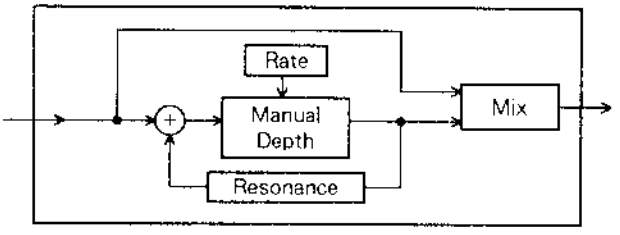
This parameter sets the overall volume level after distortion is applied. No sound is output when this is set to 0.

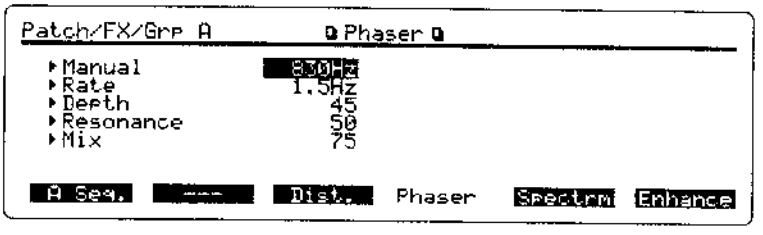
* Increasing the Drive parameter also has the effect of increasing the overall volume, so you may want to offset the resulting volume difference between Distortion ON and OFF by adjusting the Level parameter.

PATCH + F6 (Effects) + F5 (Group A) + F4 (Phaser)

Phaser

This creates a spacey, scintillating effect by adding a slightly phase - shifted copy of the direct signal back to the original.





Hint	This is really an effective sound for backup electric piano or guitar. You can hear the Phaser effect most clearly on sounds that contain a lot of upper harmonics, so it's best to connect it following Distortion or Spectrum in your signal chain.

Manual

50 Hz — 15.0 kHz

Sets the frequency range in which the sound will undulate.

Rate

0.1 — 10.0 Hz

Sets the frequency of the undulations in increments of 0.1 Hz. The higher this value, the faster the sound will seem to move.

Depth

0 — 100

Sets the depth of the undulations. Higher numbers mean a wider swing in the apparent motion of the sound.

Resonance

0 — 100

Sets the Phaser feedback volume. The higher this value, the more pronounced the phaser effect.

Mix

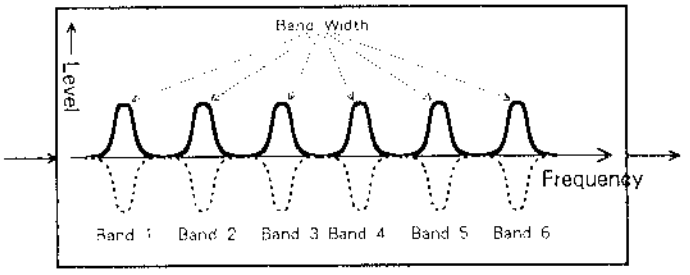
0 — 100

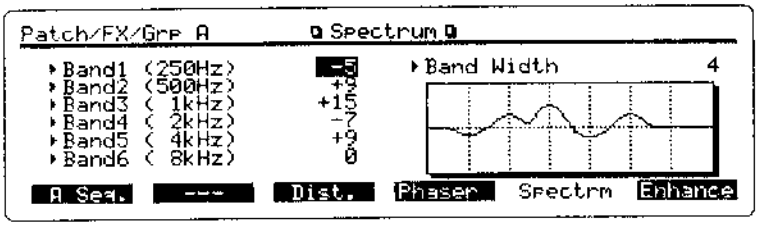
Sets the volume of the phase-shifted sound in the mix. The larger this value, the higher the effect sound level. A value of 0 means no sound at all is output.

PATCH + F6 (Effects) + F5 (Group A) + F5 (Spectrm)

Spectrm (Spectrum)

Spectrum is an effect that increases or decreases the level of the Tone only in certain frequency ranges to alter the timbre of the direct sound.





Hint	Although it works like an equalizer, each of the Spectrum bands is selected to bring out a certain distinctive quality in the sound. Its purpose is more of a special sound processing effect than simply corrective equalizing.

Band 1 – 6 (Band 1 — 6 Control) – 15 — +15

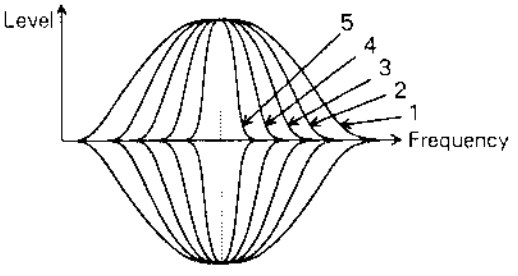
Sets the level in each Band (1 — 6). Positive values increase the level, negative values decrease it.

The bands correspond to frequencies as follows:

1: 250 Hz, 2: 500 Hz, 3: 1kHz, 4: 2 kHz, 5: 4 kHz, 6: 8 kHz

Band Width 1 — 5

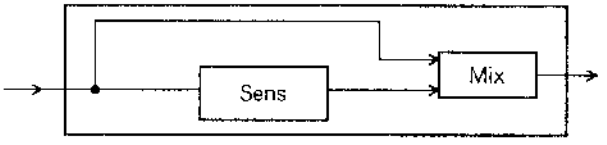
Sets the width of the frequency region over which the level is increased or decreased (identically for all Bands). Larger values correspond to wider frequency regions.

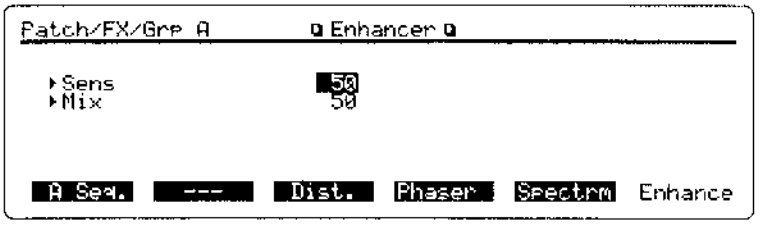


PATCH + F6 (Effects) + F5 (Group A) + F6 (Enhance)

Enhance (Enhancer)

The Enhancer generates new upper harmonics that help define a sound and make it 'punch through' more clearly in a mix.





Sens

0 — 100

Sets the depth of the enhancement; larger values correspond to a more intense effect.

Mix

0 — 100

Sets the ratio between direct and effect sound in the mix. The larger this value, the higher the effect level.

PATCH + F6 (Effects) + F6 (Group B) + F1 (B Seq.)

Group B

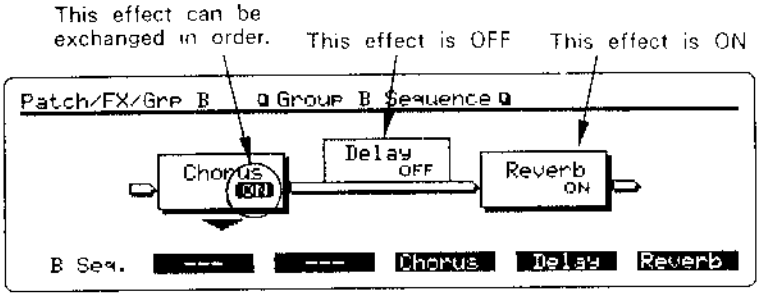
This is where you'll make the settings for each of the effects in Group B and specify their order in the signal chain.

B Seq. (Group B Sequence)

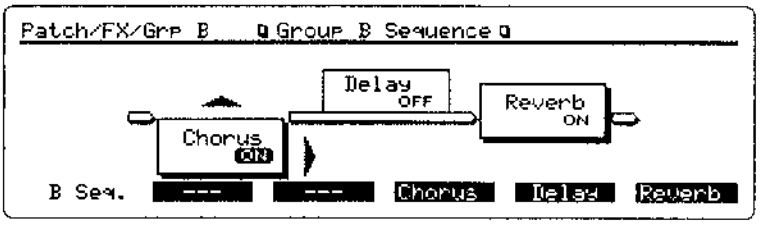
This is where you can specify the order of the effects in the signal chain. The order in which effects are applied can make a big difference in the resulting sound, even if you don't change any other parameter. Trial and error is the best way to proceed until you come up with a sound you like.

[Procedure]

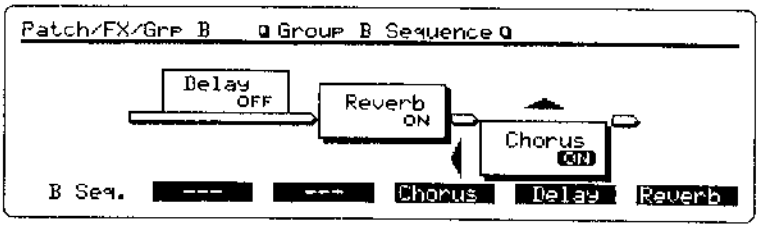
1. Turn the effect ON or OFF with [INC]/[DEC], or the [VALUE] knob. The effects which can be reordered in the chain will be highlighted in the On/Off part of display. Select the effect you want to change with the CURSOR [◀] [▶] buttons.



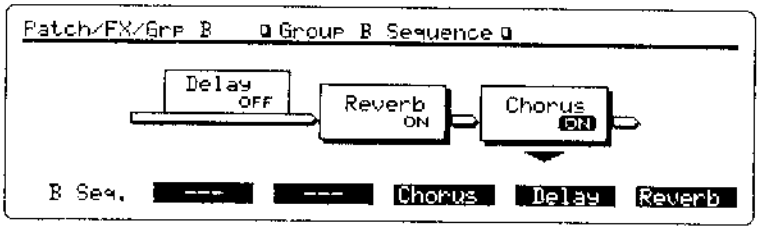
2. Press CURSOR [▼] to move the selected effect down into the chain.



3. Select the insertion point with the CURSOR [◀] [▶] buttons.



4. After you've selected the insertion point, press CURSOR [▲]. The specified effect is inserted into the signal chain.

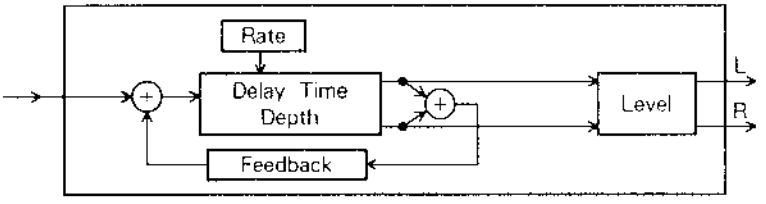


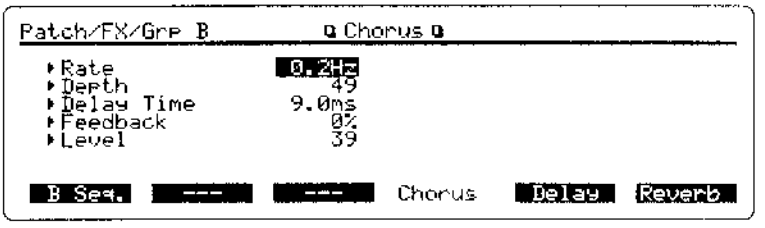
5. Repeat these steps as necessary.

PATCH + F6 (Effects) + F6 (Group B) + F4 (Chorus)

Chorus

Chorus modulates the pitch of a very short delay sound and mixes that back with the direct sound to fatten and broaden it. The effect is like several of the same instrument playing in unison.





Rate

0.1 Hz — 10.0 Hz

Sets the period of the pitch modulation, in increments of 0.1 Hz. This has the effect of speeding or slowing the slight "movement" in the Chorus effect.

Depth

0 — 100

This sets the depth of the pitch modulation. The larger the values, the more noticeable the modulation.

Delay Time

0.1 ms — 50 ms

This sets the time of the very short delay between the start of the direct sound and the start of the Chorus sound. Longer delay times make the sound seem broader.

You can change the values as follows:

From 0.1 to 5.0 ms : in 0.1 ms increments
From 5 to 10 ms : in 0.5 ms increments
From 10 to 50 ms : in 1 ms increments

Hint	A delay in the 1 ms to 10 ms range gives you a flanger effect.

PATCH + F6 (Effects) + F6 (Group B) + F4 (Chorus)

Feedback

– 98% — +98%

This parameter sets the level of the Chorus feedback, that is, the level of output signal which is being returned to or "fed back into" the input. In fact, what is set here is the percent by which the output signal is in phase (+) or out-of-phase (–) with the input side. This value is variable from – 98% to +98% in 2% increments. A value of 0 means there is no feedback.

Hint	Negative values give a broader feel to the sound. Set this to a fairly high value (about 70%) for a flanging effect.

Level

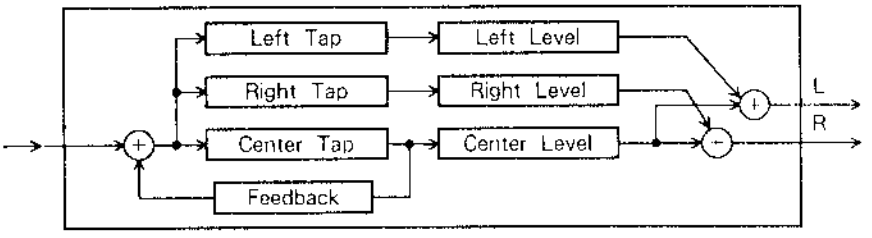
0 — 100

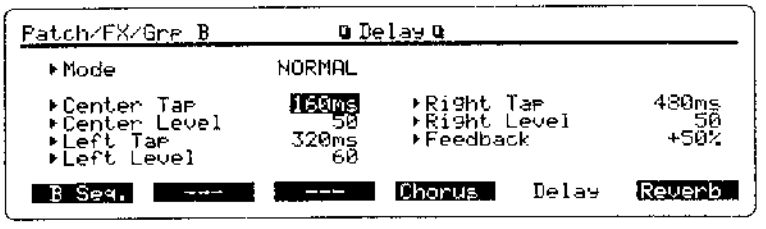
Sets the level of the Chorus effect . A value of 0 here means no Chorus sound is output.

PATCH + F6 (Effects) + F6 (Group B) + F5 (Delay)

Delay

Delay takes a copy of the direct sound and delays it by the amount of time you specify, adding it back into the sound to give it more body. You can set the delay time independently for the center (L+R), left (L), and right (R) to give you a triple - tap delay.





Note	When the output is in mono, the center, left, and right delays are all mixed together and you won't get a true triple - tap delay effect. If a spacious triple - tap is what you're after, a stereo output is the only way to go.

Mode (Delay Mode) NORMAL, MIDI TEMPO, MANUAL TEMPO

This parameter selects the desired delay mode.

NORMAL In this mode, the settings match the Tap (delay time) and Level (delay level) values in the display. If you wish to use the normal delay effect, you should select this mode.
If a musical note is selected in the Tap, the actual delay time will be calculated as the actual musical note length when the Tempo = 120. MIDI Clock is ignored in this mode.

MIDI TEMPO When musical notes are selected at more than one Tap, the Tap (delay time) is synchronized to MIDI Clock messages received from an external sequencer or rhythm machine. If you wish to synchronize the delay time with the Tempo of the external sequencer, you should select this mode. (The system uses a clock resolution of 24 tick per quarter note.)
If times (0.1 ms to 3.00 s) are selected for all three Taps, the MIDI Clock will be ignored and the Normal Delay will be applied.
If MIDI Clock messages are not received the JD - 990 reverts to the Normal Delay Mode.

PATCH + F6 (Effects) + F6 (Group B) + F5 (Delay)

MANUAL TEMPO

This mode allows the delay time to be set by pressing a switch on the front panel. This is useful when you want to synchronize the delay with other live musical sounds.("Man.SW" will appear in the [F3] part of the display.)
When musical notes are selected at more than one Tap, and [F3] (Man.SW) is pressed four times, the average time of the three intervals (MANUAL TEMPO) will be recognized by the system as the tempo setting for the delay.
If times (0.1 ms to 3.00 s) are selected for all three Taps, the MANUAL TEMPO is ignored and the JD - 990 applies the Normal Delay. When using MANUAL TEMPO, the delay times are converted based on tempo of 120 beats per minute (unless [F3](Man.SW) is pressed).

* It is possible to determine the delay time for various MIDI Clock and MANUAL TEMPO settings. See the MIDI clock / Delay time Conversion Chart at the end of this manual.
* The delay time cannot exceed 3.0 seconds. When using the MIDI or MANUAL TEMPO modes, if the calculated delay time exceeds 3.0 seconds, the actual delay time will revert to a value of 3.0 or less. For details on the exact resulting delay times, see the MIDI clock / Delay time Conversion Chart at the end of this manual.

Center Tap

0.1 ms — 3.0 s, 𝅘𝅥𝅯, 𝅘𝅥𝅯., 𝅘𝅥𝅯𝅘𝅥𝅯, 𝅘𝅥𝅯𝅘𝅥𝅯., 𝅘𝅥, 𝅘𝅥., 𝅗𝅥, 𝅗𝅥.

Sets the amount of delay for the sound output in the center (L+R).

The settings can be made with the following resolutions:
From 0.1 to 5.0 ms : in 0.1 ms increments
From 5 to 10 ms : in 0.5 ms increments
From 10 to 40 ms : in 1 ms increments
From 40 to 200 ms : in 10 ms increments
From 200 ms to 3.0 s : in 20 ms increments

Center Level

0 — 100

Sets the level of the center tap delay sound. The higher the value, the higher the level of the delay sound coming from the center. A setting of 0 indicates center tap is turned off.

Left Tap

0.1 ms — 3.0 s, 𝅘𝅥𝅯, 𝅘𝅥𝅯., 𝅘𝅥𝅯𝅘𝅥𝅯, 𝅘𝅥𝅯𝅘𝅥𝅯., 𝅘𝅥, 𝅘𝅥., 𝅗𝅥, 𝅗𝅥.

Sets the amount of delay for the sound output from the left side of the stereo field (L).
The settings can be made with the following resolutions:
From 0.1 to 5.0 ms : in 0.1 ms increments
From 5 to 10 ms : in 0.5 ms increments
From 10 to 40 ms : in 1 ms increments
From 40 to 200 ms : in 10 ms increments
From 200 ms to 3.0 s : in 20 ms increments

PATCH + F6 (Effects) + F6 (Group B) + F5 (Delay)

Left Level

0 — 100

Sets the level of the left delay sound. The higher the value, the higher the level of the delay sound output from the left. A setting of 0 indicates the left tap is turned off.

Right Tap

0.1 ms — 3.0 s, 𝅘𝅥𝅯, 𝅘𝅥𝅯., 𝅘𝅥𝅮, 𝅘𝅥𝅮., ♩, ♩., 𝅗𝅥, 𝅗𝅥.

Sets the amount of delay for the sound output from the right side of the stereo field (R).
The settings can be made with the following resolutions:

From 0.1 to 5.0 ms : in 0.1 ms increments
From 5 to 10 ms : in 0.5 ms increments
From 10 to 40 ms : in 1 ms increments
From 40 to 200 ms : in 10 ms increments
From 200 ms to 3.0 s : in 20 ms increments

Right Level

0 — 100

Sets the level of the right delay sound. The higher the value, the higher the level of the delay sound output from the right. A setting of 0 indicates the right tap is turned off.

Feedback

– 98% — +98%

Sets the feedback level of the center tap delay sound, that is, the amount of output signal that is fed back into the input. In fact, what is set here is the percent by which the output signal is in phase (+) or out-of-phase (–) with the input side. This value is variable from -98% to +98% in 2% increments. A value of 0 means there is no feedback.

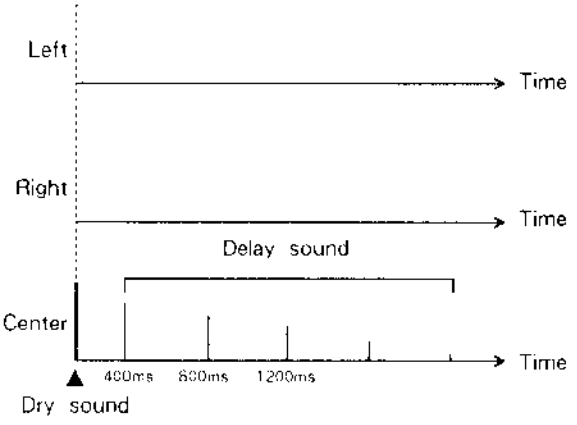
* The feed-back sound from the Center signals will be sent to the left and right. The delayed sounds from the left and right aren't fed-back.
* This isn't affected by the Center Level.

PATCH + F6 (Effects) + F6 (Group B) + F5 (Delay)

Hint

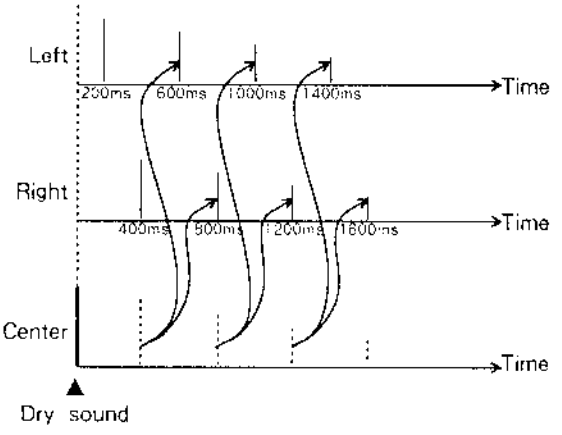
Here are a few very typical setups using triple-tap delay.

General - Purpose Delay with Output from Center Only (400 ms)



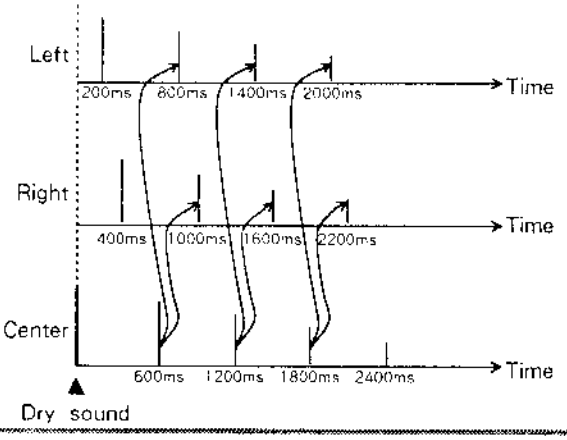
Mode = NORMAL
Center Tap = 400 ms
Center Level = 50
Left Tap = 0
Left Level = 0
Right Tap = 0
Right Level = 0
Feedback = +50%

Panning Delay from Left to Right; 200 ms Each Delay



Mode = NORMAL
Center Tap = 400 ms
Center Level = 0
Left Tap = 200 ms
Left Level = 50
Right Tap = 400 ms
Right Level = 50
Feedback = +50%

Triple - Tap Delay from Left to Right to Center; 200 ms Each Delay



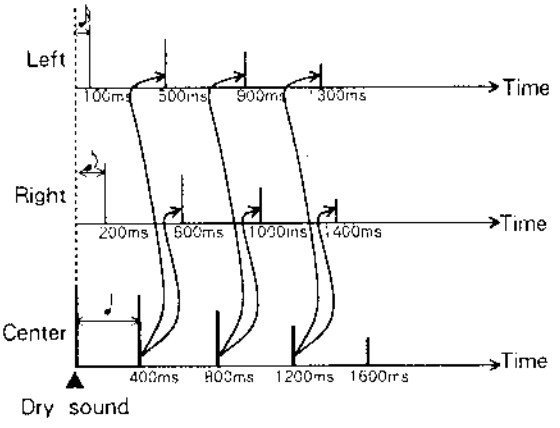
Mode = NORMAL
Center Tap = 600 ms
Center Level = 50
Left Tap = 200 ms
Left Level = 50
Right Tap = 400 ms
Right Level = 50
Feedback = +50%

PATCH + F6 (Effects) + F6 (Group B) + F5 (Delay)

Hints in using MIDI TEMPO

A representative example in the MIDI TEMPO mode is presented below.

When sequencer tempo=150 (note conversion; ♩=400ms)

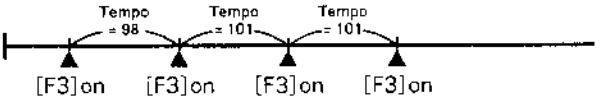


Mode = MIDI TEMPO
Center Tap = ♩
Center Level = 50
Left Tap = ♪
Left Level = 50
Right Tap = ♪
Right Level = 50
Feedback = +50 %

As the tempo changes, the delay interval will change accordingly.

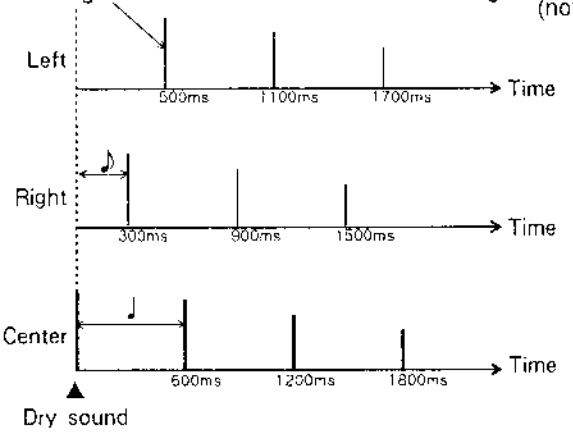
Hints in using MANUAL TEMPO

A representative example in the MANUAL TEMPO mode is presented below.



The average interval for the three manual intervals is determined, to be 100.

No change even when MANUAL TEMPO changes. (note conversion; ♩ = 600ms)

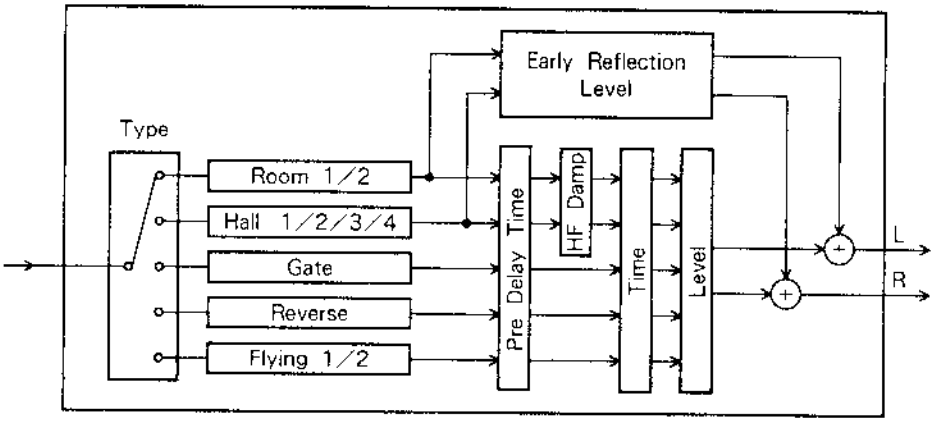


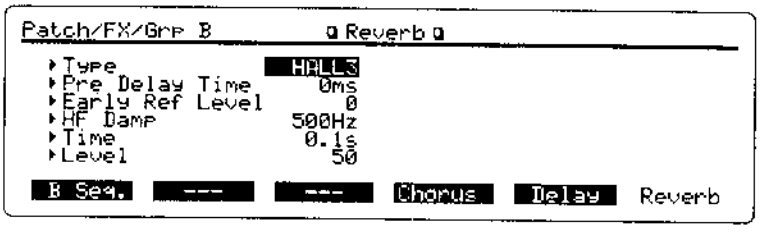
Mode = MANUAL TEMPO
Center Tap = ♩
Center Level = 50
Left Tap = 500ms
Left Level = 50
Right Tap = ♪
Right Level = 50
Feedback = +50 %

PATCH + F6 (Effects) + F6 (Group B) + F6 (Reverb)

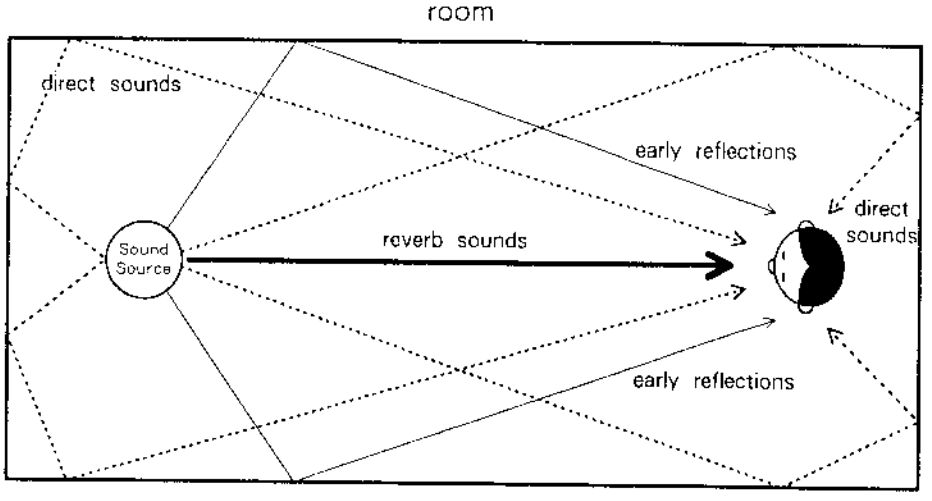
Reverb

This effect simulates the presence and acoustic properties of a concert hall or club.





《Image of reverb》



PATCH + F6 (Effects) + F6 (Group B) + F6 (Reverb)

Type

Select from the following Reverb types. Each type simulates a different size of acoustic enclosure and different reflectivity of the wall material.

ROOM1/2 : Simulates the acoustics of a small space. 2 is more "live" than 1, which is to say, a little brighter, with more reflections.

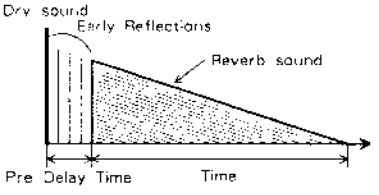
HALL1/2/3/4 : Simulates the acoustics of a concert hall. Types 1 — 4 differ in the size of the simulated acoustic enclosure and the number of reflections.

GATE : The reverb abruptly cuts off after a certain time.

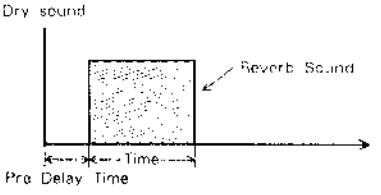
REVERSE : Rather than dying out, the reverberation increases up to a certain point at which it suddenly cuts off.

FLYING1/2 : The reverb sound pans from left to right (FLYING1) or right to left (FLYING2).

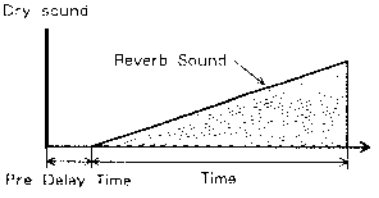
● ROOM/HALL



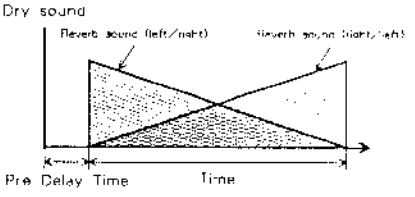
● GATE



● REVERSE



● FLYING



Reverb Sounds will pan from left (right) to right (left).

Pre Delay Time

0 — 120 ms (in 1 ms increments)

This parameter sets the time between the start of the direct sound and the start of the reverb sound. Larger values of Pre Delay Time give the impression of a larger room.

Early Ref Level

(Early Reflection Level) 0 — 100

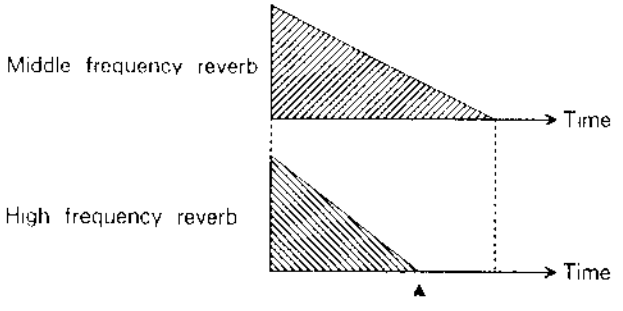
This parameter sets the level of the initial or "early" reflections. This is the first reflection from the walls of the acoustic enclosure. A high level here gives the listener the impression that the sound source is not far from the walls (i.e., it's a small room).

* This parameter has no effect on the GATE, REVERSE, or FLYING1/2 Reverbs.
* Reverb Level and Early Reflection Level are independent parameters, so that if you have this set fairly high you'll still hear an early reflection, even if Reverb Level is set to 0.

HF Damp

500 Hz — 16 kHz, BYPASS

This parameter sets a cutoff frequency for the reverberation sound. This helps simulate the effect of different materials (which have different acoustic properties) in the walls of the acoustic enclosure. Setting HF Damp to a lower frequency gives you a "darker" sound (as with carpeted walls), and higher settings makes the room sound seem "brighter" and more live (as with tiled walls). BYPASS turns the effect off.



Decays faster than the middle frequency reverb.

* This parameter has no effect on the GATE, REVERSE, or FLYING1/2 Reverbs.

PATCH + F6 (Effects) + F6 (Group B) + F6 (Reverb)

Time

0.1 s — 20.0 s (Type: ROOM1/2, HALL1/2/3/4)
5 ms — 500 ms (Type: GATE, REVERSE, FLYING1/2)

This parameter sets the Reverb Time; the duration of the reverb sound. As you can see, the amount of Reverb Time depends on the Type as well. In the case of GATE, a longer Time setting gives you the feeling of a more sparse, scattered reverb.

Level

0 — 100
This parameter sets the level of the reverb sound.

PATCH + F6 (Effects) + F6 (Group B) + F6 (Reverb)

Time

0.1 s — 20.0 s (Type: ROOM1/2, HALL1/2/3/4)
5 ms — 500 ms (Type: GATE, REVERSE, FLYING1/2)

This parameter sets the Reverb Time; the duration of the reverb sound. As you can see, the amount of Reverb Time depends on the Type as well. In the case of GATE, a longer Time setting gives you the feeling of a more sparse, scattered reverb.

Level

0 — 100
This parameter sets the level of the reverb sound.

Chapter 3

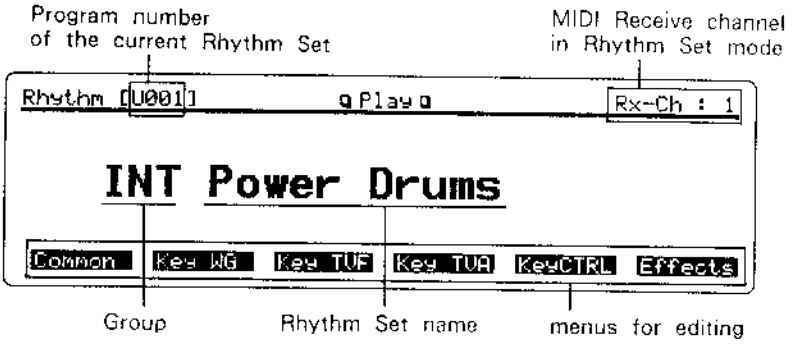
Parameter Reference

— RHYTHM SET —

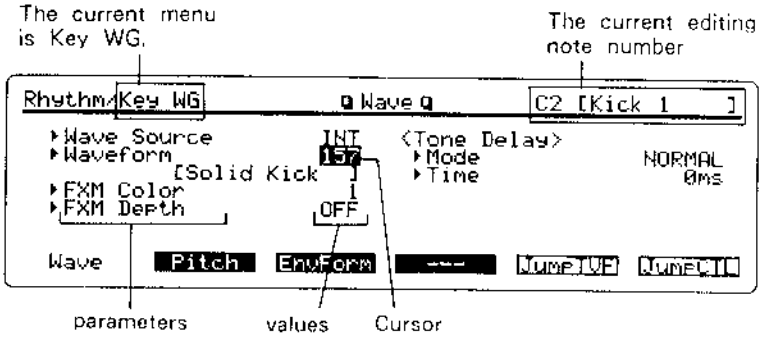
Rhythm Set Mode Displays

In this section we'll talk about the screens in Play and Edit mode. Refer to this section when you want to find out what is specified or set in a particular screen.

Play Screen



Edit Screen



Rhythm Set editing is divided into six types.

Common This is where you set parameters that control the entire Rhythm Set, rather than individual Notes.

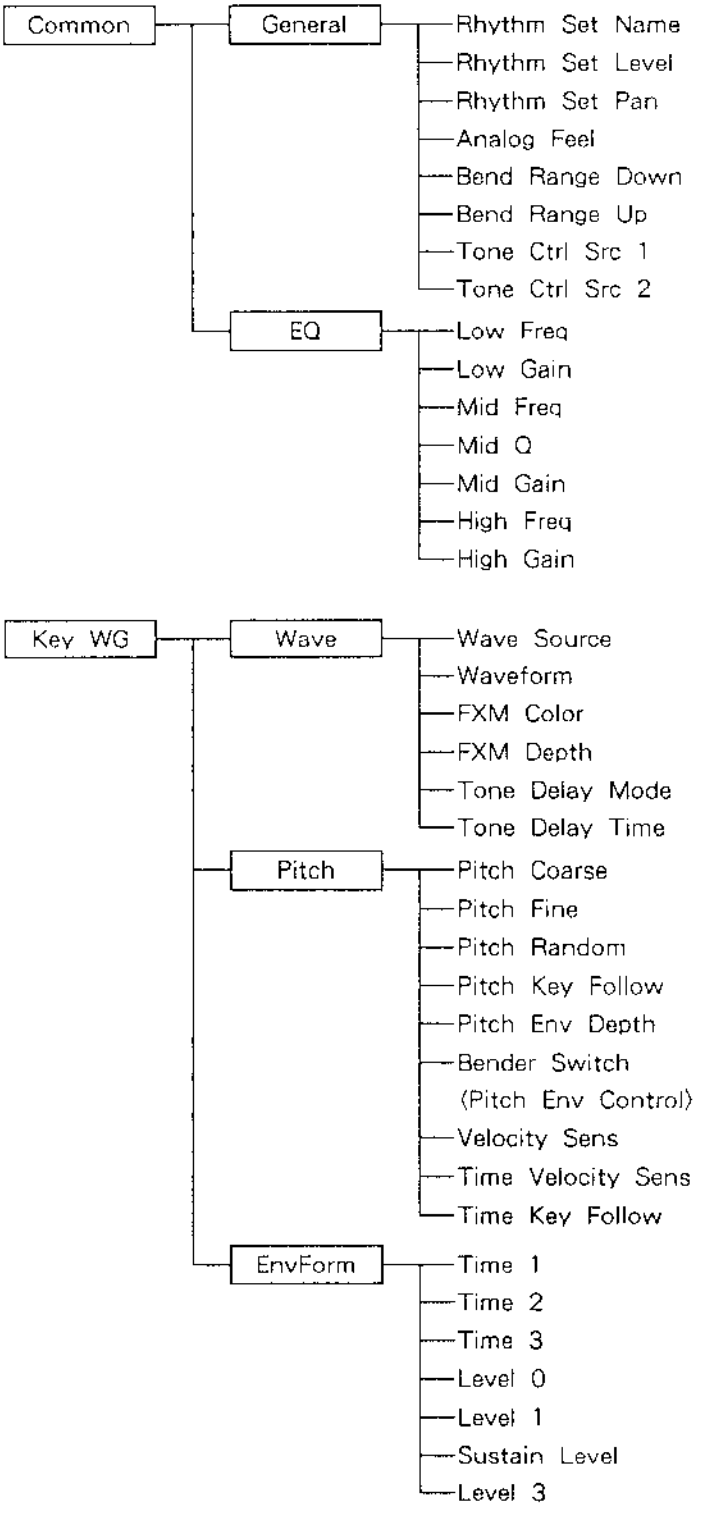
Key WG WG stands for Wave Generator. This is where you select the basic waveform for each Rhythm Set instrument and adjust its pitch.

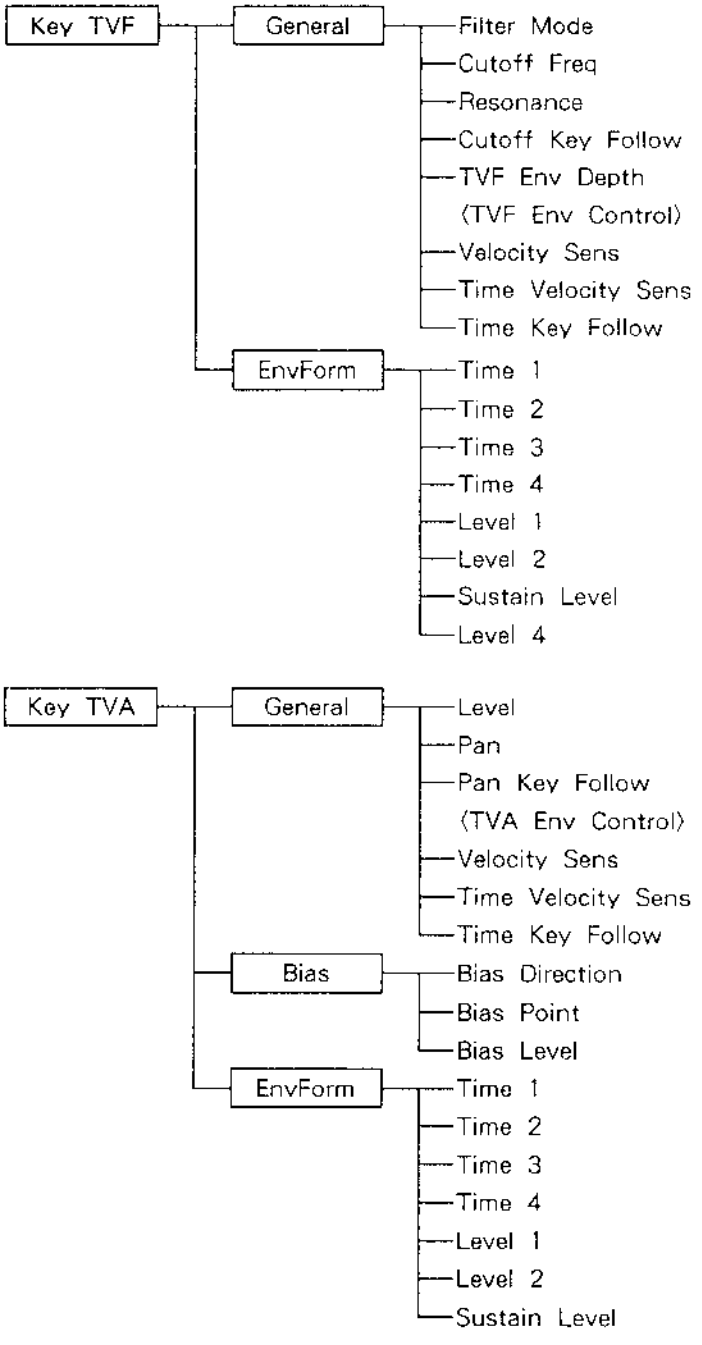
Key TVF TVF stands for Time Variant Filter, with which you can process each instrument's sound to make it brighter or darker.

