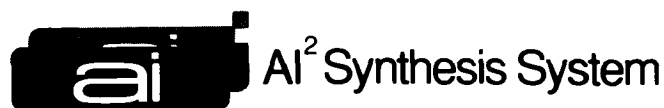


XBR

MUSIC WORKSTATION

Reference Guide



KORG

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About This Manual

The following chart shows how the explanations on the following pages are organized.

Section title Related LCD screen group Section summary LCD screens in the group

Global Oscillator Setup – 1A

These parameters are used to set the type of Program.

1A OSC Mode DOUBLE	>	1A OSC1 ASN:POLY HLD:OFF	<
1A-1		1A-2	

LCD	Parameter	Range	Description
1A-1	Oscillator Mode (OSC Mode)	SINGLE DOUBLE DRUMS	Oscillator 1 Oscillators 1 and 2 A drum kit
1A-2	Assign (ASN)	POLY MONO	Polyphonic Monophonic (all voices in unison)
	Hold (HLD)	ON/OFF	Note hold after key release (set to ON for DRUMS mode)

LCD screen numbers. For example 1A-1 indicates that this is the first LCD screen in group 1A

Parameters on each LCD screen

Parameter range or available settings

Brief description. A full description is provided in the text below each parameter table

Chapter 1: Program Play Mode

In this mode you can select and play Programs. Some Program parameters can also be adjusted, allowing you to edit parameters in real time, as you play.

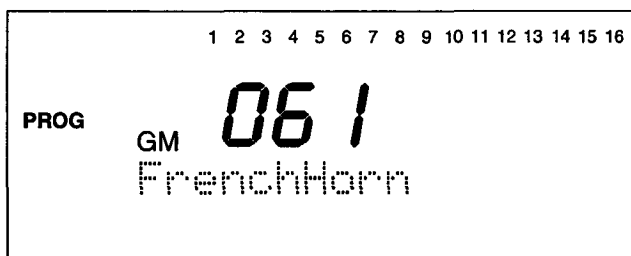
The following Programs can be selected: A00 ~ A99, B00 ~ B99, and GM001 ~ GM136. If a PROG/SEQ data card is inserted, Programs C00 ~ C99 and D00 ~ D99 can also be selected.

Program banks A and B are internal RAM banks, and banks C and D are PROG/SEQ data card banks. Bank GM contains 136 Programs, and corresponds to GM. Programs G01 to G128 are as defined by GM. G129 to G136 are the ROM drum kits 1 to 8. Drum Program GM129 corresponds to the GM drum kit. GM bank Programs 130 to 136 can be used with data that is similar to GM. They are not used with normal GM data.

Entering Program Play Mode

Press the [PROG] button.

PROG will appear on the LCD.



The numbers 1 to 16 at the top of the LCD correspond to MIDI Channels. The flashing number indicates the Global MIDI Channel setting. When MIDI Note On/Off messages are received, a box below the corresponding number flashes. This works as a MIDI monitor.

Selecting Programs

- 1) Press the [BANK] button to select a Program bank.
Pressing the [BANK] button will cycle through the available banks: A→B→GM→
- 2) Enter the required Program number using the number keypad. For example, to select Program 61 in the GM bank, press [0], [6], then [1]. Alternatively, press the [▲/YES] and [▼/NO] buttons repeatedly to select a Program.

Program Play Mode & MIDI

In Program Play mode, MIDI data is received on the Global MIDI Channel. See “Global MIDI Channel & MIDI Clock Source – 3A” on page 158.

The X3R responds to MIDI Controllers such as After Touch and Pitch Bend. See “Controller Event Edit Notes” on page 122 for a list of all usable MIDI Controllers.

Using a Pedal Switch to Select Programs

You can also select Programs using a pedal switch.

- 1) Connect an optional Korg PS-1 or PS-2 pedal switch to the ASSIGNABLE PEDAL/SW connection.
- 2) In Global mode, you need to assign the pedal to either Program Up or Program Down. See “Assignable Pedal/SW Setup – 8B” on page 171.

Using MIDI to Select Programs

You can also select Programs using MIDI Program Change messages.

- 1) Connect a MIDI device capable of sending MIDI Program Change messages to the X3R's MIDI IN connection.
- 2) Set the Global MIDI Channel parameter so that it matches that of the device sending the Program Change messages. See "Global MIDI Channel & MIDI Clock Source – 3A" on page 158.
- 3) In Global mode, you need to set Filter1 to ENA. See "MIDI Filter1 – 3C" on page 160.

The X3R also responds to MIDI Bank Select messages that can be used to select Program banks. All manufactures implement Bank Select messages differently, so refer to the relevant operating manual for details. If you want the X3R to ignore MIDI Bank Select messages, in Global mode, set Filter1 to NUM. See "MIDI Filter1 – 3C" on page 160 for full details.

The following table shows how the X3R responds to MIDI Bank Select and Program Change messages:

MIDI		X3R		
Bank Select (H)		Program Change No.	Bank	Program No.
MSB	LSB			
00	00	00~99	A	00~99
00	01	00~99	B	00~99
00	02	00~99	C	00~99
00	03	00~99	D	00~99
38H	00H	00~127	GM	01~128
3EH	00H	00~15, 56~63, 72~127		129
		16~23		130
		25		131
		32~39		132
		40~47		133
		64~71		134
		24, 26~31		135
		48~55		136

- Bank Select

Bn, 00, [MSB], 20, [LSB]

n: MIDI Channel (0~F corresponds to Channels 1~16.)

- Program Change

Cn, PP

PP: Program Number

For example: to select Program GM130 on MIDI Channel 3

B2, 00, 3E, 20, 00, C2, 10

Bank Select

Program Change

You can select a Program by sending a Program Change message only. In this case, the Program will be selected from the current Bank.

* In this *Reference Guide*, generally, decimal values are used, but hexadecimal (which uses numerals and letters such as "A") is used for MIDI data.

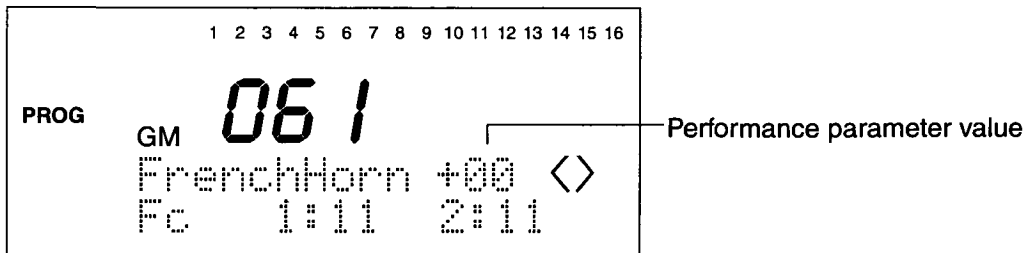
Editing in Program Play Mode (Performance Editing)

In Program Play mode, some parameters can be edited. This is called performance editing, because you can actually edit these parameters while performing. The parameters are as follows: Octave, Cutoff, VDF EG Intensity, Attack, Release, Level, Velocity, and Effect balance.

- 1) Select a Program.
- 2) Use the function buttons [1]~[8] to select a parameter.
- 3) Use the VALUE knob or the [▲/YES] and [▼/NO] buttons to adjust the selected parameter.

If the Program uses Double Oscillator mode, which is set in Program Edit mode, the selected parameter will be adjusted for both oscillators.

On the following LCD screen, the VDF Cutoff Frequency parameter has been selected by pressing function button [2]. The angle bracket symbols indicate that other parameters can be selected using the [←] and [→] cursor buttons.



When you've finished editing, press the [↓] cursor button to return to the previous LCD screen.

If you want to write the edited Program to memory, press the [REC/WRITE] button. The message "Are You Sure OK?" will appear. Press the [▲/YES] button to write the Program, or the [▼/NO] button to cancel the function. Note that if you write the Program, you will overwrite the Program that already exists with that number. To write the Program to a different Program number or change its name, see "Program Write – 8A" on page 31. Since the GM bank is a ROM bank, you cannot write Programs to it. If you do select it, however, bank A will be selected.

Ephemerals +00 >	Ephemerals +00 <>	Ephemerals +00 <>	Ephemerals +00 <>
Oct 1: 8' 2: 8'	Fc 1:28 2:54	FEG 1:58 2:80	Atk 1:00 2:00
[1] OCTAVE	[2] CUTOFF	[3] VDF EG	[4] ATTACK

Ephemerals +00 <>	Ephemerals +00 <>	Ephemerals +00 <>	Ephemerals +00 <
Re.A 1:86 2:86	Lev 1:99 2:50	V.AI 1:+50 2:+50	Eff 10:90 50:50
[5] RELEASE	[6] LEVEL	[7] VELOCITY	[8] EFFECT

Function Button	Parameter	Range		
		Displayed	Actual Increment per Step	
[1]	OSC1, OSC2 Octave (Oct)	1B 1C	-3 ~ +3	1 octave
[2]	VDF1, VDF2 Cutoff Frequency (Fc)	3A 3C	-10 ~ +10	±5
[3]	VDF1, VDF2 EG Intensity (FEG)	3A 3C	-10 ~ +10	±5
[4]	VDA1, VDA2 Attack Time (Atk)	4B 4D	-10 ~ +10	±5
[5]	VDA1, VDA2 Release Time (Re.A) VDF1, VDF2 Release Time (Re.F)	4B 4D 3B 3D	-10 ~ +10	±5
[6]	OSC1, OSC2 Level (Lev)	1B 1C	-10 ~ +10	±5
[7]	VDA1, VDA2 Vel. Sensitivity Amp. (V.AI) VDA1, VDA2 Vel. Sensitivity EG Time (V.AT) VDF1, VDF2 Vel. Sensitivity EG Int (V.FI) VDF1, VDF2 Vel. Sensitivity EG Time (V.FT) Color1, Color2 Velocity (V.Co)	4B 4D 4B 4D 3B 3D 3B 3D 3A 3C	-10 ~ +10	±5
[8]	Dry:Effect Balance (Eff)	7A 7C	-10 ~ +10	±5

OCTAVE: this parameter sets the oscillator's octave. One step equals one octave.

CUTOFF: this parameter affects a Program's cutoff frequency. One step equals ± 5 .

VDF EG: this parameter determines how a Program's cutoff frequency changes over time. One step equals ± 5 .

ATTACK: this parameter sets the VDA attack time. One step equals ± 5 .

RELEASE: this parameter sets the VDA release time. One step equals ± 5 .

LEVEL: this parameter sets a Program's volume level. One step equals ± 5 .

VELOCITY: this parameter determines how VDA and VDF parameters respond to note velocity. One step equals ± 5 .

EFFECT: this parameter sets the balance between dry signal and effected signal. One step equals ± 5 .

There are actually two parameters for Release [5], and five parameters for Velocity [7]. To access them, press VELOCITY [7], then press the [→] button. Use the [▲/YES] and [▼/NO] buttons to select them.

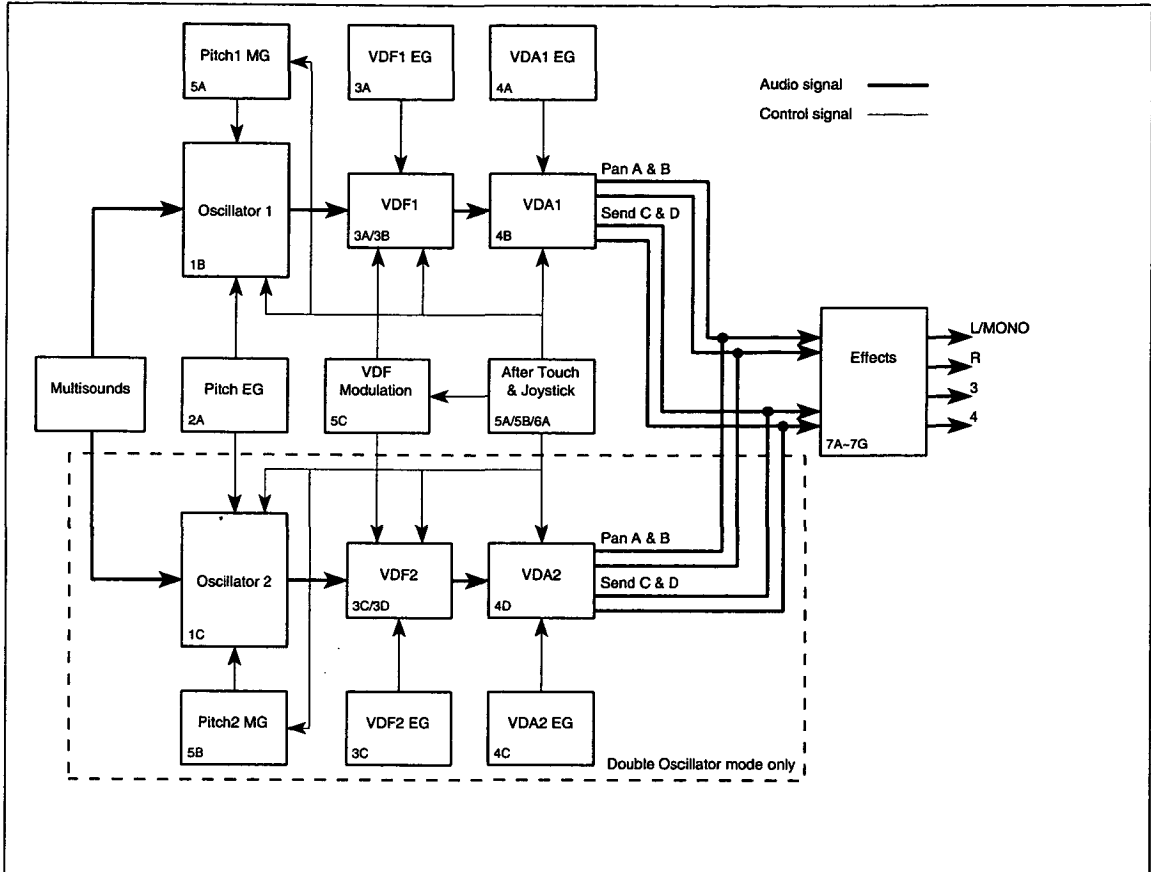
If a parameter is already set to the minimum or maximum limit of its range, the displayed value will change, but the actual value will not.

Note: *When one of the above parameters is selected, the VALUE knob will control that parameter, not the dynamic modulation. To use the VALUE knob to control dynamic modulation, press the [↓] cursor button to return to the normal Program Play LCD screen.*

When the MIDI System Exclusive Filter (3D-1 Global mode) is set to ENA, the respective MIDI System Exclusive data will be output while performance editing. Likewise, X3R parameters will be controlled when the respective System Exclusive data is received.

Chapter 2: Program Edit Mode

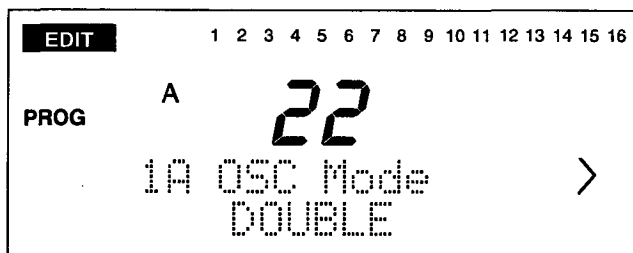
This mode allows you to edit Programs. You can create new Programs or simply edit existing ones. The following diagram shows the various parts that make up a Program. The numbers in the bottom left-hand corner of each box indicate the group of LCD screens that are used to set up that particular part.



Entering Program Edit Mode.

- 1) Select the Program that you want to edit in Program Play mode.
- 2) Press the [EDIT] button.

PROG and EDIT will appear on the LCD screen:



Compare Function

While editing, you can press the [COMPARE] button to listen to the original unedited Program. That is, how the Program was before you started editing it. While the Compare function is active, the word COMPARE will be shown on the LCD. Pressing the [COMPARE] button again will return you to the edited version of the Program.

Note: If you edit a parameter while the Compare function is active, the settings of the Program that you were editing will be lost.

Undo Function

To reset a parameter to the value that it was before you edited it, press the [▲/YES] and [▼/NO] buttons simultaneously.

Program Editing Notes

GM Bank: you can edit Programs in Bank GM, however you cannot overwrite them. So if you edit a Bank GM Program, you must write it to a different bank: A, B, C, or D.

Pitch Bend: pitch bend range is typically ± 12 semitones. However, for some Multisounds the full range is not available.

Double Mode Programs: the same function button can be used to select the corresponding LCD screens for Oscillator1 and Oscillator2. For example, if you select VDF1 EG — 3A-2 (Oscillator2 VDF EG), then press function button [3], VDF2 EG — 3C-2 (Oscillator2 VDF EG) will appear. Pressing the button again will return to VDF1 EG — 3A-2. This also applies to the following LCD screens:

1B — 1C (Oscillator Setup)

3A — 3C (VDF Cutoff & EG)

3B — 3D (VDF Velocity Sensitivity & Keyboard Tracking)

4A — 4C (VDA EG)

4B — 4D (VDA Velocity Sensitivity & Keyboard Tracking)

5A — 5B (Pitch Modulation)

Parameter Interaction: due to the way that some of the VDF EG and VDF Modulation parameters interact with VDF parameters, you may find that increasing or reducing a parameter value has no effect. This is usually because that VDF parameter is already set to its maximum or minimum value. The same applies to level parameters such as Oscillator Level, VDA Attack Level, etc. If increasing the Oscillator Level does not increase the output level, it could be that VDA Level parameters are already set to their maximum values. The overall oscillator output level is limited to the range that the VDA can handle.

Always Write Programs: remember to write an edited Program to memory before selecting another Program. Otherwise, the edited Program will be lost.

When the MIDI System Exclusive Filter (3D-1 Global mode) is set to ENA, the respective MIDI System Exclusive data will be output when a parameter is edited. Likewise, X3R parameters will be edited when the respective System Exclusive data is received.

Performance Functions

The following functions allow you to add greater expression to a live performance:

- **Note velocity:** can be used to control the Pitch EG VDF and VDA. See “Pitch EG – 2A” on page 13, “VDF1 Velocity Sensitivity & Keyboard Tracking – 3B” on page 17, and “VDA1 Velocity Sensitivity & Keyboard Tracking – 4B” on page 22.
- **After Touch:** can be used to control Pitch1 and Pitch2 Modulation, and some VDF and VDA parameters. See “Pitch1 Modulation – 5A” on page 26 and “After Touch & Joystick Control – 6A” on page 29.
- **Joystick:** can be used to control Pitch1 and Pitch2 Modulation, and some VDF and VDA parameters. See “Pitch1 Modulation – 5A” on page 26, “Pitch2 Modulation – 5B” on page 27, and “After Touch & Joystick Control – 6A” on page 29.
- **Dynamic modulation:** can be used to control effect parameters. See “Effect 1 Setup – 7A” on page 56.
- **Assignable pedal:** can be used to control the volume, VDF Cutoff Frequency, and switch effects on and off. See “Assignable Pedal/SW Setup – 8B” on page 171.

Global Oscillator Setup – 1A

These parameters are used to set the type of Program.

1A OSC Mode DOUBLE	>	1A OSC1 ASN:POLY HLD:OFF	<
1A-1		1A-2	

LCD	Parameter	Range	Description
1A-1	Oscillator Mode (OSC Mode)	SINGLE DOUBLE DRUMS	Oscillator1 Oscillator1 and Oscillator2 A drum kit
1A-2	Assign (ASN)	POLY MONO	Polyphonic Monophonic
	Hold (HLD)	ON/OFF	Note hold after key release (set to ON for DRUMS mode)

1A-1 Oscillator mode: there are three Oscillator modes: Single, Double, and Drums. In Single mode, only Oscillator1 is used, and up to 32-note polyphony is available. In Double mode, Oscillator1 and Oscillator2 are used, and different Multisounds can be selected for each oscillator, each with independent VDF and VDA. However, polyphony is reduced to 16 notes.

In Drum mode, a drum kit is used instead of a Multisound. Drum kits are set up in Global mode. See “Drum Kit Setup1 – 7A” on page 167. There are 16 drum kits available: four internal RAM kits, four card kits, and eight internal ROM kits.

1A-2 Assign: this parameter sets the Program to either polyphonic or monophonic. In Polyphonic mode, a number of notes up to the maximum available can be played simultaneously: 32 in Single mode and 16 in Double mode. In Monophonic mode, one note only can be played at a time.

Hold: this parameter determines whether or not notes continue to sound even after the corresponding MIDI Note Off message has been received. That is, even after keys are released. Typically, this parameter should be set to off, unless you want notes to drone on for eternity. However, when the Oscillator mode is set to DRUMS, this parameter should be set to ON. This will ensure that drum sounds are played in their entirety, regardless of the length of a MIDI Note or how long you hold down a key.

Oscillator1 Setup – 1B

These parameters are used to set up Oscillator1.

1B OSC1 SOUND 000:A.Piano 1	>	1B OSC1 Level199 OCT 8'	<>	1B OSC1 EGint+00 Pan=CNT	<>	1B OSC1 SEND C = 5 D = 5	<
1B-1		1B-2		1B-3		1B-4	

LCD	Parameter	Range	Description
1B-1	Multisound (SOUND)	0 ~ 339 C00 ~ 0 ~ 15	Internal Multisounds Card Multisounds (if card inserted) If Oscillator mode is DRUMS, select a drum kit
1B-2	Oscillator Level (Level)	0 ~ 99	Oscillator1 level
	Octave (OCT)	32' 16' 8' 4'	2 octaves down 1 octave down Normal pitch 1 octave up
1B-3	Pitch EG Intensity (EGint)	-99 ~ +99	The amount of control that the Pitch EG exerts over the pitch of oscillator1
	Pan (Pan)	OFF, A, 14A-CNT~14B, B	Output pan to buses A and B (when Osc mode = Single or Double on)
1B-4	Send C (SEND C)	0 ~ 9	Output level to bus C
	Send D (D)	0 ~ 9	Output level to bus D

1B-1 Multisound: this parameter is used to select one of 340 internal Multisounds for Oscillator1. Multisounds are the basic sound elements that make up a Program and provide the basic characteristics of a Program. If an optional PCM data card is inserted, Multisounds can also be selected from that card. Data card Multisound numbers have the prefix C. Press the [10's HOLD] button to select card Multisounds.

Multisounds with NT (No Transpose) at the end of their names, for example, 187 StadiumNT, produce the same pitch regardless of MIDI Notes received.

Since each Multisound has an upper limit to its pitch range, some Multisounds may produce no sound when high MIDI Notes are received.

If the Oscillator mode (1A-1) is set to DRUMS, depending on which Program bank is currently selected, you can select a drum kit from the following table. You must insert an optional PCM data card to select drum kits 4 ~ 7 (Card D.Kit1, 2). For drum kit setup details, see "Drum Kit Setup1 - 7A" on page 167.

Value	Drum Kit	Bank
0	Drum Kit A1	Internal
1	Drum Kit A2	
2	Drum Kit B1	
3	Drum Kit B2	
4	Card D.Kit1	Data Card
5	Card D.Kit2	
6	Card D.Kit3	
7	Card D.Kit4	
8	Rom D.Kit1	ROM
:	:	
15	Rom D.Kit8	

Full details about drum kits 0~3 (Drum Kit A1, A2, A3, A4) and 8~15 (Rom D.Kit1~8) are provided in the *Performance Notes*.

1B-2 Oscillator Level: this parameter is used to set the volume level of Oscillator1.

Note: For some Multisounds, a high oscillator level may result in distortion when playing chords. In such a case, reduce the oscillator level.

Octave: this parameter allows you to shift a Multisound up and down in one octave steps. If the Oscillator mode (1A-1) is set to DRUMS, this parameter should be set to 8', otherwise some drum sounds will be moved out of the playable range. If this parameter is set to anything other than 8', take care when setting the VDA and VDF Keyboard Tracking parameters.

1B-3 Pitch EG Intensity: this parameter determines the amount of control that the Pitch EG exerts over the pitch of Oscillator1. A negative value inverts the pitch levels set for the Pitch EG (2A-1~2A-3).

Pan: this parameter is used to pan the output of Oscillator1 between buses A and B. These buses feed the effects processors. See "Effect Placement – 7E" on page 57. When OFF is selected, no signal is sent on buses A and B. The CNT setting means center: signals of equal level are fed buses A and B.

Note: When the Oscillator mode (1A-1) is set to DRUMS, the pan setting for each drum in the kit are used. See "Drum Kit Setup1 – 7A" on page 167 and "Drum Kit Setup2 – 7B" on page 169.

1B-4 Send C, Send D: these parameters are used to set the level of the Oscillator1 signals sent to buses C and D respectively. These buses feed the effects processors. See "Effect Placement – 7E" on page 57.

Note: If the Oscillator mode (1A-1) is set to DRUMS, these parameters are multiplied by the setting for each drum in the kit, then output to Send C and Send D. See "Drum Kit Setup1 – 7A" on page 167.

Oscillator2 Setup – 1C

These parameters are used to set up Oscillator2. These parameters are available only when the Oscillator mode is set to DOUBLE. See “Global Oscillator Setup – 1A” on page 9.

1C OSC2 SOUND > 000:A.Piano 1	1C OSC2 <> Level199 OCT16'	1C OSC2 <> EGint+00 Pan=CNT	1C OSC2 <> SEND C = 5 D = 5	1C OSC2 SOUND <> Intvl+00 Detn+03
1C-1	1C-2	1C-3	1C-4	1C-5

1C OSC2 < Delay=00
1C-6

LCD	Parameter	Range	Description
1C-1	Multisound (SOUND)	0 ~ 339 C00 ~	Internal Multisounds Card Multisounds (if card inserted)
1C-2	Oscillator Level (Level)	0 ~ 99	Oscillator2 level
	Octave (OCT)	32' 16' 8' 4'	2 octaves down 1 octave down Normal pitch 1 octave up
1C-3	Pitch EG Intensity (EGint)	-99 ~ +99	The amount of control that the Pitch EG exerts over the pitch of Oscillator2
	Pan (Pan)	OFF, A, 14A~CNT~14B, B	Output pan to buses A and B
1C-4	Send C (SEND C)	0 ~ 9	Output level to bus C
	Send D (D)	0 ~ 9	Output level to bus D
1C-5	Interval (Intvl)	-12 ~ +12	Pitch shift relative to Oscillator1
	Detune (Detn)	-50 ~ +50	Oscillator1 and Oscillator2 detune
1C-6	Delay Start (Delay)	0 ~ 99	Oscillator2 sound output delay relative to Oscillator1

Apart from the fact that they control Oscillator2, most of these parameters operate the same as they do for Oscillator1. See “Oscillator1 Setup – 1B” on page 10. The following parameters, 1C-5 and 1C-6, are available to Oscillator2 only.

1C-5 Interval: this parameter pitch shifts Oscillator2 relative to Oscillator1 in semitone steps. This can be used, for example, to form simple 2-note chords.

Detune: this parameter de-tunes oscillators 1 and 2. This is useful for creating a thicker, richer sound. For a positive (+) Detune value, the pitch of Oscillator1 is lowered and the pitch of Oscillator2 is raised. For a negative (-) Detune value, the pitch of Oscillator1 is raised and the pitch of Oscillator2 is lowered. So as the Detune value is increased, both oscillators are detuned by the specified value. Odd Detune values will lower and raise oscillator pitches by 0.5 cents.

Detune	Oscillator1	Oscillator2
+50	-25	+25
+25	-12.5	+12.5
0	0	0
-12	+6	-6
-50	+25	-25

1C-6 Delay Start: this parameter allows you to set Oscillator2 so that it starts producing sound after Oscillator1. A setting of 0 means no delay. This is normally set to 0.

Pitch EG – 2A

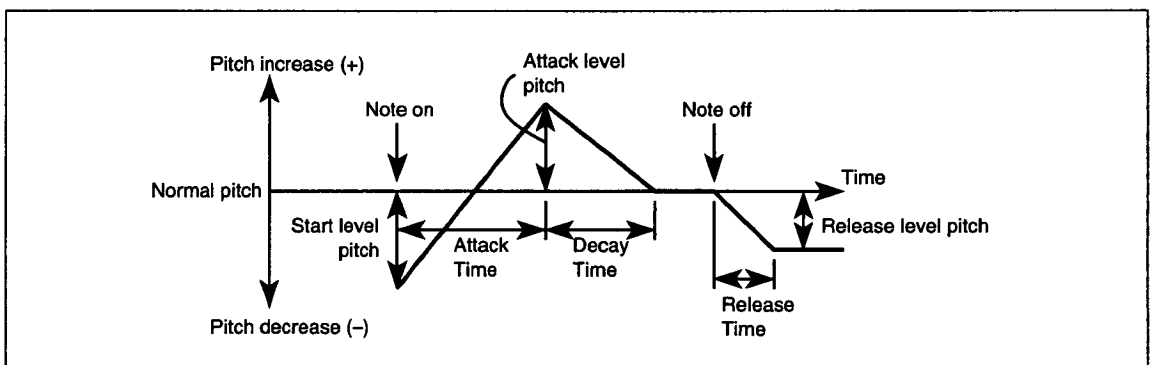
The Pitch EG (Envelope Generator) determines how the pitch of oscillators 1 and 2 varies over time.

2A PITCH EG > SL+00 AT00 AL+00	2A PITCH EG <> DT00 RT00 RL+00	2A PTCH. EG Vel < Levl=+99 Tim=+00
2A-1	2A-2	2A-3

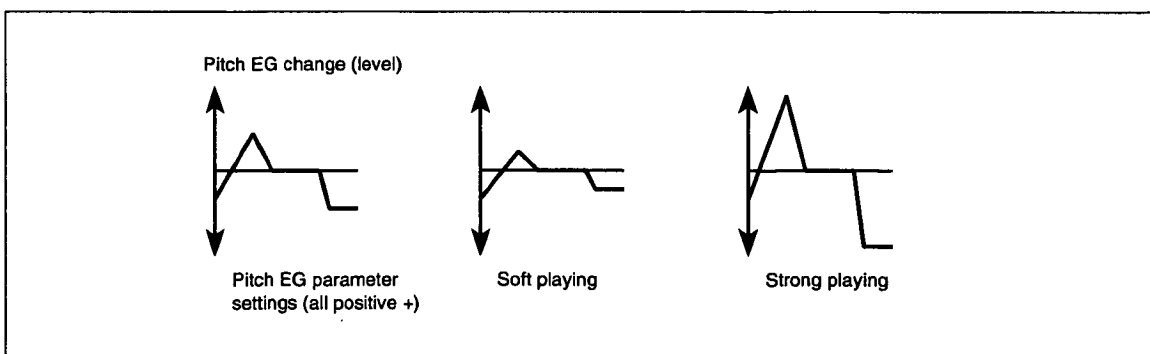
LCD	Parameter	Range	Description
2A-1	Start Level (SL)	-99 ~ +99	Amount of pitch change when key is first pressed
	Attack Time (AT)	0 ~ 99	Time to reach Attack level pitch when key pressed
	Attack Level (AL)	-99 ~ +99	Amount of pitch change when attack time ends
2A-2	Decay Time (DT)	0 ~ 99	Time to reach normal pitch once attack time ends
	Release Time (RT)	0 ~ 99	Time to reach Release level pitch when key is released
	Release Level (RL)	-99 ~ +99	Amount of pitch change when key is released
2A-3	EG Level Velocity Sensitivity (Levl)	-99 ~ +99	Pitch EG level sensitivity to keyboard velocity
	EG Time Velocity Sensitivity (Tim)	-99 ~ +99	Pitch EG time sensitivity to keyboard velocity

The Pitch EG can change the oscillator pitch by up to ± 1 octave. A level setting of 99 is approximately 1 octave. The extent to which the Pitch EG affects the oscillator pitch is set independently for each oscillator using the Pitch EG Intensity (EGInt) parameters. See “Oscillator1 Setup – 1B” on page 10 and “Oscillator2 Setup – 1C” on page 12.

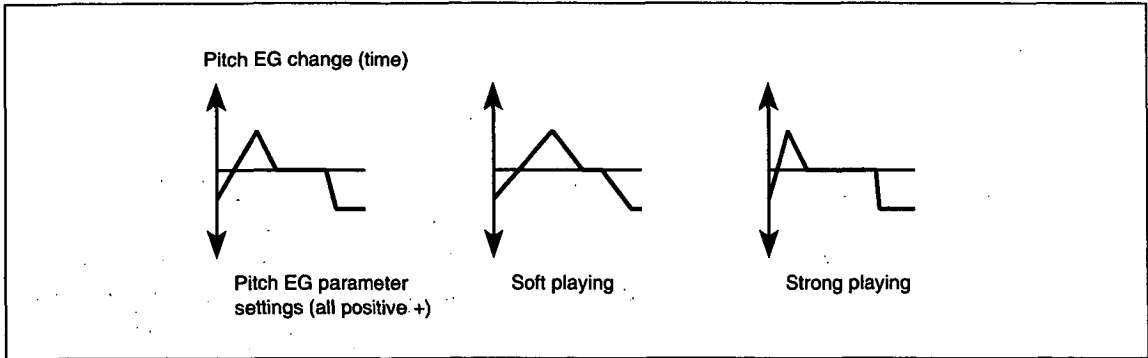
Probably the best way to understand the Pitch EG is to edit a Program, adjust the above parameters, and listen to the results. The main thing to remember is that the Level parameters specify the amount of pitch change, and the Time parameters specify the time it takes to reach pitch changes relative to note on and off. Negative (–) levels mean lowered pitch and positive (+) levels mean raised pitch. The following diagram should help too.



2A-3 EG Level Velocity Sensitivity: this parameter allows you to control the Pitch EG pitch levels using note velocity. For a positive value (+), the amount of pitch change will increase as note velocity increases. A negative value (–) will have the opposite effect.



EG Time Velocity Sensitivity: this parameter allows you to control the Pitch EG Time parameters using note velocity. For a positive value (+), time parameters will become shorter as note velocity increases. A negative value (-) will have the opposite effect.



VDF1 Cutoff & EG – 3A

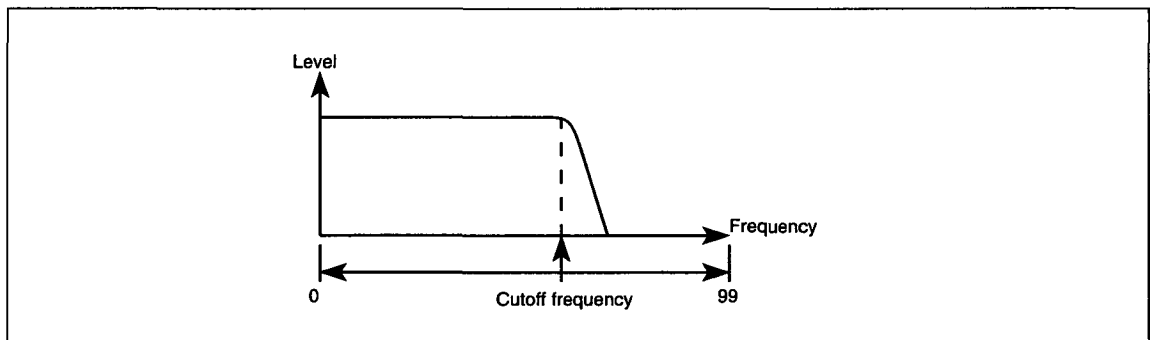
These parameters are used to set up the VDF (Variable Digital Filter) for Oscillator1.

3A VDF 1 Fc=19 EGint=65	>	3A VDF1 EG AT09 AL+08 DT00	<>	3A VDF1 EG BP+00 ST00 SL+00	<>	3A VDF1 EG RT00 RL+00	<>	3A COLOR 1 Int=00 Vel=+00	<
3A-1		3A-2		3A-3		3A-4		3A-5	

LCD	Parameter	Range	Description
3A-1	VDF Cutoff Frequency (Fc)	0 ~ 99	VDF1 cutoff frequency
	EG Intensity (EGint)	0 ~ 99	The amount of control that the following EG parameters exert over the VDF Cutoff Frequency parameter
3A-2	Attack Time (AT)	0 ~ 99	Time to reach Attack Level after key pressed
	Attack Level (AL)	-99 ~ +99	Amount of cutoff frequency change when Attack Time ends
	Decay Time (DT)	0 ~ 99	Time to reach Break Point once Attack Time ends
3A-3	Break Point (BP)	-99 ~ +99	Amount of cutoff frequency change when Decay Time ends
	Slope Time (ST)	0 ~ 99	Time to reach Sustain Level once Decay Time ends
	Sustain Level (SL)	-99 ~ +99	Amount of cutoff frequency change until key released
3A-4	Release Time (RT)	0 ~ 99	Time to reach Release Level when key released
	Release Level (RL)	-99 ~ +99	Amount of cutoff frequency change once Release Time ends
3A-5	Color Intensity (Int)	0 ~ 99	Amount of color
	Color Velocity (Vel)	-99 ~ +99	Color sensitivity to keyboard velocity

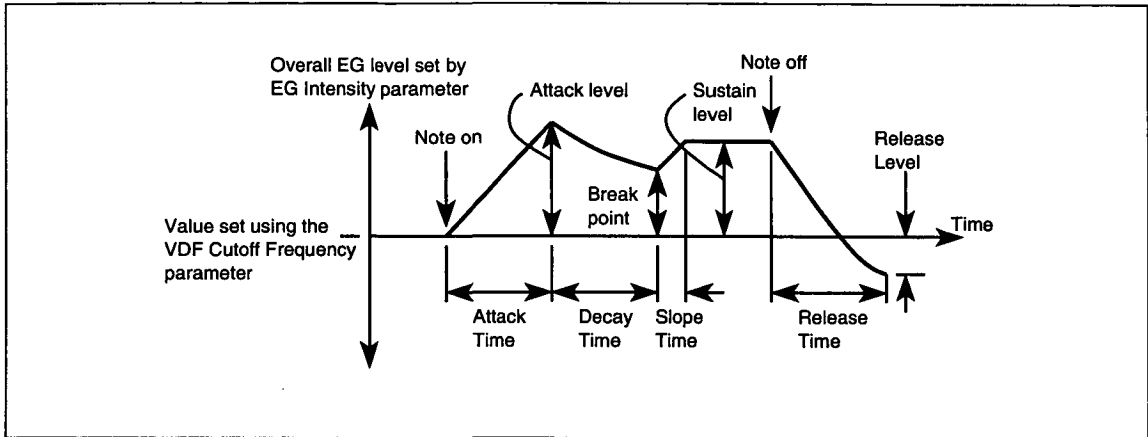
This VDF is a basically a low-pass filter with a variable cutoff frequency parameter. This can be used to change the tonal quality of a Program. In addition, the VDF EG (Variable Digital Filter Envelope Generator) parameters allow you to determine how the cutoff frequency will change over time.

3A-1 VDF Cutoff Frequency: the cutoff frequency can be set from 0 to 99. As the value is reduced, high frequencies are filtered, thus producing a duller (softer) tone.



EG Intensity: this parameter determines the amount of control that the VDF EG exerts over the VDF Cutoff Frequency parameter. Effectively, it sets the overall level of the VDF EG.

VDF EG: the eight parameters on LCD screens 3A-2 to 3A-4 are used to set up the VDF EG. Level parameters specify the amount of VDF cutoff frequency change, and Time parameters specify the time it takes to reach cutoff frequency changes relative to note on note off. Positive values cause the cutoff frequency to increase, negative values cause it to decrease.



3A-5 Color Intensity: this parameter determines the amount VDF color. By boosting the level around the cutoff frequency, the Color parameter adds character to a sound.

Color Velocity: this parameter determines how the color parameter responds to note velocity. For positive values, stronger playing will increase the amount of color. Negative values will have the opposite effect.

VDF1 Velocity Sensitivity & Keyboard Tracking – 3B

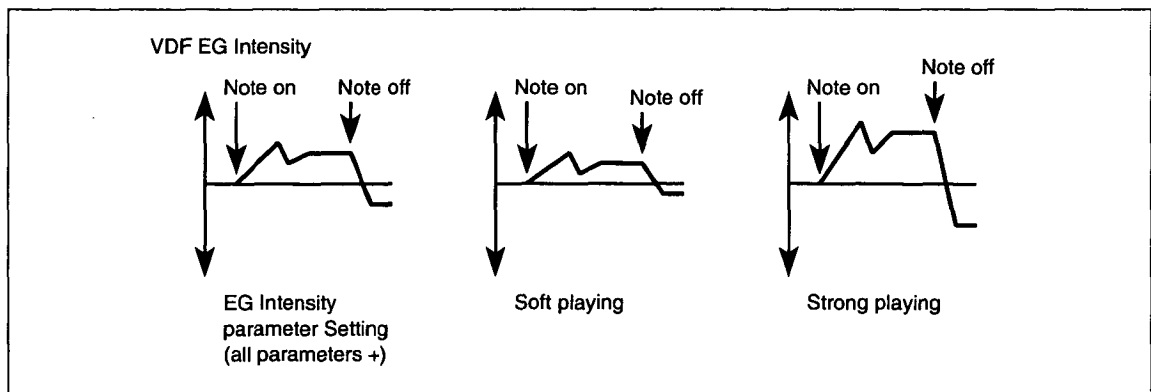
VDF1 velocity sensitivity parameters determine how VDF1 EG responds to note velocity. The keyboard tracking parameters determine how different areas of the keyboard affect VDF1.

3B VDF1 U.SENS > EGint+77 EGtm00	3B VDF1 U.SENS <> AT0 DT0 ST0 RT0	3B VDF1 K.TRK <> KeyF#4 Mode=ALL	3B VDF1 K.TRK <> Int=+00 EGtm=00	3B VDF1 K.TRK < AT0 DT0 ST0 RT0
3B-1	3B-2	3B-3	3B-4	3B-5

LCD	Parameter	Range	Description
3B-1	Velocity Sensitivity EG Intensity (EGint)	-99 ~ +99	VDF1 EG Intensity parameter sensitivity to keyboard velocity
	Velocity Sensitivity EG Time (EGtm)	0 ~ 99	VDF1 EG Time parameter sensitivity to keyboard velocity
3B-2	Attack Time (AT)	-, 0, +	The direction in which VDF1 EG Time parameters are affected by keyboard velocity
	Decay Time (DT)	-, 0, +	
	Slope Time (ST)	-, 0, +	
	Release Time (RT)	-, 0, +	
3B-3	Keyboard Tracking Key (Key)	C-1 ~ G9	For Low and High keyboard tracking modes, the key from which keyboard tracking starts. For All mode, the key at which VDF Cutoff Frequency and VDF EG Time parameters are not affected
	Keyboard Tracking Mode (Mode)	OFF LOW HIGH ALL	No keyboard tracking Keyboard tracking below the specified key Keyboard tracking above the specified key Keyboard tracking over the entire keyboard
3B-4	Keyboard Tracking Intensity (Int)	-99 ~ +99	VDF1 cutoff to keyboard tracking
	Keyboard Tracking EG Time (EGtm)	0 ~ 99	VDF1 EG Time parameter sensitivity to keyboard tracking
3B-5	Attack Time (AT)	-, 0, +	The direction in which VDF1 EG Time parameters are affected by keyboard tracking
	Decay Time (DT)	-, 0, +	
	Slope Time (ST)	-, 0, +	
	Release Time (RT)	-, 0, +	

Note: Some of the parameters mentioned in this section operate in conjunction with parameters in “VDF1 Cutoff & EG – 3A” on page 15, so refer to that section also.

3B-1 Velocity Sensitivity EG Intensity: this parameter determines how the VDF1 EG Intensity parameter is affected by note velocity. For positive values, soft playing will reduce the value of the VDF1 EG Intensity parameter, strong playing will increase the value. Negative values will have the opposite effect. In the following diagram, a positive value has been set.

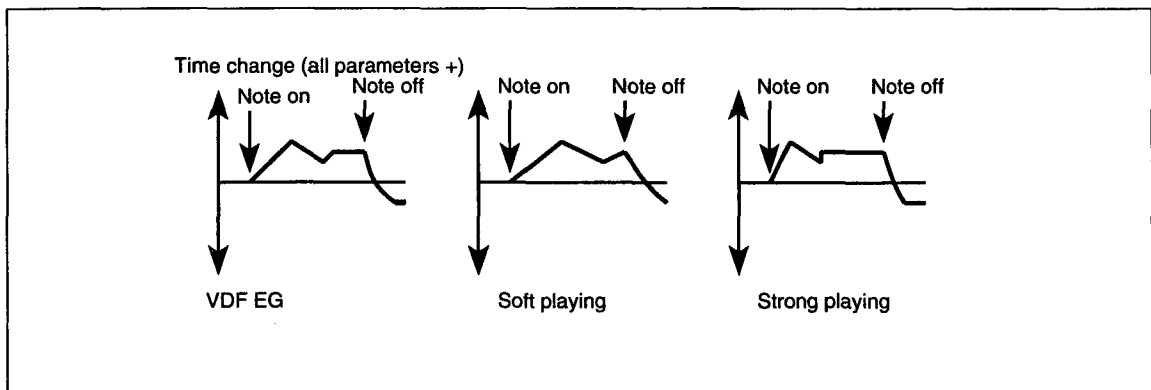


Note: This parameter does not affect the VDF Cutoff Frequency parameter directly, it affects the EG Intensity parameter. So if the EG Intensity parameter or all other VDF EG parameters are set to 0, it will have no effect.

Many acoustic instruments often produce less high frequency energy when played softly. Soft playing produces a darker sound, while strong playing creates many high frequency harmonics that brighten the sound. This natural phenomenon can be simulated by setting the VDF Cutoff Frequency parameter to a fairly low value, and the VDF EG Intensity, VDF EG Sustain Level, and Velocity Sensitivity EG Intensity parameters to positive values.

Velocity Sensitivity EG Time: this parameter determines how the VDF1 EG Time parameters are affected by note velocity. It affects the VDF1 EG Attack, Decay, Slope, and Release Time parameters equally. Although, the direction of change can be set independently for each parameter.

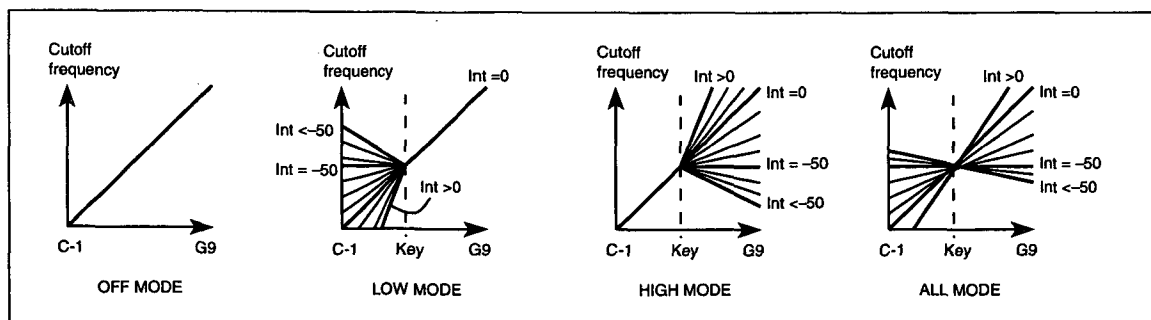
3B-2 Attack, Decay, Slope, Release Times: these parameters determine whether the VDF1 EG Time parameters are reduced or increased with changing note velocity. For a negative (-) value, they are increased, for a positive (+) value reduced, a setting of 0 means no effect. In the following diagram, each parameter is set to positive.



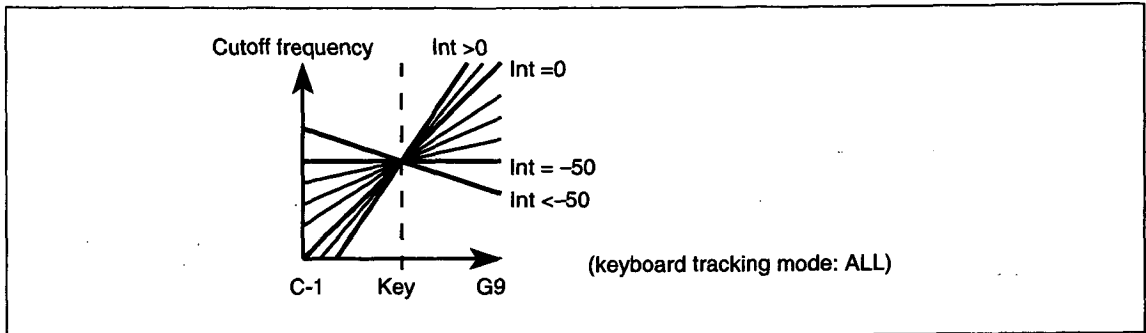
3B-3 Keyboard Tracking Key: for Low and High keyboard tracking modes, this parameter specifies the key from which keyboard tracking starts. For All mode, it specifies the key around which keyboard tracking will take place. At the specified key, keyboard tracking will have no effect.

The tracking key can be set by pressing a keyboard key while holding down the [ENTER] button.

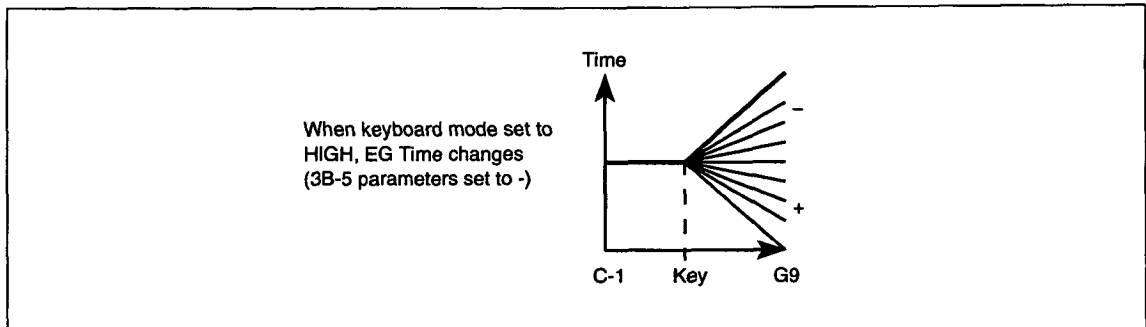
Keyboard Tracking Modes: keyboard tracking determines how the VDF affects different areas of the keyboard. There are four Keyboard Tracking modes: Off, Low, High, and All. When Off is selected, there is no keyboard tracking and the Keyboard Tracking Intensity and Keyboard Tracking EG Time parameters are disabled. When Low is selected, keyboard tracking will be active on keys below the specified Keyboard Tracking Key. When High is selected, keyboard tracking will be active on keys above the specified Keyboard Tracking Key. When All is selected, keyboard tracking will be active across the entire keyboard.



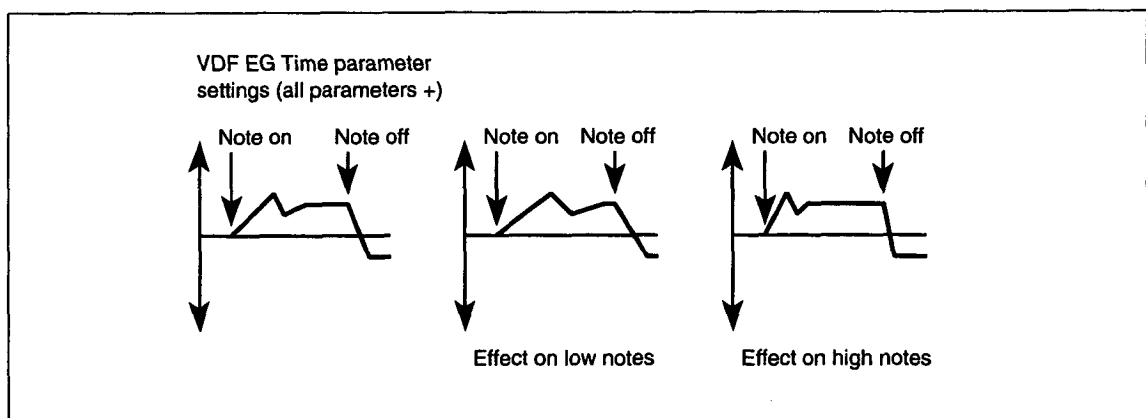
3B-4 Keyboard Tracking Intensity: this parameter determines keyboard tracking intensity for the specified keyboard area. Positive values will make high notes brighter. Negative values will have the opposite effect. For a value of 0, the cutoff frequency will change linearly with regard to key pitch. For a value of -50, the cutoff frequency will be the same for all notes.



Keyboard Tracking EG Time: this parameter determines how the VDF1 EG Time parameters are affected by keyboard tracking. It affects the VDF1 EG Attack, Decay, Slope, and Release Time parameters equally. Although, the direction of change can be set independently for each parameter. The Keyboard Tracking mode and Key parameters can be used to specify the keyboard area that is affected.



3B-5 Attack, Decay, Slope, Release Times: these parameters determine whether the VDF1 EG Time parameters are reduced or increased with keyboard tracking. For a negative (-) value, notes above the specified key will have their VDF EG times increased. For a positive (+) value, notes above the specified key will have their VDF EG times decreased. A setting of 0 means no effect.



VDF2 Cutoff & EG – 3C

These parameters are used to set up the VDF (Variable Digital Filter) for Oscillator2. Operation is the same as for VDF1. See “VDF1 Cutoff & EG – 3A” on page 15.

3C VDF 2 Fc=19 EGint=65	3C VDF2 EG <> AT09 AL+08 DT00	3C VDF2 EG <> BP+00 ST00 SL+00	3C VDF2 EG <> RT00 RL+00	3C COLOR 2 < Int=00 Vel=+00
3C-1	3C-2	3C-3	3C-4	3C-5

VDF2 Velocity Sense & Keyboard Tracking – 3D

VDF2 velocity sensitivity parameters determine how VDF2 EG responds to note velocity. The keyboard tracking parameters determine how different areas of a keyboard affect VDF2. Operation is the same as for VDF1. See “VDF1 Velocity Sensitivity & Keyboard Tracking – 3B” on page 17.

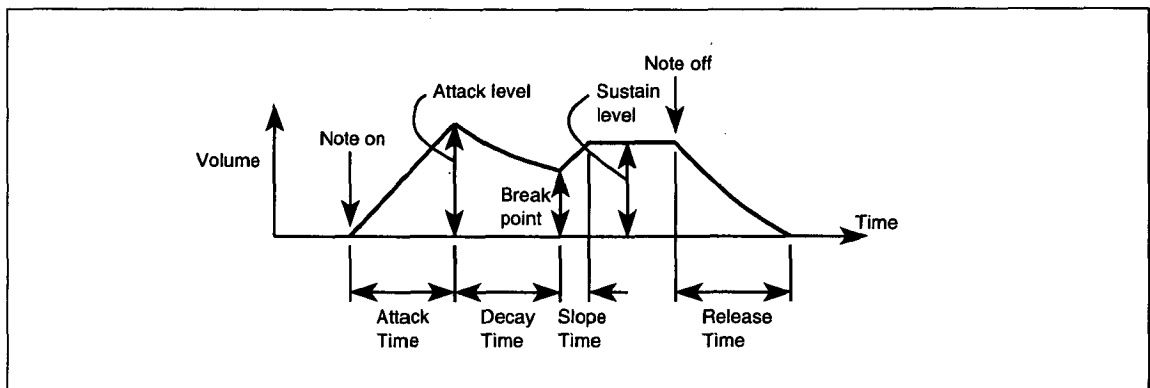
3D VDF2 U.SENS > EGint+77 EGtm00	3D VDF2 U.SENS <> AT0 DT0 ST0 RT0	3D VDF2 K.TRK <> KeyF#4 Mode=ALL	3D VDF2 K.TRK <> Int=+00 EGtm=00	3D VDF2 K.TRK < AT0 DT0 ST0 RT0
3D-1	3D-2	3D-3	3D-4	3D-5

VDA1 EG – 4A

VDA1 EG (Variable Digital Amplifier Envelope Generator) determines how the volume of Oscillator1 varies over time.

4A VDA1 EG AT00 AL99 DT15	>	4A VDA1 EG BP20 ST88 SL00	<>	4A VDA1 EG RT60	<
4A-1		4A-2		4A-3	

LCD	Parameter	Range	Description
4A-1	Attack Time (AT)	0 ~ 99	Time to reach Attack Level after key pressed
	Attack Level (AL)	0 ~ 99	Volume level when Attack Time ends
	Decay Time (DT)	0 ~ 99	Time to reach Break Point once Attack Time ends
4A-2	Break Point (BP)	0 ~ 99	Volume level when Decay Time ends
	Slope Time (ST)	0 ~ 99	Time to reach Sustain Level once Decay Time ends
	Sustain Level (SL)	0 ~ 99	Volume level when Slope Time ends
4A-3	Release Time (RT)	0 ~ 99	Time to reach zero volume when key released



VDA1 Velocity Sensitivity & Keyboard Tracking – 4B

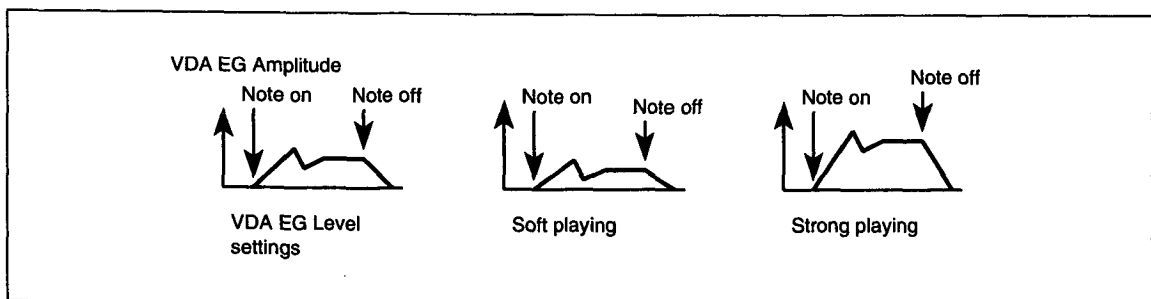
VDA1 velocity sensitivity parameters determine how VDA1 EG responds to note velocity. The keyboard tracking parameters determine how different areas of the keyboard affect VDA1.