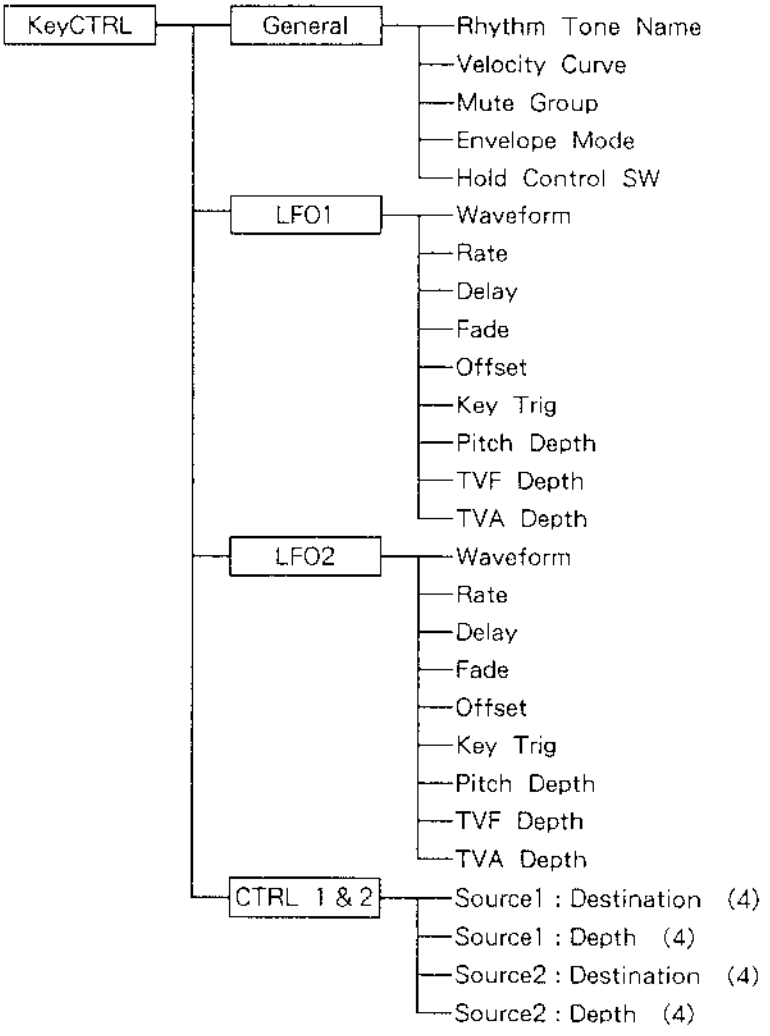
Key TVA TVA stands for Time Variant Amplifier, with which you can control the volume of each sound dynamically.

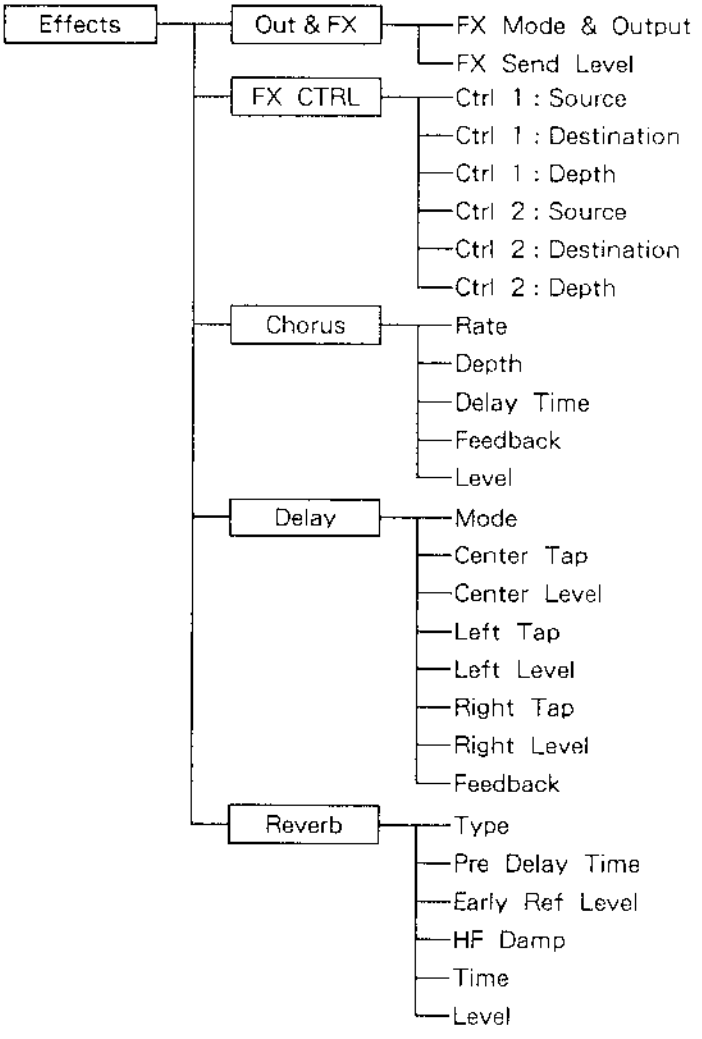
Key CTRL This is where you can name each instrument sound in a Rhythm Set, and set parameters relating to how the JD - 990 reacts to LFO and how the various messages from MIDI IN are to be handled.

Effects This specifies Effects settings for the Rhythm Set. Three types are available: Chorus, Delay, and Reverb.


Common
General
Rhythm Set Name
Rhythm Set Level
Rhythm Set Pan
Analog Feel
Bend Range Down
Bend Range Up
Tone Ctrl Src 1
Tone Ctrl Src 2
EQ
Low Freq
Low Gain
Mid Freq
Mid Q
Mid Gain
High Freq
High Gain
Key WG
Wave
Wave Source
Waveform
FXM Color
FXM Depth
Tone Delay Mode
Tone Delay Time
Pitch
Pitch Coarse
Pitch Fine
Pitch Random
Pitch Key Follow
Pitch Env Depth
Bender Switch
(Pitch Env Control)
Velocity Sens
Time Velocity Sens
Time Key Follow
EnvForm
Time 1
Time 2
Time 3
Level 0
Level 1
Sustain Level
Level 3


Key TVF
General
Filter Mode
Cutoff Freq
Resonance
Cutoff Key Follow
TVF Env Depth
(TVF Env Control)
Velocity Sens
Time Velocity Sens
Time Key Follow
EnvForm
Time 1
Time 2
Time 3
Time 4
Level 1
Level 2
Sustain Level
Level 4
Key TVA
General
Level
Pan
Pan Key Follow
(TVA Env Control)
Velocity Sens
Time Velocity Sens
Time Key Follow
Bias
Bias Direction
Bias Point
Bias Level
EnvForm
Time 1
Time 2
Time 3
Time 4
Level 1
Level 2
Sustain Level

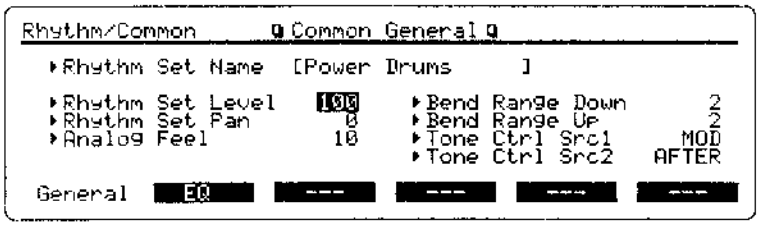

KeyCTRL
General
Rhythm Tone Name
Velocity Curve
Mute Group
Envelope Mode
Hold Control SW
LFO1
Waveform
Rate
Delay
Fade
Offset
Key Trig
Pitch Depth
TVF Depth
TVA Depth
LFO2
Waveform
Rate
Delay
Fade
Offset
Key Trig
Pitch Depth
TVF Depth
TVA Depth
CTRL 1 & 2
Source1 : Destination (4)
Source1 : Depth (4)
Source2 : Destination (4)
Source2 : Depth (4)


Effects
Out & FX
FX Mode & Output
FX Send Level
FX CTRL
Ctrl 1 : Source
Ctrl 1 : Destination
Ctrl 1 : Depth
Ctrl 2 : Source
Ctrl 2 : Destination
Ctrl 2 : Depth
Chorus
Rate
Depth
Delay Time
Feedback
Level
Delay
Mode
Center Tap
Center Level
Left Tap
Left Level
Right Tap
Right Level
Feedback
Reverb
Type
Pre Delay Time
Early Ref Level
HF Damp
Time
Level

Common

General

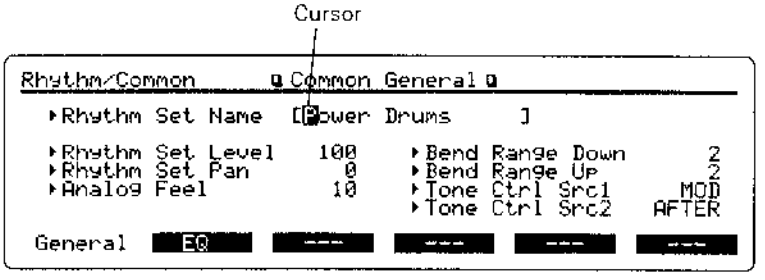
This is where you can name Rhythm Sets and set level and Pitch Bend range.



Rhythm Set Name space, A—Z, a—z, 0—9, &#!?.,:;'"*+ - /<=>

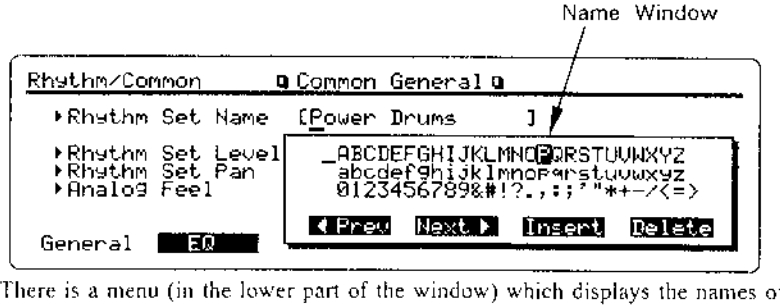
This is where you can name a Rhythm Set.

Move the cursor with CURSOR[◀][▶], and select characters with the [VALUE] knob or [INC] and [DEC] buttons. When you have selected the character you want, press CURSOR[▶] to move to the next character space.



You name a Rhythm Set in the name window (you can see all the available characters at a glance).

Press the [VALUE] knob to open the name window. Select characters with CURSOR [▲], [▼], [◀] and [▶]. The [VALUE] knob and [INC][DEC] buttons can also be used. When you have selected the character you want, press [F4](Next ▶) to move to the next character space.



There is a menu (in the lower part of the window) which displays the names of the function buttons.

- ◀ Prev : Move to the previous character space.
- Next ▶ : Move to the next character space.
- Insert : Insert a space at the underline, moving all the following characters back one.
- Delete : Delete the character under the underline, moving all the following characters up one space.

Press [EXIT] to close the name window.

RHYTHM + F1 (Common)

Rhythm Set Level 0 — 100

This sets the overall volume of the Rhythm Set. Higher values mean higher volume.

Rhythm Set Pan L50 — 50R

Sets the overall stereo position of the Rhythm Set. L50 means "hard" left, 0 is the center position, and 50R is hard right. The setting made here is added to the Pan patch setting made for each individual note (instrument).

Analog Feel 0 — 100

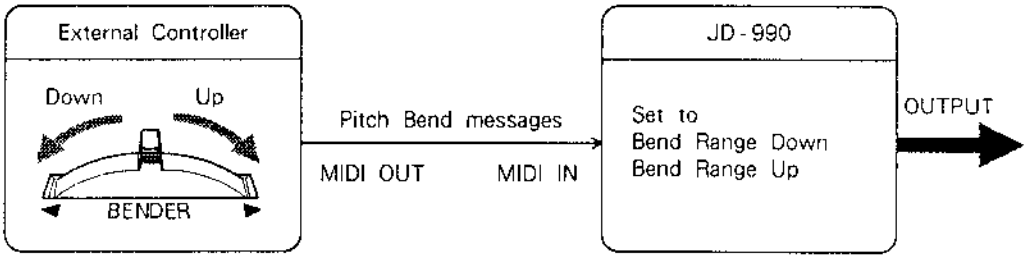
Adds a "wavering or subtle vibrato" modulation to the basic waveform.

Bend Range Down 0 — 48

This sets how much the pitch will drop when you push a Pitch Bend Lever to the left (or a Pitch Bend Wheel downward). Each unit is a semi-tone, so the maximum setting of 48 means a drop of 4 octaves.

Bend Range Up 0 — 12

This sets how much the pitch will rise when you push a Pitch Bend Lever to the right (or a Pitch Bend Wheel upward). Each unit is a semi-tone, so the maximum setting of 12 means a rise of a full octave.



Tone Ctrl Src 1 (Tone Control Source 1)
MOD, AFTER, EXP, BREATH, P.BEND, FOOT
Tone Ctrl Src 2 (Tone Control Source 2)
MOD, AFTER, EXP, BREATH, P.BEND, FOOT

You can assign up to two MIDI controllers to control the sounds on the JD - 990 by altering WG, TVF and TVA parameters in real time. The assignment is made in the KeyCTRL Control1&2 screen.

MOD : Modulation message (Control Change #1)
AFTER : Aftertouch message
EXP : Expression message (Control Change #11)
BREATH : Breath message (Control Change #2)
P.BEND : Pitch Bend message
FOOT : Foot message (Control Change #4)

EQ

This adjusts the overall equalization that will be applied to the Rhythm Set, i.e., controls the tone by adjusting the level of the sound in only the low, mid, or high frequency regions.

The Rhythm Set equalizer works the same as the Patch equalizer. For more information, refer to Patch/Common EQ (☞P. Ptch – 26).

Key WG

This selects and controls the pitch of the basic waveform for each note (instrument).

The Key WG parameters work just like the Patch WG parameters. See the section about them in Parameter Reference (☞P. Ptch – 30).

*** Note that there is no Sync Slave Switch in the Key WG/Wave parameter. (It is included only in the Patch WG parameters. See page Ptch – 31)**

Key TVF

Key TVF processes each note (instrument sound) to make the sound seem "brighter" or "darker."

The Key TVF parameters work just like the Patch TVF parameters. See that section in the Parameter Reference (☞P. Ptch – 41) for more on this topic.

Key TVA

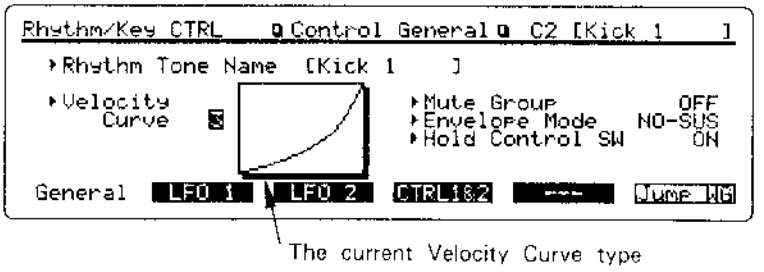
Key TVA settings dynamically control the volume of each note.

The Key TVA parameters work just like those for Patch TVA. See the section about that topic in Parameter Reference (☞P. Ptch – 51).

Key CTRL

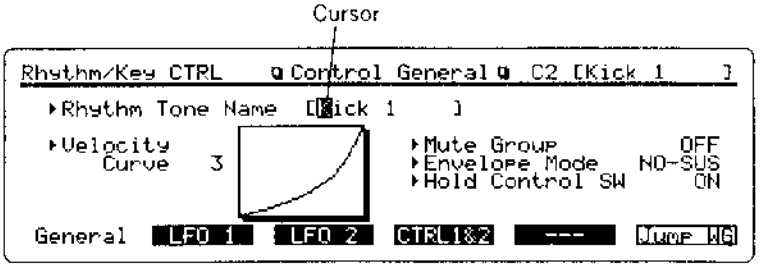
General

These parameters let you name each note and handle velocity, mute group, hold messages and so on.

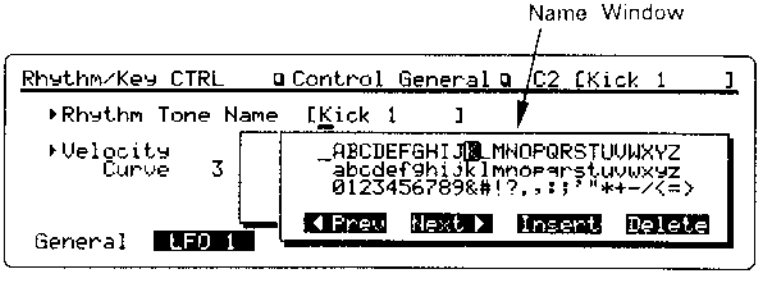


Rhythm Tone Name: space, A—Z, a—z, 0—9, &#!?.,:;'"*+ - /<=>

You can give each note (percussion sound) a name of up to ten characters.
Move the cursor with CURSOR[◀][▶], and select characters with the [VALUE] knob or [INC][DEC] buttons. When you have selected the character you want, press CURSOR[▶] to move to the next character space.



You name each note in the name window (you can see all the available characters at a glance). Press the [VALUE] knob to open the name window. Select characters with CURSOR [▲], [▼], [◀] and [▶]. The [VALUE] knob and [INC][DEC] buttons can also be used. When you have selected the character you want, press [F4](Next ▶) to move to the next character space.



There is a menu in the lower part of the window which displays the names of the function buttons.

- ◀ Prev : Move to the previous character space.
- Next ▶ : Move to the next character space.
- Insert : Insert a space at the underline, moving all the following characters back one.
- Delete : Delete the character under the underline, moving all the following characters up one space.

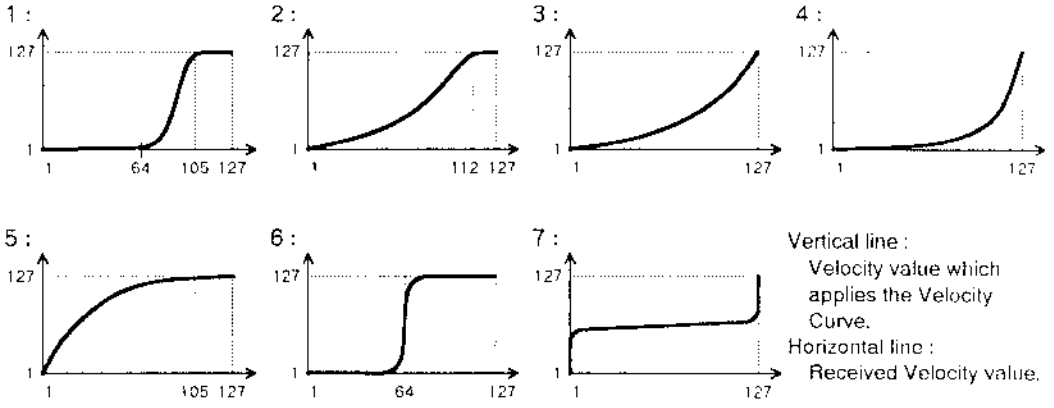
Press [EXIT] to close the name window.

RHYTHM + F5 (KeyCTRL)

Velocity Curve 1—7

Selects the type of curve that will be applied to velocity messages received via the MIDI IN port.

Types of Velocity Curve



Vertical line :
Velocity value which applies the Velocity Curve.
Horizontal line :
Received Velocity value.

Note

The following parameters are affected by this setting.

Key WG/Wave———Velocity Sens, Time Velocity Sens

Key TVF/General———Velocity Sens, Time Velocity Sens

Key TVA/General———Velocity Sens, Time Velocity Sens

Mute Group OFF, A—Z

This setting prevents the same type of rhythm sounds from playing at the same time. If the next sound played is in the same Group, the previous sound is muted before the next sound is played.

You can have up to 26 Groups, labeled A through Z. Setting this to OFF means you can play any sound, regardless of what Group it's in.

Hint

An example of where this comes in handy is with opened and closed Hi-Hats. If you put all Hi-Hat rhythm sounds into the same Group, you can be sure that you won't hear an opened and closed Hi-Hat sound at the same time (which would be impossible on a real drum kit, right?). This is also handy for certain types of Latin percussion.

Envelope Mode SUSTAIN, NO - SUS

This sets whether or not to ignore Pitch/TVF/TVA Envelope Sustain Level times (☞P. Ptch – 40, 50, 60). NO - SUS is the setting to use when making non - sustained ("one - shot") percussion sounds.

Hold Control SW OFF, ON

This setting controls whether a note (instrument sound) will (ON) or will not (OFF) respond to Hold messages received via the MIDI IN port.

LFO1/LFO2

This is where you can make settings for the LFO waveforms which can add a periodic variation to the pitch, cutoff frequency and level. LFO stands for Low Frequency Oscillator, and it is frequently used to create vibrato, wah and tremolo types of modulation effects. There are two independent LFOs on the JD - 990.

These LFO1/LFO2 parameters for Rhythm Set sounds are just like the ones for a Patch. For more information, see the section on Patch LFO&CTL parameters in Parameter Reference (☞P. Ptch – 62).

Control 1 & 2 (CTRL1&2)

This sets what kind of effect will be applied to a note (percussion sound) by the Control Source 1 and 2 specified in the Rhythm Set/Common setting (☞P. Ryth – 9). You can specify up to four effects at one time.

* The Control 1 and 2 parameter for a Rhythm Set sound works just like the Patch Control 1 and 2 parameters. Refer to the Patch LFO&CTL parameters section in Parameter Reference (☞P. Ptch – 67).

Effects

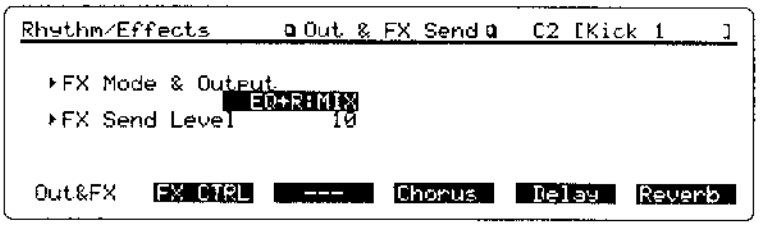
The effects you can use with a Rhythm Set are chorus, delay, and reverb. After making overall Rhythm Set settings for these effects, you can go back and make effect mode and level settings for each individual sound as well.

* **Rhythm Set effects are organized just like those for Performances. When you have selected the Rhythm Set which you want for Part 8 in a Performance, this turns on the 'Out&FX Send' for each note and applies the effects specified in the Performance settings.**

Check out the diagram on page Pfom – 10 showing how Performance effects are organized.

Out&FX Send (Out&FX)

This sets the effect type, how the effects are applied, and where the sounds (percussion sounds) are output for each note.



FX Mode & Output EQ:MIX, EQ+R:MIX, EQ+C+R:MIX, EQ+D+R:MIX, DIR1, DIR2, DIR3

You can select one of each note:

EQ:MIX	: MIX outputs a mix of the direct sound and the EQ effect sound from MIX OUT.
EQ+R:MIX	: Outputs a mix of the direct sound and the EQ and Reverb effects sound from MIX OUT.
EQ+C+R:MIX	: Outputs a mix of the direct sound and the EQ, Chorus and Reverb effects sound from MIX OUT.
EQ+D+R:MIX	: Outputs a mix of the direct sound and the EQ, Delay and Reverb effects sound from MIX OUT.
DIR1	: Outputs direct sound only from DIRECT OUT 1.
DIR2	: Outputs direct sound only from DIRECT OUT 2.
DIR3	: Outputs direct sound only from DIRECT OUT 3.

* When the Rhythm Output (☞P. Sys – 5) in System Setup is set to "ALL - MIX," the JD - 990 will output all sounds from the MIX OUT jacks.

FX Send Level 0 — 100

Sets the output level independently for each note (percussion sound) when FX Mode&Output is set to EQ+R:MIX , EQ+C+R:MIX or EQ+D+R:MIX. Higher values, of course, mean higher levels.

Effects Control (FX CTRL)

You can control the way effects are applied in real time with an external controller. The effect parameters controlled in this way are assigned to one of two Sets, corresponding to the two possible independent external controllers you can have.

* These parameters are the same as for Patch FX CTRL. For more details see that section, page Ptch – 70. However, only the seven FX CTRL Destination included in Chorus, Delay and Reverb can be selected.

Chorus

This is where you can set the parameters for Rhythm Set chorus.

* These parameters are the same as for Patch chorus. For more details see that section, page Ptch – 80.

Delay

Here's where you set Rhythm Set delay parameters.

* Identical to Patch delay settings; see page Ptch – 82.

Reverb

Sets the parameters for reverb applied to the Rhythm Set.

* See the section on page Ptch – 87 about Patch reverb parameters, as they are identical.

MEMO

Chapter 4

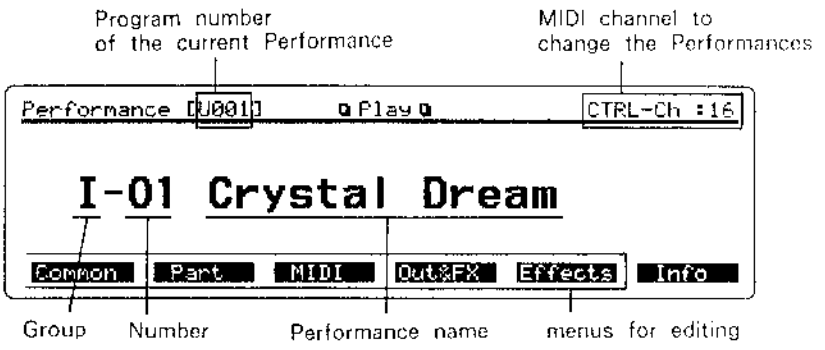
Parameter Reference

— PERFORMANCE —

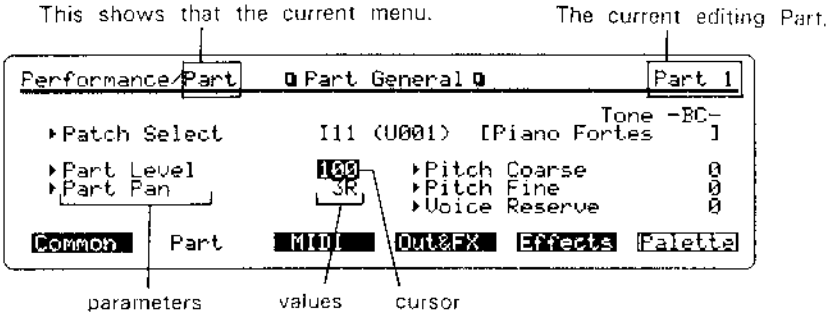
Performance Mode Displays

In this section, we'll describe some of the screens you will see in Play and Edit modes. Refer to this section later if you run across a screen which is not familiar.

Play Screen



Edit Screen



Performance editing is divided into five basic units.

Common This is where you name the Performance and set the Available Sync Part.

Part This is where you assign the Patches (or Rhythm Sets) to each Part and set their level and pan.

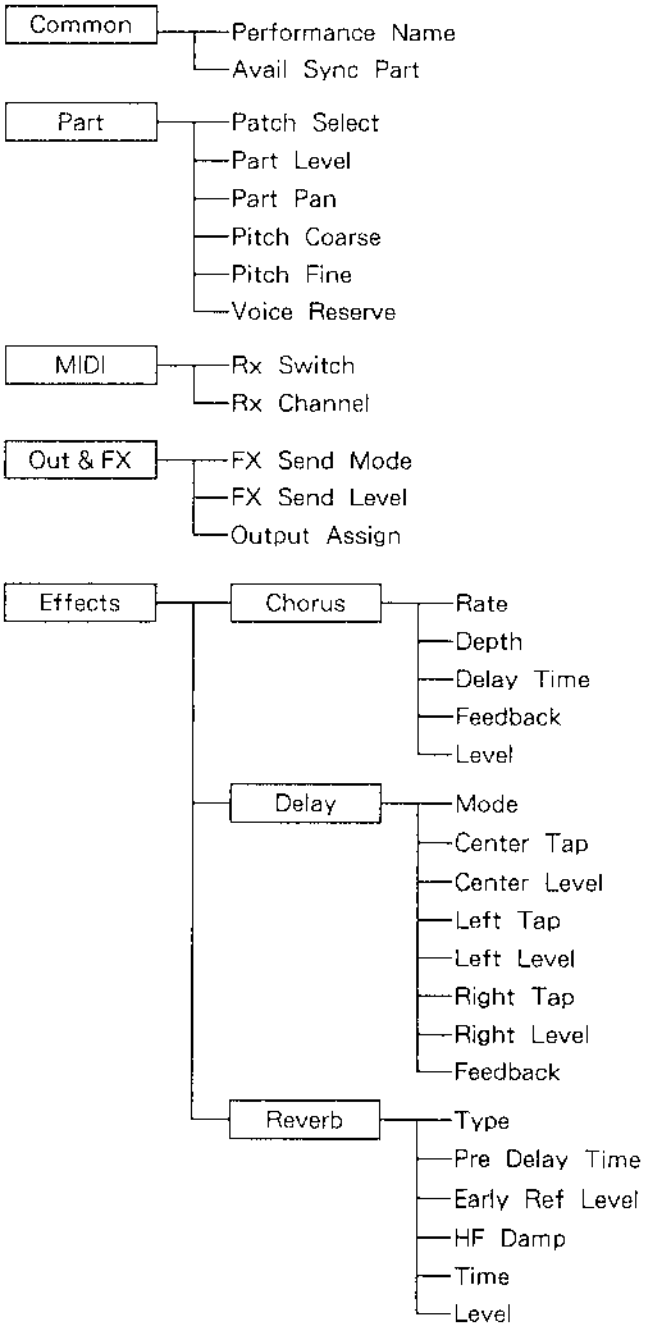
MIDI This is where you switch on/off MIDI reception and select a MIDI channel for a Part.

Out & FX Send This is where you set how effective the Performance Effect is, and where the sounds are output for each Part.

Effects This specifies what effects will be applied to the Performance. The effects settings for each individual Patch are overridden when part of a Performance, so this is where you'll make the effects settings that apply to the entire Performance.

* **The exception is Part 1, which will come through with all Group A effects (distortion, phaser, spectrum, enhancer) set just the way they are in the Patch itself. Parts 2 through 7 will have both A and B Group effects turned off, as described above. For the Rhythm Part (Part 8), Mode & Output and Send Level will stay the same as the settings made in Rhythm Edit.**

* **See the section on page App. – 3 about [F6] (Info).**

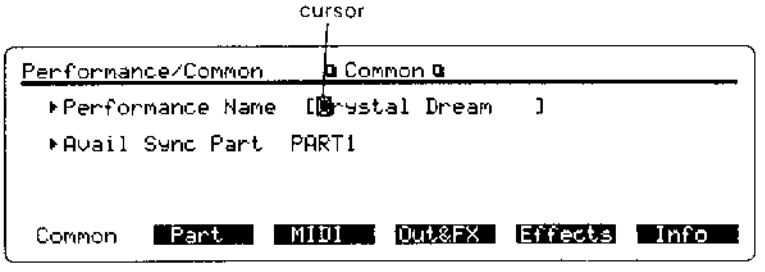

Common
Performance Name
Avail Sync Part
Part
Patch Select
Part Level
Part Pan
Pitch Coarse
Pitch Fine
Voice Reserve
MIDI
Rx Switch
Rx Channel
Out & FX
FX Send Mode
FX Send Level
Output Assign
Effects
Chorus
Rate
Depth
Delay Time
Feedback
Level
Delay
Mode
Center Tap
Center Level
Left Tap
Left Level
Right Tap
Right Level
Feedback
Reverb
Type
Pre Delay Time
Early Ref Level
HF Damp
Time
Level

Common

This is where you name the Performance and select the Part which is set the Available Sync (☞P. Ptch – 15).

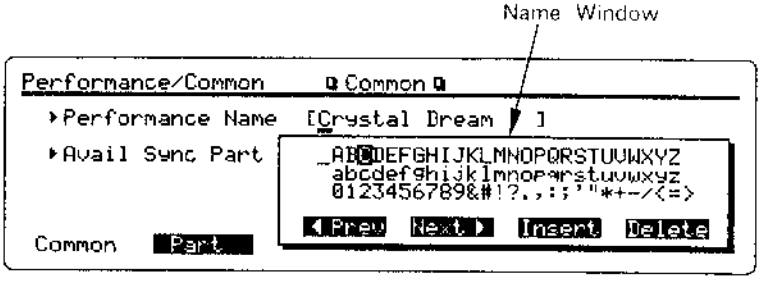
Performance Name space, A—Z, a—z, 0—9, &#!?.,:;'"*+ – /<=>

This is where you can name a Performance.
Move the cursor with CURSOR[◀][▶], and select characters with the [VALUE] knob or [INC][DEC] buttons. When you have selected the character you want, press CURSOR[▶] to move to the next character space.



You name a Performance in the name window (you can see all the available characters at a glance).

Press the [VALUE] knob to open the name window. Select characters with CURSOR [▲], [▼], [◀] and [▶]. The [VALUE] knob and [INC][DEC] buttons can also be used. When you have selected the character you want, press [F4](Next▶) to move to the next character space.



There is a menu (in the lower part of the window) which displays the names of the function buttons.

- ◀Prev : Move to the previous character space.
- Next▶ : Move to the next character space.
- Insert : Insert a space at the underline, moving all following characters back one.
- Delete : Delete the character under the underline, moving all following characters up one space.

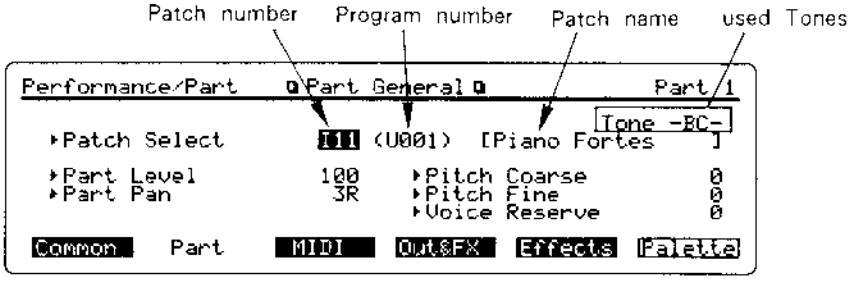
Press [EXIT] to close the name window.

Avail Sync Part (Available Sync Part) NONE, PART1 — PART7

In Performance Mode, the Sync function (☞P. Ptch – 15) is effective for only one of the seven Parts. This parameter sets the Part for which the Sync function works. For example, set to PART2 when you want to assign the Patch (including the Sync function) to Part 2.

Part

Here you'll assign Patches to Parts, and set the parameters that affect Part level, Pan, and Pitch.



Patch Select I11 - 88, C11 - 88, A11 - 88, B11 - 88

This selects and assigns Patches to Parts.

First, select a Group: either [INT], [CARD], [PRESET A], or [PRESET B]. Then select a Patch with the [VALUE] knob, or by using the [INC][DEC] buttons. Press the [VALUE] knob and turn it to step through one Bank at a time: I11, I21, I31, etc.
Patch Number, Name and the included Tones are displayed.
When selecting Part 8, the parameter changes to read Rhythm Set Select, and your choices become INT, CRD, P - A, and P - B.

* **There must be a DATA card in the DATA card slot before the JD - 990 will let you select CARD.**

Part Level 0 — 100

This sets the level of each Part. Primarily you will use this to adjust the volume balance between Parts in the Performance.

Part Pan L50 — 50R

This sets the pan for each Part, its location in the stereo field. A value of L50 indicates a "hard" left pan; 50R is "hard" right.
Each Patch also has its own pan setting, and this will be added to this pan value to determine the actual position in the stereo field.

Pitch Coarse -- 48 — +48

This transposes the reference pitch for each Part in semi-tone steps (4 octaves up or down). A value of zero means no change.

PERFORM + F2 (Part)

Pitch Fine — 50 — +50

This makes fine adjustments to the pitch set in Pitch Coarse. The pitch can be raised or lowered 50 cents in 1 cent steps (where 100 cents is a semi-tone, therefore covering the range between Pitch Coarse settings).

Voice Reserve 0 — 24

This sets the number of voices that you can count on being available for each Part if you try to play more than the 24-voice limit. A Patch is made up of Tones, each of which uses one or more voices, so remember to multiply the number of Tones by the number of voices it takes to play that Tone. However, the total number of voices reserved for each Part can't exceed 24.

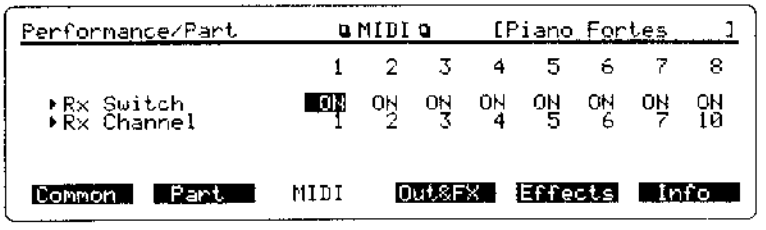
Hint

Judicious assignment of the Voice Reserves for a Part can prevent "voice stealing" when the JD - 990 is connected to a sequencer and playing a full ensemble.

Part	Instrument	Number of Tones (Voices) Used	×	Minimum Number of Notes to be Played	=	Voice Reserve
1	Bass	Tone A, B (2 Voices)		1		2
2	Organ	Tone A — D (4 Voices)		2		8
3	Guitar	Tone A, B (2 Voices)		2		4
4	Lead	Tone C, D (2 Voices)		2		4
8	Rhythm	Tone A (1 Voice)		6		6
						Total 24

MIDI

You can switch MIDI reception on/off and select a MIDI channel for each Part.



Rx Switch OFF, ON

When the switch is OFF, the Part does not receive any MIDI messages. When the switch is ON, the Part receives MIDI messages on its channel.

This parameter synchronizes to the Part Select buttons in Performance play mode. When one of the Part Select buttons is off, you can see that the Rx Switch of the Part is also "OFF."

Hint	It may be a good idea to use Part Select buttons to turn MIDI reception on/off in Play mode, and use these soft switches in edit mode.

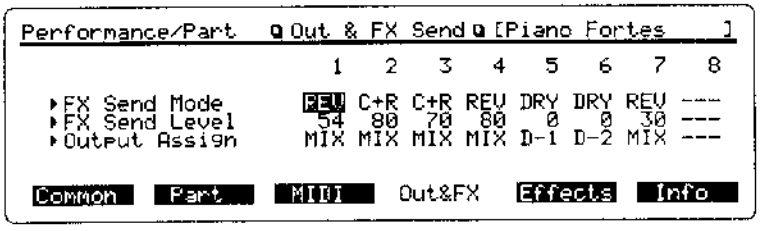
Rx Channel 1 — 16

You can set the MIDI Receive channel for each Part.

Each Part receives MIDI messages on its channel. If you don't want a Part to be active, turn the Rx Switch off.

Out & FX Send

This setting controls the type (and parameters) of the effects applied to each Part, and where the sound of each Part is to be output.



* **The Effects Send of Part 8, however, conforms to the setting made in the Rhythm Set mode. Or, all notes (instrument sounds) will be output from the MIX - OUT jack when you set the System Setup / Rhythm Output (☞ P. Sys – 5) to "ALL - MIX."**

FX Send Mode DRY, REV, C+R, D+R

Select the effect to be applied to the Part.

DRY : No effects

REV : Reverb sound is mixed with the direct sound and output.

C+R : Chorus and reverb sound is mixed with the direct sound and output.

D+R : Delay and reverb sound is mixed with the direct sound and output.

* **This setting is in effect when Output Assign (☞ P. Pfom – 9) is set to MIX, and has no effect when set to DIR - 1/2/3.**

Note If you want chorus only (or delay only) on a Part, select C+R or D+R above and set the Reverb Level to 0. The only problem this might cause is that it will also 'zero out' the reverb on all other Parts which are set for it in Effect mode.

FX Send Level 0 — 100

Sets the output level independently for each Part. Higher values, of course, mean higher levels.

* **This setting is in effect when Output Assign (☞ P. Pfom – 9) is set to MIX, and has no effect when set to DIR - 1/2/3.**

Output Assign MIX, D - 1, D - 2, D - 3

This specifies the audio output jack for each Part.

On Part 8, however, each note outputs from the corresponding output jack according to the Out&FX Send of the selected Rhythm Set and Rhythm Output included in System Setup.

MIX : Outputs a mix of the direct sound and the effects sound from MIX OUT.

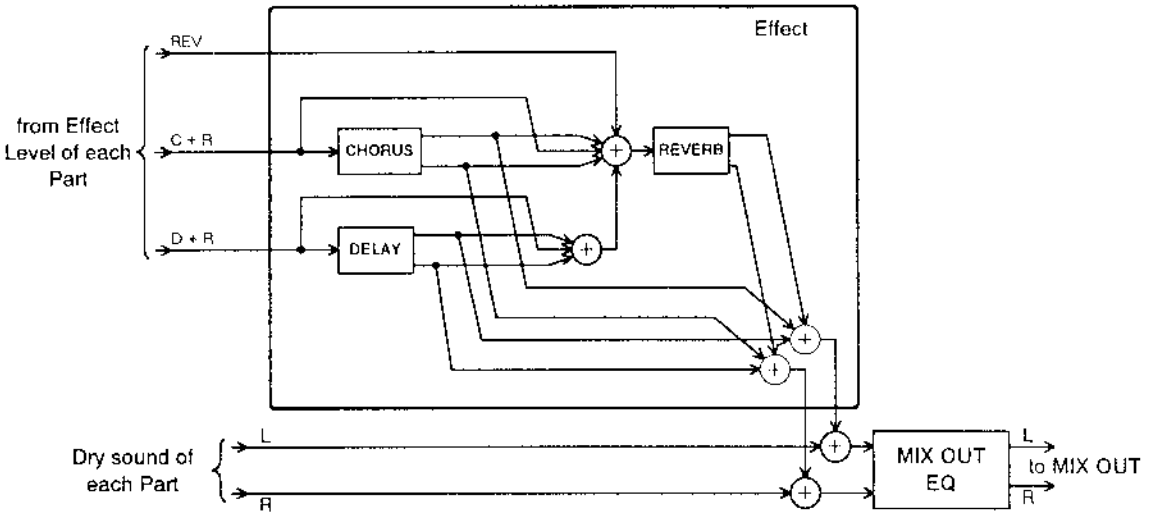
D - 1/2/3 : Outputs direct sound only from the corresponding DIRECT OUT jack. This is useful when you want to run the JD - 990 sounds through external effects units rather than use any of the internal effects.

* **Note that If no cable is attached to the specified jack, no audio will be output anywhere.**

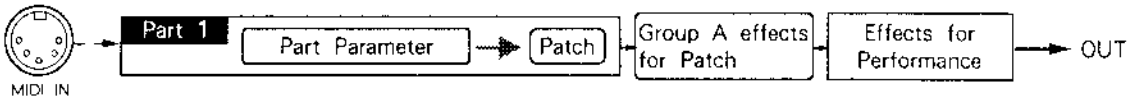
Effects

The effects you can use for a Performances include chorus, delay and reverb. You can apply them to the Performance as a whole, and tailor the settings individually for each Part.

Effects are organized as shown below. The direct sound and effect sound specified in FX Send Mode/Level (☞ P. Pfom – 8) for each Part is mixed and output from the MIX OUT jack.



With the exception of Part 1, the effects settings made to a Patch in Patch Mode are all zeroed out when the Patch is used in a Performance. Only the settings for Group A effects remain valid when Part 1 is used in a Performance; Group B effects are zeroed out.



* You can "jump" to the Out&FX Send screen by pressing [F1](Out&FX).

Chorus

This sets the parameters for Performance chorus.

* **These parameters work the same as the ones for Patch Mode effects, so refer to page Ptch – 80.**

Delay

This sets the parameters for Performance delay.

* **See page Ptch – 82 for more about the identical delay parameters used in Patch Mode.**

Reverb

Sets the parameters for reverb applied to the Performance.

* **Identical to Patch reverb parameters, see page Ptch – 87.**

MEMO

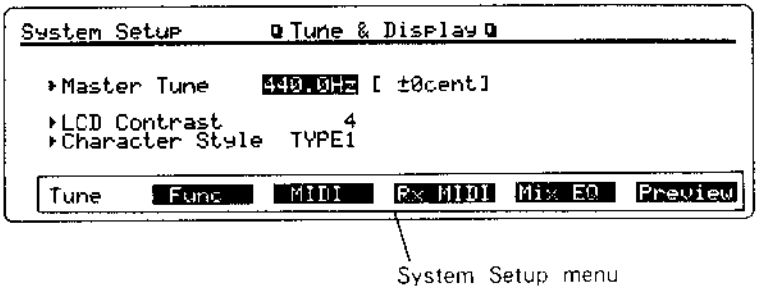
Chapter 5

Parameter Reference

—SYSTEM SETUP—

SYSTEM SETUP

Press the [SYSTEM SETUP] button in Performance, Patch, or Rhythm Set play mode to make settings, and when you're done, press [EXIT] to return to Play mode. The settings you make here are valid even if you turn the JD - 990 off and on again, because they are automatically stored in memory (unlike other types of editing, which must be saved).



System Setup menu

System Setup is divided into six basic units.

Tune These parameters relate to the overall tuning and the display of the JD - 990.

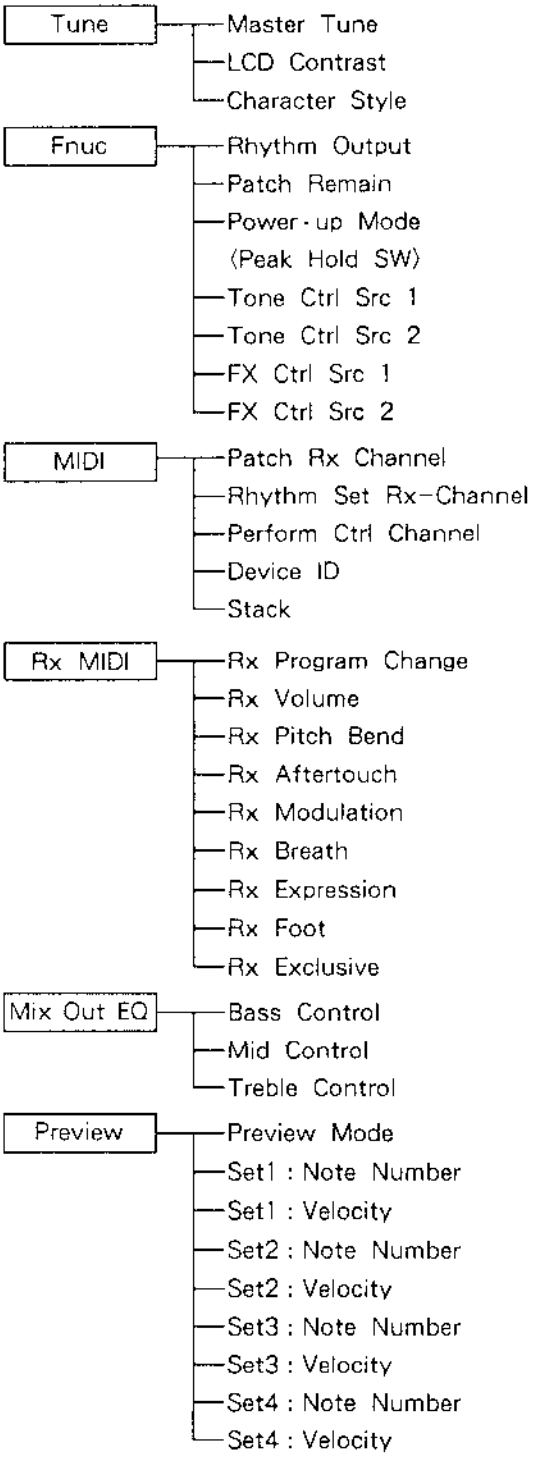
Function These parameters relate to a variety of other functions.

MIDI These are settings for a variety of MIDI parameters.

Rx MIDI These are the on/off settings for the reception of various MIDI messages.

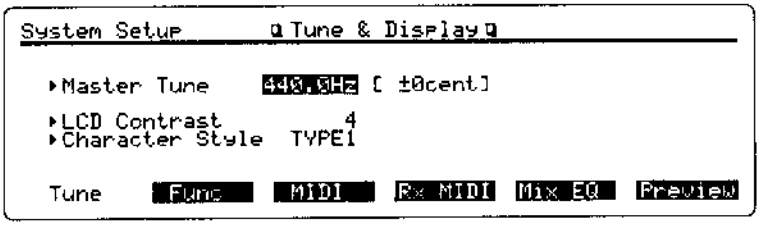
Mix Out EQ These are equalizer settings for MIX OUT.

Preview You can play a note of the current sound by pressing the [VOLUME] knob.


Tune
Master Tune
LCD Contrast
Character Style
Fnuc
Rhythm Output
Patch Remain
Power-up Mode
(Peak Hold SW)
Tone Ctrl Src 1
Tone Ctrl Src 2
FX Ctrl Src 1
FX Ctrl Src 2
MIDI
Patch Rx Channel
Rhythm Set Rx-Channel
Perform Ctrl Channel
Device ID
Stack
Rx MIDI
Rx Program Change
Rx Volume
Rx Pitch Bend
Rx Aftertouch
Rx Modulation
Rx Breath
Rx Expression
Rx Foot
Rx Exclusive
Mix Out EQ
Bass Control
Mid Control
Treble Control
Preview
Preview Mode
Set1 : Note Number
Set1 : Velocity
Set2 : Note Number
Set2 : Velocity
Set3 : Note Number
Set3 : Velocity
Set4 : Note Number
Set4 : Velocity

Tune

These parameters relate to the overall tuning and the display of the JD - 990.



Master Tune 427.5 Hz — 452.9 Hz [– 50 — +50 cents]

This adjusts the overall tuning of the JD - 990 using the A4 key as a pitch standard. The pitch may be adjusted from 427.5 Hz to 452.9 Hz in 1 cent steps. The display will show both frequency and cents.

* **The factory default setting for this setting is A4 = 440.0 Hz.**

Note	One cent is 1/100 of a chromatic step. Thus, the number of Hz (hertz) in one cent will depend on the pitch. Since the basic unit of musical pitch is the octave, it is usually convenient to set pitch values in cents.

LCD Contrast 1 — 8

This adjusts the contrast of the display. The higher this value the darker the screen.

Character Style TYPE1, TYPE2

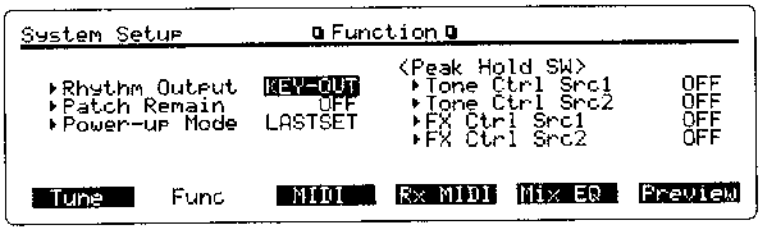
This parameter sets the character style displayed in Play modes.

TYPE1 : Bold character

TYPE2 : Normal character

Function

These parameters relate to a variety of functions.



Rhythm Output KEY - OUT, ALL - MIX

You can select where the sounds are output while in Performance mode or Rhythm Set mode.

KEY - OUT : The output assignment for each note set in Rhythm Set/Out&FX is effective.

ALL - MIX : All Notes are output from the MIX OUT jacks. Notes set to DIR1 , DIR2 or DIR3 in Rhythm Set / Out&FX are re-assigned to "EQ:MIX."

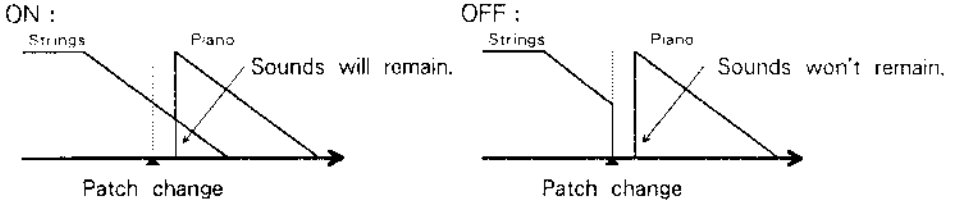
* **When set to ALL - MIX, Rhythm Set EQ may subtly alter the sound of notes assigned to "DIR1" or "DIR2" or "DIR3."**

Hint	It may be useful when listening to the Rhythm Set sounds using headphones, or outputting the sound from the MIX OUT jacks temporarily.

Patch Remain OFF, ON

With Patch Remain ON, when a Patch or Rhythm Set is changed, the previous Patch or Rhythm Set can still be heard for as long as the keys are held. The previous Patch or Rhythm Set can also be heard even after release if it has a long release time. For example, it is possible to play piano with strings sound (previous Patch) continuing as the diagram shows below.

With Patch Remain OFF, the previous Patch or Rhythm Set is muted when a Patch change occurs.



* Effects settings change when program (Patch or Rhythm Set) change occurs regardless of Patch Remain setting.

SYSTEM + F2 (Func)

Power - up Mode LASTSET, DEFAULT

This sets the way the display will be set upon power-up.

LASTSET : The Patch, Rhythm Set, and Performance that were selected just before the last power down will be displayed when you next power up.

DEFAULT : You will see Patch I11, the INT Rhythm Set, and Performance I01 every time you power up.

<Peak Hold SW>

Generally, Hold-On messages affect only note-on messages, not other messages (eg. Control Change etc). Thus, you cannot hold the sounds added by Aftertouch when you use Aftertouch control.

On the JD - 990, however, the values which are changed by certain MIDI messages (eg Control Change messages, etc.) can be held when you return the controller to the former state after receiving a Hold-On message.

Tone Ctrl Src1 OFF, ON

If this set to ON, the JD - 990 will hold the current value of the MIDI messages set at Tone Ctrl Src1 (☞P. Ptch – 11) in Patch/Common/General when receiving a Hold-On message.

Tone Ctrl Src2 OFF, ON

If this set to ON, the JD - 990 will hold the current value of the MIDI messages set at Tone Ctrl Src2 (☞P. Ptch – 11) in Patch/Common/General when receiving a Hold-On message.

FX Ctrl Src1 OFF, ON

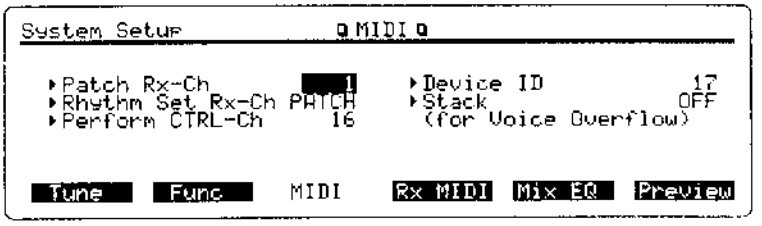
If this set to ON, the JD - 990 will hold the current value of the MIDI messages set at Source1 (☞P. Ptch – 70) in Patch/Effects/FX CTRL when receiving a Hold-On message.

FX Ctrl Src2 OFF, ON

If this set to ON, the JD - 990 will hold the current value of the MIDI messages set at Source2 (☞P. Ptch – 70) in Patch/Effects/FX CTRL when receiving a Hold-On message.

MIDI

These are settings for a variety of MIDI parameters.



Patch Rx - Ch (Patch Mode Receive Channel) 1 — 16, PART, OFF

This sets the MIDI channel over which MIDI messages from an external device are received in Patch mode.

1—16 : The numbers refer to the number of the MIDI channel.

PART : This sets the same MIDI channel of the Part selected in Performance edit. It is convenient to use this for a quick edit, and to listen to the Patch in Performance mode.

OFF : The JD - 990 won't respond to MIDI messages in Patch mode.

Rhythm Set Rx - Ch (Rhythm Set Mode Receive Channel)

1 — 16, PATCH, PART8, OFF

This sets the MIDI channel over which MIDI messages from an external device are received in Rhythm Set mode.

1—16 : The numbers refer to the number of the MIDI channel.

PATCH : Means the same channel as above Patch Rx - Ch.

PART8 : Receives the MIDI messages over the same channel as Part 8 in Performance mode.

OFF : No response to MIDI messages in Rhythm Set mode.

Perform CTRL - Ch (Performance Control Channel) 1 — 16, OFF

This sets the channel for Performance switching to a particular Performance receive channel. Performance switching takes precedence on the Part Receive channel that matches this channel setting.

＊ The Receive channel for each Part is set during Performance editing.

SYSTEM + F2 (MIDI)

Device ID (Device ID Number) 17 — 32

SysEx (System Exclusive) messages may be exchanged between devices that have the same Device ID number, so set this to the proper number for the device with which you want to exchange data.

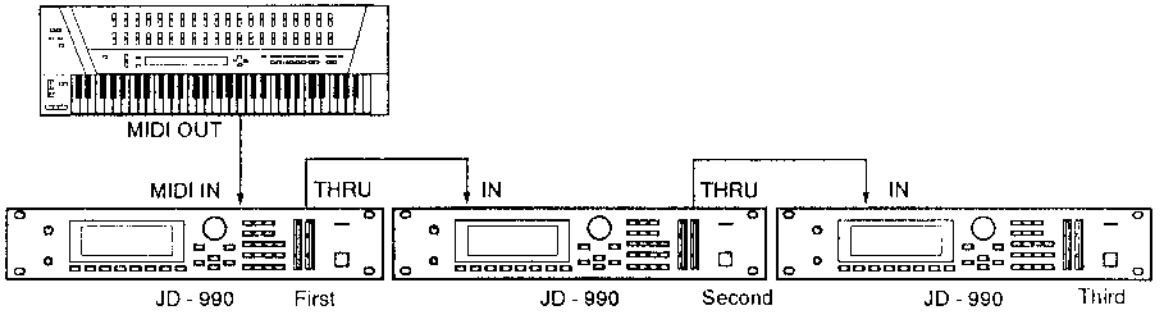
Hint If you have a complex multi-device setup that you are controlling from a sequencer, you will be able to send device-specific SysEx messages by properly setting this for each device.

Stack OFF, 1 of 2, 2 of 2, 1 of 3, ..., 8 of 8

The Stack function lets you increase the number of simultaneous voices available to you by adding more JD - 990s to the setup (up to a maximum of eight).

For example, if you had three JD - 990s you would connect them like this:

Making the Connection



〈 Setting 〉

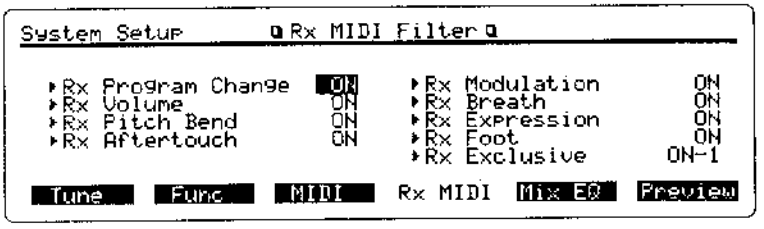
	Setting	Order of notes to be played					
First JD - 990	1 of 3	→ 1	4	7	10	13	:
Second JD - 990	2 of 3	→ 2	5	8	11	:	.
Third JD - 990	3 of 3	→ 3	6	9	12	:	:

When set to OFF, the Stack function is turned off and each received note message is played in order.

* **The Stack function does not work when using the Rhythm Set or using a Patch whose Solo or Portamento Is On. In this case, the Rhythm Set will sound from the first JD - 990 and the Patch will sound from the second one.**

Rx MIDI

You can switch reception of MIDI messages on and off.



Rx Program Change (Program Change Receive Switch) OFF, ON

This turns response to Program Change messages on and off. ON means they are received, and OFF means the JD - 990 does not respond to Program Change messages.

Rx Volume (Volume Receive Switch) OFF, ON

This turns response to Volume messages on and off. ON means they are received, and OFF means the JD - 990 does not respond to Volume messages.

Rx Pitch Bend (Pitch Bend Receive Switch) OFF, ON

This turns response to Pitch Bend messages on and off. ON means they are received, and OFF means the JD - 990 does not respond to Pitch Bend messages.

Rx Aftertouch (Aftertouch Receive Switch) OFF, ON

This turns response to Aftertouch messages on and off. ON means they are received, and OFF means the JD - 990 does not respond to Aftertouch messages.

Rx Modulation (Modulation Receive Switch) OFF, ON

This turns response to Modulation messages on and off. ON means they are received, and OFF means the JD - 990 does not respond to Modulation messages.

Rx Breath (Breath Receive Switch) OFF, ON

This turns response to Breath Controller messages on and off. ON means they are received, and OFF means the JD - 990 does not respond to Breath Controller messages.

SYSTEM + F3 (Rx MIDI)

Rx Expression (Expression Receive Switch) OFF, ON

This turns response to Expression messages on and off. ON means they are received, and OFF means the JD - 990 does not respond to Expression messages.

Rx Foot (Foot Receive Switch) OFF, ON

This turns response to Foot messages on and off. ON means they are received, and OFF means the JD - 990 does not respond to Foot messages.

Rx Exclusive (Exclusive Receive Switch) OFF, ON - 1, ON - 2

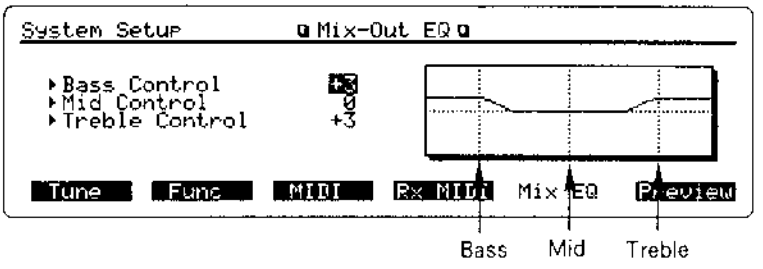
This parameter sets how Exclusive messages from an external device will be received. Exclusive messages can be received in the normal play status except during Bulk Dump or ROM Play.

OFF : JD - 990 does not respond to Exclusive messages.
ON - 1 : Exclusive messages are received only if they have the same device ID number as the one set to "Device ID".
ON - 2 : Exclusive messages are received regardless of the Device ID number.

*** For details of data transmission and reception, refer to "Roland Exclusive Messages" (☞ P. App. – 42) and "Exclusive Communications" (☞ P. App. – 48).**

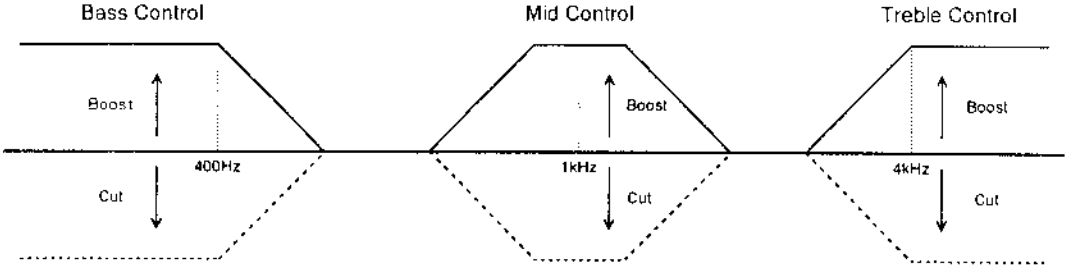
Mix Out EQ

These are equalizer settings for MIX OUT.



Bass Control – 5 — +5
Mid Control – 5 — +5
Treble Control – 5 — +5

This parameter lets you fine tune the frequency characteristics of the audio output from the MIX OUT jacks before it gets to the external playback device (stereo or amplifier). You can apply boost (positive values) or cut (negative values) in three frequency regions: Bass at around 400 Hz, Mid at around 1 kHz, and Treble at around 4 kHz.

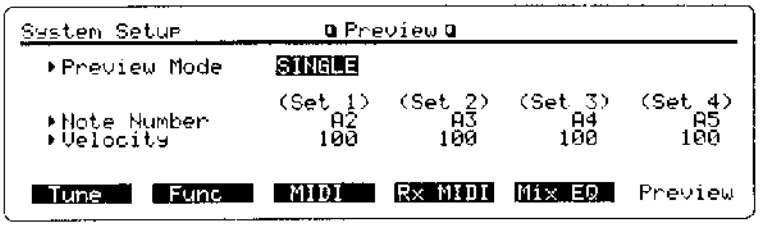


*** This has no effect on the audio output from the DIRECT OUTs.**

Hint	This is not the same thing as the equalizer settings that are part of each Patch. This parameter acts just like the bass/mid/treble controls of a mixer, and effects all Patches

Preview

With Preview, you can play a test note for each Part in a Performance, Patch, or Rhythm sound in a Performance by pressing the [VOLUME] knob; you don't have to have a MIDI controller connected. You set the pitch and volume of this test note with these Preview mode settings.



The Preview functions are as follows.

	Play Screen	Common or Effect Screens	other than Common or Effect Screen
Performance	No sound		Sounds the selected Part
Patch	Sounds the selected Patch		
Rhythm	Sounds only the notes in the System setting		Sounds the selected note

*** When in the Rhythm/Effects Out & FX Send screen, currently selected note will sound.**

Preview Mode SINGLE, CHORD

You can set it so that up to four notes sound when you press the Volume knob.

SINGLE : The notes sound one at a time.

CHORD : The notes sound all at once.

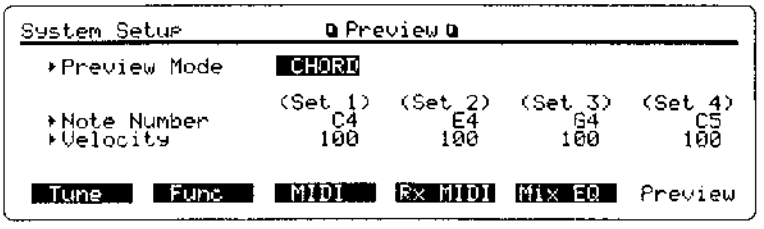
Note Number (Preview Note Number) OFF, A0 — C8

This sets the pitch of the output note in terms of its Note Number. When Preview Mode is set to SINGLE, setting this to OFF skips over that note and plays the next one. If all notes are set to OFF, the Preview option is disabled.

Velocity (Preview Velocity) 1 — 127

This sets the velocity for the output note.

(Example) Playing a C chord.



Chapter 6

Parameter Reference

— EFFECTS ON/OFF —

EFFECTS ON/OFF

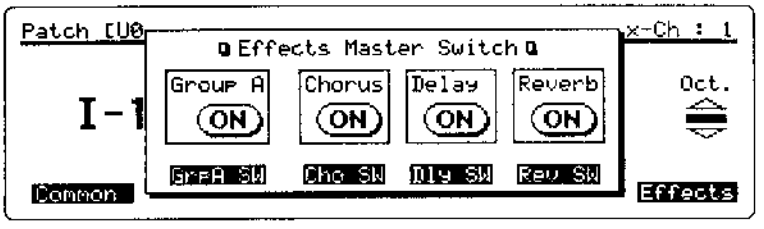
This setting is a switch to turn the built-in effects (Group A/chorus/delay/reverb) on and off, regardless of the particular effects settings in the Patch or Performance.

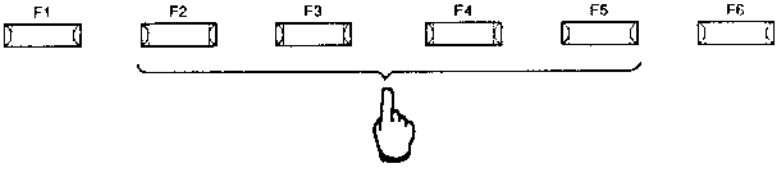
[EFFECTS ON/OFF] is a window function, so you can "pop it up" over any screen to check on the on/off status of the effects. (This is called "opening a window.") Press [EXIT] to "close" the window and return to the previous screen.

Procedure

1. Press [EFFECTS ON/OFF] to open the window.

The on/off status of the four effects is displayed.





2. To change the on/off status of an effect, just press the function button corresponding to the effect you want to change.

3. When you're finished making settings, press [EXIT] to close the window.

Hint	For example, you can turn off the internal reverb and use only outboard reverb. Or, you can turn off reverb and chorus to clean up the sound if you're playing in a gymnasium or some other very "live" venue. You might also find it handy for turning off all effects and listening to just the raw sound of the Patch.

Chapter 7

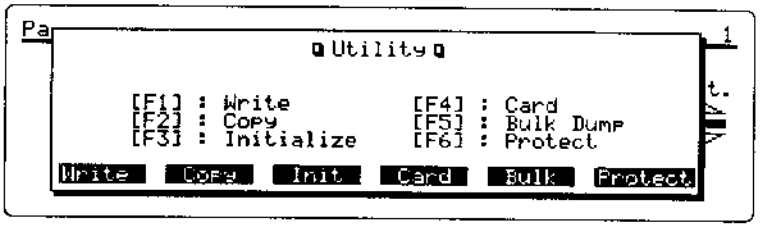
Parameter Reference

— UTILITY —

UTILITY

The operations here include writing edited Patch or Performance data into memory, and copying or transmitting data.

[UTILITY] is a window function, so you can pop it up over any screen to perform these operations. (This is called "opening a window.") Press [EXIT] to "close" the window and return to the previous screen.



There are six basic Utility functions.

Write Writes and saves edited Patch, Performance and Rhythm Set data to Internal memory or a DATA card.

Copy Makes a temporary copy of part of the data for a Patch, Performance, or Rhythm Set. You can specify what you want to copy: just the Tones, or effects settings, etc.

Initialize This initializes the temporary Patch, Performance, or Rhythm Set data to the JD - 990's standard initial settings or the factory default settings.

Card This performs a number of DATA card operations, such as collecting DATA card data and copying it to Internal memory, or formatting a new DATA card for use on the JD - 990.

Bulk Dump This organizes data in Internal memory or on a DATA Card and outputs it from the MIDI OUT connector using SysEx messages. You can specify whether you want to send out Patch data only, or temporary data only, etc.

Protect This makes it impossible to write new data to Internal memory, to prevent accidentally overwriting data already there.

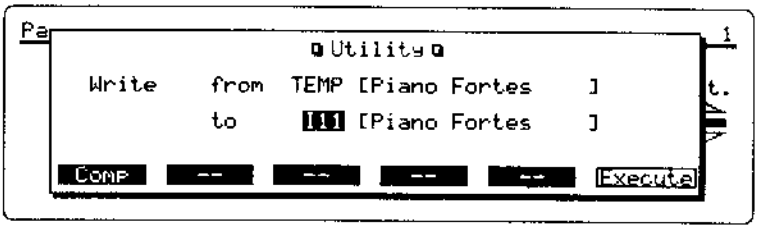
Write

Patch or Performance data that you have edited is stored in a temporary buffer. But this data that you've worked so hard on is all erased when you select a new Patch, or power down. The only way to save it for good is described below.

Procedure

1. Press [UTILITY] to open the Utilities window.

2. Press the [F1](Write) button.
   This screen is basically asking you if it's OK to write the Patch (or Performance, or Rhythm Set) currently in the temporary buffer to the Patch (or Performance, or Rhythm Set) you will select.



3. Use [INT] or [CARD] to specify the Group, and the [VALUE] knob or [INC][DEC] buttons to specify the Number of the copy destination. In Patch mode, you can skip through Bank numbers only by pressing the [VALUE] knob as you turn it.

4. Press [F6](Execute) to perform the Write operation.

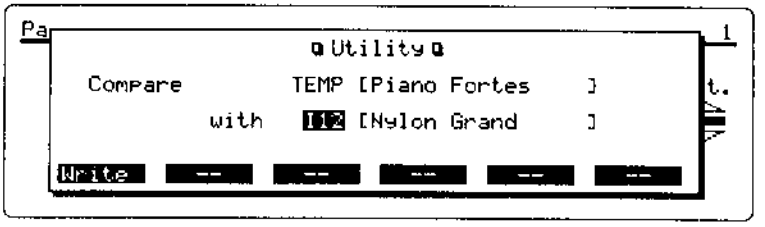
   * **If you decide partway through that you want to cancel this operation, press [EXIT]. You'll be returned to the Utilities Menu screen.**

   If you specify Internal memory as the Write destination and Write Protect is ON (like a "safety" switch that prevents writing to memory, see page Util – 21), press [F6](Execute) and the Write Protect screen will appear. Set it "OFF," and then press [EXIT]. The unit will return to the display for the Write operation.
   Press [F6](Execute) again, the Write operation will be executed.

5. When it's finished, "Completed" will be displayed in the screen and you'll be returned to the screen you were in before the Write operation. If you press [EXIT] you'll be returned to the Utility Menu. One more press of the [EXIT] button closes the Utility window.

The Compare Function

You can check on the sound of the Patch at the proposed Write location by pressing the [F1] (Comp) button in Step 3 above. (The [F1] button works like this only during Patch Writes.)



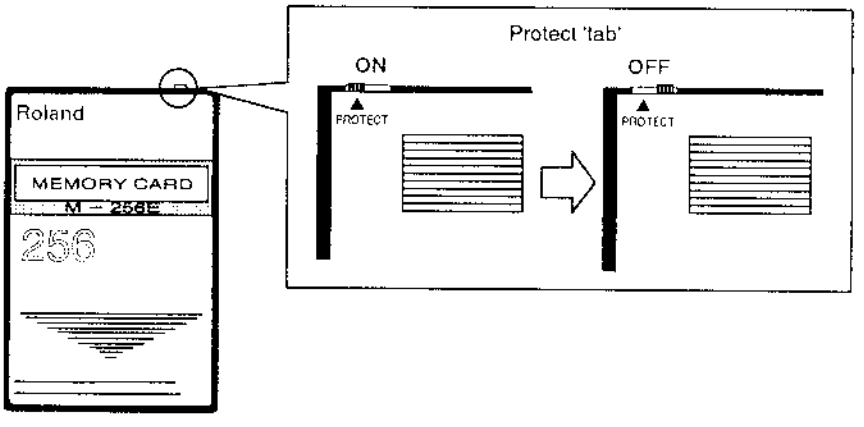
Press [F1] (Write) once more to return to the Write screen. The Compare function lets you listen to a Patch before you overwrite it, so you can decide if in fact you want to keep it.

Memory Protect

The JD - 990 has a Protect function which, when ON, prevents you from overwriting data in Internal memory or on a DATA card. You have to make the effort to turn this OFF before you can write, and it is hoped that this will prompt you to think about what you're doing and not erase something by accident.

The Protect switch for Internal memory is turned ON and OFF with the [F6](Protect) button in the Utility window (☞P. Util – 21).

DATA cards have a physical Protect 'tab' on one side which you slide to the ON and OFF position.



If you try to perform a Write operation while Protect is ON, you'll see the message "DATA Card Write Protect" before the JD - 990 returns you to the previous screen. In that case, change the Protect setting and try again.

Copy

Makes a temporary copy of part of the data for a Patch, Performance, or Rhythm Set. Once you get the hang of using the Copy function, editing will be a breeze.

Procedure

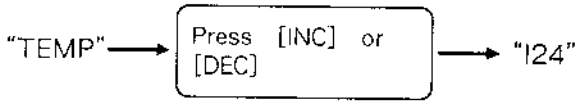
1. Press [UTILITY] to open the Utility window.
2. Press [F2](Copy).
3. Select the appropriate function button for the parameter you want to Copy.
4. Fill in the blanks for "Copy From:" and "Copy To:"
5. Press [F6](Execute) to carry out the Copy operation. When done, you'll see the "Completed" message and be returned to the previous screen.

   If you decide you want to bail out at any time, just press [EXIT] to get back to the Utility window.

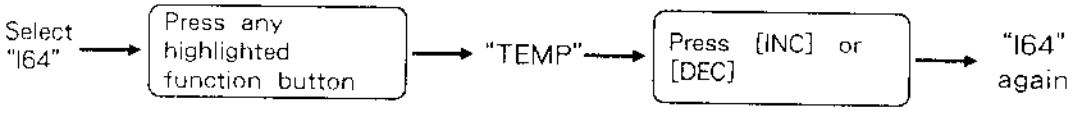
   * In Step 4, you can check on the "Copy From:" sound by just playing a note.
   * See the Write operation (☞P. Util – 3) for how to save the copied material to memory.
   * When you insert the DATA card for the JV-80 into the DATA card slot, you cannot select "CARD" as "Copy From."

Notes

When you first press [F2](Copy) to enter the Copy screen, the "Copy From:" entry will say "TEMP" (Temporary). From here, press the [INC] or [DEC] button to change this to the number of the Patch or Performance currently in the Temporary buffer.



Once you have selected the "Copy From:" point, press any of the highlighted function buttons to copy it over to the "TEMP" buffer. At this point, you can press [INC] or [DEC] to return to the previous Patch or Performance number.



By copying over to the "TEMP" buffer, you can listen to and compare the sounds before and after copying.

[PERFORM] + [UTILITY] + [F2] (Copy)

Performance Copy

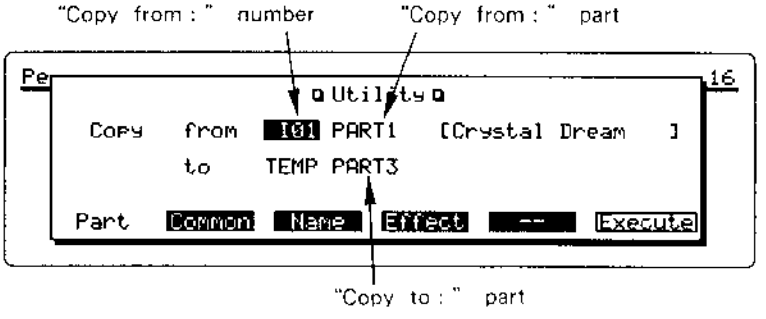
In Performance mode, this lets you copy the Parts, Common, Name, Effects, or whatever, to a Performance in the Temporary buffer.

Procedure

[F1](Part) This copies only the following Part parameters: Part, MIDI, Out & FX Send.

Move the cursor over to Performance Number or Part Number with the CURSOR [◀] [▶] buttons, then select "Copy From:" with the [VALUE] knob or [INC][DEC] buttons. You can select from Performances stored in [INT], [CARD], [PRESET A], or [PRESET B] Groups. Press [F1](Part) again at this point if you want to reset the Performance to "TEMP."

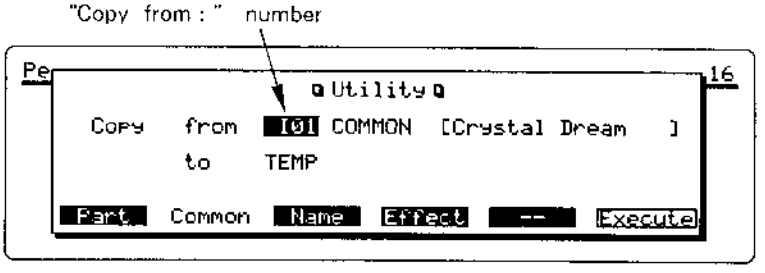
If you want to change the "Copy To:" point, move the cursor down with the CURSOR [▼] button, and select with the [VALUE] knob or [INC][DEC] buttons.



*** You can also copy between Parts in the Temporary buffer.**

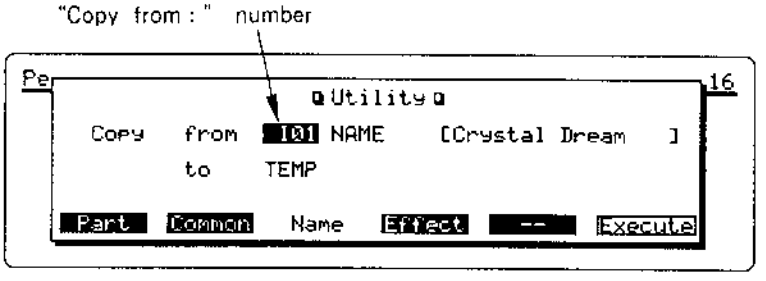
[F2](Common) This lets you copy the Performance Common parameter.

Select "Copy From:" with the [VALUE] knob or [INC][DEC] buttons. You can select from Performances stored in [INT], [CARD], [PRESET A], or [PRESET B] Groups. Press [F2](Common) again at this point if you want to reset the Performance Number back to "TEMP."
The "Copy To:" point (Destination) is the Performance in the Temporary buffer.



[F3](Name) This lets you copy the Performance Name.

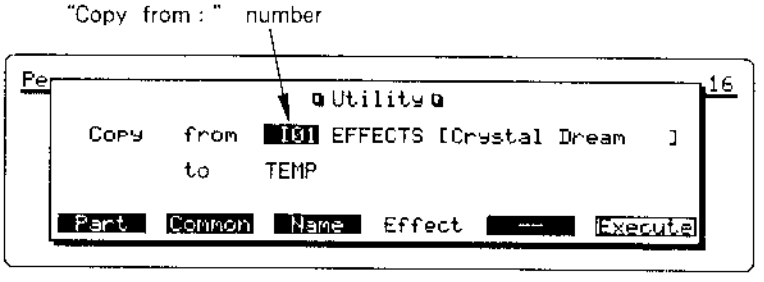
Select "Copy From:" with the [VALUE] knob or [INC][DEC] buttons. You can select from Performances stored in [INT], [CARD], [PRESET A], or [PRESET B] Groups. Press [F3](Name) again at this point if you want to reset the Performance Number back to "TEMP."
The "Copy To:" point (Destination) is the Performance in the Temporary buffer.



PERFORM + UTILITY + F2 (Copy)

[F4](Effect) This lets you copy Performance effects settings for chorus, reverb, and delay.

Select the "Copy From:" Performance Number with the [VALUE] knob or [INC][DEC] buttons. You can select from Performances stored in [INT], [CARD], [PRESET A], or [PRESET B] Groups. Press [F3](Effect) again at this point to reset the Performance Number back to "TEMP."
The "Copy To:" point (Destination) is the Performance in the Temporary buffer.



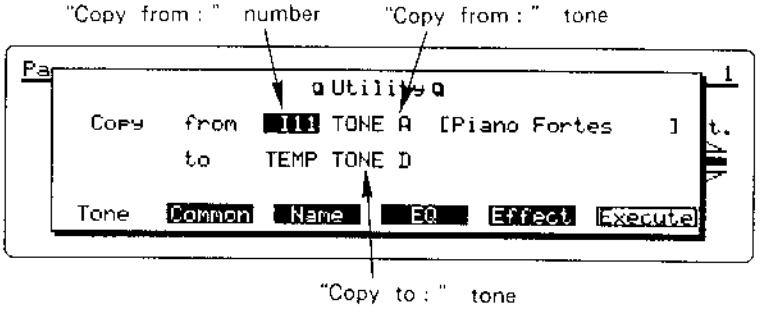
PERFORM + UTILITY + F2 (Copy)

Patch Copy

Patch Copy lets you copy Tone, Common, Name, EQ, Effect All, Effect A, and Effect B settings from any Patch to the Patch in the Temporary buffer.

[F1](Tone) Your choices here in Tone Copy include WG, TVF, TVA, and LFO&CTL.

Select a Patch Number or Tone Number with the CURSOR [◀][▶] buttons, then set that number with the [VALUE] knob or [INC][DEC] buttons. You can select from Patches stored in [INT], [CARD], [PRESET A], or [PRESET B] Groups. Press [F1](Tone) again at this point to reset the "Copy From:" Patch Number to "TEMP."
If you want to change the "Copy To:" point, move the cursor down with the CURSOR [▼] button, and select with the [VALUE] knob or [INC][DEC] buttons.