4B VDA1 U.SENS > Amp=+99 EGtm=00	4B VDA1 U.SENS <> AT0 DT0 ST0 RT0	4B VDA1 K.TRK <> KeyC#1 Mode=OFF	4B VDA1 K.TRK <> Amp=+00 EGtm=00	4B VDA1 K.TRK < AT0 DT0 ST0 RT0
4B-1	4B-2	4B-3	4B-4	4B-5

LCD	Parameter	Range	Description
4B-1	Velocity Sensitivity Amplitude (Amp)	-99 ~ +99	VDA1 EG sensitivity to note velocity
	Velocity Sensitivity EG Time (EGtm)	0 ~ 99	VDA1 EG Time parameter sensitivity to note velocity
4B-2	Attack Time (AT)	-, 0, +	The direction in which VDA1 EG Time parameters are affected by note velocity
	Decay Time (DT)	-, 0, +	
	Slope Time (ST)	-, 0, +	
	Release Time (RT)	-, 0, +	
4B-3	Keyboard Tracking Key (Key)	C-1 ~ G9	For Low and High keyboard tracking modes, the key from which keyboard tracking starts. For All mode, the key at which VDA1 EG parameters are not affected
	Keyboard Tracking Mode (Mode)	OFF LOW HIGH ALL	No keyboard tracking Keyboard tracking below the specified key Keyboard tracking above the specified key Keyboard tracking over the entire keyboard
4B-4	Keyboard Tracking Amplitude (Amp)	-99 ~ +99	VDA1 EG sensitivity to keyboard tracking
	Keyboard Tracking EG Time (EGtm)	0 ~ 99	VDA1 EG Time parameter sensitivity to keyboard tracking
4B-5	Attack Time (AT)	-, 0, +	The direction in which VDA1 EG Time parameters are affected by keyboard tracking
	Decay Time (DT)	-, 0, +	
	Slope Time (ST)	-, 0, +	
	Release Time (RT)	-, 0, +	

Note: Some of the parameters mentioned in this section operate in conjunction with parameters in “VDA1 EG – 4A” on page 21, so refer to that section also.

4B-1 Velocity Sensitivity Amplitude: this parameter determines how the overall level of VDA1 EG is affected by note velocity. For positive values, soft playing will reduce the volume. For negative values, soft playing will increase the volume. In the following diagram, a positive value has been selected.

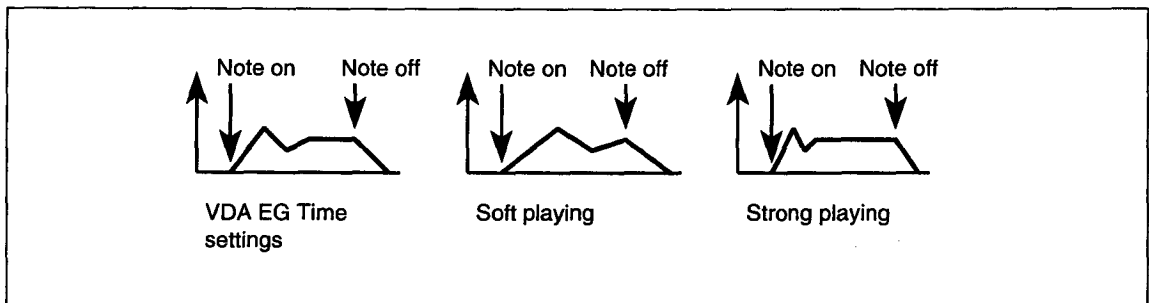


By setting the Velocity Sensitivity Amplitude parameter for VDA1 to a positive value and the Velocity Sensitivity Amplitude parameter for VDA2 to a negative value, a velocity crossfade effect can be achieved. This allows you to fade between two sounds as your playing changes from soft to strong and vice versa.

Keyboard velocity can also be used to control output panning. Set Oscillator1 and Oscillator2 parameters the same (use the “Program Oscillator Copy – 8C” on page 32), set the Velocity Sensitivity Amplitude parameters for VDA1 and VDA2 as described above, then set Oscillator1 Pan to A and Oscillator2 Pan to B. As you play softly, Oscillator2 will be sent to the right output. As your playing gradually gets stronger, the level of Oscillator2 will reduce and Oscillator1 will be sent to the left output. Because both oscillators are set identical, the Program will appear to pan from right to left as your playing gets stronger.

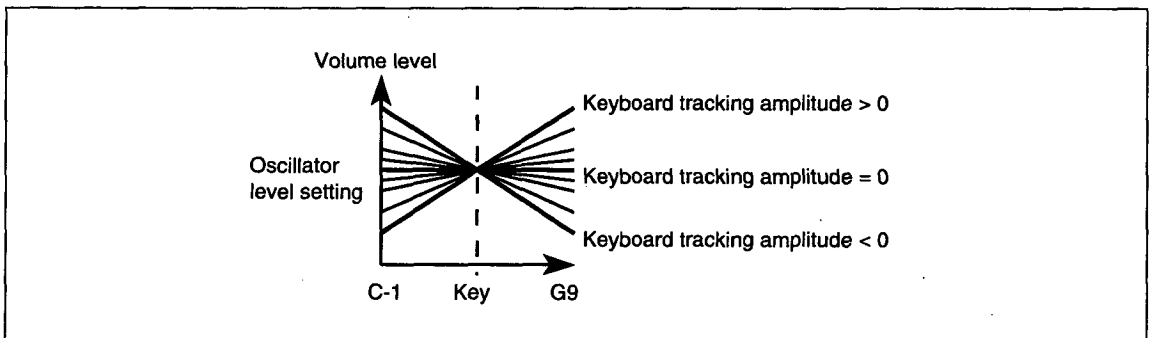
Velocity Sensitivity EG Time: this parameter determines how the overall level of VDA1 EG Time parameters are affected by note velocity. It affects the VDA1 EG Attack, Decay, Slope, and Release Time parameters equally. Although, the direction of change can be set independently for each parameter.

4B-2 Attack, Decay, Slope, Release Times: these parameters determine whether the VDA1 EG Time parameters (4B-1) are reduced or increased with changing note velocity. For a negative (–) value, they are increased the stronger you play, for a positive (+) value they are reduced the stronger you play. In other words, for a positive setting, the stronger you play, the shorter the Attack, Decay, Slope, and Release times become. This is especially effective on string type Programs. In the following diagram, all parameters are set to positive.



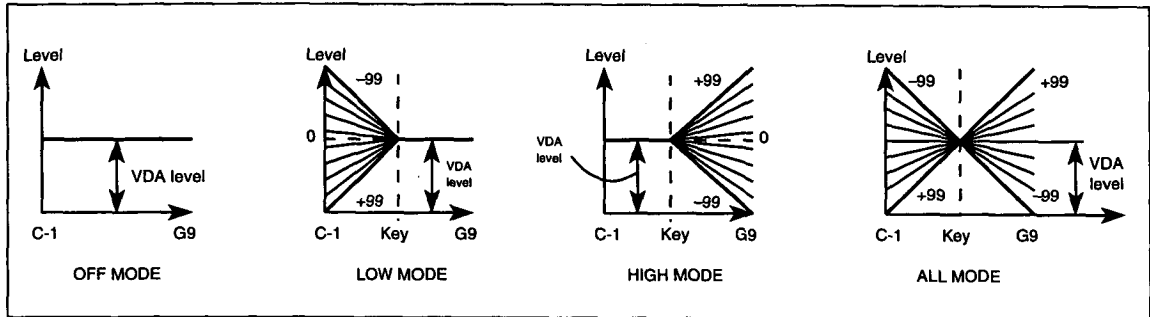
4B-3 Keyboard Tracking Key: for Low and High keyboard tracking modes, this parameter specifies the key from which keyboard tracking starts. For All mode, it specifies the key around which keyboard tracking will take place. At the specified key, keyboard tracking will have no effect.

The tracking key can be set by pressing a key on a connected MIDI keyboard while holding down the X3R [ENTER] button.



Keyboard Tracking Modes: keyboard tracking determines how the VDA EG applies to different areas of a keyboard. There are four Keyboard Tracking modes: Off, Low, High, and All. When Off is selected, there is no keyboard tracking and the Keyboard Tracking Amplitude and Keyboard Tracking EG Time parameters are disabled. When Low is selected, keyboard tracking will be

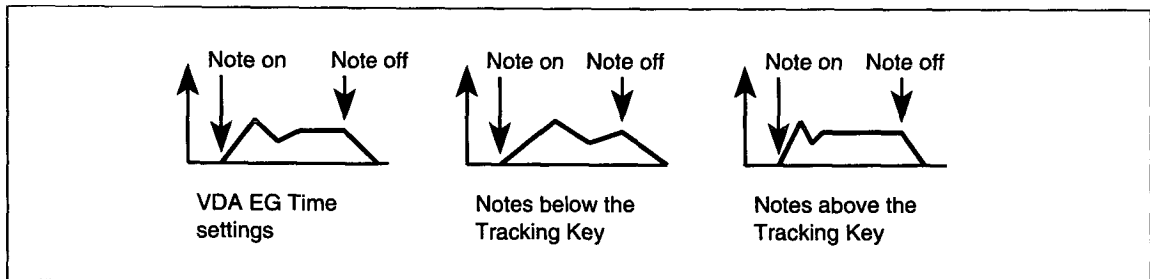
active on keys below the specified Keyboard Tracking Key. When High is selected, keyboard tracking will be active on keys above the specified Keyboard Tracking Key. When All is selected, keyboard tracking will be active across the entire keyboard.



4B-4 Keyboard Tracking Amplitude: this parameter determines keyboard tracking amplitude for the specified keyboard area. Positive values will make high notes louder. Negative values will have the opposite effect.

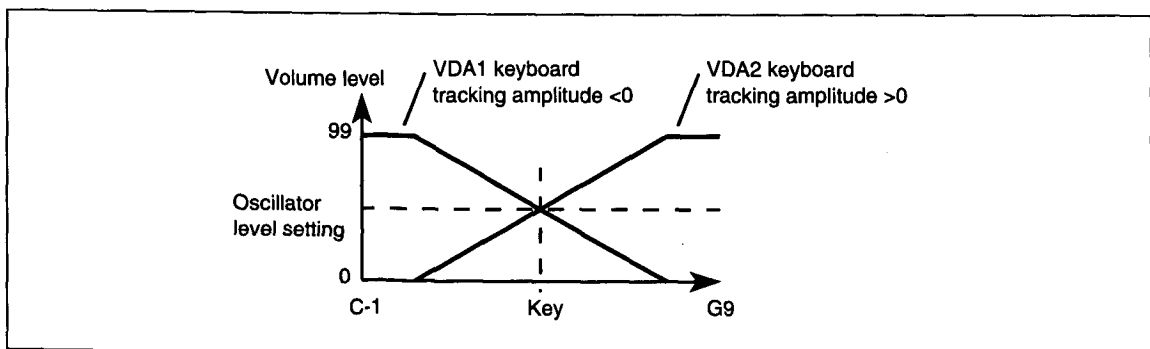
Keyboard Tracking EG Time: this parameter determines how the overall level of the VDA1 EG Time parameters are affected by keyboard tracking. It affects the VDA1 EG Attack, Decay, Slope, and Release Time parameters equally. Although, the direction of change can be set independently for each parameter. The Keyboard Tracking mode and Key parameters can be used to specify the keyboard area that is affected.

4B-5 Attack, Decay, Slope, Release Times: these parameters determine whether the VDA1 EG Time parameters are reduced or increased with keyboard tracking. For a negative (-) value, notes above the specified key will have their VDA EG times increased. For a positive (+) value, notes above the specified key will have their VDA EG times decreased. In the following diagram, all parameters are set to positive.



Creating a Positional Crossfade

You can specify a keyboard position at which one oscillator will fade out and the other will fade in. Set VDA1 (4B-3) and VDA2 (4D-3) to the same Keyboard Tracking Key, for example, C4, then set VDA1 (4B-4) to a positive Keyboard tracking Amplitude value and VDA2 (4D-4) to a negative Keyboard tracking Amplitude value.



VDA2 EG – 4C

VDA2 EG (Variable Digital Amplifier Envelope Generator) determines how the volume of Oscillator2 varies over time. Operation is the same as for VDA1. See “VDA1 EG – 4A” on page 21.

4C VDA2 EG > AT00 AL99 DT15	4C VDA2 EG <> BP20 ST88 SL00	4C VDA2 EG < RT60
4C-1	4C-2	4C-3

VDA2 Velocity Sensitivity & Keyboard Tracking – 4D

VDA2 velocity sensitivity parameters determine how VDA2 EG responds to note velocity. The keyboard tracking parameters determine how different areas of the keyboard affect VDA2 EG. Operation is the same as for VDA1. See “VDA1 Velocity Sensitivity & Keyboard Tracking – 4B” on page 22.

4D VDA2 V.SENS > Amf=+99 Egtm=00	4D VDA2 V.SENS <> AT0 DT0 ST0 RT0	4D VDA2 K.TRK <> KeyC#1 Mode=OFF	4D VDA2 K.TRK <> Amf=+00 Egtm=00	4D VDA2 K.TRK < AT0 DT0 ST0 RT0
4D-1	4D-2	4D-3	4D-4	4D-5







Pitch1 Modulation – 5A

These parameters allow you to modulate the pitch of Oscillator1. Modulation frequency and intensity can also be controlled using After Touch and Pitch Bend.

5A PITCH 1 MG > TRI Freq00 Int00	5A PITCH 1 MG <> Delay00 FadeIn00	5A PITCH 1 MG <> K.Sync:OFF	5A PMG1 FREQ <> K.TRK+00 A+J=0	5A PMG1 INT < Aft=00 JoyUP=00
5A-1	5A-2	5A-3	5A-4	5A-5

LCD	Parameter	Range	Description
5A-1	Waveform	TRI SAW↑ SAW↓ SQR1 RAND SQR2	Triangle Sawtooth ↑ Sawtooth ↓ Square1 Random Square2
	Frequency (Frg)	0 ~ 99	Modulation Speed
	Intensity(Int)	0 ~ 99	Modulation Intensity
5A-2	Delay (Delay)	0 ~ 99	Time from key press to modulation start
	Fade In Time (FadeIn)	0 ~ 99	Rate at which modulation reaches specified Intensity
5A-3	Keyboard Sync (K.Sync)	OFF ON	Modulation will continue for subsequent notes Modulation will restart for each new note
5A-4	Keyboard Tracking (K.TRK)	-99 ~ +99	Modulation sensitivity to keyboard tracking
	After Touch & Joystick (A+J)	0 ~ 9	Modulation frequency control by After Touch and Pitch Bend
5A-5	After Touch Modulation Intensity (Aft)	0 ~ 99	Modulation intensity controlled by After Touch
	Joystick Modulation Intensity (JoyUp)	0 ~ 99	Modulation intensity controlled by the Pitch Bend

5A-1 Waveform: this parameter selects the type of modulation waveform.

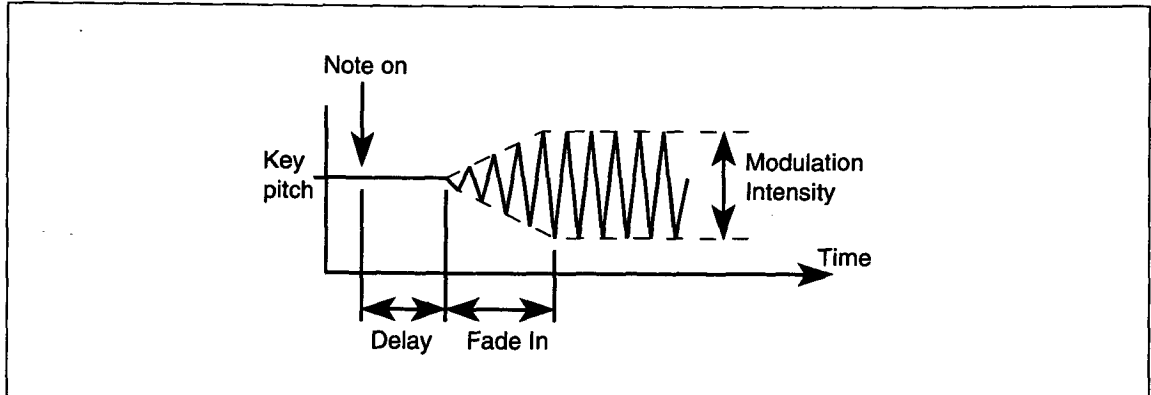
Triangle		Square1	
Sawtooth ↑		Random	
Sawtooth ↓		Square2	

Frequency: this parameter determines the modulation frequency (speed).

Intensity: this parameter determines the modulation intensity (depth).

5A-2 Delay: this parameter determines how long after a key press modulation starts.

Fade In time: this parameter specifies the time it takes modulation to reach maximum intensity.



5A-3 Keyboard Sync: determines how subsequent notes are affected by modulation. For a setting of OFF, modulation will be applied to subsequent notes in the same way that it is currently being applied to notes that are already held down. That is, subsequent notes will not be affected by the Delay and Fade In Time parameters. For a setting of ON, modulation will restart for each new note.

5A-4 Keyboard Tracking: keyboard tracking determines how modulation affects different areas of the keyboard. For positive values, the modulation frequency will increase as higher notes are played. For negative values, the modulation frequency will decrease as higher notes are played.

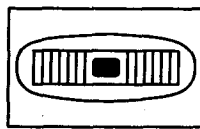
When the Keyboard Sync is set to OFF, the modulation speed is determined by the position of the first key pressed. When the keyboard tracking is set to +99, playing a key 1 octave higher will double the modulation speed. When an oscillator's Octave parameter is set to 8', key C4 becomes the keyboard tracking center key.

After Touch & Joystick: this parameter specifies how much the modulation frequency will be increased in response to After Touch and the Pitch Modulation MIDI Controller (joystick).

5A-5 After Touch Modulation Intensity: this parameter determines to what extent After Touch affects the modulation intensity.

Joystick Modulation Intensity: this parameter determines to what extent the joy stick affects the modulation intensity.

↑ Increase pitch modulation frequency & intensity



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or similar joystick

Pitch2 Modulation – 5B

These parameters allow you to modulate the pitch of Oscillator2. Modulation frequency and intensity can also be controlled using After Touch and the Pitch Modulation MIDI Controller (joystick). Operation is the same as for Pitch1 Modulation. See "Pitch1 Modulation – 5A" on page 26.

5B PITCH 2 MG > TRI Frq00 Int00	5B PITCH 2 MG <> Delay00 FadeIn00	5B PITCH 2 MG <> K.Sync:OFF	5B PMG2 FREQ <> K.TRK+00 A+J=0	5B PMG2 INT < Aft=00 JoyUP=00
5B-1	5B-2	5B-3	5B-4	5B-5

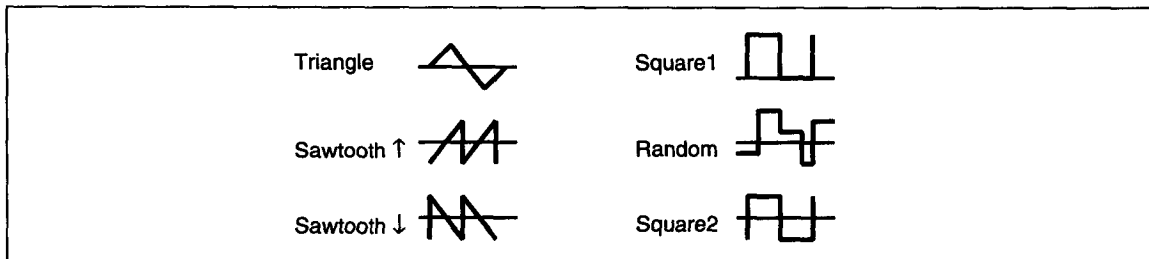
VDF Modulation – 5C

These parameters allow you to modulate the cutoff frequency of VDF1, VDF2, or both.

5C VDF MG RAND Frq00 Int00	5C VDF MG Delay00 OSC=BOTH	5C VDF MG K.Sync:OFF
5C-1	5C-2	5C-3

LCD	Parameter	Range	Description
5C-1	Waveform	TRI SAW↑ SAW↓ SQR1 RAND SQR2	Triangle Sawtooth ↑ Sawtooth ↓ Square1 Random Square2
	Frequency (Frq)	0 ~ 99	Modulation Speed
	Intensity (Int)	0 ~ 99	Modulation Intensity
5C-2	Delay	0 ~ 99	Time from key press to modulation start
	Oscillator Select (OSC)	OFF OSC1 OSC2 BOTH	Modulation off Modulation for VDF1 Modulation for VDF2 modulation for VDF1 and VDF2
5C-3	Keyboard Sync (K.Sync)	OFF ON	OFF: modulation will continue for subsequent notes ON: modulation will restart for each new note

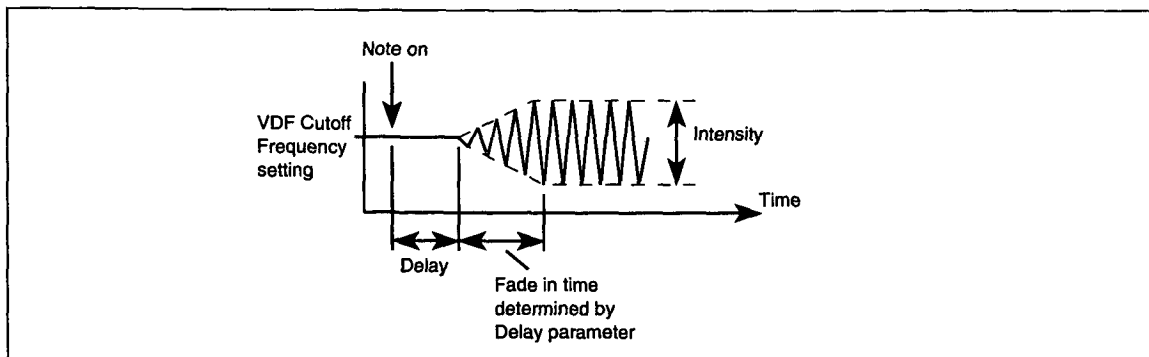
5C-1 Waveform: this parameter selects the type of modulation waveform.



Frequency: this parameter determines the modulation frequency (speed).

Intensity: this parameter determines the modulation intensity (depth).

5C-2 Delay: this parameter determines how long after a note on modulation starts. Modulation starts with a fade in time that is determined by this parameter.



Note: When Square 1 is selected and the filter is completely open, the cutoff frequency will not change.

Oscillator Select: this parameter allows you to apply modulation to VDF1, VDF2, or both.

5C-3 Keyboard Sync: determines how subsequent notes are affected by modulation. For a setting of OFF, modulation will be applied to subsequent notes in the same way that it is currently being applied to notes that are already held down. That is, subsequent notes will not be affected by the Delay parameter. For a setting of ON, modulation will restart for each new note.

After Touch & Joystick Control – 6A

These parameters determine how a Program responds to After Touch and the VDF Modulation MIDI Controller (joystick).

6A AFT CTRL P.Bend+12 Fc+00	>	6A AFT CTRL VDF.MG00 Amp+00	<>	6A J.STK Down VDF.MG=99	<>	6A BEND CTRL P.Bend+00 VDF+00	<
6A-1		6A-2		6A-3		6A-4	

LCD	Parameter	Range	Description
6A-1	After Touch Pitch Bend (P.Bend)	-12 ~ +12	After touch pitch bend range
	After Touch VDF Cutoff Frequency (Fc)	-99 ~ +99	VDF Cutoff Frequency sensitivity to After Touch
6A-2	After Touch VDF MG Intensity (VDF.MG)	0 ~ 99	VDF modulation sensitivity to After Touch
	After Touch VDA Amplitude (Amp)	-99 ~ +99	VDA1 sensitivity to After Touch
6A-3	Joystick VDF MG Intensity (VDF.MG)	0 ~ 99	VDF modulation sensitivity to the VDF Modulation MIDI Controller (joystick)
6A-4	Joystick Pitch Bend Range (P.Bend)	-12 ~ +12	Joystick pitch bend range and direction
	Joystick VDF Sweep Intensity (VDF)	-99 ~ +99	VDF modulation sensitivity to the VDF Modulation MIDI Controller (joystick)

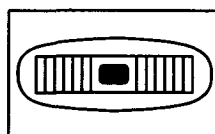
6A-1 After Touch Pitch Bend: this parameter determines the After Touch pitch bend range (± 1 octave).

After Touch VDF Cutoff Frequency: this parameter determines how the VDF Cutoff Frequency responds to After Touch. For positive values, After Touch will increase the Cutoff Frequency, thus making the sound brighter. Negative values will have the opposite effect. For this parameter to have any affect, you must set the VDF Cutoff Frequency to something other than 99.

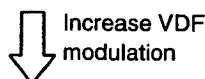
6A-2 After Touch VDF MG Intensity: this parameter determines how VDF modulation responds to After Touch. When After Touch is applied, the VDF Cutoff Frequency is modulated. The higher the value, the greater the modulation intensity. For this parameter to have any affect, you must set the VDF Cutoff Frequency to something other than 99, the VDF Modulation Frequency to something other than 0, and the VDF Modulation Oscillator to OSC1, OSC2, or BOTH.

After Touch VDA Amplitude: this parameter determines how the VDA responds to After Touch. In other words, how After Touch affects the volume of Oscillator1. For positive values, increasing After Touch (pressing down on a held key) will increase the volume. Negative settings will have the opposite effect.

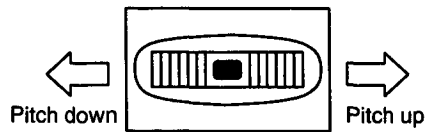
6A-3 Joystick VDF MG Intensity: this parameter determines how VDF modulation responds to the Pitch Modulation MIDI Controller (joystick). When the joystick is moved down, the VDF Cutoff Frequency is modulated. The higher the value, the greater the modulation intensity. For this parameter to have any affect, you must set the VDF Cutoff Frequency to something other than 99, the VDF Modulation Frequency to something other than 0, and the VDF Modulation Oscillator to OSC1, OSC2, or BOTH.



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or similar joystick

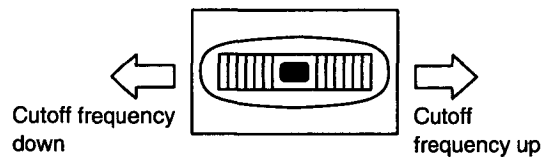


6A-4 Joystick Pitch Bend Range: this parameter determines the pitch bend range (± 1 octave) and pitch bend direction. For positive values, the pitch will increase as a joystick is moved from left to right (or a pitch wheel is moved up). For negative values, the pitch will increase as the joystick is moved from right to left (or a pitch wheel is moved down).



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or similar joystick

Joystick VDF Sweep Intensity: this parameter determines how the VDF Cutoff Frequency responds to pitch bend. For positive values, the Cutoff Frequency will increase as the joystick is moved from left to right (or a pitch wheel is moved up). For negative values, the Cutoff Frequency will increase as the joystick is moved from right to left (or a pitch wheel is moved down).



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or similar joystick

Effects – 7A ~ 7G

Effects are explained in Chapter 5: “Effects” on page 55.

When you’ve edited a Program’s effect settings, always remember to write the Program, otherwise, the settings will be lost when you select another Program.

Program Write – 8A

This function allows you to write (save) a Program to Program bank A or B. If a PROG/SEQ data card is inserted, you can also write to bank C or D. It can also be used to reorganize Program numbering by writing Programs to different destinations. You cannot write to the GM bank.

```
8A PROG WRITE
Write→000 OK?
```

8A-1

LCD	Parameter	Range	Description
8A-1	Write→xxx	A00 ~ A99 B00 ~ B99 C00 ~ C99 D00 ~ D99	Select the Program write destination
	OK to Write	OK?	Executes Program write

Note: To write a Program to bank A or B, the Program Memory Protection function must be set to OFF. See “Program Memory Protect – 4A” on page 162.

To write a Program to a PROG/SEQ data card, it must already be formatted and its write protect switch must be set to off. You cannot save to a card bank that already contains sequencer data.

To write a Program, specify the write destination, position the cursor on OK?, then press the [▲/YES] button. The message “Are You Sure OK?” will appear. Press the [▲/YES] button to write the Program, or the [▼/NO] button to cancel the function. If you write the Program, the destination Program will be selected automatically.

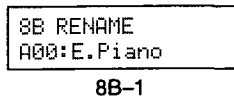
Note: The Program that already exists at the selected write destination will be lost when you execute this function.

While editing, you may want to write (save) a Program as you proceed. To do this, press the [REC/WRITE] button. The message “Are You Sure OK?” will appear. Press the [▲/YES] button to write the Program, or the [▼/NO] button to cancel the function.

To write all Programs, Combinations, and Global settings to floppy disk, see See “Save P/C/G Data – 3B” on page 183.

Program Rename – 8B

This function allows you to rename a Program.



8B-1

LCD	Parameter	Range	Description
8B-1	Rename	See character table below	Rename a Program

To rename a Program, use the [←] and [→] cursor buttons to position the cursor, and the [▲/YES] [▼/NO] buttons or VALUE knob to select characters. Available characters are shown in the table below. Program names can use up to 10 characters.

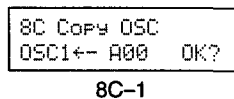
	!	"	#	\$	%	&	'	()	*	+	,	-	.	/	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	[]	^	_	
`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	

Use the number keypad to insert numbers. Use the [10's HOLD/-] button to switch between uppercase and lowercase characters. Press and hold down the [ENTER] button, then press the [←] button to delete the current character. Press and hold down the [ENTER] button, then press the [→] button to insert a character.

When you've renamed a Program, always remember to write the Program, otherwise, the new name will be lost when you select another Program. See "Program Write – 8A" on page 31.

Program Oscillator Copy – 8C

This function allows you to copy the oscillator parameter settings from another Program to either Oscillator1 or Oscillator2 of the currently selected Program.



8C-1

LCD	Parameter	Range	Description
8C-1	Copy Destination	OSC1, OSC2	The oscillator to which the oscillator settings are to be copied
	Program Source	A00 ~ A99 B00 ~ B99 C00 ~ C99 D00 ~ D99 G01 ~ 136	The Program from which the oscillator settings are to be copied
	OK to Copy	OK?	Executes oscillator copy

To copy an oscillator, specify the copy destination, the Program source, and Oscillator source. Position the cursor on OK?, then press the [▲/YES] button. The message "Are You Sure OK?" will appear. Press the [▲/YES] button to copy, or the [▼/NO] button to cancel the function.

The following parameter settings are copied: Oscillator Setup (1B or 1C), VDF Cutoff & EG (3A or 3C), VDF Velocity Sensitivity & Keyboard Tracking (3B or 3D), VDA EG (4A or 4C), VDA Velocity Sensitivity & Keyboard Tracking (4B or 4D), Pitch Modulation (5A or 5B), and the VDF Modulation Oscillator Select parameter (5C-2).

If you copy to or from a Drum mode Program, the Multisound and Octave parameters are not copied.

If the Program source is the same as the program that you are currently editing, the edited parameter settings will be copied, not the parameter settings written (saved) in that Program.

When copying oscillator parameter settings, there is no point selecting OSC2 as the oscillator source of a Program that's in single Oscillator mode.

Oscillator Copy & Swap – 8D

This function allows you to copy and swap oscillator settings between oscillators 1 and 2.

```
8D Swap OSC1-2
OSC1→OSC2 OK?
```

8D-1

LCD	Parameter	Range	Description
8D-1	Oscillator Copy/Swap	OSC1 → OSC2	Copy OSC1 to OSC2
		OSC1 ← OSC2	Copy OSC2 to OSC1
		OSC1 ↔ OSC2	Swap OSC1 and OSC2
	OK to Copy/Swap	OK?	Executes oscillator copy/swap

To copy/swap an oscillator, specify the copy/swap direction, position the cursor on OK?, then press the [▲/YES] button. The message “Are You Sure OK?” will appear. Press the [▲/YES] button to copy/swap, or the [▼/NO] button to cancel the function.

The following parameter settings are copied: Oscillator Setup (1B or 1C), VDF Cutoff & EG (3A or 3C), VDF Velocity Sensitivity & Keyboard Tracking (3B or 3D), VDA EG (4A or 4C), VDA Velocity Sensitivity & Keyboard Tracking (4B or 4D), Pitch Modulation (5A or 5B), and the VDF Modulation Oscillator Select parameter (5C-2).

Program Initialize – 8E

This function resets all Program parameters to their initial settings. This is useful when you want to create a new Program from scratch.

```
8E INIT PROG
OK?
```

8E-1

LCD	Parameter	Range	Description
8E-1	INIT PROG	OK?	Executes initialize Program

To initialize a Program, press the [▲/YES] button. The message “Are You Sure OK?” will appear. Press the [▲/YES] button to initialize, or the [▼/NO] button to cancel the function. Parameters are initialized as follows: Oscillator mode set to Single; Oscillator Level set to 50; VDF Cutoff Frequency at 99; VDA EG Attack and Release Times at 0, all Levels at 99; all modulation off; and no effects.

Chapter 3: Combination Play Mode

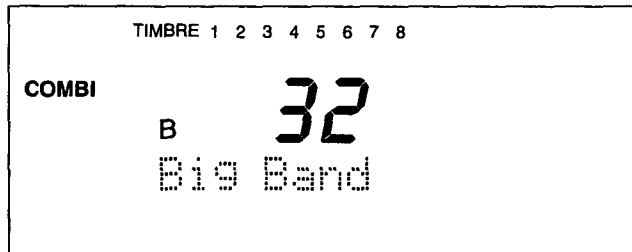
In this mode you can select and play Combinations. Some Combination parameters can also be adjusted, allowing you to edit parameters in real time – as you play.

The following Combinations can be selected: A00 to A99 and B00 to B99. If a PROG/SEQ data card is inserted, Combinations C00 to C99 and D00 to D99 can also be selected.

Entering Combination Play Mode

Press the [COMBI] button.

COMBI will appear on the LCD screen.



The numbers 1 to 8 at the top of the LCD correspond to Timbres. They appear for both EXT and INT mode Timbres. When MIDI Note On/Off messages are received, a box below the corresponding number flashes. This works as a MIDI monitor.

Selecting Combinations

- 1) Press the [BANK] button repeatedly to select a Combination bank.
- 2) Enter the required Combination number using the number keypad. For example, to select Combination 32 in bank B, press the [BANK] button to select bank B, then press [3] and [2]. Alternatively, press the [▲/YES] and [▼/NO] buttons repeatedly to select a Combination.

Combination Play Mode & MIDI

In Combination Play mode, the X3R outputs Assignable Pedal Switching data and Program Change messages when Combinations are selected. This data is sent on the Global MIDI Channel. See “Global MIDI Channel & MIDI Clock Source – 3A” on page 158. When a Combination that contains an EXT mode Timbre is selected, a Program Change message corresponding to that Timbre’s Program is output.

The X3R responds to MIDI Controllers such as After Touch and Pitch Bend. See “Controller Event Edit Notes” on page 122 for a list of all usable MIDI Controllers.

Using a Pedal Switch to Select Combinations

You can also select Combinations using a pedal switch.

- 1) Connect an optional Korg PS-1 or PS-2 pedal switch to the ASSIGNABLE PEDAL/SW connection.
- 2) In Global mode, you need to assign the pedal to either Program Up or Program Down. See “Assignable Pedal/SW Setup – 8B” on page 171.

Using MIDI to Select Combinations

You can also select Combinations using MIDI Program Change messages.

- 1) Connect a MIDI device capable of sending MIDI Program Change messages to the X3R's MIDI IN connection.
- 2) Set the Global MIDI Channel parameter so that it matches that of the device sending the Program Change messages. See "Global MIDI Channel & MIDI Clock Source – 3A" on page 158.
- 3) In Global mode, you need to set the MIDI Program Change filter to ENA or NUM. See "MIDI Filter1 – 3C" on page 160.

The following table shows how the X3R responds to MIDI Bank Select and Program Change messages in Combination Play mode.

MIDI			X3R	
Bank Select (H)		Program Change No.	Bank	Combination No.
MSB	LSB			
00	00	00~99	A	00~99
00	01	00~99	B	00~99
00	02	00~99	C	00~99
00	03	00~99	D	00~99

- Bank Select

Bn, 00, [MSB], 20, [LSB]

n: MIDI Channel (0~F corresponds to Channels 1~16.)

- Program Change

Cn, PP

PP: Program Number

For example: to select Combination C13 on MIDI Channel 3

B2, 00, 00, 20, 02, C2, 0D

Bank Select Program Change

You can select a Combination by sending a Program Change message only. In this case, the Combination will be selected from the current Bank.

Combination Notes

Polyphony: up to 32-note polyphony is available for a Combination. That is, 32 notes are available to the Timbres within a Combination. Timbre Programs that use Double Oscillator mode will obviously reduce the number of available notes. For example, eight Single Oscillator mode Programs in a Combination would allow up to 32-note polyphony. Whereas, eight Double Oscillator mode Programs would allow up to 16-note polyphony.

Playing Timbres: to play a Combination Timbre from a connected MIDI keyboard, you must set that Timbre's T.Mode to INT, and its MIDI Channel so that it matches that of the MIDI keyboard. See "Timbre Mode – 1B" on page 41 and "MIDI Channel – 3A" on page 45.

Program Effects: in Combination Play mode, the individual effect settings for each Timbre Program are ignored, and the effect settings for that Combination are used.

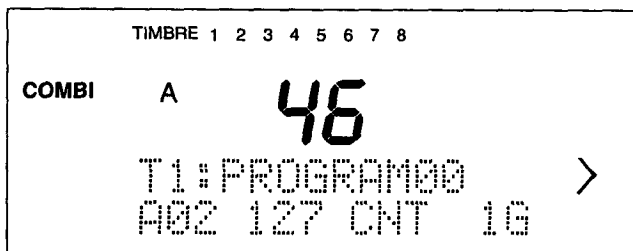
Editing a Combination Program: if you have just edited one of the Programs used by a Combination Timbre, the edited version of that Program (saved or not) will be used when that Combination is selected.

Editing in Combination Play Mode

In Combination Play mode, some parameters can be edited. This is called performance editing, because you can actually edit these parameters while performing. The parameters are as follows: Program number, Level, Panpot, and MIDI Channel.

- 1) Select a Combination.
- 2) Use the function buttons [1]~[8] to select a Timbre.
Function buttons [1]~[8] correspond to Timbres 1~8.
- 3) Use the [←] and [→] cursor buttons to select a parameter.
- 4) Use the VALUE knob or the [▲/YES] and [▼/NO] buttons to adjust the selected parameter.

On the following LCD screen, the Program Select parameter of Timbre 1 is selected. The angle bracket symbol indicates that other parameters can be displayed using the [→] cursor button.



When you've finished editing, press the [↓] cursor button or the [COMBI] button to return to the previous LCD screen.

If you want to write the edited Combination to memory, press the [REC/WRITE] button. The message "Are You Sure OK?" will appear. Press the [▲/YES] button to write the Combination, or the [▼/NO] button to cancel the function. Note that if you write the Combination, you will overwrite the Combination that already exists with that number. To write the Combination to a different Combination number or change its name, see "Combination Write – 8A" on page 53.

T1:PROGRAM00 >
A00 100 CNT 1G
[1] Timbre 1

T8:PROGRAM00 <
A00 100 CNT 1G
[8] Timbre 8

Function Button	Parameter	Range	Description
[1]	Program	OFF A00 ~ A99 B00 ~ B99 C00 ~ C99 D00 ~ D99 G01 ~ 136 p000 ~ p127	Selects a Program. P numbers indicate that a Timbre is set to EXT T.Mode. See "Program Select - 1A" on page 40.
	Level	000 ~ 127	Timbre volume level. See "Level - 2A" on page 42.
[8]	Panpot	OFF, A, 14A~CNT~14B, B PRG	Timbre output panning. See "Panpot - 2B" on page 43.
	MIDI Channel	1 ~ 16	Timbre MIDI Channel. See "MIDI Channel - 3A" on page 45.

Refer to the pages indicated in the above table for a full explanation of each parameter.

Note: While one of the above parameters is displayed on the bottom line of the LCD screen, the VALUE knob will not control dynamic modulation, it will control the selected parameter. To control dynamic modulation using the VALUE knob, press the [↓] button to exit performance edit. See Dynamic Modulation on page 56.

When the MIDI System Exclusive Filter (3D-1 Global mode) is set to ENA, the respective MIDI System Exclusive data will be output while performance editing. Likewise, X3R parameters will be controlled when the respective System Exclusive data is received.

Soloing Individual Timbres

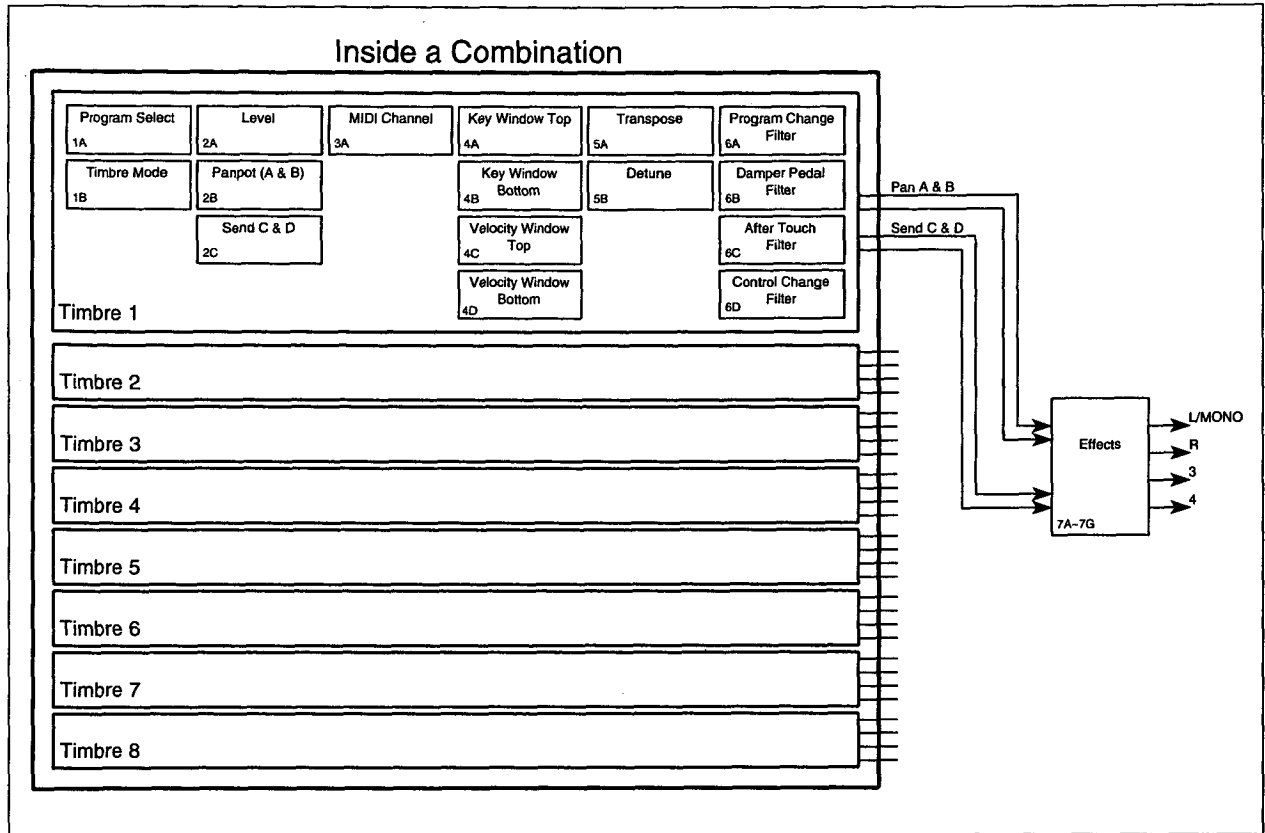
When a number of Timbres are layered together, you may find it difficult to distinguish between them while editing. The solo function allows you to listen to Timbres individually. To solo a Timbre, double-click the corresponding function button [1] to [8]. For example, to solo Timbre 6, double-click the function button [6]. The word SOLO will appear on the LCD screen as shown below.

TIMBRE 1 2 3 4 5 6 7 8
COMBI SOLO
A 46
T1:PROGRAM00 >
A02 127 CNT 1G

To cancel the solo function, double-click the respective function button [1]~[8], or press the [COMBI] button.

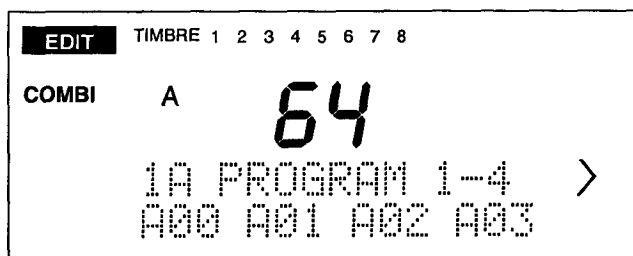
Chapter 4: Combination Edit Mode

This mode allows you to edit Combinations. You can create new Combinations or simply edit existing ones. The following diagram shows how eight Timbres that make up a Combination, and what's inside each Timbre. The numbers in the bottom left-hand corner of each box indicate the group of LCD screens that are used to set up that particular item.



Entering Combination Edit Mode

- 1) Select the Combination that you want to edit.
 - 2) Press the [EDIT] button.
- COMBI and EDIT will appear on the LCD screen.



Compare Function

While editing, you can press the [COMPARE] button to listen to the original unedited Combination. That is, how the Combination was before you started editing it. Pressing the [COMPARE] button again will return you to the edited version of the Combination.

Undo Function

To reset a parameter to the value that it was before you edited it, press the [▲/YES] and [▼/NO] buttons simultaneously.

Combination Editing Notes

Always Write Combinations: remember to write an edited Combination to memory before selecting another Combination, otherwise, the edited Combination will be lost.

When the MIDI System Exclusive Filter (3D-1 Global mode) is set to ENA, the respective MIDI System Exclusive data will be output when a parameter is edited. Likewise, X3R parameters will be edited when the respective System Exclusive data is received.

Program Select – 1A

These parameters allow you to assign Programs to Timbres.

Timbres 1-4	Timbres 5-8
1A PROGRAM 1-4 > A00 A01 B02 A03	1A PROGRAM 5-8 < A04 G01 G99 128
1A-1	1A-2

LCD	Parameter	Range	Description
1A-1	Timbre 1 Program Select	A00 ~ A99 B00 ~ B99 C00 ~ C99 D00 ~ D99 G01 ~ 136 p000 ~ p127	Assign a Program to a Timbre
	Timbre 2 Program Select		
	Timbre 3 Program Select		
	Timbre 4 Program Select		
1A-2	Timbre 5 Program Select		
	Timbre 6 Program Select		
	Timbre 7 Program Select		
	Timbre 8 Program Select		

Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select Programs.

Use the [10's HOLD] button to select Program banks.

An optional PROG/SEQ data card must be inserted before you can select Programs from banks C and D.

For INT mode Timbres (see “Timbre Mode – 1B” on page 41), MIDI Program Change messages received on the corresponding MIDI channel can be used to select Programs. However, if the Timbre’s MIDI Channel is the same as the Global MIDI Channel, operation will depend on the MIDI Program Change Filter1 parameter setting. For example, if it is set to PRG, MIDI Program Change messages received on the Global MIDI Channel will still select Timbre Programs. When set to either ENA or NUM, they will select Combinations. See “MIDI Filter1 – 3C” on page 160.

P000 ~ P127: for EXT mode Timbres (see “Timbre Mode – 1B” on page 41) you can select a MIDI Program Change number, as indicated by the prefix P. When a Combination that contains EXT mode Timbres is selected, the specified MIDI Program Change number is output via the MIDI OUT connection. This allows you to select Programs (voices, patches) on other MIDI devices such as a synthesizer or tone generator simply by selecting the appropriate Combination on the X3R. It could also be used to select effect programs on an external effects units.

Note: If the MIDI Channel of an EXT mode Timbre is the same as the Global MIDI Channel, a MIDI Program Change message will not be output by that Timbre when a Combination is selected.

Timbre Mode – 1B

These parameters allow you to set the operating mode for each Timbre. In other words, the sound source and the way that each Timbre works with MIDI data from external MIDI devices.

Timbres 1~4				Timbres 5~8			
1B T.MODE	1-4	>		1B T.MODE	5-8	<	
INT	INT	EXT	EXT	INT	INT	OFF	OFF
1B-1				1B-2			

LCD	Parameter	Range	Description
1B-1	Timbre 1 Timbre Mode	OFF	Timbre is off
	Timbre 2 Timbre Mode		
	Timbre 3 Timbre Mode		
	Timbre 4 Timbre Mode		
1B-2	Timbre 5 Timbre Mode	INT	Use an internal program
	Timbre 6 Timbre Mode		
	Timbre 7 Timbre Mode		
	Timbre 8 Timbre Mode		
		EXT	Use an external program, for use with other MIDI instruments

OFF: this parameter allows you to turn off a Timbre. Turn off any Timbres that you are not going to use. When a Timbre is turned OFF, the corresponding number on the top line of the LCD screen disappears.

INT: when this mode is selected, you can assign an X3R Program to a Timbre using Program Select. See “Program Select – 1A” on page 40. This mode should be selected when you want to use an X3R Program.

To play an INT mode Timbre from a connected MIDI keyboard, its MIDI Channel must be set to that of the MIDI keyboard. See “MIDI Channel – 3A” on page 45.

MIDI Program Change messages received on a corresponding Timbre’s MIDI channel can be used to select Programs. If the Timbre’s MIDI Channel is the same as the Global MIDI Channel, “MIDI Filter1 – 3C” on page 160 must be set to PRG.

EXT: when this mode is selected, you can select a MIDI Program Change number using Program Select. See “Program Select – 1A” on page 40. This mode should be selected when you want to use Programs (voices, patches) from other MIDI devices such as a synthesizer or tone generator as part of a Combination. It could also be used to select effect programs on an external effects units.

When a Combination that contains EXT mode Timbres is selected, the specified MIDI Program Change numbers are output via the MIDI OUT connection. This allows you to select Programs (voices, patches) on other MIDI devices simply by selecting the appropriate Combination on the X3R.

Note: If the MIDI Channel of an EXT mode Timbre is the same as the Global MIDI Channel, a MIDI Program Change message will not be output when a Combination is selected.

Level – 2A

These parameters allow you to set the volume level of each Timbre.

Timbres 1~4		Timbres 5~8	
2A LEVEL 1-4	>	2A LEVEL 5-8	<
127 099 011 127		055 127 127 127	
2A-1		2A-2	

LCD	Parameter	Range	Description
2A-1	Timbre 1 Level	0 ~ 127	Sets the volume level of each Timbre
	Timbre 2 Level		
	Timbre 3 Level		
	Timbre 4 Level		
2A-2	Timbre 5 Level		
	Timbre 6 Level		
	Timbre 7 Level		
	Timbre 8 Level		

Using these parameters you can set the volume level of each Timbre in a Combination.

For EXT mode Timbres (see “Timbre Mode – 1B” on page 41), MIDI Volume message (Bn.07.xx) will be sent when Level parameters are adjusted. This allows you to control the volume level of other MIDI devices.

Note: If the MIDI Channel of an EXT mode Timbre is the same as the Global MIDI Channel, MIDI Volume messages will not be sent.

For INT mode Timbres, the volume level is determined by this parameter multiplied by MIDI Controller No. 7 Volume or Expression No. 11.

Panpot – 2B

These parameters allow you to pan the output of each Timbre between buses A and B. These buses feed the effects processors. See “Effect Placement – 7E” on page 57.

Timbres 1-4				Timbres 5-8			
2B PANPOT 1-4 >				2B PANPOT 5-8 <			
A	B	CNT	CNT	10A	10B	CNT	PRG
2B-1				2B-2			

LCD	Parameter	Range	Description
2B-1	Timbre 1 Panpot	OFF, A, 14A~CNT~14B, B, PRG	Pans the outputs of each Timbre between buses A and B
	Timbre 2 Panpot		
	Timbre 3 Panpot		
	Timbre 4 Panpot		
2B-2	Timbre 5 Panpot		
	Timbre 6 Panpot		
	Timbre 7 Panpot		
	Timbre 8 Panpot		

OFF: nothing is output to buses A and B.

A, 14A~CNT~14B, B: for a setting of A, Timbre output is to bus A only. For a setting of B, to bus B only. And for a setting of CNT, equally to buses A and B. You can set different output levels for buses A and B with settings 14A to 14B.

PRG: when this setting is selected, the pan settings that have been set for a Program in Program Edit mode are used. See “Oscillator1 Setup – 1B” on page 10 and “Oscillator2 Setup – 1C” on page 12.

If a Program is using a drum kit, the pan settings for each drum sound will be used when PRG is selected. See “Drum Kit Setup1 – 7A” on page 167 and “Drum Kit Setup2 – 7B” on page 169.

For a setting other than OFF or PRG, these parameters can be controlled using MIDI Controller No. 10 Panpot. See “MIDI Panpot, Send Data” on page 124 for details about the relationship between panpot value and MIDI Controller value.

Pan adjustments are not sent as MIDI data.

Send C & D – 2C

These parameters allow you to set the output level of each Timbre sent to buses C and D. These buses feed the effects processors. See “Effect Placement – 7E” on page 57.

Timbres 1~4		Timbres 5~8	
2C SendCD 1-4 >		2C SendCD 5-8 <	
9:0 0:9 5:5 5:5		5:5 5:5 0:0 P:P	
2C-1		2C-2	

LCD	Parameter	Range	Description
2C-1	Timbre 1 Send C	0 ~ 9, P	Sets the output level of each Timbre sent to buses C and D
	Timbre 1 Send D		
	Timbre 2 Send C		
	Timbre 2 Send D		
2C-2	Timbre 3 Send C		
	Timbre 3 Send D		
	Timbre 4 Send C		
	Timbre 4 Send D		
	Timbre 5 Send C		
	Timbre 5 Send D		
	Timbre 6 Send C		
	Timbre 6 Send D		
2C-2	Timbre 7 Send C		
	Timbre 7 Send D		
	Timbre 8 Send C		
	Timbre 8 Send D		

0~9: when a Program is used in a Combination, its Send C and Send D parameters are ignored, and these settings are active. Oscillators 1 and 2 use the same settings. If the Program is set to DRUM mode, the Send C and Send D settings of the individual drums within the kit are ignored, and these settings are active.

P: when this setting is selected, the Send C and Send D settings that have been set for a Program in Program Edit mode are used. See “Oscillator1 Setup – 1B” on page 10 and “Oscillator2 Setup – 1C” on page 12. If a Program is using a drum kit, the settings for each drum sound will be used. See “Drum Kit Setup1 – 7A” on page 167 and “Drum Kit Setup2 – 7B” on page 169.

For a setting other than P, the Send C parameters can be controlled using MIDI Controller No. 91 Reverb Level. MIDI Controller No. 93 Chorus Level can be used to control Send D.

See “MIDI Panpot, Send Data” on page 124 for details about the relationship between send value and MIDI Controller value.

Send C and D adjustments are not sent as MIDI data.

MIDI Channel – 3A

These parameters allow you to set the MIDI Channel that each Timbre uses to send and receive MIDI data.

Timbres 1~4				Timbres 5~8			
3A MIDI CH	1-4	>		3A MIDI CH	5-8	<	
1G	2	3	4	5	6	7	8
3A-1				3A-2			

LCD	Parameter	Range	Description
3A-1	Timbre 1 MIDI Channel	1 ~ 16	Sets the MIDI Channel that each Timbre uses to send and receive MIDI data
	Timbre 2 MIDI Channel		
	Timbre 3 MIDI Channel		
	Timbre 4 MIDI Channel		
3A-2	Timbre 5 MIDI Channel		
	Timbre 6 MIDI Channel		
	Timbre 7 MIDI Channel		
	Timbre 8 MIDI Channel		

If you want to play a Combination from a connected MIDI keyboard, you should set each Timbre's MIDI Channel so that it matches that of the MIDI keyboard. If you are using an external MIDI sequencer, set each Timbre's MIDI Channel so that it matches the corresponding sequencer track's MIDI channel. This allows you to use the X3R like an 8-part multi-timbral tone generator.

Combinations can be selected using the X3R front panel controls or the Assignable Pedal. When a Combination is selected, the corresponding MIDI Program Change message is output on the Global MIDI Channel. When a Combination that contains an EXT mode Timbre is selected, a Program Change message corresponding to that Timbre's Program is also output.

For EXT mode Timbres, MIDI data corresponding to volume, After Touch, damper pedal, and joystick movements is received and sent on the selected MIDI channel. However, you can filter some of this MIDI data. For example, you may not want to send joystick data to another MIDI device. These filters can be set for each Timbre individually on LCD screens 6A, 6B, 6C, and 6D.