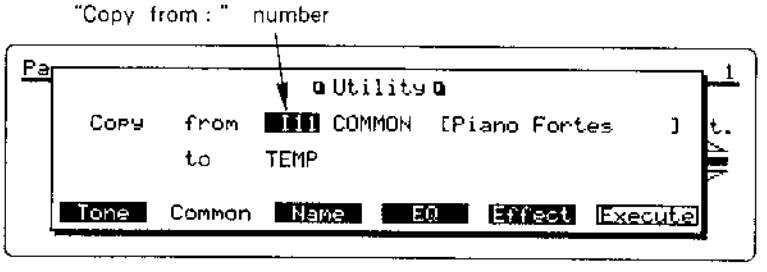
* **You can also copy between Tones in the Temporary buffer.**

Copy

PERFORM + UTILITY + F2 (Copy)

[F2](Common) This lets you copy Patch Common parameters.

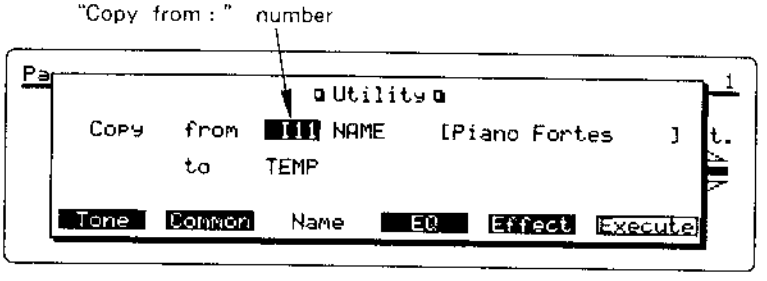
Select the "Copy From:" Patch Number with the [VALUE] knob or [INC][DEC] buttons. You can select from Patches stored in the [INT], [CARD], [PRESET A], or [PRESET B] Groups. Press [F2](Common) again at this point to reset the Patch Number to "TEMP."
The "Copy To:" point (Destination) is the Patch in the Temporary buffer.



* **Name and EQ can also be copied in this manner, since they are included in the Common parameters.**

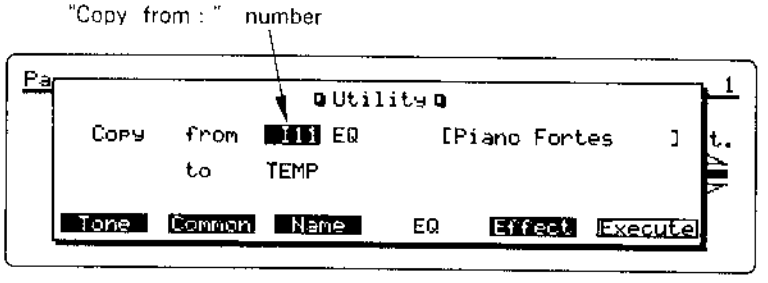
[F3](Name) This lets you copy a Patch Name.

Select the "Copy From:" Patch Number with the [VALUE] knob or [INC][DEC] buttons. You can select from Patches stored in the [INT], [CARD], [PRESET A], or [PRESET B] Groups. Pressing [F3](Name) again resets the Patch Number to "TEMP."
The "Copy To:" destination is the Patch in the Temporary buffer.



[F4](EQ) This lets you copy Patch Common EQ settings.

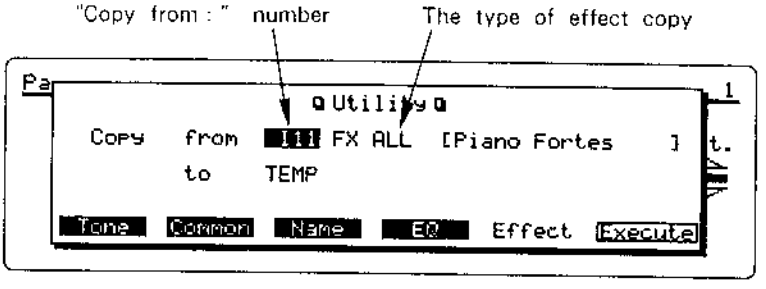
Select the "Copy From:" Patch Number with the [VALUE] knob or [INC][DEC] buttons from among the Patches stored in the [INT], [CARD], [PRESET A], or [PRESET B] Groups. Pressing [F4](EQ) again resets the Patch Number to "TEMP."
The "Copy To:" destination is the Patch in the Temporary buffer.



[F5](Effect) This lets you copy Patch effects settings.

You have three different kinds of Effect Copy from which to choose: FX ALL (all effects), FX A (Group A effects only), or FX B (Group B effects only). Selecting FX ALL will copy both Groups A and B, as well as the effects balance and control settings.

Select the "Copy From:" Patch Number and type of Effect Copy with the [VALUE] knob or [INC][DEC] buttons. You can select from Patches stored in the [INT], [CARD], [PRESET A], or [PRESET B] Groups. Press [F5](Effect) again to reset the Patch Number to "TEMP."
The "Copy To:" destination is the Patch in the Temporary buffer.



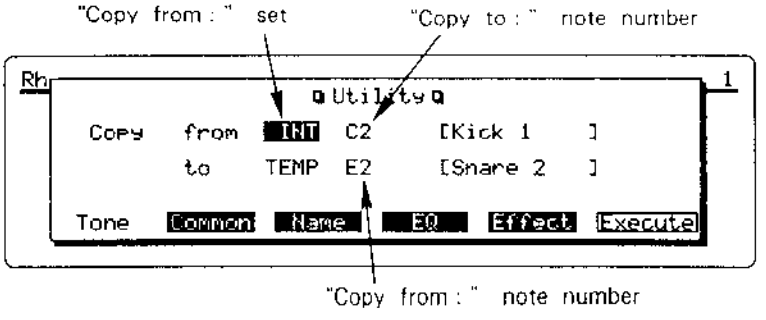
PERFORM + UTILITY + F2 (Copy)

Rhythm Set Copy

This function copies Tone, Common, Name, EQ, and Effects from any Rhythm Set you like to the Rhythm Set in the Temporary buffer.

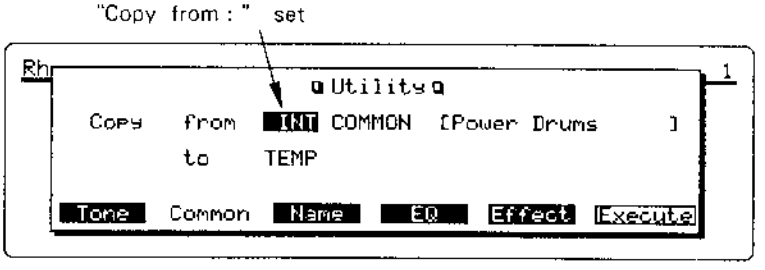
[F1](Tone) Your choices here in Tone Copy include Key WG, Key TVF, Key TVA, KeyCTRL, and Out&FX Send of Effects.

Select Rhythm Set or Note Number with the CURSOR [◀][▶] buttons, then select the "Copy From:" percussion sound with the [VALUE] knob or [INC][DEC] buttons. You can select from among the Rhythm Sets stored in [INT], [CARD], [PRESET A], or [PRESET B]. Press [F1](Tone) again at this point to reset the "Copy From:" Patch Number to "TEMP."
If you want to change the "Copy To:" point, move the cursor down with the CURSOR [▼] button, and select with the [VALUE] knob or [INC][DEC] buttons.



[F2](Common) This lets you copy Rhythm Set Common parameters.

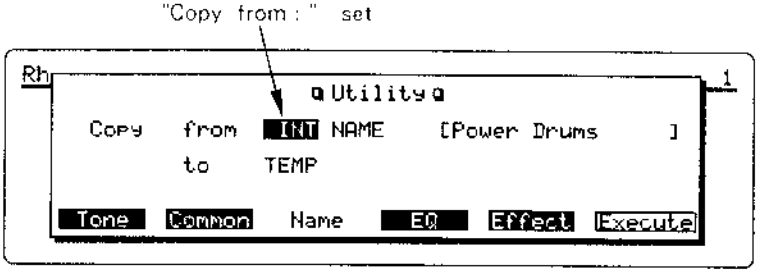
Select the "Copy From:" Rhythm Set with the [VALUE] knob or [INC][DEC] buttons from among the Rhythm Sets stored in [INT], [CARD], [PRESET A], or [PRESET B]. Press [F2](Common) again to reset the Rhythm Set to "TEMP."
The "Copy To:" destination is the Rhythm Set in the Temporary buffer.



* **Name and EQ can also be copied in this manner, since they are Common parameters.**

[F3](Name) This lets you copy a Rhythm Set Name.

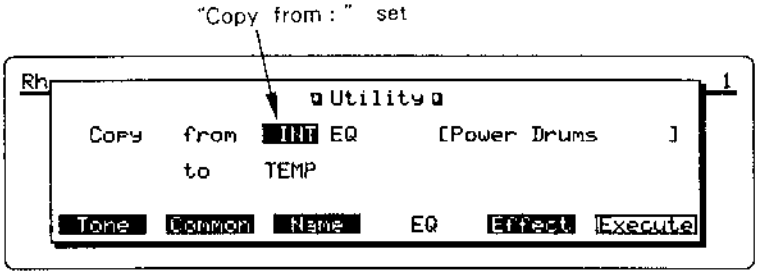
Select the "Copy From:" Rhythm Set with the [VALUE] knob or [INC][DEC] buttons from among those stored in [INT], [CARD], [PRESET A], or [PRESET B]. Pressing [F3](Name) again resets the Rhythm Set to "TEMP."
The "Copy To:" destination is the Rhythm Set in the Temporary buffer.



PERFORM + UTILITY + F2 (Copy)

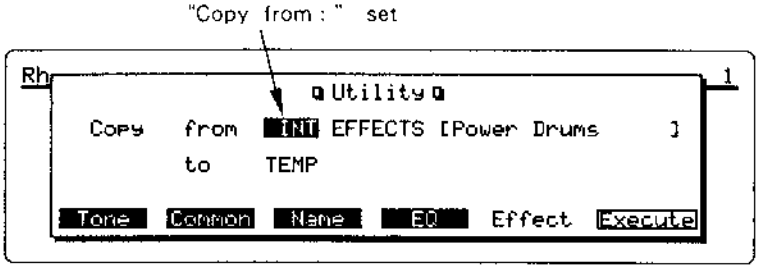
[F4](EQ) This lets you copy Rhythm Set EQ settings.

Select the "Copy From:" Rhythm Set with the [VALUE] knob or [INC][DEC] buttons from among the Rhythm Sets stored in [INT], [CARD], [PRESET A], or [PRESET B]. Pressing [F4](EQ) again resets the Rhythm Set to "TEMP."
The "Copy To:" destination is the Rhythm Set in the Temporary buffer.



[F5](Effect) This lets you copy Rhythm Set effects settings (effects controller, chorus, delay, reverb).

Select the "Copy From:" Rhythm Set with the [VALUE] knob or [INC][DEC] buttons. You can select from Rhythm Sets stored in the [INT], [CARD], [PRESET A], or [PRESET B] Groups. Pressing [F5](Effect) again resets the Rhythm Set to "TEMP."
The "Copy To:" destination is the Rhythm Set in the Temporary buffer.



Initialize

This function resets the data in the Temporary buffer to either the standard initial settings, or the factory defaults.

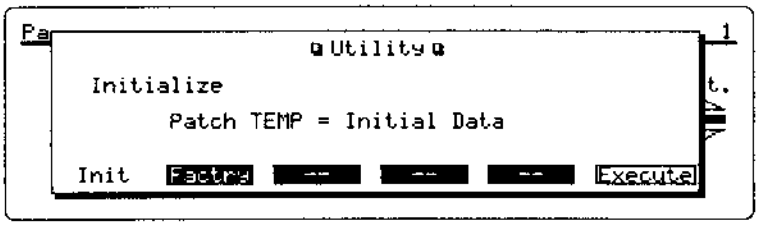
Procedure

1. Press [UTILITY] to open the Utility window.

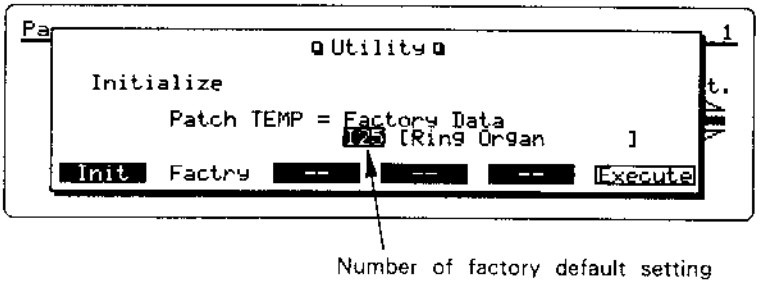
2. Press [F3](Init).

3. The data you want to bring to the Temporary buffer is selected with a function button.

[F1](Init) This resets all parameters to their standard initial values. This can be handy when creating new sounds to erase all previous settings so you can start with a clean slate.
For Rhythm Sets, you can initialize each individual note (percussion sound).



[F2](Factory) This inserts the original factory data. You can select a single Patch or Performance to initialize with the [VALUE] knob or the [INC][DEC] buttons. With Rhythm Sets, you reset all notes to their factory settings as a group.



4. When you're ready to carry out the Initialization, press [F6](Execute). When you see "Completed" in the screen, you'll be returned to the screen just before initializing. To cancel the operation at any time, press [EXIT].

* **For a detailed description of what the Initial settings are, see the summary on page App. – 15.**

Card

This function copies Internal data to a DATA Card (Roland M - 256E: sold separately) and so lets you swap data between DATA Cards and Internal memory.

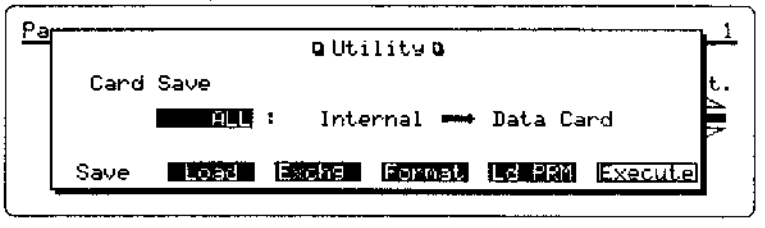
Procedure

1. Press [UTILITY] to open the Utility window.
2. Press [F4](Card).
3. Select the function button corresponding to the menu item you want to perform.

[F1](Save) Internal → Card — Copies Internal data to a DATA Card. Select the type of data to transfer from among those listed below with the [VALUE] knob or [INC][DEC] buttons.

[F2](Load) Card → Internal — Copies DATA Card data to Internal memory. Select the type of data to transfer from among those listed below with the [VALUE] knob or [INC][DEC] buttons.

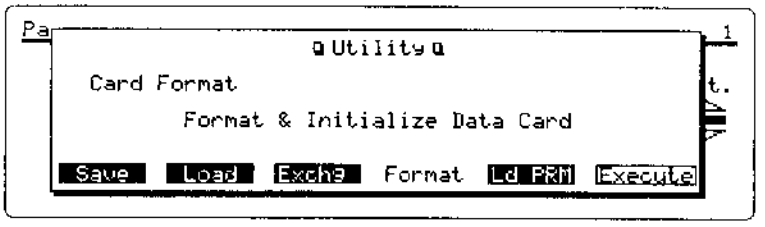
[F3](Exchg) Internal ⟷ Card — Exchange Internal data with a DATA Card data. Select the type of data to transfer from among those listed below with the [VALUE] knob or [INC][DEC] buttons.



Parameter	Meaning
ALL	includes System Setup data, 16 Performances, 64 Patches, and 1 Rhythm Set.
PERFORM	includes the 16 Performances only.
PATCH	includes the 64 Patches only.
RHYTHM	includes one Rhythm Set only.

[F4](Format) Format

This function prepares new DATA Cards (or DATA Cards used by other machines) so that the JD - 990 can use them. It does this by writing special formatting data onto the Card.

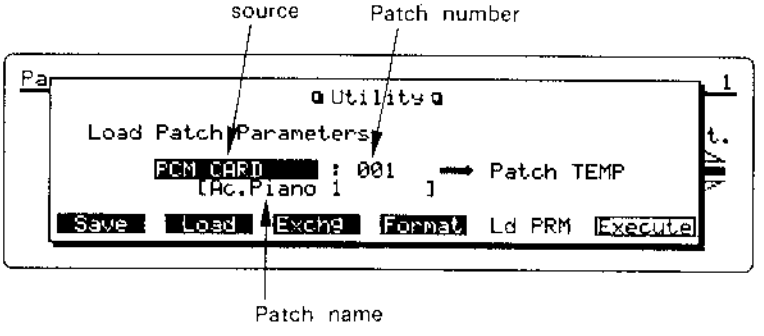


You can select the Load Parameter function (assigned to [F5](Ld PRM)) only when in the Utility window in Patch mode.

[F5](Ld PRM) Load Parameter

Some PCM Cards or Expansion Boards (e.g. for JV - 80) contain the Patch data. This function copies this kind of data to the temporary buffer.

Select Source or Patch number with the CURSOR [▲], [▼], [◀] and [▶] buttons, then set it with the [VALUE] knob or [INC][DEC].



PCM CARD :Loads Patch data within a PCM card.
EXP BOARD/JV :Loads Patch data for the JV - 80 within an Expansion board.
EXP BOARD/JD :Loads Patch data for the JD - 990 within an Expansion board.

4. When you're ready to execute, press [F6](Execute). When the JD - 990 is finished formatting the disk, the word "Completed" will appear and then you'll be returned to the previous screen.

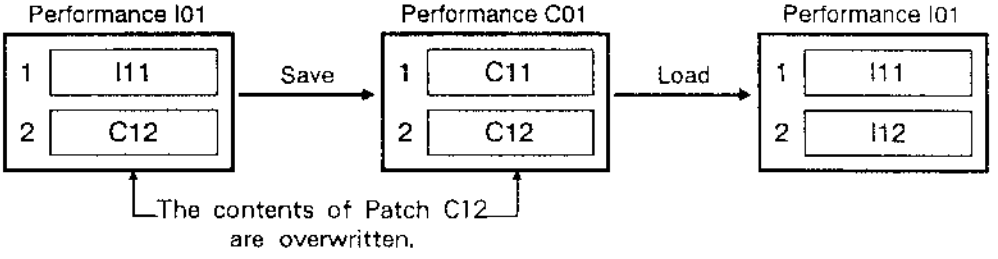
If you want to cancel the formatting at any point, press [EXIT].

* **If you are trying to write something to a DATA Card (i.e., all the above operations except [F2](Load) and [F5](Ld PRM)), make sure the Protect tab is set OFF first. Otherwise, you'll just get a momentary "DATA Card Write Protect" message in the display. If that happens, take the Card out, reset the Protect tab, and try again.**

UTILITY + F4 (Card)

Note You can create a Performance on the JD - 990 by combining Patches from Internal memory and a DATA Card. However, a few remarks are in order concerning the following situation which you might encounter when you try to do an [F1](Save) ALL or [F2](Load) ALL.

(Example) Let's assume you have Performance I01 with Part 1 set to (Internal) Patch I11 and Part 2 set to (DATA Card) Patch C12.
Now, when you perform an [F1](Save) ALL, this Performance is stored as "C01" on the DATA Card. The Patch for Part 1 changes to C11, and that for Part 2 is stored as C12, as before.
However, the Patch has been copied from Internal memory to the Card by performing ALL, so the C12 Patch settings on the Card have now been overwritten.



Similarly, when you perform an [F2](Load) ALL to combine Internal and DATA Card Patches into a single Performance, the contents of the Patches you have selected for a Part will be modified.

The way to avoid this kind of problem when you want to save Performance settings is to use a Bulk Dump, as described on page Util – 19.

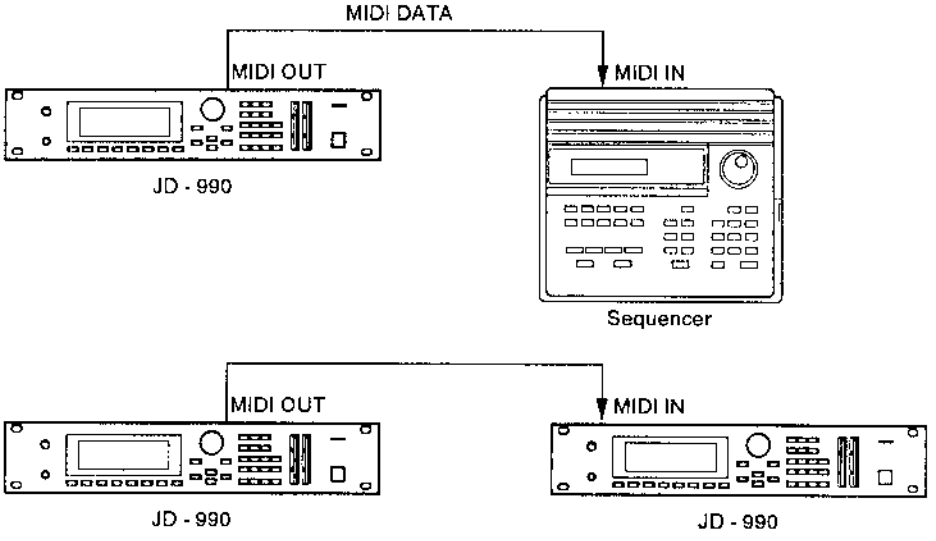
* **This problem only occurs when you try to Save or Load ALL.**

Bulk Dump

This sends Internal or DATA Card data in the form of SysEx messages to an external sequencer or other device. This is useful for overwriting JD - 990 song performance settings with Bulk Data that you drop in at the beginning of the song data, or for saving data to an external device as a backup.

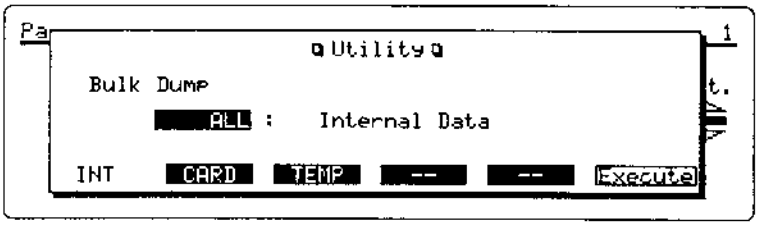
Connections

Hook things up as shown to connect the JD - 990 to an external sequencer or a second JD - 990.



Procedure

1. Press [UTILITY] to open the Utility window.
2. Press [F5](Bulk).
3. Select a menu by pressing the appropriate function button.



UTILITY + F5 (Bulk)

[F1](INT) Transmits the data in Internal memory. Select the type of data from among those listed below with the [VALUE] knob or [INC][DEC] buttons.

[F2](CARD) Transmits the data on a DATA Card. Select the type of data to transfer from among those listed below with the [VALUE] knob or [INC][DEC] buttons.

Parameter	Meaning
ALL	transmits System Setup data for the specified storage (Internal or Card), plus 16 Performances, 64 Patches, and 1 Rhythm Set.
PERFORM	transmits the 16 Performances only.
PATCH	transmits the 64 Patches only.
RHYTHM	transmits the one Rhythm Set only.

* **When you insert a DATA card which is formatted for the JD-800 into the card slot, the selected data will be automatically converted to Exclusive data for the JD-990, and then transmitted.**

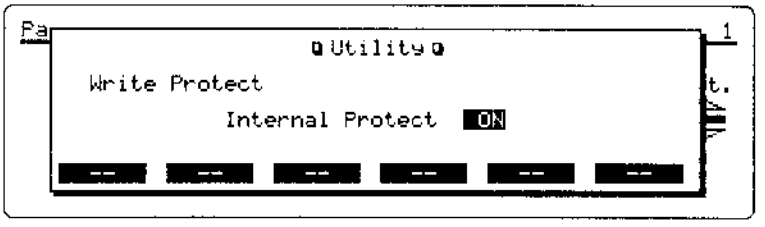
[F3](TEMP) Transmits the Temporary data for the current mode.

4. When you've made all the settings and are ready to send, press [F6](Execute). The JD-990 will display the word "Completed" when it's done and return you to the previous screen.

If you want to cancel the transmission at any point, press [EXIT].

Write Protect

Turning Write Protect ON prevents you from writing any data to Internal memory so as to prevent accidental erasures or overwriting of the data that's already there. OFF cancels the Write Protect setting and enables saving to Internal memory.



Turn Write Protect ON and OFF with the [VALUE] knob or [INC][DEC] buttons.

You will need to turn it OFF before you can write or copy anything to Internal memory, including Bulk Dumps. Write Protect is always ON when the JD - 990 is first powered up.

If you try to write to memory when Write Protect is ON, you'll get the following display: "Internal RAM Write Protect," and the JD - 990 will return you to the screen before the Write operation. If you want to go ahead with the Write, change the setting to OFF and try again.

MEMO

Chapter 8

Parameter Reference

— APPENDIX —

Sound Test (Preview)

You can push the [VOLUME] knob to play a few test notes on the JD - 990 without being hooked up to a MIDI controller (keyboard or drum pad). This is called the Preview function.

What sound you will play depends on the mode you're in.

	Play Screen	Common or Effect Screens	other than Common or Effect Screen
Performance	No sound		Sounds the selected Part
Patch	Sounds the selected Patch		
Rhythm	Sounds only the notes in the System setting		Sounds the selected note

The Preview setting of the System Setup menu is where you specify up to four note numbers (pitches) and velocities that will be played when you hit the Preview ([VOLUME]) knob. You can also specify whether to play all notes at once or in sequence, and what the sequence will be. See Parameter Reference page Sys -- 12 for more about how to make these settings.

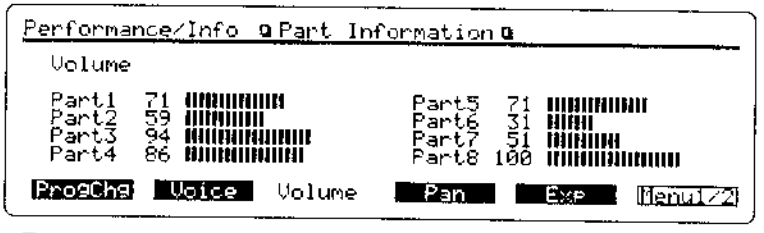
Monitoring the MIDI Data Stream (Part Information)

This lets you view the MIDI messages for each Part as they are received in Performance mode. It's easy to investigate the cause of MIDI problems or to monitor MIDI messages with this function.

Procedure

1. Press [F6](Info) in the Performance Play screen.

2. Press a function button ([F1] — [F5]) corresponding to the type of MIDI message you want to display. Pressing [F6](Menu1/2) again switches you to a second menu of choices, which can also be specified by pressing a function button. Every press of the [F6] button switches you between Menu 1 and Menu 2.



The current value with graphic bar (except Program Change and Hold 1).

	[F1]	[F2]	[F3]	[F4]	[F5]
Menu 1	Program Change	Voice	Volume	Pan	Expression
Menu 2	Pitch Bend	Aftertouch	Modulation	Breath	Hold 1

3. Press [EXIT] to return to Play mode.

Displayed MIDI Data

Menu 1

[F1](ProgChg) Program Change U001 — U128, P001 — P128

Real time display of the program number and name of the Patch or Rhythm Set selected for each Part.

[F2](Voice) Voice Information 0 — 24

Displays the number of voices currently being used by each Part.

PERFORM + F6 (Into)

[F3](Volume) 0 — 127

Real time display of the Volume messages (Control Change #7) for each Part.

[F4](Pan) 0 — 127

Real time display of the Pan messages (Control Change #10) for each Part. In the display, 0 indicates hard left, 64 center, and 127 a hard right pan.

[F5](Exp) Expression 0 — 127

Real time display of the Expression messages (Control Change #11) for each Part.

Menu2

[F1](P.Bend) Pitch Bend – 64 — +63

Real time display of all Pitch Bend messages for each Part.

[F2](After) Aftertouch 0 — 127

Real time display of the Aftertouch messages for each Part.

[F3](Mod) Modulation 0 — 127

Real time display of the Modulation messages (Control Change #1) for each Part.

[F4](Breath) 0 — 127

Real time display of the Breath Controller messages (Control Change #2) for each Part.

[F5](Hold - 1) ON, OFF

Real time display of Hold 1 messages (Control Change #64) for each Part.

Returning to Factory Default Settings

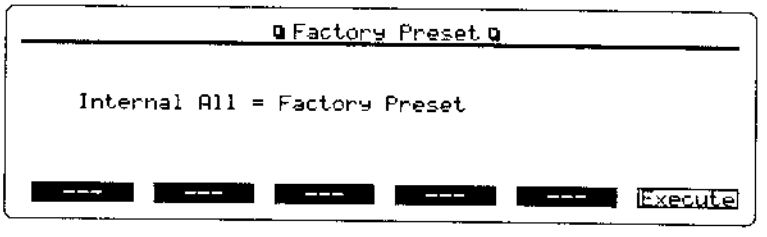
It is possible to reset all the data in memory (System Setup, Performance, Patch, Rhythm Set) to their original presets; the way they were when the JD - 990 was shipped from the factory.

* **Returning to factory default settings also involves erasing all data currently stored in Internal memory.**

Procedure

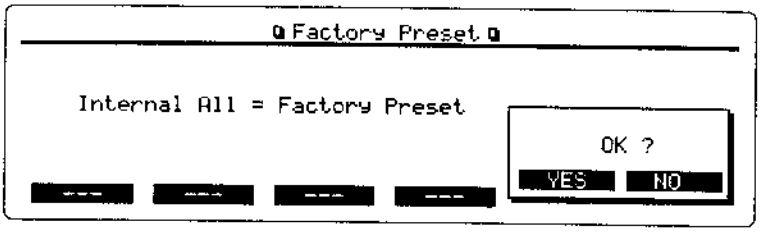
1. Go to the Play screen for either Performance, Patch, or Rhythm Set. (If you're in the Edit screen, just press [EXIT] to move to the Play screen.)

2. While holding down the [EXIT] button, press [UTILITY].
   You will see a display like the following, asking you to verify that you want to return to the factory defaults.



3. If you're sure this is what you want to do (remember the warning about erasing all Internal data!), press [F6](Execute). If you want to cancel at this point, press [EXIT] to return to the screen before you started.

   Actually, pressing [F6](Execute) doesn't do anything yet, it just gives you one more chance to change your mind by displaying the "OK?" prompt again.



4. This time, if you're sure you want to go ahead, press the [F5] (YES) button. (To cancel and go back to the prior screen, press [F6](NO).) When you see "Completed" in your screen, all data in Internal memory has been reset to the factory default settings.

Troubleshooting

Error Messages

If you push the wrong button during a procedure or the JD - 990 fails to execute a function properly, you'll see a temporary error message in the screen. This error message will often give you some clues about what you need to do to fix the problem.

Error Messages During Power Up

Internal Battery Low

Cause : The JD - 990's internal backup battery is running low.

What to do : Talk to your nearest Roland Service Center (see the end of this manual) about getting the battery replaced.

Internal Memory Messages

Internal RAM Write Protect

Cause : Internal Write Protect (☞P. Util – 21) is ON.

What to do : Set Write Protect function to OFF.

Internal RAM Read Error

Cause : The JD - 990 has failed in loading the internal memory data.

What to do : Try to load again.

Internal Memory Full

Cause : Internal Patch memory is full.

What to do : Write (store) the data to a DATA Card. Or, initialize unnecessary Patches to increase the free memory capacity. (☞P. Util – 15)

DATA Card Messages

DATA Card Not Ready

Cause : There is no DATA Card in the DATA Card slot, or it is not properly inserted.

What to do : Insert a card or reinsert the card properly.

DATA Card Battery Low

Cause : The DATA Card backup battery is running low.

What to do : Refer to your DATA Card instructions to find out how to install a new (CR2016) battery.

Improper DATA Card

Cause : The DATA Card in the slot has not been formatted, or is formatted for a device other than the JD - 990.

What to do : Format the Card (☞P. Util – 17), or insert one that is compatible with the JD - 990.

DATA Card Read Error

Cause : It is possible that the DATA card is not properly inserted into the slot.

What to do : Make sure that the DATA card is properly inserted and then try the operation again.

DATA Card Write Protect

Cause : DATA Card Protect is ON.

What to do : Set DATA Card Protect to OFF.

DATA Card Read Only (JD - 800 format)

Cause : The DATA Card in the slot has been formatted for the JD - 800. The JD - 990 cannot save data to a DATA Card formatted for the JD - 800.

What to do : Insert a Card formatted for the JD - 990, or re-format the existing one.

JV - 80 DATA Card (Play Only)

Cause : The JD - 990 can only play the data for the JV - 80. (Additional data cannot be stored on this card.)

PCM card messages

PCM Card Not Ready

Cause : There is no PCM Card in the PCM Card slot, or it is not inserted properly.

What to do : Insert a card or reinsert the card properly.

Improper PCM Card

Cause : The PCM Card in the slot is formatted for a device other than the JD - 990.

What to do : Insert a Card that is compatible with the JD - 990.

Parameter Not Exist

Cause : The inserted PCM Card (or installed Expansion Board) does not contain Patch data.

Expansion Board Messages

Expansion Board Not Ready

Cause : There is no Expansion Board in the Expansion Board slot, or it is not installed properly.

What to do : Install an Expansion board or install the existing one properly.

Improper Expansion Board

Cause : The Expansion Board in the slot is formatted for a device other than the JD - 990.

What to do : Insert an Expansion Board that is compatible with the JD - 990.

MIDI Communication messages

Exclusive Address Error

Cause : The address for the received SysEx message is incorrect.

What to do : Check the address of the transmitted data and try the operation again.

Exclusive Check Sum Error

Cause : The check sum for the received SysEx message is incorrect.

What to do : Check the check sum of the transmitted data and try the operation again.

MIDI Buffer Full

Cause : The JD - 990 is receiving MIDI data faster than it can process it.

What to do : Reduce the density of the MIDI message stream coming from the external device.

MIDI Communication Error

Cause : The MIDI cable has been damaged or has become disconnected.

What to do : Check that the cable is connected properly, or try a different one.

Trouble Information

Here are a few things you should know in case you run into a problem while using the JD - 990. If you can't find the cause, or the problem persists, contact your nearest Roland Service Center or your retailer.

No Sound

Is the Volume turned down all the way?

➡ Check the [VOLUME] knob of the JD - 990 and the volume controls on any connected mixers or amps.

Can you hear anything in the headphones?

➡ If so, then the problem may be in the cables connecting the JD - 990 to the amp or mixer. Check connections, swap cables if necessary, and try again.

What is the MIDI Receive Channel set to?

➡ Make sure the MIDI receive channel (☞P. Pfom – 7, P. Sys – 7) of the JD - 990 and the MIDI transmit channel of the connected controller are the same.

Are volume levels for the Tone, Patch, and/or Part set too low?

➡ Check the following parameters and crank them up if necessary: Tone Level (☞P. Ptch – 51), Patch Level (☞P. Ptch – 9), and the Part Level setting in Performance mode (☞P. Pfom – 5).

Is a Tone Mute turned ON?

➡ Check the Mute ON/OFF switch.

Are the Key Range settings correct for each Tone?

➡ Check the Key Range.

Has a Volume or Expression message been received from the external device that caused the volume to be lowered?

➡ Check the MIDI data stream for Volume or Expression messages in the Part Information screen (☞P. App. – 3).

Are the effects settings correct?

➡ Check the Effects ON/OFF Switch (☞P. FX – 2) and effects balance settings.

Plays Incorrect Pitches

Is Master Tune set correctly?

➡ Check the setting (☞P. Sys – 4).

Are the pitch settings for each Tone and Part set correctly?

➡ Check on these too (Tone: ☞P. Ptch – 33, Part: ☞P. Pfom – 5).

Has a Pitch Bend message (that is still in effect) been received from an external controller?

➡ Check the MIDI data stream for Pitch Bend messages in the Part Information screen (☞P. App. – 3).

Cannot Select Patches

Is the MIDI Program Change Receive switch in the MIDI Parameters section turned ON?

➡ If this is turned OFF, the JD - 990 will not respond to Program Change messages transmitted from external devices.

Is the JD - 990 in ROM Play mode or Edit mode?

➡ Press [EXIT] to return to regular Play mode.

No Effects

Are effects parameter settings correct?

➡ In particular, check Effects ON/OFF (☞P. FX – 2), Effects Sequence (☞P. Ptch – 72, 78), and the level setting for each individual effect.

Are Part Output Assign settings correct?

➡ Check on these and change them if necessary (☞P. Ptch – 9).

The JD - 990 doesn't sound properly when you select a waveform from the Expansion Board.

Did you select a Waveform which is triggered backwards on the JV - 80?

➡ The JD - 990 cannot trigger Waves backwards. (When you select these waveforms, the difference in sound is obvious.)

Blank Charts

[PATCH]

PATCH COMMON							
Patch Name	Patch Name						
-							
General							
Level	Pan	A.Feel	Voice	PB.Down	PB.Up	TCS1	TCS2
Key Effects							
Portamento				Solo			
SW	Mode	Type	Time	SW	Legato	Sync	
Structure							
Tone A & B				Tone C & D			
Key Range							
Tone A		Tone B		Tone C		Tone D	
Low	High	Low	High	Low	High	Low	High
Velocity Range							
Tone A			Tone B				
Range	Point	Fade	Range	Point	Fade		
Tone C			Tone D				
Range	Point	Fade	Range	Point	Fade		
EQ							
L-freq	L-gain	M-freq	Mid-Q	M-gain	H-freq	H-gain	
Hz	dB	Hz		dB	Hz	dB	
Octave Up/Down							

PATCH EFFECTS								
Effects Balance								
Dry/FX A : FX B = :								
Effects Control								
Control 1			Control 2					
Source	Dest.	Depth	Source	Dest.	Depth			
Group A Seq/SW			Group B Seq/SW					
→	→	→	→	→				
Distortion			Phaser					
Type	Drive	Level	Manual	Rate	Depth	Reso	Mix	
			Hz	Hz				
Spectrum							Enhancer	
Band1	Band2	Band3	Band4	Band5	Band6	Width	Sens	Mix
Chorus								
Rate	Depth	D-time	Feedback	Level				
Hz		ms	%					
Delay								
Mode	C-tap	C-level	L-tap	L-level	R-tap	R-level	Feedback	
							%	
Reverb								
Type	Pre dly	ER level	HF damp	Time	Level			
	ms		Hz	s				

[RHYTHM SET]

RHYTHM COMMON						
Group	Rhythm Set Name					
General						
Level	Pan	A.Feel	PB.Down	PB.Up	TCS1	TCS2
EQ						
L-freq	L-gain	M-freq	Mid-Q	M-gain	H-freq	H-gain
Hz	dB	Hz		dB	Hz	dB

RHYTHM EFFECTS								
Effects Control								
Control 1			Control 2					
Source	Dest.	Depth	Source	Dest.	Depth			
Chorus								
Rate	Depth	D-time	Feedback	Level				
Hz		ms	%					
Delay								
Mode	C-tap	C-level	L-tap	L-level	R-tap	R-level	Feedback	
							%	
Reverb								
Type	Pre dly	ER level	HF damp	Time	Level			
	ms		Hz	s				

[TONE]

TONES		A	B	C	D
Tone SW					
WG					
Wave	Wave Source				
	Waveform				
	FXM Color				
	FXM Depth				
	Sync Slave SW				
	Tone Delay Mode				
	Tone Delay Time				
Pitch	Pitch Coarse				
	Pitch Fine				
	Pitch Random				
	Pitch KF				
	P-Env Depth				
	Bender SW				
	Velo Sens				
	Time Velo				
	Time KF				
P-Env Form	Time 1				
	Time 2				
	Time 3				
	Level 0				
	Level 1				
	Sus Level				
	Level 3				
TVF					
General	Filter Mode				
	Cutoff Freq				
	Resonance				
	Cutoff KF				
	F-Env Depth				
	Velo Sens				
	Time Velo				
	Time KF				
F-Env Form	Time 1				
	Time 2				
	Time 3				
	Time 4				
	Level 1				
	Level 2				
	Sus Level				
	Level 4				

TONES		A	B	C	D
TVA					
General	Level				
	Pan				
	Pan KF				
	Velo Sens				
	Time Velo				
	Time KF				
Bias	Bias Direction				
	Bias Point				
	Bias Level				
A-Env Form	Time 1				
	Time 2				
	Time 3				
	Time 4				
	Level 1				
	Level 2				
	Sus Level				
LFO & CTL					
General	Velocity Curve				
	Hold Ctrl SW				
LFO1	Waveform				
	Rate				
	Delay				
	Fade				
	Offset				
	Key Trig				
	Pitch Depth				
	TVF Depth				
	TVA Depth				
LFO2	Waveform				
	Rate				
	Delay				
	Fade				
	Offset				
	Key Trig				
	Pitch Depth				
	TVF Depth				
	TVA Depth				
Control 1 & 2 Source 1	Dest 1				
	Depth 1				
	Dest 2				
	Depth 2				
	Dest 3				
	Depth 3				
	Dest 4				
	Depth 4				
Control 1 & 2 Source 2	Dest 1				
	Depth 1				
	Dest 2				
	Depth 2				
	Dest 3				
	Depth 3				
	Dest 4				
	Depth 4				

[RHYTHM SET (Key Setting)]

	Note number	Tone name	Mute group	ENV mode	Mode & Output	Send Level
C2	36					
	37					
	38					
	39					
	40					
	41					
	42					
	43					
	44					
	45					
	46					
	47					
C3	48					
	49					
	50					
	51					
	52					
	53					
	54					
	55					
	56					
	57					
	58					
	59					
C4	60					
	61					
	62					
	63					
	64					
	65					
	66					
	67					
	68					
	69					
	70					
	71					
C5	72					
	73					
	74					
	75					
	76					
	77					
	78					
	79					
	80					
	81					
	82					
	83					
C6	84					
	85					
	86					
	87					
	88					
	89					
	90					
	91					
	92					
	93					
	94					
	95					
C7	96					

[PERFORMANCE]

Common	Number		Name					Sync Part			
Part		1	2	3	4	5	6	7	8		
Part	Patch Select										
	Level										
	Pan										
	Pitch Coarse										
	Pitch Fine										
	Voice Reserve										
Rx MIDI	Rx Switch										
	Rx Channel										
Out & FX Send	Send Mode										
	Send Level										
	Output Assign										

Effects	Chorus				
	Rate	Depth	D-time	Feedback	Level
	Hz		ms	%	

Effects	Delay						
	Mode	G-tap	G-level	L-tap	L-level	R-tap	R-level	Feedback
								%

Effects	Reverb					
	Type	Pre-dly	ER-level	HF-damp	Time	Level
		ms		Hz	s	

[SYSTEM SETUP]

Tune	Master Tune	
	LCD Contrast	
	Character Style	
Function	Rhythm Output	
	Patch Remain	
	Power-up Mode	
	(Peak Hold SW)	----------
	Tone Ctrl Src1	
	Tone Ctrl Src2	
	FX Ctrl Src1	
	FX Ctrl Src2	
MIDI	Patch Rx CH	
	Rhythm Rx CH	
	Ctrl CH	
	Device ID	
	Stack	

Effects On/Off	Group A SW	
	Chorus SW	
	Delay SW	
	Reverb SW	

Rx MIDI	Rx Prog Chg	
	Rx Volume	
	Rx Pitch Bend	
	Rx Aftertouch	
	Rx Modulation	
	Rx Breath	
	Rx Expression	
	Rx Foot	
	Rx Exclusive	
Mix-Out EQ	Bass Control	
	Mid Control	
	Treble Control	
Preview	Preview Mode	
	Note Number 1	
	Velocity 1	
	Note Number 2	
	Velocity 2	
	Note Number 3	
	Velocity 3	
	Note Number 4	
	Velocity 4	

Initial Settings

Patch Data

PATCH COMMON

Patch Name	Patch Name
–	Initial Patch

General

Level	Pan	A-Feel	Voice	PB.Down	PB.Up	TCS1	TCS2
100	0	0	LAST	2	2	MOD	AFT

Key Effects

Portamento				Solo		
SW	Mode	Type	Time	SW	Legato	Sync
OFF	NORMAL	TIME	0	OFF	OFF	OFF

Structure

Tone A & B	Tone C & D
TYPE1	TYPE1

Key Range

Tone A		Tone B		Tone C		Tone D	
Low	High	Low	High	Low	High	Low	High
C – 1	G9	C – 1	G9	C – 1	G9	C – 1	G9

Velocity Range

Tone A			Tone B		
Range	Point	Fade	Range	Point	Fade
ALL	64	0	ALL	64	0
Tone C			**Tone D**		
Range	Point	Fade	Range	Point	Fade
ALL	64	0	ALL	64	0

EQ

L-freq	L-gain	M-freq	Mid-Q	M-gain	H-freq	H-gain
200 Hz	0 dB	1.25 kHz	0.5	0 dB	8 kHz	0 dB

Octave Up/Down

0

PATCH EFFECTS

Effects Balance

Dry/FX A : FX B = 50 : 50

Effects Control

Control 1			Control 2		
Source	Dest.	Depth	Source	Dest.	Depth
MOD	FX-BAL	0	AFT	FX-BAL	0

Group A Seq/SW	Group B Seq/SW
DS/OFF→PH/OFF→SP/OFF→EN/OFF	CH/OFF→DL/OFF→RV/OFF

Distortion

Type	Drive	Level
MELLOW DRIVE	50	50

Phaser

Manual	Rate	Depth	Reso	Mix
800 Hz	1.0 Hz	50	50	50

Spectrum

Band1	Band2	Band3	Band4	Band5	Band6	Width
0	0	0	0	0	0	1

Enhancer

Sens	Mix
50	50

Chorus

Rate	Depth	D-time	Feedback	Level
0.5 Hz	50	10 ms	0 %	50

Delay

Mode	C-tap	C-level	L-tap	L-level	R-tap	R-level	Feedback
NORM	300 ms	50	300 ms	50	300 ms	50	0 %

Reverb

Type	Pre-dly	ER-level	HF-damp	Time	Level
HALL	20 ms	0	10 kHz	2.0 s	50

[TONE(Patch)]

TONES		A	B	C	D
Tone SW		ON	OFF	OFF	OFF
WG					
Wave	Wave Source	INT			
	Waveform	1			
	FXM Color	1			
	FXM Depth	OFF			
	Sync Slave SW	OFF			
	Tone Delay Mode	NORM			
	Tone Delay Time	0			
Pitch	Pitch Coarse	0			
	Pitch Fine	0			
	Pitch Random	0			
	Pitch KF	+100			
	P-Env Depth	0			
	Bender SW	ON			
	Velo Sens	0			
	Time Velo	0			
	Time KF	0			
P-Env Form	Time 1	30			
	Time 2	30			
	Time 3	30			
	Level 0	0			
	Level 1	0			
	Sus Level	0			
	Level 3	0			
TVF					
General	Filter Mode	LPF			
	Cutoff Freq	100			
	Resonance	0			
	Cutoff KF	0			
	F-Env Depth	0			
	Velo Sens	0			
	Time Velo	0			
	Time KF	0			
F-Env Form	Time 1	0			
	Time 2	30			
	Time 3	30			
	Time 4	0			
	Level 1	100			
	Level 2	100			
	Sus Level	100			
	Level 4	0			

TONES		A	B	C	D
TVA					
General	Level	100			
	Pan	0			
	Pan KF	0			
	Velo Sens	0			
	Time Velo	0			
	Time KF	0			
Bias	Bias Direction	UPPER			
	Bias Point	C4			
	Bias Level	0			
A-Env Form	Time 1	0			
	Time 2	30			
	Time 3	30			
	Time 4	0			
	Level 1	100			
	Level 2	100			
	Sus Level	100			
LFO & CTL					
General	Velocity Curve	3			
	Hold Ctrl SW	ON			
LFO1	Waveform	TRI			
	Rate	70			
	Delay	0			
	Fade	0			
	Offset	0			
	Key Trig	OFF			
	Pitch Depth	0			
	TVF Depth	0			
	TVA Depth	0			
LFO2	Waveform	TRI			
	Rate	70			
	Delay	0			
	Fade	0			
	Offset	0			
	Key Trig	OFF			
	Pitch Depth	0			
	TVF Depth	0			
	TVA Depth	0			
Control 1 & 2 Source 1	Dest 1	P-LFO1			
	Depth 1	0			
	Dest 2	P-LFO1			
	Depth 2	0			
	Dest 3	A-LFO1			
	Depth 3	0			
	Dest 4	LFO1-R			
	Depth 4	0			
Control 1 & 2 Source 2	Dest 1	PITCH			
	Depth 1	0			
	Dest 2	P-LFO1			
	Depth 2	0			
	Dest 3	CUTOFF			
	Depth 3	0			
	Dest 4	LEVEL			
	Depth 4	0			

Rhythm Set Data

RHYTHM COMMON	
Group	Rhythm Set Name
	nitial Drum Set

General

Level	Pan	A-Feel	PB.Down	PB.Up	TCS1	TCS2
100	0	0	2	2	MOD	AFT

EQ

L-freq	L-gain	M-freq	Mid-Q	M-gain	H-freq	H-gain
200 Hz	0 dB	1.25 kHz	0.5	0 dB	8 kHz	0 dB

RHYTHM EFFECTS					
Effects Control					
Control 1			Control 2		
Source	Dest.	Depth	Source	Dest.	Depth
MOD	CH-RAT	0	AFT	CH-RAT	0

Chorus

Rate	Depth	D-time	Feedback	Level
0.5 Hz	50	10 ms	0 %	50

Delay

Mode	C-tap	C-level	L-tap	L-level	R-tap	R-level	Feedback
NORM	300 ms	50	300 ms	50	300 ms	50	+10 %

Reverb

Type	Pre dly	ER level	HF damp	Time	Level
HALL1	20 ms	0	10 kHz	2.0 s	50

[TONE(Rhythm Set)]

TONE		A
WG		
Wave	Wave Source	INT
	Waveform	157
	FXM Color	1
	FXM Depth	OFF
	Tone Delay Mode	NORM
	Tone Delay Time	0
Pitch	Pitch Coarse	0
	Pitch Fine	0
	Pitch Random	0
	Pitch KF	0
	P-Env Depth	0
	Bender SW	ON
	Velo Sens	0
	Time Velo	0
	Time KF	0
P-Env Form	Time 1	30
	Time 2	30
	Time 3	30
	Level 0	0
	Level 1	0
	Sus Level	0
	Level 3	0
TVF		
General	Filter Mode	LPF
	Cutoff Freq	100
	Resonance	0
	Cutoff KF	0
	F-Env Depth	0
	Velo Sens	0
	Time Velo	0
	Time KF	0
F-Env Form	Time 1	0
	Time 2	80
	Time 3	40
	Time 4	40
	Level 1	100
	Level 2	100
	Sus Level	0
	Level 4	0

TONE		A
TVA		
General	Level	100
	Pan	0
	Pan KF	0
	Velo Sens	0
	Time Velo	0
	Time KF	0
Bias	Bias Direction	UPPER
	Bias Point	C4
	Bias Level	0
A-Env Form	Time 1	0
	Time 2	40
	Time 3	40
	Time 4	40
	Level 1	100
	Level 2	90
	Sus Level	0
LFO & CTL		
General	Velocity Curve	3
	Hold Ctrl SW	ON
LFO1	Waveform	TRI
	Rate	70
	Delay	0
	Fade	0
	Offset	0
	Key Trig	OFF
	Pitch Depth	0
	TVF Depth	0
	TVA Depth	0
LFO2	Waveform	TRI
	Rate	70
	Delay	0
	Fade	0
	Offset	0
	Key Trig	OFF
	Pitch Depth	0
	TVF Depth	0
	TVA Depth	0
Control 1 & 2 Source 1	Dest 1	P_LFO1
	Depth 1	0
	Dest 2	F_LFO1
	Depth 2	0
	Dest 3	A_LFO1
	Depth 3	0
	Dest 4	LFO1_R
	Depth 4	0
Control 1 & 2 Source 2	Dest 1	PITCH
	Depth 1	0
	Dest 2	P-LFO1
	Depth 2	0
	Dest 3	CUTOFF
	Depth 3	0
	Dest 4	LEVEL
	Depth 4	0

[RHYTHM SET (Key Setting)]

	Note number	Tone name	Mute group	ENV mode	Mode & Output	Send Level
C2	36	Init Key	OFF	NO-SUS	EQ : MIX	0
	37	Init Key	OFF	NO-SUS	EQ : MIX	0
	38	Init Key	OFF	NO-SUS	EQ : MIX	0
	39	Init Key	OFF	NO-SUS	EQ : MIX	0
	40	Init Key	OFF	NO-SUS	EQ : MIX	0
	41	Init Key	OFF	NO-SUS	EQ : MIX	0
	42	Init Key	OFF	NO-SUS	EQ : MIX	0
	43	Init Key	OFF	NO-SUS	EQ : MIX	0
	44	Init Key	OFF	NO-SUS	EQ : MIX	0
	45	Init Key	OFF	NO-SUS	EQ : MIX	0
	46	Init Key	OFF	NO-SUS	EQ : MIX	0
	47	Init Key	OFF	NO-SUS	EQ : MIX	0
C3	48	Init Key	OFF	NO-SUS	EQ : MIX	0
	49	Init Key	OFF	NO-SUS	EQ : MIX	0
	50	Init Key	OFF	NO-SUS	EQ : MIX	0
	51	Init Key	OFF	NO-SUS	EQ : MIX	0
	52	Init Key	OFF	NO-SUS	EQ : MIX	0
	53	Init Key	OFF	NO-SUS	EQ : MIX	0
	54	Init Key	OFF	NO-SUS	EQ : MIX	0
	55	Init Key	OFF	NO-SUS	EQ : MIX	0
	56	Init Key	OFF	NO-SUS	EQ : MIX	0
	57	Init Key	OFF	NO-SUS	EQ : MIX	0
	58	Init Key	OFF	NO-SUS	EQ : MIX	0
	59	Init Key	OFF	NO-SUS	EQ : MIX	0
C4	60	Init Key	OFF	NO-SUS	EQ : MIX	0
	61	Init Key	OFF	NO-SUS	EQ : MIX	0
	62	Init Key	OFF	NO-SUS	EQ : MIX	0
	63	Init Key	OFF	NO-SUS	EQ : MIX	0
	64	Init Key	OFF	NO-SUS	EQ : MIX	0
	65	Init Key	OFF	NO-SUS	EQ : MIX	0
	66	Init Key	OFF	NO-SUS	EQ : MIX	0
	67	Init Key	OFF	NO-SUS	EQ : MIX	0
	68	Init Key	OFF	NO-SUS	EQ : MIX	0
	69	Init Key	OFF	NO-SUS	EQ : MIX	0
	70	Init Key	OFF	NO-SUS	EQ : MIX	0
	71	Init Key	OFF	NO-SUS	EQ : MIX	0
C5	72	Init Key	OFF	NO-SUS	EQ : MIX	0
	73	Init Key	OFF	NO-SUS	EQ : MIX	0
	74	Init Key	OFF	NO-SUS	EQ : MIX	0
	75	Init Key	OFF	NO-SUS	EQ : MIX	0
	76	Init Key	OFF	NO-SUS	EQ : MIX	0
	77	Init Key	OFF	NO-SUS	EQ : MIX	0
	78	Init Key	OFF	NO-SUS	EQ : MIX	0
	79	Init Key	OFF	NO-SUS	EQ : MIX	0
	80	Init Key	OFF	NO-SUS	EQ : MIX	0
	81	Init Key	OFF	NO-SUS	EQ : MIX	0
	82	Init Key	OFF	NO-SUS	EQ : MIX	0
	83	Init Key	OFF	NO-SUS	EQ : MIX	0
C6	84	Init Key	OFF	NO-SUS	EQ : MIX	0
	85	Init Key	OFF	NO-SUS	EQ : MIX	0
	86	Init Key	OFF	NO-SUS	EQ : MIX	0
	87	Init Key	OFF	NO-SUS	EQ : MIX	0
	88	Init Key	OFF	NO-SUS	EQ : MIX	0
	89	Init Key	OFF	NO-SUS	EQ : MIX	0
	90	Init Key	OFF	NO-SUS	EQ : MIX	0
	91	Init Key	OFF	NO-SUS	EQ : MIX	0
	92	Init Key	OFF	NO-SUS	EQ : MIX	0
	93	Init Key	OFF	NO-SUS	EQ : MIX	0
	94	Init Key	OFF	NO-SUS	EQ : MIX	0
	95	Init Key	OFF	NO-SUS	EQ : MIX	0
C7	96	Init Key	OFF	NO-SUS	EQ : MIX	0

Performance Data

Common	Number		Name	Initial Perform		Sync Part		PART	
Part		1	2	3	4	5	6	7	8
Part	Patch Select	I:1	II:1	III:1	III:5	I:1	III:5	III:5	II:1
	Level	100	100	100	100	100	100	100	100
	Pan	0	0	0	0	0	0	0	0
	Pitch Coarse	0	0	0	0	0	0	0	0
	Pitch Fine	0	0	0	0	0	0	0	0
	Voice Reserve	0	0	0	0	0	0	0	0
Rx MIDI	Rx Switch	ON	ON	ON	ON	ON	ON	ON	ON
	Rx Channel	1	2	3	4	5	6	7	10
Out & FX Send	Send Mode	DRY	DRY	DRY	DRY	DRY	DRY	DRY	
	Send Level	0	0	0	0	0	0	0	
	Output Assign	MIX	MIX	MIX	MIX	MIX	MIX	MIX	

Effects

Chorus

Rate	Depth	D-time	Feedback	Level
0.5 Hz	50	10 ms	0 %	50

Delay

MODE	C-tap	C-level	L-tap	L-level	R-tap	R-level	Feedback
NORM	300 ms	50	300 ms	50	300 ms	50	+10 %

Reverb

Type	Pre dly	ER level	HF damp	Time	Level
HALL1	20 ms	0	10 kHz	2.0 s	50

System Setup Data

Tune	Master Tune	440.0
	LCD Contrast	4
	Character Style	TYPE1
Function	Rhythm Output	KEY OUT
	Patch Remain	OFF
	Power-up Mode	LASTSET
	(Peak Hold SW)	----------
	Tone Ctrl Src1	OFF
	Tone Ctrl Src2	OFF
	FX Ctrl Src1	OFF
	FX Ctrl Src2	OFF
MIDI	Patch Rx CH	1
	Rhythm Rx CH	PATCH
	Ctrl CH	16
	Device ID	17
	Stack	OFF

Effects On/Off	Group A SW	ON
	Chorus SW	ON
	Delay SW	ON
	Reverb SW	ON

Rx MIDI	Rx Prog Chg	ON
	Rx Volume	ON
	Rx Pitch Bend	ON
	Rx Aftertouch	ON
	Rx Modulation	ON
	Rx Breath	ON
	Rx Expression	ON
	Rx Foot	ON
	Rx Exclusive	ON
Mix Out EQ	Bass Control	0
	Mid Control	0
	Treble Control	0
Preview	Preview Mode	SINGLE
	Note Number 1	A2
	Velocity 1	100
	Note Number 2	A3
	Velocity 2	100
	Note Number 3	A4
	Velocity 3	100
	Note Number 4	A5
	Velocity 4	100

Parameter Lists

* Parameter marked with " * " are compatible to those in the JD - 800.

Patch Parameters

[Common]

General

Parameter		Display	Values
Patch Name	*	Patch Name	(16 Character ASCII)
Patch Level	*	Patch Level	0 -- 100
Patch Pan		Patch Pan	L50 — 50R
Analog Feel		Analog Feel	0 — 100
Voice Priority		Voice Priority	LAST, LOUDEST
Bend Range Down	*	Bend Range Down	0 — 48
Bend Range Up	*	Bend Range Up	0 — 12
Tone Control Source 1		Tone Ctrl Src1	MOD, AFTER, EXP, BREATH, P.BEND, FOOT
Tone Control Source 2		Tone Ctrl Src2	

Key Effects (Key FX)

Parameter		Display	Values
Portamento Switch	*	〈Portamento〉 Switch	OFF, ON
Portamento Mode	*	〈Portamento〉 Mode	NORMAL, LEGATO
Portamento Type		〈Portamento〉 Type	TIME, RATE
Portamento Time	*	〈Portamento〉 Time	0 -- 100
Solo Switch	*	〈Solo〉 Switch	OFF, ON
Solo Legato	*	〈Solo〉 Legato	OFF, ON
Solo Sync Master		〈Solo〉 Sync Master	OFF, TONE A — D

Structure (Struct)

Parameter	Display	Values
Tone Structure A & B	Tone A & B	TYPE 1 — 6
Tone Structure C & D	Tone C & D	TYPE 1 -- 6

Key Range (K.Range)

Parameter	Display	Values
Tone A Key Range L/H *	A	C-1 — G9
Tone B Key Range L/H *	B	C-1 — G9
Tone C Key Range L/H *	C	C-1 — G9
Tone D Key Range L/H *	D	C-1 — G9

Velocity Range (V.Range)

Parameter	Display	Values
Tone A Velocity Range	Range A	ALL, LOW, HIGH
Tone B Velocity Range	Range B	ALL, LOW, HIGH
Tone C Velocity Range	Range C	ALL, LOW, HIGH
Tone D Velocity Range	Range D	ALL, LOW, HIGH
Tone A Velocity Point	Point A	1 — 127
Tone B Velocity Point	Point B	1 — 127
Tone C Velocity Point	Point C	1 — 127
Tone D Velocity Point	Point D	1 — 127
Tone A Velocity Fade	Fade A	0 — 127
Tone B Velocity Fade	Fade B	0 — 127
Tone C Velocity Fade	Fade C	0 — 127
Tone D Velocity Fade	Fade D	0 — 127

EQ

Parameter	Display	Values
Low Frequency *	Low Freq	200Hz, 400Hz
Low Gain *	Low Gain	-15 — +15dB (1dB step)
Mid Frequency *	Mid Freq	200Hz — 8kHz *1
Mid Q *	Mid Q	0.5, 1.0, 2.0, 4.0, 9.0
Mid Gain *	Mid Gain	-15 — +15dB (1dB step)
High Frequency *	High Freq	4kHz, 8kHz
High Gain *	High Gain	-15 — +15dB (1dB step)

*1 : 200,250,315,400,500,630,800,1k,1.25k,1.6k,2k,2.5k,3.15k,4k,5k,6.3k,8k (Unit : Hz)

Octave Up/Down	-----	-1, 0, +1

[WG]

Wave

Parameter		Display	Values
Wave Source	*	Wave Source	INT, CARD, EXP
Waveform	*	Waveform	1 — 256
FXM Color		FXM Color	1 — 8
FXM Depth		FXM Depth	OFF, 1 — 100
Sync Slave Switch		Sync Slave SW	OFF, ON
Tone Delay Mode		〈Tone Delay〉 Mode	NORMAL, HOLD, K-OFF N, K-OFF D, PLAYMATE
Tone Delay Time		〈Tone Delay〉 Time	0 — 5.0s *2 0 — 254 %

*2 : 0 — 1.0s (10ms step), 1.0 — 3.0 (100ms step)
3.0 — 4.0 (200ms step), 4.0 — 5.0 (500ms step)

Pitch

Parameter		Display	Values
Pitch Coarse	*	Pitch Coarse	− 48 — + 48
Pitch Fine	*	Pitch Fine	− 50 — + 50
Pitch Random	*	Pitch Random	0 — 100
Pitch Key Follow	*	Pitch Key Follow	− 100 — + 200
Pitch Env Depth		Pitch Env Depth	− 12 — + 12
Bender Switch	*	Bender Switch	OFF, ON
< Pitch Env Control >			
Velocity Sensitivity	*	Velocity Sens	− 50 — + 50
Time Velocity Sensitivity	*	Time Velocity Sens	− 50 — + 50
Time Key Follow	*	Time Key Follow	− 10 — + 10

Pitch Envelope Form (EnvForm)

Parameter		Display	Values
Time 1	*	T1	0 — 100
Time 2	*	T2	0 — 100
Time 3	*	T3	0 — 100
Level 0	*	L0	− 50 — + 50
Level 1	*	L1	− 50 — + 50
Sustain Level	*	Ls	− 50 — + 50
Level 3	*	L3	− 50 — + 50

[TVF]

General

Parameter		Display	Values
Filter Mode	*	Filter Mode	LPF, BPF, HPF
Cutoff Frequency	*	Cutoff Freq	0 — 100
Resonance	*	Resonance	0 — 100
Cutoff Key Follow	*	Cutoff Key Follow	− 100 — + 150
TVF Envelope Depth	*	TVF Envelope Depth	− 50 — + 50
< TVF Env Control >			
Velocity Sensitivity	*	Velocity Sens	− 50 — + 50
Time Velocity Sensitivity	*	Time Velocity Sens	− 50 — + 50
Time Key Follow	*	Time Key Follow	− 10 — + 10

TVF Envelope Form (EnvForm)

Parameter		Display	Values
Time 1	*	T1	0 — 100
Time 2	*	T2	0 — 100
Time 3	*	T3	0 — 100
Time 4	*	T4	0 — 100
Level 1	*	L1	0 — 100
Level 2	*	L2	0 — 100
Sustain Level	*	Ls	0 — 100
Level 4	*	L4	0 — 100

[TVA]

General

Parameter		Display	Values
Level	*	Level	0 — 100
Pan		Pan	L50 — 50R, RND, ALT-L, ALT-R
Pan Key Follow		Pan Key Follow	− 100 — + 100
< TVA Env Control >			
Velocity Sensitivity	*	Velocity Sens	− 50 — + 50
Time Velocity Sensitivity	*	Time Velocity Sens	− 50 — + 50
Time Key Follow	*	Time Key Follow	− 10 — + 10

Bias

Parameter		Display	Values
Bias Direction	*	Bias Direction	LOWER, UPPER, UP & LOW
Bias Point	*	Bias Point	C-1 — G9
Bias Level	*	Bias Level	- 10 — + 10

TVA Envelope Form (EnvForm)

Parameter		Display	Values
Time 1	*	T1	0 — 100
Time 2	*	T2	0 — 100
Time 3	*	T3	0 — 100
Time 4	*	T4	0 — 100
Level 1	*	L1	0 — 100
Level 2	*	L2	0 — 100
Sustain Level	*	Ls	0 — 100

[LFO&CTL]

General

Parameter		Display	Values
Velocity Curve	*	Velocity Curve	1 — 7
Hold Control Switch	*	Hold Control SW	OFF, ON

LFO1

Parameter		Display	Values
Waveform	*	Waveform	TRI, SIN, SAW, SQU, TRP, S & H, RND, CHS
Rate	*	Rate	0 -- 100
Delay	*	Delay	0 ··· 100, REL
Fade	*	Fade	− 50 — + 50
Offset	*	Offset	−, 0, +
Key Trigger	*	Key Trig	OFF, ON
< LFO1 Depth >			
Pitch Depth		Pitch	− 50 — + 50 *3
TVF Depth		TVF	− 50 — + 50 *3
TVA Depth		TVA	− 50 — + 50 *3

*3 : WG/LFO1 Modulation, TVF/LFO Select, LFO Depth, TVA/LFO Select, LFO Depth in the JD-800 are converted.

LFO2

Parameter		Display	Values
Waveform	*	Waveform	TRI, SIN, SAW, SQU, TRP, S & H, RND, CHS
Rate	*	Rate	0 — 100
Delay	*	Delay	0 — 100, REL
Fade	*	Fade	− 50 — + 50
Offset	*	Offset	−, 0, +
Key Trigger	*	Key Trig	OFF, ON
< LFO2 Depth >			
Pitch Depth		Pitch	− 50 — + 50 *3
TVF Depth		TVF	− 50 — + 50 *3
TVA Depth		TVA	− 50 — + 50 *3

*3 : WG/LFO2 Modulation, TVF/LFO Select, LFO Depth, TVA/LFO Select, LFO Depth in the JD-800 are converted.

Control1&2 (CTRL1&2)

Parameter	Display	Values
Control1 Destination (4)	Dest.	PITCH, CUTOFF, RES, LEVEL, P-LFO1, P-LFO2, F-LFO1, F-LFO2, A-LFO1, A-LFO2, LFO1-R, LFO2-R *4
Control1 Depth (4)	Depth	−50 — +50 *4
Control2 Destination (4)	Dest.	PITCH, CUTOFF, RES, LEVEL, P-LFO1, P-LFO2, F-LFO1, F-LFO2, A-LFO1, A-LFO2, LFO1-R, LFO2-R *4
Control2 Depth (4)	Depth	−50 — +50 *4

*4 : WG/Aftertouch Bend SW, Lever Modulation, TVF/Aftertouch Cutoff Sensitivity,, TVA/Aftertouch Sensitivity, Common Aftertouch Bend Sensitivity in the JD-800 are converted.

[Effects]

Effects Balance (Balance)

Parameter	Display	Values
Dry/Effect A : Effect B *	Dry/FX A : FX B	100 : 0 — 0 : 100

Effects Control (FX CTRL)

Parameter	Display	Values
Control Source 1	(Ctrl1) Source	MOD, AFTER, EXP, BREATH, P.BEND, FOOT
Control Destination 1	(Ctrl1) Destination	FX-BAL, DS-DRV, PH-MAN, PH-RAT, PH-DPT, PH-RES, PH-MIX, EN-MIX, CH-RAT, CH-FDB, CH-LVL, DL-FDB, DL-LVL, RV-TIM, RV-LVL
Control Depth 1	(Ctrl1) Depth	−50 — +50
Control Source 2	(Ctrl2) Source	MOD, AFTER, EXP, BREATH, P.BEND, FOOT
Control Destination 2	(Ctrl2) Destination	FX-BAL, DS-DRV, PH-MAN, PH-RAT, PH-DPT, PH-RES, PH-MIX, EN-MIX, CH-RAT, CH-FDB, CH-LVL, DL-FDB, DL-LVL, RV-TIM, RV-LVL
Control Depth 2	(Ctrl2) Depth	−50 — +50

Group A

Group A Sequence (ASeq.)

Parameter		Display	Values
Group A Sequence	*	—[ ]—[ ]—[ ]—[ ]—	Dist., Phaser, Spectrum, Enhancer
Distortion Switch	*	Dist.	OFF, ON
Phaser Switch	*	Phaser	OFF, ON
Spectrum Switch	*	Spectrum	OFF, ON
Enhancer Switch	*	Enhancer	OFF, ON

Distortion (Dist.)

Parameter		Display	Values
Type	*	Type	MELLOW DRIVE, OVERDRIVE, CRY DRIVE, MELLOW DIST, LIGHT DIST, FAT DIST, FUZZ DIST
Drive	*	Drive	0 — 100
Level	*	Level	0 — 100

Phaser

Parameter		Display	Values
Manual	*	Manual	50Hz — 15.0 kHz
Rate	*	Rate	0.1 — 10 Hz
Depth	*	Depth	0 — 100
Resonance	*	Resonance	0 — 100
Mix	*	Level	0 — 100

Spectrum (Spectrm)

Parameter		Display	Values
Band 1 Control	*	Band 1 (250Hz)	− 15 — + 15
Band 2 Control	*	Band 2 (500Hz)	− 15 — + 15
Band 3 Control	*	Band 3 (1kHz)	− 15 — + 15
Band 4 Control	*	Band 4 (2kHz)	− 15 — + 15
Band 5 Control	*	Band 5 (4kHz)	− 15 — + 15
Band 6 Control	*	Band 6 (8kHz)	− 15 — + 15
Band Width	*	Band Width	1 — 5

Enhancer (Enhance)

Parameter		Display	Values
Sensitivity	*	Sens	0 — 100
Mix	*	Mix	0 — 100

Group B

Group B Sequence (B Seq.)

Parameter		Display	Values
Group B Sequence	*	—[ ]—[ ]—[ ]—	Chorus, Delay, Reverb
Chorus Switch	*	Chorus	OFF, ON
Delay Switch	*	Delay	OFF, ON
Reverb Switch	*	Reverb	OFF, ON

Chorus

Parameter		Display	Values
Rate	*	Rate	0.1 — 10Hz
Depth	*	Depth	0 — 100
Delay Time	*	Delay Time	0.1 — 50ms
Feedback	*	Feedback	− 98 — + 98 %
Level	*	Level	0 — 100

Delay

Parameter		Display	Values
Delay Mode		Mode	NORMAL, MIDI TEMPO, MANUAL TEMPO
Center Tap	*	Center Tap	0.1ms ··· 3.00s 𝅘𝅥𝅯, 𝅘𝅥𝅯., 𝅘𝅥𝅯𝅘𝅥𝅯, 𝅘𝅥𝅯𝅘𝅥𝅯., 𝅘𝅥, 𝅘𝅥., 𝅗𝅥, 𝅗𝅥.
Center Level	*	Center Level	0 — 100
Left Tap	*	Left Tap	0.1ms — 3.00s 𝅘𝅥𝅯, 𝅘𝅥𝅯., 𝅘𝅥𝅯𝅘𝅥𝅯, 𝅘𝅥𝅯𝅘𝅥𝅯., 𝅘𝅥, 𝅘𝅥., 𝅗𝅥, 𝅗𝅥.
Left Level	*	Left Level	0 — 100
Right Tap	*	Right Tap	0.1ms — 3.00s 𝅘𝅥𝅯, 𝅘𝅥𝅯., 𝅘𝅥𝅯𝅘𝅥𝅯, 𝅘𝅥𝅯𝅘𝅥𝅯., 𝅘𝅥, 𝅘𝅥., 𝅗𝅥, 𝅗𝅥.
Right Level	*	Right Level	0 — 100
Feedback	*	Feedback	− 98 — + 98 %

Reverb

Parameter		Display	Values
Type	*	Type	ROOM1/2, HALL1/2/3/4, GATE, REVERSE, FLYING1/2
Pre Delay Time	*	Pre Delay Time	0 — 120ms
Early Reflection Level	*	Early Ref Level	0 — 100
HF Damp	*	HF Damp	500Hz — 15kHz
Time	*	Time	0.1s — 10s (5 — 500ms)
Level	*	Level	0 — 100

Rhythm Set Parameters

[Common]

General

Parameter		Display	Values
Rhythm Set Name		Rhythm Set Name	(16 Character ASCII)
Rhythm Set Level	*	Rhythm Set Level	0 — 100
Rhythm Set Pan	*	Rhythm Set Pan	L50 — 50R
Analog Feel	*	Analog Feel	0 — 100
Bend Range Down	*	Bend Range Down	0 — 48
Bend Range Up	*	Bend Range Up	0 — 12
Tone Control Source 1		Tone Ctrl Src1	MOD, AFTER, EXP, BREATH, P.BEND, FOOT
Tone Control Source 2		Tone Ctrl Src2	

EQ

Parameter		Display	Values
Low Frequency	*	Low Freq	200Hz, 400Hz
Low Gain	*	Low Gain	−15 — +15dB (1dB step)
Mid Frequency	*	Mid Freq	200Hz — 8kHz *1
Mid Q	*	Mid Q	0.5, 1.0, 2.0, 4.0, 9.0
Mid Gain	*	Mid Gain	−15 — +15dB (1dB step)
High Frequency	*	High Freq	4kHz, 8kHz
High Gain	*	High Gain	−15 — +15dB (1dB step)

*1 : 200,250,315,400,500,630,800,1k,1.25k,1.6k,2k, 2.5k,3.15k,4k,5k,6.3k,8k (Unit : Hz)

[Key WG] Refer to "WG" in Patch parameters.

[Key TVF] Refer to "TVF" in Patch parameters.

[Key TVA] Refer to "TVA" in Patch parameters.

[KeyCTRL]

General

Parameter		Display	Values
Rhythm Tone Name	*	Rhythm Tone Name	(10 Character ASCII)
Velocity Curve	*	Velocity Curve	1 — 7
Mute Group	*	Mute Group	OFF, A — Z
Envelope Mode	*	Envelope Mode	SUSTAIN, NO-SUS
Hold Control Switch	*	Hold Control SW	OFF, ON

LFO1 Refer to "LFO1" in Patch parameters.

LFO2 Refer to "LFO2" in Patch parameters.

Control1&2 (CTRL1&2)

Refer to "CTRL1&2" in Patch parameters.

[Effects]

Out & FX Send (Out&FX)

Parameter		Display	Values
Effect Mode & Output	*	FX Mode & Output	EQ : MIX, EQ + R : MIX, EQ + C + R : MIX, EQ + D + R : MIX, DIR1, DIR2, DIR3
Effect Send Level	*	FX Send Level	0 — 100

Effects Control (FX CTRL)

Refer to "FX CTRL" in Patch parameters.

Chorus Refer to "Chorus" in Patch parameters.

Delay Refer to "Delay" in Patch parameters.

Reverb Refer to "Reverb" in Patch parameters.

Performance Parameters

Common

Parameter	Display	Values
Performance Name	Performance Name	(16 Character ASCII)
Available Sync Part	Avail Sync Part	NONE, PART 1 — 7

Part

Parameter		Display	Values
Patch Select	*	Patch Select	I11 – B88
Part Level	*	Part Level	0 — 100
Part Pan	*	Part Pan	L50 — 50R
Pitch Coarse		Pitch Coarse	− 48 — + 48
Pitch Fine		Pitch Fine	− 50 — + 50
Voice Reserve		Voice Reserve	0 — 24

Rx MIDI

Parameter		Display	Values
Rx Switch		Rx Switch	OFF, ON
Rx Channel	*	Rx Channel	1 — 16

Out&FX Send (Out&FX)

Parameter		Display	Values
Effect Send Mode	*	FX Send Mode	OFF, REV, C + R, D + R
Effect Send Level	*	FX Send Level	0 — 100
Output Assign	*	Output Assign	MIX, D − 1, D − 2, D − 3

Effects

Chorus — Refer to "Chorus" in Patch parameters.

Delay — Refer to "Delay" in Patch parameters.

Reverb — Refer to "Reverb" in Patch parameters.

SYSTEM SETUP

Tune

Parameter	Display	Values
Master Tune *	Master Tune	427.5Hz — 452.9Hz
LCD Contrast	LCD Contrast	1 — 8
Character Style	Character Style	TYPE1, TYPE2

Function (Func)

Parameter	Display	Values
Rhythm Output	Rhythm Output	KEY-OUT, ALL-MIX
Patch Remain	Patch Remain	OFF, ON
Power up Mode	Power-up Mode	LASTSET, DEFAULT
< Peak Hold SW >		
Tone Control Source 1	Tone Ctrl Src1	OFF, ON
Tone Control Source 2	Tone Ctrl Src2	OFF, ON
Effects Control Source 1	FX Ctrl Src1	OFF, ON
Effects Control Source 2	FX Ctrl Src2	OFF, ON

MIDI

Parameter	Display	Values
Patch Mode Rx Channel	Patch Rx - Ch	1 — 16, PART, OFF
Rhythm Set Mode Rx Channel	Rhythm Set Rx - Ch	1 — 16, PATCH, PART8, OFF
Performance Control Channel	Perform. CTRL - Ch	1 — 16, OFF
Device ID Number	Device ID	17 — 32
Stack	Stack	OFF, 1 of 2 — 8 of 8

Rx MIDI

Parameter	Display	Values
Program Change Receive SW	Rx Program Change	OFF, ON
Volume Receive SW	Rx Volume	OFF, ON
Pitch Bend Receive SW	Rx Pitch Bend	OFF, ON
Aftertouch Receive SW	Rx Aftertouch	OFF, ON
Modulation Receive SW	Rx Modulation	OFF, ON
Breath Receive SW	Rx Breath	OFF, ON
Expression Receive SW	Rx Expression	OFF, ON
Foot Receive SW	Rx Foot	OFF, ON
Exclusive Receive SW	Rx Exclusive	OFF, ON - 1, ON - 2

Mix–Out EQ (Mix EQ)

Parameter		Display	Values
Bass Control	*	Bass Control	– 5 — + 5
Mid Control	*	Mid Control	– 5 — + 5
Treble Control	*	Treble Control	– 5 — + 5

Preview

Parameter	Display	Values
Preview Mode	Preview Mode	SINGLE, CHORD
Preview Note Number (Set1 — 4)	Note Number	OFF, A0 — C8
Preview Velocity (Set1 — 4)	Velocity	1 — 127

[EFFECTS ON/OFF]

Parameter	Display	Values
Group A Switch	Grp A SW	OFF, ON
Chorus Switch	Cho SW	OFF, ON
Delay Switch	Dly SW	OFF, ON
Reverb Switch	Rev SW	OFF, ON

Waveform Lists

* The Waveform Types are as follows: S-loop: short loop waveforms, L-loop: long loop waveforms, O-shot: one shot waveforms.