Note: *The above MIDI data is always sent on the Global MIDI Channel, so, if the Global MIDI Channel and selected Timbre MIDI Channel are the same, even with the above filters set MIDI data will still be sent. This applies to INT and EXT mode Timbres alike. For this reason, it's a good idea to set the Global MIDI Channel and Timbre MIDI Channel differently.*

For an INT mode Timbre (see "Timbre Mode – 1B" on page 41), MIDI Program Change messages received on the corresponding MIDI channel can be used to select Programs. However, if the Timbre's MIDI Channel is the same as the Global MIDI Channel, operation will depend on the Filter1 parameter setting. See "MIDI Filter1 – 3C" on page 160.

If the selected MIDI Channel is the same as the Global MIDI Channel, a G will appear next to the selected channel number.

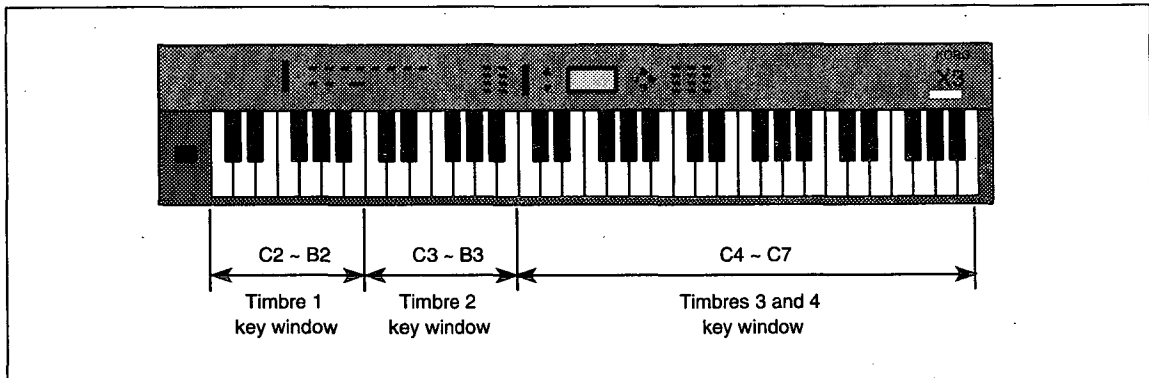
Key Window Top – 4A

These parameters allow you to set the top note for each Timbre's key window.

Timbres 1-4		Timbres 5-8	
4A KW TOP 1-4 >	4A KW TOP 5-8 <		
G9 G9 G9 G9	B4 G9 G9 G9		
4A-1	4A-2		

LCD	Parameter	Range	Description
4A-1	Timbre 1 Key Window Top	C-1 ~ G9	Specifies the top note for each Timbre's key window (If a note lower than the Key Window Bottom parameter is selected, that parameter will automatically use this value)
	Timbre 2 Key Window Top		
	Timbre 3 Key Window Top		
	Timbre 4 Key Window Top		
4A-2	Timbre 5 Key Window Top		
	Timbre 6 Key Window Top		
	Timbre 7 Key Window Top		
	Timbre 8 Key Window Top		

A key window is the range of keys (notes) that can be used to play a Timbre. Used in conjunction with the Key Window Bottom parameters, you can designate sections of a keyboard to certain Timbres. For example, you could designate the bottom half of a keyboard to a bass Timbre and the top half to a piano Timbre. In the example shown below, Timbres 1 and 2 have been designated their own key windows, while the key window for Timbres 3 and 4 have been set the same.



As well as using the VALUE knob and the [▲/YES] and [▼/NO] buttons to set Key Window Top and Bottom parameters, you can use a connected MIDI keyboard. Select a Key Window parameter, press and hold down the [ENTER] button, then press the desired key.

Key Window Bottom – 4B

These parameters allow you to set the bottom note for each Timbre’s key window. Refer to “Key Window Top – 4A” on page 46 for more details.

Timbres 1-4				Timbres 5-8			
4B KW BTM 1-4	>	4B KW BTM 5-8	<				
C-1 C-1 C-1 C-1		C-1 C-1 C-1 C-1					
4B-1				4B-2			

LCD	Parameter	Range	Description
4B-1	Timbre 1 Key Window Bottom	C-1 ~ G9	Specifies the bottom note for each Timbre’s key window. (If a note higher than the Key Window Top parameter is selected, that parameter will automatically use this value)
	Timbre 2 Key Window Bottom		
	Timbre 3 Key Window Bottom		
	Timbre 4 Key Window Bottom		
4B-2	Timbre 5 Key Window Bottom		
	Timbre 6 Key Window Bottom		
	Timbre 7 Key Window Bottom		
	Timbre 8 Key Window Bottom		

Velocity Window Top – 4C

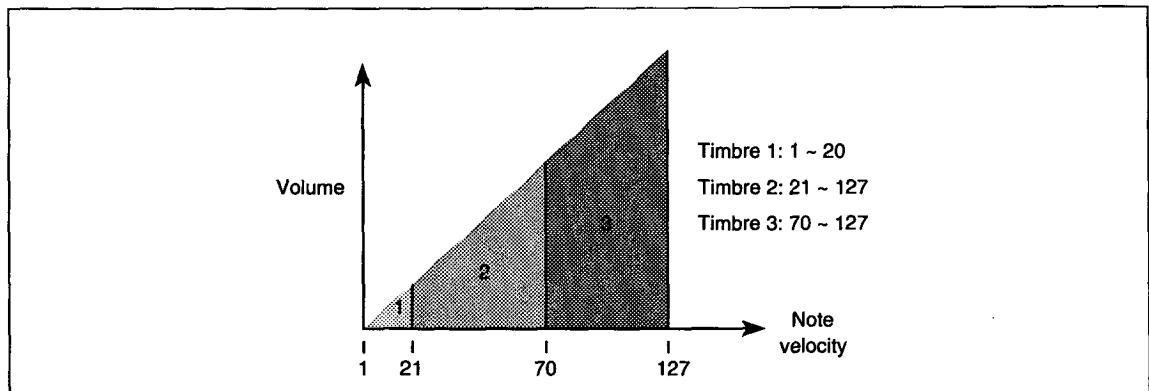
These parameters allow you to set the maximum velocity for each Timbre's velocity window.

Timbres 1-4		Timbres 5-8	
4C UW TOP 1-4 >	4C UW TOP 5-8 <		
127 127 127 127	127 127 127 127		
4C-1	4C-2		

LCD	Parameter	Range	Description
4C-1	Timbre 1 Velocity Window Top	1 ~ 127	Specifies the maximum velocity for each Timbre's Velocity window
	Timbre 2 Velocity Window Top		
	Timbre 3 Velocity Window Top		
	Timbre 4 Velocity Window Top		
4C-2	Timbre 5 Velocity Window Top		
	Timbre 6 Velocity Window Top		
	Timbre 7 Velocity Window Top		
	Timbre 8 Velocity Window Top		

A velocity window determines the range of note velocity that can be used to play a Timbre. Used in conjunction with the Velocity Window Bottom parameters, you can specify a note velocity range for each Timbre. For example, you could set a soft strings Timbre to a low velocity window, and hard strings Timbre to a high velocity window. Then, soft playing will play the soft strings and stronger playing will play the hard strings. This technique is called velocity crossover. You could set the velocity windows so that their ranges overlap.

In the example shown below, Timbre 1 will play when the note velocity is between 1 and 20, Timbre 2 between 21 and 127, and Timbre 3 between 70 and 127. Note that Timbres 2 and 3 overlap.



If a Timbre is set to EXT mode (see "Timbre Mode – 1B" on page 41), MIDI Notes whose velocity falls within the velocity window range will be fed through the X3R to the MIDI OUT connection.

Velocity Window Bottom – 4D

These parameters allow you to set the minimum velocity for each Timbre’s velocity window. Refer to “Velocity Window Top – 4C” on page 48 for more details.

Timbres 1~4		Timbres 5~8	
4D UW BTM 1-4	>	4D UW BTM 5-8	<
001 001 001 001		001 001 001 001	
4D-1		4D-2	

LCD	Parameter	Range	Description
4D-1	Timbre 1 Velocity Window Bottom	1 ~ 127	Specifies the minimum velocity for each Timbre’s Velocity window
	Timbre 2 Velocity Window Bottom		
	Timbre 3 Velocity Window Bottom		
	Timbre 4 Velocity Window Bottom		
4D-2	Timbre 5 Velocity Window Bottom		
	Timbre 6 Velocity Window Bottom		
	Timbre 7 Velocity Window Bottom		
	Timbre 8 Velocity Window Bottom		

Transpose – 5A

These parameters allow you to transpose each Timbre.

Timbres 1-4		Timbres 5-8	
5A TRANS 1-4	>	5A TRANS 5-8	<
+00 +07 +00 +00		+00 +00 +00 +00	
5A-1		5A-2	

LCD	Parameter	Range	Description
5A-1	Timbre 1 Transpose	-24 ~ +24	Transpose each Timbre in semitone steps
	Timbre 2 Transpose		
	Timbre 3 Transpose		
	Timbre 4 Transpose		
5A-2	Timbre 5 Transpose		
	Timbre 6 Transpose		
	Timbre 7 Transpose		
	Timbre 8 Transpose		

Detune – 5B

These parameters allow you to detune each Timbre.

Timbres 1-4		Timbres 5-8	
5B DETUNE 1-4	>	5B DETUNE 5-8	<
+00 +03 +00 +00		+00 +00 +00 +00	
5B-1		5B-2	

LCD	Parameter	Range	Description
5B-1	Timbre 1 Detune	-50 ~ +50	Detune each Timbre in one cent steps
	Timbre 2 Detune		
	Timbre 3 Detune		
	Timbre 4 Detune		
5B-2	Timbre 5 Detune		
	Timbre 6 Detune		
	Timbre 7 Detune		
	Timbre 8 Detune		

Program Change Filter – 6A

These parameters determine how EXT mode Timbres work with MIDI Program Change messages.

Timbres 1~8

6A PROG CHANGE
E E D D E E E E

6A-1

LCD	Parameter	Range	Description
6A-1	Timbre 1 Program Change Filter	D: Disable	Program Change messages ignored Program Change messages can be received and sent
	Timbre 2 Program Change Filter		
	Timbre 3 Program Change Filter		
	Timbre 4 Program Change Filter		
	Timbre 5 Program Change Filter	E: Enable	
	Timbre 6 Program Change Filter		
	Timbre 7 Program Change Filter		
	Timbre 8 Program Change Filter		

Enable: with this setting, received Program Change messages will select Programs for a Timbre. A Combination that includes EXT mode Timbres (1B) will send the corresponding Program Change messages when it is selected.

Note: If the Global mode MIDI Program Change Filter1 is set to DIS (“MIDI Filter1 – 3C” on page 160), Program Change messages are completely disabled. This setting overrides the above settings. Furthermore, if the Global mode MIDI Program Change Filter1 is set to ENA, Program Change messages received on the Global MIDI Channel will select Combinations. For this reason, it’s a good idea to set the Global MIDI Channel and Timbre MIDI Channel differently.

Disable: with this setting, Program Change messages are neither sent nor received for the respective Timbre.

Damper Pedal Filter – 6B

These parameters determine how each Timbre responds to damper pedal movements.

Timbres 1~8

6B DAMPER
E E E E E E E E

6B-1

LCD	Parameter	Range	Description
6B-1	Timbre 1 Damper Pedal Filter	D: Disable	Timbre will ignore the damper pedal Timbre will respond to the damper pedal
	Timbre 2 Damper Pedal Filter		
	Timbre 3 Damper Pedal Filter		
	Timbre 4 Damper Pedal Filter		
	Timbre 5 Damper Pedal Filter	E: Enable	
	Timbre 6 Damper Pedal Filter		
	Timbre 7 Damper Pedal Filter		
	Timbre 8 Damper Pedal Filter		

Enable: with this setting, INT mode Timbres respond to damper pedal movements.

Disable: with this setting, damper pedal movements are ignored.

After Touch Filter – 6C

These parameters determine how each Timbre responds to After Touch.

Timbres 1~8

6C AFTER TOUCH
E E E E E E E E

6C-1

LCD	Parameter	Range	Description
6C-1	Timbre 1 After Touch Filter	D: Disable E: Enable	Timbre will ignore After Touch
	Timbre 2 After Touch Filter		
	Timbre 3 After Touch Filter		
	Timbre 4 After Touch Filter		
	Timbre 5 After Touch Filter		Timbre will respond to After Touch
	Timbre 6 After Touch Filter		
	Timbre 7 After Touch Filter		
	Timbre 8 After Touch Filter		

Enable: with this setting, INT mode Timbres respond to After Touch.

Disable: with this setting, After Touch is ignored.

Note: If the Global mode MIDI After Touch Filter1 is set to DIS (“MIDI Filter1 – 3C” on page 160), After Touch messages are completely disabled. This setting overrides the above settings.

Control Change Filter – 6D

These parameters determine whether each Timbre responds to MIDI Controllers.

Timbres 1~8

6D CONTROL CHG
E E E E E E E E

6D-1

LCD	Parameter	Range	Description
6D-1	Timbre 1 Control Change Filter	D: Disable E: Enable	Timbre will ignore controllers
	Timbre 2 Control Change Filter		
	Timbre 3 Control Change Filter		
	Timbre 4 Control Change Filter		
	Timbre 5 Control Change Filter		Timbre will respond to controllers
	Timbre 6 Control Change Filter		
	Timbre 7 Control Change Filter		
	Timbre 8 Control Change Filter		

Enable: with this setting, INT mode Timbres respond to controllers.

Disable: with this setting, controllers are ignored.

Effects 7A ~ 7G

In a Combination, the individual effect settings of each Program are ignored, and the settings for that Combination are used. If you want to use a Program's effect settings for a Combination, use the Effects Copy – 7F function. See “Effects Copy – 7F” on page 60.

Effects are explained in Chapter 5: “Effects” on page 55.

When you've edited a Combination's effect settings, always remember to write the Combination, otherwise, the settings will be lost when you select another Combination.

Combination Write – 8A

This function allows you to write a Combination to Combination bank A or B. If a PROG/SEQ data card is inserted, you can also write to bank C or D. It can also be used to reorganize Combination numbering by writing Combinations to different destinations.

```

8A COMB WRITE
Write→A00   OK?
  
```

8A-1

LCD	Parameter	Range	Description
8A-1	Write→xxx	A00 ~ A99 B00 ~ B99 C00 ~ C99 D00 ~ D99	Select the Combination write destination
	OK to Write	OK?	Executes write

Note: To write a Combination to bank A or B, the Combination Memory Protection function must be set to OFF. See “Combination Memory Protect – 4B” on page 162.

To write a Combination to a PROG/SEQ data card, it must already be formatted and its write protect switch must be set to off. See “Save Programs & Combinations to Card – 6C” on page 165.

To write a Combination, specify the write destination, position the cursor on OK?, then press the [▲/YES] button. The message “Are You Sure OK?” will appear. Press the [▲/YES] button to write the Combination, or the [▼/NO] button to cancel the function. If you write the Combination, the destination Combination will be selected automatically.

Note: The Combination that already exists at the selected write destination will be lost when you execute this function.

You can write Combinations at any time. To do this, press the [REC/WRITE] button. The message “Are You Sure OK?” will appear. Press the [▲/YES] button to write the Combination, or the [▼/NO] button to cancel the function.

To write all Combinations, Programs, and Global settings to floppy disk, see “Save P/C/G Data – 3B” on page 183.

Combination Rename – 8B

This function allows you to rename a Combination.

```
8B RENAME
A00: Organ
```

8B-1

LCD	Parameter	Range	Description
8B-1	Rename	See character table below	Rename a Combination

To rename a Combination, use the [←] and [→] cursor buttons to position the cursor, and the [▲/YES] [▼/NO] buttons or VALUE knob to select characters. Available characters are shown in the table below. Combination names can use up to 10 characters.

	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	[¥]	^	_
`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	{	|	}	~	←

Use the number keypad to insert numbers. Use the [10's HOLD/-] button to switch between uppercase and lowercase characters. Press and hold down the [ENTER] button, then press the [←] button to delete the current character. Press and hold down the [ENTER] button, then press the [→] button to insert a character.

Combination Initialize – 8C

This function resets all Combination parameters to their initial settings.

```
8C INIT COMB
OK?
```

8C-1

LCD	Parameter	Range	Description
8C-1	Initialize Combination	OK?	Executes initialize

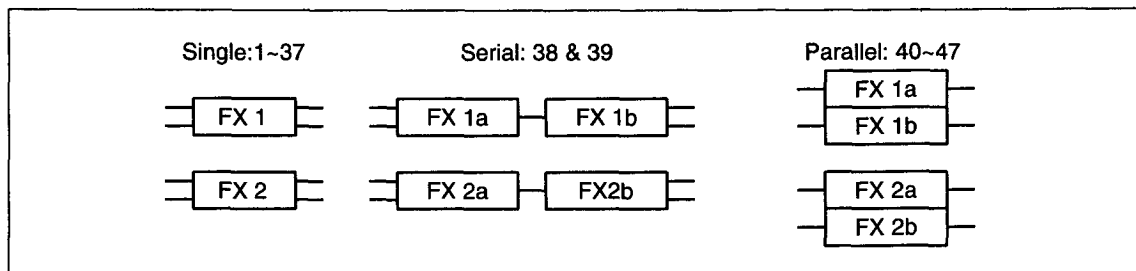
To initialize a Combination, press the [▲/YES] button. The message "Are You Sure OK?" will appear. Press the [▲/YES] button to initialize, or the [▼/NO] button to cancel the function.

Parameters are initialized as follows: Timbres 1 to 8 are assigned Programs A00 to A07, Timbre mode is set to INT, volume set to maximum, Pan is set to CNT, Send C and Send D are set to 0, key and velocity windows fully open, MIDI Channels are assigned from 1 to 8, transpose and detune is +00, all filters are E (Enabled), and no effects.

Chapter 5: Effects

The X3R contains two digital multi-effects processors. Each processor can be set to produce one of 47 effects. The effects section consists of four inputs (A, B, C, D), two effects processors (Effect1, Effect2), two panpots (pan 3, 4), and four outputs (L/MONO, R, 3, 4). Each processor can be assigned any one of six placements. See "Effect Placement – 7E" on page 57.

Effects 1 to 37 are single effects, 38 and 39 are serial effects, and 40 to 47 are parallel effects. The parallel type effects allow up to four independent effects simultaneously.



Effect parameters can be edited and stored with individual Programs, Combinations, and sequencer songs. Effect parameters for a Program should be edited in Program Edit mode, a Combination in Combination Edit mode, and for a song in Sequencer mode. In all modes the effect LCD screens are numbered 7A to 7G.

When you play a Combination, the individual effect settings for each Program in that Combination are ignored, and the effect settings for that Combination are used. Likewise, for sequencer songs, the individual Program effect settings are ignored and the effect settings for that particular song are used.

Effect Types

Effect No.	Effect
0	No Effect
1	Hall
2	Ensemble Hall
3	Concert Hall
4	Room
5	Large Room
6	Live Stage
7	Wet Plate
8	Dry Plate
9	Spring Reverb
10	Early Reflection 1
11	Early Reflection 2
12	Early Reflection 3
13	Stereo Delay
14	Cross Delay
15	Dual Mono Delay
16	Multi-Tap Delay 1
17	Multi-Tap Delay 2
18	Multi-Tap Delay 3
19	Chorus 1
20	Chorus 2
21	Quadrature Chorus
22	Crossover Chorus
23	Harmonic Chorus

Effect No.	Effect
24	Symphonic Ensemble
25	Flanger 1
26	Flanger 2
27	Crossover Flanger
28	Exciter
29	Enhancer
30	Distortion
31	Overdrive
32	Stereo Phaser 1
33	Stereo Phaser 2
34	Rotary Speaker
35	Auto Pan
36	Tremolo
37	Parametric EQ
38	Chorus-Delay
39	Flanger-Delay
40	Delay/Hall Reverb
41	Delay/Room Reverb
42	Delay/Chorus
43	Delay/Flanger
44	Delay/Distortion
45	Delay/Overdrive
46	Delay/Phaser
47	Delay/Rotary Speaker

Effect 1 Setup – 7A

7A EFFECT 1=01 > Hall OFF	> 7A Hall <> DRY:EFF=75:25	< 7A Hall < Src:JS(+Y) I+10
7A-1	7A-2	7A-3

LCD	Parameter	Range	Description
7A-1	Effect Type (Effect 1)	0 ~ 47	Select an effect type
	Switch	OFF, ON	Turn the effect on or off.
7A-2	Dry:Effect Balance (DRY:EFF)	DRY 99:1 ~ 1:99 FX	Dry signal only Dry:effect mix Effect signal only
7A-3	Dynamic Modulation Control Source (Src)	NONE JS(+Y) JS(-Y) AFTT PEDAL1 PEDAL2 VDA EG KNOB K+J(+) K+J(-) K+AFTT K+PDL1 K+PDL2 K+VDA	Dynamic modulation off Joystick +Y Joystick -Y After Touch Foot pedal1 Foot pedal2 (MIDI Controller No. 13) Sum of all 32 VDA EGs VALUE knob VALUE knob & joystick +Y VALUE knob & joystick -Y VALUE knob & After Touch VALUE knob & foot pedal1 VALUE knob & foot pedal2 VALUE knob & VDA EG
	Dynamic Modulation Intensity (I)	-15 ~ +15	Set the depth of dynamic modulation

7A-1 Effect type: each time a different effect is selected, any parameters that you set for the previously selected effect will reset to their initial values. When effect 24:Symphonic Ensemble is selected for one processor, some other effects cannot be selected for the other processor. See “Symphonic Ensemble” on page 71.

Switch: is used to turn the effects processors on and off. Effects processors can also be turned on and off using a foot pedal. In Global mode, set the ASSIGNABLE PEDAL/SW parameter to “Effect 1 on/off”. See “Assignable Pedal/SW Setup – 8B” on page 171.

By sending MIDI Controller 92 for Effect 1 or MIDI Controller 94 for Effect 2, effects can be switched on and off by the sequencer or another MIDI device. Each time a Controller message is sent, the corresponding effect is toggled either on or off.

Note: The high and low EQ for the following effects is valid even when the effect is set to OFF: 13:Stereo Delay, 14:Cross Delay, 19:Chorus 1, 20:Chorus 2, 28:Exciter, 35:Autopan, 36:Tremolo. To bypass these effects completely select 0: No Effect.

7A-2 Dry:Effect balance: this parameter allows you to set the level balance between the dry signal and effected signal. A setting of DRY means no effected signal. A setting of FX means all effect signal.

7A-3 Dynamic modulation: allows you to adjust certain effect parameters, such as mix balance and modulation speed, while you play. This provides greater control for musical expression during a performance. The modulation source can be set to any one of seven controls. To use a foot pedal, the ASSIGNABLE PEDAL/SW function must be set to Effect Control. See “Assignable Pedal/SW Setup – 8B” on page 171. Effect parameters that can be controlled using dynamic modulation are listed with the effect parameters on the following pages.

The VDA EG control source is the sum of all 32 VDA EGs. In other words, dynamic modulation will increase as more notes are played.

Note: When editing in Program Play mode or Combination Play mode, the VALUE knob is used to adjust parameters, so it cannot control the dynamic modulation.

Dynamic Modulation Source: Pedal1 corresponds to the assignable pedal connected to the X3R. Effect Controll1 is assigned using the ASSIGNABLE PEDAL/SW function in Global mode. Pedal1 corresponds to MIDI Controller No. 12. Pedal2 corresponds to MIDI Controller No. 13, and can be controlled by MIDI only. Joystick+Y corresponds to MIDI Controller No. 1. Joystick–Y corresponds to MIDI Controller No. 2.

When the source is set to PEDAL, MIDI Controllers 12 and 13 (Effect 1 and Effect 2 respectively) In this case, set the external device’s MIDI Channel so that it matches the X3R Global MIDI Channel. Likewise, if the dynamic modulation data is stored on an external MIDI sequencer track, set that track’s MIDI Channel so that it matches the X3R Global MIDI Channel.

Dynamic Modulation Intensity: the dynamic modulation intensity can be set from –15 to +15. Positive values cause dynamic modulation to increase the value of the effect parameter being controlled. Negative values have the opposite effect.

Effect 1 Parameters – 7B

Effect parameters are explained from page 61 onwards.

Effect 2 Setup – 7C

These parameters are the same as for “Effect 1 Setup – 7A”.

Effect 2 Parameters – 7D

Effect parameters are explained from page 61 onwards.

Effect Placement – 7E

7E PLACEMENT > Serial	7E EFF1PANPOT < 3= L 4= R	7E E1/E2 LEVEL < L=5 R=5 L=5 R=5
7E-1	7E-2	7E-3

LCD	Parameter	Range	Description
7E-1	Effect Placement	Serial (Serial) Parallel 1 (Parallel 1) Parallel 2 (Parallel 2) Parallel 3 (Parallel 3) Serial Sub (Parallel Sub) Parallel Sub (Parallel Sub)	Effect routing configurations
7E-2	Panpots 3	OFF	No signal output
	Panpot 4	L 99:1 ~ 1:99 R	Signal is panned hard left Panned between L and R (50:50 pan center) Signal is panned hard right (this LCD screen appears when Serial, Parallel 1, or Parallel 2 is selected)
7E-3	Level 1L (L)	0 ~ 9	Set the output level of each effect when Parallel 3 is selected. (this LCD is available only when Parallel 3 placement is selected)
	Level 1R (R)		
	Level 2L (L)		
	Level 2R (R)		

The effect processors can be used in one of six placements. These placements affect the way in which the four input buses (A, B, C, D) are routed through the effects.

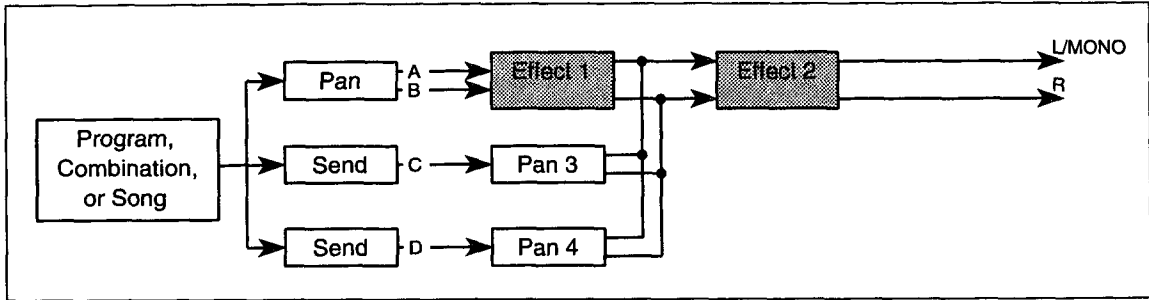
The panpot, Send C level, and Send D level parameters are set as part of an individual Program, Combination, or song. The pan 3 and pan 4 parameters are set as part of the Effect 1 and Effect 2 setup. If the Parallel 3 placement is selected, pan 3 and pan 4 are replaced by four independent level controls. When Serial Sub or parallel Sub is selected, the four outputs can be used (L/Mono, R, 3, 4). When a GM System On message is received or the “GM Song Mode – 8F” function on page 152 is used, the following settings are made:

Placement — Parallel3. Effect 1 — Hall. Effect 2 — Chorus.

When a Program is initialized in Program Edit mode, or a Combination is initialized in Combination Edit mode, the following effects settings are made:

Placement — Serial. Effect 1 — No Effect. Effect 2 — No Effect.

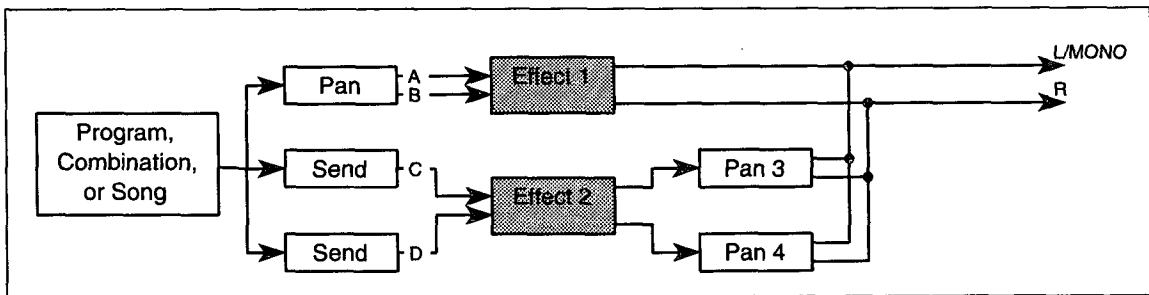
Serial Placement



With the Serial placement, buses A and B are sent to Effect 1, Effect 2, then output from L/MONO and R. Buses C and D are mixed with the output of Effect 1, sent to Effect 2, and then output.

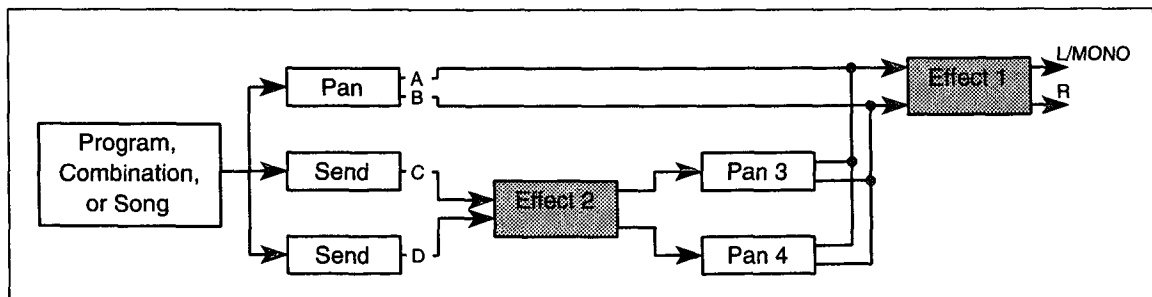
Buses C and D allow you to avoid applying Effect 1 to a sound, or to apply Effect 1 to a specific sound and then apply Effect 2 to all sounds.

Parallel 1 Placement



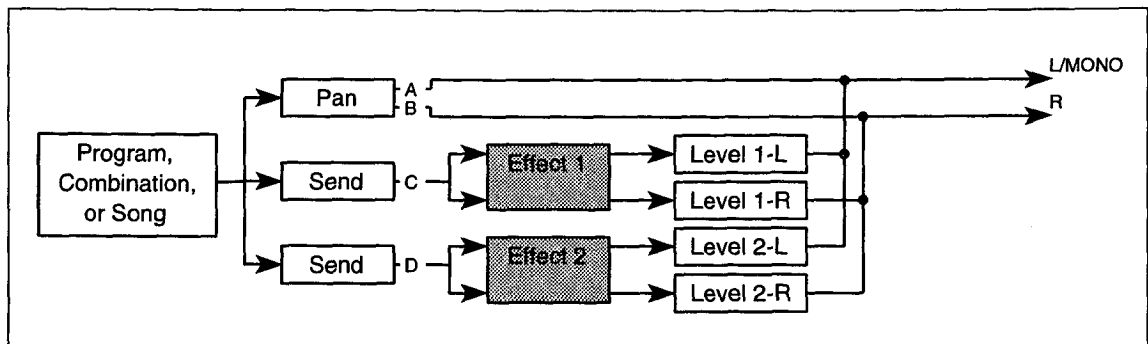
With the Parallel 1 placement, buses A and B are sent to Effect 1, then output from L/MONO and R. Buses C and D are sent to Effect 2, mixed with the output of Effect 1, then output.

Parallel 2 Placement



With the Parallel 2 placement, buses A and B are sent to Effect 1, then output from L/MONO and R. Buses C and D are sent to Effect 2, mixed with the input to Effect 1, then output.

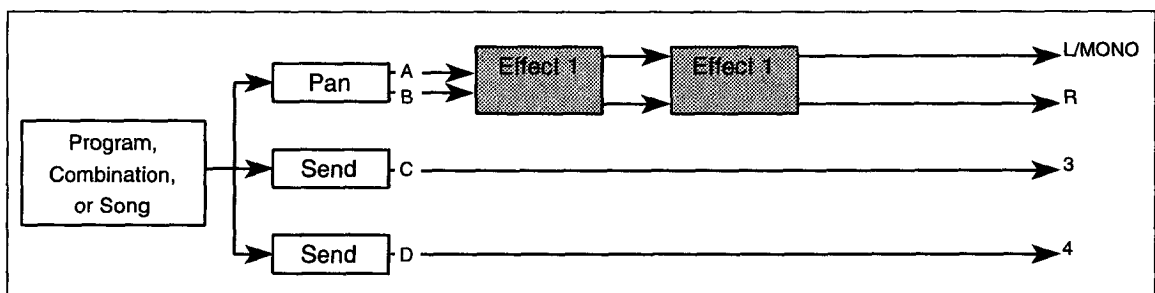
Parallel 3 Placement



With the Parallel 3 placement, buses A and B are sent straight to the outputs. Bus C signal is sent to Effect 1 and bus D signal is sent to Effect 2. The effect outputs, each with independent level control, are then mixed down to the L/MONO and R outputs. This placement works well when playing a GM compatible song.

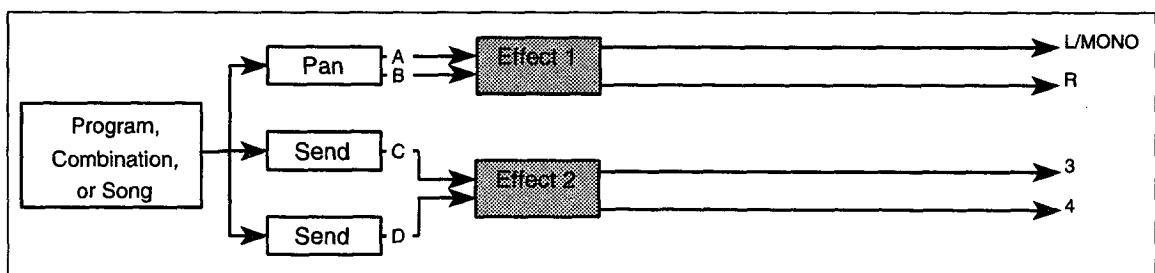
Note: For Serial, Parallel 1, and Parallel 2 placements, if Pan 3 or Pan 4 is set to off, signals sent to bus C and bus D respectively will not be output.

Serial Sub Placement



With the Serial Sub placement, buses A and B are fed to Effect 1 and 2, then output from L/MONO and R. Buses C and D and sent straight to outputs 3 and 4. In this case, you can use buses C and D to output dry sounds that you want to use with external effects.

Parallel Sub Placement



With the Parallel Sub placement, buses A and B are fed to Effect 1, then output from L/MONO and R. Buses C and D are fed to Effect 2, then output from 3 and 4.

Note: Outputs 3 and 4 are used only with the Serial Sub and Parallel Sub Placements.

Effects Copy – 7F

This function allows you to copy the effects parameter settings from a another Program, Combination, or song to the currently selected Program, Combination, or Sequencer song.

```
7F COPY EFF
PROG A00 OK?
```

7F-1

LCD	Parameter	Range		Description
7F-1	Effect Copy Source	PROG COMBI SONG		Select the effect copy source
	Source Number	Programs	A00 ~ B99 C00 ~ D99 G01 ~ 136	Select the source number
		Combinations	A00 ~ B99 C00 ~ D99	
		Songs	S10 ~ S19 SC0 ~ SD9	
OK to copy	OK?		Executes effect copy	

To copy effect parameters, select the effect copy source, the source number, position the cursor on OK?, then press the [▲/YES] button. The effect parameters will be copied to the currently selected Program, Combination, or Song. Pan, Send C, and Send D settings, which are set for oscillators, Timbres, and tracks, are not copied.

Effect Copy/Swap – 7G

This function allows you to copy or swap effects parameter settings between Effect 1 and Effect 2.

```
7G SWAP FX1-2
FX1↔FX2 OK?
```

7G-1

LCD	Parameter	Range	Description
7G-1	Copy/Swap direction	FX1↔FX2 FX1→FX2 FX1←FX2	Swap FX1 with FX2 Copy FX1 to FX2 Copy FX2 to FX1
	OK to copy	OK?	Executes effect copy/swap

To copy/swap effect parameters, set the copy/swap direction, position the cursor on OK?, then press the [▲/YES] button.

Effects & Parameters

Effects Types & Parameters

Different parameters are available for different effects. Effects from 0 (no effect) through to effect 47 (delay/rotary speaker) can be selected for Effect 1 and Effect 2. Effect 1 LCD screens are numbered 7A~7B. Effect 2 LCD screens are numbered 7C~7D. Effect 1 numbers are used in this manual.

No Effect

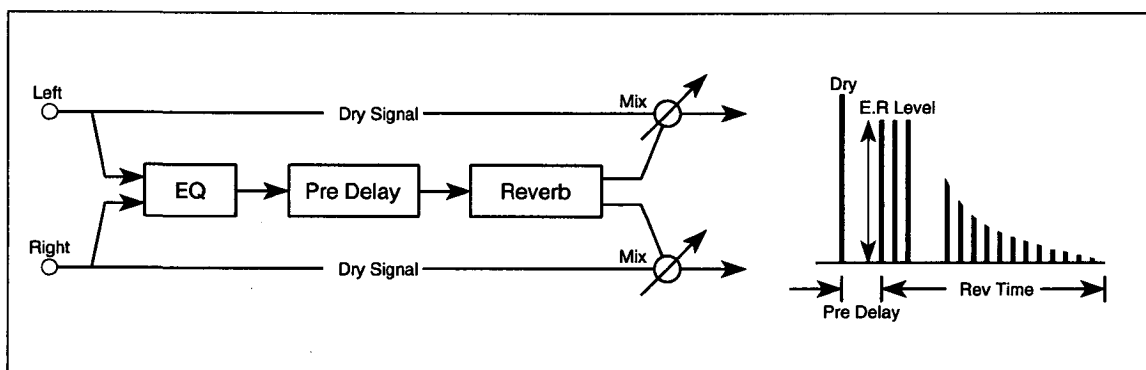
0: No Effect

When NO EFFECT is selected, the effect processors are completely bypassed.

Effects can be turned off using “Effect 1 Setup – 7A” and “Effect 2 Setup – 7C”. However, for some effects the high and low EQ will still be active. Selecting 0:No Effect allows you to bypass these effects completely.

Reverb

These effects simulate reverberant acoustics, adding ambience to the sound.



1: Hall

This effect simulates the reverb characteristics and natural ambience of a medium size hall.

2: Ensemble Hall

This effect simulates the reverb characteristics and natural ambience of an ensemble hall. Ideal for string and brass ensembles.

3: Concert Hall

This effect simulates the reverb characteristics and natural ambience of a large hall with pronounced early reflections.

4: Room

This effect simulates the reverb characteristics and natural ambience of a small room.

5: Large Room

This effect simulates the reverb characteristics and natural ambience of a large room with pronounced reverb density. Reverb times of about 0.5 seconds produce an effect similar to gated reverb.

6: Live Stage

This effect simulates the reverb characteristics and natural ambience of a large, live-performance space.

7: Wet Plate

This effect simulates the reverb characteristics of a steel plate type reverb with pronounced reverb density.

8: Dry Plate

This effect simulates the reverb characteristics of a steel plate type reverb with a light reverb density.

9: Spring Reverb

This effect simulates the reverb characteristics of a spring type reverb system.

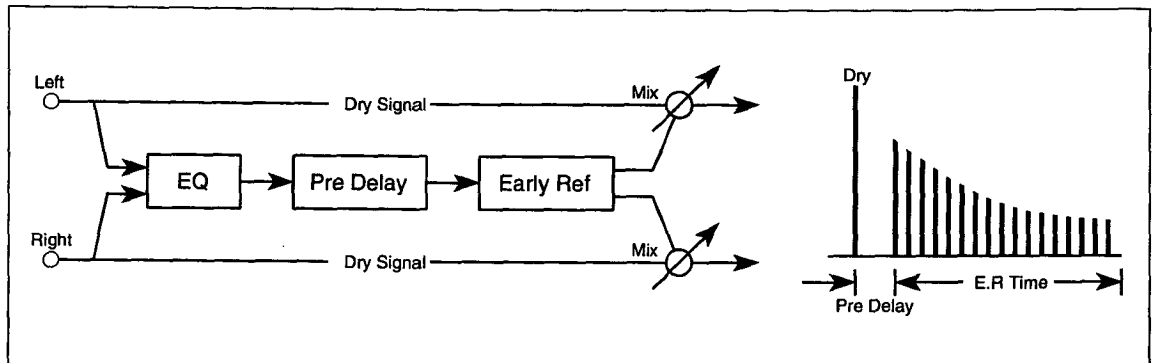
7B Hall Time3.2 H.Dmp30	>	7B Hall P.Dly060ms E.R62	<>	7B Hall EQ.L 04dB H+00dB	<
7B-1		7B-2		7B-3	

LCD	Parameter	Range	Description
7B-1	Reverb Time (Time)	0.2 ~ 9.9 sec 0.2 ~ 4.9 sec 00 ~ 99	The time over which the reverb effect will last Hall type Room type Plate/spring type
	High Damp (H.Dmp)	0 ~ 99%	High frequency decay 0 = bright reverb 99 = dark reverb
7B-2	Pre Delay (P.Dly)	0 ~ 200 ms	The delay between the original sound and the early reflections
	Early Reflection Level (E.R)	0 ~ 99 1 ~ 10	The level of the early reflections Hall/Room type Plate/spring type
7B-3	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

For effects 1~9, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

Early Reflection

The Early Reflection effects create the early reflections that are an important element in determining the qualities of an acoustic environment. Using the Early Reflection Time parameter, you can create a variety of effects such as sound thickening and echo-like reflections.



10: Early Reflection 1

Early reverb reflections are a crucial element of naturally occurring reverb. They transmit details such as room size, distance, acoustic damping, etc. This effect emphasizes the low frequency range, and is ideal for percussive sounds such as drums.

11: Early Reflection 2

This effect is similar to Early Reflection 1, although, the level of the early reflections change over time in a different way.

12: Early Reflection 3

This effect applies a reverse envelope to the early reflections. This produces an effect that is similar to playing a tape backwards, and it is ideally to sounds that have a fast attack such as crash cymbals.

7B EarlyRef1 >	7B EarlyRef1 <>	7B EarlyRef1 <
E.R Time=220ms	Pre Delay= 015ms	EQ.L+03dB H+05dB
7B-1	7B-2	7B-3

LCD	Parameter	Range	Description
7B-1	Early Reflection Time (E.R Time)	100 ~ 800 ms	Early reflection time in 10 ms steps
7B-2	Pre Delay (Pre Delay)	0 ~ 200 ms	The delay between the original sound and the early reflections
7B-3	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

For effects 10-12, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

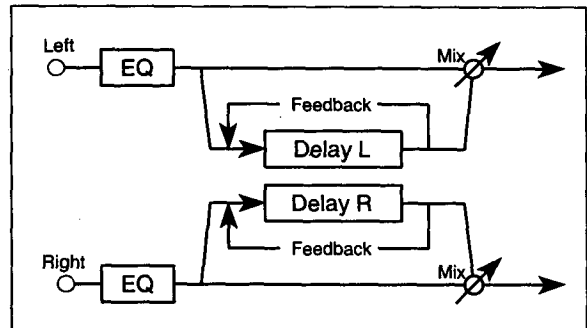
Stereo Delay

These effects create stereo delay patterns in which you can set the left and right delay times independently. Using the High Damp parameter, you can make delays decay in a natural way.

13: Stereo Delay

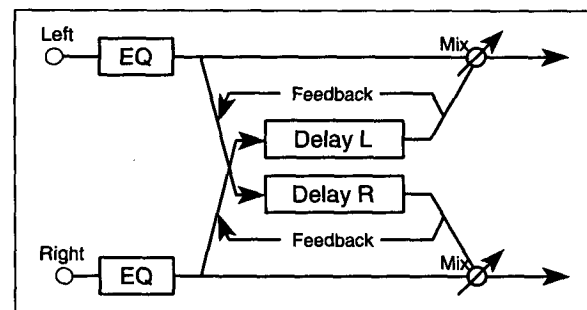
This is a stereo delay effect with feedback. The delay time can be set for the left and right channels independently.

The high damp parameter can be used to produce a more natural echo effect by gradually attenuating the high frequencies of successive delay repeats.



14: Cross Delay

This is a stereo delay effect with independent delay parameters for the left and right channels. The delay outputs are crossed over, and each delay receives the other delay's feedback signal. Thus, the delay repeats appear to move between the left and right outputs.



7B StereoDly >	7B StereoDly <>	7B StereoDly <
D.TimeL=250 R260	FB+40 H.Dmp30	EQ.L+00dB H+00dB
7B-1	7B-2	7B-3

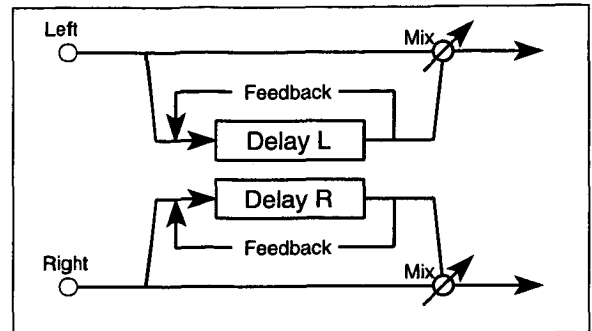
LCD	Parameter	Range	Description
7B-1	Delay Time Left (D.Time L)	0 ~ 500 ms	Delay time for the left channel
	Delay Time Right (R)	0 ~ 500 ms	Delay time for the right channel
7B-2	Feedback (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the effect. Minus values invert the feedback signal phase
	High Damp (H.Dmp)	0 ~ 99%	High frequency decay 0 = bright delay 99 = dark delay
7B-3	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

For effects 13 and 14, dynamic modulation (7A-3) can be used to control the DRY:EFF balance. The EQ part of these effects is active even when the Effect is switched off (7A-1). To bypass these effects completely, select 0:No Effect.

Dual Mono Delay

15: Dual Mono Delay

This effect consists of two mono delays with independent delay time, feedback, and high damp parameters for each channel.



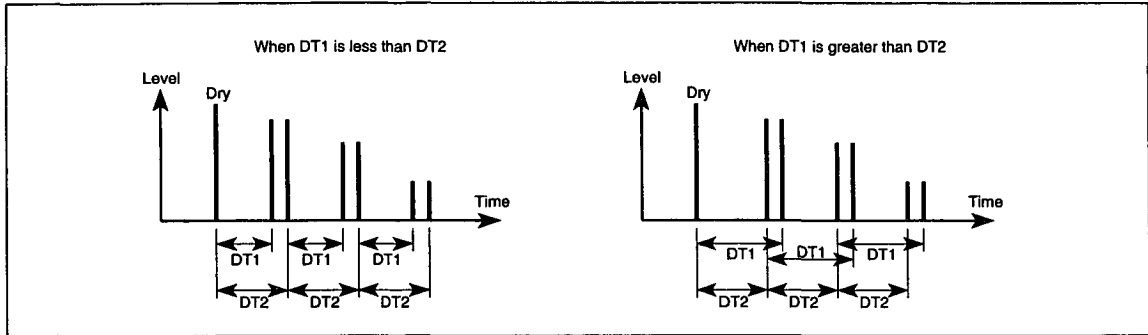
7B D.M D19(L) > D.Time=250ms	7B D.M D19(L) <> FB+50 H.Dmp=10	7B D.M D19(R) <> D.Time=250ms	7B D.M D19(R) < FB+50 H.Dmp=10
7B-1	7B-2	7B-3	7B-4

LCD	Parameter	Range	Description
7B-1	Delay Time Left (D.Time)	0 ~ 500 ms	Delay time for the left channel
7B-2	Feedback Left (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the left channel effect. Minus values invert the feedback signal phase
	High Damp Left (H.Dmp)	0 ~ 99%	High frequency damping for the left channel
7B-3	Delay Time Right (D.Time)	0 ~ 500 ms	Delay time for the right channel
7B-4	Feedback Right (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the left channel effect. Minus values invert the feedback signal phase
	High Damp Right (H.Dmp)	0 ~ 99%	High frequency damping for the right channel

For effect 15, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

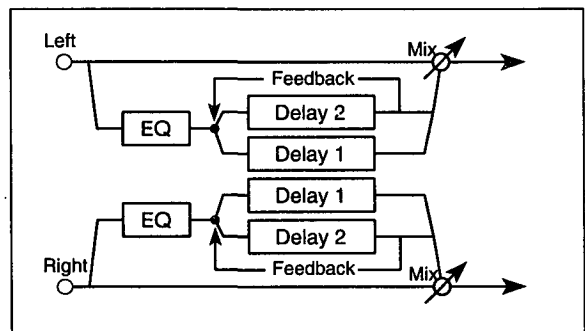
Multi-Tap Delay

In these effects, an equalizer is applied to each effect input, then the signals are fed to two independent series-connected delays. The output of one delay is fed back.



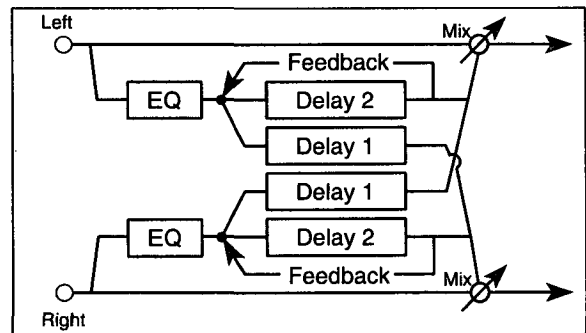
16: Multi-Tap Delay 1

This is a two-channel multi-repeat delay. It consists of two parallel delays for each channel. The delay time for each delay can be set independently. The output of delay 2 is fed back to the inputs of delay 1 and delay 2.



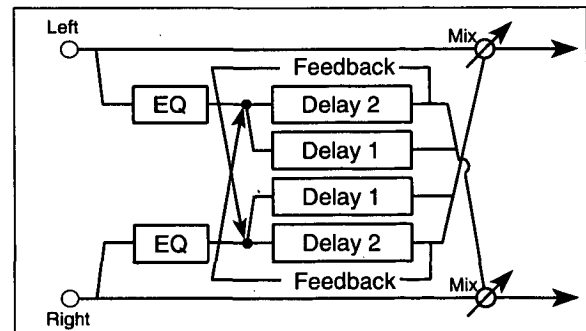
17: Multi-Tap Delay 2

This is a two-channel multi-repeat delay with cross panning.



18: Multi-Tap Delay 3

This is a two-channel multi-repeat delay with cross feedback.



7B M.TapD1w1 D1T300 D2T400	>	7B M.TapD1w1 FB+50	<>	7B M.TapD1w1 EQ.L+00dB H+00dB	<
7B-1		7B-2		7B-3	

LCD	Parameter	Range	Description
7B-1	Delay Time 1 (D1T)	0 ~ 500 ms	Delay time for delay 1
	Delay Time 2 (D2T)	0 ~ 500 ms	Delay time for delay 2
7B-2	Feedback (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the effect. Minus values invert the feedback signal phase
7B-3	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

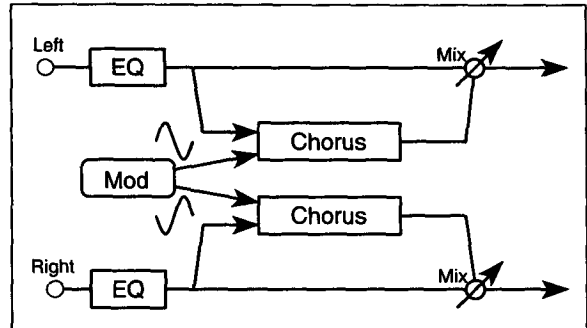
For effects 16, 17, and 18, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

Chorus

These are stereo-type effects that use two chorus units, and are an effective way to add spaciousness and depth to any type of sound: piano, strings, brass, etc.

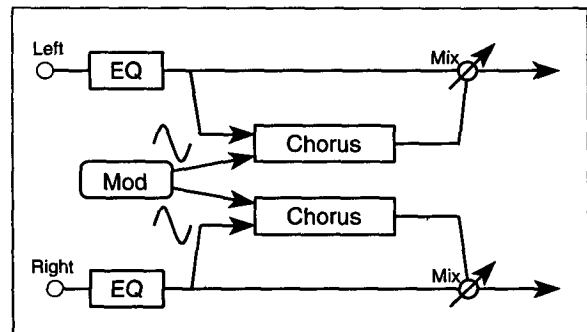
19: Chorus 1

In this chorus effect, the left channel modulation signal is out of phase with the right channel modulation signal. This produces a wide stereo chorus effect.



20: Chorus 2

In this chorus effect, left and right channel modulation signals are in phase.



7B Chorus 1 D.Time 010ms TRI	7B Chorus 1 Mod60 M.SP0.30Hz	7B Chorus 1 EQ.L+00dB H+00dB
---------------------------------	---------------------------------	---------------------------------

7B-1

7B-2

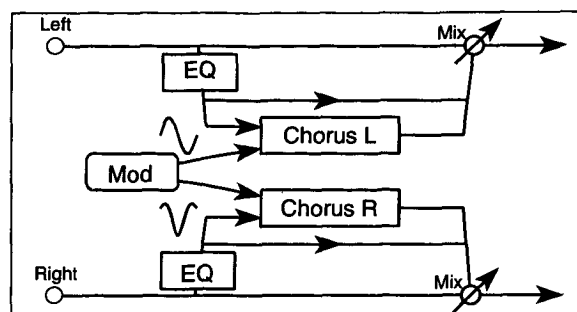
7B-3

LCD	Parameter	Range	Description
7B-1	Delay Time (D.Time)	0 ~ 200 ms	Delay time
	Mod Waveform	Sine (SIN) Triangle (TRI)	Modulation waveform type
7B-2	Mod Depth (Mod)	0 ~ 99	Modulation intensity
	Mod Speed (M.SP)	0.03 ~ 30 Hz	Modulation speed
7B-3	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

For effects 19 and 20, dynamic modulation (7A-3) can be used to control the DRY:EFF balance. The EQ part of these effects is active even when the Effect is switched off (7A-1). To bypass these effects completely, select 0:No Effect.

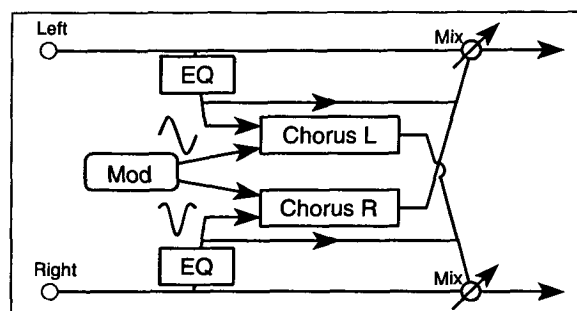
21: Quadrature Chorus

The modulation signals fed to each channel of this stereo chorus effect are 90 degrees out of phase with each other.



22: Crossover Chorus

The modulation signals fed to each channel of this stereo chorus effect are 90 degrees out of phase with each other. The chorused signal is mixed with the output of the other channel.



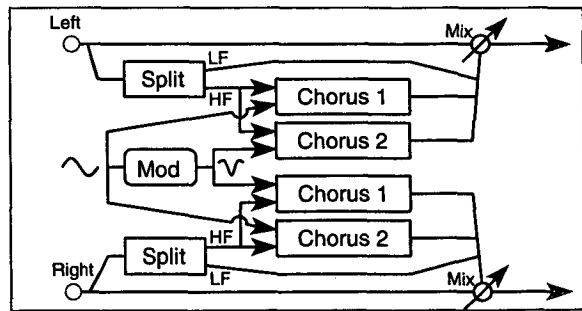
7B Quad. Cho >	7B Quad. Cho <>	7B Quad. Cho <>	7B Quad. Cho <
D.TimeL=011 R023	Mod50 ModSP=33	ModShape=T+00	EQ.L+00dB H+00dB
7B-1	7B-2	7B-3	7B-4

LCD	Parameter	Range	Description
7B-1	Delay Time L (D.TimeL)	0 ~ 250 ms	Left channel delay time
	Delay Time R (R)	0 ~ 250 ms	Right channel delay time
7B-2	Mod Depth (Mod)	0 ~ 99	Modulation depth
	Mod Speed (ModSP)	1 ~ 99	Modulation speed
7B-3	Mod Shape (ModShape)	T+10 ~ T-10, S-10 ~ S+10	Modulation waveform shape. T-Triangle, S-Sine. The range from +10 to -10 effects the waveform symmetry
7B-4	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

For effects 21 and 22, dynamic modulation (7A-3) can be used to control the Mod Speed.

23: Harmonic Chorus

This effect splits the signal into two bands: HF high frequencies – LF low frequencies. The HF band is then fed to the quadrature type chorus, and the LF band is fed directly to the output. This effect is useful for low frequency instruments such as bass.



7B Harmo. Cho	>	7B Harmo. Cho	<>	7B Harmo. Cho	<
D1T004		D2T012		Mod99	ModSP=35
				F.Split Point=01	
7B-1		7B-2		7B-3	

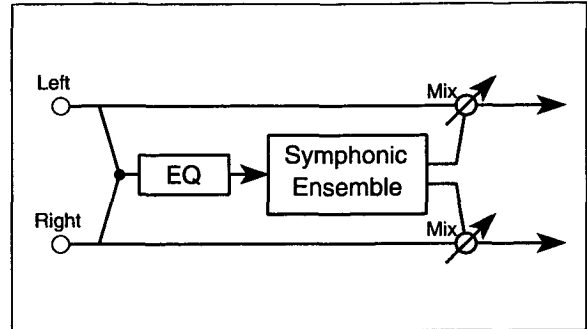
LCD	Parameter	Range	Description
7B-1	Delay Time1 (D1T)	0 ~ 500 ms	Channel 1 delay time
	Delay Time 2 (D2T)	0 ~ 500 ms	Channel 2 delay time
7B-2	Mod Depth (Mod)	0 ~ 99	Modulation depth
	Mod Speed (ModSP)	1 ~ 99	Modulation speed
7B-3	Frequency Split Point (F.Split Point)	0 ~ 18	The frequency at which the input signal is split into HF and LF bands

For effect 23, dynamic modulation (7A-3) can be used to control the Mod Speed.

Symphonic Ensemble

24: Symphonic Ensemble

This effect is basically a multiple chorus type effect. It produces a rich, thickening effect, ideal for strings.



7B Smp.Ens. Mod80	>	7B Smp.Ens. EQ.L+00dB H+00dB	<
7B-1		7B-2	

LCD	Parameter	Range	Description
7B-1	Mod Depth (Mod)	0 ~ 99	Modulation depth
7B-2	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

For effect 24, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

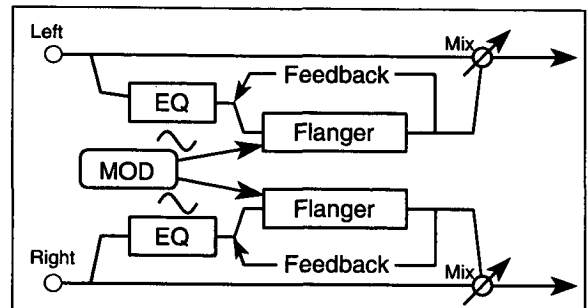
Note: When this effect is selected the following effect types cannot be selected for the other effect: 19~23 Choruses, 24 Symphonic Ensemble, 25~27 Flangers, 32 – 33 Phasers, 34 Rotary Speaker, 35 and 36 Tremolos, 38 – 39 Chorus Flanger/Delay, 42 Delay/Chorus, 43 Delay/Flanger, 46 Delay/Phaser, and 47 Delay/Rotary Speaker.

Flanger

These effects add feedback to a chorus effect. When used on sounds that contain a lot of high-frequency energy such as cymbals, they not only create modulation effects, but add a sense of pitch to a non-pitched sound.

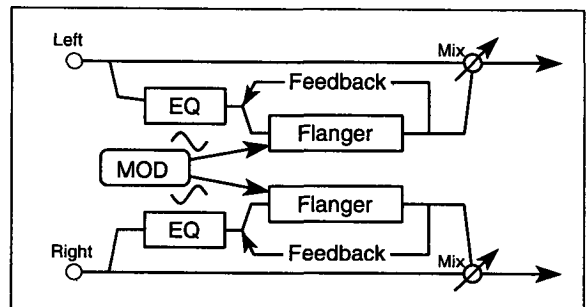
25: Flanger 1

In this effect, inphase modulation is fed to both flanger channels.



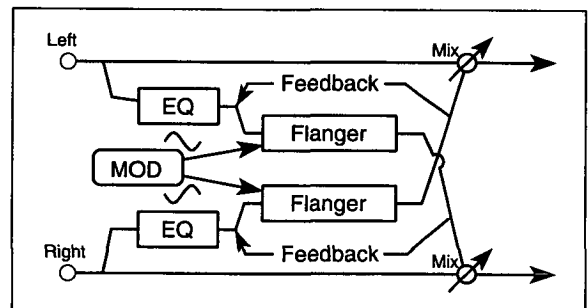
26: Flanger 2

In this effect, the left channel modulation signal is in phase and the right channel modulation signal is out of phase. This produces a wide, stereo flange effect.



27: Crossover Flanger

In this effect, two flangers are modulated out of phase and apply feedback to each other.



7B Flanger1 >	7B Flanger1 <>	7B Flanger1 <
D.Time005 Res+85	Mod99 ModSP=20	EQ.L+00dB H+00dB
7B-1	7B-2	7B-3

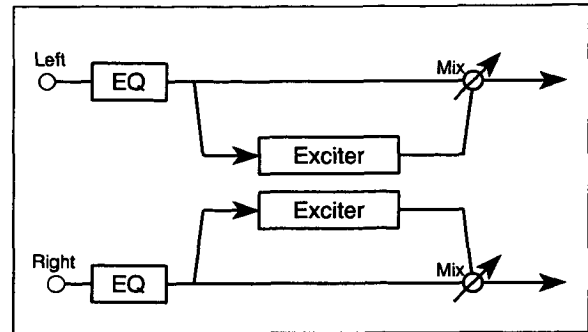
LCD	Parameter	Range	Description
7B-1	Delay Time (D.Time)	0 ~ 200 ms	Delay time
	Resonance (Res)	-99 ~ +99	Amount of output signal fed back to the input (feedback)
7B-2	Mod Depth (Mod)	0 ~ 99	Modulation depth
	Mod Speed (ModSP)	1 ~ 99	Modulation speed
7B-3	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

For effects 25~27, dynamic modulation (7A-3) can be used to control the Mod Speed.

Exciter

28: Exciter

This effect increases the clarity of a sound and gives it greater definition.



7B Exciter Blend=+50	>	7B Exciter Emph Point=05	<>	7B Exciter EQ.L+04dB H+00dB	<
7B-1		7B-2		7B-3	

LCD	Parameter	Range	Description
7B-1	Blend (Blend)	-99 ~ +99	Mix of dry and effected signal
7B-2	Emphatic Point (Emph Point)	1 ~ 10	The central frequency around which sounds are excited
7B-3	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

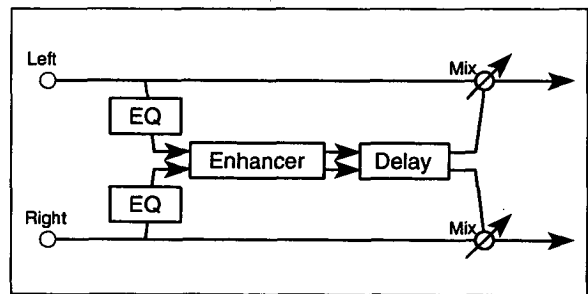
For effect 28, dynamic modulation (7A-3) can be used to control the DRY:EFF mix level.

The EQ sections of this effect are active even when the effect is switched OFF. To bypass this effect completely, select 0:No Effect.

Enhancer

29: Enhancer

This is a two-channel enhancer that includes a delay to give a sound more spaciousness. An enhancer makes the sound clearer and more defined, giving the sound more presence and bringing it up front in the mix.



7B Enhancer Harm Density=80	>	7B Enhancer Hot Spot=01	<>	7B Enhancer S.W=50 D.Time=25	<>	7B Enhancer EQ.L+01dB H+01dB	<
7B-1		7B-2		7B-3		7B-4	

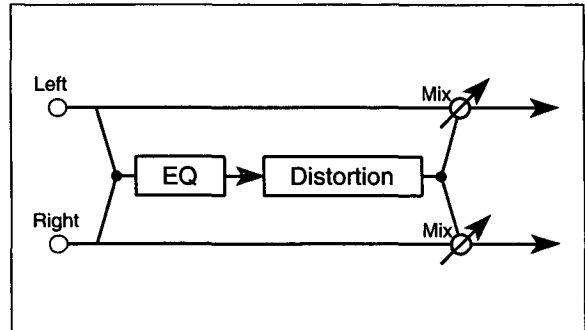
LCD	Parameter	Range	Description
7B-1	Harmonic Density	1 ~ 99	Level of the enhanced signal
7B-2	Hot Spot	1 ~ 20	The central frequency around which sounds are enhanced
7B-3	Stereo Width (S.W)	0 ~ 99	The width of the stereo image that is opened up by the delay
	Delay Time (D.Time)	1 ~ 99	Delay time
7B-4	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

For effect 29, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

Distortion

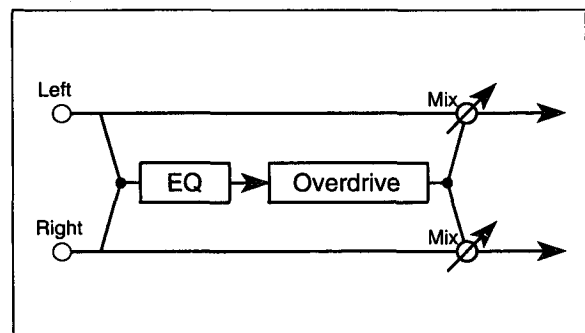
30: Distortion

This effect can provide subtle distortion through to mega power distortion. Ideal for ripping solos. The Hot Spot and Resonance parameters allow you to tune in for a wah type effect. The Hot Spot parameter can be controlled in real time using dynamic modulation.



31: Overdrive

This effect produces a smooth overdrive. As with the previous distortion effect, dynamic modulation allows real time control of the wah filter's Hot Spot parameter.



7B Dist Drive=111 Res=80	>	7B Dist H.Spot05 Level110	<>	7B Dist EQ.L+02dB H 12dB	<
7B-1		7B-2		7B-3	

LCD	Parameter	Range	Description
7B-1	Drive (Drive)	1 ~ 111	Distortion/Overdrive level
	Resonance (Res)	0 ~ 99	Gain of the resonant wah filter
7B-2	Hot Spot (H.Spot)	0 ~ 99	Wah filter centre frequency
	Out Level (Level)	0 ~ 99	Distortion output level
7B-3	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

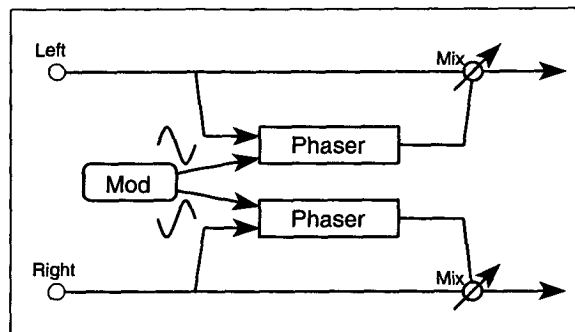
For effects 30 and 31, dynamic modulation (7A-3) can be used to control the Hot Spot parameter. This is useful for creating a wah-wah type effect.

Phaser

These are two-channel stereo phase shifters. Using delay and phase changes, they produce a modulation effect that is clearer than chorus or flanger. These effects are especially suitable for electric piano and guitar. Chorus and flanger produce their effects by modulating the delay time. However, phasers, modulate the phase of the input signal, creating an effect that has a different character to that of chorus or flanger.

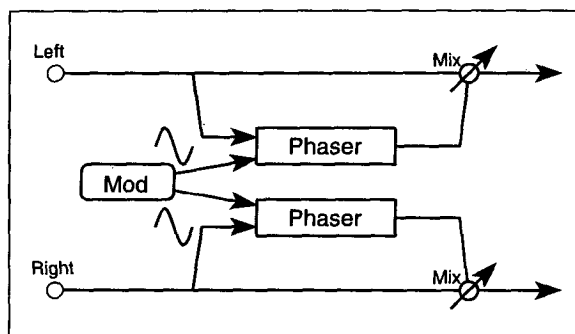
32: Stereo Phaser 1

In Phaser 1, the left channel modulation signal is in phase and the right channel modulation signal is out of phase. This produces a wide stereo phaser effect.



33: Stereo Phaser 2

This stereo effect contains two phasers. In-phase modulation is fed to both channels.



7B Phaser 1 Manual=99	>	7B Phaser 1 Mod60 M.SP0.69Hz	<>	7B Phaser 1 FB+75 SIN	<
7B-1		7B-2		7B-3	

LCD	Parameter	Range	Description
7B-1	Manual (Manual)	0 ~ 99	The central frequency around which phase shifting is concentrated
7B-2	Mod Depth (Mod)	0 ~ 99	Modulation depth
	Mod Speed (M.SPO.)	0.03 ~ 30 Hz	Modulation speed
7B-3	Feedback (FB)	-99 ~ +99%	The amount of phased signal that is fed back into the effect. Minus values invert the feedback signal phase
	Mod Waveform	Sine (SIN) Triangle (TRI)	Modulation waveform

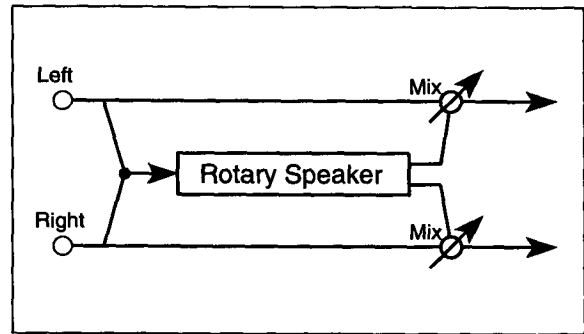
For effects 32 and 33, dynamic modulation (7A-3) can be used to control the Mod Speed.

Rotary Speaker

This effect simulates the rotary speaker effect that is popular for organs.

34: Rotary Speaker

The effect is popular with organ type sounds. The rotation speed continuously cycles between the two speed settings at a rate determined by the Acceleration parameter. Dynamic modulation can be used to switch from slow to fast speed. Regardless of how rapidly you move the controller, the rotor speed will change at the rate specified by the Acceleration parameter.



7B Rot.Spk >	7B Rot.Spk <>	7B Rot.Spk <
Vibrato Depth=09	Acceleration=04	Speed S=25 F=70
7B-1	7B-2	7B-3

LCD	Parameter	Range	Description
7B-1	Vibrato Depth (Vibrato Depth)	0 - 15	Effect depth
7B-2	Acceleration (Acceleration)	1 - 15	Time taken to change from one speed to the other
7B-3	Slow Speed (S)	1 - 99	Slow rotation speed
	Fast Speed (F)	1 - 99	Fast rotation speed

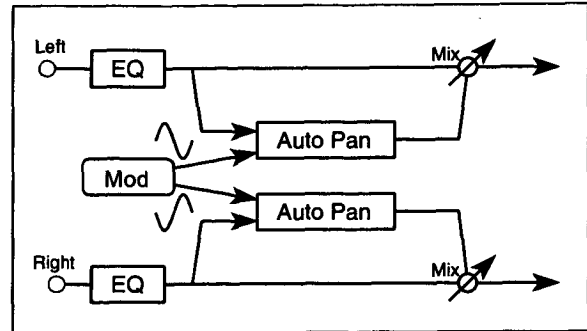
For effect 34, dynamic modulation (7A-3) can be used to switch from slow to fast speed.

Tremolo

This effect cyclically varies the volume.

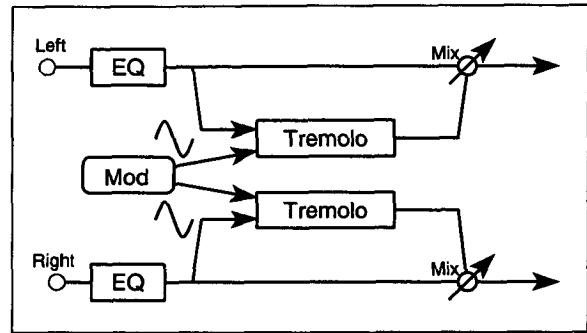
35: Auto Pan

This effect pans the signal continuously across the stereo image. The speed of panning (Mod Speed) can be set relative to song tempo, or left to produce a natural drift across the stereo image.



36: Tremolo

The tremolo effect modulates the signal amplitude to produce regular variations in volume level.



7B Auto Pan SIN ModShape+99	>	7B Auto Pan <> Mod80 M.SP1.59Hz	<	7B Auto Pan < EQ.L+00dB H+00dB
7B-1		7B-2		7B-3

LCD	Parameter	Range	Description
7B-1	Mod Waveform	Sine (SIN) Triangle (TRI)	Modulation waveform
	Mod Shape (Mod Shape)	-99 ~ +99	
7B-2	Mod Depth (Mod)	0 ~ 99	Modulation depth
	Mod Speed (M.SP)	0.03 ~ 30 Hz	Modulation speed
7B-3	EQ Low (EQ.L)	-12 ~ +12 dB	Low EQ cut and boost
	EQ High (H)	-12 ~ +12 dB	High EQ cut and boost

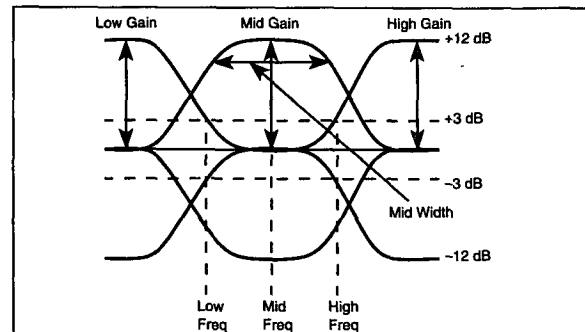
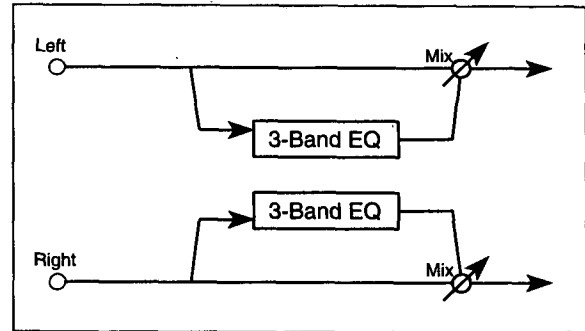
For effects 35 and 36, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

The EQ sections of this effect are active even when the effect is switched OFF. To bypass this effect completely, select 0:No Effect.

Parametric EQ

37: Parametric EQ

This is a 3-band parametric equalizer, with independent gain and frequency controls for each band. The width of the mid-frequency band can also be adjusted.



7B Para. EQ > LowFr=12 Gain+12	7B Para. EQ <> MidFr=08 Gain+12	7B Para. EQ <> MidWidth=50	7B Para. EQ < Hi Fr=20 Gain+12
7B-1	7B-2	7B-3	7B-4

LCD	Parameter	Range	Description
7B-1	Low Freq (LowFrq)	0 ~ 29	Low cutoff frequency
	Low Gain (Gain)	-12 ~ +12 dB	Low EQ cut and boost
7B-2	Mid Freq (MidFrq)	0 ~ 99	Mid center frequency
	Mid Gain (Gain)	-12 ~ +12 dB	Mid EQ cut and boost
7B-3	Mid Width (MidWidth)	0 ~ 99	Mid band width
7B-4	High Freq (Hi Frq)	0 ~ 29	High cutoff frequency
	High Gain (Gain)	-12 ~ +12 dB	High EQ cut and boost

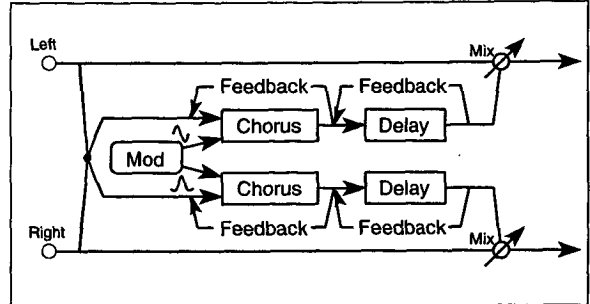
For effect 37, dynamic modulation (7A-3) can be used to control the Mid Freq parameter. This is useful for creating a wah type effect.

Combination Effects: Serial

In effects 38 and 39, a mono input–stereo output chorus/flanger is connected in series with a stereo delay.

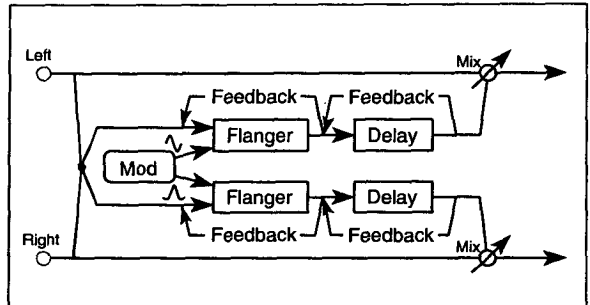
38: Chorus–Delay

This effect consists of a chorus and delay in series. The input signals are summed, then fed to two chorus units. The modulation signals fed to each chorus are 90 degrees out of phase with each other. Feedback parameters are available for both chorus and delay.



39: Flanger–Delay

This effect consists of a flanger and delay in series. The input signals are summed, then fed to two flanger units. The modulation signals fed to each flanger are 90 degrees out of phase with each other. Feedback parameters are available for both flanger and delay.



7B Chor-Dly >	7B Chor-Dly <>	7B Chor-Dly <
Cho.DT11ms FB+10	Cho.Mod50 M.SP30	Dly.DT110 FB-10
7B-1	7B-2	7B-3

Chorus, Flanger

LCD	Parameter	Range	Description
7B-1	Delay Time (Cho.DT)	0 ~ 50 ms	Chorus/Flanger delay time
	Feedback (FB)	-99 ~ +99%	The amount of effected signal that is fed back into the effect. Minus values invert the feedback signal phase
7B-2	Mod Depth (Cho.Mod)	0 ~ 99	Modulation depth
	Mod Speed (M.SP)	1 ~ 99	Modulation speed

Delay

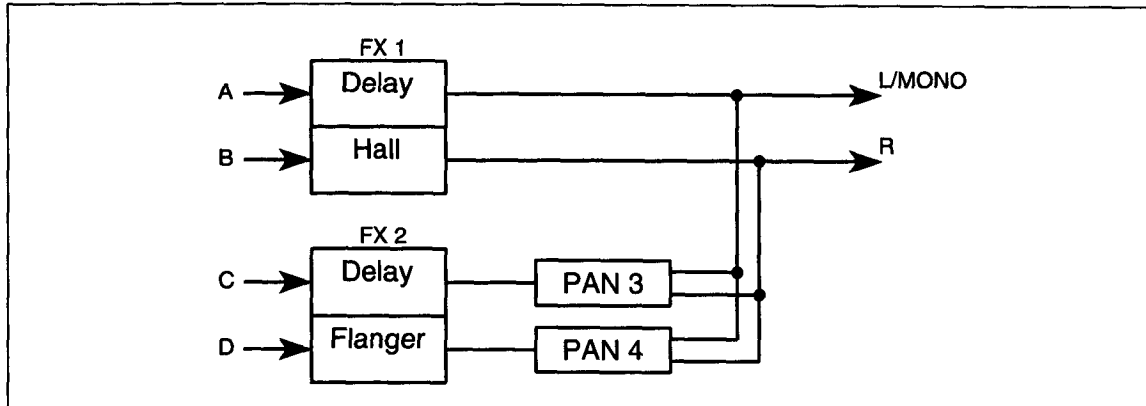
LCD	Parameter	Range	Description
7B-3	Delay Time (Dly.DT)	0 ~ 450 ms	Delay time (set in 2 ms steps)
	Delay Feedback (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the effect. Minus values invert the feedback signal phase

For effects 38 and 39, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

Combination Effects: Parallel

All of the effects subsequent to this point (40-47) can be used in parallel combinations, so that separate effects can be used on two different channels.

For Example: When 40 (Delay/Hall Reverb) is selected for the parallel-connection model of the FX1 and 43 (Delay/Flanger) for the FX2.

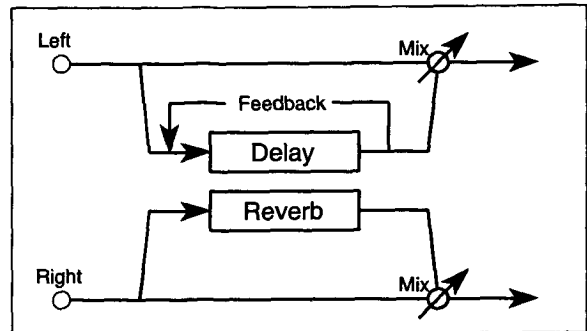


For information on the various Effects, please refer to the descriptions for 1 to 34.

Mono Delay/Reverb

40: Delay/Hall Reverb

This effect consists of two independent effects: delay on the left channel and hall type reverb on the right.



41: Delay/Room Reverb

This effect consists of two independent effects: delay on the left channel and room type reverb on the right.

7B Delay(L) Time250ms FB+50	>	7B Delay(L) H.Dmp10	<>	7B Hall(R) Time3.5s H.Dmp40	<>	7B Delay(R) P.Dly055ms	<
7B-1		7B-2		7B-3		7B-4	

Delay

LCD	Parameter	Range	Description
7B-1	Delay Time (Time)	0 ~ 500 ms	Delay time
	Feedback (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the effect. Minus values invert the feedback signal phase
7B-2	High Damp (H.Dmp)	0 ~ 99%	High frequency decay

Hall, Room

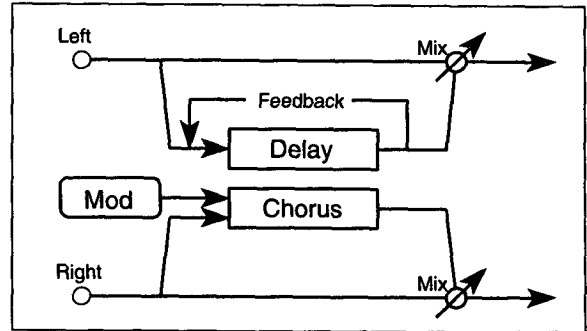
LCD	Parameter	Range	Description
7B-3	Reverb Time (Time)	0.2 ~ 9.9 sec (Hall)	The time over which the reverb effect will last
		0.2 ~ 4.9 sec (Room)	
	High Damp (H.Dmp)	0 ~ 99%	High frequency decay 0 = bright reverb 99 = dark reverb
7B-4	Pre Delay (P.Dly)	0 ~ 150 ms	The delay between the original sound and the early reflections

For effects 40 and 41, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

Mono Delay/Modulated Delay

42: Delay/Chorus

This effect consists of two independent effects: delay on the left channel and chorus on the right.



7B Delay(L) Time250ms FB+50	>	7B Delay(L) H.Dmp10	<>	7B Chorus(R) Mod60 M.SP0.30Hz	<>	7B Chorus(R) TRI	<
7B-1		7B-2		7B-3		7B-4	

Delay

LCD	Parameter	Range	Description
7B-1	Delay Time (Time)	0 ~ 500 ms	Delay time
	Feedback (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the effect. Minus values invert the feedback signal phase
7B-2	High Damp (H.Dmp)	0 ~ 99%	High frequency decay

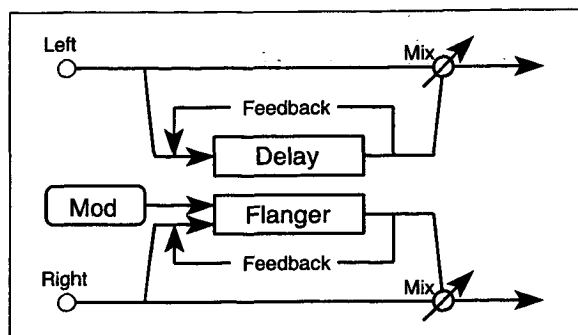
Chorus

LCD	Parameter	Range	Description
7B-3	Mod Depth (Mod)	0 ~ 99%	Modulation depth
	Mod Speed (M.SP)	0.03 ~ 30 Hz	Modulation speed
7B-4	Mod Waveform	Sine (SIN) Triangle (TRI)	Modulation waveform

For effect 42, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

43: Delay/Flanger

This effect consists of two effects: delay on the left channel and flanger on the right.



7B Delay(L) Time250ms FB+50	>	7B Delay(L) H.Dmp10	<>	7B Flanger(R) Mod70 M.SP0.18Hz	<>	7B Flanger(R) FB-75	<
7B-1		7B-2		7B-3		7B-4	

Delay

LCD	Parameter	Range	Description
7B-1	Delay Time (Time)	0 ~ 500 ms	Delay time
	Feedback (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the effect. Minus values invert the feedback signal phase
7B-2	High Damp (H.Dmp)	0 ~ 99%	High frequency decay

Flanger

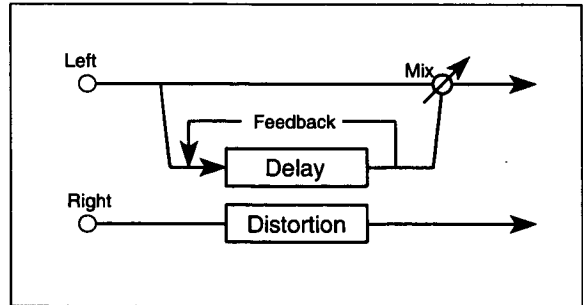
LCD	Parameter	Range	Description
7B-3	Mod Depth (Mod)	0 ~ 99%	Modulation depth
	Mod Speed (M.SP)	0.03 ~ 30 Hz	Modulation speed
7B-4	Feedback (FB)	-99 ~ +99%	The amount of effected signal that is fed back into the effect. Minus values invert the feedback signal phase

For effect 43, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

Mono Delay/Distortion, Overdrive

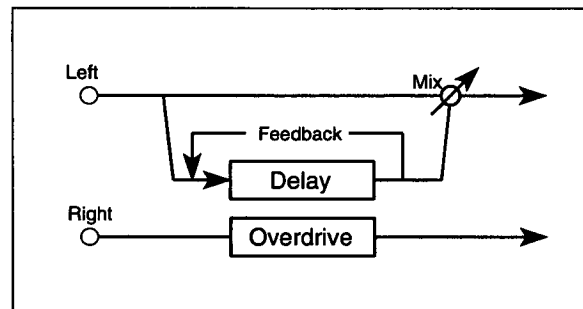
44: Delay/Distortion

This effect consists of two effects: delay on the left channel and distortion on the right.



45: Delay/Overdrive

This effect consists of two effects: delay on the left channel and overdrive on the right.



7B Delay(L) Time250ms FB+40	>	7B Dist(R) Drive=111 Res=75	<>	7B Dist(R) H.Spot50 Level105	<
7B-1		7B-2		7B-3	

Delay

LCD	Parameter	Range	Description
7B-1	Delay Time (Time)	0 ~ 500 ms	Delay time
	Feedback (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the effect. Minus values invert the feedback signal phase

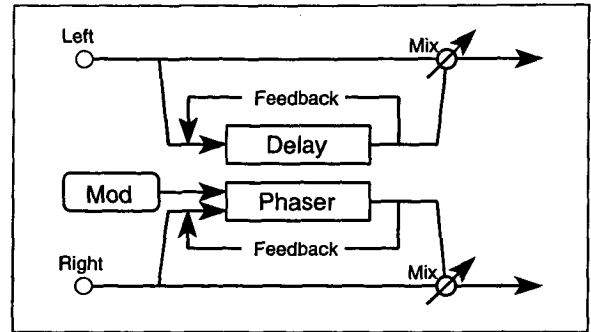
Distortion, Overdrive

LCD	Parameter	Range	Description
7B-2	Drive (Drive)	1 ~ 111	Distortion/Overdrive level
	Resonance (Res)	0 ~ 99	Gain of the resonant wah filter
7B-3	Hot Spot (H.Spot)	1 ~ 99	The wah filter frequency where it all happens
	Level (Level)	1 ~ 99	Distortion output level

Mono Delay/Phaser

46: Delay/Phaser

This effect consists of two effects: delay on the left channel and phaser on the right.



7B Delay(L) Time250ms FB+50	>	7B Delay(L) H.Dmp10	<>	7B Phaser(R) Mod60 M.SP0.69Hz	<>	7B Phaser(R) FB-75	<
7B-1		7B-2		7B-3		7B-4	

Delay

LCD	Parameter	Range	Description
7B-1	Delay Time (Time)	0 ~ 500 ms	Delay time
	Feedback (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the effect. Minus values invert the feedback signal phase
7B-2	High Damp (H.Dmp)	0 ~ 99%	High frequency decay

Phaser

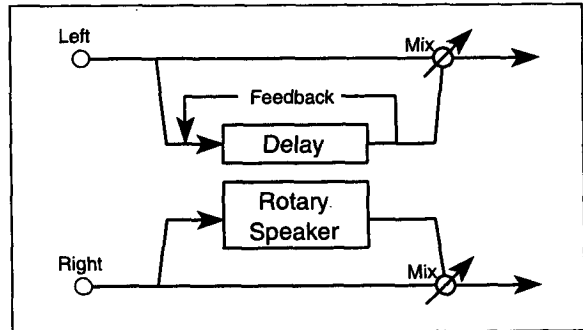
LCD	Parameter	Range	Description
7B-3	Mod Depth (Mod)	0 ~ 99%	Modulation depth
	Mod Speed (M.SP)	0.03 ~ 30 Hz	Modulation speed
7B-4	Feedback (FB)	-99 ~ +99%	The amount of phased signal that is fed back into the effect. Minus values invert the feedback signal phase

For effect 46, dynamic modulation (7A-3) can be used to control the DRY:EFF balance.

Mono Delay/Rotary

47: Delay/Rotary Speaker

This effect consists of two effects: delay on the left channel and rotary speaker on the right.



7B Delay(L) Time250ms FB+40	>	7B Rot.SP(R) <> Acceleration=04	<	7B Rot.SP(R) < Speed S=25 F=70
7B-1		7B-2		7B-3

Delay

LCD	Parameter	Range	Description
7B-1	Delay Time (Time)	0 ~ 500 ms	Delay time
	Feedback (FB)	-99 ~ +99%	The amount of delay signal that is fed back into the effect. Minus values invert the feedback signal phase

Rotary Speaker

LCD	Parameter	Range	Description
7B-2	Acceleration (Acceleration)	1 ~ 15	Time taken to change from one speed to the other
7B-3	Slow Speed (S)	1 ~ 99	Slow rotation speed
	Fast Speed (F)	1 ~ 99	Fast rotation speed

For effect 47, dynamic modulation (7A-3) can be used to switch the speed change direction.

Effect Parameter Table

		Reverb Time	Pre Delay	E.R Level	High Damp
1	Hall	0.2 ~ 9.9 sec (2.3)	0 ~ 200 ms (60)	0 ~ 99 (62)	0 ~ 99% (31)
2	Ensemble Hall	0.2 ~ 9.9 sec (3.1)	0 ~ 200 ms (15)	0 ~ 99 (23)	0 ~ 99% (32)
3	Concert Hall	0.2 ~ 9.9 sec (3.3)	0 ~ 200 ms (80)	0 ~ 99 (46)	0 ~ 99% (41)
4	Room	0.2 ~ 4.9 sec (1.3)	0 ~ 200 ms (8)	0 ~ 99 (68)	0 ~ 99% (36)
5	Large Room	0.2 ~ 4.9 sec (2.4)	0 ~ 200 ms (25)	0 ~ 99 (51)	0 ~ 99% (32)
6	Live Stage	0.2 ~ 4.9 sec (2.2)	0 ~ 200 ms (12)	0 ~ 99 (81)	0 ~ 99% (36)
7	Wet Plate	0 ~ 99 (59)	0 ~ 200 ms (29)	1 ~ 10 (7)	0 ~ 99% (51)
8	Dry Plate	0 ~ 99 (30)	0 ~ 200 ms (26)	1 ~ 10 (5)	0 ~ 99% (47)
9	Spring Reverb	0 ~ 99 (25)	0 ~ 200 ms (0)	1 ~ 10 (9)	0 ~ 99% (30)
		E.R Time	Pre Delay		
10	Early Reflection 1	100 ~ 800 ms (220)	0 ~ 200 ms (0)		
11	Early Reflection 2	100 ~ 800 ms (180)	0 ~ 200 ms (30)		
12	Early Reflection 3	100 ~ 800 ms (300)	0 ~ 200 ms (90)		
		Delay Time L	Delay Time R	Feedback	High Damp
13	Stereo Delay	0 ~ 500 ms (185)	0 ~ 500 ms (370)	-99 ~ +99% (-40)	0 ~ 99% (10)
14	Cross Delay	0 ~ 500 ms (190)	0 ~ 500 ms (380)	-99 ~ +99% (+40)	0 ~ 99% (10)
		Delay Time L	Feedback L	High Damp L	Dry:Effect Mix L
15	Dual Mono Delay	0 ~ 500 ms (20)	-99 ~ +99% (0)	0 ~ 99% (0)	Dry ~ Effect (50:50)
		Delay Time 1	Delay Time 2		Feedback
16	Multi-Tap Delay 1	0 ~ 500 ms (175)	0 ~ 500 ms (350)		-99 ~ +99% (+30)
17	Multi-Tap Delay 2	0 ~ 500 ms (200)	0 ~ 500 ms (400)		-99 ~ +99% (0)
18	Multi-Tap Delay 3	0 ~ 500 ms (250)	0 ~ 500 ms (500)		-99 ~ +99% (+20)
		Delay Time	Mod Speed	Mod Depth	Mod Waveform
19	Chorus 1	0 ~ 200 ms (3)	0.03 ~ 30 Hz (0.33)	0 ~ 99 (99)	SIN, TRI (TRI)
20	Chorus 2	0 ~ 200 ms (2)	0.03 ~ 30 Hz (0.42)	0 ~ 99 (84)	SIN, TRI (TRI)
		Delay Time L	Delay Time R	Mod Speed	Mod Depth
21	Quadrature Chorus	0 ~ 250 ms (24)	0 ~ 250 ms (12)	● 1 ~ 99 (30)	0 ~ 99 (50)
22	Crossover Chorus	0 ~ 250 ms (2)	0 ~ 250 ms (24)	● 1 ~ 99 (16)	0 ~ 99 (99)
		Delay Time L	Delay Time R		Mod Speed
23	Harmonic Chorus	0 ~ 500 ms (4)	0 ~ 500 ms (12)		● 1 ~ 99 (36)
		Mod Depth			
24	Symphonic Ensemble	0 ~ 99 (92)			
		Delay Time	Mod Depth	Mod Speed	
25	Flanger 1	0 ~ 200 ms (5)	0 ~ 99 (50)	● 1 ~ 99 (20)	
26	Flanger 2	0 ~ 200 ms (24)	0 ~ 99 (99)	● 1 ~ 99 (42)	
27	Crossover Flanger	0 ~ 200 ms (1)	0 ~ 99 (60)	● 1 ~ 99 (22)	
		Blend		Emphatic Point	
28	Exciter	-99 ~ +99 (+60)		1 ~ 10 (1)	
		Harmonic Density	Hot Spot	Stereo Width	Delay Time
29	Enhancer	1 ~ 99 (28)	1 ~ 20 (3)	0 ~ 99 (85)	1 ~ 99 (25)
		Drive	Hot Spot	Resonance	EQ Low
30	Distortion	1 ~ 111 (107)	● 0 ~ 99 (99)	0 ~ 99 (7)	-12 ~ +12 dB (0)
31	Overdrive	1 ~ 111 (85)	● 0 ~ 99 (70)	0 ~ 99 (63)	-12 ~ +12 dB (0)
		Manual	Mod Speed	Mod Depth	Feedback
32	Stereo Phaser 1	0 ~ 99 (98)	● 0.03 ~ 30 Hz (0.24)	0 ~ 99 (90)	-99 ~ +99% (+96)
33	Stereo Phaser 2	0 ~ 99 (96)	● 0.03 ~ 30 Hz (0.24)	0 ~ 99 (90)	-99 ~ +99% (+90)
		Vibrato Depth		Acceleration	Slow Speed
34	Rotary Speaker *	0 ~ 15 (2)		1 ~ 15 (12)	1 ~ 99 (25)
		Mod Waveform	Mod Wave Shape	Mod Speed	Mod Depth
35	Auto Pan	SIN, TRI (TRI)	-99 ~ +99 (+96)	0.03 ~ 30 Hz (0.21)	0 ~ 99 (96)
36	Tremolo	SIN, TRI (TRI)	-99 ~ +99 (-99)	0.03 ~ 30 Hz (3.9)	0 ~ 99 (99)
		Low Freq	Low Gain	Mid Freq	Mid Gain
37	Parametric EQ	0 ~ 29 (15)	-12 ~ +12 dB (+6)	● 0 ~ 99 (50)	-12 ~ +12 dB (+6)
		Fig/Cho Delay	Fig/Cho Feedback	Mod Speed	Mod Depth
38	Chorus-Delay	0 ~ 50 ms (24)	-99 ~ +99% (+24)	1 ~ 99 (12)	0 ~ 99 (75)
39	Flanger-Delay	0 ~ 50 ms (1)	-99 ~ +99% (+80)	1 ~ 99 (4)	0 ~ 99 (99)
		Delay Time	Feedback	High Damp	Dry:Effect Mix
40	Delay/Hall Reverb	0 ~ 500 ms (30)	-99 ~ +99% (0)	0 ~ 99% (0)	● Dry ~ Effect (FX)
41	Delay/Room Reverb	0 ~ 500 ms (20)	-99 ~ +99% (0)	0 ~ 99% (0)	● Dry ~ Effect (FX)
		Delay Time	Feedback	High Damp	Dry:Effect Mix
42	Delay/Chorus	0 ~ 500 ms (220)	-99 ~ +99% (+15)	0 ~ 99% (50)	● Dry ~ Effect (70:30)
		Delay Time	Feedback	High Damp	Dry:Effect Mix
43	Delay/Flanger	0 ~ 500 ms (400)	-99 ~ +99% (+20)	0 ~ 99% (60)	● Dry ~ Effect (70:30)
		Delay Time	Feedback		Dry:Effect Mix
44	Delay/Distortion	0 ~ 500 ms (250)	-99 ~ +99% (+40)		● Dry ~ Effect (79:21)
45	Delay/Overdrive	0 ~ 500 ms (350)	-99 ~ +99% (+50)		● Dry ~ Effect (75:25)
		Delay Time	Feedback	High Damp	Dry:Effect Mix
46	Delay/Phaser	0 ~ 500 ms (300)	-99 ~ +99% (+15)	0 ~ 99% (60)	● Dry ~ Effect (60:40)
		Delay Time	Feedback		Dry:Effect Mix
47	Delay/Rotary Speaker*	0 ~ 500 ms (280)	-99 ~ +99% (+15)		Dry ~ Effect (70:30)

● A parameter that can be controlled using dynamic modulation

* Dynamic modulation can be used to change the speed cycle direction

Values in parenthesis indicate the initial parameter value

	EQ Low	EQ High	Dry:Effect Mix
	-12 ~ +12 dB (-3)	-12 ~ +12 dB (-1)	● Dry ~ Effect (80:20)
	-12 ~ +12 dB (-1)	-12 ~ +12 dB (-3)	● Dry ~ Effect (80:20)
	-12 ~ +12 dB (-2)	-12 ~ +12 dB (-4)	● Dry ~ Effect (80:20)
	-12 ~ +12 dB (+1)	-12 ~ +12 dB (+2)	● Dry ~ Effect (78:22)
	-12 ~ +12 dB (-1)	-12 ~ +12 dB (+2)	● Dry ~ Effect (78:22)
	-12 ~ +12 dB (-5)	-12 ~ +12 dB (-4)	● Dry ~ Effect (75:25)
	-12 ~ +12 dB (0)	-12 ~ +12 dB (-4)	● Dry ~ Effect (80:20)
	-12 ~ +12 dB (+2)	-12 ~ +12 dB (+2)	● Dry ~ Effect (80:20)
	-12 ~ +12 dB (+2)	-12 ~ +12 dB (-4)	● Dry ~ Effect (78:22)
	EQ Low	EQ High	Dry:Effect Mix
	-12 ~ +12 dB (-4)	-12 ~ +12 dB (-4)	● Dry ~ Effect (68:32)
	-12 ~ +12 dB (+1)	-12 ~ +12 dB (0)	● Dry ~ Effect (65:35)
	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	● Dry ~ Effect (75:25)
	EQ Low	EQ High	Dry:Effect Mix
	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	● Dry ~ Effect (80:20)
	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	● Dry ~ Effect (80:20)
Delay Time R	Feedback R	High Damp R	Dry:Effect Mix R
0 ~ 500 ms (40)	-99 ~ +99% (0)	0 ~ 99% (0)	● Dry ~ Effect (50:50)
	EQ Low	EQ High	Dry:Effect Mix
	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	● Dry ~ Effect (80:20)
	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	● Dry ~ Effect (70:30)
	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	● Dry ~ Effect (75:25)
	EQ Low	EQ High	Dry:Effect Mix
	-12 ~ +12 dB (+4)	-12 ~ +12 dB (+4)	● Dry ~ Effect (50:50)
	-12 ~ +12 dB (+3)	-12 ~ +12 dB (+4)	● Dry ~ Effect (60:40)
Mod Waveform	EQ Low	EQ High	Dry:Effect Mix
T+10 ~ S+10 (T+00)	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	Dry ~ Effect (50:50)
T+10 ~ S+10 (T+00)	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	Dry ~ Effect (50:50)
Mod Depth	Split Point		Dry:Effect Mix
0 ~ 99 (99)	0 ~ 18 (3)		Dry ~ Effect (25:75)
	EQ Low	EQ High	Dry:Effect Mix
	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	● Dry ~ Effect (67:33)
Resonance	EQ Low	EQ High	Dry:Effect Mix
-99 ~ +99% (+80)	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	Dry ~ Effect (50:50)
-99 ~ +99% (+36)	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	Dry ~ Effect (50:50)
-99 ~ +99% (+80)	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	Dry ~ Effect (50:50)
	EQ Low	EQ High	Dry:Effect Mix
	-12 ~ +12 dB (+3)	-12 ~ +12 dB (+3)	● Dry ~ Effect (50:50)
	EQ Low	EQ High	Dry:Effect Mix
	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	● Dry ~ Effect (50:50)
EQ High	Output Level		Dry:Effect Mix
-12 ~ +12 dB (0)	0 ~ 99 (6)		Dry ~ Effect (50:50)
-12 ~ +12 dB (0)	0 ~ 99 (8)		Dry ~ Effect (50:50)
Mod waveform			Dry:Effect Mix
SIN, TRI (TRI)			Dry ~ Effect (50:50)
SIN, TRI (SIN)			Dry ~ Effect (50:50)
Fast Speed			Dry:Effect Mix
1 ~ 99 (69)			Dry ~ Effect (34:66)
	EQ Low	EQ High	Dry:Effect Mix
	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	● Dry ~ Effect (20:80)
	-12 ~ +12 dB (0)	-12 ~ +12 dB (0)	● Dry ~ Effect (50:50)
Mid Width	High Freq	High Gain	Dry:Effect Mix
0 ~ 99 (50)	0 ~ 29 (12)	-12 ~ +12 dB (+6)	Dry ~ Effect (50:50)
Delay Time	Feedback		Dry:Effect Mix
0 ~ 450 ms (120)	-99 ~ +99% (+16)		● Dry ~ Effect (60:40)
0 ~ 450 ms (300)	-99 ~ +99% (+30)		● Dry ~ Effect (50:50)
Reverb Time	Pre Delay	High Damp	Dry:Effect Mix
0.2 ~ 9.9 sec (3.0)	0 ~ 150 ms (68)	0 ~ 99% (34)	● Dry ~ Effect (70:30)
0.2 ~ 4.9 sec (1.1)	0 ~ 150 ms (0)	0 ~ 99% (28)	● Dry ~ Effect (65:35)
Mod Speed	Mod Depth	Mod Waveform	Dry:Effect Mix
0.03 ~ 30 Hz (0.39)	0 ~ 99 (99)	SIN, TRI (TRI)	● Dry ~ Effect (50:50)
Mod Speed	Mod Depth	Feedback	Dry:Effect Mix
0.03 ~ 30 Hz (0.21)	0 ~ 99 (96)	-99 ~ +99% (-75)	● Dry ~ Effect (50:50)
Drive	Hot Spot	Resonance	Output Level
1 ~ 111 (105)	1 ~ 99 (99)	0 ~ 99 (7)	1 ~ 99 (10)
1 ~ 111 (65)	1 ~ 99 (90)	0 ~ 99 (63)	1 ~ 99 (20)
Mod Speed	Mod Depth	Feedback	Dry:Effect Mix
0.03 ~ 30 Hz (0.69)	0 ~ 99 (90)	-99 ~ +99% (+99)	● Dry ~ Effect (25:75)
Acceleration	Slow Speed	Fast Speed	Dry:Effect Mix
1 ~ 15 (10)	1 ~ 99 (25)	1 ~ 99 (69)	● Dry ~ Effect (30:70)

Chapter 6: Sequencer Mode

In Sequencer mode you can playback songs and record in real time.

Sequencer Edit mode allows you to edit your real-time recordings, record in step time, and create patterns in either step time or real time. See “Sequencer Edit Mode” on page 110.

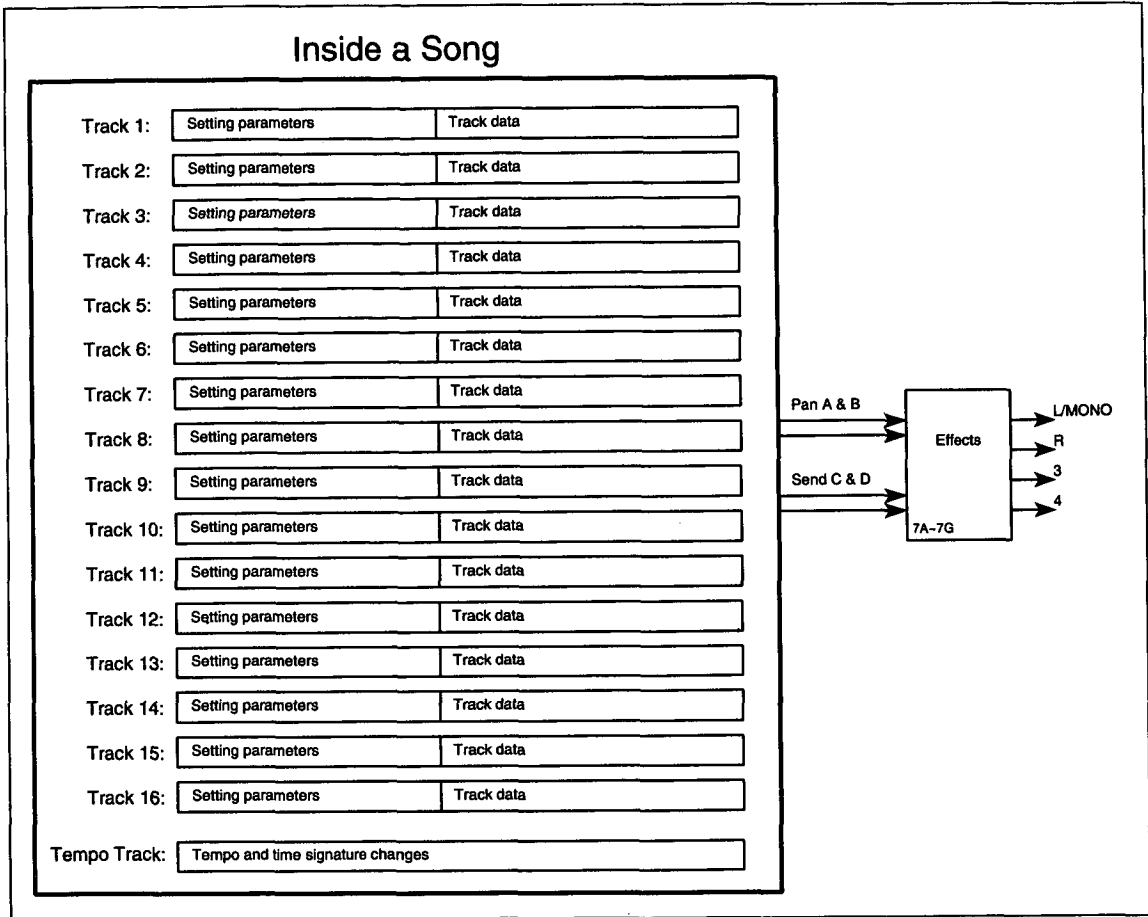
The X3R can also be connected to an external sequencer, and used as a 16-part multi-timbral tone generator.

X3R Sequencer Specs

- 10 songs and 100 patterns can be held in memory simultaneously.
- 32,000 events (notes, etc.) can be recorded for the 10 songs and 100 patterns. However, one track or pattern may contain a maximum of 16,000 events.
- A song can contain up to 16 tracks.
- A track may contain up to 999 measures.
- A pattern may contain up to 99 measures.
- Base Resolution can be either 48 PPQN or 96 PPQN.
- Effects can be set individually for each song. Program effect settings are ignored.
- Song 9 can be conformed for use with General MIDI.
- Program Change messages can be used to select different Programs at any time.
- By setting a track to EXT status (“Track Status – 1B” on page 111), external MIDI devices can be controlled by the sequencer.
- Up to 32-notes are available for all tracks simultaneously.
- All sequencer data is retained in memory when the power is off. However, we do recommend that you save your data at regular intervals.
- Sequencer tracks respond to MIDI Controllers such as After Touch and Pitch Bend. See “Controller Event Edit Notes” on page 122 for a list of all usable MIDI Controllers.
- Track Programs can be selected using MIDI Bank Select and Program Change messages. See “Using MIDI to Select Programs” on page 4 for details about how the X3R responds to MIDI Bank Select and Program Change messages

What's in a Song?

The following diagram shows what's in a song:



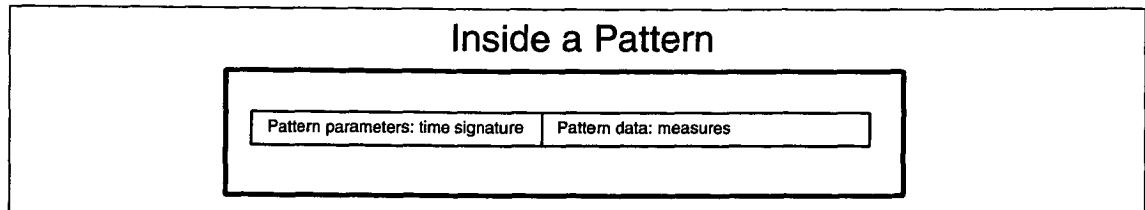
Setting parameters determine the playback environment. Parameters listed below that are marked with a (*) can be adjusted and recorded by the sequencer. During playback, these adjustments will be carried out automatically. This means that the parameter value at any point during playback may be different to its original value. When the [RESET] button is pressed, these parameters are reset to their original values. Setting parameters can be copied from a Combination. See "Copy from Combination – 8E" on page 151.

Setting Parameters	Track Data
Prog No. *	Note on/off
Volume *	Pitch Bend
Pan *	After Touch
MIDI Channel	Prog Change (Include bank Select)
Send C *	Poly After
Send D *	Controllers (0~101)
Status	
Bend Range *	
Transpose *	
Tune *	
Vel Window	
Key Window	

What's in a Pattern?

As well as songs you can have up to 100 patterns. By making a repetitive drum phrase into a pattern, you can save sequencer memory. Patterns can be played by putting them into tracks. Each pattern can be used in one track only. Patterns can be from 1 to 99 measures long.

The following diagram shows what's in a pattern:



Sequencer Data, RAM Cards, & Floppy Disks

Sequencer data on a floppy disk must be loaded before you can play or edit it.

Sequencer data on a PROG/SEQ data card can be played without loading. Although, you must load it before editing.

A PROG/SEQ data card can store up to 7,000 events. See "Save Sequencer Data to Card – 6D" on page 166.

If the amount of free sequencer memory is less than 77%, the sequencer data cannot be saved to card. In this case, save to floppy disk. See "Save Sequencer Data – 3C" on page 184.

Ways to Record Tracks

- **Real-Time Track Recording:** is similar to recording on a tape machine – you select a track, start recording, start playing, then stop. Real-time recording is carried out in Sequencer mode. See "Real-Time Recording" on page 96.
- **Step-Time Track Recording:** allows you enter notes one by one – you select a position, specify the note, its velocity, and length, then insert it into a track. Step-time recording is carried out in Sequencer Edit mode. See "Step-Time Track Recording – 2A" on page 114.
- **Patterns:** can contain up to 99 measures. They allow you to use the same data in a number of tracks, at various times. Patterns can be copied to tracks or put to tracks. Putting a pattern to a track means that you do not have to duplicate (copy) the data. Thus, saving sequencer memory. Any changes made to a put pattern will be reflected in all tracks into which that pattern has been put. This makes it simple to, for example, update the snare drum pattern used in all choruses.

Ways to Record Patterns

- **Real-time Pattern Recording:** this is similar to real-time track recording except the pattern repeats while recording, allowing you to build up patterns by overdubbing. For example, you could record a bass drum in the first pass, a snare drum in the second, hi-hats in the third, etc.
- **Step-Time Pattern Recording:** allows you enter notes one by one – you select a position, specify the note, its velocity, and length, then insert it into a pattern.
- **Copy Data from a Track:** you can select a number of measures from a track, and copy the data into a pattern. The pattern can then be edited, and put or copied into other tracks. See "Get from Track – 6B" on page 146.

Real-Time Recording & Patterns

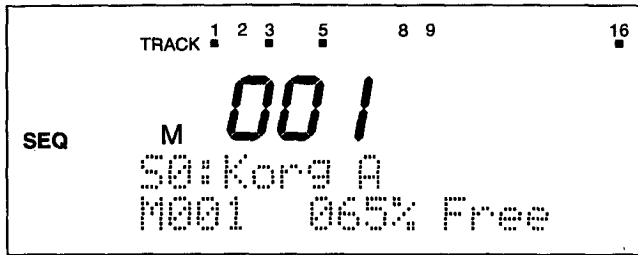
If a pattern overlaps the specified range for real-time recording, that pattern will be opened automatically when recording stops. However, if there is not enough sequencer memory available to open the pattern, the options YES and NO will appear.