No.	Wave name	Remarks	Type
001	Syn Saw 1	Analog synth sharp sawtooth wave	S – loop
002	Syn Saw 2	Analog synth thin sawtooth wave	S – loop
003	FAT Saw	Analog synth thick sawtooth wave	S – loop
004	FAT Square	Analog synth square wave	S – loop
005	Syn Pulse1	Analog synth pulse wave (duty cycle 50%)	S – loop
006	Syn Pulse2	Analog synth pulse wave (duty cycle 30%)	S – loop
007	Syn Pulse3	Analog synth pulse wave (duty cycle 20%)	S – loop
008	Syn Pulse4	Analog synth pulse wave (duty cycle 14%)	S – loop
009	Syn Pulse5	Analog synth pulse wave (duty cycle 7%)	S – loop
010	Pulse Mod	Pulse width modulation wave	L – loop
011	Triangle	Analog synth triangle wave	S – loop
012	Syn Sine	Analog synth sine wave	S – loop
013	Soft Pad	Soft analog synth wave	L – loop
014	Wire Str	Metallic string sound	S – loop
015	MIDI Clav	Clav sound with sharp attack	L – loop
016	Spark Vox1	Processed human voice 1	S – loop
017	Spark Vox2	Processed human voice 2	S – loop
018	Syn Sax	Synth sax	S – loop
019	Clav Wave	Processed clav-type wave	S – loop
020	Cello Wave	Processed cello wave	S – loop
021	BrightDigi	Bright harpsichord-like sound	S – loop
022	Cutters	Sharp and distorted sound	S – loop
023	Syn Bass	Thick synth bass	S – loop
024	Rad Hose	Soft woodwind with a unique attack	S – loop
025	Vocal Wave	Breathy sound extracted from human voice	S – loop
026	Wally Wave	Rough digital synth sound	S – loop
027	Brusky Ip	Thick digital synth sound	S – loop
028	Digiwave	Unique sound with many high partials (overtones)	S – loop
029	Can Wave 1	Sound with the attack of a struck can	S – loop
030	Can Wave 2	Sound with the attack of a woodwind instrument	S – loop
031	EML 5th	Perfect 5th chord created on a synth	S – loop
032	Wave Scan	Clav-type digital synth sound	S – loop
033	Nasty	Sound with a very rough low frequency range	S – loop
034	Wave Table	Slightly dark digital synth sound	S – loop
035	Fine Wine	Finger rubbed around the edge of a glass	L – loop
036	Funk Bass1	Electric bass	S – loop

No.	Wave name	Remarks	Type
037	Funk Bass2	Electric bass with bright low range	S – loop
038	Strat Sust	Single coil electric guitar	S – loop
039	Harp Harm	Harp harmonics	S – loop
040	Full Organ	Electric organ with doubled 16 feet	S – loop
041	Full Draw	Full drawbar electric organ	S – loop
042	Doo	Sound with many overtones and pipe organ-like attack	S – loop
043	ZZZ Vox	Hard, noisy voice	L – loop
044	Org Vox	Soft, noisy voice	L – loop
045	Male Vox	Metallic voice	L – loop
046	Kalimba	Kalimba (ethnic instrument) with sharp attack	S – loop
047	Xylo	Xylophone	S – loop
048	Marim Wave	Marimba	S – loop
049	Log Drum	Log Drum (ethnic instrument)	S – loop
050	AgogoBells	Agogo bells	S – loop
051	Bottle Hit	Sound of hitting a small bottle	S – loop
052	Gamelan 1	Metallic percussion	S – loop
053	Gamelan 2	Hard metallic percussion	S – loop
054	Gamelan 3	Soft metallic percussion	S – loop
055	Tabla	Tabla (ethnic instrument)	S – loop
056	Pole Ip	Rough sound of hitting an earthen pipe	L – loop
057	Pluck Harp	Harp with strong attack	S – loop
058	Nylon Str	Nylon string classical guitar	S – loop
059	Hooky	Many plucked strings	S – loop
060	Muters	Muted electric guitar	S – loop
061	Klack Wave	Thick sound with sharp attack	S – loop
062	Crystal	Transparent sound	S – loop
063	Digi Bell	Hard bell	S – loop
064	FingerBell	Sound of hitting a small bell	L – loop
065	Digi Chime	Hard chime	S – loop
066	Bell Wave	Soft bell sound	S – loop
067	Org Bell	Bell sound with many high partials (overtones)	S – loop
068	Scrape Gut	Sound of scraped strings	S – loop
069	Strat Atk	Attack sound of electric guitar played with a pick	S – loop
070	Hellow Bs	Synth bass with thick attack	S – loop
071	Piano Atk	Acoustic piano including hammer sound	S – loop
072	EP Hard	Electric piano	S – loop

No.	Wave name	Remarks	Type
073	Clear Keys	Electric piano processed to an organ-type sound	S – loop
074	EP Distone	Distorted electric piano	S – loop
075	Flute Push	Tongued flute sound	O – shot
076	Shami	Attack of shamisen sound	O – shot
077	Wood Crak	Sound with sharp attack (like a slapped board)	O – shot
078	Klmba Atk	Attack sound of a kalimba	O – shot
079	Block	Attack sound of a wood block	O – shot
080	Org Atk 1	Low range organ attack sound	O – shot
081	Org Atk 2	High range organ attack sound	O – shot
082	Cowbell	Attack of a cowbell	O – shot
083	Sm Metal	Muted attack of a cowbell	O – shot
084	StrikePole	Sound of a struck metal rod	O – shot
085	Pizz	Pizzicato strings	O – shot
086	Switch	Mechanical noise of a power switch	O – shot
087	Tuba Slap	Sound of a tuba valve (piston)	O – shot
088	Plink	Very short metallic noise	O – shot
089	Plunk	Very short bell-type noise	O – shot
090	EP Atk	Electric piano attack sound	O – shot
091	TVF_Trig	An impulse-type sound (usable as a trigger)	O – shot
092	Flute Tone	Flute harmonics	S – loop
093	Pan Pipe	A pan pipe with a lot of breath noise	L – loop
094	BottleBlow	Sound of blown bottle	L – loop
095	Shaku Atk	Shakuhachi (tongued-style)	L – loop
096	FlugelWave	Flugel horn	S – loop
097	French	French horn	S – loop
098	WhiteNoise	White noise	S – loop
099	Pink Noise	Pink noise	S – loop
100	Pitch Wind	A pitched, dark-feeling wind sound	L – loop
101	Vox Noise1	White noise with little sense of pitch	L – loop
102	Vox Noise2	White noise with greater sense of pitch	L – loop
103	CrunchWind	Sound similar to braking noise	L – loop
104	ThroatWind	Sound similar to steam noise	L – loop
105	Metal Wind	Metallic noise	L – loop
106	Windago	Noise with agogo bell nuance	L – loop
107	Anklungs	Many wood scraps sounding together	L – loop
108	Wind Chime	Many metallic scraps sounding together	L – loop

No.	Wave name	Remarks	Type
109	Ac Piano 1	Acoustic piano with soft touch	S loop
110	SA Rhodes 1	Rhodes piano with soft touch	S – loop
111	SA Rhodes 2	Rhodes piano with strong touch	S – loop
112	E.Piano 1	Hard electric piano	S – loop
113	E.Piano 2	Electric piano with a unique attack	S – loop
114	Clav 1	Clavinet	S – loop
115	Organ 1	Electric Organ	S – loop
116	Jazz Organ	Organ with a percussive attack	S – loop
117	Pipe Organ	Pipe organ	S – loop
118	Nylon GTR	Soft nylon string guitar	S – loop
119	6STR GTR	Steel string guitar	S – loop
120	GTR HARM	Guitar harmonics sound	S – loop
121	Mute GTR 1	Muted guitar with a strong attack	S – loop
122	Pop Strat	Electric guitar played hard	S – loop
123	Stratus	Clean electric guitar	S – loop
124	SYN GTR	Guitar created on a synthesizer	S – loop
125	Harp 1	Harp	S – loop
126	Pick Bass	Electric bass played with a pick	S – loop
127	E.Bass	Electric bass played with a finger	S – loop
128	Fretless 1	Fretless bass	S – loop
129	Upright BS	Wood bass	S – loop
130	Slap Bass 1	Slap bass (without pull)	S – loop
131	Slap & Pop	Slap bass (with pull - low)	S – loop
132	Slap Bass 2	Slap bass (with pull - mid)	S – loop
133	Slap Bass 3	Slap bass (with pull - high)	S – loop
134	Flute 1	Flute	L – loop
135	Trumpet 1	Trumpet	S – loop
136	Trombone 1	Trombone	S – loop
137	Harmon Mute1	Trumpet with a harmon mute	S – loop
138	Alto Sax 1	Alto sax	S – loop
139	Tenor Sax 1	Tenor sax	S – loop
140	Blow Pipe	Soft pan pipe	L – loop
141	Trumpet SECT	Trumpet section sound	L – loop
142	Strings	Strings section sound	L – loop
143	SYN VOX 1	Rough voice created on a synthesizer	L – loop
144	SYN VOX 2	Soft voice created on a synthesizer	L – loop

No.	Wave name	Remarks	Type
145	Org Vox 2	Noisy voice	L - loop
146	Pop Voice	Bright sound processed human voice	S – loop
147	Fantasynth	Soft voice created on a synthesizer	L – loop
148	Fanta Bell	Soft bell created on a synthesizer	S – loop
149	Vibes	Vibraphone	S – loop
150	Steel Drums	Steel drums	S – loop
151	MMM VOX	Characteristic voice	S – loop
152	Lead Wave	Synth lead sound	S – loop
153	Feedbackwave	Pitch noise	L – loop
154	Rattles	Spring sound	L – loop
155	Tin Wave	Sound with the attack of tin metal plate	S loop
156	Spectrum 1	Noise structured with high non - integer overtones	L – loop
157	Solid Kick	Tight bass drum *1	O - shot
158	Room Kick	Bass drum with reverberation *1	O – shot
159	808 K Long	808 bass drum *2	S – loop
160	Hard SN	Hard snare drum *1	O – shot
161	808 SN	808 snare drum *2	O – shot
162	90's SN	Snare drum with long gate effect *2	O – shot
163	Bigshot SN	Snare drum with rim shot *3	O - shot
164	Power SN	Intense snare drum *3	O – shot
165	Power Tom	Bright tom *1	O – shot
166	Closed HH1	Tight closed hi - hat *1	O - shot
167	Closed HH2	Half - closed hi - hat *1	O – shot
168	Open HH	Open hi - hat (loop) *1	L – loop
169	Crash Cym	Crash cymbal (loop) *1	L – loop
170	Ride Cym	Ride cymbal (loop) *1	L - loop
171	808 Claps	808 hand clap *2	O – shot
172	Maraca	Maracas *1	O - shot
173	Cabasa Up	Cabasa (up) *1	O – shot
174	CabasaDown	Cabasa (down) *1	O – shot
175	Slap Cga	Conga with a strong attack *1	O – shot
176	Mute Cga 1	Muted conga (high pitch) *1	O – shot
177	Mute Cga 2	Muted conga (low pitch) *1	O – shot
178	Hi Conga	Conga (high pitch) *1	O – shot
179	Lo Conga	Conga (low pitch) *1	O – shot
180	Snaps	Finger snap *2	O – shot

No.	Wave name	Remarks	Type
181	Tambourine	Tambourine (loop) *2	L – loop
182	Cowbell 2	Tight cowbell *3	O – shot
183	Saw +DC	Saw wave with direct current	S – loop
184	Sqr +DC	Square wave with direct current	S – loop
185	Pulse1 +DC	Pulse wave with direct current (duty cycle 50%)	S – loop
186	Pulse2 +DC	Pulse wave with direct current (duty cycle 30%)	S – loop
187	Pulse3 +DC	Pulse wave with direct current (duty cycle 20%)	S – loop
188	Pulse4 +DC	Pulse wave with direct current (duty cycle 14%)	S – loop
189	Pulse5 +DC	Pulse wave with direct current (duty cycle 7%)	S – loop
190	Triangle +DC	Triangle wave with direct current	S – loop
191	Sine +DC	Sine wave with direct current	S – loop
192	Loop 1	The sound looping several waves 1	L – loop
193	Loop 2	The sound looping several waves 2	L – loop
194	Loop 3	The sound looping several waves 3	L – loop
195	Loop 4	The sound looping several waves 4	L – loop

***1 : These waves are also included in the WAVEFORM Card "SO - JD80 - 01" for the JD - 800.**

***2 : These waves are also included in the WAVEFORM Card "SO - JD80 - 02" for the JD - 800.**

***3 : These waves are also included in the WAVEFORM Card "SO - JD80 - 03" for the JD - 800.**

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 triggers 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

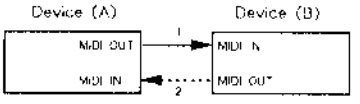
Address mapping is a technique for transferring messages conforming to the data format given in Section 1. It assigns a series of memory resident records waveform and tone data, switch status, and parameters, for example to specific locations in a machine dependent address space, thereby allowing access 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 Section 3 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

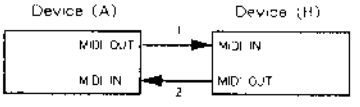


Connection at point 2 is essential for "Request data" procedures. (See Section 3.)

≠ Handshake transfer procedure (This device does not cover this procedure.)

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



Connection at points 1 and 2 is essential.

Notes on the above two procedures

* There are separate Command IDs for different transfer procedures.
* Devices A 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 and is used 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 20 milliseconds 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.

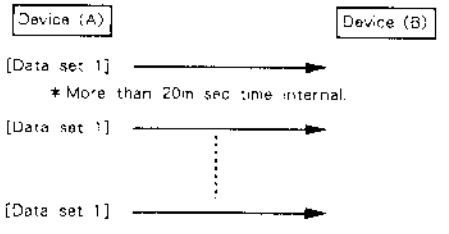
Byte	Description
F0H	Exclusive
41H	Manufacturer ID (Roland)
DEV	Device ID
MDL	Model ID
12H	Command ID
aaH	Address MSB
⋮	⋮
	LSB
ddH	Data
⋮	⋮
sum	Check sum
F7H	End of exclusive

* 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.

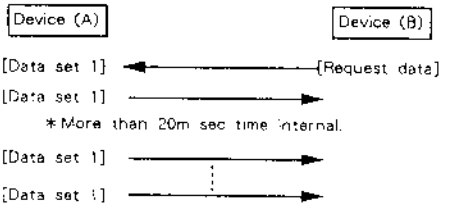
* The number of bytes comprising address data varies from one Model ID to another.
* The error checking process uses a checksum that provides a bit pattern where the least significant 7 bits are zero when values for an address, size, and that checksum are summed.

≡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.



SYNTHESIZER MODULE Date : Jan. 20. 1993

Model JD-990 # MIDI Implementation Version : 1.00

1. RECOGNIZED RECEIVE DATA

■ Channel Voice Messages

● Note Off

Status	Second	Third
8nH	kkH	vvH
9nH	kkH	00H

n = MIDI channel number : 0H - FH (0 - 15) ; 0 = ch 1, 15 = ch 16
kk = Note number : 00H - 7FH (0 - 127)
vv = Velocity : 00H - 7FH (0 - 127)

*When in Performance mode, JD 990 receives this message when the receive switch of the Part parameter on the MIDI channel is on.

*When the message is assigned to a Rhythm part (part 8) and the envelope mode of the rhythm tone parameter is SUSTAIN, the message is recognized.

*JD 990 uses the velocity (vv) as the On velocity when retriggering a Solo-on patch. It translates 9nH kkH 00H as 8nH kkH 40H. This message is made invalid when the mode is Rhythm set or Solo of the patch is off.

● Note On

Status	Second	Third
9nH	kkH	vvH

n = MIDI channel number : 0H - FH (0 - 15) ; 0 = ch 1, 15 = ch 16
kk = Note number : 00H - 7FH (0 - 127)
vv = Velocity : 01H - 7FH (1 - 127)

*When JD-990 is in Performance mode and the receive switch of the assigned Part parameter is on, this message is recognized.

● Control Change

○ Bank select (MSB only)

Status	Second	Third
BnH	00H	vvH

n = MIDI channel number : 0H - FH (0 - 15) ; 0 = ch 1, 15 = ch 16
v = Bank number : 50H, 51H (80, 81)

*JD-990 recognizes the MSB only.
*JD-990 will not make the MSB effective unless it receives a program change.
*Bank numbers : user memory (internal card) = 80 ; preset memory (preset A, B) = 81.
*If the current mode is Performance and the MIDI channel is assigned to a Part, the message acts on the Patch or Rhythm set ; if the MIDI channel is assigned to the Control channel, the message acts on Performance. If both the part channel and control channel are assigned to the received MIDI channel, the latter has priority.
*JD-990 receives this message only when the Program change receives switch of the System setup is on.

○ Modulation

Status	Second	Third
BnH	01H	vvH

n = MIDI channel number: 0H - FH (0 - 15) 0 = ch 1, 15 = ch 16
vv = Modulation depth : 00H - 7FH (0 - 127)

*Recognized when Modulation receive switch of System setup is on.
*When in Patch (or Rhythm set) mode and the tone control source is Modulation, JD 990 uses this message to control the tone color according to the setting of Control 1 & 2 of LFO & CTL.
*If Modulation is selected as the effects control source of Patch mode (or Rhythm set mode), the message changes the effects according to the setting of Effects control.
*Both Tone color and Effects can be controlled at the same time by using this message if both are set.

○ Breath

Status	Second	Third
BnH	02H	vvH

n = MIDI channel number: 0H FH (0 15) 0 ch 1 15 ch 16
vv = Breath : 00H - 7FH (0 - 127)

*Recognized when Breath receive switch of System setup is on.
*When in Patch (or Rhythm set) mode and the tone control source is Breath, JD - 990 uses this message to control the tone color according to the setting of Control 1 & 2 of LFO & CTL.
*If Breath is selected as the effects control source of Patch mode (or Rhythm set mode), the message changes the effects according to the setting of Effects control.
*Both Tone color and Effects can be controlled at the same time by using this message if both are set.

○ Foot

Status	Second	Third
BnH	04H	vvH

n = MIDI channel number: 0H - FH (0 15) 0 = ch 1 15 = ch 16
vv = Foot : 00H - 7FH (0 - 127)

*Recognized when Foot receive switch of System setup is on.
*When in Patch (or Rhythm set) mode and the tone control source is Foot, JD - 990 uses this message to control the tone color according to the setting of Control 1 & 2 of LFO & CTL.
*If Breath is selected as the effects control source of Patch mode (or Rhythm set mode), the message changes the effects according to the settingof Effects control.
*Both Tone color and Effects can be controlled at the same time by using this message if both are set.

○ Portamento time

Status	Second	Third
BnH	05H	vvH

n = MIDI channel number: 0H - FH (0 - 15) 0 = ch 1 15 = ch 16
vv = Portamento time : 00H - 7FH (0 - 127)

*Changes the portamento time of KEY FX of Common of Patch mode.
*JD-990 converts the value vv (0 - 127) into one of its Portamento time control data ranging from 0 to 100 and changing in 101 steps.

○ Volume

Status	Second	Third
BnH	07H	vvH

n = MIDI channel number: 0H - FH (0 - 15) 0 = ch 1 15 = ch 16
vv = Volume : 00H 7FH (0 127)

*Recognized when Volume receive switch of System setup is on.

*Controls the MIDI Volume assinged to the receive MIDI channel.
*A MIDI Channel volume is equipped for each Part of Performance mode, or for Patch mode and Rhythm set mode. These MIDI Volumes cannot be adjusted from the JD-990 panel.
*MIDI Volumes are set to the maximum value (127) upon power-up or mode change.

○ Pan

Status	Second	Third
BnH	0AH	vvH

n = MIDI channel number: 0H-FH (0-15) 0 = ch 1 15 = ch 16
vv = Pan : 00H-7FH (0-127)

*The value 0 of vv (Pan) localizes the sound at the leftmost, 64 at the center and 127 at the rightmost of the sound field.
*This message controls the MIDI Pan assigned to the receive MIDI channel.
A MIDI Channel Pan is equipped for each Part of Performance mode, or for Patch mode and Rhythm set mode. These MIDI Pans cannot be adjusted from the JD-990 panel.
*MIDI Pans are set to the center value (64) upon power-up or mode change.

○ Expression

Status	Second	Third
BnH	0BH	vvH

n = MIDI channel number: 0H-FH (0-15) 0 = ch 1 15 = ch 16
vv = Expression : 00H-7FH (0-127)

*Recognized when Expression receive switch of System setup is on.
*When in Patch (or Rhythm set) mode and the tone control source is Expression, JD-990 uses this message to control the tone color according to the setting of Control 1 & 2 of LFO & CTL.
*If Expression is selected as the effects control source of Patch mode (or Rhythm set mode), the message changes the effects according to the setting of Effects control.
*Both Tone color and Effects can be controlled at the same time by using this message if both are set.

○ Hold 1

Status	Second	Third
BnH	40H	vvH

n = MIDI channel number: 0H-FH (0-15) 0 = ch 1 15 = ch 16
vv = Control value : 00H-7FH (0-127) 0-63 = OFF; 64-127 = ON

*Recognized when Hold control switch of the selected Tone is on.
*If the value of vv is On, it holds the MIDI-on note. Also holds the current settings of Modulation, Aftertouch, Breath, Expression, Pitch bend and Foot volume when Peak hold of System setup is on.
*The message is acts on Rhythm part (part 8) if Envelope mode of corresponding Rhythm tone parameter is SUSTAIN.

○ Portamento

Status	Second	Third
BnH	41H	vvH

n = MIDI channel number: 0H-FH (0-15) 0 = ch 1 15 = ch 16
vv = Control value : 00H-7FH (0-127) 0-63 = OFF; 64-127 = ON

*Turns on or off Portamento switch of KEY FX of Common of Patch.

○ General Purpose 5

Status	Second	Third
BnH	50H	vvH

n = MIDI channel number: 0H FH (ch. 1-ch. 16)
vv = control value: 00H-7FH (0-127)
0-63 = OFF, 64 127 ON

*This message functions as Tone On/Off switch of the patch. It turns ON and OFF Tone A of a patch of an appropriate MIDI channel in Patch mode and Performance mode. In Rhythm Set mode and Part 8 in Performance mode, this message is ignored.

○ General Purpose 6

Status	Second	Third
BnH	51H	vvH

n = MIDI channel number: 0H FH (ch. 1-ch. 16)
vv = control value: 00H-7FH (0-127)
0-63 = OFF, 64-127 = ON

*This message affects as Tone On/Off switch of the patch. It turns ON and OFF Tone B of a patch of an appropriate MIDI channel in Patch mode and Performance mode. In Rhythm Set mode and Part 8 in Performance mode, this message is ignored.

○ General Purpose 7

Status	Second	Third
BnH	52H	vvH

n = MIDI channel number: 0H FH (ch. 1-ch. 16)
vv = control value: 00H-7FH (0-127)
0-63 = OFF, 64-127 = ON

*This message affects as Tone On/Off switch of the patch. It turns ON and OFF Tone C of a patch of an appropriate MIDI channel in Patch mode and Performance mode. In Rhythm Set mode and Part 8 in Performance mode, this message is ignored.

○ General Purpose 8

Status	Second	Third
BnH	53H	vvH

n = MIDI channel number: 0H-FH (ch. 1-ch. 16)
vv = control value: 00H 7FH (0 127)
0-63 = OFF, 64-127 = ON

*This message affects as Tone On/Off switch of the patch. It turns ON and OFF Tone D of a patch of an appropriate MIDI channel in Patch mode and Performance mode. In Rhythm Set mode and Part 8 in Performance mode, this message is ignored.

○ General purpose effects 1

Status	Second	Third
BnH	5BH	vvH

n = MIDI channel number: 0H-FH (0-15) 0 = ch 1 15 = ch 16
vv = Control value : 00H-7FH (0-127)

*Adjusts Effects send level of the Part (1-7) of Performance mode.
*This message cannot connect to Patch mode, Rhythm set mode or Part 8 set in Performance mode.

○ **RPN LSB**

Status	Second	Third
BnH	64H	llH

n = MIDI channel number: 0H - FH (0 - 15) 0 = ch 1 15 = ch 16
ll = The lower byte of Parameter No. specified by the RPN.

○ **RPN MSB**

Status	Second	Third
BnH	65H	mmH

n = MIDI channel number : 0H - FH (0 - 15) 0 = ch 1 15 = ch 16
mm = The upper byte of the parameter No. specified by the RPN.

○ **Data entry LSB**

Status	Second	Third
BnH	26H	llH

n = MIDI channel number: 0H - FH (0 - 15) 0 = ch 1 15 = ch 16
ll = Data LSB : 00H - 7FH (0 - 127)

*The lower byte of the parameter value specified by the PRN.

○ Data entry MSB

Status	Second	Third
BnH	06H	mmH

n = MIDI channel number: 0H - FH (0 - 15) 0 = ch 1 15 = ch 16
ll = Data MSB : 00H - 7FH (0 - 127)

*The upper byte of the parameter value specified by the RPN.

** Description of RPN **

Control change includes RPNs (registered parameter numbers). The function (tone color setting and control of reproduction performance) of RPNs are defined in the MIDI standard. Each RPN may be used to change a parameter of MIDI equipment.
To effect RPN, first designate the parameter to be controlled by using RPN MSB and RPN LSB, and then specify the value of designated parameter in data entry.

The JD-990 can use RPNs: Pitch bend sensitivity (RPN # 0), Fine tune (RPN # 1) and Coarse tune (RPN # 2).

< RPN # 0 : Pitch bend sensitivity >

The external control equipment must send the data in the following order.

BnH 65H 00H	BnH 64H 00H	BnH 06H mmH
(RPN MSB)	(RPN LSB)	(Data Entry MSB)

n = MIDI channel number : 0H - FH (0 - 15)
0 = ch 1 15 = ch 16
mm = Data entry upper byte: 00H - 7FH (0 - 127)

*JD-990 does not recognize the lower byte of the data entry. Rather it will use the upper byte to raise or lower the bend range of the Patch or Rhythm assigned to the receive MIDI channel in units of semitone up to 1 octave.
The maximum valid value is 0CH (12) and value above this limit is translated as 0CH.

Data Entry MSB

BnH 06H mmH	Pitch bend sensitivity
00H	0 cent
01H	100 cents (1 semitone)
:	
0CH	1200 cents (12 semitones)
:	
7FH	1200 cents (12 semitones)

< RPN # 1 : Fine tune >

The external control equipment must send the data in the following order.

BnH 65H 00H	BnH 64H 01H	BnH 06H mmH	BnH 26H llH
(RPN MSB)	(RPN LSB)	(Data Entry MSB)	(Data Entry LSB)

n = MIDI channel number : 0H FH (0 - 15:
0 ch 1 15 ch 16
mm = Data entry upper byte: 00H 7FH (0 127:
ll = Data entry lower byte : 00H - 7FH (0 127:

mm, ll 20H, 00H 40H, 00H-60H, 00H 50 cents 0 cent +50 cents

440.0Hz

*JD-990 changes Master tune of System setup in Patch or Rhythm set mode according to RPN # 1 data; or fine tune the pitch of the assigned Part in Performance mode.
When JD 990 receives this message on the MIDI channel assigned to Performance control channel, it controls Master tune.
The valid setting range is between 60H, 00H (96, 00) and 20H, 00H (32, 00).
Any value exceeding the limit is recognized as the extreme.

Data Entry MSB mmH	Data Entry LSB llH	Fine tune
00H	00H	-50 cents
:	:	
20H	00H	00 cents
:		
20H	32H	49 cents
:	:	
40H	00H	0 cent
:	:	
5FH	2DH	+49 cents
:		
60H	00H	+50 cents
:		
7FH	7FH	+50 cents

< RPN # 2 : Coarse tune >

The external control equipment must send the data in the following order.

BnH 65H 00H	BnH 64H 02H	BnH 06H mmH
(RPN MSB)	(RPN LSB)	(Data Entry MSB)

n = MIDI channel number : 0H FH (0 - 15)
0 ch 1 15 = ch 16
mm = Data entry upper byte: 00H 7FH (0 127:

*Ignored in Patch mode and Rhythm set mode.
In Performance mode JD-990 raises or lowers the Pitch coarse of the assigned Part by up to 48 semitones in units of semitone. If the receive MIDI channel is Performance control channel, the message is ignored.
The setting value should be in the range between 70H (112, upper.) and 10H (16, lower). Any value exceeding the limit is recognized as the extreme.

Data Entry MSB

BnH	06H	pnH	Coarse tune
		00H	+48 semitones
		01H	+47 semitones
		02H	+46 semitones
		:	:
		40H	0
		:	:
		7EH	-46 semitones
		7FH	-48 semitones

< RPN reset >

Clears the RPN parameters.

The external control equipment must send the data in the following order.

BnH	65H	7FH	BnH	64H	7FH
(RPN MSB)			(RPN LSB)		

n = MIDI channel number: 0H - FH (0 - 15) 0 = ch 1 15 = ch 16

**JD-990 receives RPN MSB and RPN LSB in any order. However, a pair of MSB and LSB of Data entry mus be in that order for them to recognized.
**Upon receiving MSB, the LSB is reset to 0.

● Program Change

Status	Second
CnH	ppH

n = MIDI channel number: 0H - FH (0 - 15) 0 = ch 1 15 = ch 16
pp = Program number : 00H - 7FH (0 - 127)

*JD-990 receives this message only when the Program change receive switch of the System setup is on.
*When JD-990 receives this message in Patch mode, it changes the current control to the Patch corresponding to the Program number. When JD-990 receives this message in Rhythm set mode, it changes the current control to the Rhythm set corresponding to the Program number.

Upon receiving this message in Performance mode, JD-990 changes patches in the Part assigned to the receive MIDI channel.
Upon receiving on the Control channel, JD-990 changes current control to the Performance corresponding to the Program number.
If both the Part and Control channel are on the same MIDI channel, the Performance has priority.

The message is ignored while in editing mode of Patch or Rhythm Set.

CnH	ppH	Patch number	
		Bank select = 80	Bank select = 81
	00H	I-11	A-11
	01H	I-12	A-12
	:	:	:
	07H	I-18	A-18
	08H	I-21	A-21
	:	:	:
	3FH	I-88	A-88
	40H	C-11	B-11
	:	:	:
	7FH	C-88	B-88

CnH	ppH	Rhythm set	
		Bank select = 80	Bank select = 81
	00H	INT	PRESET A
	40H	CARD	PRESET B

*Program numbers other than those shown above are ignored.

CnH	ppH	Performance	
		Bank select = 80	Bank select = 81
	00H	I-01	A-01
	01H	I-02	A-02
	:	:	:
	0FH	I-16	A-16
	40H	C-01	B-01
	:	:	:
	4FH	C-16	B-16

*Program numbers other than those shown above are ignored.

● Channel Aftertouch

Status	Second
DnH	vvH

n = MIDI channel number: 0H - FH (0 - 15) 0 = ch 1 15 = ch 16
vv = Aftertouch : 00H - 7FH (0 - 127)

*JD-990 recognizes this message only when the Aftertouch receive switch of the System setup is on.
*If Aftertouch is selected as the tone control source of Patch or Rhythm set mode, JD-990 changes the tone color according to the setting of Control 1 & 2 of LFO & CTL.
*If Aftertouch is selected as the effects control source of Patch or Rhythm set mode, JD-990 changes the effects according to the setting of Effects control.
*Both tone color and effects can be controlled at the same time if both are selected.

● Pitch Bend Change

Status	Second	Third
EnH	llH	mmH

n = MIDI channel number : 0H – FH (0 – 15) 0 = ch 1 15 = ch 16
mm, ll = Pitch bend change : 00H, 00H – 40H, 00H – 7FH, 7FH
(8192 – 0 – +8191)

*JD – 990 recognizes this message only when the Pitch bend receive switch of the System setup is on.
*If the Bender switch of the tone is on, JD – 990 ups (lowers) the pitch by the degrees set by Bend range up (down).
*If Pitch bend is selected as the tone control source of Patch or Rhythm set mode, JD – 990 changes the tone color according to the setting of Control 1 & 2 of LFO & CTL.
*If Pitch bend is selected as the effects control source of Patch or Rhythm set mode, JD – 990 changes the effects according to the setting of Effects control.
*Tone color, effects and pitch (bend range) can be controlled at the same time if they are selected.

■ Channel Mode Messages

● Reset All Controllers

Status	Second	Third
BnH	79H	00H

n = MIDI channel number : 0H – FH (0 – 15) 0 = ch 1 15 = ch 16

*Upon receiving this message, JD – 990 sets the controllers as shown below.

Controller	Settings
Modulation	0 (min.)
Breath	0 (min.)
Foot	0 (min.)
Volume	127 (max.)
Pan	64 (center)
Expression	0 (min.)
Hold 1	0 (off)
Channel aftertouch	0 (min.)
Pitch bend change	+/-0 (center)
RPN	No. not reset, data remains unchanged

● All Notes Off

Status	Second	Third
BnH	7BH	00H

n = MIDI channel number : 0H – FH (0 – 15) 0 = ch 1 15 = ch 16

*Turns off all MIDI – on notes on the MIDI channel.

● OMNI Off

Status	Second	Third
BnH	7CH	00H

n = MIDI channel number : 0H FH (0 – 15) 0 = ch 1 15 = ch 16

*Same as All Notes Off.

● OMNI On

Status	Second	Third
BnH	7DH	00H

n – MIDI channel number : 0H – FH (0 – 15) 0 – ch 1 15 ch 16

*Serves as All Notes Off and not OMNI on.

● MONO

Status	Second	Third
BnH	7EH	mmH

n – MIDI channel number: 0H – FH (0 – 15) 0 = ch 1 15 ch 16
mm = Number of MONOs : 00H – 10H (0 – 16)

*The Solo switch of KEY FX of Common in Patch is turned on.
*Serves as All Notes Off and sets the corresponding channel to Mode 4 (m = 1) if the mm falls within 0 16.

● POLY

Status	Second	Third
BnH	7FH	00H

n = MIDI channel number : 0H – FH (0 15) 0 ch 1 15 – ch 16

*The Solo switch of KEY FX of Common in Patch is turned off.
*Serves as All Notes Off and sets Part to Mode 3.

■ System Real Time Messages

● Timing Clock

Status
F8H

*Recognized only when Delay mode is MIDI Tempo.

● Active Sensing

Status
FEH

*When JD – 990 receives Active sensing, it measures time intervals between incoming messages. If the subsequent message (status, data) will not come within 300 ms after the previous one, JD – 990 turns off all MIDI – on notes as though it receives Reset all controllers, returns back to the normal mode and stops measuring of message intervals.

■ System exclusive messages

```
Status  Data byte
F0H     11H  ddH .............ceH
F7H

F0H                 : System exclusive
ll = Manufacturer ID: 41H (65)
dd .....ce = Data   : 00H - 7FH (0 - 127)
F7H                 : EOX (End Of eXclusive)
```

*The JD – 990 recognizes this message when the receive switch in the system setup is set to ON.
For details, please refer to section 3 : Roland exclusive message.

2. Transmit data

■ System exclusive messages

Status	Data byte
F0H	11H, ddH ..... eeH
F7H	

F0H : System exclusive
ii : Manufacturer ID: 41H (65)
dd ..... ee : Data : 00H - 7FH (0 - 127)
F7H : EOX (End Of eXclusive)

For details, please refer to section 3 : Roland exclusive message.

3. Exclusive communications

The JD - 990 can transmit patches, performances and effects parameters using system exclusive messages.

■ One - way communication

● Request Data 1 : RQ1 (11H)

This message is to request the JD - 990 to transmit its parameters.

The JD - 990 itself does not output this message.
When the JD - 990 receives this message, it responds with appropriate parameters if the following conditions are satisfied :

1. The addresses indicated with RQ1 matches with one of the parameter base address of the JD - 990.
2. The requested size is larger than 1.

With these conditions provided, the JD - 990 transmits specified parameters in Data Set 1 (DT1) format shown in the following table.

RQ1 structure is shown below.

Bytes	Comments
F0H	System exclusive status
41H	Manufacturer ID (Roland)
Dev	Device ID (Dev=DEVICE#-1)
57H	Mode ID (JD-990)
11H	Command ID (RQ1)
aaH	Address MSB
bbH	Address
ccH	Address
ddH	Address LSB
ssH	Size MSB
ssH	Size
ssH	Size
ssH	Size LSB
sum	Check sum byte
F7H	EOX (End Of eXclusive)

● Data set 1 : DT1 (12H)

◇ The JD - 990 recognizes this message if the following conditions are satisfied.

1. The device ID matches with the current setting of the JD - 990.
2. The address matches with one of the parameter base addresses of the JD - 990.

With these conditions provided, the JD - 990 stores the received data at the specified address of the memory.
Notice : If the transmission interval is shorter than 25m second, the JD - 990 cannot receive data correctly. Please make enough interval between transmission.

◇ The JD - 990 transmits this message in the following conditions.

1. When the JD - 990 responds to RQ1 message.
2. The user executes Bulk Dump function.

Regarding details of the parameters, please refer to the parameter address map.

The DT1 structure is shown below.

Bytes	Comments
F0H	System exclusive status
41H	Manufacturer ID (Roland)
Dev	Device ID (Dev=DEVICE#-1)
57H	Mode ID (JD-990)
12H	Command ID (DT1)
aaH	Address MSB
bbH	Address
ccH	Address
ddH	Address LSB
eeH	Data
:	:
ffH	Data
sum	Check sum byte
F7H	EOX (End Of eXclusive)

○ Model ID

The model ID for the JD - 990 is 57H. The JD - 990 recognizes the model ID of the JD - 800 (3DH) as well but it covers only the temporary patch dump and "special setup" dump. The system and multi - timbral setups are not recognized.
The JD - 990 also recognizes scale tuning of the GS exclusive messages. The GS model ID is 42H.

○ Device ID

The system exclusive messages do not have MIDI channel but, to specify individual instrument, the Roland exclusives contain a code called device ID.
The instrument which equips several basic channels such as JD - 990 uses values 10H through 1FH as device ID. The user can set the JD - 990's device ID in System Setup/MIDI function.

/ Example of creating the exclusive message /

Scenario : OK, now I am editing the performance setup. I wish to change the current reverb type to HALL4. How can I do that ?

Create data as the following and send it to your JD - 990.
xxH means a hexadecimal number. To exchange decimal numbers to hexadecimal, please use the conversion table in appendix A - 1

F0H	41H	10H	57H	12H	01H	00H	00H	29H	05H	53H	F7H
1	2	3	4	5		6			7	8	9

Comments :

1. F0H is the exclusive status.
2. 41H is the Roland's manufacturer ID.
3. This is the device ID and it depends on your system setup. Assuming that you set the ID as 17 for now, please assert here the number subtracting 1 from 17.

17 minus 1 leaves 16 and it is 10H in hexadecimal code.

4. 57H is the model ID of the JD - 990.
5. 12H is DT1 (data set) command ID.
6. These are the parameter addresses of the Performance reverb type. You can get the address according to the following way.
   Please find the start address of the temporary performance from the table of the parameter Address Block. You can find the address as 01H 00H 00H 00H. Next, please find the offset address of the performance common from the table 4 - 1.
   You will see the value as 00H 00H 00H. Please also find the Performance reverb type address from the table 4 - 2 - 1. That is 00H 00H 29H.
   Finally, add all of these address values. The result will be 01H 00H 00H 29H.

```
  01H 00H 00H 00H (the start address of the temporary performance)
     00H 00H 00H (the offset address of the performance common)
+)   00H 00H 29H (the offset address of the reverb type)
  01H 00H 00H 29H
```

7. Please find the reverb type value from the table 4 - 2 - 1. That is 05H.
8. This is the check sum byte. The error checking process uses a Checksum and provides a pattern where the last significant 7 bits are zero when values for an address, data (or size) and the Checksum are summed. If the address is "aa bb ccH" and the data (or the size) is "dd ee ffH"

```
aa + bb + cc + dd + ee + ff = sum
sum ÷ 128 = quotient ···remainder
128 - remainder   checksum
```

In case of this example,

```
F0H  41H  10H  57H  12H  01H  00H  06H  29H  05H  77H  F7H
                          address          data checksum
```

Using the above formura, Checksum is below.

```
01H + 00H + 00H + 29H + 05H = 1 + 0 + 0 + 41 + 5 = 47(sum)
51(sum) ÷ 128 = 0(quotient) ···81(remainder)
checksum = 128 - 47(remainder) = 81 = 51H
```

If you calcurate using only hexadecimal.

```
aa + bb + cc + dd + ee + ff = sum(xxH)
sum(xxH) ÷ 80H = quotient ···remainder
80H - remainder = checksum
```

Checksum is below.

```
01H + 00H + 00H + 29H + 05H = 2FH
2FH ÷ 80H = 00H(quotient) ···2FH(remainder)
checksum = 80H - 2FH(remainder) = 51H
```

9. F7H is the mark of the end of exclusive.

4 Parameter address map of the JD-990 (model ID : 57H)

Addresses are expressed by 4 sets of 7 bits as shown below.

Address	MSB			LSB
Binary	0aaa aaaa	0bbb bbbb	0ccc cccc	0ddd dddd
7 bit, hex.	aa	bb	cc	dd

True address can be found by adding the parameter start address and the offset address.

The device ID used in the following examples is assumed 17H.

■ Parameter Address Block

1 JD 990

< Model ID = 57H >

Start address	Contents and remarks	
00 00 00 00	System Area	*4-1
01 00 00 00	Temporary Performance	*4-2
02 00 00 00	Performance Mode Temporary Patch (Part1)	*4-3
02 01 00 00	Performance Mode Temporary Patch (Part2)	
:	:	
02 0B 00 00	Performance Mode Temporary Patch (Part12)	
03 00 00 00	Patch Mode Temporary Patch	*4-4
04 00 00 00	Temporary Rhythm Setup	*4-5
05 00 00 00	Internal Performance 001	*4-2
05 01 00 00	Internal Performance 002	
:	:	
05 3F 00 00	Internal Performance 116	
06 00 00 00	Internal Patch 001	*4-3
06 01 00 00	Internal Patch 002	
:	:	
06 3F 00 00	Internal Patch 064	
07 00 00 00	Internal Rhythm Setup	*4-4
08 00 00 00	Card System Area	*4-1
09 00 00 00	Card Performance C01	*4-2
09 01 00 00	Card Performance C02	
:	:	
09 0F 00 00	Card Performance C16	
0A 00 00 00	Card Patch C11	*4-3
0A 01 00 00	Card Patch C12	
:	:	
0A 3F 00 00	Card Patch C88	
0B 00 00 00	Card Rhythm Setup	*4-4

The details of the asterisk marks (i.e. *4 - 1, *4 - 2) are described below per each block.

You cannot use any address having "±" for the top address.

*4 - 1 System Area

Offset address	Data	Contents and remarks	
00 00 00	00 - 02	System mode	PATCH, PERFORMANCE, RHYTHM
<Tune>			
00 00 01	00 - 64	Master tune	427.0 - 452.9Hz(0.2 Step)
00 00 02	00 - 07	LCD contrast	1 - 8
00 00 03	00 - 01	Character style	TYPE1, TYPE2
<Function>			
00 00 04	00 - 01	Rhythm output	KEY OUT, ALL MIX
00 00 05	00 - 01	Patch remain	OFF, ON
00 00 06	00 - 01	Power up mode	LASTSET, DEFAULT
<Peak Hold SW>			

00 00 07	00 - 7F	Tone control source 1	OFF, ON
00 00 08	00 - 7F	Tone control source 2	OFF, ON
00 00 09	00 - 7F	Effects control source 1	OFF, ON
00 00 0A	00 - 7F	Effects control source 2	OFF, ON

<Effects switch>

00 00 0B	00 - 7F	Effect switch Chorus	OFF, ON
00 00 0C	00 - 7F	Effect switch Delay	OFF, ON
00 00 0D	00 - 7F	Effect switch Reverb	OFF, ON
00 00 0E	00 - 7F	Effect switch Group-A	OFF, ON

<MIDI>

00 00 0F	00 - 11	Rx CH(Patch mode)	1 - 16, PART, OFF
00 00 10	00 - 12	Rx CH(Rhythm mode)	1 - 16, PART1, PART8, OFF
00 00 11	00 - 10	Control channel	1 - 16, OFF

<MIDI Rx receive switch>

00 00 12	00 - 01	Rx Program change	OFF, ON
00 00 13	00 - 01	Rx Volume	OFF, ON
00 00 14	00 - 01	Rx Pitch bend	OFF, ON
00 00 15	00 - 01	Rx Aftertouch	OFF, ON
00 00 16	00 - 01	Rx Modulation	OFF, ON
00 00 17	00 - 01	Rx Breath	OFF, ON
00 00 18	00 - 01	Rx Expression	OFF, ON
00 00 19	00 - 01	Rx Foot	OFF, ON

<Mix Out EQ>

00 00 1A	00 - 0A	Mix Out EQ high	5 - +5
00 00 1B	00 - 0A	Mix Out EQ mid	-5 - +5
00 00 1C	00 - 0A	Mix Out EQ low	-5 - +5

<Preview>

00 00 1D	00 - 01	Preview mode	SINGLE, CHORD
00 00 1E	00 - 58	Preview note number 1	OFF, A0 - C8
00 00 1F	00 - 58	Preview note number 2	OFF, A0 - C8
00 00 20	00 - 58	Preview note number 3	OFF, A0 - C8
00 00 21	00 - 58	Preview note number 4	OFF, A0 - C8
00 00 22	01 - 7F	Preview velocity 1	1 - 127
00 00 23	01 - 7F	Preview velocity 2	1 - 127
00 00 24	01 - 7F	Preview velocity 3	1 - 127
00 00 25	01 - 7F	Preview velocity 4	1 - 127

Total Size 00 00 26 (38bytes)

Example using RQ1 :

To extract all the system parameters from the JD-990, send the following message to the JD-990.