Press the [▲/YES] button to copy the pattern data into the track, or the [▼/NO] button to discard the data just recorded.

Entering Sequencer Mode

- 1) Press the [SEQ] button.

SEQ will appear on the LCD screen.



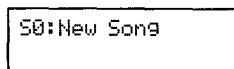
The numbers at the top of the display correspond to the track numbers. The number of the currently selected track flashes. Normally, there is only one currently selected track, however, for multitrack recording any number of tracks can be selected. When a track is muted, its number disappears. When a track is soloed, all other track numbers disappear. A box underneath a track number indicates that a track contains data. During playback, and when MIDI data is received, this box will flash.

Playing Songs

This section explains how to play songs.

Songs can be in any one of three places: in the internal sequencer memory, on a PROG/SEQ data card, or on a floppy disk. If the song that you want to play is in the sequencer memory or on a PROG/SEQ data card, proceed to step 1. If it is on a floppy disk, you must load it into the sequencer memory before it can be played. See “Load Sequencer Data – 1C” on page 177.

- 1) If you haven’t already, press the [SEQ] button to enter Sequencer mode.
- 2) Press function button [8]. The following LCD screen will appear.



- 3) Use the VALUE knob, [▲/YES] and [▼/NO] buttons, or number keypad to select a song. If the song is on a PROG/SEQ data card, press the [BANK] button, then select the song.
- 4) Press the [START/STOP] button to start playback.

Press the [START/STOP] button again to pause playback.

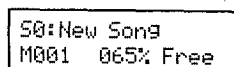
To continue playback, press the [START/STOP] button. Playback will continue from the point at which playback was paused.

To return to the beginning of the song, press the [RESET] button. Tracks whose status is set to EXT will send the corresponding MIDI Bank Select, Program Change, volume, etc., messages. So any external MIDI devices will be ready to start playback from the first measure.

At the end of the song, playback will stop, and the song will return to the first measure. If a Next Song has been specified, that song will played. See “Next Song – 8C” on page 150.

Playback from a Specific Measure

To start playback at a specific measure in a song, press function button [1] to select the Measure Position & Free Memory LCD screen shown below:



Position the cursor on the measure parameter (M001), use the VALUE knob, [▲/YES] and [▼/NO] buttons, or number keypad to select a measure, then press the [START/STOP] button to start playback. At the end of the song, the song will return to measure at which playback was started. See “Measure Position & Free Memory” on page 103.

Muting Individual Tracks

While playing a song, you can mute individual tracks.

- 1) Press function button [3]. The following LCD screen will appear:

```

50:New Song
Tr01 Ch:010 PLAY
  
```

- 2) Position the cursor on the Tr01 parameter, then use the VALUE knob, [▲/YES] and [▼/NO] buttons, or number keypad to select the track that you want to mute. See “Track Program, Level, & Pan” on page 104.
- 3) Position the cursor on the PLAY parameter, then use the VALUE knob or the [▲/YES] and [▼/NO] buttons to select MUTE.

Set the parameter back to PLAY, for normal playback.

Soloing Individual Tracks

The solo function allows you to listen to tracks individually. To solo a track, press function button [2] or [3], then move the cursor to “Tr”. Use the VALUE knob, the [▲/YES] and [▼/NO] buttons, or the number keypad to select a track, then double-click function button [2]; SOLO will appear on the LCD. The currently selected track only will be heard. To listen to other tracks, select the Tr parameter on the LCD screen, and use the VALUE knob, [▲/YES] and [▼/NO] buttons, or number keypad.

On the LCD screen shown below, track 3 has been soloed.

```

          TRACK SOLO
          [SUN]
          .
          .
SEQ      M  001
          50:Kore A
          M001 065% Free
  
```

To cancel the solo function, double-click function button [2] (TRACK).

Song Playback Notes

You can edit a song’s effect settings during playback. This allows you to try different effects and edit effect parameters, just like a mixdown on a real mixing console. Press the [EDIT] button, then function button [7] to access the effects. See “Effects 7A ~ 7G” on page 148.

Program, level, and pan parameters can also be edited during playback. See “Track Program, Level, & Pan” on page 104.

Note: If you sometimes use an external MIDI clock to synchronize the X3R sequencer, remember to set the X3R’s Clock Source back to INT when not using that external clock. Otherwise, the X3R will not playback. See “Global MIDI Channel & MIDI Clock Source – 3A” on page 158.

Erase All Sequencer Data

To erase all the sequencer data, power on the X3R while pressing the [SEQ] button and function button [8] (DELETE); Sequencer free memory will become 100%.

Note: This will erase the 10 songs and 100 patterns, and the setting parameters will be initialized. So make sure that you save your important data to either floppy disk or card beforehand. See “Save Programs & Combinations to Card – 6C” on page 165, “Save Sequencer Data to Card – 6D” on page 166, and “Save All Data – 3A” on page 183.

Real-Time Recording

This section explains how to record in real time.

- 1) Connect a MIDI keyboard, such as the Korg X3, to the X3R MIDI IN connection.
- 2) Press the [SEQ] button to enter Sequencer mode.
- 3) Press function button [1], and check the amount of free memory. If you think there is not enough free sequencer memory for your new song, save another song to floppy disk (“Save Sequencer Data – 3C” on page 184) or a PROG/SEQ data card (“Save Sequencer Data to Card – 6D” on page 166), then erase it (“Erase Song – 2G” on page 127). Alternatively, see “Erase All Sequencer Data” on page 95. This will free up some sequencer memory.
- 4) Press function button [8]. The following LCD screen will appear:

```
50:SONG
```

- 5) Use the VALUE knob, [▲/YES] and [▼/NO] buttons, or number keypad to select a new song.
- 6) Now you must set the song’s base resolution, because once you record something, it cannot be changed. Press the [EDIT] button to enter Sequencer Edit mode, then locate the LCD screen shown below, 8B:

```
8B B.Reso
High(1/96) OK?
```

Set the base resolution to either 1/48 or 1/96. See “Song Base Resolution – 8B” on page 149 for full details.

- 7) Press the [SEQ] button to return to Sequencer mode.
- 8) Press function button [2]. The following LCD screen will appear:

```
G1:Piano
Tr01 A00 127 CNT
```

- 9) Select a track for recording. Then select a Program, and set the level and pan parameters. See “Track Program, Level, & Pan” on page 104 for full details. If you change any of these parameters while recording, that change will be recorded.

If you want to record a GM (General MIDI) compatible song, see “GM Song Mode – 8F” on page 152.

If you are recording a new song, ignore this step. If you are re-recording tracks, make sure that the track protect parameter is set to off. See “Track Status – 1B” on page 111.

If you want to record using quantize, see “Real-Time Quantize” on page 108.

If you want to use the metronome, see “Metronome” on page 108.

- 10) Press the [REC/WRITE] button.
The word REC will appear on the LCD screen.
- 11) Press function button [4]. The following LCD screen will appear:

```
G1:Piano
J=120:MAN 04/04
```

Set the song tempo and time signature parameters as required.

- 12) Press function button [7]. The following LCD screen will appear:

```
00WR
MultiREC:OFF
```

If you want to record one track only, set the MultiREC parameter to OFF. If you want to record on more than one track simultaneously, set it to ON. See “Multitrack Recording – MultiREC” on page 101 for more details about multitrack recording.

Move the cursor to the Recording mode parameter (in this case OVWR), then use the VALUE knob or the [▲/YES] and [▼/NO] buttons to select a Recording mode. See “Recording Mode” on page 109.

What you do next depends on the Recording mode that you selected. See the following explanations of each Recording mode.

Overwriting – OVWR

In this Recording mode, any existing data in the selected track will be overwritten (lost) from the measure at which you start recording.

- 1) Follow the steps for “Real-Time Recording” on page 96, and select OVWR as the Recording mode.
- 2) To select the start measure, press function button [1]. The following LCD screen will appear:

50:
M001 065% Free

Position the cursor on the measure parameter (M001), use the VALUE knob, [▲/YES] and [▼/NO] buttons, or number keypad to select a measure.

- 3) Press the [START/STOP] button.

After the specified count-in (“Metronome – 8D” on page 150), recording will begin. Other tracks that contain data will play depending their Track Status (“Track Status – 1B” on page 111).

- 4) To stop recording, press the [START/STOP] button.

The song will be returned to the measure at which recording started. Simply press the [START/STOP] button again to start playback.

If you record on a section of a track that contained a put pattern, the pattern data and the new data will be added to the track.

Overdubbing – OVDB

In this Recording mode, any existing data in the selected track will be merged with new data.

- 1) Follow the steps for “Real-Time Recording” on page 96, and select OVDB as the Recording mode.
- 2) To select the start measure, press function button [1]. The following LCD screen will appear:

50:
M001 065% Free

Position the cursor on the measure parameter (M001), use the VALUE knob, [▲/YES] and [▼/NO] buttons, or number keypad to select a measure.

- 3) Press the [START/STOP] button.

After the specified count-in (“Metronome – 8D” on page 150), recording will begin. Other tracks that contain data will play depending their Track Status (“Track Status – 1B” on page 111).

- 4) To stop recording, press the [START/STOP] button.

The song will be returned to the measure at which recording started. Simply press the [START/STOP] button to start playback.

If you record on a section of a track that contained a put pattern, the pattern data and the new data will be added to the track.

Auto Punch In/Out Recording – AOTP

In this Recording mode, you can re-record a specified measure(s) on a track that already contains data. The old data will be deleted.

- 1) Follow the steps for “Real-Time Recording” on page 96, and select AOTP as the Recording mode. As shown on the LCD screen below, the options for punch in and punch out measures will appear.

```
AOTP M001 →001
MultiREC:OFF
```

- 2) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to specify the punch in and punch out measures.
- 3) Press function button [1]. The following LCD screen will appear:

```
S0: New Song
M001 065% Free
```

Position the cursor on the measure parameter (M001), and select a measure that is several measures before the specified punch in measure.

- 4) Press the [START/STOP] button.

After the specified count-in (“Metronome – 8D” on page 150), **playback** will begin.

When the specified punch in measure is reached, recording will begin.

When the specified punch out measure is reached, recording will stop (playback will continue).

- 5) Press the [START/STOP] button to stop playback.

The song will be returned to the measure at which recording started. Simply press the [START/STOP] button to start playback. If you don’t like what you just recorded and you want to do it again, return to step 3.

If you punch in/out on measures that contain Controller data such as Pitch Bend or Damper Pedal, leaving the Controller stuck at a value other than that of its natural resting place, you will probably have to use the Event Edit function to set correct the data. Alternatively, erase the Controller data.

If you record on a section of a track that contained a put pattern (more than two measures), the pattern data and the new data will be added to the track.

Manual Punch In/Out Recording – MANP

This Recording mode is similar to Auto punch in/out, except that you use the [REC/WRITE] button or a pedal switch to punch in/out when you like.

- 1) Follow the steps for “Real-Time Recording” on page 96, except step 10 (do not press the [REC/WRITE] button), and select MANP as the recording mode.
- 2) Press function button [1]. The following LCD screen will appear:

S0:New Song M001 065% Free

Position the cursor on the measure parameter (M001), and select a measure that is several measures before the point at which you want to manually punch in.

- 3) Press the [START/STOP] button.
Playback will begin.
- 4) When the point at which you want to punch in is reached, press the [REC/WRITE] button to start recording.
- 5) To stop recording, press the [REC/WRITE] button again.

Steps 4 and 5 can also be performed using a pedal switch. Connect an optional Korg PS-1 or PS-2 pedal switch to the ASSIGNABLE PEDAL/SW connection. Then, in Global mode, assign the pedal to SEQ punch in/out. See “Assignable Pedal/SW Setup – 8B” on page 171. Instead of pressing the [REC/WRITE] button in steps 4 and 5, press the pedal switch.

If you punch in/out at a point that contains Controller data such as Pitch Bend or Damper Pedal, leaving the Controller stuck at a value other than that of its natural resting place, you will probably have to use the Event Edit function to set correct the data. Alternatively, erase the Controller data.

If you record on a section of a track that contained a put pattern (more than two measures), the pattern data and the new data will be added to the track.

Loop Recording – LOOP

In this Recording mode, a specified number of measures are played continuously (looped), and you can add and remove new data as you like.

- 1) Follow the steps for “Real-Time Recording” on page 96, and select LOOP as the recording mode. As shown on the LCD screen below, the options for loop start and end measures will appear.

```
LOOP M001 →001
```

- 2) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to specify the punch in and punch out measures.
- 3) Press function button [1]. The following LCD screen will appear:

```
S0: New Song  
M001 065% Free
```

Position the cursor on the measure parameter (M001), and select a measure that is several measures before the specified loop start measure.

- 4) Press the [START/STOP] button.

After the specified count-in (“Metronome – 8D” on page 150), **playback** will begin. The measure is shown in the center of the LCD.

When the specified loop start measure is reached, recording will begin.

When the specified loop end measure is reached, recording will restart from the specified loop start measure. Data that is recorded on subsequent passes through the specified loop will be merged (overdubbed) with any existing data.

- 5) To stop recording, press the [START/STOP] button. Simply press the [START/STOP] button to start playback. If you don’t like what you just recorded and you want to do it again, return to step 3. If you record on a section of a track that contained a put pattern (more than two measures), the pattern data and the new data will be added to the track.

Deleting All Data while Loop Recording

While loop recording is in progress, press and hold down function button [8] (DELETE). For the time that you hold down the button, all data will be deleted. Release the button to stop deleting.

Deleting Specific Data while Loop Recording

When you start loop recording, what you play is added (overdubbed) to the any existing data, and the word [ADD] is shown on the bottom line of the LCD screen. By positioning the cursor on [ADD], and pressing the [▲/YES] button, you can select [RMV]. In this mode, any note data corresponding to a keyboard key that you press and hold will be deleted for the time that you hold down that key. Record looping must actually be in progress to use this function.

Note: When Loop Recording mode is selected, playback also loops.

Multitrack Recording – MultiREC

Normally, you will record one track at a time. If, however, you want to record a number of tracks simultaneously, for example, you want to record a number of tracks from another MIDI sequencer, etc., you need to use the MultiREC mode. In this mode, MIDI data received via the MIDI IN connection will be recorded onto tracks whose MIDI Channels correspond the MIDI Channels used by the incoming data.

- 1) In Global mode, set the Clock Source parameter to EXT. See “Global MIDI Channel & MIDI Clock Source – 3A” on page 158.

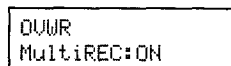
It is important that the X3R uses the external sequencer’s MIDI clock, otherwise, data may not be recorded correctly.

- 2) Press the [SEQ] button to enter Sequencer mode.
- 3) Press function button [7] to select the Recording mode LCD screen, then set the MultiREC parameter to ON.

Select which tracks you want to record, play, or be muted. See “Track MIDI Channel & Mode” on page 105.

Follow the steps for “Real-Time Recording” on page 96, and select a Recording mode.

You cannot select LOOP for MultiREC.



- 4) Press function button [3] to select the track that you want to record, play, or mute.
- 5) Press the [REC/WRITE] button to enter Record Ready mode.
- 6) Start playback on the external sequencer.

The X3R sequencer will automatically start recording. This is because the external sequencer sends a MIDI Start message to the X3R.

- 7) To stop recording, press the [START/STOP] button, or stop the external sequencer.

The X3R sequencer will automatically stop recording. This is because the external sequencer sends a MIDI Stop message to the X3R.

The X3R sequencer can record the following types of MIDI data from an external device:

Note On/Off
Pitch Bend
Program Change
Channel Pressure After Touch
Polyphonic Key Pressure After Touch
Controllers 0 ~ 101

If one track on the external sequencer contains far more data than the other tracks, a memory full message may appear even though there is enough free sequencer memory. In this case, mute the large track, record the other tracks, then record the large track after.

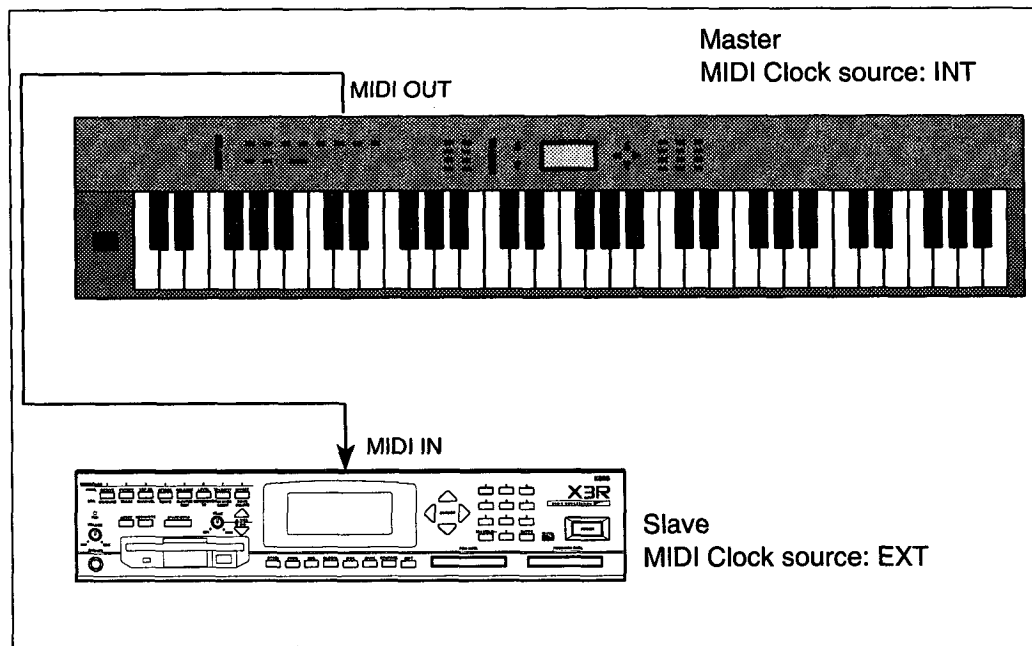
See “Controller Event Edit Notes” on page 122 for a list of X3R compatible MIDI Controllers.

Synchronization

The X3R sequencer can be synchronized to other MIDI devices such as sequencers, drum machines, etc. This allows you to start and stop the X3R by using the start and stop buttons on the master MIDI device.

The MIDI Clock source of the master device is set to INT (internal), and the X3R is set to EXT (external). See “Global MIDI Channel & MIDI Clock Source – 3A” on page 158. Refer to the manual of your other MIDI device for details about selecting MIDI clock sources.

The MIDI OUT of the master device should be connected to the MIDI IN of the X3R, as shown below:



The X3R will start and stop when the corresponding functions on the master device are executed. The tempo of the X3R is determined by the tempo of the master device.

When the X3R is used as a 16-part multi-timbral tone generator with an external MIDI sequencer, Track Program numbers should be set to match those of the corresponding sequencer tracks. To playback GM song data, you should execute the “GM Song Mode – 8F” function on page 152 beforehand. In this case, you don’t have to match up the Program numbers. In Sequencer mode (1B), Set the Track Status to either INT or BOTH.

Combinations allow you to use the X3R as an 8-part multi-timbral tone generator.

Note: When song data that contains a GM System ON message is received, song 9 is conformed to the GM Standard.

Real-Time Record/Play Parameters

Measure Position & Free Memory

These parameters indicate the current measure and the amount of free sequencer memory.

```

50:New Song
M001 100% Free

```

[1] Measure

Function Button	Parameter	Range	Description
[1]	Measure Position (M)	001 ~ 999	Indicates and selects the current measure

The current measure is also indicated by the three large digits in the middle of the LCD screen. On the bottom line of the LCD screen the amount of free sequencer memory is shown (1% is approximately 320 events).

Track Program, Level, & Pan

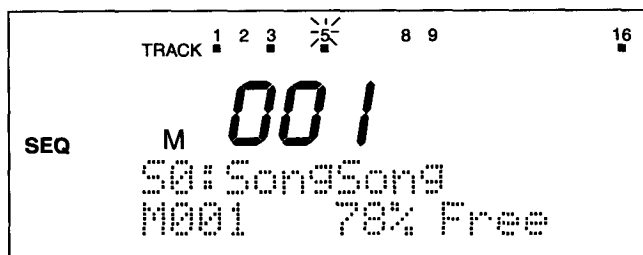
These parameters allows you to select a Program and set the volume level and pan for each track.

```
G01:Piano
Tr-01 A00 127 CNT
```

[2] Track

Function Button	Parameter	Range	Description
[2]	Track (Tr)	1 ~ 16	Select a track for recording, editing, soloing, etc
	Program	OFF A00 ~ A99 B00 ~ B99 C00 ~ C99 D00 ~ D99 G01 ~ 136	Select a Program for each track
	Level	0 ~ 127	Set the level for each track
	Pan	OFF, A, 14A ~ CNT ~ 14B, B, PRG	Set the pan for each track

Track: this parameter allows you to select a track for recording – the current track. The corresponding track number flashes at the top of the LCD screen. Press function button [3] to set the X3R MIDI Channel to the same MIDI Channel as that of the connected MIDI keyboard.



Program: this parameter allows you to select a Program for each track. Programs can also be selected using MIDI Program Change messages. See “Using MIDI to Select Programs” on page 4.

Level: this parameter allows you to set the level of each track. When the X3R receives MIDI Controller No. 7 Volume, this setting will be changed. The actual volume is determined by this setting multiplied by the Expression (No. 11) MIDI Controller data.

Pan: when PRG is selected, the selected Program’s pan settings will be used. See “Oscillator1 Setup – 1B” on page 10 and “Oscillator2 Setup – 1C” on page 12. If the selected Program is using a drum kit, the pan settings that have been set in Global mode will be used. See “Drum Kit Setup1 – 7A” on page 167. For Double mode Programs, the pan settings of each oscillator will be used.

For a setting other than OFF or PRG, these parameters can be controlled using MIDI Controller No. 10 Panpot. See “MIDI Panpot, Send Data” on page 124 for details about the relationship between panpot value and MIDI Controller value.

These parameters can be adjusted during playback. This is useful when you want to, for example, try a different Program for a track. However, if data corresponding to one of these parameters is recorded in a track, that data will set the parameter automatically during playback. For example, if at the beginning of a song you adjust the volume, but then some volume data that was previously recorded in the track is played, the volume will be reset by the recorded volume data.

While recording, real time only, you can select other Programs and adjust the level and pan parameters. These adjustments will be recorded along with other events (notes, etc.), and they can be edited using Event Edit. See “Event Edit – 2B” on page 118. They can also be adjusted using Create Controller Data. See “Create Controller Data – 3D” on page 132.

Pan adjustments made during playback or recording affect subsequent notes, not notes that are currently playing. The corresponding values of Program, level, and pan adjustments recorded in a track will be displayed during playback.

Track MIDI Channel & Mode

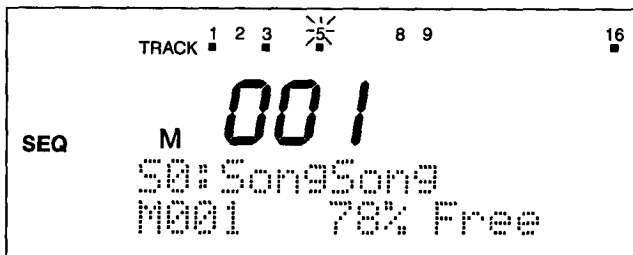
These parameters allows you to select a MIDI Channel and Track mode for each track.

```
G01:Piano
Tr01 Ch:01G MUTE
```

[3] Channel

Function Button	Parameter	Range	Description
[3]	Track (Tr)	1 ~ 16	Select a track for recording, editing, soloing, muting, etc.
	MIDI Channel (Ch)	1 ~ 16	Select a MIDI Channel for each track
	Track Mode	REC PLAY MUTE	Track will be recorded Track will playback Track muted

Track: this parameter allows you to select a track for recording – the current track. The corresponding track number flashes on the LCD screen as shown below.



MIDI Channel: this parameter determines the MIDI Channel that each track uses to send and receive MIDI data. If the selected MIDI Channel is the same as the Global MIDI Channel, a G will appear after the Channel number. Tracks whose MIDI Channel matches that of the MIDI data received from a connected MIDI keyboard will sound.

By assigning two or more tracks to the same MIDI Channel, and selecting different Programs for each, you can play Programs in unison. This is sometimes called layering. Likewise, data from two or more tracks can be used to play one Program by setting those tracks to the same MIDI Channel. For example, you could record note data on one track, and Controller data on another track.

Tracks with a Track Status of EXT or BOTH use this MIDI Channel to send and receive MIDI data to and from other MIDI devices. See “Track Status – 1B” on page 111.

Track Mode: this parameter determines whether a track plays or not during playback and recording. When Play is selected, data on the track will play. When Mute is selected, data on the track will not be played and the corresponding track number will disappear from the LCD screen. When Rec is selected, the track is armed for recording and the corresponding track number will flash on the LCD screen.

When a track contains some data, a small box will appear under the corresponding track number.

When the MultiREC parameter is set to on (“Recording Mode” on page 109), use these parameters to select which tracks you want to play, record, and mute.

Song Tempo, Tempo Mode, & Time Signature

These parameters allow you to set the song tempo, Tempo mode, and time signature.

```
G01:Piano
J=120:MAN 16/16
```

[4] Tempo

Function Button	Parameter	Range	Description
[4]	Tempo (♩)	40 ~ 240, EXT	Set the song tempo (EXT when MIDI Clock Source is EXT)
	Tempo Mode	MAN AUT REC	Recording
		MAN AUT	Playback
	Time Signature	1/4 ~ 9/4 1/8 ~ 16/8 1/16 ~ 16/16	Low base resolution
1/4 ~ 5/4 1/8 ~ 10/8 1/16 ~ 16/16		High base resolution	

Tempo: this parameter determines the song tempo. When the Tempo mode is set to MAN, you can use the VALUE knob, the [▲/YES] and [▼/NO] buttons, or the number keypad to adjust the tempo. However, when the Tempo mode is set to AUT you cannot adjust the tempo. In this case, tempo data recorded on the tempo track determines the tempo.

When the MIDI Clock Source parameter is set to EXT (“Global MIDI Channel & MIDI Clock Source – 3A” on page 158), the tempo value will show EXT. In this case, the tempo is determined by the tempo of the external MIDI device.

Tempo Mode: this parameter determines how the tempo track functions during playback and recording. Three options, MAN, AUT, and REC, can be selected in Record Ready mode, and two options, MAN and AUT, during playback.

To record some tempo changes, press the [REC/WRITE] button, then select REC. Press the [START/STOP] button to start recording and adjust the tempo as required. To playback the tempo changes, select AUT. If MAN is selected, the recorded tempo changes will not affect recording or playback tempo. Tempo changes are recorded on the Tempo track.

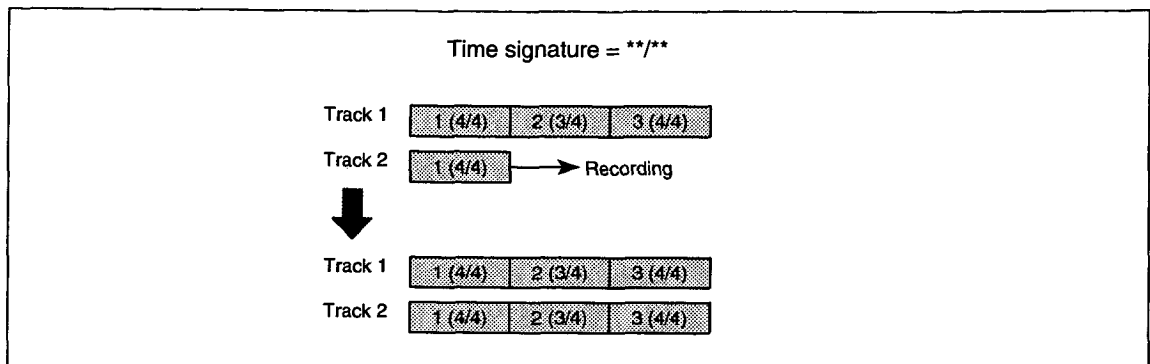
Time Signature: this parameter determines the time signature. Available time signatures depend on the song’s base resolution: High or Low. See “Song Base Resolution – 8B” on page 149.

The time signature can be set in Record Ready mode after the [REC/WRITE] button has been pressed.

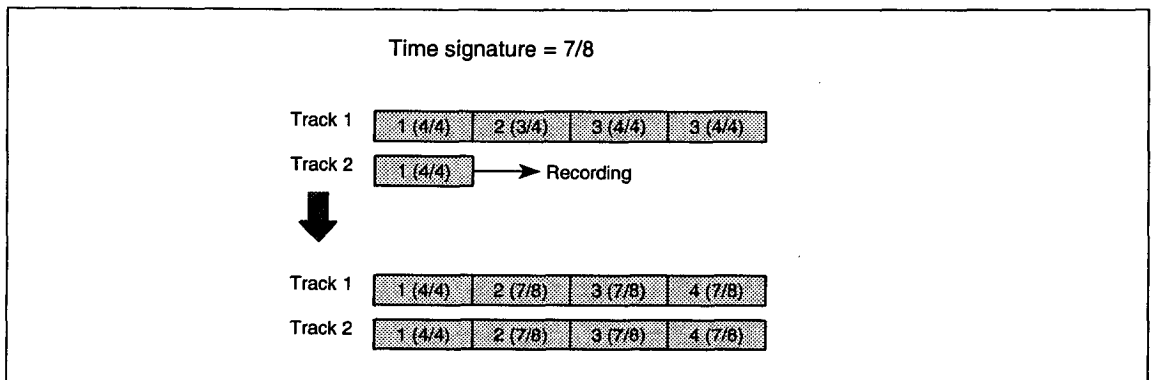
Note: The base resolution must be set before recording. Once a song contains some data, it cannot be changed.

Base Resolution	Time Signature
Low	1/4, 2/4, 3/4, 4/4, 5/4, 6/4, 7/4, 8/4, 9/4 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 8/8, 9/8, 10/8, 11/8, 12/8, 13/8, 14/8, 15/8, 16/8 1/16, 2/16, 3/16, 4/16, 5/16, 6/16, 7/16, 8/16, 9/16, 10/16, 11/16, 12/16, 13/16, 14/16, 15/16, 16/16
High	1/4, 2/4, 3/4, 4/4, 5/4 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 8/8, 9/8, 10/8 1/16, 2/16, 3/16, 4/16, 5/16, 6/16, 7/16, 8/16, 9/16, 10/16, 11/16, 12/16, 13/16, 14/16, 15/16, 16/16

Once a measure has been recorded, the same time signature will be used for all subsequent recordings. A value of **/** means that the previous time signature will be used. As shown below:



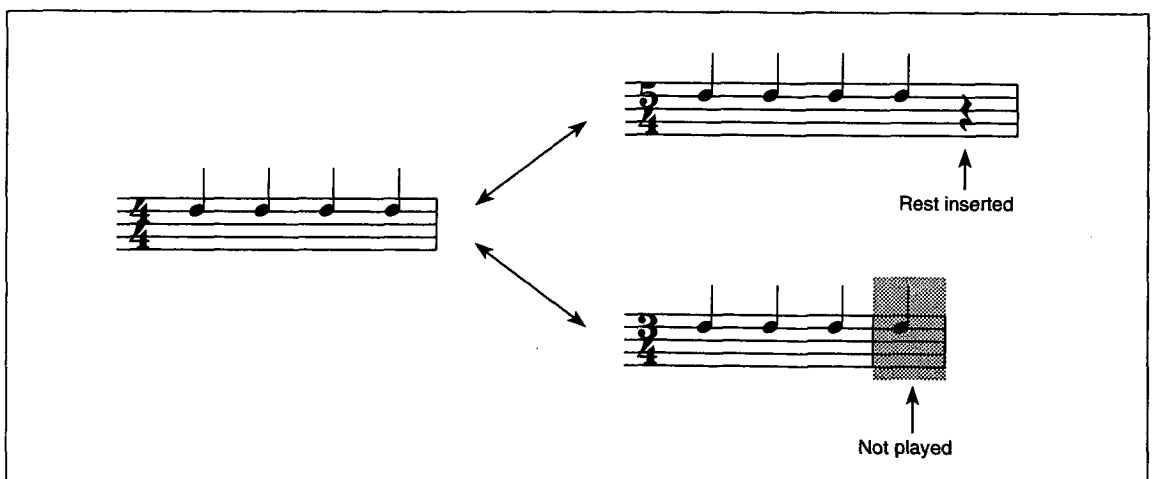
If you want to change the time signature, change the **/** value. After recording a different time signature, the time signature of other track measures occurring at the same time will be changed. For example, if you record the second measure of track 2 using 7/8 time, existing second measures on all other tracks will also change to 7/8 time.



By assigning measures different time signatures, you can change the time signature at any point in a song. However, measures that occur at the same time in different tracks cannot have different time signatures.

If you change a measure's time signature through recording or editing, the time signature of other track measures occurring at the same time will be changed. For example, if you **change** the fifth measure of track 6 to 3/4 time, the fifth measure on all other tracks will also change to 3/4 time. Likewise, if you **record** the fifth measure of track 6 using 3/4 time, existing fifth measures on all other tracks will also change to 3/4 time.

Measures that become longer will have rests inserted into them, and measures that become shorter will not play the data that exceeds the new length of the measure. However, this data will not be lost, and if you change the measure back to its original time signature, that data will play again.



Real-Time Quantize

Recording quantize determines how the timing accuracy of your playing is corrected while recording.

G01:Piano
Real Quant:HI

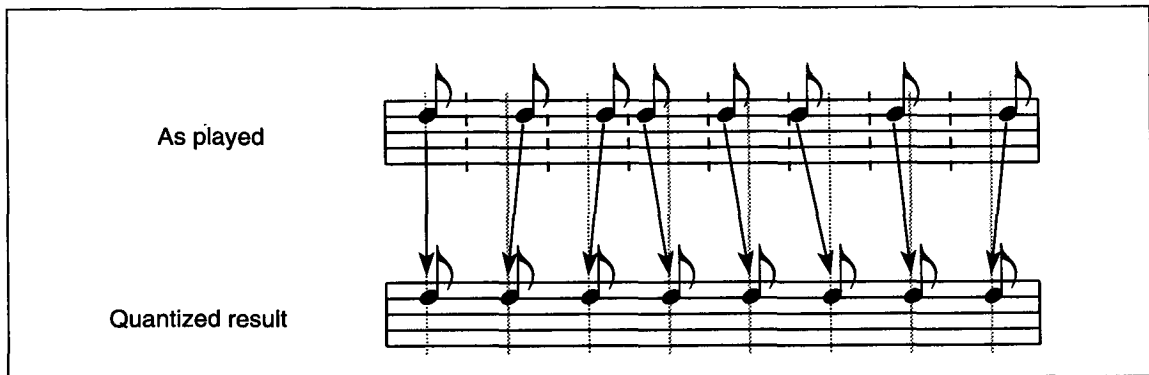
[5] Quantize

Function Button	Parameter	Range	Description
[5]	Recording Quantize (Real Quant)	HI	Timing resolution of recording data

For setting of HI, the quantize value is determined by the song's base resolution. See "Song Base Resolution – 8B" on page 149.

For a setting of everything you play will be recorded at quarter note (crochet) intervals.

In the following diagram, the quantize value is set to .



If you record Controller data such as Pitch Bend with a low quantize value, for example, Pitch Bend playback will be jerky and unnatural. In this case, record using a higher quantize value, then use the "Quantize – 3A" function on page 128 to quantize note events.

Recording continuously variable data such as After Touch and joystick uses a lot of memory. You can reduce the amount of memory used by setting the quantize to a value other than HI. However, before recording you should check to make sure that the quantize value is not too low. With too low a value the continuous data may become jerky.

Metronome

This is where you set up the metronome.

G01:Piano
Metronome:ON

[6] Metronome

Function Button	Parameter	Range	Description
[6]	Metronome (Metronome)	OFF ON REC	Metronome off Metronome for playback and recording Metronome for recording only

When the metronome is set to ON or REC, the metronome symbol appears on the LCD screen.

For the instant that the metronome sounds, the 32-note polyphony will be reduced by one.

Even when the metronome is set to OFF it will sound during the count-in.

Recording Mode

These parameters allows you to set the Recording mode.

OVWR
MultiREC:OFF

[7] Rec mode

Function Button	Parameter	Range	Description
[7]	Recording Mode	OVWR OVDB AUTP MANP LOOP	Overwrite (see page 96) Overdub (see page 97) Auto punch in (see page 98) Manual punch in (see page 99) Loop (page 100)
	Start Measure (M)	001 ~ 999	Measure at which recording will start (AUTP & LOOP only)
	End Measure	001 ~ 999	Measure at which recording will end (AUTP & LOOP only)
	Add/Remove	[ADD] [RMV]	(Loop only) (Loop only)
	MultiREC (MultiREC)	OFF, ON	Multitrack recording (except loop)

Function Buttons

[8]	Delete	(Loop only)
-----	--------	-------------

Recording Mode: there are five recording modes. For details about each mode, see the pages listed in table above.

While the Recording mode is set to LOOP, playback will also loop between the specified start and end measures.

Start & End Measure: these parameters are available only when AUTP or LOOP Recording mode is selected. The

For loop mode recording, function button [8] can be used to delete. See “Loop Recording – LOOP” on page 100.

[ADD] / [RMV]: These function work only for Loop recording. When ADD is selected, played notes will be recorded. When RMV is selected, they will be removed.

MultiREC: when this parameter is set to on, you can record up to 16 tracks simultaneously. See “Multitrack Recording – MultiREC” on page 101. When set to OFF you can record tracks individually.

Song Select

This parameter allows you to select songs for playback and recording.

S0:Kong A

[8] Song

Function Button	Parameter	Range	Description
[8]	Song Select	S0 ~ S9	Select a song to play or record

- 1) Use the VALUE knob, [▲/YES] and [▼/NO] buttons, or number keypad to select songs.

Sequencer data on a PROG/SEQ data card can be played without loading. Although, you must load it before editing.

To play a song on a PROG/SEQ data card, press the [BANK] button, then select a song on the card. The selected bank will be indicated on the LCD: C or D.

Chapter 7: Sequencer Edit Mode

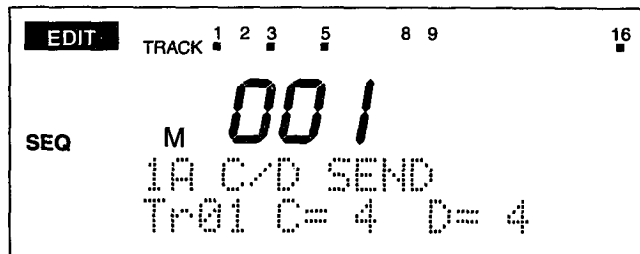
In Sequencer Edit mode, you can edit your real-time recordings, record in step time, and create patterns in either step time or real time.

Use Sequencer mode for song playback and real-time recording. See “Sequencer Mode” on page 91.

Entering Sequencer Edit Mode

- 1) Press the [SEQ] button.
- 2) Press the [EDIT] button.

SEQ and EDIT will appear on the LCD screen. When editing a pattern using LCD screens 5A~6D, PATTERN will appear.



Opening Patterns

For many of the edit functions in this mode, you will be asked whether you want to open patterns, when you try to execute them. If you want to continue with the chosen edit function, press the [▲/YES] button. The pattern will be opened, its data copied into the track, and the function executed. The pattern itself is unaffected by this. The same result could be achieved by copying the pattern into the track (“Copy to Track – 4F” on page 140), then executing the edit function.

If you do not want to continue press the [▼/NO] button.

In some cases, an error message may appear when trying to execute an edit function. See “Sequencer Mode Error Messages” on page 197.

Compare Function

If you execute an edit function by mistake, you can press the [COMPARE] button to restore the previous data. For example, if after quantizing a pattern you decide that you do not like the results, press the [COMPARE] button to restore the previous data.

If you execute a function when there is not much free memory, the undo function may not be available. In this case, you will be asked whether you want to continue with the chosen function. Press the [▲/YES] button to execute the function, or the [▼/NO] button to cancel the function.

Note: This function can only undo the last function executed. So, before executing a number of functions, the results of which you are not sure of, save your sequencer data to floppy disk or RAM card first.

Quick Undo

To reset a parameter to the value that it was when you first selected it, press the [▲/YES] and [▼/NO] buttons simultaneously.

Send C & D – 1A

These parameters allow you to set the output level of each track sent to buses C and D. These buses feed the effects processors. See “Effect Placement – 7E” on page 57. The output level to buses A and B is set in Sequencer mode. See “Track Program, Level, & Pan” on page 104.

```
1A C/D SEND
Tr01 C = 4 D = 4
```

1A-1

LCD	Parameter	Range	Description
1A-1	Track (Tr)	1 ~ 16	Select a track
	Send C (C)	0 ~ 9, PRG	Set the output level sent to bus C for the selected track
	Send D (D)	0 ~ 9, PRG	Set the output level sent to bus D for the selected track

1A-1 Track: this is used to select a track for editing. The following parameters can be edited for the selected track. The same applies to track parameters 1B~1F.

Send C, Send D: when PRG is setting is selected, the Send C Send D settings that have been set for a Program in Program Edit mode are used. See “Oscillator1 Setup – 1B” on page 10 and “Oscillator2 Setup – 1C” on page 12.

If a Program is using a drum kit Multisound, the Send C & D settings that have been set in Global mode will be used when PRG is selected. See “Drum Kit Setup1 – 7A” on page 167 and “Drum Kit Setup2 – 7B” on page 169.

For a setting other than PRG, these parameters can be controlled using MIDI Controller No. 10 Panpot. See “MIDI Panpot, Send Data” on page 124 for details about the relationship between panpot value and MIDI Controller value.

Track Status – 1B

These parameters allow you to set the status of each track, and protect tracks.

```
1B STAT/PROT
Tr01 BOTH ON
```

1B-1

LCD	Parameter	Range	Description
1B-1	Track (Tr)	1 ~ 16	Select a track
	Status	INT EXT BOTH	Track will play an internal Program Track will output data to external MIDI device via MIDI OUT Track will play an internal Program and output MIDI data
	Protect	OFF ON	Unprotected Protected

1B-1 Status: this parameter determines the status of each track.

When set to INT, a track will play the internal Program selected for that particular track.

When set to EXT, the track’s data will be output via the MIDI OUT connection.

When set to BOTH, track data will play the internal Program selected for that particular track, and track data will be output via the MIDI OUT connection.

Protect: this parameter allows you to protect tracks against editing, accidental over-recording, and deletion.

Program Change Filter & Pitch Bend Range – 1C

These parameters determine how a track works with MIDI Program Change messages, and its pitch bend range.

```
1C P.CHG/BEND
Tr01 ENA +02
```

1C-1

LCD	Parameter	Range	Description
1C-1	Track (Tr)	1 ~ 16	Select a track
	Program Change Filter	DIS ENA	Program Change messages ignored Program Change messages select track Programs
	Pitch Bend Range	-12 ~ +12, PRG	Set a track's pitch bend range

1C-1 Program Change Filter: when set to DIS, received Program Change messages are ignored. When set to ENA, received Program Change messages select Programs for tracks. To select a Program using a MIDI Program Change message, set the track's MIDI channel so that it matches that of the device sending the Program Change message. These parameters do not affect Program Change messages sent by the X3R.

Pitch Bend Range: this parameter determines a track's pitch bend range. For positive values, the pitch will increase as a joystick is moved from left to right (or a pitch wheel is moved up). For negative values, the pitch will increase as a joystick is moved from right to left (or a pitch wheel is moved down).

When set to PRG, the pitch bend range specified for the track's Program will be used. See "After Touch & Joystick Control – 6A" on page 29.

For a setting other than PRG, MIDI RPN Pitch Bend Range Controller can be used to set the pitch bend range. See "Controller Event Edit Notes" on page 122.

Transpose & Detune – 1D

These parameters allow you to transpose and detune each track.

```
1D TRANS/DETUNE
Tr01 T+00 D+00
```

1D-1

LCD	Parameter	Range	Description
1D-1	Track (Tr)	1 ~ 16	Select a track
	Transpose (T)	-24 ~ +24	Transpose each track in semitone steps
	Detune (D)	-50 ~ +50	Detune each track in one cent steps (100 cents = 1 semitone)

These transpose and detune parameters have no effect on a track's MIDI data output.

MIDI RPN Coarse Tune Controller can be used to set the Transpose parameter. MIDI RPN Fine Tune can be used to set the Detune parameter. See "Controller Event Edit Notes" on page 122.

Velocity Window – 1E

These parameters determine the range of note velocities that each track's Program responds to.

```
1E VEL WINDOW
Tr01 001 +127
```

1E-1

LCD	Parameter	Range	Description
1E-1	Track (Tr)	1 ~ 16	Select a track
	Velocity Window Bottom	1 ~ 127	Specify the velocity window bottom note
	Velocity Window Top	1 ~ 127	Specify the velocity window top note

- 1) Select a track.
- 2) Specify the velocity window top and bottom parameters.

These parameters affect the X3R only. All note data will be recorded and transmitted regardless of the settings.

Notes with velocities outside of the specified range will not be recorded.

Recorded notes outside of the specified range will not playback.

If the bottom value is set higher than the top, it will automatically become the top value. Likewise, if the top value is set lower than the bottom value, it will automatically become the bottom value.

By setting two or more tracks to the same MIDI Channel, but with different velocity windows, you can record and playback velocity switching Programs.

Key Window – 1F

These parameters determine the range of notes (keys) that each track's Program responds to.

```
1F KEY WINDOW
Tr01 C-1 +G9
```

1F-1

LCD	Parameter	Range	Description
1F-1	Track (Tr)	1 ~ 16	Select a track
	Key Window Top	C-1 ~ G9	Specify the key window top note
	Key Window Bottom	C-1 ~ G9	Specify the key window bottom note

- 1) Select a track.
- 2) Specify the key window top and bottom parameters.

These parameters affect the X3R only. All note data will be recorded and transmitted regardless of the settings.

Notes outside of the specified key range will not be recorded.

Recorded notes outside of the specified key range will not playback.

As well as using the VALUE knob and the [▲/YES] and [▼/NO] buttons to set Key Window Top and Bottom parameters, you can also use a MIDI keyboard. Select a Key Window parameter so that it is flashing, press and hold down the [ENTER] button, then press the desired key.

If the bottom value is set higher than the top, it will automatically become the top value. Likewise, if the top value is set lower than the bottom value, it will automatically become the bottom value.

By setting two or more tracks to the same MIDI Channel, but with different key windows, you can record and playback Program splits.

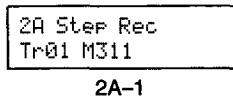
Step-Time Track Recording – 2A

This section explains how to record and edit a track in step time. Step-time recording allows you to enter notes one by one, specifying the duration, velocity, and value for each note. This is useful when recording something that is difficult to record in real time.

If the amount of free memory is low, delete an unnecessary song. See “Erase Song – 2G” on page 127.

Note: If you step-time record on a measure that already contains some data, that data will be lost.

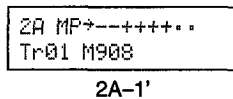
Connect a MIDI keyboard, such as the Korg X3, to the X3R MIDI IN connection.



LCD	Parameter	Range	Description
2A-1	Track (Tr)	1 - 16	Select a track to record/edit
	Measure (M)	1 - 999	Select measure at which to start recording

- 1) Select the track that you want to record or edit.
- 2) Press the [→] button, then select the measure at which you want to start recording.

The following LCD screen will be shown:



This screen shows 10 measures (1 character per measure), with the current measure at the far left. The meaning of each character is explained below:

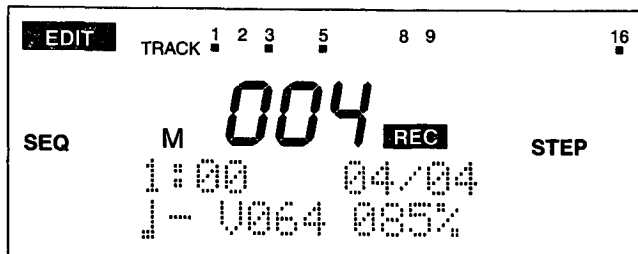
- + event exists
- no data in measure
- ▣ track has finished
- ▢ pattern has been put
- pattern overlapping from previous measure

For the previous LCD screen:

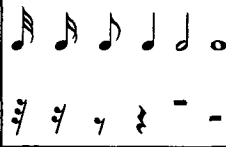
measures 908 and 909 are patterns
 measures 910 and 911 are not played
 measures 912 to 915 are played and
 measure 915 is at the end of the track

- 3) Press the [REC/WRITE] button.
- 4) Press the [START/STOP] button.

STEP will appear on the LCD screen.



The value indicated at the left-hand side, top line, of the LCD screen indicates the current position within the measure. The current measure is indicated by the three large digits in the center of the LCD screen. The measure number is not shown while recording.

LCD	Parameter	Range	Description
	Time Signature	1/4 ~ 9/4 1/8 ~ 16/8 1/16 ~ 16/16	Base resolution = Low
		1/4 ~ 5/4 1/8 ~ 10/8 1/16 ~ 16/16	Base resolution = High
	Note Type		Note/Rest (rests not shown on LCD)
	Triplet Normal Dot	3 — .	Triplet note of specified Note Duration Note as specified by Note Duration Dotted note of specified Note duration
	Velocity	V2 ~ V126 Key	Specify note velocity Set velocity by pressing key
	Note Length	1 ~ 100%	Note length
	Note	C-1 ~ G9	Note range

























Function Buttons

[5]	Rest	Inserts a rest
[6]	Tie	Inserts a tie
[8]	Delete	Delete current step and go back one step

5) If you are recording a new track, specify the time signature.

If you have already recorded some tracks, the time signature set for those tracks will be selected. If you change the time signature here, it will be changed for those tracks too.

6) Specify the note type and whether it's a dot, triplet, or normal. The following table shows how normal note durations are affected by dots and triplets:

Note Type						
Normal	 0:12	 0:24	 0:48	 1:00	 2:00	 4:00
Dot	 0:18	 0:36	 0:72	 1:48	 3:00	 6:00
Triplet	 0:08	 0:16	 0:32	 0:64	 1:32	 2:64

7) Specify the note length from 1 to 100%.

A note length of 80% is normal.

A note length of 50% makes a note staccato.

A note length of 100% makes a note tenuto.

8) Specify the note velocity from 2 to 126. If key is selected, the velocity of the key you press in the next step will be used. The note velocity can be set to even values only.

9) Press a key, or play a chord to enter the corresponding notes. When entering a chord, timing is not critical, because as long as one note is held down, all subsequent notes will be entered at the current step. When all keys are released, the next step is selected automatically.

The note type, note value, velocity, and length are displayed when each key is pressed.

- 10) Repeat steps 6 to 9 to enter more notes.
- 11) To end step-recording, press the [START/STOP] button.

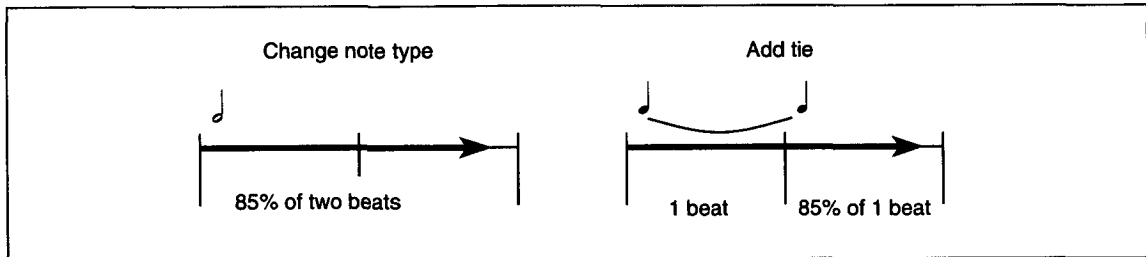
Entering Rests

To enter a rest at the current step, specify the note type (rest duration), then press function button [5]. The current position will be moved forward by the amount specified in steps 6 and 7.

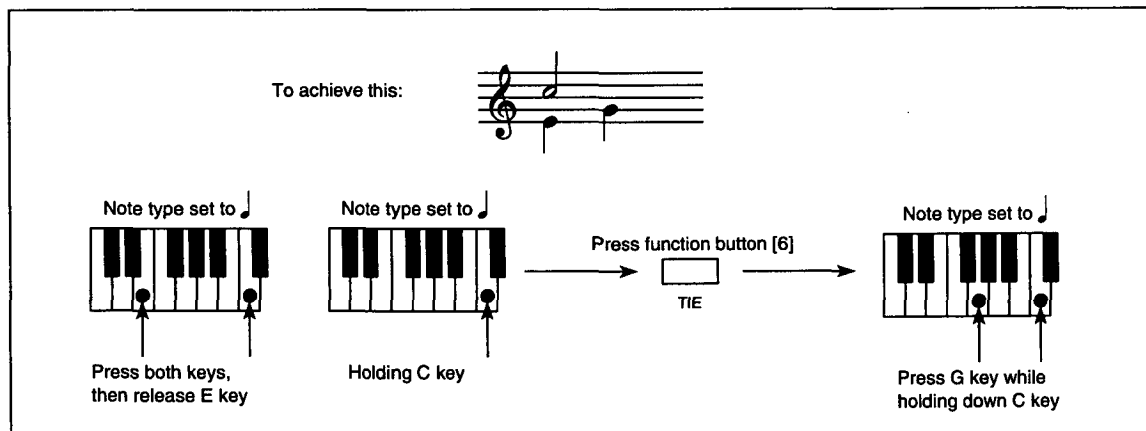
Entering Ties

To tie the previously entered note, press function button [6]. The note length will be increased by the amount specified in steps 6 and 7.

To enter a note that is longer than the specified note type, you can either change the note type, or use a tie. The resultant note length is different for each method.



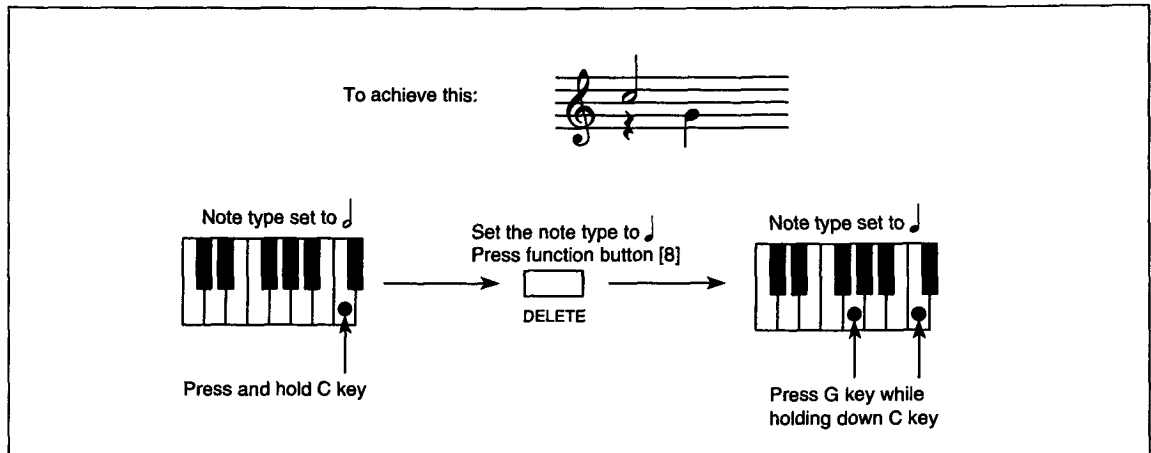
Ties can also be entered while entering notes. Press and hold down a key, then press function button [6]. The note length will be increased by the specified note type. Because the entered tie only applies to notes whose corresponding key is held down, you can use this technique to apply different note lengths to individual notes within a chord, as shown below:



Deleting Notes

Press function button [8] to delete data at the current step and go back one step.

Function button [8] can also be used to enter different note types. See below:



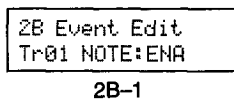
Step Recording & Controller Data

You cannot enter Controller data while step-time recording. However, you can record Controller data in real time, then use bounce track ("Bounce Track – 2D" on page 125). Alternatively, use event edit ("Event Edit – 2B" on page 118), or create control data ("Create Controller Data – 3D" on page 132).

Event Edit – 2B

This section explains how to edit, insert, and delete events recorded in a track. Note type events consist of note value, velocity, and length. Other event types, Controllers, Program Change, etc., usually consist of just one variable.

Note: When you edit events, you are actually editing data in the track. So, if you make a mistake, you cannot restore the original data. Beware of this while editing.



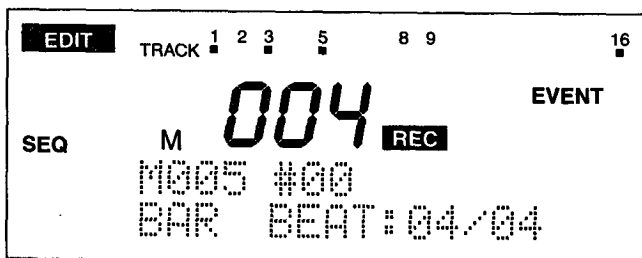
2B-1

LCD	Parameter	Range	Description
2B-1	Track	Tr01~Tr16, Temp	Edit track
	Event Filter	NOTE CTRL AFTT BEND PROG PAFT	Note data Controller data After Touch data Pitch Bend data Program Change data Polyphonic After Touch data
	DIS/ENA	DIS ENA	Editing disabled Editing enabled

- 1) Select a track.
- 2) Disable or enable event types as required.
Disabled event types cannot be edited.
If you selected the Tempo track, only tempo related events can be edited.