F0 41 10 57 11 00 00 00 00 00 00 00 26 5A F7

Example using DT1 :

To change the treble of the mix-out equalizer to +5dB, send the following message to the JD-990.

F0 41 10 57 12 00 00 00 1A 0A 5C F7

*4-2 Performance

Offset address	Contents and remarks	
00 00 00	Performance Common	*4-2-1
00 00 30	Part 1	*4-2-2
00 00 3C	Part 2	:
00 00 48	Part 3	
00 00 54	Part 4	
00 00 60	Part 5	
00 00 6C	Part 6	
00 00 78	Part 7	
00 01 64	Part 8(Rhythm Part)	

Total Size 00 01 10 (144bytes)

*4-2-1 Performance Common

Offset address	Data	Contents and remarks	
00 00 00	20 - 7F	Performance name 1	(ASCII)
00 00 01	20 - 7F	Performance name 2	(ASCII)
:	:	:	
00 00 0F	20 - 7F	Performance name 16	(ASCII)
00 00 10	00 - 07	Available sync part	MONO, PART1 - 7
00 00 11	00 - 18	Voice reserve (Part 1)	0 - 24
00 00 12#	00 - 18	Voice reserve (Part 2)	0 - 24
:	#	:	
00 00 38#	00 - 18	Voice reserve (Part 8)	0 - 24

< Chorus >

00 00 39	00 - 63	Rate	0.1 - 10Hz(0.1Hz step)
00 00 3A	00 - 64	Depth	0 - 100
00 00 3B	00 - 63	Delay time	0.1 - 50ms(*1)
00 00 3C	00 - 62	Feedback	98 - 0 -98%(2% step)
00 00 3D	00 - 64	Level	0 - 100

< Delay >

00 00 3E	00 - 02	Mode	NORMAL, MIDI SYNC, MANUAL
00 00 3F	00 - 01	Center tap MSB	
00 00 40#	00 - 7F	Center tap LSB	0.1ms - 3.0s *2
00 00 41	00 - 64	Center level	0 - 100
00 00 42	00 - 01	Left tap MSB	
00 00 43#	00 - 7F	Left tap LSB	0.1ms - 3.0s*2
00 00 44	00 - 64	Left level	0 - 100
00 00 45	00 - 01	Right tap MSB	
00 00 46#	00 - 7F	Right tap LSB	0.1ms - 3.0s*2
00 00 47	00 - 64	Right level	0 - 100
00 00 48	00 - 62	Feedback	98 - 0 -98%(2% step)

< Reverb >

00 00 49	00 - 09	Type	*3
00 00 4A	00 - 7B	Pre delay	0 - 123ms(1ms step)
00 00 4B	00 - 64	Early ref level	0 - 100
00 00 4C	00 - 10	HF damp	500Hz - 16kHz, BYPASS(*4)
00 00 4D	00 - 63	Time	0.1 - 20s(*4)
00 00 4E	00 - 64	Level	0 - 100
00 00 4F	00 - 00	< dummy >	

Total Size 00 00 50 (48bytes)

|*1|: 0.1ms - 5ms(0.1ms step), 5ms - 10ms(0.5ms step), 10ms - 50ms(1ms step)

|*2|: 0.1ms - 5ms(0.1ms step), 5ms - 10ms(0.5ms step), 10ms - 40ms(1ms step), 40ms - 200ms(10ms step), 200ms - 3.0s(20ms step), 16th note, Triplet 8th note, 8th note, Triplet quarter note, Dotted 8th note, Quarter note, Triplet half note, Dotted quarter note, Half note, whole note

|*3|: ROOM1, ROOM2, HALL1, HALL2, VALI3, HALL4,

GATE, REVERSE, FLYING1, FLYING2
[*4]: 500, 630, 800, 1k, 1.25k, 1.6k, 2k, 2.5k, 3.15k,
4k, 5k, 6.3k, 8k, 10k, 12.5k, 16kHz, BYPASS
[*5]: 0.1s 8.0s(0.1s step), 8.0s 16s(0.5s step), 16s 20s(1s step)
:(ROOM1, ROOM2, HALL1, HALL2, HALL3, HALL4)
5 500ms(5ms step) : (GATE, REVERSE, FLYING1, FLYING2)

*4-2-2 Part 1 - Part 8

Offset address	Data	Contents and remarks
00 00 00	00 - 01	MIDI Rx sw: OFF, ON
00 00 01	00 - 0F	MIDI Rx channel: 1 - 16
00 00 02	00 01	Bank: INT/Card, PresetA/B
00 00 03	00 - 7F	Patch(/Rhythm) number: 1 - 128
00 00 04	00 - 64	Part level: 0 - 100
00 00 05	00 64	Part pan: L50 50R
00 00 06	00 - 60	Part pitch coarse: -48 - +48
00 00 07	00 - 64	Part pitch fine: -50 +50
00 00 08	00 - 03	Output assign[*1]:MIX, DIR-1, DIR-2, DIR-3
00 00 09	00 03	Effect send mode[*1] DRY, REV, CHR, DLY
00 00 0A	00 - 64	Effect send level[*1]: 0 - 100
00 00 0B	20 - 00	<dummy>
Total Size	00 00 0C (12bytes)	

[*1] : These are ignored in Part 8.

/ example using RQ1 /
To extract the temporary part parameter of part 3, send the following message to the JD-990.

F0 41 10 57 11 01 00 00 46 00 00 00 0C 2D F7

/ Example using DT1 /

To change the temporary part level of Part 5 to 50, send the following message to the JD-990.

F0 41 10 57 12 01 00 00 62 32 6B F7

*4-3 Patch Memory / Patch Temporary

Offset address	Contents and remarks
00 00 00	Patch Common & Effect: *4-3-1
00 00 76	Patch Tone-A: *4-3-2
00 01 52	Patch Tone-B: :
00 02 2E	Patch Tone-C: :
00 03 0A	Patch Tone-D: :
Total Size	00 03 66 (486bytes)

*4-3-1 Patch Memory Common / Patch Temporary Common

Offset address	Data	Contents and remarks
00 00 00	20 - 7F	Patch name1: (ASCII)
00 00 01	20 - 7F	Patch name2: (ASCII)
:	: :	:
00 00 0F	20 - 7F	Patch name16: (ASCII)
00 00 10	00 - 64	Patch level: 0 - 100
00 00 11	00 - 64	Patch pan: L50 - 50R
00 00 12	00 64	Analog feel: 0 - 100
00 00 13	00 - 01	Voice priority: LAST, LOUDEST
00 00 14	00 - 30	Bend range (down): 0 48
00 00 15	00 - 0C	(up): 0 12
00 00 16	00 - 05	Tone control source 1: *1
00 00 17	00 - 05	Tone control source 2: *1
00 00 18	00 - 0F	Layer tone: *2
00 00 19	00 0F	Active tone: *2

< Key Effects >

00 00 1A	00 - 01	Portamento SW	OFF, ON
00 00 1B	00 - 01	Portamento mode	NORMAL, LEGATO
00 00 1C	00 01	Portamento type	TIME, RATE
00 00 1D	00 64	Portamento time	0 100
00 00 1E	00 - 01	Solo SW	OFF, ON
00 00 1F	00 - 01	Solo legato	OFF, ON
00 00 20	00 - 04	Solo sync master	OFF, TONE-A, B, C, D

< EQ >

00 00 21	00 - 01	Low frequency	200, 400Hz
00 00 22	00 1E	Low gain	15.0 +15.0dB (1dB step)
00 00 23	00 - 10	Mid frequency	200Hz 8kHz(*3, 1
00 00 24	00 - 04	Mid Q	0.5, 1.0, 2.0, 4.0, 8.0
00 00 25	00 - 1E	Mid gain	-15.0 - +15.0dB (1dB step)
00 00 26	00 - 01	High frequency	4, 8kHz
00 00 27	00 - 1E	High gain	15.0 - +15.0dB (1dB step)

< Structure >

00 00 28	00 - 05	Structure A & B	TYPE 1, 2, 3, 4, 5, 6
00 00 29	00 - 05	Structure C & D	TYPE 1, 2, 3, 4, 5, 6

< Key Range >

00 00 2A	00 - 7F	Key range L (Tone A)	C-1 G9
00 00 2B	00 7F	Key range L (Tone B)	C-1 G9
00 00 2C	00 - 7F	Key range L (Tone C)	C-1 G9
00 00 2D	00 - 7F	Key range L (Tone D)	C-1 G9
00 00 2E	00 - 7F	Key range H (Tone A)	C-1 G9
00 00 2F	00 7F	Key range H (Tone B)	C-1 G9
00 00 30	00 - 7F	Key range H (Tone C)	C-1 G9
00 00 31	00 7F	Key range H (Tone D)	C-1 G9

< Velocity >

00 00 32	00 - 02	Velocity range 1	ALL, LOW, HIGH
00 00 33	00 - 02	Velocity range 2	ALL, LOW, HIGH
00 00 34	00 - 02	Velocity range 3	ALL, LOW, HIGH
00 00 35	00 - 02	Velocity range 4	ALL, LOW, HIGH
00 00 36	01 7F	Velocity point 1	1 - 127
00 00 37	01 - 7F	Velocity point 2	1 127
00 00 38	01 7F	Velocity point 3	1 127
00 00 39	01 7F	Velocity point 4	1 127
00 00 3A	00 - 7F	Velocity fade 1	0 127
00 00 3B	00 7F	Velocity fade 2	0 127
00 00 3C	00 - 7F	Velocity fade 3	0 - 127
00 00 3D	00 7F	Velocity fade 4	0 127

< Effect >

00 00 3E	00 - 64	Effects balance for Group B	0 100
00 00 3F	00 - 05	Control source 1	*1
00 00 40	00 0E	Control dest 1	*4
00 00 41	00 - 64	Control depth 1	50 +50
00 00 42	00 05	Control source 2	*1
00 00 43	00 - 0E	Control dest 2	*4
00 00 44	00 - 64	Control depth 2	50 - +50

< Effect Chain >

00 00 45	05 - 17	Group A sequence			[*5]
CC 00 46	00 - 01	Group-A block-1 sw			OFF, ON
00 00 47	00 - 01	Group A block 2 sw			OFF, ON
00 00 48	00	01	Group-A block-3 sw			OFF, ON
00 00 49	00	01	Group-A block-4 sw			OFF, ON
< Distortion >						[*14]
00 00 4A	00 - 06	Type				[*6]
00 00 4B	00	64	Drive		0	100
00 00 4C	00 - 64	Level			0 - 100
!< Phaser >						[*14]
00 00 4D	00 - 03	Manual		50Hz	15kHz[*7]
00 00 4E	00	63	Rate	0.1	10Hz(0.1Hz step)
00 00 4F	00	64	Depth		0	100
00 00 50	00	64	Resonance		0 - 100
00 00 51	00 - 64	Mix			0 - 100
!< Spectrum >						[*14]
00 00 52	00 - 1E	Band 1		-15 - 0 - +15dB
00 00 53	00	1E	Band 2	-15 - 0 - +15dB
00 00 54	00	1E	Band 3	-15 - 0 - +15dB
00 00 55	00 - 1E	Band 4		-15 - 0 - +15dB
00 00 56	00 - 1E	Band 5		-15 - 0 - +15dB
00 00 57	00 - 1E	Band 6		-15 - 0 - +15dB
00 00 58	00	04	Band width		1 - 5
!< Enhancer >						[*14]
00 00 59	00	64	Sens		0	100
00 00 5A	00 - 64	Mix			0 - 100
!< Effect Chain >						[*15]
00 00 5B	00	05	Group-B sequence			[*8]
00 00 5C	00 - 01	Group-B block-1 sw			OFF, ON
00 00 5D	00	01	Group-B block 2 sw			OFF, ON
00 00 5E	00 - 01	Group-B block-3 sw			OFF, ON
!< Chorus >						[*16]
00 00 5F	00	63	Rate	0.1 - 10Hz(0.1Hz step)	
00 00 60	00	64	Depth		0 - 100
00 00 61	00	03	Delay time	0.1m	50ms[*9]
00 00 62	00 - 62	Feedback		-98 - 0 - +98%(2% step)	
00 00 63	00	64	Level		0 - 100
!< Delay >						[*15]
00 00 64	00 - 02	Mode	NORMAL, MIDI TEMPO, MANUAL TEMPO		
00 00 65	00	01	Center tap MSB		
00 00 66	00 - 7F	Center tap LSB		0.1ms - 3.0s[*10]	
00 00 67	00 - 64	Center level			0 - 100
00 00 68	00	01	Left tap MSB		
00 00 69	00 - 7F	Left tap LSB		0.1ms - 3.0s[*10]	
00 00 6A	00 - 64	Left level			0	100
00 00 6B	00	01	Right tap MSB		
00 00 6C	00	7F	Right tap LSB	0.1ms - 3.0s[*10]	
00 00 6D	00 - 64	Right level			0	100
00 00 6E	00 - 62	Feedback		-98 - 0 - +98%(2% step)	
!< Reverb >						[*15]
00 00 6F	00 - 09	Type				[*11]
00 00 70	00	78	Pre delay	0 - 120ms(1ms step)	
00 00 71	00	64	Early ref level		0 - 100
00 00 72	00	10	RF damp	500Hz - 16kHz, BYPASS[*12]	
00 00 73	00	63	Time	0.1	20s[*13]
00 00 74	00	64	Level		0	100
00 00 75	00 - 02	Octave SW			1, 2, +1
Total Size	00 00 76 (118bytes)					

[*1] : MOD, AFTER, EXP, BREATH, P.BEND, FOOT
[*2] : OFF, A, B, AB, C, AC, BC, ABC, D, AD, BD, ABD, CD, ACD, BCD, ABCD
[*3] : 200, 250, 315, 400, 500, 630, 800, 1k, 1.25k, 1.6k, 2k, 2.5k, 3.15k, 4k, 5k, 6.3k, 8k
[*4] : FX-BAL, DS-DRV, PH-MAN, PH RAT, PH-DPT, PH-RES, PH MIX, EX-MIX, CH RAT, CH-FDB, CH-LVL, DL FDB, DL LVL, RV-TIM, RV-LVL,
[*5] : DS PH-SP-EX, DS-PH-EX-SP, DS SP-EX-PH, DS-SP-PH-EX, DS-EX PH EX, DS-EX-PH-SP, PH-DS-SP-EX, PH-DS-EX-SP, PH SP-EX-DS, PH-SP-DS EX, PH-EX-DS-SP, PH-EX SP DS, SP-PH-DS-EX, SP-PH EX DS, SP-DS-EX-PH, SP-DS-PH-EX, SP-EX-PH-DS, SP-EX-DS-PH, EX-PH-SP-DS, EX PH-DS SP, EX-SP-DS-PH, EX SP PH-DS, EX-DS-PH-SP, EX DS-SP-PH,
[*6] : MELLOW DRIVE, OVERDRIVE, CRY DRIVE, MELLOW DIST, LIGHT DIST, FAT DIST, FUZZ DIST
[*7] : 50 - 300Hz(10Hz step), 320Hz, 350 - 1010Hz(30Hz step) 1.1k - 8.1kHz(0.2kHz step), 8.5 - 15kHz(0.5kHz step)
[*8] : CHO-DLY REV, CHO-REV-DLY, DLY CHO-REV, DLY-REV-CHO, REV CHO-DLY, REV-DLY CHO
[*9] : 0.1ms - 5ms(0.1ms step), 5ms - 10ms(0.5ms step), 10ms - 50ms(1ms step)
[*10]: 0.1ms - 5ms(0.1ms step), 5ms - 10ms(0.5ms step), 10ms - 40ms(1ms step), 40ms - 200ms(10ms step), 200ms - 3s(20ms step), 16th note, Triplet 8th note, 8th note, Triplet quarter note, Dotted 8th note, Quarter note, Triplet half note, Dotted quarter note, Half note, whole note
[*11]: ROOM1, ROOM2, HALL1, HALL2, HALL3, HALL4, GATE, REVERSE, PLYING1, PLYING2
[*12]: 500, 630, 800, 1k, 1.25k, 1.6k, 2k, 2.5k, 3.15k, 4k, 5k, 6.3k, 8k, 10k, 12.5k, 16kHz, BYPASS
[*13]: 0.1s - 8.0s(0.1s step), 8.0s -16s(0.5s step), 16s - 20s(1s step) : (ROOM1, ROOM2, HALL1, HALL2, HALL3, HALL4) 5 - 500ms : (GATE, REVERSE, PLYING1, PLYING2)
[*14]: These are effective in Patch mode and Part of Performance
[*15]: These are ignored in Performance mode.

/ Example using RQ1 /
To extract the equalizer parameters of the patch 1 - 51, send the following message to the JD - 990 .

F0 41 10 57 11 06 20 00 21 00 00 00 07 32 F7

/ Example using DT1 /
To change the structure A&B of the patch 1 - 21 to TYPE 3, send the following message to the JD - 990 .

F0 41 10 57 12 06 08 00 28 02 48 F7

/ Example using RQ1 /
To extract the effects parameter of the patch 1 - 41, send the following message to the JD - 990 .

F0 41 10 57 11 06 18 00 3E 00 00 00 37 6D F7

/ Example using DT1 /
To change the phaser depth of the patch 1 - 71 to 100, send the following message to the JD - 990 .

F0 41 10 57 12 06 30 00 4F 64 17 F7

*4 - 3 - 2 Patch Memory Tone / Patch Temporary Tone / Setup Tone

Offset address	Data	Contents and remarks
< WG >		
00 00 00	00 - 02	Source [Int, Card, Exp]
00 00 01	00 - 01	Waveform MSB
00 00 02	00 - 7F	Waveform LSB [*1] 1 - 256
00 00 03	00 07	PXM color 1 - 8
00 00 04	00 - 64	PXM depth OFF, 1 - 100
00 00 05	00 - 01	Sync slave switch OFF, ON
00 00 06	00 04	Tone delay mode [*2]
00 00 07	00 - 7F	Tone delay time 0 5.0s [*3]
00 00 08	00 40	Pitch coarse -48 - +48 (semi)
00 00 09	00 64	Pitch fine 50 +50 (cent)
00 00 0A	00 64	Pitch random 0 - 100
00 00 0B	00 - 10	Pitch key follow [*4]
00 00 0C	00 18	Pitch envelope depth -12 - +12
00 00 0D	00 - 01	Bender switch OFF, ON
< PITCH ENV >		
00 00 0E	00 64	Velocity sens 50 -50
00 00 0F	00 64	Time velocity sens -50 - -50
00 00 10	00 14	Time key follow 10 -10
00 00 11	00 - 64	Level 0 -50 - -50
00 00 12	00 64	Time 1 0 100
00 00 13	00 - 64	Level 1 50 -50
00 00 14	00 - 64	Time 2 0 100
00 00 15	00 64	Sustain level 50 -50
00 00 16	00 64	Time 3 0 100
00 00 17	00 - 64	Level 3 -50 - -50
< TVF >		
00 00 18	00 - 02	Filter mode HPF, BPF, LPF
00 00 19	00 - 64	Cutoff freq 0 - 100
00 00 1A	00 64	Resonance 0 100
00 00 1B	00 - 28	Cutoff key follow [*5]
00 00 1C	00 64	TVF envelope depth 50 -50
< TVF ENV >		
00 00 1D	00 - 64	Velocity sens -50 - +50
00 00 1E	00 - 64	Time velocity sens -50 - +50
00 00 1F	00 14	Time key follow 10 +10
00 00 20	00 64	Time 1 0 100
00 00 21	00 - 64	Level 1 0 - 100
00 00 22	00 - 64	Time 2 0 - 100
00 00 23	00 - 64	Level 2 0 - 100
00 00 24	00 - 64	Time 3 0 - 100
00 00 25	00 - 64	Sustain level 0 - 100
00 00 26	00 - 64	Time 4 0 - 100
00 00 27	00 64	Level 4 0 100
< TVA >		
00 00 28	00 - 64	Level 0 - 100
00 00 29	00 02	Bias direction UPPER, LOWER, UP&LOW
00 00 2A	00 - 7F	Bias point C-1 - G9
00 00 2B	00 14	Bias level -10 - +10
00 00 2C	00 67	Pan L50 50R, RND, ALT-L, ALT-R
00 00 2D	00 - 0E	Pan key follow [*6]
< TVA ENV >		
00 00 2E	00 - 64	Velocity sens -50 - +50
00 00 2F	00 - 64	Time velocity sens -50 - +50
00 00 30	00 14	Time key follow 10 +10
00 00 31	00 - 64	Time 1 0 100
00 00 32	00 64	Level 1 0 100
00 00 33	00 64	Time 2 0 100
00 00 34	00 64	Level 2 0 100
00 00 35	00 64	Time 3 0 100
00 00 36	00 - 64	Sustain level 0 100
00 00 37	00 64	Time 4 0 100
< Velocity & Control >		
00 00 38	00 - 06	Velocity curve 1 7
00 00 39	00 - 01	Hold control SW OFF, ON
< LFO 1 >		
00 00 3A	00 - 07	Waveform TRI, SIN, SAW, SQR, RND, SAH, EXT, USR
00 00 3B	00 64	Rate 0 100
00 00 3C	00 - 65	Delay 0 100, SYNC
00 00 3D	00 64	Fade 50 0 -50
00 00 3E	00 - 02	Offset -1 0 +1
00 00 3F	00 01	Key trigger OFF, ON
< LFO 1 Depth>		
00 00 40	00 64	Pitch 50 +50
00 00 41	00 64	TVF 50 +50
00 00 42	00 - 64	TVA 50 -50
< LFO 2 >		
00 00 43	00 07	Waveform TRI, SIN, SAW, SQR, RND, SAH, EXT, USR
00 00 44	00 64	Rate 0 100
00 00 45	00 65	Delay 0 100, SYNC
00 00 46	00 64	Fade 50 0 -50
00 00 47	00 - 02	Offset -1, 0, +1
00 00 48	00 01	Key trigger OFF, ON
< LFO 2 Depth>		
00 00 49	00 - 64	Pitch 50 +50
00 00 4A	00 64	TVF 50 +50
00 00 4B	00 64	TVA 50 +50
< Control source 1 >		
00 00 4C	00 08	Destination 1 TVA
00 00 4D	00 64	Depth 1 50 +50
00 00 4E	00 0B	Destination 2 PAN
00 00 4F	00 64	Depth 2 +50
00 00 50	00 0B	Destination 3 PAN
00 00 51	00 64	Depth 3 50 +50
00 00 52	00 - 0B	Destination 4 PAN
00 00 53	00 64	Depth 4 50 +50
< Control source 2 >		
00 00 54	00 0B	Destination 1 PAN
00 00 55	00 - 64	Depth 1 50 -50
00 00 56	00 - 0B	Destination 2 PAN
00 00 57	00 64	Depth 2 50 -50
00 00 58	00 - 0B	Destination 3 PAN
00 00 59	00 - 64	Depth 3 50 -50
00 00 5A	00 0B	Destination 4 PAN
00 00 5B	00 - 64	Depth 4 50 -50
Total size	00 00 5C	(92bytes)

[*1] : The range for use of the JD-990 internal waveform is 00 00H (0) through 01H 41H (141). In case of the PCM card, the maximum value will be the number of waveform in the

and minus 5. If the indicated value is out of range, the tone does not sounds properly.

*2 : NORMAL, HOLD, K-OFF N, K-OFF D, PLAYMATE

*3 : 0 - 1s(10ms step), 1 - 3s(100ms step), 3 - 4s(200ms step), 4.5, 5s : (NORMAL, HOLD, K-OFF N, K-OFF D)
0 - 254 * : (PLAYMATE)

*4 : -100, -50, -20, -10, -5, 0, +5, +10, +20, +50, +98, +99, +100, +101, +102, +150, +200%

*5 : -100 - 0%(10% step), - +150%(5% step)

*6 : -100, -70, -50, -40, -30, -20, -10, 0, +10, +20, +30, +40, +50, +70, +100

*7 : PITCH, CUTOFF, RES, LEVEL, P-LFO1, P-LFO2, F-LFO1, F-LFO2, A-LFO1, A-LFO2, LFO1 R, LFO2 R

/ Example using RQ1 /

To extract the TONE A parameters of the patch I-12, send the following message to the JD-990.

F0 41 10 57 11 06 01 01 54 00 00 00 5C 48 F7

/ Example using DT1 /

To change the TONE C cutoff frequency of the patch temporary in Part 2 to 100, send the following message to the JD-990.

F0 41 10 57 12 02 01 00 19 64 00 F7

*4-4 Rhythm Setup Area

Offset address	Contents and remarks	
00 00 00	Rhythm setup common	*4-4-1
00 00 3A	Rhythm Setup #1(Note# 36)	*4-4-2
00 01 24	Rhythm Setup #2(Note# 37)	:
00 02 0E	Rhythm Setup #3(Note# 38)	:
00 02 78	Rhythm Setup #4(Note# 39)	
00 03 62	Rhythm Setup #5(Note# 40)	
00 04 4C	Rhythm Setup #6(Note# 41)	
00 05 36	Rhythm Setup #7(Note# 42)	
00 06 20	Rhythm Setup #8(Note# 43)	
00 07 0A	Rhythm Setup #9(Note# 44)	
00 07 74	Rhythm Setup #10(Note# 45)	
00 08 5E	Rhythm Setup #11(Note# 46)	
00 09 48	Rhythm Setup #12(Note# 47)	
00 0A 32	Rhythm Setup #13(Note# 48)	
00 0B 1C	Rhythm Setup #14(Note# 49)	
00 0C 06	Rhythm Setup #15(Note# 50)	
00 0C 70	Rhythm Setup #16(Note# 51)	
00 0D 5A	Rhythm Setup #17(Note# 52)	
00 0E 44	Rhythm Setup #18(Note# 53)	
00 0F 2E	Rhythm Setup #19(Note# 54)	
00 10 18	Rhythm Setup #20(Note# 55)	
00 11 02	Rhythm Setup #21(Note# 56)	
00 11 6C	Rhythm Setup #22(Note# 57)	
00 12 56	Rhythm Setup #23(Note# 58)	
00 13 40	Rhythm Setup #24(Note# 59)	
00 14 2A	Rhythm Setup #25(Note# 60)	
00 15 14	Rhythm Setup #26(Note# 61)	
00 15 7E	Rhythm Setup #27(Note# 62)	
00 16 68	Rhythm Setup #28(Note# 63)	
00 17 52	Rhythm Setup #29(Note# 64)	
00 18 3C	Rhythm Setup #30(Note# 65)	
00 19 26	Rhythm Setup #31(Note# 66)	
00 1A 10	Rhythm Setup #32(Note# 67)	
00 1A 7A	Rhythm Setup #33(Note# 68)	
00 1B 64	Rhythm Setup #34(Note# 69)	
00 1C 4E	Rhythm Setup #35(Note# 70)	
00 1D 38	Rhythm Setup #36(Note# 71)	
00 1E 22	Rhythm Setup #37(Note# 72)	
00 1F 0C	Rhythm Setup #38(Note# 73)	
00 1F 76	Rhythm Setup #39(Note# 74)	
00 20 60	Rhythm Setup #40(Note# 75)	
00 21 4A	Rhythm Setup #41(Note# 76)	
00 22 34	Rhythm Setup #42(Note# 77)	
00 23 1E	Rhythm Setup #43(Note# 78)	
00 24 08	Rhythm Setup #44(Note# 79)	
00 24 72	Rhythm Setup #45(Note# 80)	
00 25 5C	Rhythm Setup #46(Note# 81)	
00 26 46	Rhythm Setup #47(Note# 82)	
00 27 30	Rhythm Setup #48(Note# 83)	
00 28 1A	Rhythm Setup #49(Note# 84)	
00 29 04	Rhythm Setup #50(Note# 85)	
00 29 6E	Rhythm Setup #51(Note# 86)	
00 2A 58	Rhythm Setup #52(Note# 87)	
00 2B 42	Rhythm Setup #53(Note# 88)	
00 2C 2C	Rhythm Setup #54(Note# 89)	
00 2D 16	Rhythm Setup #55(Note# 90)	
00 2E 00	Rhythm Setup #56(Note# 91)	
00 2E 6A	Rhythm Setup #57(Note# 92)	
00 2F 54	Rhythm Setup #58(Note# 93)	
00 30 3E	Rhythm Setup #59(Note# 94)	
00 31 28	Rhythm Setup #60(Note# 95)	
00 32 12	Rhythm Setup #61(Note# 96)	
Total Size	00 32 7C (6524bytes)	

*4-4-1 Rhythm Setup Common

Offset address	Data	Contents and remarks	
00 00 00	20 - 7F	Rhythm setup name1	(ASCII)
00 00 01	20 - 7F	Rhythm setup name2	(ASCII)
:	:	:	
00 00 0F	20 - 7F	Rhythm setup name16	(ASCII)
00 00 10	00 - 64	Rhythm setup level	0 - 100
00 00 11	00 - 64	Rhythm setup pan	L50 - 50R
00 00 12	00 - 64	Analog feel	0 - 100
00 00 13	00 - 30	Bend range (down)	0 - 48
00 00 14	00 - 0C	(up)	0 - 12
00 00 15	00 - 05	Tone control source 1	*1
00 00 16	00 - 05	Tone control source 2	*1
< EQ >			
00 00 17	00 - 01	Low frequency	200, 400Hz
00 00 18	00 - 32	Low gain	-15.0 - +15.0dB (1dB step)
00 00 19	00 - 0F	Mid frequency	200Hz - 8kHz *2
00 00 1A	00 - 04	Mid Q	0.5, 1.0, 2.0, 4.0, 9.0
00 00 1B	00 - 32	Mid gain	-15.0 - +15.0dB (1dB step)
00 00 1C	00 - 01	High frequency	4, 8kHz
00 00 1D	00 - 32	High gain	-15.0 - +15.0dB (1dB step)
< Effect >			*9
00 00 1E	00 - 05	Control source 1	*1
00 00 1F	00 - 06	Control destination 1	*3
00 00 20	00 - 64	Control depth 1	-50 - +50
00 00 21	00 - 05	Control source 2	*1
00 00 22	00 - 05	Control destination 2	*3
00 00 23	00 - 64	Control depth 2	-50 - +50
< Chorus >			*9
00 00 24	00 - 63	Rate	0.1 - 10Hz(0.1Hz step)
00 00 25	00 - 64	Depth	0 - 100
00 00 26	00 - 63	Delay time	0.1ms - 50ms *4
00 00 27	00 - 62	Feedback	-98 - 0 - +98%(2% step)
00 00 28	00 - 64	Level	0 - 100

< Delay >			[*9]
00 00 29	00 - 02	Mode	NORMAL, MIDI TEMPO, MANUAL TEMPO
00 00 2A	00 - 01	Center tap MSB	
00 00 2B	00 - 7F	Center tap LSB	0.1ms - 3.0s[*5]
00 00 2C	00 - 64	Center level	0 - 100
00 00 2D	00 - 01	Left tap MSB	
00 00 2E	00 - 7F	Left tap LSB	0.1ms - 3.0s[*5]
00 00 2F	00 - 64	Left level	0 - 100
00 00 30	00 - 01	Right tap MSB	
00 00 31	00 - 7F	Right tap LSB	0.1ms - 3.0s[*5]
00 00 32	00 - 64	Right level	0 - 100
00 00 33	00 - 62	Feedback	-98 - 0 - +98%(2% step)
< Reverb >			[*9]
00 00 34	00 - 09	Type	[*6]
00 00 35	00 - 78	Pre delay	0 - 120ms(1ms step)
00 00 36	00 - 64	Early ref level	0 - 100
00 00 37	00 - 10	HF damp	500Hz - 16kHz, BYPASS[*7]
00 00 38	00 - 63	Time	0.1 - 20s[*8]
00 00 39	00 - 64	Level	0 - 100
Total Size 00 00 3A (58bytes)			

[*1] : MOD, AFTER, EXP, BREATH, P-BEND, FOOT
[*2] : 200, 250, 315, 400, 500, 630, 800, 1k, 1.25k, 1.6k,
2k, 2.5k, 3.15k, 4k, 5k, 6.3k, 8kHz
[*3] : CH-RAT, CH-FDB, CH-LVL, DL-FDB, DL-LVL,
RV-TIM, RV-LVL,
[*4] : 0.1ms - 9ms(0.1ms step), 5ms - 10ms(0.5ms step),
10ms - 50ms(1ms step)
[*5] : 0.1ms - 5ms(0.1ms step), 5ms - 10ms(0.5ms step),
10ms - 40ms(1ms step), 40ms - 200ms(10ms step),
200ms 3.0s(20ms step), 16th note, Triplet 8th note,
8th note, Triplet quarter note, Dotted 8th note,
Quarter note, Triplet half note, Dotted quarter note,
Half note, whole note
[*6] : ROOM1, ROOM2, HALL1, HALL2, HALL3, HALL4,
GATE, REVERSE, FLYING1, FLYING2
[*7] : 500, 630, 800, 1k, 1.25k, 1.6k, 2k, 2.5k, 3.15k,
4k, 5k, 6.3k, 8k, 10k, 12.5k, 16kHz, BYPASS
[*8] : 0.1s - 8.0s(0.1s step), 8.0s - 16s(0.5s step),
16s 20s(1s step)
: (ROOM1, ROOM2, HALL1, HALL2, HALL3, HALL4)
5 - 500ms (5ms step) : (GATE, REVERSE, FLYING1, FLYING2)
[*9] : These are ignored in Part 8 of Performance.

*4-4-2 Rhythm Setup

Offset address	Contents and remarks	
00 00 00	Setup key	*4-4-2-1
00 00 0E	Key Tone	*4-3-2
Total Size 00 00 6A (106bytes)		

*4-4-2-1 Setup Key

Offset address	Data	Contents and remarks	
00 00 00	20 - 7F	Rhythm key name 1	(ASCII)
:	:	:	:
00 00 09	20 - 7F	Rhythm key name 10	(ASCII)
00 00 0A	00 01	Envelope mode	SUSTAIN, NO-SUS
00 00 0B	00 - 1A	Mute group	OFF, A - Z
00 00 0C	00 - 06	Effect mode&output	[*1]
00 00 0D	00 - 64	Effect send level	0 - 100
Total Size 00 00 0E (14bytes)			

[*1] : EQ:MIX, EQ+R:MIX, EQ+C+R:MIX, EQ+D+R:MIX, DIR1, DIR2, DIR3

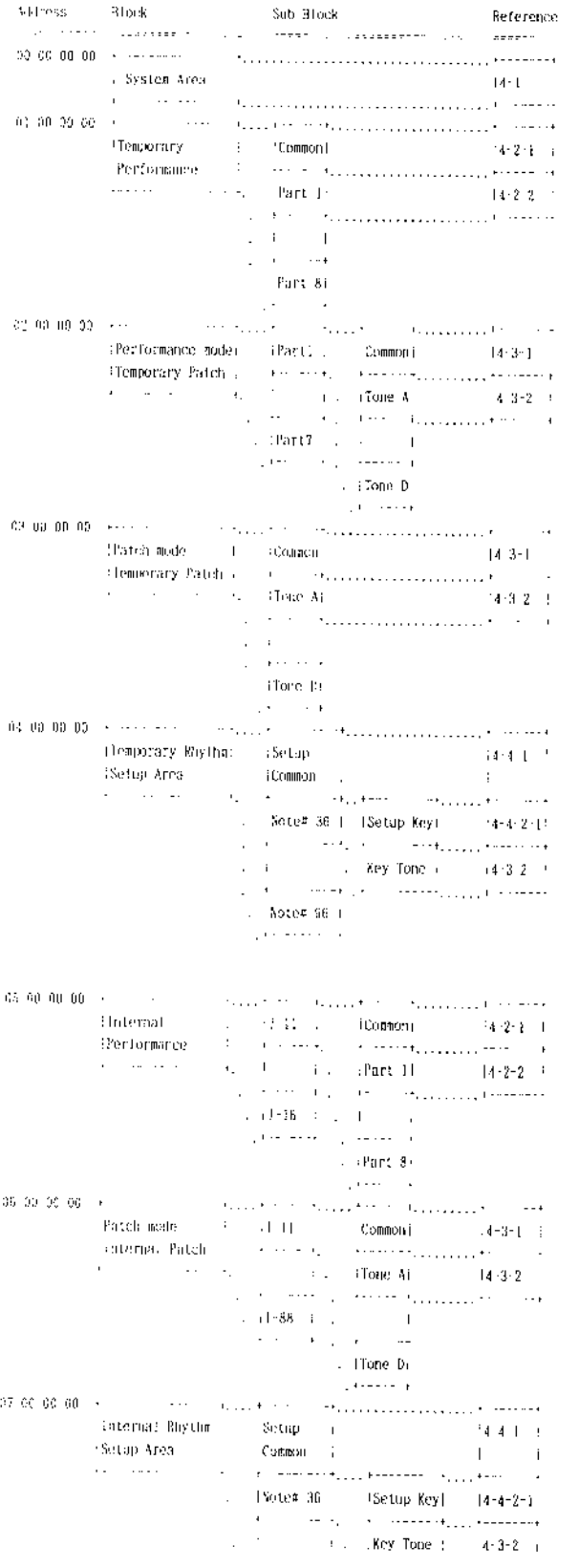
/ Exmple using RQ1 /
To extract the 10 characters of the instrument name of note number 60 : instrument common : temporary rhythm set, send the following message to the JD-990 .

F0 41 10 57 11 04 00 14 2A 00 00 00 0A 34 F7

/ Example using DT1 /
To change the output mode of note number 50 : instrument common : temporary rhythm set to DIR1, send the following message to the JD-990 .

F0 41 10 57 12 04 00 0C 12 04 5A F7

Address Map


Address
Block
Sub Block
Reference
00 00 00 00
System Area
01 00 00 00
Temporary
Performance
Common
Part 1
Part 8
02 00 00 00
Performance mode
Temporary Patch
Part1
Part7
Common
Tone A
Tone D
03 00 00 00
Patch mode
Temporary Patch
Common
Tone A
Tone B
04 00 00 00
Temporary Rhythm
Setup Area
Setup
Common
Note# 36
Note# 96
Setup Key
Key Tone
05 00 00 00
Internal
Performance
Common
Part 1
1-16
Part 8
06 00 00 00
Patch mode
Internal Patch
Common
Tone A
1-88
Tone D
07 00 00 00
Internal Rhythm
Setup Area
Setup
Common
Note# 36
Note# 96
Setup Key
Key Tone
08 00 00 00
Card System
Area
09 00 00 00
Card
Performance
Common
Part 1
1-16
Part 8
0A 00 00 00
Patch mode
Card Patch
Common
Tone A
1-88
Tone D
0B 00 00 00
Card Rhythm
Setup Area
Setup
Common
Note# 36
Note# 96
Setup Key
Key Tone

JD-800

< Model ID = 3DH >

■ Parameter Address Block

Start address	Contents and remarks	
00 00 00	Patch Mode Temporary Area	*5-1
01 00 00	Special Setup Temporary Area	*5-2

The details of the asterisk marks (i.e., *5-1, *5-2) are described below for each block.

True address can be found by adding the parameter start address and the offset address. The device ID used in the following examples is assumed 17H.

*5-1 Patch Mode Temporary Area

Offset address	Contents and remarks	
00 00 00	Patch Common	*5-1-1
00 00 32	Patch Effect	*5-1-2
00 00 60	Patch Tone-A	*5-1-3
00 01 28	Patch Tone-B	*5-1-3
00 01 70	Patch Tone-C	*5-1-3
00 02 38	Patch Tone-D	*5-1-3
[Total Size]	00 03 00 (384bytes)	

*5-1-1 Patch Temporary Common

Offset address	Data	Contents and remarks	
00 00 00	20 - 7F	Patch name1	(ASCII)
:	:	:	
00 00 0F	20 - 7F	Patch name16	(ASCII)
00 00 10	00 - 64	Patch level	0 - 100
00 00 11	00 - 7F	Key range L (Tone A)	C-1 - G9
00 00 12	00 - 7F	Key range H (Tone A)	C-1 - G9
00 00 13	00 - 7F	Key range L (Tone B)	C-1 - G9
00 00 14	00 - 7F	Key range H (Tone B)	C-1 - G9
00 00 15	00 - 7F	Key range L (Tone C)	C-1 - G9
00 00 16	00 - 7F	Key range H (Tone C)	C-1 - G9
00 00 17	00 - 7F	Key range L (Tone D)	C-1 - G9
00 00 18	00 - 7F	Key range H (Tone D)	C-1 - G9
00 00 19	00 - 0C	Bender range up	0 - 12
00 00 1A	00 - 30	Bender range down	0 - 48
00 00 1B	0C - 1A	A-Touch bend	36, -24, -12 - +12(semi)
00 00 1C	00 - 01	Solo SW	OFF, ON
00 00 1D	00 - 01	Solo legato	OFF, ON
00 00 1E	00 - 01	Portamento SW	OFF, ON
00 00 1F	00 - 01	Portamento mode	NORMAL, LEGATO
00 00 20	00 - 64	Portamento time	0 - 100
00 00 21	00 - 0F	Layer tone	none - ABCD (*1)
00 00 22	00 - 0F	Active tone	none - ABCD (*1)

< EQ >

00 00 23	00 - 01	Low frequency		200, 400Hz
00 00 24	00 - 1E	Low gain	15.0	+15.0dB (1dB step)
00 00 25	00 - 10	Mid frequency		200Hz - 8kHz (*2)
00 00 26	00 - 04	Mid Q		0.5, 1, 2, 4, 9
00 00 27	00 - 1E	Mid gain	-15.0	-15.0dB - +15.0dB (1dB step)
00 00 28	00 - 01	High freq		4k, 8kHz
00 00 29	00 - 1E	High gain	15.0	-15.0dB - +15.0dB (1dB step)

< MIDI TX >

00 00 2A	00 - 02	Key mode (*3)		MONO, SPLIT, DUAL
00 00 2B	00 - 5A	Split point (*3)		C1 - C#8
00 00 2C	00 - 0F	Lower channel (*3)		1 - 16
00 00 2D	00 - 0F	Upper channel (*3)		1 - 16
00 00 2E	00 - 7F	Lower program change (*3)		1 - 128
00 00 2F	00 - 7F	Upper program change (*3)		1 - 128
00 00 30	00 - 02	Hold mode (*3)		UPPER, LOWER, BOTH
00 00 31	00	00	<dummy>	
[Total Size]	00 00 32 (50bytes)			

(*1) : none, A, B, AB, C, AC, BC, ABC, D, AD, BD, ABD, CD, ACD, BCD, ABCD

(*2) : 200, 250, 315, 400, 500, 630, 800, 1k, 1.25k, 1.6k, 2k, 2.5k, 3.15k, 4k, 5k, 6.3k, 8kHz

(*3) : This will be ignored in the JD-990.