- 3) Press the [REC/WRITE] button.
- 4) Press the [START/STOP] button.

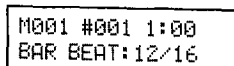
The following LCD screen will appear.



- 5) Use the [↑] and [↓] cursor buttons to select events.
To quickly locate events in a song, play the song, press the [START/STOP] button, then enter this event edit function. The measure at which playback was stopped will be selected automatically.
Measures that contain patterns cannot be edited.
- 6) Use the [▲/YES] and [▼/NO] buttons or number keypad to edit event values.
- 7) When you've finished editing, press the [START/STOP] button.

The following LCD screens are available for event editing. The tempo LCD screen appears only when the Tempo track has been selected.

Beat



The Beat LCD screen shows the beat.

Note Event

```
M001 #001 1:00
C#2 V064 0:72
```

The note event LCD screen shows note value (C#2), velocity (V064), and length (0:72).

Note velocity cannot be set to an odd value.

Note events will play as you edit them.

Pitch Bend

```
M001 #002 1:00
BEND +3281
```

The pitch bend LCD screen shows the pitch bend value (+3281).

After Touch

```
M001 #003 1:00
AFTT 058
```

The After Touch LCD screen shows the After Touch value (058).

Program Change

```
M001 #004 1:00
PROG A:125
```

The Program Change LCD screen shows the bank (A) and Program Change number (125).

Controller

```
M001 #005 1:00
CTRL 007:127
```

The Program Controller LCD screen shows the Controller type (007) and Controller value (127).

Polyphonic After Touch

```
M001 #006 1:00
PAFT C#4:098
```

The polyphonic After Touch LCD screen shows the note value (C#4) and amount of After Touch (098).

Tempo

```
M001 #001 1:00
TEMPO 120
```

The tempo LCD screen shows the tempo.

	Event Type	BAR C-1 ~ G9 BEND AFTT PROG CTRL PAFT TEMPO	Bar line Note Pitch bend Channel After Touch Program Change Controller Polyphonic After Touch Tempo (Tempo track only)
--	------------	--	---

	Beat	1/4 ~ 9/4 1/8 ~ 16/8 1/16 ~ 16/16	Base resolution = Low
		1/4 ~ 5/4 1/8 ~ 10/8 1/16 ~ 16/16	Base resolution = High
	Velocity Bend After Touch Program Bank Controller No. Poly After touch Key Tempo	2~126 -8192 ~ 8191 0 ~ 127 A, B, C, D, 4 ~ 127, GM, GMD, - - - 0 ~ 101 C-1 ~ G9 40 ~ 240	(for notes) (even number steps) (for Pitch Bend) (for channel) (for program changes) (for control changes) (for poly After Touch) (for tempo changes) (Tempo track only)
	Length Program Number Data Value Data Tempo	0:00 ~ 9:00, TIE 00 ~ 127 0 ~ 127 0 ~ 127 40~240	Note length (for notes) (for program changes) (Control No. = 10 Pan) Control data (for control changes) Tempo change data

Function Buttons

[7]	Insert	Insert a note event
[8]	Delete	Delete the current note event

The following three values are shown on all event edit LCD screens. They are, from left to right, current measure, event index number, and event time in measure.

Use the [\uparrow] and [\downarrow] buttons, or change the Measure and Index No. values to select events for editing.

Measure	1 ~ 999	Select measure to edit
Index No.	0 ~	Event Index number
Event time	1:00 ~9:95, TIE	Time of event in measure

Each event in a measure has an index number. When an event is deleted, moved, or new events inserted, existing events are re-indexed (reordered).

The event time corresponds to the beat in the bar and the beat clock. For example, 2:48 indicates an event 48 clock ticks after the second beat in a measure.

Beats are divided into 96 clock ticks (one MIDI Clock tick is equivalent to four X3R clock ticks). However, in Low base resolution (“Song Base Resolution – 8B” on page 149), beats are divided into 48 clock ticks. So adjustments will be in steps of two.

Event Edit Notes

Time Signature: the following bar beat LCD screen appears at the beginning of each measure:

```
M001 #000
BAR BEAT:04/04
```

If the time signature (beat) is changed, that change is reflected across all tracks.

End of Track: when the end of the track is reached, the following message will appear:

```
M001 #007
End Of Track
```

Patterns in Measures: if a measure contains a pattern, the pattern name will be shown, as below:

```
M002 PAT00(H)
BAR BEAT:04/04
```

The (H) indicates that the head of the pattern (start) is within the measure.

Polyphonic After Touch: the X3R does not support Polyphonic After Touch. However, this type of event can be recorded and played by the sequencer for use with external MIDI devices.

Tempo Track

The tempo track allows you to put tempo change events into a song. Tempo change events affect all tracks in a song.

Moving Events

Events can be moved within a measure.

- 1) Select the event that you want to move.
- 2) Position the cursor on the event time field.
- 3) Use the [▲/YES] and [▼/NO] buttons or the number keypad to change the event time.

When events are moved, index numbers are reordered automatically.

Deleting Events

- 1) Select the event that you want to delete.
- 2) Press function button [8] (DELETE).

If you delete an event by mistake, press function button [7] (INSERT) to retrieve it. For tied notes, only the note will be restored, you'll have to add the tie yourself.

Inserting New Events

- 1) Press function button [7] (INSERT) to insert one event just before the currently selected event.
- 2) Edit the event time and event type as required.

If you have just deleted an event, that event will be inserted when function button [7] is pressed.

Events can also be inserted into a new track. Although, you must insert some measures first. See "Insert Measure – 4D" on page 137.

Cutting & Pasting Events between Measures

- 1) Select the event, and press function button [8] (DELETE).
- 2) Select another measure, and press function button [7] (INSERT).

The event cut in step 1 will be inserted automatically. Adjust the event data as required.

Tied Notes

Notes that overlap bar lines are treated as tied notes. The following LCD screens show a note that overlaps measures 2 and 3.

A	B
M002 #001 1:00 C#2 0064 TIE	M003 #001 TIE C#2 2:04

LCD screen A shows the note value, velocity, and its length is shown as TIE. LCD screen B shows the same note value and index number as A. However, its event time is shown as TIE, and the length of the tied note is shown.

To edit the note value and velocity, use LCD screen A. LCD screen B will be updated automatically.

To edit the note length, use LCD screen B.

To delete a tied note, first delete on LCD screen A, then LCD screen B. If you delete on LCD screen B only, the note will continue to the end of the measure in which it starts.

If the note length value on LCD screen A is changed to anything other than TIE, an event time of 1:00 will be set on LCD screen B.

To insert tied A and B notes, insert a note at 1:00 in B, then insert note A and set its note length to TIE. Set the note value and velocity for both notes the same. This procedure also applies to tied notes that overlap measures.

Controller Event Edit Notes

The following table shows which Controllers the X3R uses.

Controller No.	Controller	Value	Notes
0	Bank Select (MSB)	0 ~ 127	MSB of MIDI Bank Select message
1	Pitch Modulation	0 (off) ~ 127	Move the joystick up
2	VDF Modulation	0 (off) ~ 127	Move the joystick down
4	Foot Controller	0-63(main), 64-127(sub)	Select scale (main, sub)
6	Data Entry	0 ~ 127	For RPN Edit (MSB) *3
7	Volume	0 ~ 127	Volume *2
10	Panpot	0 ~ 127	AB pan (see "MIDI Panpot, Send Data" on page 124)
11	Expression	0 ~ 127	Same as volume *2
12	Effect Control 1	0 ~ 127	Effect dynamic modulation 1
13	Effect Control 2	0 ~ 127	Effect dynamic modulation 2
32	Bank Select (LSB)	0 ~ 127	LSB of MIDI Bank Select message *1
38	Data Entry	0 ~ 127	For RPN Edit (LSB) *3
64	Damper Switch	0-63(off), 64-127 (on)	
72	Release Time	0-64-127	Play mode edit release time *4
73	Attack Time	0-64-127	Play mode edit attack time *4
74	Brightness	0-64-127	Play mode edit cutoff *5
91	Reverb Level	000-013 : 0 014-026 : 1 027-040 : 2 041-053 : 3 054-067 : 4 068-080 : 5 081-094 : 6 095-107 : 7 108-121 : 8 122-127 : 9	Send C Level (see "MIDI Panpot, Send Data" on page 124)
92	Effect1 on/off	0 (off), 1-127 (on)	Effect 1 on/off
93	Chorus Level	000-013 : 0 014-026 : 1 027-040 : 2 041-053 : 3 054-067 : 4 068-080 : 5 081-094 : 6 095-107 : 7 108-121 : 8 122-127 : 9	Send D Level (see "MIDI Panpot, Send Data" on page 124)
94	Effect2 on/off	0 (off), 1-127 (on)	Effect 2 on/off
96	Data Increment	00	RPN data increment *3
97	Data Decrement	00	RPN data decrement *3
100	RPN	0 = Pitch Bend Sensitivity 1 = Fine Tune 2 = Coarse Tune	Registered parameter No. (LSB) *3
101	RPN	00	Registered parameter No. (MSB) *3

Controllers 12, 13, 92, 94, (effect control 1, 2 and Effect 1, 2 on off) use the track data on the track that matches the Global MIDI Channel.

Note *1: Usually, Bank Select is set as part of a Program Change event. However, some MIDI devices may not respond. In this case, set the MSB and LSB for the Bank Select message. Please refer to the other MIDI device's operating manual to see how it responds to Bank Select messages.

Note *2: The X3R volume is determined by the multiplies result of Volume Controller No. 6 and Expression Controller No. 11. When the [RESET] button is pressed, the volume is reset to its starting value, and expression is set to maximum (127).

Note *3: Use RPN to select a parameter for editing, then use the Data Entry parameter to set the selected parameter. Control number 100 (value: 00-02) and 101 (value: 00 fixed) will select a parameter. The following tables show the various parameters respond to Data Entry Controllers No. 6 and No. 38.

Controller No.		
06	38	Pitch Bend
00	00	0 (semitone)
01	00	+1
:	:	:
12	0	+12

Controller No.		
06	38	Coarse Tune
40	00	-24 (semitone)
52	00	-12
64	00	0
88	00	+24

Controller No.		
06	38	Fine Tune
32	00	-50 (cent)
:	:	:
48	00	-25
:	:	:
64	00	0
:	:	:
96	00	+50

For example, if you wish to set Transpose (Coarse Tune) of a track on MIDI Channel 1 to “-12”, transmit “B0,64,02” and “B0,65,00” to the X3R to select Coarse Tune RPN. Then send “B0,06,34” and “B0,26,00” to set the value to -12.

To do this with most sequencers, set the MIDI Channel for Control Change to “1”, and set Controller 100 to “02”, and Controller 101 to “00”, to select Coarse Tune RPN. To set the value to -12, set Controller 6 to “52” (which corresponds to “-12”) and Controller 38 to “00”.

Note *4: When the value is 64, the Program setting will be used. Settings below 64 reduce the time, and settings above 64 increase the time.

Note *5: When the value is 64, the Program setting will be used. Setting below 64 make the sound darker, while settings above 64 make the sound brighter.

MIDI Panpot, Send Data

Panpot	
MIDI IN Pan Data	X3R Pan
0~2	A
3~6	14A
7~10	13A
11~15	12A
16~19	11A
20~23	10A
24~27	9A
28~32	8A
33~36	7A
37~40	6A
41~44	5A
45~49	4A
50~53	3A
54~57	2A
58~62	1A
63~66	CNT
67~70	1B
71~74	2B
75~79	3B
80~83	4B
84~87	5B
88~91	6B
92~96	7B
97~100	8B
101~104	9B
105~108	10B
109~113	11B
114~117	12B
118~121	13B
122~125	14B
126~127	B

On the X3R, use Send level C controller to control Reverb Depth Bn, 5B, vv, and Send level D controller to control Chorus Depth Bn, 5D, vv.

Send	
MIDI IN Send Data	X3R Send
0~13	0
14~26	1
27~40	2
41~53	3
54~67	4
68~80	5
81~94	6
95~107	7
108~121	8
122~127	9

Erase Track – 2C

This function allows you to erase a track.

```
2C Erase Track
Tr01      OK?
```

2C-1

LCD	Parameter	Range	Description
2C-1	Track (Tr)	1 ~ 16	Select track to erase
	OK to Erase Track	OK?	Executes track erase

- 1) Select a track.
- 2) Position the cursor on OK?, and press the [▲/YES] button.

Quick Undo

If you erase a track by mistake, press the [COMPARE] button to restore the previous data.

Bounce Track – 2D

This function allows you to merge data from two tracks into one.

```
2D Bnce Track
Tr01+Tr02  OK?
```

2D-1

LCD	Parameter	Range	Description
2D-1	Source Track (Tr)	1 ~ 16	Select a source track
	Destination Track (Tr)	1 ~ 16	Select a destination track
	OK to Bounce Track	OK?	Executes track bounce

- 1) Select the source track.
- 2) Select the destination track.
- 3) Position the cursor on OK?, and press the [▲/YES] button.

If either track contains patterns that have been put into them, you will be asked whether you want to open the patterns. Press the [▲/YES] button to open the patterns, copy their data to the tracks, and merge as required, or the [▼/NO] button to ignore the pattern data.

The data in the source track will be erased.

Track parameter settings such as Program and MIDI Channel will be determined by the destination track.

Note: If the source and destination tracks both contain MIDI Controller data, the resulting Controller data will probably be unusable. In this case, use the “Erase Measure – 4B” function on page 135 to erase the MIDI Controller data before bouncing

Copy Track – 2E

This function allows you to copy data from one track to another.

```
2E Copy Track
Tr01→Tr02  OK?
```

2E-1

LCD	Parameter	Range	Description
2E-1	Source Track (Tr)	1 ~ 16	Select a source track
	Destination Track (Tr)	1 ~ 16	Select a destination track
	OK to Copy Track	OK?	Executes track copy

- 1) Select the source track.
- 2) Select the destination track.
- 3) Position the cursor on OK?, and press the [▲/YES] button.

Append Song – 2F

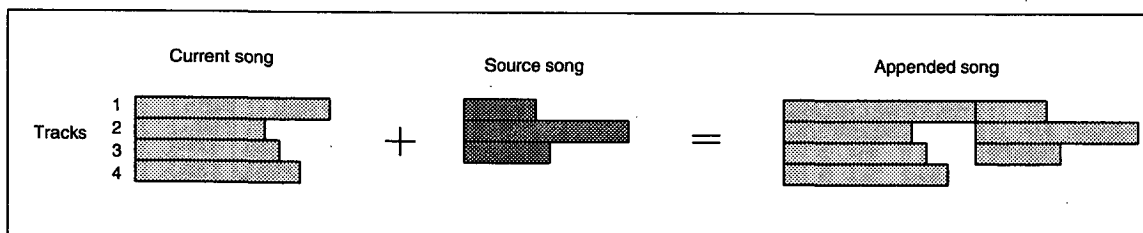
This function allows you to append a song onto the end of the current song. It can also be used to copy songs.

```
2F Append Song
SONG0  OK?
```

2F-1

LCD	Parameter	Range	Description
2F-1	Source Song (SONG)	0 ~ 9	Select a source song
	OK to Append Song	OK?	Executes append

- 1) Select the source song.
- 2) Position the cursor on OK?, and press the [▲/YES] button.



Track settings (Program, MIDI Channel) of the current song will be used.

If the current song has some unused measures at the end of it, delete them. See “Delete Measure – 4A” on page 134.

The source song is not affected by this function.

Note: You cannot append songs that have different base resolutions.

Song Copy

This function can also be used to copy songs.

- 1) Make sure that there is no data in the current song. If there is, erase it. See “Erase Track – 2C” on page 125.
- 2) Select the source song.
- 3) Position the cursor on OK?, and press the [▲/YES] button.

Erase Song – 2G

This function allows you to erase all the data in the currently selected song.

2G Erase Song SONG0 OK?

2G-1

LCD	Parameter	Range	Description
2G-1	OK to Erase Song	OK?	Executes song erase

- 1) Press the [▲/YES] button.


If you want to erase a song other than the currently selected song, in Sequencer mode, press function button [8] to select the song select LCD screen. Select a song, then return to this function.

The song's name is not erased.

Quantize – 3A

This function allows you to improve the timing of data recorded in a track.

3A Quantize >	3A Quantize <
Tr01 M123+135 HI	ALL 0+00 100 OK?
3A-1	3A-2

LCD	Parameter	Range	Description
3A-1	Track	Tr1 ~ Tr16, Tempo Track	Select a track to be quantized
	Start Measure (M)	1 ~ 999	Select first measure to be quantized
	End Measure	1 ~ 999	Select last measure to be quantized
	Quantize Resolution	HI 	
3A-2	Data to Quantize (Track 1~16 only)	ALL NTE CNT ATT BND PRG	All data Note data Controller data After touch data Pitch bend data Program Change data
	Offset (O)	-96 ~ +96	Quantize offset
	Intensity	0 ~ 100%	Quantize intensity
	OK to Quantize	OK?	Executes quantizing erase

- 1) Select a track.
- 2) Select the start and end measures.
When the Start Measure and End Measure parameters are selected, the status of the 10 measures after the currently selected measure will be shown on the LCD.
- 3) Set the quantize resolution.
- 4) Select the data to be quantized. This option does not appear when the Tempo track has been selected.
- 5) Set the offset and intensity.
- 6) Position the cursor on OK?, and press the [**▲**/YES] button.

This quantize function does not affect note length.

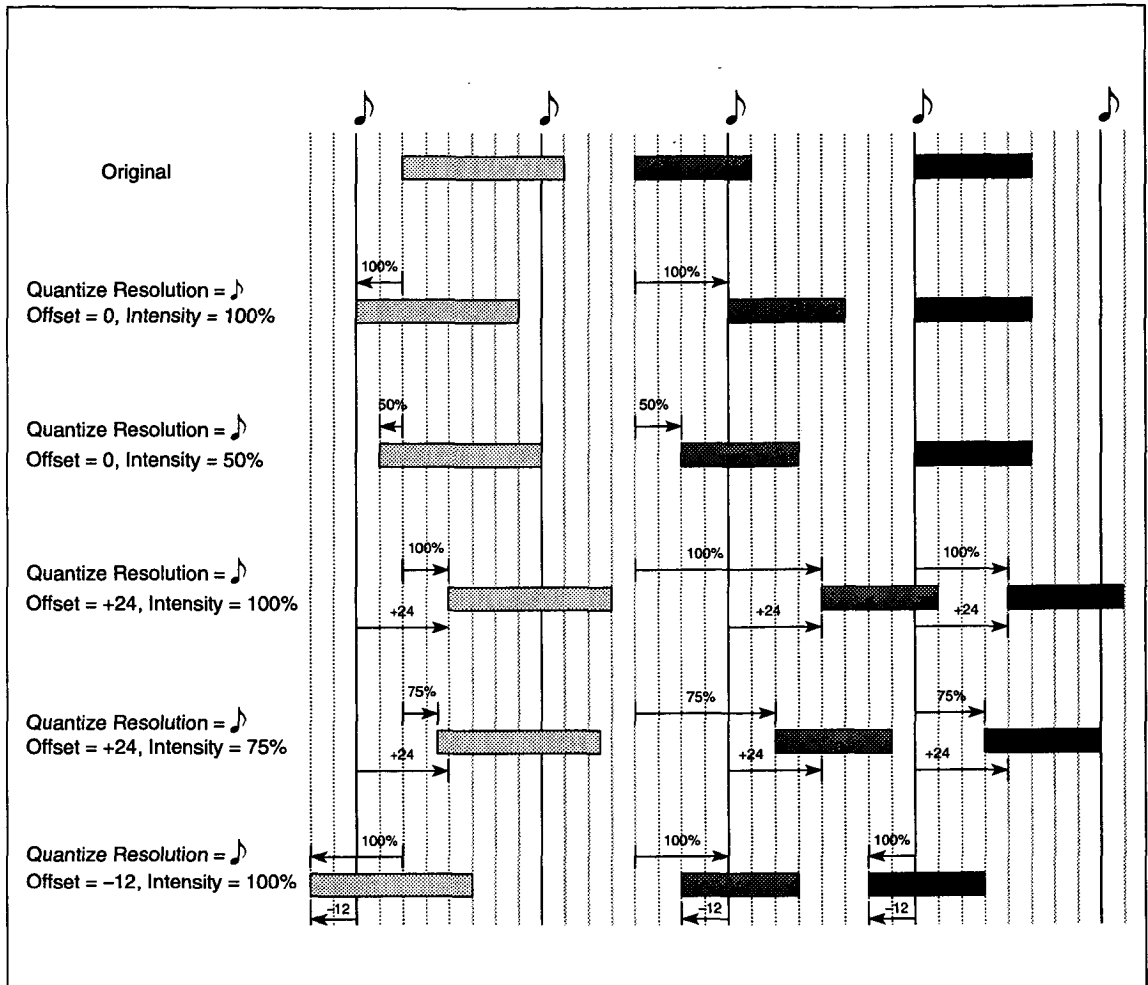
If the quantize resolution is set to HI, data will be quantized at the same resolution as that set for the song. See “Song Base Resolution – 8B” on page 149. In this case, note data is unaffected. This allows you to thin out Controller data and free up sequencer memory.

Recording continuously variable data such as After Touch and joystick uses a lot of memory. You can reduce the amount of memory used by quantizing. However, before quantizing you should check to make sure that the quantize value is not too low. With too low a value the continuous data may become jerky.

3A-2 Data to Quantize: when ATT is selected, Channel After Touch data and Polyphonic After Touch data will be quantized. The X3R does not support Polyphonic After Touch. However, this type of event can be recorded and played by the sequencer for use with external MIDI devices.

When set to CNT, they will be combined into one event. This allows you to thin out Controllers and free up sequencer memory.

The following examples show how notes are affected by the offset and intensity parameters:



Shift Note – 3B

This function allows you to shift the pitch of a specified range of notes in specified measures.

3B Shift Note > Tr01 M123→135	3B Shift Note < C-1→C-1 S+00 OK?
3B-1	3B-2

LCD	Parameter	Range	Description
3B-1	Track (Tr)	1 ~ 16	Select a track
	Start Measure (M)	1 ~ 999	Select first measure for note shift
	End Measure	1 ~ 999	Select last measure for note shift
3B-2	Note Range Bottom	C-1 ~ G9	Set the lowest note in the range
	Note Range Top	C-1 ~ G9	Set the highest note in the range
	Note Shift Amount (S)	-24 ~ +24	Amount of pitch shift in semitones
	OK to Note Shift	OK?	Executes note shift

- 1) Select a track.
- 2) Select the start and end measures.

When the Start Measure and End Measure parameters are selected, the status of the 10 measures after the currently selected measure will be shown on the LCD.

- 3) Set the low and high notes of the range. Notes outside this range are unaffected.
- 4) Set the amount of pitch shift.
- 5) Position the cursor on OK?, and press the [▲/YES] button.

If the specified range of measures contains a pattern that has been put into the track, you will be asked whether you want to open the pattern. Press the [▲/YES] button to open the pattern, copy the pattern data into the track, and pitch shift it, or the [▼/NO] button to ignore the pattern data.

The Note Range Bottom and Note Range Top parameters can also be set by pressing a key on a connected MIDI keyboard while holding down the [ENTER] button.

Modify Velocity – 3C

This function allows you to modify note velocity over a number of measures. This is useful for creating crescendo type effects.

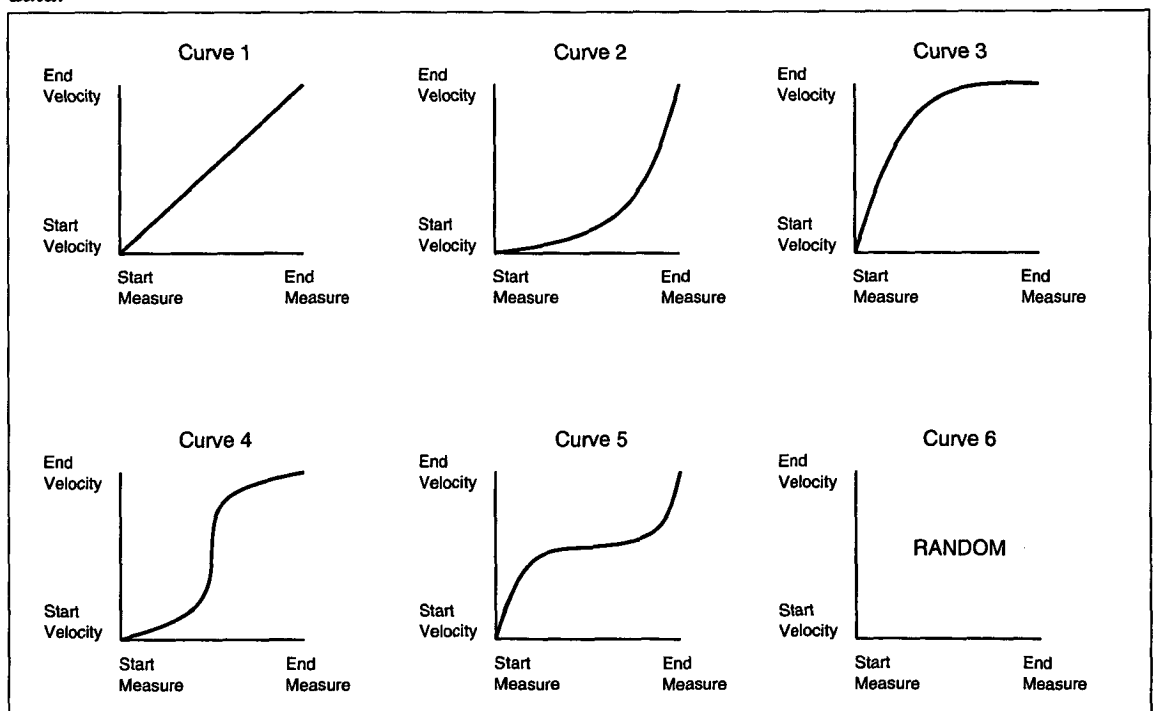
3C Modify Vel > Tr@1 M123+135 C1	3C Modify Vel < 002+126 I000 OK?
3C-1	3C-2

LCD	Parameter	Range	Description
3C-1	Track (Tr)	1 ~ 16	Select a track
	Start Measure (M)	1 ~ 999	Select first measure for note shift
	End Measure	1 ~ 999	Select last measure for note shift
	Curve (C)	1 ~ 6	Velocity curve
3C-2	Start Velocity	2 ~ 126	Velocity value for the first note in the selected start measure
	End Velocity	2 ~ 126	Velocity value for the last note in the selected end measure
	Intensity (I)	0 ~ 100%	Modify velocity intensity
	OK to Modify Velocity	OK?	Executes modify velocity

- 1) Select a track.
- 2) Select the start and end measures.
When the Start Measure and End Measure parameters are selected, the status of the 10 measures after the currently selected measure will be shown on the LCD.
- 3) Select a velocity curve.
- 4) Set the start and end velocity values.
- 5) Set the intensity.
- 6) Position the cursor on OK?, and press the [▲/YES] button.

3C-2 Intensity: for a setting of 0%, there will be no change. For a setting of 100%, note velocities will be changed as specified by the start velocity and end velocity parameters.

If the specified range of measures contains a pattern that has been put into the track, you will be asked whether you want to open the pattern. Press the [▲/YES] button to open the pattern, copy the pattern data into the track, and modify velocity, or the [▼/NO] button to ignore the pattern data.



Create Controller Data – 3D

This function allows you to edit controller data such as Pitch Bend, After Touch, etc.

3D Create Ctl > Tr01 M123 1:00	3D Create Ctl <> M126 1:00 C000	3D Create Ctl < 120+000 OK?
3D-1	3D-2	3D-3

LCD	Parameter	Range	Description
3D-1	Track	1 ~ 16, Tempo Track	Select a track
	Start Measure (M)	1 ~ 999	Select the start measure
	Start Location	1:00 ~ 9:95	Specify a position within the start measure
3D-2	End Measure (M)	1 ~ 999	Select the end measure
	End Location	1:00 ~ 9:95	Specify a position within the end measure
	Controller (track 1~16 only)	BEND AFTT CNT 000~101	Select a Controller to edit (see the table in "Controller Event Edit Notes" on page 122 for a list of X3R compatible Controllers)
3D-3	End Value (END)	ERA, -8192 ~ +8191	Pitch bend
		ERA, 40 ~ 240	Tempo track
		ERA, 0 ~ 127	Other Controllers
	OK to Create Control Data	OK?	Executes create control data

- 1) Select a track.
- 2) Select the start measure and the position within that measure from where you want to edit.

When the Start Measure and End Measure parameters are selected, the status of the 10 measures after the currently selected measure will be shown on the LCD.

The start and end locations correspond to the beat in the bar and the beat clock. For example, 2:48 indicates an event 48 clock ticks after the second beat in a measure.

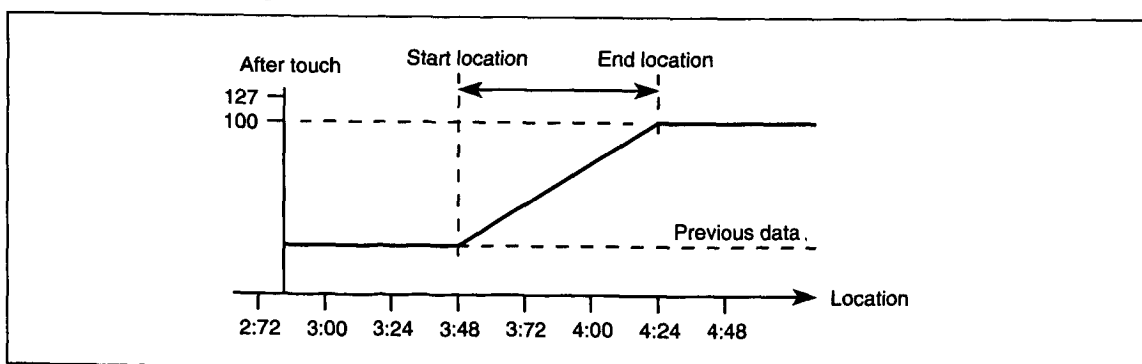
Beats are divided into 96 clock ticks. However, in Low base resolution ("Song Base Resolution – 8B" on page 149), beats are divided into 48 clock ticks. So adjustments will be in steps of two.

- 3) Select the end measure and the position within that measure at which you want to stop editing.
- 4) Select the Controller that you want to edit.
- 5) Specify the end value for the Controller data.

If you specify ERA, the specified Controller data in the specified range will be erased.

- 6) Position the cursor on OK?, and press the [▲/YES] button.

In the following example, the start location is set to 3:48, the end location to 4:24, the Controller type is AFTT, and the end value is 100. The value of the After Touch data rises to the new value of 100, between the specified start and end locations:



If a pattern is located between the specified start and end locations that have been put into the track, you will be asked whether you want to open the pattern. Press the [▲/YES] button to open the pattern, copy its data into the track, and edit the Controller data as necessary, or the [▼/NO] button to ignore the pattern data.

Editing a lot of Controller data uses a large amount of sequencer memory, so, if there is not much sequencer memory available, you may not be able to edit the Controller data. In this case, thin out the Controller data using the quantize function. See “Quantize – 3A” on page 128.

X3R Programs can be panned to any one of 31 positions. Some MIDI devices can be panned to any one of 128 positions (0 ~127). However, this type of pan data uses a lot of sequencer memory. So editing will use a lot of sequencer memory. This type of pan data is best recorded in real time or using event edit.

Delete Measure – 4A

This function allows you to delete measures.

4A Delete Meas > Tr01 M123+135	4A Delete Meas < OK?
4A-1	4A-2

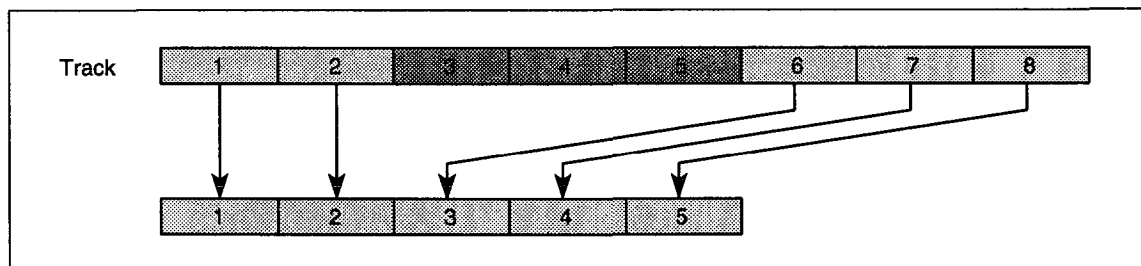
LCD	Parameter	Range	Description
4A-1	Track	Tr1 ~ Tr16, ALL	Select a track
	Start Measure (M)	1 ~ 999	Select first measure for deletion
	End Measure	1 ~ 999	Select last measure for deletion
4A-2	OK to Delete Measure	OK?	Executes delete measure

- 1) Select a track.
- 2) Select the start and end measures.

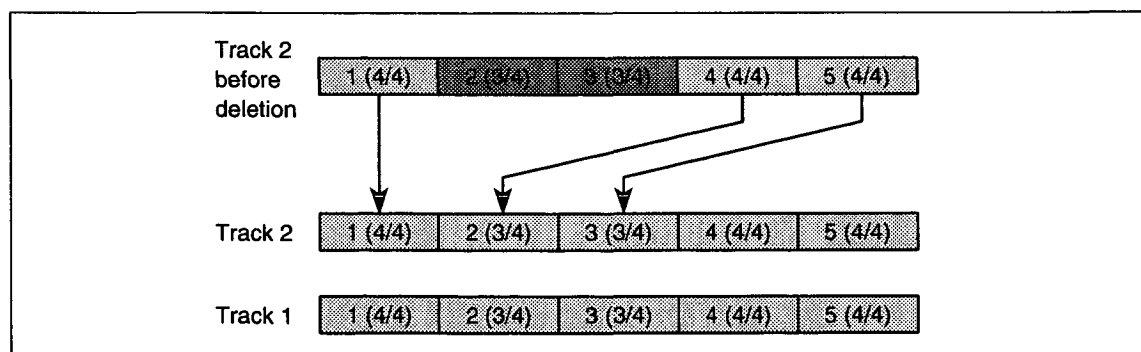
When the Start Measure and End Measure parameters are selected, the status of the 10 measures after the currently selected measure will be shown on the LCD.

- 3) Position the cursor on OK?, and press the [\blacktriangle /YES] button.

When selecting measures, the start measure, end measure, and any measures in-between are deleted. Subsequent measures after the end measure are moved forward. For example, in the following diagram, measures 3 to 5 have been deleted, and measures 6, 7, and 8 move forward to take the place of the deleted measures:



Measures that are moved forward use the same time signature as measures in other tracks. For example, in the following diagram, two 3/4 time measures are deleted from track 2. Subsequent measures are moved forward, and set to the same time signature as the measures on track 1.



If the track parameter is set to ALL, the specified measures from all tracks will be deleted, including the Tempo track.

If a note overlaps the range of measures being deleted, that note will be shortened accordingly.

If the end measure contains a pattern that has been put into the track, you will be asked whether you want to open the pattern. Press the [\blacktriangle /YES] button to open the pattern, copy the pattern data into the track, and delete as necessary, or the [\blacktriangledown /NO] button to ignore the pattern data.

If the start measure contains a pattern that has been put into the track, subsequent measures that also used that pattern will no longer use it after the start measure has been deleted.

Erase Measure – 4B

This function allows you to erase data within a pattern. Unlike the Delete Measure function that actually deletes the measure, this function deletes only the data in a measure.

4B Erase Meas > Tr01 M123+M135	4B Erase Meas < ALL OK?
4B-1	4B-2

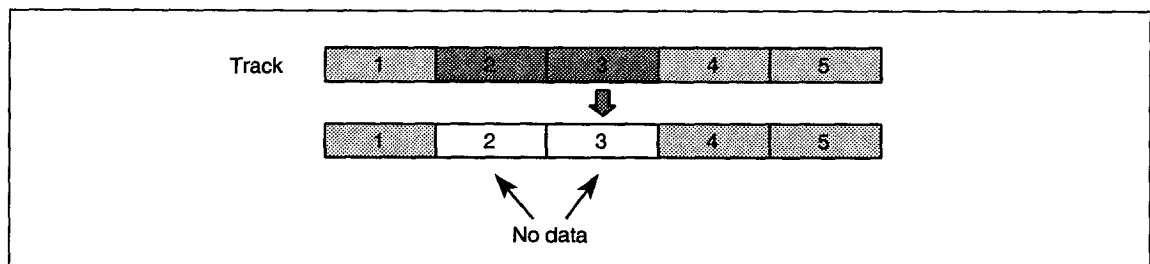
LCD	Parameter	Range	Description
4B-1	Track	Tr1 ~ Tr16, ALL	Select a track
	Start Measure (M)	1 ~ 999	Select first measure to be erased
	End Measure	1 ~ 999	Select last measure to be erased
4B-2	Data to Erase	ALL NTE CNT ATT BND PRG	All data Note data Controller data After Touch data Pitch bend data Program Change data
	OK to Erase Measure	OK?	Executes erase measure

- 1) Select a track.
- 2) Select the start and end measures. The status of each measure will be shown on the LCD.

When the Start Measure and End Measure parameters are selected, the status of the 10 measures after the currently selected measure will be shown on the LCD.

- 3) Select the data that you want to erase.
- 4) Position the cursor on OK?, and press the [▲/YES] button.

When selecting measures, the start measure, end measure, and any measures in-between are erased. In the following diagram, measures 3 to 5 have been deleted:



When ATT is selected, Channel After Touch data and Polyphonic After Touch data are erased. The X3R does not support Polyphonic After Touch. However, this type of event can be recorded and played by the sequencer for use with external MIDI devices.

If the track parameter is set to ALL, the specified measures will be erased from all tracks, including the Tempo track.

To delete the tempo track, use the Event Edit or Create Control data functions. See “Event Edit – 2B” on page 118 and “Create Controller Data – 3D” on page 132 respectively.

If a note overlaps the range of measures, only the overlap will be erased.

If the end measure contains a pattern that has been put into the track, you will be asked whether you want to open the pattern. Press the [▲/YES] button to open the pattern, copy the pattern data into the track, and erase as necessary, or the [▼/NO] button to ignore the pattern data.

If the start measure contains a pattern that has been put into the track, subsequent measures that also used that pattern will no longer use it after the start measure has been erased.

If you erase a measure that contains Controller data such as Pitch Bend or Damper Pedal, leaving the Controller stuck at a value other than that of its natural resting place, you will probably have to use the Event Edit function to set correct the data. Alternatively, erase the Controller data.

Copy Measure – 4C

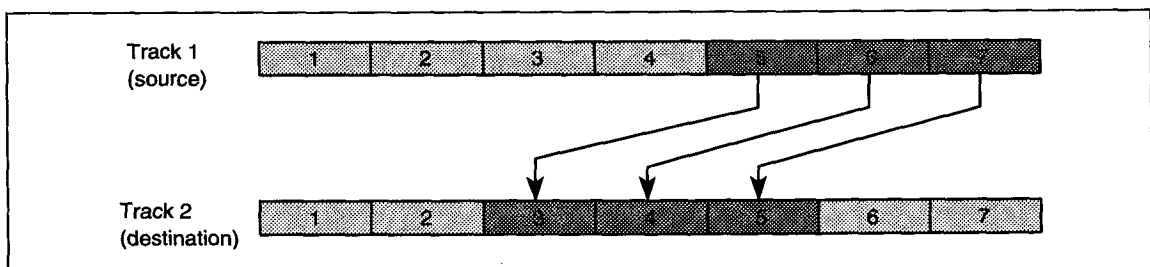
This function allows you to copy measures to other tracks.

4C Copy Meas Tr01 M123→135	>	4C Copy Meas Tr02 M001	<	OK?
4C-1		4C-2		

LCD	Parameter	Range	Description
4C-1	Source Track	Tr1 ~ Tr16, ALL	Select a source track
	Source Start Measure (M)	1 ~ 999	Select first measure to be copied
	Source End Measure	1 ~ 999	Select last measure to be copied
4C-2	Destination Track	1 ~ 16, ALL	Select a destination track
	Destination Start Measure (M)	1 ~ 999	Select a destination start measure
	OK to Copy Measure	OK?	Executes measure copy

- 1) Select a source track.
- 2) Select the source start and end measures.
- 3) Select the destination track.
- 4) Select the destination start measure.
- 5) Position the cursor on OK?, and press the [▲/YES] button.

In the following example, the source is track 1, the start measure is set to 5, the end measure to 7, the destination track is 2, and the destination start measure to 3. Hence, track 1 measures 5 to 7 are copied to track 2 measures 3 to 5. Existing data in track 2 measures 3 to 5 is overwritten.



Existing data in the specified destination measures will be overwritten.

If you specify some source measures that contain no data, empty measures are copied.

The copied measures will use the same time signature as corresponding measures in other tracks (if any other tracks exist).

If the track parameter is set to ALL, the specified measures from all tracks including the tempo track will be copied. This is useful when creating repetitive song sections such as choruses, verses, etc.

If either the source start measure or the last measure at the destination contains a pattern that has been put into the track, you will be asked whether you want to open the pattern. Press the [▲/YES] button to open the pattern, and copy its data, or the [▼/NO] button to ignore the pattern data.

If the last measure of the copy destination contains a pattern that has been put into the track, it will be ignored, and the copied data will play.

If the destination start measure contains a pattern that has been put into the track, measures starting at this point will be replaced with the copied measures.

If the start measure contains a pattern that has been put into the track, subsequent measures that also used that pattern will no longer use it after the start measure has been erased.

Insert Measure – 4D

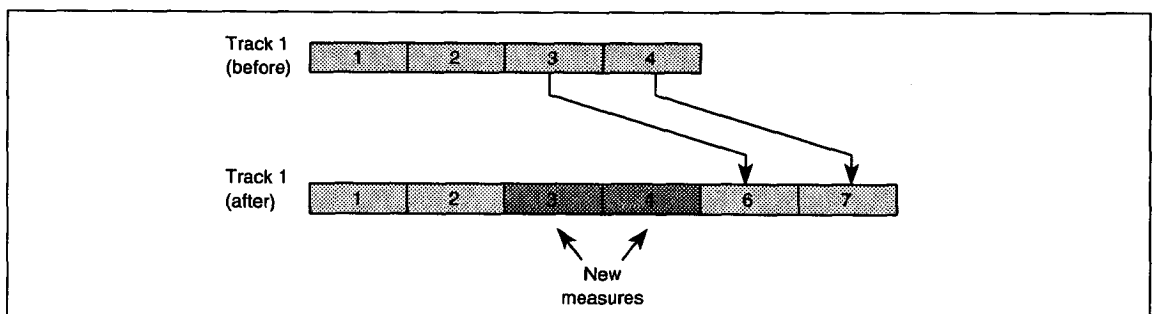
This function allows you to insert new measures into tracks.

4D Ins Meas	>	4D Ins Meas	<
Tr01 M123 L002		**/**	OK?
4D-1		4D-2	

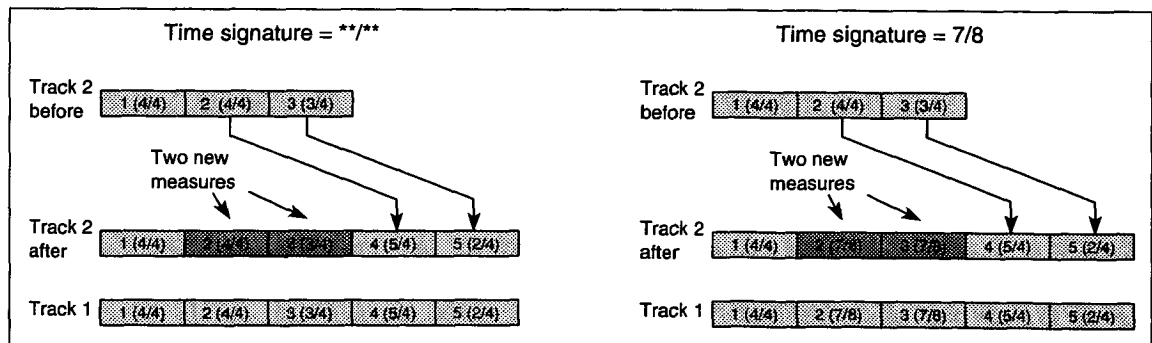
LCD	Parameter	Range	Description
4D-1	Destination Track	Tr1 ~ Tr16, ALL	Select a destination track
	Destination Measure (M)	1 ~ 999	Specify where to insert measure(s)
	Number of Measures (L)	1 ~ 999	Specify the number of measures to be inserted
4D-2	Time Signature	**/**	Use time signature of measures in other tracks
		1/4 ~ 9/4 1/8 ~ 16/8 1/16 ~ 16/16	Low base resolution
		1/4 ~ 5/4 1/8 ~ 10/8 1/16 ~ 16/16	High base resolution
	OK to Insert Measure	OK?	Executes measure insert

- 1) Select the destination track, and specify the destination measure.
- 2) Specify the number of new measures to be inserted.
- 3) Specify the time signature for the new measures. If you don't want to change the time signature, select **/** (the time signature set previously will be used).
- 4) Position the cursor on OK?, and press the [▲/YES] button.

In the following example, two new measures are inserted into track 1, and the destination measure is set to 3.



If the time signature parameter is set to **/**, the new measures will use the time signature of corresponding measures in other tracks. If a time signature value is set, the new measures and all corresponding track measures will use that value. The following example shows both cases:



If the track parameter is set to ALL, new measures will be inserted into all tracks. If an existing note overlaps into the specified destination measure, it will be divided into two notes. If the new measures apply to a section that contains a pattern that has been put into the track, you will be asked whether you want to open the pattern. Press the [▲/YES] button to open the pattern, and insert the new measures, or the [▼/NO] button to ignore the pattern data.

Put to Track – 4E

This function allows you to put patterns to tracks. Unlike the Copy to track function, the track will not contain the pattern data, just its name. In the computer world, this is sometimes referred to as an alias or link. It allows you to share common patterns in tracks and songs without having to duplicate (copy) the same data, which would use more sequencer memory.

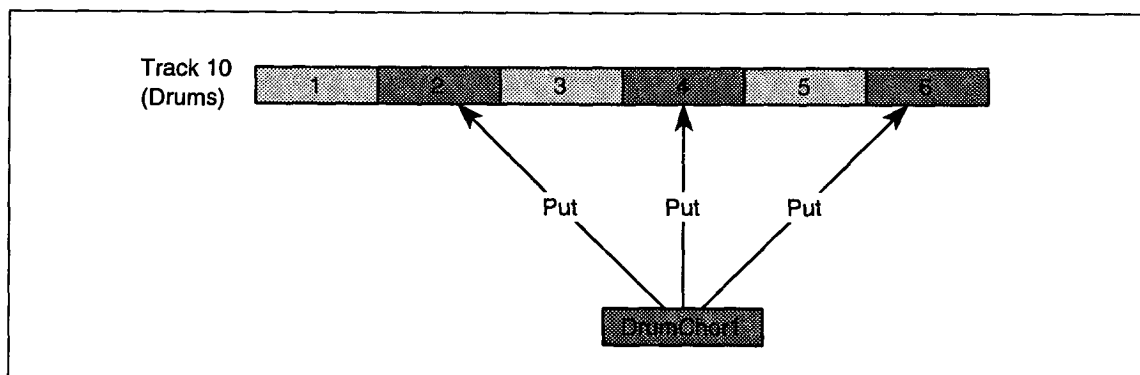
This could be used, for example, with a drum pattern that is used for each chorus. Rather than copy the data, make a pattern, then put that pattern into the track at the required times. Any changes made to that pattern will be reflected in all tracks in which that pattern has been put.

4E Put To Tr P00 Tr01	>	4E Put To Tr M123	<	OK?
4E-1		4E-2		

LCD	Parameter	Range	Description
4E-1	Pattern (P)	0 ~ 99	Select pattern to put in track
	Destination Track (Tr)	1 ~ 16	Select destination track
4E-2	Destination Measure (M)	1 ~ 999	Select destination measure
	OK to Put to Track	OK?	Executes put to track

- 1) Select the pattern to put.
- 2) Select the track and measure into which the pattern is to be put.
- 3) Position the cursor on OK?, and press the [▲/YES] button.

In the following example, pattern DrumChor1 is put into track 10 at each chorus.



Existing data in the destination measure will be deleted, and subsequent measures will be moved forward depending on the number of measures in the pattern. For example, if you put a pattern that contains only one measure, data in the destination measure will be deleted, and subsequent measures will not move. However, if you put a pattern that contains three measures, data in the destination measure will be deleted, and subsequent measures will move forward by two measures.

The pattern's base resolution will be adjusted to match that of the song.

The pattern will use the same time signature as the corresponding measures in other tracks.

Track Controller data such as Pitch Bend (except Volume) will be reset when a pattern is put. If you want to use Pitch Bend and Damper pedal, you must write the data directly to the pattern.

Copy to Track – 4F

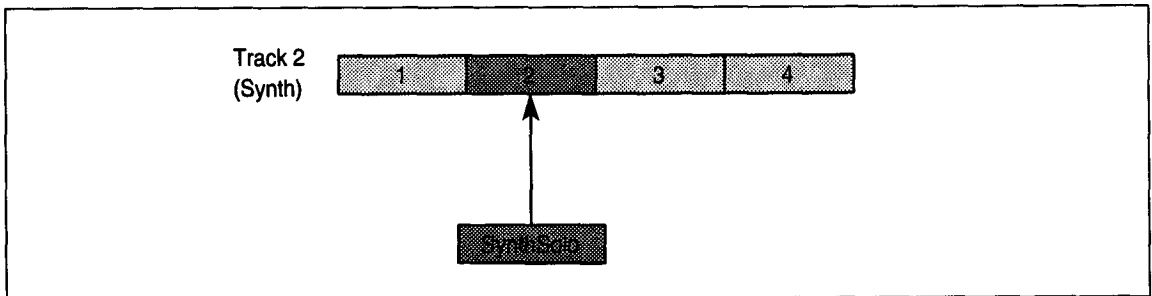
This function allows you to copy patterns into tracks.

4F Copy To Tr P00 Tr01	>	4F Copy To Tr M123 OK?	<
4F-1		4F-2	

LCD	Parameter	Range	Description
4F-1	Pattern (P)	0 ~ 99	Select pattern to copy to track
	Destination Track (Tr)	1 ~ 16	Select destination track
4F-2	Destination Measure (M)	1 ~ 999	Select destination measure
	OK to Copy to Track	OK?	Executes copy to track

- 1) Select the pattern to copy.
- 2) Select the track and measure into which the pattern is to be copied. The status of each measure will be displayed.
- 3) Position the cursor on OK?, and press the [▲/YES] button.

In the following example, pattern SynthSolo is put into track 2.



Existing data in the destination measure will be deleted, and subsequent measures will be moved forward depending on the number of measures in the pattern. For example, if you copy a pattern that contains only one measure, data in the destination measure will be deleted, and subsequent measures will not move. However, if you copy a pattern that contains three measures, data in the destination measure will be deleted, and subsequent measures will move forward by two measures.

The pattern's base resolution will be adjusted to match that of the song.

The pattern will use the same time signature as the corresponding measures in other tracks.

Real-Time Pattern Record/Edit – 5A

This section explains how to record and edit a pattern in real time.

Connect a MIDI keyboard, such as the Korg X3, to the X3R MIDI IN connection.

5A Real Rec P00]=120 0:HI	>	5A Real Rec MM:ON	<
5A-1		5A-2	

LCD	Parameter	Range	Description
5A-1	Pattern (P)	0 ~ 99	Select pattern to record/edit
	Tempo (♩)	40 ~ 240, EXT	Set the pattern tempo (EXT when MIDI Clock Source is EXT)
	Metronome (MM)	OFF ON REC	Metronome off Metronome for playback only Metronome for playback and recording
5A-2	Recording Quantize (Q)	HI	
	Add/Remove	[ADD] [RMV]	Overdubs data on subsequent passes through the pattern Removes corresponding data while a key is held down

Function Buttons

[8]	Delete		Deletes data while held down (only when recording)
-----	--------	--	--

Before recording a pattern, select the track that you intend to use the pattern in. The selected track's Program will be used while you record the pattern. If, after recording, a pattern is copied to another track, it will use the Program assigned to that track.

- 1) Set the "Pattern Setup Parameters – 5D" on page 145.
- 2) Select the pattern that you want to record or edit.
Patterns that were recorded in step time can also be selected.
- 3) Set the tempo, metronome, and recording quantize parameters as required.
- 4) Press the [REC/WRITE] button to engage record ready mode.
- 5) Press the [START/STOP] button to start recording, then start playing.

When the end of the last measure in the pattern is reached, recording will continue from the first measure in the pattern, just like loop recording a song. What you play on subsequent passes through the pattern will be overdubbed onto the previously recorded data. This allows you to buildup a pattern in layers.

- 6) To stop recording, press the [START/STOP] button.
To play the pattern, press the [START/STOP] button.
If you want to add more to the pattern, repeat steps 4 to 6.
If you want to erase some data that you have just recorded, see below.

Deleting Data while Recording

There are two ways to delete data:

- 1) Start recording, then press and hold down function button [8]. Data will be deleted while the button is held down. Release the button to stop deleting.
- 2) Start recording, position the cursor on [ADD], then press the [▲/YES] button. [ADD] will change to [RMV]. To delete a specific note, press the corresponding keyboard key. All corresponding notes will be deleted while that key is held down.

This technique can also be used to delete Pitch Bend data. Just before the Pitch Bend data that you want to delete is played, move the pitch bender. While the pitch bender is not in its normal resting position, all Pitch Bend data will be deleted.

The [RMV]/[ADD] parameter is set to [ADD] and to recording status in overdub automatically each time recording is started.

Note: *Only MIDI data on the MIDI Channel that matches that of the recording track will be recorded.*

Real-Time Pattern Record Notes

If you record Controller data such as Joystick, Pitch Bend, & Pedal, etc., make sure that the controller is returned to its normal resting position before the end of the pattern is reached. Otherwise, Controller data will be loop recorded, and it will affect the top of the pattern. When the song that includes the pattern is played, only the pattern will be affected. Overdubbing Controller data will probably produce unusable results, so it is best avoided.

When recording at a high resolution, a note that you played right at the beginning of a pattern may sometimes be added to the end the pattern. Recording at a low resolution will prevent this.

Pattern Event Edit – 5C

This section explains how to edit event data in a pattern.

5C Event Edit P00 NOTE:ENA

5C-1

LCD	Parameter	Range	Description
5C-1	Pattern (P)	0 - 99	Select pattern for event editing
	Event Filter	NOTE CTRL AFTT BEND PROG PAFT	Note data Controllers After Touch Pitch Bend Program Change Polyphonic After Touch
	DIS/ENA	DIS ENA	Event type cannot be edited Event type can be edited

- 1) Select the pattern that you want to edit.
- 2) Disable or enable event types as required.
Disabled event types cannot be edited.
- 3) Press the [REC/WRITE] button.
- 4) Press the [START/STOP] button.
- 5) Follow the procedure for “Event Edit – 2B” on page 118.
- 6) Press the [START/STOP] button to end event editing.

Pattern Setup Parameters – 5D

These parameters allow you to set up a pattern before recording, and modify a pattern after recording.

5D Pat Param P00 16/16 L01	>	5D Pat Param B.Res:Hi OK?	<
5D-1		5D-2	

LCD	Parameter	Range	Description
5D-1	Pattern (P)	0 ~ 99	Select a pattern
	Time Signature	1/4 ~ 9/4 1/8 ~ 16/8 1/16 ~ 16/16	Low base resolution
		1/4 ~ 5/4 1/8 ~ 10/8 1/16 ~ 16/16	High base resolution
	Pattern Length (L)	1 ~ 99	Number of measures in pattern
5D-2	Base Resolution	Low (LOW) High (HIGH)	48 pulses per quarter note 96 pulses per quarter note
	OK to Set Parameters	OK?	Set the specified parameters

- 1) Select the pattern to set up.
- 2) Set the parameters as required.
- 3) Position the cursor on OK?, and press the [▲/YES] button.

If a pattern has already been put into a song, the message “Pat In Use Continue OK?” will appear. Press the [▲/YES] button to continue, or the [▼/NO] button to cancel.

5D-2 Base Resolution: this parameter determines the timing precision for a pattern. When set to Low, the timing resolution will be 48 PPQN (pulses per quarter note), i.e., 1/48 of a quarter note. When set to High, the timing resolution will be 96 PPQN (pulses per quarter note), i.e., 1/96 of a quarter note. See also “Song Base Resolution – 8B” on page 149.

For High resolution, the location can be varied in one clock steps. For Low resolution, the location can be varied in two clock steps. One MIDI clock is equivalent to four X3R clocks.

If the base resolution of a pattern is different to that of the song it is being used in, the pattern data is modified accordingly.

Note: Once a parameter has been set, the Compare function does not work.

Erase Pattern – 6A

This function allows you to erase a pattern.

```
6A Erase Pat
P00      OK?
```

6A-1

LCD	Parameter	Range	Description
6A-1	Pattern (P)	0 ~ 99	Select pattern to erase
	OK to Erase Pattern	OK?	Executes pattern erase

- 1) Select a pattern.
- 2) Position the cursor on OK?, and press the [▲/YES] button.

If a pattern has already been put into a song, the message “Pat In Use Continue OK?” will appear. Press the [▲/YES] button to continue, or the [▼/NO] button to cancel.

Get from Track – 6B

This function allows allow you to copy data from a track into a pattern.

```
6B Get From Tr > 6B Get From Tr <
P00 S0 Tr01 M123      OK?
```

6B-1

6B-2

LCD	Parameter	Range	Description
6B-1	Destination Pattern (P)	0 ~ 99	Select destination pattern
	Source Song (S)	0 ~ 9	Select the source song
	Source Track (Tr)	1 ~ 16	Select the source track
	Source Start Measure (M)	1 ~ 999	Select the source start measure
6B-2	OK to Get from Track	OK?	Executes get from track

- 1) Select the destination pattern.
- 2) Select the source song.
- 3) Select the source track.
- 4) Select the source start measure.
- 5) Position the cursor on OK?, and press the [▲/YES] button.

If the specified range of measures contains a pattern that has been put into the source track, you will be asked whether you want to open the pattern. Press the [▲/YES] button to open the pattern and copy its data, or the [▼/NO] button to ignore the pattern data.

The destination pattern’s base resolution and time signature is determined by the source song.

The original pattern data will be deleted, and the get data will be inserted into the pattern. If a tied note overlaps the specified range of measures, as determined by the Destination Pattern parameter, that tie will be erased.

Pattern Edit Note

If you want to use track editing functions such as quantize, create control data, etc., on a pattern, copy the pattern to an empty track (“Copy to Track – 4F” on page 140), do your editing, then use this function to copy the data back into the pattern.

Bounce Pattern – 6C

This function merges data from two patterns into one.

```
6C Bnce Pat
P00+P01    OK?
```

6C-1

LCD	Parameter	Range	Description
6C-1	Source Pattern (P)	0 ~ 99	Select the source pattern
	Destination Pattern (P)	0 ~ 99	Select the destination pattern
	OK to Bounce pattern	OK?	Executes pattern bounce

- 1) Select a source pattern.
- 2) Select a destination pattern.
- 3) Position the cursor on OK?, and press the [▲/YES] button.

The data will be merged in the destination pattern. The source pattern will not be changed.

The time signature, pattern length, and base resolution is determined by the destination pattern.

Copy Pattern – 6D

This function allows you to copy the data from one pattern to another.

```
6D Copy Pat
P00+P01    OK?
```

6D-1

LCD	Parameter	Range	Description
6D-1	Source Pattern (P)	0 ~ 99	Select the source pattern
	Destination Pattern (P)	0 ~ 99	Select the destination pattern
	OK to Copy pattern	OK?	Executes pattern copy

- 1) Select a source pattern.
- 2) Select a destination pattern.
- 3) Position the cursor on OK?, and press the [▲/YES] button.

The time signature, pattern length, and base resolution is determined by the source pattern.

Effects 7A ~ 7G

In a song, the individual effect settings, panpot settings, and send C and D settings of each Program are ignored, and the settings for that song are used. If you want to use a Program or Combination's effect settings for a song, use the Effects Copy – 7F function. See “Effects Copy – 7F” on page 60.

Effects are explained in Chapter 5: “Effects” on page 55.

Dynamic Modulation & the Sequencer

To record and playback dynamic modulation data for the effects, set the track to be used to record the data to the same MIDI Channel as that used by the Global MIDI Channel.

Rename Song – 8A

This function allows you to rename a song.

```
8A RENAME
50: SongName00
```

8A-1

LCD	Parameter	Range	Description
8A-1	Rename Song	See character table below	Rename a song

To rename a song, use the [←] and [→] cursor buttons to position the cursor, and the [▲/YES] [▼/NO] buttons, VALUE knob, or number keypad to select characters. Available characters are shown in the table below. Song names can use up to 10 characters.

	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	[]	^	_	
`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z	(	|	)	→	←

Use the number keypad to insert numbers. Use the [10's HOLD/-] button to switch between uppercase and lowercase characters. Press and hold down the [ENTER] button, then press the [←] button to delete the current character. Press and hold down the [ENTER] button, then press the [→] button to insert a character.

Note: Once a song has been renamed, you cannot use the Compare function to restore the previous name.

Saving SMF (Standard MIDI File) Notes

When a song is saved in the SMF file format, the file name will use the eight left-most characters, lowercase characters will become uppercase, and symbols will be converted to “_”. Hence, there is a possibility that the new SMF file name may become the same as that of an existing file. However, this affects only the file name, the full song name is saved inside the file. So after reloading the SMF file into an X3, the full song name will appear.

Song Base Resolution – 8B

This parameter allows you to set the base resolution for each song.

8B B.Reso High(J/96) OK?
8B-1

LCD	Parameter	Range	Description
8B-1	Base Resolution	Low High	48 pulses per quarter note 96 pulses per quarter note
	OK to set base resolution	OK?	Sets base resolution

Note: *The base resolution must be set before recording. Once a song contains some data, it cannot be changed.*

8B-1 Base Resolution: this parameter determines the timing precision for each song. When set to Low, the timing resolution will be 48 PPQN (pulses per quarter note), i.e., 1/48 of a quarter note. When set to High, the timing resolution will be 96 PPQN (pulses per quarter note), i.e., 1/96 of a quarter note.

To capture your real-time recording with greater accuracy, i.e., capture the subtle nuances of your playing, set the base resolution to High.

The selected base resolution affects the number of time signature values that are available. More are available when the base resolution is set to Low. See the table below.

Base Resolution	Time Signature
Low	1/4, 2/4, 3/4, 4/4, 5/4, 6/4, 7/4, 8/4, 9/4 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 8/8, 9/8, 10/8, 11/8, 12/8, 13/8, 14/8, 15/8, 16/8 1/16, 2/16, 3/16, 4/16, 5/16, 6/16, 7/16, 8/16, 9/16, 10/16, 11/16, 12/16, 13/16, 14/16, 15/16, 16/16
High	1/4, 2/4, 3/4, 4/4, 5/4 1/8, 2/8, 3/8, 4/8, 5/8, 6/8, 7/8, 8/8, 9/8, 10/8 1/16, 2/16, 3/16, 4/16, 5/16, 6/16, 7/16, 8/16, 9/16, 10/16, 11/16, 12/16, 13/16, 14/16, 15/16, 16/16

When the Recording Quantize parameter (See “Real-Time Record/Play Parameters” on page 103.), or the Quantize Resolution parameter (See “Quantize – 3A” on page 128.) is set to HI, the base resolution specified using this function determines the quantize resolution.

Step Recording (“Step-Time Track Recording – 2A” on page 114), Create Control Data (“Create Controller Data – 3D” on page 132), and Event Edit (“Event Edit – 2B” on page 118) will advance two steps when the base resolution parameter is set to Low, and one step when set to High.

Note: *Once set, you cannot use the Compare function.*

Next Song – 8C

This function allows you to specify the next song to be played after the current song.

8C NEXT SONG SO→OFF PLAY
8C-1

LCD	Parameter	Range	Description
8C-1	Next Song	OFF, 0 ~ 9	Select the next song
	Next Song Mode	STOP PLAY	Press [START/PLAY] to play next song Next song plays automatically

8C-1 Next Song: this parameter specifies the next song to be played when the current song ends. When set to OFF, no song will playback when the current song finishes.

Next Song Mode: this parameter determines how the next song will play. When PLAY is selected, the next song will start playing when the current song ends.

When STOP is selected, playback will stop when the current song ends, and you will have to press the [START/STOP] button to start the next song playing.

If, while the next song is playing, the [RESET] button is pressed, the previous song will be selected.

Note: Once select, you cannot use the Compare function.

Metronome – 8D

These parameters allow you to set the metronome lead-in, level, and pan.

8D METRONOME I=2 L=99 P=A+B
8D-1

LCD	Parameter	Range	Description
8D-1	Lead In (I)	0 ~ 2	Number of measures for count-in
	Level (L)	0 ~ 99	Metronome level
	Pan (P)	A, A+B, B, C, C+D, D, ALL	Metronome output pan

8D-1 Lead-In: this parameter determines the number of lead-in measures before recording starts.

Level: this parameter determines the level of the metronome.

Pan: this parameter determines which buses the metronome will be output on.

For the instant that the metronome is sounding, the available note polyphony will be reduced by one.

Note: Once set, you cannot use the Compare function.

Copy from Combination – 8E

This function allows you to copy settings from the eight Timbres within a Combination into tracks 1 to 8 or tracks 9 to 16.

```
8E Copy Combi
No=A00→T1-8 OK?
```

8E-1

LCD	Parameter	Range	Description
8E-1	Source Combination (No=)	A00 ~ A99 B00 ~ B99 C00 ~ C99 D00 ~ D99	Select the Combination to copy
	Destination Tracks (T)	1-8, 9-16	Select the eight destination tracks
	OK to Copy from Combination	OK?	Executes Combination copy

The following Timbre parameter settings are copied: Program, volume, transpose, detune, pan, key window, velocity window, MIDI Channel, and Timbre mode (track status). The Combination's effect settings are also copied. Other song parameters remain the same.

When a Combination containing EXT mode Timbres is selected, MIDI Program Change messages are sent via the X3R's MIDI OUT. However, when EXT mode Timbres are copied to song tracks, you will have to insert a Program Change message at the beginning of the track's data. In this way, Programs (patches, voices) on external MIDI devices will be selected automatically when the song starts playing.

If some track's MIDI Channels are set the same, the same track data will play the Programs assigned to those tracks.

Note: Once set, you cannot use the Compare function.

GM Song Mode – 8F

This function conforms a song to the GM (General MIDI) settings. It should be used when you want to make a new GM compatible song from scratch, and when you want to playback a GM song file that you received in the SMF format.

8F Set To GM SONG0 OK?

8F-1

LCD	Parameter	Range	Description
8F-1	OK to set Song to GM Mode	OK?	Sets song to GM mode

The selected song's parameters are set as follows. Track 10 is set for drums:

Parameter	Tracks 1 ~ 9 & 11 ~ 16	Track 10	
Program	G01	G129 (Drum kit)	*
Level	100	100	*
Pan	CNT	PRG	*
Send C & D	2, 2	PRG, 0	*
Transpose	0	0	*
Detune	0	0	*
Pitch Bend Range	+2	0	*
Program Change Filter	ENA	ENA	
Velocity Window	1~127	1~127	
Key Window	C-1~G9	C-1~G9	
Effect 1	—	—	Hall
Effect 2	—	—	Chorus
Effect Placement	—	—	Parallel 3
MIDI Channel	1 ~ 9, 11 ~ 16	10	

* Can be set via MIDI

If you are playing a GM song file, track Programs will be selected automatically when the song starts playing. GM song files contain Program Change messages that specify the required program for each track.

If you are creating a new GM compatible song from scratch, you can select Programs for tracks as required.

When a MIDI GM System On message (F0, 7E, nn, 09, 01, F7) is received, these parameters are set automatically, and song 9 is conformed to the GM Standard. Track Protect is ignored.

Note: Once activate to set, you cannot use the Compare function.

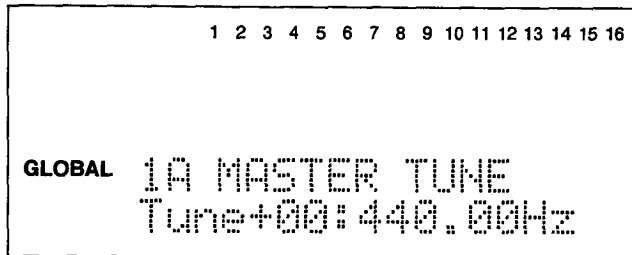
Chapter 8: Global Mode

The functions in this mode allow you to set parameters that affect the overall performance of the X3R. For example, master tuning, MIDI, memory protection, PROG/SEQ data card operations, and drum kit setup.

Entering Global Mode

- 1) Press the [GLOBAL] button.

GLOBAL will appear on the LCD screen.



The numbers at the top of the display correspond to MIDI Channels. The number of the Global MIDI Channel flashes. When MIDI data is received, a box underneath the corresponding MIDI Channel number will flash.

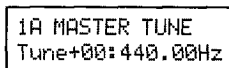
Saving Global Setup Data

All global settings are remembered when the X3R is powered off.

Global settings (except LCD contrast and memory protect) related to a specific project can be saved to either floppy disk or data card. They are saved in bank A. See "Save Programs & Combinations to Card – 6C" on page 165 and "Save P/C/G Data – 3B" on page 183.

Master Tune – 1A

This function allows you to tune the X3R.



1A-1

LCD	Parameter	Range	Description
1A-1	Master Tune (Tune)	-50 ~ +50	Used to tune the X3R in 1 cent steps

The selected tuning is also indicated in Hz, with 0 cents being equal to 440 Hz (A4).

The X3R can also be tuned via external MIDI devices that can output MIDI RPN Fine Tune messages (the X3R cannot output these messages). In Sequence mode, these messages are received on the individual MIDI Channels specified for each track, and they control the Detune parameters. In all other modes, they are received on the Global MIDI Channel, and can be used to set this master tune function. See "Controller Event Edit Notes" on page 122.

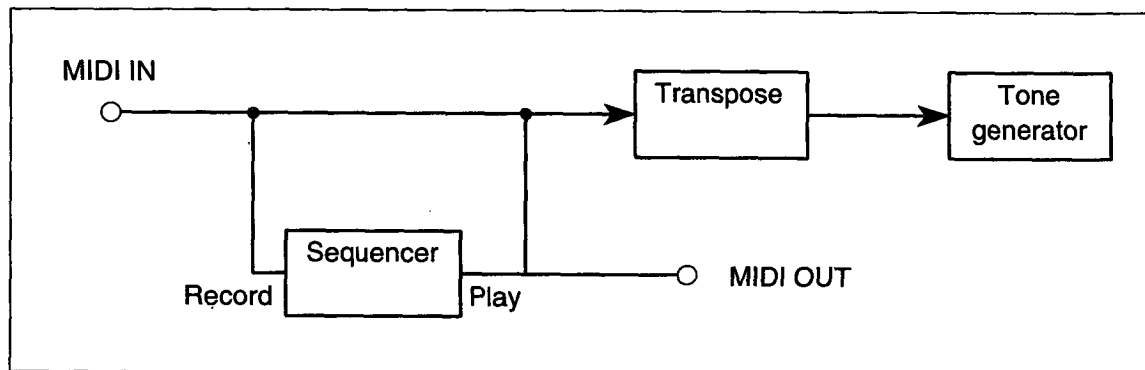
Transpose – 1B

This function allows you to transpose the X3R. This is useful when you want to play a song in a different key.

```
1B TRANSPOSE >
  Trans+00
```

1B-1

LCD	Parameter	Range	Description
1B-1	Transpose (Trans)	-12 ~ +12	Used to transpose the X3R in 1 semitone steps



The Transpose function affects the sequencer only during playback not when recording.

After Touch & Velocity Response Curve – 1C

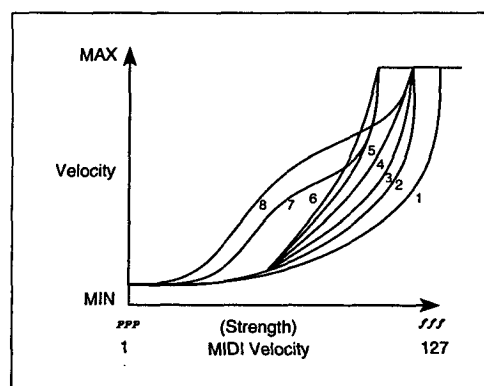
These functions allow you to adjust the After Touch and velocity response to suit your playing style.

```
1C CURVE
Vel=5 Aft=1
```

1C-1

LCD	Parameter	Range	Description
1C-1	Velocity Response (Vel)	1 ~ 8	Velocity response curve
	After Touch Response (Aft)	1 ~ 8	After Touch response curve

1C-1 Velocity Response: this parameter allows you to adjust velocity response. For a low setting, strong playing is required to achieve the maximum value (insensitive). For a high setting, maximum value will be achieved with soft playing (sensitive). Select one of the eight curves to suit your playing style. This function affects the data played by the tone generator, data output to the MIDI OUT, and the data recorded by the sequencer. It does not affect MIDI IN data and sequencer playback data.

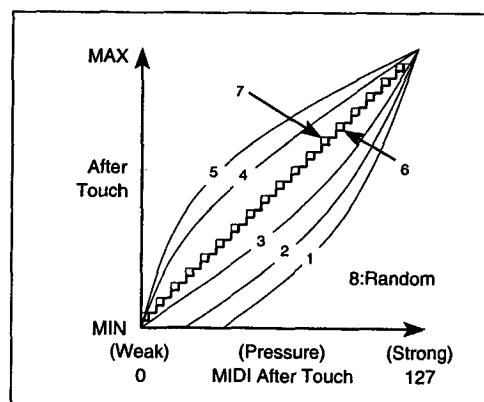


Curves 7 and 8 are suitable when you do not need velocity or when you wish to make the intensity of the sound even, since changes are not obvious when playing moderately. However, they are difficult to control, because soft playing will create significant changes.

Vel. Curve: 1, 2: Strong playing produces an obvious effect. 3, 4, 5: Standard curve. 6: Moderate playing can produce an obvious effect. 7: Moderate playing produces small changes and constant effect. 8: Moderate playing produces small changes and constant effect (flatter than curve 7).

After Touch Response: this parameter allows you to adjust the After Touch response. For a low setting, a keyboard must be pressed hard to activate After Touch (insensitive). For a high setting, pressing softly will activate After Touch (sensitive). Select one of the eight curves to suit your playing style.

This function affects the data generated by the tone generator, data output to the MIDI OUT, and the data recorded by the sequencer. It does not affect MIDI IN data and sequencer playback data.



Curves 6 and 7 change in steps of 24 and 12 respectively. Curve 7 changes in steps of 12, and allows pitch to change by semitones when pitch shift width for After Touch is set to one octave. Curve 8 is random. You can use this when you wish to achieve a special effect or give an irregular pitch shift through After Touch.

After Touch Curve: 1, 2: Strong playing produces an obvious effect. 3, 4: Standard curve. 5: Moderate playing can produce an obvious effect. 6: A little rough curve (24 steps). 7: Rough curve (12 steps). 8: Random.

Scale – 2A

This function allows you to select scales other than the usual equal temperament scale. You can also create your own User scale.

2A SCALE TYPE > User Scale	2A SCALE KEY <> Key=C	2A User Scale <> C+00 C#+00 D+00	2A User Scale <> D#+00 E+00 F+00	2A User Scale <> F#+00 G+00 G#+00
2A-1	2A-2	2A-3	2A-4	2A-5

2A User Scale <> A+00 A#+00 B+00	2A Copy Scale <> from Slendro OK?	2A SUB SCALE <> Equal Temp	2A SUB KEY < Key=C
2A-6	2A-7	2A-8	2A-9

LCD	Parameter	Range	Description	
2A-1	Scale Type	Equal Temperament	Most commonly used equal temperament scale. Songs can easily be transposed into different keys.	
		Equal Temperament2	Like equal temperament, but with slight random pitch variations between subsequent key presses. This is useful for simulating the unstable pitch of an acoustic instrument.	
		Pure Major	Intervals such as third and fifth are perfectly in tune. Other intervals will correspondingly be out of tune, so you must specify a key. See LCD screen 2A-2.	
		Pure Minor	Like the pure major scale, but minor.	
		Arabic (quarter tone scales often used in Arabic music)	Scale	Key
			RAST DO / BAYATI RE	C
			RAST FA / BAYATI SOL	F
			RAST SOL / BAYATI LA	G
			RAST RE / BAYATI MI	D
		RAST Sib / BAYATI DO	A \sharp (B \flat)	
		Pythagorean	Ancient Greek tuning, useful when playing melodies	
		Werkmeister	Equal temperament style that was used in the latter part of the baroque period.	
		Kirnberger	Developed in the 18th Century, used mainly for harpsichord.	
Slendro	Indonesian gamelan tuning with 5 notes per octave. When key is set to C, notes C, D, F, G, A are used. Other notes are set to equal temperament.			
Pelog	Like the slendro scale, but with 7 notes per octave. When key is set to C, notes C, D, E, F, G, A, B are used.			
User Scale	This allows you to create your own tuning, and is set up using LCD screens 2A-3 to 2A-6.			
2A-2	Key	C ~ B	Specifies the tonic (key note) of the scale.	
2A-3	User Scale	C	-99 ~ +99	Used to tune the individual notes for the user scale in 1 cent steps
		C#		
		D		
2A-4		D#		
		E		
		F		
2A-5		F#		
		G		
		G#		
2A-6		A		
	A#			
	B			
2A-7	Copy Scale	Same as 2A-1 (except User scale)	Copy a preset scale to the user scale (key not copied)	
	OK to Copy	OK?	Executes scale copy	

LCD	Parameter	Range	Description
2A-8	Sub Scale	Same as 2A-1	See 2A-1 descriptions above (excluding User Scale)
2A-9	Sub Scale Key	C ~ B	Specifies the tonic (key note) of the sub scale

2A-1 Scale Type: as well as the usual equal temperament scale, 11 other scales including a user definable scale are available.

User Scale: this scale allows you to define your own personal tuning scale. The tuning of each keyboard note can be adjusted ± 99 cents on LCD screens 2A-3 to 2A-6. To edit one of the preset scales, first copy it (2A-7), then edit it as a user scale.

The User Scale settings are used are used by both the main and the sub.

2A-8 Sub Scale: it is possible to switch between two scales, the main scale and sub scale, using a pedal switch.

- 1) Connect an optional Korg PS-1 or PS-2 pedal switch to the ASSIGNABLE PEDAL/SW connection.
- 2) In Global mode, assign the pedal to Scale Switching. See “Assignable Pedal/SW Setup – 8B” on page 171.

When the pedal is pressed, the Sub Scale is selected and the MIDI message Bn, 04, 7F will be sent to the MIDI OUT. When the main scale is selected, the message Bn, 04, 7F will sent to the MIDI OUT.

If the MIDI message Bn, 04, 00 ~ Bn, 04, 3F is received, the main scale is selected. If the MIDI message Bn, 04, 40 ~ Bn, 04, 7F is received, the sub scale is selected. Normally, in Combination mode they can be selected by any Timbre. In Sequencer mode, they can be selected by any Track.

These messages are normally sent on the Global MIDI Channel. In Combination mode, they are sent on the MIDI Channels of EXT mode Timbres. So, for example, you could have one Timbre playing the melody with Arabic scale, and another playing Timbre playing the backing with an Equal Temperament scale.

Global MIDI Channel & MIDI Clock Source – 3A

These parameters allow you to set the Global MIDI Channel and select a MIDI Clock source.

```
3A CH/CLOCK
1 INT
```

3A-1

LCD	Parameter	Range	Description
3A-1	Global MIDI Channel	1 ~ 16	Set the Global MIDI Channel
	Clock Source	INT EXT	Use the X3R's internal MIDI Clock Use an external MIDI Clock

3A-1 Global MIDI Channel: the Global MIDI Channel is used as follows: to receive MIDI data in Program mode, to select Combinations in Combination mode (except when MIDI Filter1 is set to PRG), to control effects, and for MIDI Data Dump.

MIDI data for individual Timbres in a Combination and tracks in a song is received on the MIDI Channels specified in Combination Edit mode (Timbres) and Sequencer mode (tracks) respectively. In Combination mode, when a Program Change message is received on the Global MIDI Channel, a Combination is selected. Therefore, when you play a Combination via an external MIDI device, set the Global MIDI Channel and the Timbre MIDI Channels differently.

MIDI data on the Global MIDI channel is used to control the effects (ON/OFF and Dynamic Modulation). When you wish to control them using the internal sequencer, match the channel of the track containing the control data to the Global MIDI channel.

Clock Source: to synchronize another MIDI device (external sequencer, drum machine, etc.) to the X3R, set the Clock Source to INT. In this mode, MIDI Clock data such as Start, Stop, Continue, Song Select, and Song Position will be sent via the X3R's MIDI OUT connection when the X3R's sequencer is used.

To synchronize the X3R to another MIDI device, set the Clock Source to EXT. In this mode, the X3R sequencer will respond to MIDI Clock data such as Start, Stop, Continue, Song Select, and Song Position that is received via the X3R's MIDI IN connection, and the X3R tempo setting will have no effect.

MIDI Real-Time Messages

Start: starts song playback from the top

Stop: stops playback

Continue: starts song playback from the point at which it was stopped

Song Position Pointer: song position data (specified by clock and bar)

MIDI Clock data: timing data related to song tempo. A slave sequencer will synchronize to this data. Twenty-four clocks equals one quarter note.

Note: If you are not synchronizing the X3R to an external MIDI Clock source, select INT.

Note Receive Filter – 3B

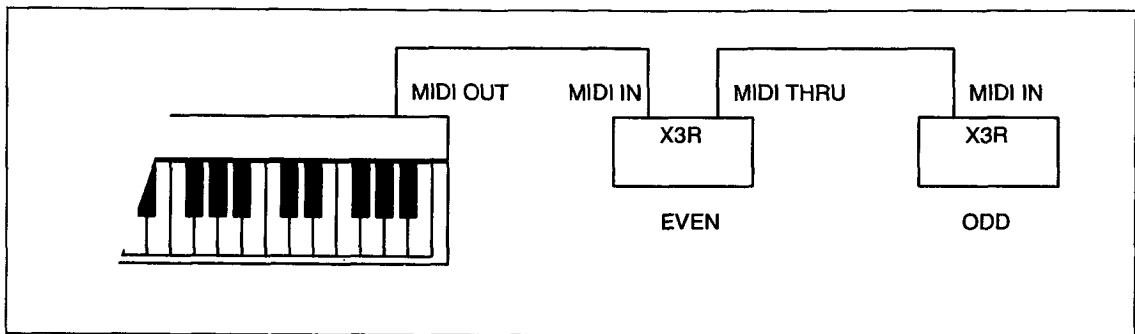
The Note Filter determines whether the X3R responds to even notes, odd notes, or all notes from the MIDI IN connection.

3B NoteR
ALL

3B-1

LCD	Parameter	Range	Description
3B-1	Note Receive Filter	EVEN ODD ALL	Respond to even notes only Respond to odd notes only Respond to all notes

3B-1 Note Receive Filter: normally, this should be set to ALL. However, if you want to double the number of available notes by using two X3Rs simultaneously, feed data to both X3Rs, and set one to respond to odd notes and the other to respond to even notes.



MIDI Filter1 – 3C

MIDI Filter1 determines how the X3R sends and receives MIDI Program Change messages and After Touch.

```
3C FILTER1
PROG:ENA AFT:ENA
```

3C-1

LCD	Parameter	Range	Description
3C-1	Program Change Filter (PROG)	DIS ENA PRG NUM	Program Change operation disabled Program Change messages select Combinations & Programs Program Change messages select Timbre Programs MIDI Bank Select messages ignored
	After Touch Filter (AFT)	DIS ENA	After touch send / receive disabled After touch send / receive enabled

3C-1 Program Change Filter

When DIS is selected, MIDI Program Change messages are neither sent nor received.

When ENA is selected, MIDI Program Change messages received on the Global MIDI Channel select Programs in Program mode and Combinations in Combination mode. MIDI Bank Select messages will select banks in the selected mode. In Combination mode, MIDI Program Change messages received on other channels will select Programs for corresponding Timbres. If the Global MIDI Channel and a Timbre's MIDI Channel are set the same, the Global MIDI Channel has priority. So a Combination will be selected, the Timbre's Program will remain the same.

When PRG is selected, MIDI Program Change messages received on the Global MIDI Channel will still select Programs in Program mode, but in Combination mode, Timbre Programs are selected. MIDI Bank Select messages will select banks in the selected mode.

When NUM is selected, operation is basically the same as for ENA except that MIDI Bank Select messages are ignored.

The following table shows the Program Change and Bank Select receive conditions:

Mode		DIS	ENA	PRG	NUM
Program Play	Program No.	X	O	O	Δ
Combination Play	Combination No.	X	O	X	Δ
Combination Play	Timbre Program No.	X	O	O	Δ
Sequencer Play	Track Program No.	X	O	O	Δ

X — Not received

Δ — Program Change received only

O — Program Change and Bank Select received

Program Change messages recorded in a song are not affected by this filter during playback.

3C-2 After Touch Filter

The X3R uses Channel After Touch only, not Polyphonic After Touch.

Disabling After Touch is useful when, for example, you are recording to the sequencer and you do not want to record After Touch data. Because After Touch is a continuous type of controller, it consumes sequencer memory quickly. After Touch data recorded in a song is not affected by this filter during playback.

MIDI Filter2 – 3D

MIDI Filter1 determines how the X3R responds to MIDI Controllers and System Exclusive data.

```
3D FILTER2
CTRL:ENA EX:DIS
```

3D-1

LCD	Parameter	Range	Description
3D-1	MIDI Controller Filter (CTRL)	DIS ENA	MIDI Controller operation disabled MIDI Controllers sent and received
	System Exclusive Filter (EX)	DIS ENA	System Exclusive operation disabled System Exclusive data sent and received

When the MIDI Controller filter is set to DIS, MIDI Controller messages such as pitch bend, damper pedal, volume, and joystick are neither sent nor received by the X3R, and the sequencer does not record them.

When the MIDI System Exclusive Filter is set to DIS, System Exclusive data for parameter editing is neither sent nor received by the X3R. Normally, this should be set to DIS, however, when using an X3R editing program on a personal computer, set it to ENA.

By connecting the MIDI OUT of one X3R (A) to the MIDI IN of another X3R (B), and setting the System Exclusive filters to ENA, both units can be controlled by editing parameters on X3R (A).

Program Memory Protect – 4A

This function allows you to protect Program memory.

```
4A PROTECT
PROGRAM: OFF
```

4A-1

LCD	Parameter	Range	Description
4A-1	Program Protect (PROGRAM)	OFF ON	Program memory is not protected Program memory is protected

When set to on, Programs cannot be written to internal Program banks A and B.

To protect PROG/SEQ card data, use the protect tab on the card.

Combination Memory Protect – 4B

This function allows you to protect Combination memory.

```
4B PROTECT
COMBINATION: OFF
```

4B-1

LCD	Parameter	Range	Description
4B-1	Combination Protect (COMBINATION)	OFF ON	Combination memory is not protected Combination memory is protected

When set to on, Combinations cannot be written to internal Combination banks A and B.

To protect PROG/SEQ card data, use the protect tab on the card.

Sequencer Memory Protect – 4C

This function allows you to protect sequencer memory.

```
4C PROTECT
SEQUENCE: OFF
```

4C-1

LCD	Parameter	Range	Description
4C-1	Sequencer Protect (SEQUENCE)	OFF ON	Sequencer memory is not protected Sequencer memory is protected

When set to on, sequencer data cannot be written to the sequencer memory.

To protect PROG/SEQ card data, use the protect tab on the card.

Page Memory On/Off – 4D

The Page Memory function remembers which LCD screen is selected when you exit a mode. Next time you enter that particular mode, that LCD screen is selected automatically.

```
4D PAGE MEMORY
OFF
```

4D-1

LCD	Parameter	Range	Description
4D-1	Page Memory	OFF ON	Page Memory function off Page Memory function on

MIDI Data Dump – 5A

MIDI Data Dump allows you to save X3R data to an external MIDI device such as a MIDI data recorder, MIDI computer, or another X3R.

```
5A MIDI DUMP
PROGRAM      OK?
```

5A-1

LCD	Parameter	Range	Description
5A-1	MIDI Data Dump	Program Combination Global Drum kit Sequence All data	Dump 200 Programs in banks A and B Dump 200 Combinations in banks A and B Dump Global setup data Dump 4 drum kits from banks A and B Dump all sequencer data (10 songs, 100 patterns) Dump all the above data
	OK to Data Dump	OK?	Executes Data Dump

Saving Data with MIDI Data Dump

To save X3R data using MIDI Data Dump, you must connect a MIDI device capable of receiving MIDI Data Dump to the X3R's MIDI OUT connection. Although not required by all MIDI devices, set the external devices MIDI Channel to match the X3R's Global MIDI Channel. Specify the X3R data that you want to save, position the cursor on OK?, then press the [▲/YES] button to dump.

Note: While dumping, do not press any buttons.

The following table lists the approximate data size and dump time for each Data Dump.

Type of Data Dump	Approx. Data Size	Approx. Dump Time (Seconds)
Program	37.5 KB	12.0
Combination	31.1 KB	9.9
Global setup	39 bytes	0.1
Drum kit	1.9 KB	0.6
Sequence	4.2 KB ~ 150.5 KB	1.4 ~ 48.2
All data	74.8 KB ~ 221.0 KB	24.0 ~ 70.8

Loading Data with MIDI Data Dump

To load the data back into the X3R, connect the external MIDI device to the X3R's MIDI IN connection, and make sure that the external devices MIDI Channel matches the X3R's Global MIDI Channel. If you are loading Program, Combination, or sequence data, make sure that the respective memory protect function is set to off. See "Program Memory Protect – 4A" on page 162, "Combination Memory Protect – 4B" on page 162, or "Sequencer Memory Protect – 4C" on page 162. Send the Data Dump data.

If you are transferring data between X3Rs, make sure that both X3Rs are set to the same Global MIDI Channel, and the respective memory protect function is set to off.

While the above MIDI DUMP LCD screen is shown, MIDI Data Dump can be received regardless of the System Exclusive Filter setting ("MIDI Filter2 – 3D" on page 161). However, to receive MIDI Data Dump while other LCD screens are shown, the filter must be set to ENA.

For more detailed information on MIDI Data Dumps, see "MIDI Implementation Chart" on page 200.

Load Programs & Combinations from Card – 6A

This function allows you to load individual banks containing Programs, Combinations, drum kits, and Global setup data from a PROG/SEQ data card.

```
6A Load Card
P/C C + A OK?
6A-1
```

LCD	Parameter	Range	Description
6A-1	Source Bank (P/C)	C D C+D	Load data from card bank C Load data from card bank D Load data from card banks C and D
	Destination Bank	A B A+B	Load to internal bank A Load to internal bank B Load to internal bank A and B
	OK to Load	OK?	Executes load

Each card bank can contain 100 Programs, 100 Combinations, 2 drum kits, and global settings, or sequencer data (10 songs, 100 patterns). Sequencer data is loaded using LCD screen 6B. See below.

To load the data, insert a PROG/SEQ data card, select the card bank that you want to load, and the destination, position the cursor on OK?, then press the [▲/YES] button.

When C+D is selected as the source, A+B is automatically selected as the destination. Data must already be saved in banks C and D. See “Save Programs & Combinations to Card – 6C” on page 165. Data from card bank C is loaded into internal bank A, and data from card bank D is loaded into internal bank B.

Note: Existing internal bank data will be overwritten when this load function is executed. So be careful that you don't overwrite (lose) some valuable data.

Note: You cannot load Programs or Combinations if the corresponding memory protect function is set to on. See “Program Memory Protect – 4A” on page 162 and “Combination Memory Protect – 4B” on page 162.

Note: Global settings are stored in bank A, so when you load into bank A you will overwrite the current Global settings (except LCD contrast and memory protect).

Load Sequencer Data from Card – 6B

This function allows you to load sequencer data from a PROG/SEQ data card.

```
6B Load Card
SEQ C OK?
6B-1
```

LCD	Parameter	Range	Description
6B-1	Load Sequencer Data (SEQ)	C D	Load sequencer data from card bank C Load sequencer data from card bank D
	OK to load	OK?	Executes Sequencer data load

Sequencer data consists of 10 songs and 100 patterns.

To load the sequencer data, insert a PROG/SEQ data card, select the card bank that you want to load, position the cursor on OK?, then press the [▲/YES] button.

Note: Existing sequencer data will be overwritten when this load function is executed. So be careful that you don't overwrite (lose) some valuable data.

Note: Card sequencer data can be played from the card. However, to edit the data you must load it first.

Save Programs & Combinations to Card – 6C

This function allows you to save individual banks containing Programs, Combinations, drum kits, and Global setup data to a PROG/SEQ data card. This data and sequencer data cannot be saved in the same bank.

```
6C Save Card
P/C A + C  OK?
```

6C-1

LCD	Parameter	Range	Description
6C-1	Source Bank (P/C)	A B A+B	Save data from internal bank A Save data from internal bank B Save data from internal banks A and B
	Destination Bank	C D C+D	Save to card bank C Save to card bank D Save to card banks C and D
	OK to Save	OK?	Executes Save

Each card bank can contain 100 Programs, 100 Combinations, 2 drum kits, and global settings, or sequencer data (10 songs, 100 patterns). Sequencer data is saved using LCD screen 6D. See below. PROG/SEQ data cards are formatted automatically when you save data onto them, so there are no card formatting functions.

When you save Programs, Combinations, etc., using this function, the destination card bank will be formatted for storing Programs, Combinations, etc. If you save sequencer data using “Save Sequencer Data to Card – 6D” the destination card bank will be formatted for storing sequencer data. In either case, once data has been saved to a bank, it can be loaded, re-saved, and played directly from the card bank

Note: Existing data in the selected destination bank will be overwritten when this load function is executed. So be careful that you don't overwrite (lose) some valuable data.

Note: Make sure that the card's write protect switch is set to off.

Note: Since Global data is stored in bank A only, if the source bank is set to B or A+B, the source bank for global settings will be bank A.

To save the data, insert a PROG/SEQ data card, select the internal bank that you want to save, and the destination bank, position the cursor on OK?, then press the [▲/YES] button. The message “Are You Sure OK?” will appear. Press the [▲/YES] button to save, or the [▼/NO] button to cancel the function.

When A+B is selected as the source, C+D is automatically selected as the destination. Data from internal bank A is saved to card bank C, and data from internal bank B is saved to card bank D.

Save Sequencer Data to Card – 6D

This function allows you to save sequencer data to a PROG/SEQ data card.

```

6D Save Card
SEQ      C   OK?
  
```

6D-1

LCD	Parameter	Range	Description
6D-1	Source Bank (SEQ)	C D	Save sequencer data to card bank C Save sequencer data to card bank D
	OK to Save	OK?	Executes Sequencer data Save

Sequencer data consists of 10 songs and 100 patterns, and can be loaded from card bank C or D.

Note: Existing data in the selected bank will be overwritten when this load function is executed. So be careful that you don't overwrite (lose) some valuable data.

To save the sequencer data, insert a PROG/SEQ data card, select the card bank that you want to save to, position the cursor on OK?, then press the [▲/YES] button. The message “Are You Sure OK?” will appear. Press the [▲/YES] button to save, or the [▼/NO] button to cancel the function.

While saving, the selected card bank will be formatted for use with sequencer data.

Note: If the amount of free sequencer memory is less than 78%, sequencer data cannot be saved to card. In this case, save to floppy disk. See “Save Sequencer Data – 3C” on page 184.

Drum Kit Setup1 – 7A

These parameters allow you to set up drum kits.

Before entering Global mode to edit a drum kit, you must select a Program that is using that drum kit. That is, a Program whose Oscillator mode is set to DRUMS.

Because drum kits are selected like Multisounds in a Program, adjustable parameters in Program Edit mode can also be used when editing a drum kit. For example, VDF, VDA, joystick pitch bend, and even drum modulation is possible.

7A DRUM A1 #01 105:TimPani	> 7A KEY/TUNE/L <> D#4 T+019 L+65	<> 7A DECAY/ASGN <> Dcy+00 Asgn:EX1	< 7A PAN/SEND < Pan=CNT C=0 D=0
7A-1	7A-2	7A-3	7A-4

LCD	Parameter	Range	Description
7A-1	Drum Kit	A1, A2, B1, B2 C1, C2, D1, D2 ROM kits 1 ~ 8	Select a drum kit for editing
	Index (#)	0 ~ 59	Select an index
	Drum Sound	---, 000 ~ 163	Select a drum sound for an index
7A-2	Key	C0 ~ G8	Select a key (note) for an index
	Tune (T)	-120 ~ +120	Tune an index (1 = 10 cents)
	Level (L)	-99 ~ +99	Set the index volume level
7A-3	Decay (Dcy)	-99 ~ +99	Set the index decay
	Group Assign (Asgn)	---, EX1 ~ EX6, SLF	Assign an index to an exclusive group
7A-4	Pan (Pan)	OFF, A, 14A ~ CNT ~ 14B, B	Output pan to buses A and B
	Send C (C)	0 ~ 9	Output level to bus C
	Send D (D)	0 ~ 9	Output level to bus D

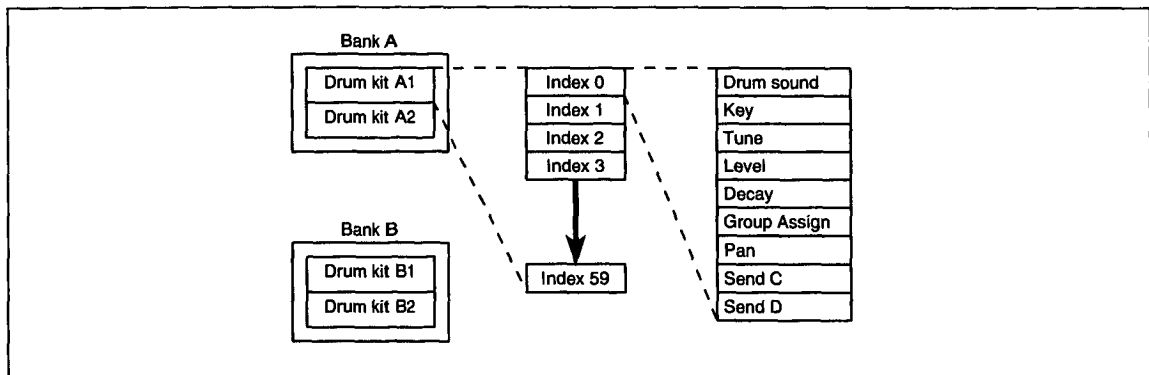
7A-1 Drum Kit: this parameter allows you to select a drum kit for editing. You can edit internal drum kits A1, A2 and B1, B2. PROG/SEQ data card drum kits, C1, C2, D1, and D2, can be viewed using this group of LCD screens, however, they cannot be edited. To edit one of these drum kits, copy it to internal drum kit A1, A2, B1, or B2. See “Drum Kit Copy – 7C” on page 169.

Rom drum kits 1 to 8 are used in GM Programs 129 to 136. These kits can be viewed using this group of LCD screens, however, they cannot be edited. To edit one of these drum kits, copy it to internal drum kit A1, A2, B1, or B2. See “Drum Kit Copy – 7C” on page 169. ROM drum kits cannot be overwritten.

Index: X3R drum kits consist of indexes. Think of an index as an empty drum case, into which you put a drum sound, select a keyboard note, set a volume level, and pan. Parameters 7A-1 to 7A-4 affect the selected index.

As well as using the VALUE knob and the [▲/YES] and [▼/NO] buttons to select indexes, you can also use a MIDI keyboard. Position the cursor on the index parameter, press and hold down the [ENTER] button, then press a key. The index assigned to that key will be selected.

Indexes that have not been assigned a drum sound display the message “No Assign” when selected.

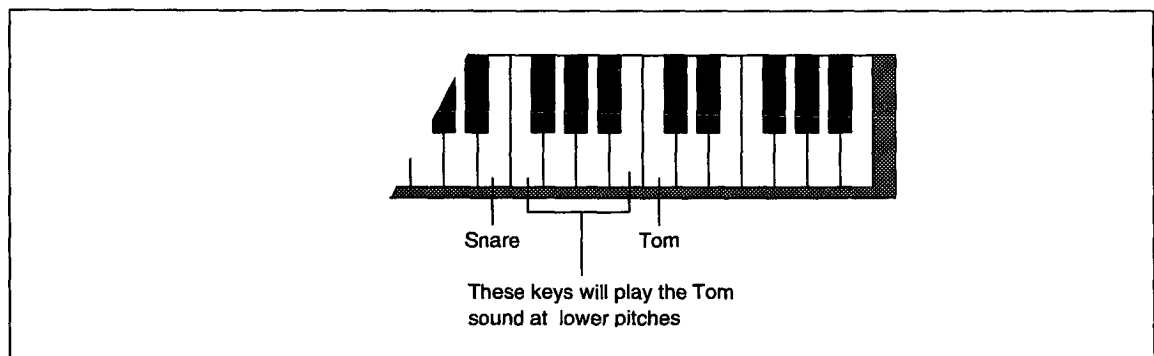


Drum Sound: this parameter allows you to select a drum sound for the currently selected index. If an optional PCM data card that contains drum sounds is inserted, those drum sounds can also be selected. The same drum sound can be selected for any number of indexes. A setting of --- means that no drum sound is selected. See the *Performance Notes* for available drum sounds.

7A-2 Key: this parameter allows you to select the note that will trigger the index. It is not possible to select the same key for two indexes. So, if you want to select a key that is being used by another index, set the other index to a different key first.

As well as using the VALUE knob and the [▲/YES] and [▼/NO] buttons to select keys, you can also use a MIDI keyboard. Select the Key parameter, press and hold down the [ENTER] button, then press a key.

If a key is selected for an index, but no drum sound is assigned to that index, the drum sound assigned to the next key up will play when that key is pressed. The pitch of the drum sound will be lowered one semitone. This can be corrected using the Tune parameter.



Tune: this parameter allows you to tune individual indexes ± 120 (10 = 1 semitone, 120 = 1 octave). For example, you may use the same snare drum sound for two indexes, but tune them differently. Use this parameter to make hi, mid, and low tom-toms from one tom drum sound.

Level: this parameter allows you to set the level of individual indexes. You can use this parameter to set up your drum mix. The overall volume level is determined by the current Program's Oscillator Level parameter.

7A-3 Decay: this parameter allows you to set the decay time of individual indexes. This parameter works in conjunction with the Program's VDA EG Decay Time parameter. So, depending on that parameter setting, you may find that increasing or decreasing this value has little or no effect.

Group Assign: this parameter determines how an index is played in relation to other indexes.

In an exclusive group (EX1 to EX6), only one index can play at a time (monophonic). If, while an index is playing, another index in that group is triggered, the first index will stop, and the new index will play. This is useful for creating realistic hi-hats. By assigning an open hi-hat and a closed hi-hat to the same exclusive group, the sound of the open hi-hat can be cut short by triggering the closed hi-hat. Just like pressing a real hi-hat pedal.

When SLF is selected, the index will be monophonic. In other words, while a long drum sound such as a crash cymbal is playing, if it is re-triggered, the original cymbal sound will be cut short, and the drum sound will play again from the beginning.

7A-4 Pan: this parameter is used to pan the index between buses A and B. These buses feed the effects processors. See “Effect Placement – 7E” on page 57. When OFF is selected, no signal is sent on buses A and B. The CNT setting means center: signals of equal level are fed buses A and B. This parameter can be used to simulate the stereo spread of a real drum kit with, for example, tom toms panned between the stereo outputs.

Send C, Send D: these parameters are used to set the level of the index sent to buses C and D respectively. These buses feed the effects processors. See “Effect Placement – 7E” on page 57.

Note: The Program’s Pan parameter is ignored when its Oscillator mode is set to DRUMS. In this case, the drum kit Pan parameter specified on LCD screen 7A-4 is used.

Drum Kit Setup2 – 7B

These parameters allow you to set up a drum kit. Operation is the same as for “Drum Kit Setup1 – 7A” on page 167.

7B DRUM A1 #01 105:Timpani	> 7B KEY/TUNE/L <> D#4 T+019 L+65	<> 7B DECAY/ASN <> Decy+00 Asgn:EX1	< 7B PAN/SEND < Pan:CNT C=0 D=0
7B-1	7B-2	7B-3	7B-4

Drum Kit Copy – 7C

This function allows you to copy a drum kit to an internal drum kit.

7C COPY D.Kit ROM1 → A2 OK?
7C-1

LCD	Parameter	Range	Description
7C-1	Drum Kit Source	A1, A2, B1, B2 C1, C2, D1, D2 ROM 1 ~ 8	Select the source drum kit
	Drum Kit Destination	A1, A2, B1, B2 C1, C2, D1, D2	Select the destination drum kit
	OK to Copy	OK?	Executes the copy

Drum kits C1, C2, D1, and D2 can be copied only when a PROG/SEQ data card is inserted.

To copy a drum kit, select the source and destination, position the cursor on OK?, then press the [▲/YES] button. The message “Are You Sure OK?” will appear. Press the [▲/YES] button to copy, or the [▼/NO] button to cancel the function.

Note: The drum kit at the specified destination will be overwritten when this function is executed. So be careful that you don’t overwrite (lose) a valuable drum kit.

LCD Contrast – 8A

This function allows you to adjust the LCD contrast. When the LCD screen is viewed from a different height or angle, you may need adjust the LCD contrast to maintain good readability.

```
8A LCD CONT
  3
```

8A-1

LCD	Parameter	Range	Description
8A-1	LCD Contrast	0 ~ 7	Adjusts the LCD contrast for good readability

If you power on the X3R, but cannot see anything on the LCD screen (sometimes caused by extremely low temperatures), press the [GLOBAL] button, then function button [8], and use the VALUE knob or the [▲/YES] and [▼/NO] buttons to adjust the LCD contrast.

Assignable Pedal/SW Setup – 8B

This parameter assigns a function to the ASSIGNABLE PEDAL/SW.

8B ASGN PEDAL
Scale Switch

8B-1

LCD	Parameter	Range	Pedal	Description
8B-1	Pedal Assign	OFF		No function
		Program Up	F/S	Increment Programs in Program mode and Combinations in Combination mode. When pressed, a corresponding MIDI Program Change message is output.
		Program Down		Decrement Programs in Program mode and Combinations in Combination mode. When pressed, a corresponding MIDI Program Change message is output.
		SEQ start/stop		Start and stop the sequencer. When pressed, the corresponding MIDI Start or Stop message is output.
		SEQ punch in/out		Punch in and punch out the sequencer in Manual Punch In/Out recording.
		Effect 1 on/off		Switch Effect 1 on and off. When pressed, the corresponding MIDI Effect 1 on or off message is output.
		Effect 2 on/off		Switch Effect 2 on and off. When pressed, the corresponding MIDI Effect 2 on or off message is output.
		Scale Switch		Switch between the main and sub scales. See "Scale – 2A" on page 156.
		Volume		F/C	Control the X3R volume. When pressed, the corresponding MIDI Volume messages are output.
		Expression	Operates the same as volume. Although, a different MIDI message is output.	
		VDF cutoff	Control the VDF Cutoff Frequency parameter. Pressing the foot controller increases the Cutoff Frequency.	
		Effect control	Control effect dynamic modulation. When pressed, MIDI Effect Control messages are output. See "Effect 1 Setup – 7A" on page 56.	
		Data entry	Adjusts the selected parameter in Program Edit mode, Combination Edit mode, and Sequencer Edit mode, just like using the VALUE knob.	

The Pedal column indicates the type of pedal needed for each function. For F/S use an on/off type footswitch such as the Korg PS-1 foot pedal. For F/C, use a continuous foot controller such as the Korg EXP-2.

Chapter 9: Disk Mode

In this mode you can save and load data to and from the X3R's internal floppy disk drive. The floppy disk drive is recessed into the left-hand end cheek of the X3R.

What Type of Floppy Disk?

Use only 3.5 inch 2DD type floppy disks with the X3R.

The X3R disk format is the same as that used on MS-DOS 720KB disks.

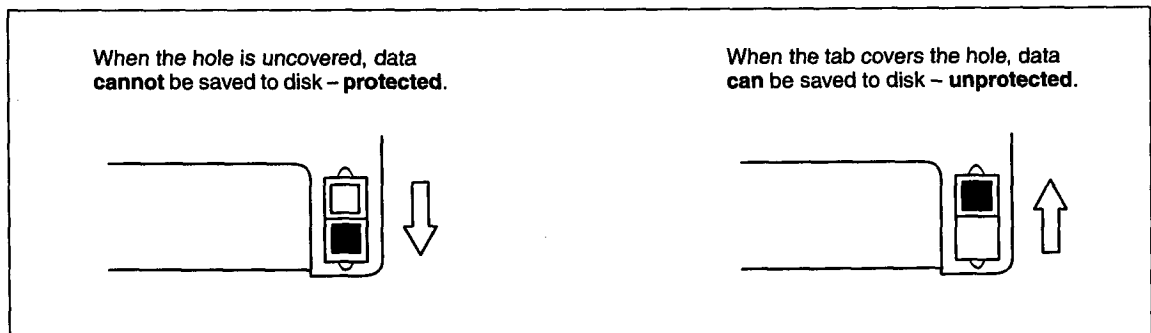
Handling Floppy Disks

Observe the following precautions when handling floppy disks.

- Do not open the shutter or touch the surface of a disk.
- Do not transport the X3R with a floppy disk in the disk drive. Vibration may cause the disk drive head to scratch the disk, making it unusable.
- Do not store or place floppy disks near to a television, computer monitor, loudspeaker, power transformer, or any other device that generates a magnetic field. Doing so may render the disk unusable.
- Do not store or place floppy disks in locations subject to extremes of temperature and humidity, direct sunlight, or excessive dust and dirt.
- Do not place objects on top of a floppy disk.
- Always return disks to their protective cases after use.

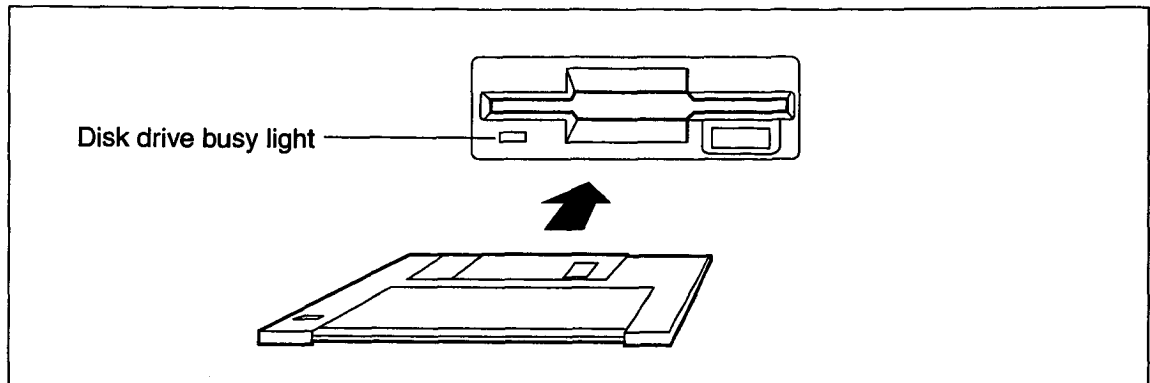
Write Protect Tab

A disk's write protect tab allows you to protect valuable data from being accidentally overwritten. Use a pen or other pointed object to set the tab as shown below.



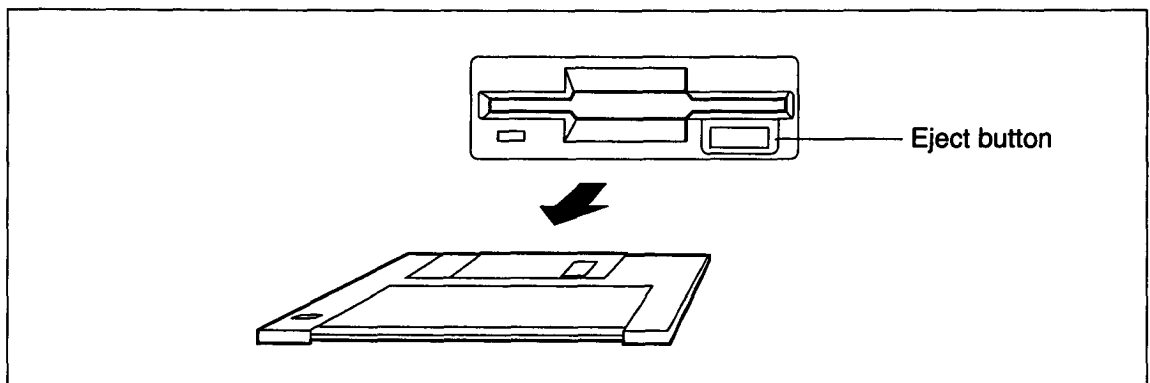
Inserting a Floppy Disk

Insert the disk into the disk drive label side up, shutter first. Push it in until it clicks into place. Do not force disks into the drive. Make sure that you hold the disk straight while inserting it.



Ejecting a Floppy Disk

Before ejecting a disk, make sure that the disk drive busy light is off, and that no "Loading" or "Saving" messages are shown on the LCD screen. Then, press the eject button, and remove the disk.



Disk Drive Head Cleaning

If, after a prolonged period of use, disk save and load errors become frequent, the disk drive head may need cleaning. This can be done using a good-quality fluid-type head cleaning kit for 3.5 inch DD (double-sided) disk drives. Do not use a cleaning kit intended for single-sided disk drives.

- 1) Moisten the cleaning disk with cleaning fluid.
- 2) Insert the cleaning disk into the disk drive.
- 3) Execute any type of load function. An error message will appear. This is normal.
- 4) After approximately 10 seconds, eject the disk.

Do not use the disk drive for about 5 minutes.