< Example using DT1 >

To extract the equalizer parameter of the Temporary Patch, send the following message to the JD-990.

F0 41 10 3D 12 00 00 10 64 0C F7

*5-1-2 Patch Temporary Effect

Offset address	Data	Contents and remarks	
00 00 00	00	17	Group-A sequence	#1
00 00 01	00	05	Group-B sequence	#2
00 00 02	00 - 01	Group A block 1 sw	OFF, ON
00 00 03	00	01	Group A block 2 sw	OFF, ON
00 00 04	00	01	Group A block 3 sw	OFF, ON
00 00 05	00 - 01	Group-A block 4 sw	OFF, ON
00 00 06	00	01	Group-B block-1 sw	OFF, ON
00 00 07	00	01	Group-B block-2 sw	OFF, ON
00 00 08	00 - 01	Group B block 3 sw	OFF, ON
00 00 09	00	64	Group B effect balance	100 0 - 0:100

< Distortion >

00 00 0A	00 - 06	Type		#1
00 00 0B	00 - 64	Drive		0 - 100
00 00 0C	00	64	Level	0 - 100

< Phaser >

00 00 0D	00	53	Manual	36 - 156Hz *1
00 00 0E	00	63	Rate	0.1 - 10Hz (0.1Hz step)
00 00 0F	00 - 64	Depth		0 - 100
00 00 10	00	64	Resonance	0 - 100
00 00 11	00	64	Mix	0 - 100

< Spectrum >

00 00 12	00	1E	Band 1	15 - +15
00 00 13	00	1E	Band 2	15 - +15
00 00 14	00 - 1E	Band 3		15 - +15

00	00	15	00	1E	Band 4	-15 - +15
00	00	16	00	1E	Band 5	-15 - +15
00	00	17	00	1E	Band 6	-15 - +15
00	00	18	00	04	Band width	1 - 5

< Enhancer >

00	00	19	00	64	Sens	0 - 100
00	00	1A	00	64	Mix	0 - 100

< Delay >

00	00	1B	00	78	Center tap	0.1 - 600ms (*5)
00	00	1C	00	64	Center level	0 - 100
00	00	1D	00	7D	Left tap	0.1 - 600ms (*5)
00	00	1E	00	64	Left level	0 - 100
00	00	1F	00	7D	Right tap	0.1 - 600ms (*5)
00	00	20	00	64	Right level	0 - 100
00	00	21	00	62	Feedback	-98 - 0 - +98%(2% step)

< Chorus >

00	00	22	00	69	Rate	0.1 - 10Hz(0.1Hz step)
00	00	23	00	64	Depth	0 - 100
00	00	24	00	63	Delay time	0.1 - 30ms (*6)
00	00	25	00	62	Feedback	-98 - 0 - +98%(2% step)
00	00	26	00	64	Level	0 - 100

< Reverb >

00	00	27	00	01	Type	(*7)
00	00	28	00	26	Pre delay	0 - 120ms(1ms step)
00	00	29	00	64	Early ref level	0 - 100
00	00	2A	00	10	HF damp	500Hz - BYPASS (*8)
00	00	2B	00	64	Time	0.1 - 20s (*9)
00	00	2C	00	63	Level	0 - 100
00	00	2D	00	00	<dummy>	

Total Size(00 00 2E (46bytes)

*1 : PS-PH-SP-EN, PS-PH-EN-SP, PS-SP-EN-PH, PS-SP-PH-EN, PS-EN-PH-SP, PS-EN-SP-PH, PH-PS-SP-EN, PH-PS-EN-SP, PH-SP-EN-PS, PH-SP-PS-EN, PH-EN-PS-SP, PH-EN-SP-PS, SP-PH-PS-EN, SP-PH-EN-PS, SP-PS-EN-PH, SP-PS-PH-EN, SP-EN-PH-PS, SP-EN-PS-PH, EN-PH-SP-PS, EN-PH-PS-SP, EN-SP-PS-PH, EN-SP-PH-PS, EN-PS-PH-SP, EN-PS-SP-PH

*2 : CHO-REV, CHO-REV DLY, DLY-CHO-REV, DLY-REV-CHO, REV-CHO, REV-CHO DLY, REV-DLY-CHO

*3 : MELLOW DRIVE, OVER DRIVE, CRY DRIVE, MELLOW DIST, LIGHT DIST, FAT DIST, FUZZ DIST

*4 : 50Hz - 300Hz(10Hz step), 320Hz - 350Hz - 400Hz(30Hz step), 1.1kHz - 8.1kHz(0.2kHz step), 8.5kHz - 15kHz(0.5kHz step)

*5 : 0.1ms - 5ms(0.1ms step), 5.5ms - 10ms(0.5ms step), 11ms - 40ms(1ms step), 50ms - 200ms(10ms step), 220ms - 600ms(20ms step)

*6 : 0.1ms - 5ms(0.1ms step), 5.5ms - 10ms(0.5ms step), 11ms - 30ms(1ms step)

*7 : ROOM1, ROOM2, HALL1, HALL2, HALL3, HALL4, GATE, REVERSE, FLYING1, FLYING2

*8 : 500, 630, 800, 1k, 1.25k, 1.6k, 2k, 2.5k, 3.15k, 4k, 5k, 6.3k, 8k, 10k, 12.5k, 15kHz, BYPASS

*9 : 0.1s - 8.0s(0.1s step), 8.0s - 15s(0.5s step); 16s - 20s(1s step)
(ROOM1/2, HALL1/2/3/4)
5 - 500ms (5ms step);
(GATE, REVERSE, FLYING1/2)

/ Example using DT1 /

To extract the phaser mix of the Temporary Patch, send the following message to the ID = 990.

F0 41 10 3D 12 00 00 48 64 59 F7

*5 - 1 - 3 Patch Temporary Tone / Setup Key Tone

Offset address	Data	Contents and remarks		
< COMMON >				
00	00	00	00 - 03	Velocity curve	1, 2, 3, 4
00	00	01	00 - 01	Hold control	OFF, ON
< LFO 1 >				
00	00	02	00 - 64	Rate	0 - 100
00	00	03	00 - 65	Delay	0 - 100, REL
00	00	04	00 - 64	Fade	-50 - +50
00	00	05	00 - 04	Waveform	TRI, SAW, SQU, S/H, RND
00	00	06	00	02	Offset	-, 0,
00	00	07	00 - 01	Key trigger	OFF, ON
< LFO 2 >				
00	00	08	00	64	Rate	0 - 100
00	00	09	00	65	Delay	0 - 100, REL
00	00	0A	00	64	Fade	-50 - +50
00	00	0B	00 - 04	Waveform	TRI, SAW, SQU, S/H, RND
00	00	0C	00 - 02	Offset	-, 0,
00	00	0D	00	01	Key trigger	OFF, ON
< MG >				
00	00	0E	00	01	Wave source	INT, EXT
00	00	0F	00 - 01	Waveform MSB	
00	00	10	00 - 7F	Waveform LSB	0 - 255 (*1)
00	00	11	00 - 60	Pitch coarse	48 - +48
00	00	12	00 - 64	Pitch fine	-50 - +50
00	00	13	00 - 64	Pitch random	0 - 100
00	00	14	00 - 10	Key follow	1/50 - +200(%) (*2)
00	00	15	00	01	Bender	OFF, ON
00	00	16	00 - 01	A-touch bend	OFF, ON
00	00	17	00	64	LFO1 sens	50 - +50
00	00	18	00	64	LFO2 sens	50 - +50
00	00	19	00 - 64	Lever sens	LFO2(50) 0 LFO1(50)
00	00	1A	00 - 64	A-touch mod sens	LFO2(50) 0 LFO1(50)
< PITCH ENV >				
00	00	1B	00 - 64	Velo	-50 - +50
00	00	1C	00 - 64	Time velo	-50 - +50
00	00	1D	00	14	Time KF	-10 - +10
00	00	1E	00	64	Level 0	-50 - +50
00	00	1F	00	64	Time 1	0 - 100
00	00	20	00 - 64	Level 1	-50 - +50
00	00	21	00	64	Time 2	0 - 100
00	00	22	00	64	Time 3	0 - 100
00	00	23	00	64	Level 2	-50 - +50
< TVF >				
00	00	24	00 - 02	Filter mode	HPF, BPF, LPF
00	00	25	00	64	Cutoff freq	0 - 127
00	00	26	00 - 64	Resonance	0 - 100
00	00	27	00 - 28	Key follow	-100 - +150(%) (*3)
00	00	28	00 - 64	A-touch sens	-50 - +50
00	00	29	00 - 01	LFO select	LFO 1, LFO 2
00	00	2A	00 - 64	LFO depth	-50 - +50
00	00	2B	00 - 64	TVF Env depth	-50 - +50
< TVF ENV >				

00 00 2C	00	64	Velo		50 - +50
00 00 2D	00	64	Time velo		50 - +50
00 00 2E	00	14	Time KF		-10 - +10
00 00 2F	00	64	Time 1		0 100
00 00 30	00	64	Level 1		0 100
00 00 31	00	64	Time 2		0 100
00 00 32	00	64	Level 2		0 100
00 00 33	00	64	Time 3		0 100
00 00 34	00	64	Sustain level		0 100
00 00 35	00	64	Time 4		0 100
00 00 36	00	64	Level 4		0 100
< TVA >					
00 00 37	00	02	Bias direction		UP, LOW, UNI
00 00 38	00	7F	Bias point		C -1 - G#9
00 00 39	00	14	Bias level		-10 - +10
00 00 3A	00	64	Level		0 100
00 00 3B	00	64	Aftertouch		-50 +50
00 00 3C	00	01	LFO select		LFO 1, LFO 2
00 00 3D	00	64	LFO depth		50 +50
< TVA ENV >					
00 00 3E	00	64	Velo		50 +50
00 00 3F	00	64	Time velo		-50 +50
00 00 40	00	14	Time KF		-10 - +10
00 00 41	00	64	Time 1		0 100
00 00 42	00	64	Level 1		0 100
00 00 43	00	64	Time 2		0 100
00 00 44	00	64	Level 2		0 100
00 00 45	00	64	Time 3		0 100
00 00 46	00	64	Sustain level		0 100
00 00 47	00	64	Time 4		0 100
Total size 00 00 48 (72bytes)					

*1] : For PCM card, the maximum value will be the number of waveform in the card minus 1.
If a value out of this range is selected, the tone does not sound properly.

*2] : 100, 50, 20, 10, 5, 0, -5, -10, -20, -50, -98, +99, +150, +101, +102, +150, +200(%)

*3] : 100 5(10% step), 0 +150(5% step)

/ Example using DT1 /

To change the TONE C cutoff frequency of the patch temporary TONE C to 100, send the following message to the JD 990.

F0 41 10 30 12 00 01 15 64 06 F7

*5 - 2 Special Setup Temporary Area

Offset address	Contents and remarks	
00 00 00	Special Setup Common / EQ	*5 2-1
00 00 04	Special Setup Key #1(Note# 36)	*5 2-2
00 00 02	Special Setup Key #2(Note# 37)	:
00 01 3A	Special Setup Key #3(Note# 38)	:
00 02 12	Special Setup Key #4(Note# 39)	:
00 02 6A	Special Setup Key #5(Note# 40)	
00 03 42	Special Setup Key #6(Note# 41)	
00 04 1A	Special Setup Key #7(Note# 42)	
00 04 72	Special Setup Key #8(Note# 43)	
00 05 4A	Special Setup Key #9(Note# 44)	
00 06 22	Special Setup Key #10(Note# 45)	
00 06 7A	Special Setup Key #11(Note# 46)	
00 07 52	Special Setup Key #12(Note# 47)	
00 08 2A	Special Setup Key #13(Note# 48)	
00 09 02	Special Setup Key #14(Note# 49)	
00 09 5A	Special Setup Key #15(Note# 50)	
00 0A 32	Special Setup Key #16(Note# 51)	
00 0B 0A	Special Setup Key #17(Note# 52)	
00 0B 62	Special Setup Key #18(Note# 53)	
00 0C 3A	Special Setup Key #19(Note# 54)	
00 0D 12	Special Setup Key #20(Note# 55)	
00 0D 6A	Special Setup Key #21(Note# 56)	
00 0E 42	Special Setup Key #22(Note# 57)	
00 0F 1A	Special Setup Key #23(Note# 58)	
00 0F 72	Special Setup Key #24(Note# 59)	
00 10 4A	Special Setup Key #25(Note# 60)	
00 11 22	Special Setup Key #26(Note# 61)	
00 11 7A	Special Setup Key #27(Note# 62)	
00 12 52	Special Setup Key #28(Note# 63)	
00 13 2A	Special Setup Key #29(Note# 64)	
00 14 02	Special Setup Key #30(Note# 65)	
00 14 5A	Special Setup Key #31(Note# 66)	
00 15 32	Special Setup Key #32(Note# 67)	
00 16 0A	Special Setup Key #33(Note# 68)	
00 16 62	Special Setup Key #34(Note# 69)	
00 17 3A	Special Setup Key #35(Note# 70)	
00 18 12	Special Setup Key #36(Note# 71)	
00 18 6A	Special Setup Key #37(Note# 72)	
00 19 42	Special Setup Key #38(Note# 73)	
00 1A 1A	Special Setup Key #39(Note# 74)	
00 1A 72	Special Setup Key #40(Note# 75)	
00 1B 4A	Special Setup Key #41(Note# 76)	
00 1C 22	Special Setup Key #42(Note# 77)	
00 1C 7A	Special Setup Key #43(Note# 78)	
00 1D 52	Special Setup Key #44(Note# 79)	
00 1E 2A	Special Setup Key #45(Note# 80)	
00 1F 02	Special Setup Key #46(Note# 81)	
00 1F 5A	Special Setup Key #47(Note# 82)	
00 20 32	Special Setup Key #48(Note# 83)	
00 21 0A	Special Setup Key #49(Note# 84)	
00 21 62	Special Setup Key #50(Note# 85)	
00 22 3A	Special Setup Key #51(Note# 86)	
00 23 12	Special Setup Key #52(Note# 87)	
00 23 6A	Special Setup Key #53(Note# 88)	
00 24 42	Special Setup Key #54(Note# 89)	
00 25 1A	Special Setup Key #55(Note# 90)	
00 25 72	Special Setup Key #56(Note# 91)	
00 26 4A	Special Setup Key #57(Note# 92)	
00 27 22	Special Setup Key #58(Note# 93)	
00 27 7A	Special Setup Key #59(Note# 94)	
00 28 52	Special Setup Key #60(Note# 95)	
00 29 2A	Special Setup Key #61(Note# 96)	
Total Size 00 2A 02 (5378bytes)		

*5 - 2 1 Special Setup Common / EQ

Offset address	Data	Contents and remarks		
< EQ >				
00 00 00	00 01	Low freq		200, 400Hz
00 00 01	00 1E	Low gain	-15.0 +15.0	1dB step
00 00 02	00 - 10	Mid freq		200 - 8kHz*1
00 00 03	00 04	Mid Q		0.5, 1, 2, 4, 8
00 00 04	00 1E	Mid gain	-15.0 +15.0	1dB step
00 00 05	00 01	High freq		4k, 8kHz
00 00 06	00 - 1E	High gain	-15.0 +15.0	1dB step

```
 00 00 07 | 00 - 30 | Bender range down           0 - 48 semi|
 00 00 08 | 00 - 0C | Bender range up             0 - 12 semi|
 00 00 09 | 00 - 1A | A-touch bend sens  -36, 24, 12 - +12 semi|
 Total Size| 00 00 0A (10bytes)
```

*1 [illegible] : 200, 250, 315, 400, 500, 630, 800, 1k, 1.25k, 1.6k, 2k,
2.5k, 3.15k, 4k, 5k, 6.3k, 8kHz

*5 - 2 - 2 Special Setup Key

Offset address	Contents and remarks	
00 00 00	Setup Key	*5-2-2-1
00 00 10	Setup Key Tone	*5-1-3
Total Size	00 00 58 (88bytes)	

*5 - 2 - 2 - 1 Setup Key

Offset address	Data	Contents and remarks	
00 00 00	20 - 7F	Name 1	(ASCII)
:	:	:	
00 00 09	20 - 7F	Name 10	(ASCII)
00 00 0A	00 - 08	Mute group	OFF, A - H
00 00 0B	00 - 01	ENV mode	SUSTAIN, NO SUSTAIN
00 00 0C	00 - 3C	Pan	[illegible]
00 00 0D	00 - 03	Effect mode	DRY, REV, CHO+REV, DLY+REV
00 00 0E	00 - 64	Effect level	0 - 100
00 00 0F	00 - 00	(Dummy)	
Total Size	00 00 10 (16bytes)		

/ Example using DT1 /
To change the effect mode of the note number 50 in temporary Rhythm Set to REV (Reverb), send the following message to the JD-990.

F0 41 10 3D 12 01 09 5A 01 1B F7

3 GS

< MODEL ID = 42 >

Start address	Contents and remarks	
40 10 40	Scale Tune Part8(Drum)	*6-1
40 11 40	: Part1	
40 12 40	: Part2	
40 13 40	: Part3	
40 14 40	: Part4	
40 15 40	: Part5	
40 16 40	: Part6	
40 17 40	: Part7	

*6 - 1 Scale Tune

Offset address	Data	Contents and remarks	
00 00 00	00 - 7F	Scale Tune C	-64 - +63
00 00 01	00 - 7F	: C#	-64 - +63
00 00 02	00 - 7F	: D	-64 - +63
00 00 03	00 - 7F	: D#	-64 - +63
00 00 04	00 - 7F	: E	-64 - +63
00 00 05	00 - 7F	: F	-64 - +63
00 00 06	00 - 7F	: F#	-64 - +63
00 00 07	00 - 7F	: G	-64 - +63
00 00 08	00 - 7F	: G#	-64 - +63
00 00 09	00 - 7F	: A	-64 - +63
00 00 0A	00 - 7F	: A#	-64 - +63
00 00 0B	00 - 7F	: B	-64 - +63
Total Size	00 00 0C (12bytes)		

Notice :
When transmitting a scale tune message, 12 bytes (for 12 keys 1 octave) of data must be in the same exclusive packet.

/ Example using DT1 /
To tune the scale of pPart 1 in Performance to Arabic scale, send the following massage to the JD-990.

F0 41 10 42 12 40 11 40 3A 6D 3E 34 0D 38 6B 3C 6F
40 36 0F 76 F7

● Table A - 1 Decimal - Hexadecimal Conversion

MIDI employs 8 bit for status byte and 7 bit for data, exclusive address or size. Normally hexadecimal number is used to express those values.

Please refer to the table below to covert decimal number to hexadecimal number.

decimal	Hexa	decimal	Hexa	decimal	Hexa	decimal	Hexa
0	00H	32	20H	64	40H	96	60H
1	01H	33	21H	65	41H	97	61H
2	02H	34	22H	66	42H	98	62H
3	03H	35	23H	67	43H	99	63H
4	04H	36	24H	68	44H	100	64H
5	05H	37	25H	69	45H	101	65H
6	06H	38	26H	70	46H	102	66H
7	07H	39	27H	71	47H	103	67H
8	08H	40	28H	72	48H	104	68H
9	09H	41	29H	73	49H	105	69H
10	0AH	42	2AH	74	4AH	106	6AH
11	0BH	43	2BH	75	4BH	107	6BH
12	0CH	44	2CH	76	4CH	108	6CH
13	0DH	45	2DH	77	4DH	109	6DH
14	0EH	46	2EH	78	4EH	110	6EH
15	0FH	47	2FH	79	4FH	111	6FH
16	10H	48	30H	80	50H	112	70H
17	11H	49	31H	81	51H	113	71H
18	12H	50	32H	82	52H	114	72H
19	13H	51	33H	83	53H	115	73H
20	14H	52	34H	84	54H	116	74H
21	15H	53	35H	85	55H	117	75H
22	16H	54	36H	86	56H	118	76H
23	17H	55	37H	87	57H	119	77H
24	18H	56	38H	88	58H	120	78H
25	19H	57	39H	89	59H	121	79H
26	1AH	58	3AH	90	5AH	122	7AH
27	1BH	59	3BH	91	5BH	123	7BH
28	1CH	60	3CH	92	5CH	124	7CH
29	1DH	61	3DH	93	5DH	125	7DH
30	1EH	62	3EH	94	5EH	126	7EH
31	1FH	63	3FH	95	5FH	127	7FH

*When expressing a MIDI channel number or a program change number, please notice that the values are less by one.
For example, MIDI channel is expressed as 0 through 15 in stead of 1 through 16.

*The range of 7 bit can express 128 steps from 0 to 127.
To express broader range, use several data bytes.

● Table A 2 ASCII code table

The JD 990 uses the following ASCII codes when it transmits/receives patch names or performance names through MIDI.

Char	Hexa	Char	Hexa	Char	Hexa
SP	20H				
A	41H	a	61H	1	31H
B	42H	b	62H	2	32H
C	43H	c	63H	3	33H
D	44H	d	64H	4	34H
E	45H	e	65H	5	35H
F	46H	f	66H	6	36H
G	47H	g	67H	7	37H
H	48H	h	68H	8	38H
I	49H	i	69H	9	39H
J	4AH	j	6AH	0	30H
K	4BH	k	6BH	+	2BH
L	4CH	l	6CH	-	2DH
M	4DH	m	6DH	*	2AH
N	4EH	n	6EH	/	2FH
O	4FH	o	6FH	#	23H
P	50H	p	70H	!	21H
Q	51H	q	71H	,	2CH
R	52H	r	72H	.	2EH
S	53H	s	73H		
T	54H	t	74H		
U	55H	u	75H		
V	56H	v	76H		
W	57H	w	77H		
X	58H	x	78H		
Y	59H	y	79H		
Z	5AH	z	7AH		

Notice : SP means SPACE character.

SYNTHESIZER MODULE (Patch mode/Performance mode Part 1—7) Date : Jan. 20 1993

Model JD-990

MIDI Implementation Chart

Version : 1.00

Function...		Transmit	Receive	Remarks
Basic	Default	×	1 – 16	
Channel	Changed	×	1 – 16	Memorized
Mode	Default	×	Mode 3, 4	
	Messages	×	×	
	Altered	*********		
Note Number		×	0 – 127	
	True Voice	*********	0 – 127	
Velocity	Note On	×	○ v = 1 ~ 127	
	Note Off	×	*3 v = 0 – 127	
Aftertouch	Key's	×	×	
	Ch's	×	○ *1	
Pitch Bend		×	○ *1	Resolution : 9 bits
Control Change	0	×	○	Bank Select
	1	×	○ *1	Modulation
	2	×	○ *1	Breath
	4	×	○ *1	Foot
	5	×	○	Portamento Time
	6, 38	×	○ *2	Data Entry
	7	×	○ *1	Volume
	10	×	○	Panpot
	11	×	○ *1	Expression
	64	×	○	Hold 1
	65	×	○	Portamento
	80 – 83	×	○	General Purpose 5 – 8
	91	×	○ (Performance only)	Effects 1 Depth
	100, 101	×	○	RPN LSB, MSB
	121	×	○	Reset All Controllers
Program Change		×	○ *1	Program Number
	True #	*********	0 – 127	1—128
System Exclusive		○	○ *1	
System Common	Song Pos	×	×	
	Song Sel	×	×	
	Tune	×	×	
System Real Time	Clock	×	○	
	Commands	×	×	
Aux Messages	Local ON/OFF	×	×	
	All Notes Off	×	○ (123 – 127)	
	Active Sens	×	○	
	Reset	×	×	
Notes		*1 Changed to ○ or × manually, and memorized. *2 Data for RPN *3 Used for retrigger velocity in solo (Mode 4)		

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO ○ : Yes

Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO × : No

SYNTHESIZER MODULE (Rhythm Set mode/Performance mode Part 8) Date : Jan. 20 1993

Model JD-990

MIDI Implementation Chart

Version : 1.00

Functions...		Transmit	Receive	Remarks
Basic	Default	×	1 - 16	
Channel	Changed	×	1 - 16	Memorized
Mode	Default	×	Mode 3	
	Messages	×	×	
	Altered	**********		
Note		×	36 - 96	
Number	True Voice	**********	36 - 96	
Velocity	Note On	×	○ v = 1 - 127	
	Note Off	×	×	
Aftertouch	Key's	×	×	
	Ch's	×	○ *1	
Pitch Bend		×	○ *1	Resolution : 9 bits
Control Change	0	×	○	Bank Select
	1	×	○ *1	Modulation
	2	×	○ *1	Breath
	4	×	○ *1	Foot
	6, 38	×	○ *2	Data Entry
	7	×	○ *1	Volume
	10	×	○	Panpot
	11	×	○ *1	Expression
	64	×	○	Hold 1
	100, 101	×	○	RPN LSB, MSB
	121	×	○	Reset All Controllers
Program Change		×	○ *1	Program Number
	True #	*********	0. 64	1, 65
System Exclusive		○	○ *1	
System Common	Song Pos	×	×	
	Song Sel	×	×	
	Tune	×	×	
System Real Time	Clock	×	○	
	Commands	×	×	
Aux Messages	Local ON/OFF	×	×	
	All Notes Off	×	○ (123 - 125)	
	Active Sens	×	○	
	Reset	×	×	
Notes		*1 Changed to ○ or × manually, and memorized. *2 Data for RPN.		

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO ○ : Yes

Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO × : No

Specifications

JD - 990 : SYNTHESIZER MODULE

☐ Maximum Polyphony ..... 24 voices

☐ Parts

Part 1 — 8

☐ Effects

Patch Mode :

3 band EQ, Distortion, Phaser, Spectrum, Enhancer, Chorus, Delay, Reverb, Mix Out EQ

Performance Mode / Rhythm Set Mode :

3 band EQ, Chorus, Delay, Reverb, Mix - Out EQ

☐ Memory

Internal :

System Setup 1

Performance

- Preset A 16
- Preset B 16
- User 16

Patch

- Preset A 64
- Preset B 64
- User 64

Rhythm Set

- Preset A 1
- Preset B 1
- User 1

Data Card :

System Setup 1

Performance 16

Patch 64

Rhythm Set 1

☐ Display

80 × 320 dots (backlit LCD)

☐ Connectors

MIX OUT (L,R)

DIRECT OUT 1 (L,R)

DIRECT OUT 2 (L,R)

DIRECT OUT 3 (L,R)

PHONES

MIDI (IN,OUT,THRU)

☐ Slots

PCM Card Slot

Data Card Slot

☐ Power Supply

AC120V, AC230V, AC240V

☐ Power Consumption

23 W (AC 120 V)

25 W (AC 230 V, AC 240 V)

☐ Dimensions

482(w) × 281(D) × 88(H) mm

18 - 15/16" × 11 - 1/16" × 3 - 1/2" inches

EIA - 2U rack mount type

☐ Weight

5.1 kg

11 lbs 4 oz

☐ Accessories

Owner's Manual (User's Guide, Reference)

AC Cord

MIDI Cable × 1

☐ Options

DATA Card (M - 256E)

Sound Library (SL - JD80 series,
SO - PCM1 series,
PN - JV80 series)

Expansion Board (SR - JV80 series)

Topical Index

The JD - 990 has a wealth of parameters, and exactly because it offers so many choices it is difficult to remember the functions of each. This index lists these parameters by what you want to do instead of by name. We hope it help make your music as much fun to create as it is to listen to.

Changing the volume

(Patch mode/Rhythm Set mode)

(Performance mode)

Changing the pitch

(Patch mode/Rhythm Set mode)

(Performance mode)

'Thicken' the sound

(Patch mode/Rhythm Set mode)

(Performance mode)

Increasing spaciousness of sounds

(Patch mode/Rhythm Set mode)

Making Tones stand out

Increasing Tone attack

Making sound 'harder'

Making sound 'softer'

Increasing 'fatness'

Adding reverberation

Making sound 'waver'

Playing monophonically

Changing played sound with keyboard range

Changing sound 'feel' with keyboard position

Changing played sound with keyboard velocity

Changing sound 'feel' with keyboard velocity

Controlling pitch, tone, volume and waver from an external MIDI controller

(Changing pitch with a pitch/bend controller)

(Other effects)

(example) Using vibrato with the Modulation Lever

Select Modulation as the Controller, Pitch as the Destination, and adjust Depth

(example) Using an expression pedal like a wah pedal

Select Expression as the Controller, Cutoff Frequency or Resonance as the Destination, and adjust Depth

Controlling effects from an external MIDI controller

Set different outputs for each Part and Rhythm Set sound

Setting specific MIDI information: receive/ignore

(Performance mode)

(Patch mode/Rhythm Set mode)

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【W】

【Z】

MIDI clock / Delay time Conversion Chart

Tempo	Clock	𝅘𝅥𝅯	𝅘𝅥𝅯.	𝅘𝅥𝅮	𝅘𝅥𝅮.	𝅘𝅥𝅮𝅯	♩	♩.	♩.	𝅗𝅥	𝅝
	F8	F8 × 6	F8 × 8	F8 × 12	F8 × 16	F8 × 18	F8 × 24	F8 × 32	F8 × 36	F8 × 48	F8 × 96
20	125.0	750	1000	1500	2000	2250	3000	2000	2250	3000	3000
25	100.0	600	800	1200	1600	1800	2400	1600	1800	2400	2400
30	83.3	500	667	1000	1333	1500	2000	2667	3000	2000	2000
35	71.4	429	571	857	1143	1286	1714	2286	2571	1714	1714
40	62.5	375	500	750	1000	1125	1500	2000	2250	3000	3000
45	55.6	333	444	667	889	1000	1333	1778	2000	2667	2667
50	50.0	300	400	600	800	900	1200	1600	1800	2400	2400
55	45.5	273	364	545	727	818	1091	1455	1636	2182	2182
60	41.7	250	333	500	667	750	1000	1333	1500	2000	2000
65	38.5	231	308	462	615	692	923	1231	1385	1846	1846
70	35.7	214	286	429	571	643	857	1143	1286	1714	1714
75	33.3	200	267	400	533	600	800	1067	1200	1600	1600
80	31.3	188	250	375	500	563	750	1000	1125	1500	3000
85	29.4	176	235	353	471	529	706	941	1059	1412	2824
90	27.8	167	222	333	444	500	667	889	1000	1333	2667
95	26.3	158	211	316	421	474	632	842	947	1263	2526
100	25.0	150	200	300	400	450	600	800	900	1200	2400
105	23.8	143	190	286	381	429	571	762	857	1143	2286
110	22.7	136	182	273	364	409	545	727	818	1091	2182
115	21.7	130	174	261	348	391	522	696	783	1043	2087
120	20.8	125	167	250	333	375	500	667	750	1000	2000
125	20.0	120	160	240	320	360	480	640	720	960	1920
130	19.2	115	154	231	308	346	462	615	692	923	1846
135	18.5	111	148	222	296	333	444	593	667	889	1778
140	17.9	107	143	214	286	321	429	571	643	857	1714
145	17.2	103	138	207	276	310	414	552	621	828	1655
150	16.7	100	133	200	267	300	400	533	600	800	1600
155	16.1	97	129	194	258	290	387	516	581	774	1548
160	15.6	94	125	188	250	281	375	500	563	750	1500
165	15.2	91	121	182	242	273	364	485	545	727	1455
170	14.7	88	118	176	235	265	353	471	529	706	1412
175	14.3	86	114	171	229	257	343	457	514	686	1371
180	13.9	83	111	167	222	250	333	444	500	667	1333
185	13.5	81	108	162	216	243	324	432	486	649	1297
190	13.2	79	105	158	211	237	316	421	474	632	1263
195	12.8	77	103	154	205	231	308	410	462	615	1231
200	12.5	75	100	150	200	225	300	400	450	600	1200
205	12.2	73	98	146	195	220	293	390	439	585	1171
210	11.9	71	95	143	190	214	286	381	429	571	1143
215	11.6	70	93	140	186	209	279	372	419	558	1116
220	11.4	68	91	136	182	205	273	364	409	545	1091
225	11.1	67	89	133	178	200	267	356	400	533	1067
230	10.9	65	87	130	174	196	261	348	391	522	1043
235	10.6	64	85	128	170	191	255	340	383	511	1021
240	10.4	63	83	125	167	188	250	333	375	500	1000
245	10.2	61	82	122	163	184	245	327	367	490	980
250	10.0	60	80	120	160	180	240	320	360	480	960

Unit : ms

: revised within 3000ms

Internal Wave Number Correspondence Between JV - 80 and JD - 990

JV - 80 Wave#	JD - 990 Wave#	JV - 80 Wave#	JD - 990 Wave#	JV - 80 Wave#	JD - 990 Wave#	JV - 80 Wave#	JD - 990 Wave#
1:	109	34:	140	67:	3	100:	165 *1
2:	110	35:	94	68:	2	101:	165
3:	111	36:	141	69:	4	102:	77 *1
4:	112	37:	142	70:	9	103:	171
5:	113	38:	142	71:	8	104:	182
6:	114	39:	142	72:	11	105:	181
7:	115	40:	85	73:	12	106:	79 *1
8:	116	41:	143	74:	81	107:	176
9:	117	42:	144	75:	98	108:	177
10:	118	43:	45	76:	106	109:	175
11:	119	44:	145	77:	105	110:	178
12:	120	45:	102	78:	153	111:	179
13:	121	46:	13	79:	107	112:	172
14	122	47:	10	80:	108	113:	173 *1
15:	123	48:	146	81:	154	114:	173
16:	124	49:	35	82:	155	115:	174
17:	125	50:	147	83:	156	116:	150 *3
18:	23	51:	148	84:	161	117:	155 *3
19:	126	52:	67	85:	162	118:	160 *3
20:	127	53:	50	86:	163	119:	164 *3
21:	128	54:	51	87:	160 *1	120:	162 *3
22:	129	55:	149	88:	160 *1	121:	163 *3
23:	130	56:	48	89:	163 *1	122:	157 *3
24:	131	57:	49	90:	157	123:	170 *3
25:	132	58:	63	91:	158	124:	165 *3
26:	133	59:	65	92:	157 *1	125:	182 *3
27:	134	60:	150	93:	159	126:	181 *3
28:	135	61:	151	94:	166	127:	178 *3
29:	136	62:	16	95:	167	128:	172 *3
30:	137	63:	32	96:	168 *2	129:	169 *3
31:	138	64:	14	97:	169		
32:	139	65:	152	98:	170		
33:	97	66:	1	99:	170 *1		

Wave numbers not marked "*" are the same as those in the JV - 80. Note the following when the Waves marked "*" are used:

*1: The JD - 990 does not have the same Waves, so it uses a similar Wave when one of these is selected.

*2: These Waves are the same as those in the JV - 80, but the JV - 80 uses these Waves as "One - shots." (The JD - 990 uses these Waves as "short loops.")

*3: These Waves are the same as those in the JV - 80, but the JV - 80 triggers them backwards. (The JD - 990 does not have the ability to play these Waves backwards. The difference in sound is obvious.)

Information

When you need repair service, call your local Roland Service Station or the authorized Roland distributor in your country as shown below.

U. S. A.
Roland Corporation US
7200 Dominion Circle
Los Angeles, CA. 90040-3696,
U. S. A.
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CANADA
Roland Canada Music Ltd.
(Head Office)
5480 Parkwood Way
Richmond B. C., V6V 2M4
CANADA
TEL: (604) 270-6626

Roland Canada Music Ltd.
(Montreal Office)
9425 Transcanadienne
Service Rd. N., St Laurent,
Quebec H4S 1V3, CANADA
TEL: (514) 335-2009

Roland Canada Music Ltd.
(Toronto Office)
346 Watline Avenue,
Mississauga, Ontario L4Z
1X2, CANADA
TEL: (416) 890-6488

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Roland Corporation Australia Pty. Ltd.
38 Campbell Avenue Dee
Why West, NSW 2099
AUSTRALIA
TEL: (02) 982-8266

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Auckland 3, NEW
ZEALAND
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TEL: 0252 816181

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TEL: (0792) 700-139

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Viale delle Industrie 8 20020
ARESE MILANO ITALY
TEL: 02-93581311

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Roland Electronics de España, S. A.
Calle Bolivia 239 08020
Barcelona, SPAIN
TEL: 93-308-1000

GERMANY
Roland Elektronische Musikinstrumente Handelsgesellschaft mbH.
Oststrasse 96, 2000
Norderstedt, GERMANY
TEL: 040/52 60 090

FRANCE
Musikengro
102 Avenue Jean-Jaures
69007 Lyon Cedex 07
FRANCE
TEL: (7) 858-54 60

Musikengro (Paris Office)
Centre Region Parisienne 41
rue Charles Fourier, 94400
Vitry SUR/SEINE FRANCE
TEL: (1) 4680 86 62

BELGIUM/HOLLAND/ LUXEMBOURG
Roland Benelux N. V.
Houtstraat 1 B-2260 Oevel-
Westerlo BELGIUM
TEL: (0032) 14-575811

DENMARK
Roland Scandinavia A/S
Langebrogade 6 Box 1937
DK-1023 Copenhagen K.
DENMARK
TEL: 31-95 31 11

SWEDEN
Roland Scandinavia A/S
Danvik Center 28 A, 2 tr. S-
131 30 Nacka SWEDEN
TEL: 08-702 00 20

NORWAY
Roland Scandinavia Avd. Kontor Norge
Lilleakerveien 2 Postboks 95
Lilleaker N-0216 Oslo 2
NORWAY
TEL: 22-73 00 74

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Fazer Musik Inc.
Länsituulentie POB 169, SF-
02101 Espoo FINLAND
TEL: 0-43 50 11

SWITZERLAND
Musitronic AG
Gerberstrasse 5, CH-4410
Liestal, SWITZERLAND
TEL: 061/921 16 15

Roland CK (Switzerland) AG
Postfach Hauptstrasse 21
CH-4456 Tenniken
SWITZERLAND
TEL: 061/98 60 55
Repair Service by Musitronic AG

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Neu-Rum Siemens-Strasse 4
A-6021 Innsbruck Postfach
591 AUSTRIA
TEL: (0512) 63 451

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20, Alexandras Avn., GR
10682 Athens, GREECE
TEL: 01-8232415

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Rua de Santa Catarina 131
4000 Porto, PORTUGAL
TEL: 02-38 44 56

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Warehouse Area 'DEPO'
Torokbalint, Budapest
HUNGARY
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D.J.A. International Ltd.
10 Bar Giyora St., Tel-Aviv
ISRAEL
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TEL: 149 93 24

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R. Alvarenga 591 CEP-
05509 Sao Paulo BRAZIL
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CEP 05586-010 Vila Indiana
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Jalisco MEXICO
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TEL: (1) 394-4029

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Tom Lee Music Co., Ltd. Service Division
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Tsuen Wan, New Territories,
HONG KONG
TEL: 415-0911

KOREA
Cosmos Corporation Service Station
261 2nd Floor Nak-Won
arcade Jong Ro ku, Seoul,
KOREA
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Swee Lee Company
Bras Basah Complex #03-23
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PORE
TEL: 3367886

PHILIPPINES
G.A. Yupangco & Co. Inc.
339 Gil J. Puyat Avenue
Makati, Metro Manila 1200,
PHILIPPINES
TEL: (632) 819-7551

THAILAND
Theera Music Co., Ltd.
330 Verng Nakorn Kasem,
Soi 2, Bangkok 10100,
THAILAND
TEL: 2248821

MALAYSIA
Syarikat Bentley
No.142, Jalan Bukit Bintang
55100 Kuala Lumpur,
MALAYSIA
TEL: 2421288

INDONESIA
PT Galestra Inti
Kompleks Perkantoran Duta
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INDONESIA
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Room 5, 9fl, No. 112
Chung Shan N.Road Sec.2
Taipei, TAIWAN, R.O.C.
TEL: (02) 5364546

SOUTH AFRICA
That Other Music Shop (PTY) Ltd.
256 Bree Street, Johannes-
burg 2001 Republic of
South Africa
TEL: 337 6573

Paul Bothner (PTY) Ltd.
17 Werdmuller Centre
Claremont 7700 Republic
of South Africa
TEL: 021-64-4030

As of Feb. 4, 1993

For Nordic Countries

Apparatus containing Lithium batteries

ADVARSEL!

Lithiumbatteri - Eksplosionsfare ved fejlagtig handtering
Udskiftning ma kun ske med batteri af samme fabrikat og type.
Lever det brugte batteri tilbage til leverandoren.

VARNING!

Explosionsfara vid felaktigt batteribyte
Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

ADVARSEL!

Litiumbatteri - Eksplosjonsfare.
Ved utskifting benyttes kun batteri som anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandoren.

VAROITUS!

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin. Hävita käytetty paristo valmistajan ohjeiden mukaisesti.

For Germany

Bescheinigung des Herstellers / Importeurs

Hiermit wird bescheinigt, daß der/die/das
Roland SYNTHESIZER MODULE JD-990
(Gerät, Typ Bezeichnung)

in Übereinstimmung mit den Bestimmungen der
Amtsbl. Vfg 1046 / 1984
(Amtsblattverfügung)

funk-entstört ist.
Der Deutschen Bundespost wurde das Inverkehrbringen dieses Gerätes angezeigt und die Berechtigung zur Überprüfung der Serie auf Einhaltung der Bestimmungen eingeräumt.

Roland Corporation Osaka / Japan
Name des Herstellers/Importeurs

For the USA

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

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

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

Unauthorized changes or modification to this system can void the users authority to operate this equipment.

For Canada

CLASS B **NOTICE**

This digital apparatus does not exceed the Class B limits for radio noise emissions set out in the Radio Interference Regulations of the Canadian Department of Communications.

CLASSE B **AVIS**

Cet appareil numérique ne dépasse pas les limites de la classe B au niveau des émissions de bruits radioélectriques fixés dans le Réglement des signaux parasites par le ministère canadien des Communications.