X3R File Types

The X3R has four file types:

File Type		File Contents		File Extension
1	Program/Combination/Global	Programs	A00 ~ A99, B00 ~ B99	.PCG
		Combinations	A00 ~ A99, B00 ~ B99	
		Drum kits	A1, A2, B1, B2	
		Global settings		
2	Sequence	Songs	0 ~ 9	.SNG
		Patterns	00 ~ 99	
3	MIDI Exclusive data	MIDI Exclusive data		.EXL
4	SMF (Standard MIDI File)	1 SMF format song		.MID

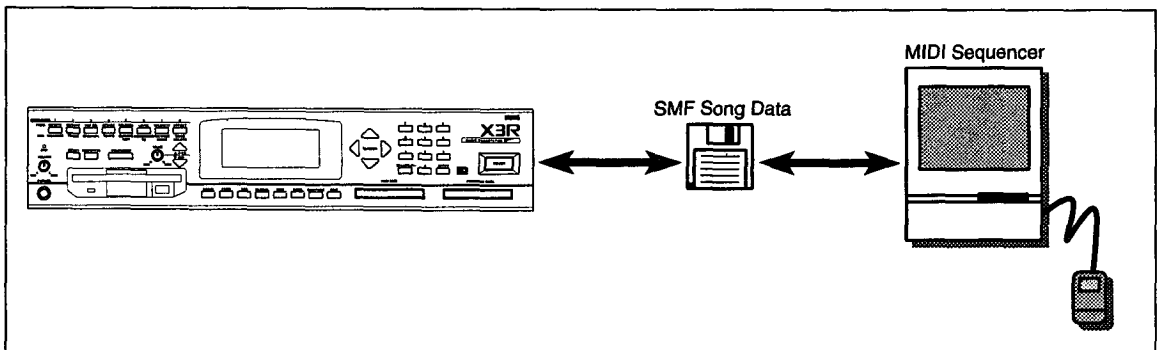
Program/Combination/Global: this type of file contains 200 Programs from banks A and B, 200 Combinations from banks A and B, four drum kits, and the Global mode settings.

The LCD contrast and memory protect function settings are not saved in this file.

Sequence: this type of file contains 10 songs and 100 patterns.

MIDI Exclusive Data: this type of file allows you to use the X3R as a MIDI data recorder. It can be used to store MIDI Exclusive data from external MIDI devices onto X3R floppy disks.

SMF (Standard MIDI File): this type of file contains songs in the SMF format. This format can be read by many different sequencers, making it ideal for transferring songs between systems. You can save X3R sequencer songs in the SMF (Standard MIDI File) format. The X3R can also read SMF format songs from third party suppliers.

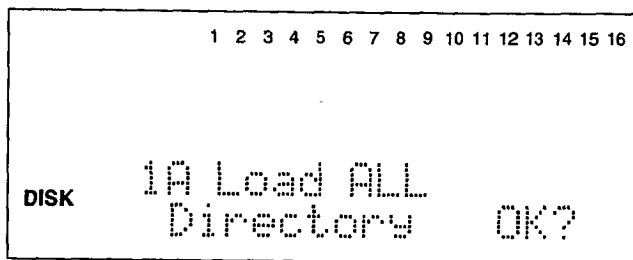


SMF songs can be transferred to and from various computers using 720KB 2DD MS-DOS floppy disks.

Entering Disk Mode

- 1) Press the [DISK] button.

DISK will appear on the LCD screen.



Loading & Saving Notes

Important: Do not attempt to eject a floppy disk while a “Loading” or “Saving” message is shown. Doing so may damage the X3R’s disk drive. Wait until a “Completed” message is shown.

New Disks: new floppy disks, and disks that have been used on other equipment must be formatted before you can save data to them. See “Format Disk – 8A” on page 191.

Directory: when you insert a disk or change disks, load functions will display “Directory”, and “OK?” will flash on the LCD screen. At this point, the X3R does not know what files are on the disk. Press the [▲/YES] button, and the X3R will read the disk. Available files can then be selected using the VALUE knob or the [▲/YES] and [▼/NO] buttons.

Valuable Data: existing X3R data will be overwritten (lost) when you use the various load functions. Make sure that you have any valuable data saved to disk or card.

Memory Protect: if a Program, Combination, or Sequencer memory protect function is set on, the respective data cannot be loaded from floppy disk into the X3R. See “Program Memory Protect – 4A” on page 162, “Combination Memory Protect – 4B” on page 162, and “Sequencer Memory Protect – 4C” on page 162.

Disk Write Protect: make sure that the floppy disk’s write protect tabs are set to unprotected before attempting to save data. See “Write Protect Tab” on page 172.

Always Name Files: if you save a file with the same name as that of a file already stored on a disk, the existing file will be overwritten.

File Name Extensions: these are the three characters after the period in a file’s name. They are added to file types automatically. You do not have to specify them yourself.

Loading & Saving Errors: when a load or save operation has finished, the message “Completed” should appear. At this point, the floppy disk can be ejected. If an error message appears instead of the “Completed” message, reinsert the disk, and try again. See “Disk Mode Error Messages” on page 197.

Naming Files

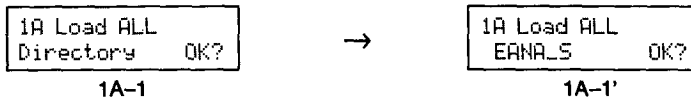
The following characters are available:

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	G	H
I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	-

Names can be up to eight characters long, but with no spaces within the name. Numbers 0~9 can be entered using the number keypad.

Load All Data – 1A

This function allows you to load a .PCG (Program/Combination/Global) file and a .SNG (Sequencer) file simultaneously, both files must have the same name. Both files can be saved to floppy disk with the same name using the “Save All Data – 3A” function on page 183.

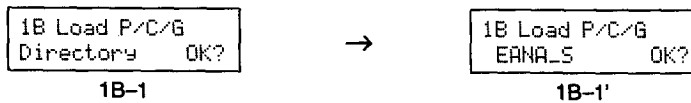


LCD	Parameter	Range	Description
1A-1'	Source file	Files on disk	Select a file name (.PCG and .SNG files with same name)
	OK to Load	OK?	Executes the load function

- 1) Insert a floppy disk that contains the data into the disk drive.
The message “Directory OK?” will appear.
- 2) Press the [▲/YES] button.
- 3) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select a name.
Only file names with a .PCG and .SNG extension will appear.
- 4) Position the cursor on OK?
- 5) Press the [▲/YES] button.
The message “Are You Sure OK?” will appear.
- 6) If you are sure that you want to load the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.
First, the .PCG file is loaded, then the .SNG file. If either file cannot be found, an error message will appear. When finished, the message “Completed” will appear.

Load P/C/G Data – 1B

This function allows you to load a .PCG (Programs/Combinations/Global settings) file from floppy disk.

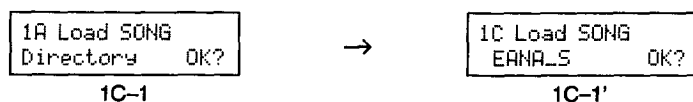


LCD	Parameter	Range	Description
1B-1'	Source File	Files on disk	Select a file
	OK to Load	OK?	Executes the load function

- 1) Insert a floppy disk that contains the data into the disk drive.
The message “Directory OK?” will appear.
- 2) Press the [▲/YES] button.
- 3) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select a file.
Only file names with a .PCG extension will appear.
- 4) Position the cursor on OK?
- 5) Press the [▲/YES] button.
The message “Are You Sure OK?” will appear.
- 6) If you are sure that you want to load the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.
While the file is being loaded, the message “Now Loading .PCG” is shown. When finished, the message “Completed” will appear.

Load Sequencer Data – 1C

This function allows you to load a .SNG (10 songs, 100 patterns) file from floppy disk.



LCD	Parameter	Range	Description
1C-1'	Source file	Files on disk	Select a file
	OK to Load	OK?	Executes the load function

- 1) Insert a floppy disk that contains the data into the disk drive.
The message "Directory OK?" will appear.
- 2) Press the [▲/YES] button.
- 3) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select a file.
Only file names with a .SNG extension will appear.
- 4) Position the cursor on OK?
- 5) Press the [▲/YES] button.
The message "Are You Sure OK?" will appear.
- 6) If you are sure that you want to load the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.
While the file is being loaded, the message "Now Loading .SNG" is shown.
When finished, the message "Completed" will appear.

Load 1 Combination – 2A

This function allows you to load 1 Combination from a .PCG file. You may need to load the Programs used by the Combination Timbres too. See “Load 1 Program – 2B” on page 179.

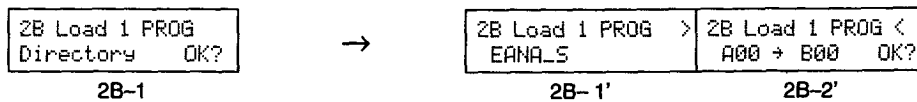


LCD	Parameter	Range	Description
2A-1'	Source File	Files on disk	Select a file
	Source Combination	A00 ~ A99, B00 ~ B99	Select a Combination to load
2A-2'	Destination	A00 ~ A99, B00 ~ B99	Select the destination
	OK to Load	OK?	Executes the load function

- 1) Insert a floppy disk that contains the data into the disk drive.
The message “Directory OK?” will appear.
- 2) Press the [▲/YES] button.
- 3) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select a file.
Only file names with a .PCG extension will appear.
- 4) Press the [→] button.
- 5) Select the Combination to load.
The X3R may take a few seconds to check what Combinations are available on disk. After which, names of available Combinations will be shown.
- 6) Select the destination.
- 7) Position the cursor on OK?
- 8) Press the [▲/YES] button.
The message “Are You Sure OK?” will appear.
- 9) If you are sure that you want to load the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.
While the Combination is being loaded, the message “Now Loading...” is shown.
When finished, the message “Completed” will appear.

Load 1 Program – 2B

This function allows you to load 1 Program from a .PCG file. If the Program uses a drum kit, you'll have to load that too. See "Load 1 Drum Kit – 2E" on page 182.

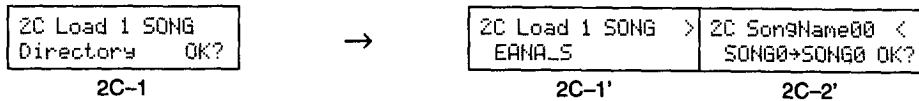


LCD	Parameter	Range	Description
2B-1'	Source File	Files on disk	Select a file
	Source Program	A00 ~ A99, B00 ~ B99	Select a Program to load
2B-2'	Destination	A00 ~ A99, B00 ~ B99	Select the destination
	OK to Load	OK?	Executes the load function

- 1) Insert a floppy disk that contains the data into the disk drive.
The message "Directory OK?" will appear.
- 2) Press the [▲/YES] button.
- 3) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select a file.
Only file names with a .PCG extension will appear.
- 4) Press the [→] button.
- 5) Select the Program to load.
The X3R may take a few seconds to check what Programs are available on disk. After which, names of available Programs will be shown.
- 6) Select the destination.
- 7) Position the cursor on OK?
- 8) Press the [▲/YES] button.
The message "Are You Sure OK?" will appear.
- 9) If you are sure that you want to load the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.
While the Program is being loaded, the message "Now Loading..." is shown.
When finished, the message "Completed" will appear.

Load 1 Song – 2C

This function allows you to load 1 song from a .SNG file. You may need to load some patterns too. In this case, load the patterns first. See “Load 1 Pattern – 2D” on page 181.



LCD	Parameter	Range	Description
2C-1'	Source File	Files on disk	Select a file
	Song to Load (SONG)	SONG1 ~ SONG9	Select a song to load
2C-2'	Destination (SONG)	SONG1 ~ SONG9	Select the destination song
	OK to Load	OK?	Executes the load function

- 1) Insert a floppy disk that contains the data into the disk drive.
The message “Directory OK?” will appear.
- 2) Press the [▲/YES] button.
- 3) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select a file.
Only file names with a .SNG extension will appear.
- 4) Press the [→] button.
- 5) Select the song to load.
The X3R may take a few seconds to check what songs are available on disk. After which, names of available songs will be shown.
- 6) Select the destination.
- 7) Position the cursor on OK?
- 8) Press the [▲/YES] button.
The message “Are You Sure OK?” will appear.
- 9) If you are sure that you want to load the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.
While the song is being loaded, the message “Now Loading...” is shown.
When finished, the message “Completed” will appear.

Load 1 Pattern – 2D

This function allows you to load 1 pattern from a .SNG file.

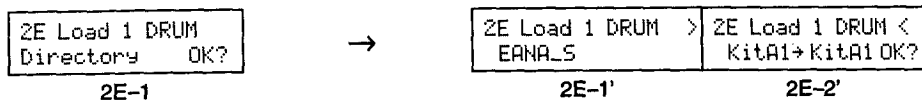


LCD	Parameter	Range	Description
2D-1'	Source File	Files on disk	Select a file
	Pattern to Load (P)	P00 – P99	Select a pattern to load
2D-2'	Destination (P)	P00 – P99	Select the destination pattern
	OK to Load	OK?	Executes the load function

- 1) Insert a floppy disk that contains the data into the disk drive.
The message “Directory OK?” will appear.
- 2) Press the [▲/YES] button.
- 3) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select a file.
Only file names with a .SNG extension will appear.
- 4) Press the [→] button.
- 5) Select the pattern to load.
- 6) Select the destination.
- 7) Position the cursor on OK?
- 8) Press the [▲/YES] button.
The message “Are You Sure OK?” will appear.
- 9) If you are sure that you want to load the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.
While the pattern is being loaded, the message “Now Loading...” is shown.
When finished, the message “Completed” will appear.

Load 1 Drum Kit – 2E

This function allows you to load 1 drum kit from a .PCG file.



LCD	Parameter	Range	Description
2E-1'	Source File	Files on disk	Select a file
2E-2'	Drum Kit to Load	A1, A2, B1, B2	Select a drum kit to load
	Destination	A1, A2, B1, B2	Select the destination drum kit
	OK to Load	OK?	Executes the load function

- 1) Insert a floppy disk that contains the data into the disk drive.
The message "Directory OK?" will appear.
- 2) Press the [▲/YES] button.
- 3) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select a file.
Only file names with a .PCG extension will appear.
- 4) Press the [→] button.
- 5) Select the drum kit to load.
- 6) Select the destination.
- 7) Position the cursor on OK?
- 8) Press the [▲/YES] button.
The message "Are You Sure OK?" will appear.
- 9) If you are sure that you want to load the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.
While the drum kit is being loaded, the message "Now Loading..." is shown.
When finished, the message "Completed" will appear.

Save All Data – 3A

This function allows you to save all data to floppy disk. That is, a .PCG (Program/Combination/Global) file and a .SNG (Sequencer) file simultaneously. Both files will be saved with the same name (different file extensions).

```

3A Save ALL
NEW_NAME  OK?
  
```

3A-1

LCD	Parameter	Range	Description
3A-1	File Name		Name the files (.PCG and .SNG files will use same name)
	OK to Save	OK?	Executes the save function

- 1) Insert a formatted X3R floppy disk into the disk drive.
- 2) Use the [←] and [→] cursor buttons to position the cursor, and the VALUE knob, [▲/YES] and [▼/NO] buttons, or the number keypad to select characters. See “Naming Files” on page 175.
- 3) Position the cursor on OK?
- 4) Press the [▲/YES] button.
The message “Are You Sure OK?” will appear.
- 5) If you are sure that you want to save the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.

First, the .PCG file is saved, then the .SNG file.

When finished, the message “Completed” will appear.

If a file with the same name already exists on the disk, the message “PCG(SNG) exists OK?” will appear. In this case, press the [▲/YES] button to save (overwriting the existing file), or the [▼/NO] button to cancel the function.

Save P/C/G Data – 3B

This function allows you to save a .PCG (Programs/Combinations/Global settings) file to floppy disk.

```

3B Save P/C/G
NEW_NAME  OK?
  
```

3B-1

LCD	Parameter	Range	Description
3B-1	File Name		Name the file
	OK to Save	OK?	Executes the save function

- 1) Insert a formatted X3R floppy disk into the disk drive.
- 2) Use the [←] and [→] cursor buttons to position the cursor, and the VALUE knob, [▲/YES] and [▼/NO] buttons, or number keypad to select characters. See “Naming Files” on page 175.
- 3) Position the cursor on OK?
- 4) Press the [▲/YES] button.
The message “Are You Sure OK?” will appear.
- 5) If you are sure that you want to save the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.

While the data is being saved, the message “Now Saving...” is shown. When finished, the message “Completed” will appear.

If a file with the same name already exists on the disk, the message “File exists OK?” will appear. In this case, press the [▲/YES] button to save (overwriting the existing file), or the [▼/NO] button to cancel the function.

Save Sequencer Data – 3C

This function allows you to save a .SNG (10 songs, 100 patterns) file to floppy disk.

```
3C Save SONG
NEW_NAME  OK?
```

3C-1

LCD	Parameter	Range	Description
3C-1	File Name		Name the file
	OK to Save	OK?	Executes the save function

- 1) Insert a formatted X3R floppy disk into the disk drive.
- 2) Use the [←] and [→] cursor buttons to position the cursor, and the VALUE knob or [▲/YES] and [▼/NO] buttons to select characters. See “Naming Files” on page 175.
- 3) Position the cursor on OK?
- 4) Press the [▲/YES] button.

The message “Are You Sure OK?” will appear.

- 5) If you are sure that you want to save the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.

While the Sequencer data is being saved, the message “Now Saving .SNG” is shown.

When finished, the message “Completed” will appear.

If a file with the same name already exists on the disk, the message “File exists OK?” will appear. In this case, press the [▲/YES] button to save (overwriting the existing file), or the [▼/NO] button to cancel the function.

Load MIDI Exclusive Data – 4A

This function allows you to transmit MIDI Exclusive data that is stored on an X3R floppy disk to other MIDI devices. The Exclusive data for a particular MIDI device must have been saved to disk first. For example, you cannot send MIDI Exclusive data saved from a drum machine to an effects unit. See “Save MIDI Exclusive Data – 4B” on page 185.

```
4A Load EXCL
Directory  OK?
```

4A-1

→

```
4A Load EXCL
EDATA    OK?
```

4A-1'

LCD	Parameter	Range	Description
4A-1'	Source File	Files on disk	Select an Exclusive data file to load
	OK to Load	OK?	Executes the load function

- 1) Connect the X3R's MIDI OUT to the receiving device's MIDI IN.
- 2) Insert the floppy disk that contains the data you want to send.
The message “Directory OK?” will appear.
- 3) Press the [▲/YES] button.
- 4) Select the MIDI Exclusive file that you want to send.
- 5) Position the cursor on OK?
- 6) Press the [▲/YES] button.

The message “Transmitting...” will appear.

When finished, the message “Completed” will appear.

Save MIDI Exclusive Data – 4B

This function allows you to use the X3R as a MIDI data recorder. It can be used to store MIDI Exclusive data from external MIDI devices onto X3R floppy disks. Apart from recording the data, the X3R does not respond directly to this data.

4B Save EXCL Awaiting data	>	4B Save EXCL < MYSETTING OK?
4B-1		4B-2

LCD	Parameter	Range	Description
4B-1	Awaiting data		Exclusive data receive
4B-2	Name		Name the EXCL file to be saved
	OK to Save	OK?	Executes the Save function

- 1) Connect the MIDI OUT of the sending device to the X3R's MIDI IN.
- 2) Insert a formatted X3R floppy disk into the disk drive.
- 3) With this function selected, send the MIDI Exclusive data from the external MIDI device. Refer to the device's operating manual for details about sending MIDI Exclusive data, sometimes referred to as MIDI Bulk Dump.

When the external device has finished sending its data, the amount of data received will be shown on the X3R LCD screen. The X3R can receive up to 64KB of System Exclusive data.

- 4) Press the [→] cursor button.
- 5) Use the [←] and [→] cursor buttons to position the cursor, and the VALUE knob or [▲/YES] and [▼/NO] buttons to select characters. See "Naming Files" on page 175.
- 6) Position the cursor on OK?
- 7) Press the [▲/YES] button.
- 8) If you are sure that you want to save the data, press the [▲/YES] button again. The Exclusive data will be saved to floppy disk.

The message "Now Saving .EXL" will appear.

When finished, the message "Completed" will appear.

The "Load MIDI Exclusive Data – 4A" function on page 184 can be used to transmit the Exclusive data back to the external MIDI device.

Note: If you select an LCD screen other than 4B-1 or 4B-2, the received data will be lost.

MIDI Exclusive Notes

For the Load and Save MIDI Exclusive Data functions, MIDI Exclusive data is sent and received regardless of the X3R's Global MIDI Channel setting and the Global mode MIDI Exclusive Filter setting.

Up to 64 KB of MIDI Exclusive data can be received and saved by the X3R. Free sequencer memory must be more than 52%. If more data is received, the error message "Memory Overflow" will appear. 64 KB is approximately 21 seconds of continuous data reception.

Load SMF (Standard MIDI File) – 5A

This function allows you to load an SMF (Standard MIDI File) into the X3R. This is useful when you want to use a MIDI song that was recorded on a different type of MIDI sequencer system. SMF songs can be transferred to and from various computers using 720KB 2DD floppy disks.



LCD	Parameter	Range	Description
5A-1'	Source File	Files on disk	Select an SMF file to load
5A-2'	Destination Song (SONG)	0 ~ 9	Select the load destination
	OK to Load	OK?	Executes the load function

- 1) Insert the floppy disk that contains the SMF carefully into the disk drive.
The message "Directory OK?" will appear.
- 2) Press the [▲/YES] button.
- 3) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select the SMF that you want to load.
X3R SMF files use the file extension "MID". However, other manufacturers may use something else.
- 4) Press the [→] button.
- 5) Select the load destination.
- 6) Position the cursor on OK?
- 7) Press the [▲/YES] button.
The message "Are You Sure OK?" will appear.
- 8) If you are sure that you want to load the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.

While the file is being loaded, the message "Now Loading..." is shown.

When finished, the message "Completed" will appear.

Note: When an X3R SMF file is loaded back into the X3R, track settings such as meta events are loaded into the destination song. Program No., Volume, and Pan settings at the beginning of the song are ignored.

Note: If sequencer data from a MIDI device other than the X3R contains incompatible data, it cannot be loaded.

Note: When playing a SMF from another device, you may find that some of the parts are played by the wrong Program. This should not occur if the SMF contains GM compatible song data.

Save SMF (Standard MIDI File) – 5B

This function allows you to save an X3R song in the SMF (Standard MIDI File) format. The SMF format can be read by many different sequencers, making it ideal for transferring songs between systems.

5B Save SMF SONG0: YOURSONG	>	5B Save SMF Format:0	<	OK?
5B-1		5B-2		

LCD	Parameter	Range	Description
5B-1	Source Song (SONG)	Song 0 ~ 9	Select a song to save in SMF format
	Name		Name the SMF file to be saved
5B-2	SMF Format	0, 1	Select an SMF format
	OK to Save	OK?	Executes the save function

- 1) Make sure that the floppy disk's write protect tabs are set to unprotected. See "Write Protect Tab" on page 172.
- 2) Insert the floppy disk carefully into the disk drive.
The floppy disk must be formatted before it can be used. See "Format Disk – 8A" on page 191.
- 3) Use the VALUE knob, [▲/YES] and [▼/NO] buttons, or number keypad to select the song that you want to save.
- 4) If you want to change the file name, use the [←] and [→] cursor buttons to position the cursor within the existing name, and the VALUE knob or [▲/YES] and [▼/NO] buttons to select characters. See "Naming Files" on page 175. In addition to the characters shown on page 175, lower case roman characters and some symbols can be used. When you select songs, the first eight characters of the song name are displayed, these will be used as the file name when you save.

Note: X3R song names can be up to 10 characters long. However, file names can use 8 characters only. So the last two characters of a 10 character song name are not used.

- 5) Press the [→] cursor button.
- 6) Select either format 0 or format 1.

Format 0: MIDI data from the 16 tracks is merged into one track.

Format 1: MIDI data is saved as individual tracks, maintaining track integrity.

Normally, format 1 should be selected. If, however, the MIDI device that you are transferring to cannot read format 1, use format 0.

- 7) Position the cursor on OK?
- 8) Press the [▲/YES] button.
The message "Are You Sure OK?" will appear.
- 9) If you are sure that you want to save the data, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.

If a file with the same name already exists, the message "File Exists" will appear. Press the [▲/YES] button to overwrite the existing file, or the [▼/NO] button to cancel the function.

While the file is being saved, the message "Now Saving .MID..." is shown.

When finished, the message "Completed" will appear.

Note: Songs that contain a lot of patterns can become quite large when saved in SMF format. In some case you may not be able to load the SMF back into the X3R.

Note: When saving a standard MIDI file, the settings for each track of the song to be saved will be added as meta events. Also, track settings (Program number, volume, and pan) are added as events at the beginning of the tracks, assuming that a sequencer other than the X3R is used to load the file. Refer to the Note for "Load SMF-5A" on page 182 of this manual.

Rename File – 6A

This function allows you to rename floppy disk files.



LCD	Parameter	Range	Description
6A-1'	File Name	Files on disk	Select a file to rename
6A-2'	Rename		
	OK to Rename	OK?	Executes the rename function

- 1) Make sure that the floppy disk's write protect tabs are set to unprotected. See "Write Protect Tab" on page 172.
- 2) Insert the floppy disk carefully into the disk drive.
The message "Directory OK?" will appear.
- 3) Press the [▲/YES] button.
- 4) Use the VALUE knob or [▲/YES] and [▼/NO] buttons to select the file that you want to rename.

Note: When selecting files, pay attention to file names and extensions. Remember that when you Save All Data, .PCG and .SNG files are saved with the same name. See "X3R File Types" on page 174.

- 5) Press the [→] cursor button.
- 6) Use the [←] and [→] cursor buttons to position the cursor within the existing name, and the [▲/YES] and [▼/NO] buttons to select characters. See "Naming Files" on page 175.

Important: Do not change the three letter extension at the end of the file name (the three characters after the period). If you do, the X3R will not be able to read the file. The file extension can be changed back to something that the X3R can read using an MS-DOS based personal computer.

- 7) Position the cursor on OK?
- 8) Press the [▲/YES] button.
The message "Are You Sure OK?" will appear.
- 9) If you are sure that you want to rename the file, press the [▲/YES] button again. Press the [▼/NO] button to cancel the function.

While the file is being renamed, the message "Processing..." is shown.

If a file already exists with the name you specify, the message "Same name found" appears. In this case, choose another name.

Set Date – 7A

This function allows you to date stamp files.

A file's date cannot be displayed on the X3R. However, this function may be useful if you manage your X3R floppy disk files using an MS-DOS based personal computer.

```
7A Set Date
JAN - 01 - 1993
```

7A-1

LCD	Parameter	Range	Description
7A-1	Month	JAN ~ DEC	Set the month
	Day	01 ~ 31	Set the day
	Year	1980 ~ 2079	Set the year

The date is stored when the X3R is powered off.

Set Time – 7B

This function allows you to time stamp files.

A file's time cannot be displayed on the X3R. However, this function may be useful if you manage your X3R floppy disk files using an MS-DOS based personal computer.

```
7B Set Time
00 : 00
```

7B-1

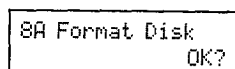
LCD	Parameter	Range	Description
7B-1	Hour	0 ~ 23	Set the hour
	Minute	00 ~ 59	Set the minute

The time is stored when the X3R is powered off.

Format Disk – 8A

This function allows you to format a floppy disk. Floppy disks have to be formatted before you can save data to them. Formatting prepares the disk so that it is ready to store X3R data.

Use only 3.5 inch 2DD type floppy disks with the X3R.



8A-1

LCD	Parameter	Range	Description
8A-1	OK to Format	OK?	Executes the disk format function

- 1) Make sure that the floppy disk's write protect tabs are set to unprotected. See "Write Protect Tab" on page 172.
- 2) Insert the floppy disk carefully into the disk drive.

Note: Any data already stored on the floppy disk will be deleted during disk formatting. Now might be a good time to check the disk contents to see if there is any data that you want to keep.

- 3) Press the [▲/YES] button.
- 4) The message "Are you Sure OK?" will appear. Press the [▲/YES] button to format the disk, or the [▼/NO] button to cancel the function.

While disk formatting is in progress, the message "Now Formatting..." is shown. Disk formatting takes approximately two minutes.

When finished, the message "Completed" will appear. The floppy disk can then be used to save X3R data. The disk is compatible with MS-DOS 720KB format.

When you have saved some X3R data to disk, write on the disk label what is stored on the disk.

Note: If, instead of the message "Completed", an error message appears, eject the disk, reinsert it, then format it again. If the same error message appears, try another disk. Faulty floppy disks are not uncommon.

Floppy disks can also be formatted on a personal computer: MS-DOS 720KB format.

Chapter 10: Data Cards

Using X3R data cards you can expand the number of available Multisounds, experiment with third-party Programs and Combinations, and save your own Programs and sequencer data. See your Korg dealer for more information about available data cards.

PCM Data Cards

PCM data cards typically contain Multisounds. By now, you are probably aware that Multisounds are the basic elements that make up Programs. Hence, increasing your library of Multisounds gives you the power to create some exciting new Programs. Which can, of course, be combined into Combinations, or used in songs. Some PCM data cards also contain drum sounds.

See "Oscillator1 Setup – 1B" on page 10 for details about selecting PCM data card Multisounds.

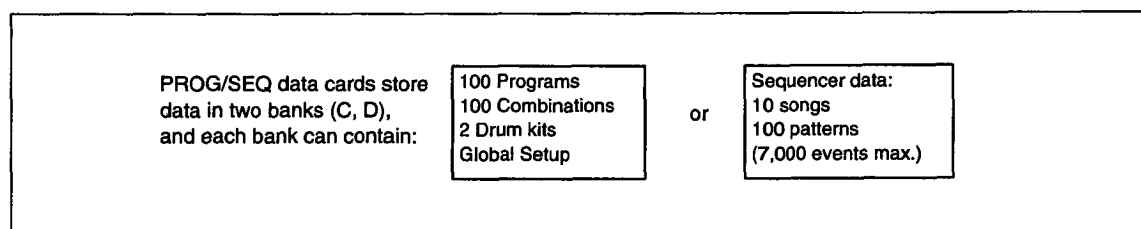
PROG/SEQ Data Cards

PROG/SEQ data cards can be either RAM or ROM type cards.

ROM cards typically contain third-party Programs and/or Combinations, and they allow you to expand your Program and Combination library with ease.

RAM cards can be used to save Programs, Combinations, and sequencer data. Although you can also save this data to floppy disk, you have to load it into the X3R before you can use it. Whereas, Programs, Combinations, and sequencer data stored on a RAM card can be accessed at any time (sequencer data can be played, but you must load it for recording and editing).

The following diagram shows how PROG/SEQ data cards can be used:



See Global mode pages 164 and 165 for details about saving and loading Programs, Combinations, and sequencer data.

The following table shows where the various PROG/SEQ data card load and save functions are located:

Type of Data	Save	Load
100 Programs 100 Combinations 2 Drum kits Global Setup	See "Save Programs & Combinations to Card – 6C" on page 165.	See "Load Programs & Combinations from Card – 6A" on page 164.
Sequencer data: 10 songs 100 patterns	See "Save Sequencer Data to Card – 6D" on page 166.	See "Load Sequencer Data from Card – 6B" on page 164.
1 Program	See "Program Write – 8A" on page 31.	See "Selecting Programs" on page 3.
1 Combination	See "Combination Write – 8A" on page 53.	See "Selecting Combinations" on page 35.
1 Drum kit	See "Drum Kit Copy – 7C" on page 169.	See "Drum Kit Copy – 7C" on page 169.

RAM Card Write Protect Switch

Data on RAM cards can be protected by setting the RAM card's write protect switch to ON. In this case, data cannot be saved to the card, and existing card data is protected against accidental erasure. The write protect switch is located on the side of the RAM card.

Set the RAM card's write protect switch to OFF when you want to save data to the card.

When you are not using a card, to prolong the battery life, set the write protect switch to ON.

Inserting & Removing Data Cards

- Insert data cards with the label facing upwards.
- Do not insert or remove data cards while the X3R is producing sound.
- Do not insert PROG/SEQ data cards in the PCM DATA card slot, and vice versa.

Formatting RAM cards

A new RAM card is formatted automatically the first time that you save data to it in Global mode. Therefore, there is no dedicated RAM card format function.

Using the "Save Programs & Combinations to Card – 6C" on page 165 or "Save Sequencer Data to Card – 6D" on page 166 function will format a new RAM data card. Individual Programs or Combinations cannot be written to a card that has not been formatted using one of these functions. You cannot save sequencer data to a card bank that already contains Programs or Combinations. Likewise, you cannot save Programs or Combinations to a card bank that already contains sequencer data.

Ram Card Battery

RAM cards need a long-life lithium battery to be able to store data. A battery, type CR2016, should be included when you buy a RAM card, however, you will have to install it yourself. See below for details.

Installing the RAM Card Battery

- 1) Turn the RAM card over so that its contacts are facing down.
- 2) Locate the battery slot in the card.
- 3) Install the battery so that its positive (+) side is facing upwards.

Replacing the RAM Card Battery

We recommend that you replace the RAM card battery once every year to protect the data stored on the card. Battery life is reduced if stored at temperatures above 40°C (104°F). CR2016 type lithium batteries are available from your Korg dealer.

- 1) Power on the X3R, and insert the RAM card into the PROG/SEQ slot.
- 2) Remove the old battery.
- 3) Insert the new battery.
- 4) Remove the RAM card.

If you replace the battery while the RAM card is not inserted in a powered on X3R, its data will be lost.

Appendix

General Troubleshooting

Trouble	What To Do
The X3R cannot be powered up.	Check that the power cable is connected to a suitable AC receptacle.
	Check that the X3R's rear panel POWER ON/OFF switch is on.
	Check the power cable plug fuse (if fitted).
	If the X3R still cannot be powered up, consult your Korg dealer.
The X3R appears to be powered up, but nothing is displayed on the LCD.	Check that the LCD contrast is not set to 0. See "LCD Contrast – 8A" on page 170.
The X3R does not produce any sound.	Check the connections to your amplifier, mixer, etc.
	Check that your amplifier, mixer, etc., is switched on, and the correct settings have been made.
	Check that the X3R VALUE knob is up.
	Is Local Control turned off? It should be on. See "Note Receive Filter – 3B" on page 159.
The wrong sounds are produced.	If you are using PCM data cards, is the inserted PCM data card the same one that you used when creating the current Program?
	If you are using PROG/SEQ data cards, is the inserted PROG/SEQ data card the same one that you used when creating the current Combination?
Sound cannot be stopped.	Make sure that the current Program's Hold parameter is not set to ON. See "Global Oscillator Setup – 1A" on page 9.
The selected song cannot be played.	Does the song contain any data?
	Make sure that the MIDI Clock source is set to INT. If you are using an external clock source, make sure that the MIDI Clock source is set to EXT and the external device is sending the MIDI clock data correctly.
Cannot record with the sequencer.	Make sure that the sequencer memory is not protected. See "Sequencer Memory Protect – 4C" on page 162.
	Is the selected track protected? See "Track Status – 1B" on page 111.
	If you are using an external clock source, make sure that the MIDI Clock source is set to EXT and the external device is sending the MIDI clock data correctly.
The X3R does not respond to incoming MIDI data.	Make sure that all MIDI cables are connected correctly.
	Make sure that the X3R is set to receive MIDI data on the channel that the sending device is using? For Programs, see "Global MIDI Channel & MIDI Clock Source – 3A" on page 158. For Combinations, see "MIDI Channel – 3A" on page 45.
	Make sure that the X3R is not set to filter out the incoming MIDI data. See "Note Receive Filter – 3B" on page 159, "MIDI Filter1 – 3C" on page 160, and "MIDI Filter2 – 3D" on page 161. For Combinations, see the various MIDI filters explained in "Combination Edit Mode" on page 39.
In Combination Play mode, Combinations cannot be selected using MIDI Program Change messages.	Make sure that MIDI Filter1's Program Change Filter parameter is set to ENA. See "MIDI Filter1 – 3C" on page 160.
In Combination Play mode, Timbre Programs cannot be selected using MIDI Program Change messages.	Make sure that MIDI Filter1's Program Change Filter parameter is set to PRG. See "MIDI Filter1 – 3C" on page 160.
In Combination Play mode, sound is produced only when certain keys are played.	Maybe some Timbres' key window parameters are set to produce a keyboard split. See "Key Window Top – 4A" on page 46.
Cannot select VDF2, VDA2, or Pitch2 Modulation parameters.	The currently selected Program is not Double mode. See "Global Oscillator Setup – 1A" on page 9.
Cannot write a Program or Combination.	Is the Program or Combination memory protect function set to ON. See "Program Memory Protect – 4A" on page 162.

Trouble	What To Do
Some drum sounds in a Program cannot be played.	Does the drum kit use drum sounds from a PCM data card that is not inserted.
Keys do not play the specified drum sounds.	Is the Transpose function set to something other than +00? See "Transpose - 1B" on page 154.
	Is the oscillator octave parameter set to 8'?
Cannot play GM compatible song data.	Make sure that the song data is GM compatible.
	If you are sending GM compatible song data to the X3R via MIDI, you must conform the selected X3R song to GM. See "GM Song Mode - 8F" on page 152.

Floppy Disk & Data Card Troubleshooting

Trouble	What To Do
Cannot format a floppy disk.	Are you using 3.5 inch 2DD type floppy disks?
	Make sure that the disk is inserted correctly.
	Make sure that the disk's write protect tabs are not set to protect.
Cannot save data to floppy disk.	Make sure that the disk is inserted correctly.
	Make sure that the disk's write protect tabs are not set to protect.
Cannot load data from floppy disk.	Make sure that the disk is inserted correctly.
	Does the disk contain any data?
	Is the memory protected. See "Program Memory Protect - 4A" on page 162, "Combination Memory Protect - 4B" on page 162, and "Sequencer Memory Protect - 4C" on page 162
Cannot save data to card.	Make sure that the card's write protect switch is not set to protect.
	Make sure that you are not using a ROM card. You can save data to RAM type cards only.
	Make sure that the card is inserted correctly.
	When a Program or Combination is saved to a card bank, that bank is formatted for storing Programs and Combinations. Are you trying to save sequencer data to such a card bank?
Cannot load data from card.	Make sure that the card is inserted correctly.
	Does the card contain any data?
	Is the memory protected. See "Program Memory Protect - 4A" on page 162, "Combination Memory Protect - 4B" on page 162, and "Sequencer Memory Protect - 4C" on page 162

General Error Messages

Error Message	Meaning
Battery Low (Internal)	The voltage of the internal battery is low. Please contact your Korg dealer to have the battery replaced. Do not attempt to replace the battery yourself.
Memory Protected	The memory into which you are trying to load data is protected. See "Program Memory Protect - 4A" on page 162, "Combination Memory Protect - 4B" on page 162, and "Sequencer Memory Protect - 4C" on page 162.
Write Error	Data was not saved to card correctly. Reinsert the card and try again.

Sequencer Mode Error Messages

Error Message	Meaning
Beat or Length Mismatch	You are trying to place a track or pattern data into a track with a different time signature, or to bounce or copy patterns of different lengths.
Blank Measure	No data in the specified source measure.
Blank Pattern	No data in the specified source pattern.
Blank Track	No data in the specified source track.
Can't Open Pat	The pattern cannot be opened.
Can't Undo	Cannot perform undo due to insufficient free memory.
Card Memory Full	The sequencer data is too large to save to a PROG/SEQ card. Internal sequencer memory capacity is 32,000 events. PROG/SEQ cards can store 7,000 events.
Measure Overflow	The operation you are trying will exceed the 999 measure limit for a track.
Memory Full	The total number of events used by all songs and patterns has reached 32,000 - the maximum.
Mismatch B Resol	Song's base resolution is different.
No Events Exist	The track or pattern selected for event editing does not contain any data.
Ocpd by Pat	A pattern overlaps into the measure that you have specified for punch in/out or the measure that you have specified for a measure edit destination.
Pat Across Src	If you are copying from a track, the specified source contains part of a pattern. If you are executing a get from track function, the specified source contains part or all of a pattern.
Pat Confl Event	You are trying to bounce a track that contains a pattern with a track that contains an event or pattern in the same measure.
Pattern Used in Song	The pattern cannot be loaded because it is used in a song.
Song Not Empty	The selected song contains data.
Src Across Dst	While copying measures within a track, the source and destination data overlaps.
Track Protected	The selected track is protected. See "Track Status - 1B" on page 111.

Disk Mode Error Messages

Error Message	Meaning
Can't Make File	There are 112 files on the disk (maximum).
Data Error	The data that was saved to disk or read from disk is incomplete or meaningless. Or the disk is not for use with the X3R. Data errors also occur if: a disk is scratched, the wrong disk type is used, the disk drive heads are dirty. If a data error message appears, try the following: Eject the disk, reinsert it, then try again. Try a new floppy disk. Clean the disk drive. See "Disk Drive Head Cleaning" on page 173.
Disk Type Error	The disk is not for use with the X3R.
Disk Full	The disk is full. Use another disk.
Drive Not Ready	No disk in the disk drive.
File Protected	File is set to read only.
File Type Error	The file has a .PCG, .SNG, .EXL file extension, but the file format is different.

Error Message	Meaning
Illegal SMF FMT	The file that you have loaded is not a format 0 or format1 SMF.
Illegal SMF Divi	The file that you have loaded is timecode based.
Illegal SMF Data	The SMF that you have loaded contains some errors.
Measure Overflow	The SMF that you are trying to load contains more than 999 measures.
Memory Full	When loading SMF, sequencer memory becomes full.
Memory Overflow	While saving MIDI data via MIDI filer, the received data exceeded 64kbytes.
No Combination	You have tried to Load 1 COMB from an i2 or i3 .PCG file.
No Data	No events in the loaded SMF
	No MIDI data for MIDI Filer to save.
No File	The file specified does not exist on the disk.
Not Enough Mem	There is not enough memory for the MIDI filer to save the data.
Same File	A file with that name already exists.
Song Data Error	When saving or loading sequencer data, the data contains an error.
Src Is Empty	When saving SMF, there are no track events.
Tr Memory Over	The SMF that you are trying to load contains a track with more than 16,000 events.
Tr Number Over	The SMF that you are trying to load contains more than 16 tracks.
Write Protected	The disk's write protect tabs are set to the protected position. See "Write Protect Tab" on page 172.

Global Mode Error Messages

Message	Meaning
CARD Battery Low	The voltage of the card battery is low. Replace the battery. See "Ram Card Battery" on page 194.
Card Format Mismatch	The data that you are trying to load does not exist on the card.
Combi/Prog in the Bank (C/D)	The card bank from which you tried to load sequencer data contains Programs and/or Combinations.
Invalid (Unformatted) CARD	The card does not contain any data, or it is not for use with the X3R.
Invalid Bank (C/D)	The card bank does not contain any data.
No CARD Inserted	No card is inserted.
ROM Protected	You cannot write to a ROM card, or a RAM card whose write protect switch is set to ON.
SEQ in the Bank (C/D)	The card bank from which you tried to load Programs, Combinations, and/or drum kits contains sequencer data.

Specifications

Tone Generation System	AI ² (Advanced Integrated) Synthesis
Tone Generator	Single mode: 32 voice, 32 oscillators
	Double mode: 16 voice, 32 oscillators
	Dynamic voice allocation
PCM Waveform Memory	6MB
Effects	Two digital multi-effects processors
Programs	336 (200 internal RAM, 136 internal ROM), 536 with PROG/SEQ card
Combinations	200 internal RAM, 400 with PROG/SEQ card
Sequencer	16 tracks
	10 songs
	100 patterns
	32,000 event capacity
Control Inputs	Assignable pedal
Outputs	L/MONO, R, 3, 4
	PHONES
Floppy Disk Drive	3.5 inch 2DD
Card Slots	PCM DATA
	PROG/SEQ DATA
MIDI Connections	IN, OUT, THRU
LCD	Custom LCD with backlight
Power Consumption	10 W
Dimensions (W x D x H)	430 x 405.3 x 89 mm (17 x 16 x 3.5 inch) 2U rack mount
Weight	5.2 kg (11.5 lbs)

Appearance and specifications subject to change without notice.

Options

Cards	SRC-512 RAM card
	PCM data card
	ROM card
Foot Pedals	PS-1 pedal switch
	PS-2 pedal switch
	DS-1 Damper Pedal
	EXP-2 Expression Pedal

MIDI Implementation Chart

Function		Transmitted	Recognized	Remarks
Basic Channel	Default	1 ~ 16	1~16	Memorized
	Changed	1 ~ 16	1~16	
Mode	Default		3	
	Messages	X	X	
	Altered	*****		
Note Number:		0 ~ 127	0~127	*1
	True Voice	*****	0~127	
Velocity	Note On	O 9n, V=2 ~ 126	O 9n, V=1 ~ 127	Only even values transmitted
	Note Off	X	X	
After Touch	Keys	O	O	Seq data keys only *1 *A
	Chs	O	O	*1 *A
Pitch bend		O	O	*C
Control Change	0, 32	O	O	Bank Select (MSB, LSB) *P
	1, 2	O	O	Modulation (pitch, cutoff) *1 *C
	4, 64	O	O	Pedal (scale, damper) (64:*1 *C
	6, 38	O	O	Data Entry (MSB, LSB) *1
	7, 11	O	O	Volume, expression (11:*1) *C
	10, 91, 93	O	O	A:B panpot, send C, D *1 *C
	12, 13	O	O	Effect controller 1, 2 (13:*1) *C
	72, 73, 74	O	O	EG time (release, attack), brightness *1 *C
	92, 94	O	O	Effects 1, 2 on/off *1 *C
	96, 97	O	O	Data Inc, Dec *1
	100, 101	O	O	RPN (LSB, MSB) *1 *3
	120, 121	O	O	All sound off, Reset all Cntrls *1
0 ~ 101	O	O	(Sequencer data)	
Program Change	True#	O 0 ~ 127	O 0~127	*P
		*****	0 ~ 127	0 ~ 99 except bank GM
System Exclusive		O	O	*4 *E
System Common	Song pos	O	O	*2
	Song Sel	O 0 ~ 29	O 0 ~ 29	*2
	Tune	X	X	
System Real Time	Clock	O	O	*2
	Command	O	O	*2
Aux Messages	Local On/Off	X	O	
	All Notes Off	X	O (123~127)	
	Active Sense	O	O	
	Reset	X	X	
Notes	<p>*C, *P, *A, *E: Sent and received when MIDI Filter (Controller, Program Change, After touch, System Exclusive) set to ENA.</p> <p>*1 Only sequencer data is transmitted.</p> <p>*2 When clock set to internal, sent, but not received. When set to external, received, but not sent.</p> <p>*3: LSB, MSB = 00,00: pitch bend range, =01,00: fine tune, =02,00: course tune.</p> <p>*4 App'ies to Inquire message, GM system, master balance, master volume, not Korg Exclusive.</p>			

Mode 1:OMNI ON, POLY
Mode 3:OMNI OFF, POLY

Mode 2:OMNI ON, MONO
Mode 4:OMNI OFF, MONO

O: Yes
X: No

MIDI IMPLEMENTATION

1. TRANSMITTED DATA

1-1 CHANNEL MESSAGES

Status (Hex)	Second (Hex)	Third (Hex)	Description	E N A
1000 nnnn (8n)	Okkk kkkk (kk)	0100 0000 (40)	Note Off (Only Seq Recorded Data)	A
1001 nnnn (9n)	Okkk kkkk (kk)	0vzv vvvv (vv)	Note On (Only Seq Recorded Data)	A
			vvv vvvv=2~128	
1010 nnnn (An)	Okkk kkkk (kk)	0vzv vvvv (vv)	Poly Key Pressure (Only Seq Recorded Data)	T,Q
1011 nnnn (Bn)	0000 0000 (00)	0mmn mmmn (mm)	Bank Select(MSB) (BANK Key, etc)	*1,2 P
1011 nnnn (Bn)	0000 0100 (04)	0000 0000 (00)	Foot Pedal (Select Main Scale)	C
1011 nnnn (Bn)	0000 0100 (04)	0111 1111 (7F)	Foot Pedal (Select Sub Scale)	C
1011 nnnn (Bn)	0000 0111 (07)	0vzv vvvv (vv)	Volume (Assign Pedal, etc)	*1 C
1011 nnnn (Bn)	0000 1010 (0A)	0vzv vvvv (vv)	Panpot (by A:B Panpot)	C
1011 gggg (Bg)	0000 1100 (0C)	0vzv vvvv (vv)	Effect Control (Assignable Pedal)	C
1011 nnnn (Bn)	0010 0000 (20)	0bbb bbbb (bb)	Bank Select(LSB) (BANK Key, etc)	*1,2 P
1011 nnnn (Bn)	0ccc cccc (cc)	0vzv vvvv (vv)	Control Data (Seq Recorded Data)	C,Q
			ccc cccc=00~101	
1100 nnnn (Cn)	0ppp pppp (pp)	---- ----	Program Change (Prog/Comb Change)	*1,2 P
1101 nnnn (Dn)	0vzv vvvv (vv)	---- ----	Channel Pressure (Only Seq Recorded Data)	T
1110 nnnn (En)	0bbb bbbb (bb)	0bbb bbbb (bb)	Bender Change (Only Seq Recorded Data)	C

nnnn : MIDI Channel No.(0~15) Usually Global Channel. When using Sequencer, each track's channel, and when in Combination Mode, each timbre's channel.

gggg : Always Global Channel No.(0~15)

vvvv : Value

ENA = A : Always Enabled

C : Enabled when Control Filter in GLOBAL Mode is ENA

P : Enabled when Program Filter in GLOBAL Mode is ENA

T : Enabled when After Touch Filter in GLOBAL Mode is ENA

Q : Enabled when Sequencer is Playing(Trans),Recording(Receive)

T,Q: T and Q

C,Q: C and Q

*1 : When change the Combination No., Transmits [Bank Select],[Program Change] of Selected Combination, and Each Timbre's(Mode=EXT) [Bank Select],[Program Change],[Volume].

Program	MIDI Out (Hex)	Combination	MIDI Out (Hex)
BankA 00~99 :	mm,bb,pp = 00,00,00~63	BankA 00~99 :	mm,bb,pp = 00,00,00~63
" B 00~99 :	" 00,01,00~63	" B 00~99 :	" 00,01,00~63
" C 00~99 :	" 00,02,00~63	" C 00~99 :	" 00,02,00~63
" D 00~99 :	" 00,03,00~63	" D 00~99 :	" 00,03,00~63
" G 01~128 :	" 38,00,00~7F		
" G 129 :	" 3E,00,00		
" G 130 :	" 3E,00,10		
" G 131 :	" 3E,00,19		
" G 132 :	" 3E,00,20		
" G 133 :	" 3E,00,28		
" G 134 :	" 3E,00,40		
" G 135 :	" 3E,00,18		
" G 136 :	" 3E,00,30		

1-2 SYSTEM COMMON MESSAGES

Status (Hex)	Second (Hex)	Third (Hex)	Description
1111 0010 (F2)	0sss ssss (ss)	0ttt tttt (tt)	Song Position Pointer
			sss ssss : Least significant (LSB) *3
			ttt tttt : Most significant (MSB) *3
1111 0011 (F3)	000s ssss (ss)	-----	Song Select
			s ssss : Song No. = 0~29 (10~29:Card)

Transmits when in Sequencer Mode (Internal Clock)

When change the Song No., Transmits [Song Select] and Each Track's (Status=EXT,BOTH) [Bank Select],[Program Change],[Volume],[Panpot], Last of all [Song Position Pointer].

*3 : For Example Time Signature = 4/4, 8/8
tt,ss = 00,10 / Measure

1-3 SYSTEM REALTIME MESSAGES

Status (Hex)	Description
1111 1000 (F8)	Timing Clock *4
1111 1010 (FA)	Start *4
1111 1011 (FB)	Continue *4
1111 1100 (FC)	Stop *4
1111 1110 (FE)	Active Sensing

*4 : Transmits when in Sequencer Mode (Internal Clock)

1-4 UNIVERSAL SYSTEM EXCLUSIVE MESSAGES (DEVICE INQUIRY REPLY)

Byte (Hex)	Description
1111 0000 (F0)	Exclusive Status
0111 1110 (7E)	Non Realtime Message
0000 gggg (0g)	MIDI GLOBAL CHANNEL (DEVICE ID)
0000 0110 (06)	INQUIRY MESSAGE
0000 0010 (02)	IDENTITY REPLY
0100 0010 (42)	KORG ID (MANUFACTURERS ID)
0011 0101 (35)	X3R ID (FAMILY CODE (LSB))
0000 0000 (00)	(" " (MSB))
0000 0001 (01)	(MEMBER CODE (LSB))
0000 0000 (00)	(" " (MSB))
0*** **** (**)	ROM No. 1~ (Minor Ver. (LSB))
0000 0000 (00)	(" " (MSB))
0*** **** (**)	SOFT VER. 1~ (Major Ver. (LSB))
0000 0000 (00)	(" " (MSB))
1111 0111 (F7)	END OF EXCLUSIVE

Transmits when INQUIRY MESSAGE REQUEST Received

MEMBER CODE = 0 : X3
1 : X3R

1-5 STRUCTURE OF KORG SYSTEM EXCLUSIVE MESSAGES

```

1st Byte = 1111 0000 (F0) : Exclusive Status
2nd Byte = 0100 0010 (42) : KORG ID
3rd Byte = 0011 gggg (3g) : Format ID   g:Global ch.
4th Byte = 0011 0101 (35) : X3R ID
5th Byte = 0fff ffff (ff) : Function Code (See Func Code List)
6th Byte = 0ddd dddd (dd) : Data
LastByte = 1111 0111 (F7) : End of Exclusive ..... EOX
    
```

1-6 Transmits Function Code List

Func	Description	R	D	E	C
42	MODE DATA	○			
47	ALL DRUM SOUND(PCM CARD) NAME DUMP	○			
45	ALL MULTISOUND(PCM CARD) NAME DUMP	○			
4E	MODE CHANGE				○*5
41	PARAMETER CHANGE				○*8
53	DRUMKIT PARAMETER CHANGE				○*7
40	PROGRAM PARAMETER DUMP	○			○*8
4C	ALL PROGRAM PARAMETER DUMP	○	○		
49	COMBINATION PARAMETER DUMP				○*9
4D	ALL COMBINATION PARAMETER DUMP	○	○		
48	ALL SEQUENCE DATA DUMP	○	○		
51	GLOBAL DATA DUMP	○	○		
52	DRUMS DATA DUMP	○	○		
50	ALL DATA(GLOBAL, DRUM, COMBI, PROG, SEQ) DUMP	○	○		
26	RECEIVED MESSAGE FORMAT ERROR	○		○	
23	DATA LOAD COMPLETED (ACK)			○	
24	DATA LOAD ERROR (NAK)			○	
21	WRITE COMPLETED			○	
22	WRITE ERROR			○	

Transmitted when

- R : Request Message is received
- D : Data dump by SW (Don't respond to Exclusive ENA,DIS)
- E : EX.Message received
- C : Mode or No. is changed by SW

Some Request Message is not received in some mode. See 2-6.

* When transmits series of EX Messages to X3R, Wait until [DATA LOAD COMPLETED] or [WRITE COMPLETED] of Several Messages was received.

- *5 : Transmits when change a Mode.
- *8 : Transmits when edit a parameter in EDIT PROGRAM, EDIT COMBINATION, and PROGRAM (Performance Edit) Mode.
- *7 : Transmits when edit a DrumKit's parameter in GLOBAL Mode.
- *8 : Transmits when enter to EDIT PROGRAM Mode, or edit a Performance Edit's parameter.
- *9 : Transmits when change a Combination No.

2. RECOGNIZED RECEIVE DATA

2-1 CHANNEL MESSAGES

Status (Hex)	Second (Hex)	Third (Hex)	Description	ENA
1000 nnnn (8n)	0kkk kkkk (kk)	0xxx xxxx (xx)	Note Off	A
1001 nnnn (9n)	0kkk kkkk (kk)	0000 0000 (00)	Note Off	A
1001 nnnn (9n)	0kkk kkkk (kk)	0vvv vvvv (vv)	Note On	A
			vvv vvvv=1~127	
1010 nnnn (An)	0kkk kkkk (kk)	0vvv vvvv (vv)	Poly Key Pressure (For Seq.Recording)	T,Q
1011 nnnn (Bn)	0000 0000 (00)	0mmn nmmn (mm)	Bank Select(MSB)	*1 P
1011 nnnn (Bn)	0000 0001 (01)	0vvv vvvv (vv)	Modulation1 Depth (Pitch Modulation)	C
1011 nnnn (Bn)	0000 0010 (02)	0vvv vvvv (vv)	Modulation2 Depth (Cutoff Modulation)	C
1011 nnnn (Bn)	0000 0100 (04)	00vv vvvv(≤3P)	Foot Pedal Off (Select Main Scale)	C
1011 nnnn (Bn)	0000 0100 (04)	01vv vvvv(≥40)	Foot Pedal On (Select Sub Scale)	C
1011 nnnn (Bn)	0000 0110 (06)	0vvv vvvv (vv)	Data Entry (MSB) (For RPN)	C
1011 nnnn (Bn)	0000 0111 (07)	0vvv vvvv (vv)	Volume	C
1011 nnnn (Bn)	0000 1010 (0A)	0vvv vvvv (vv)	Panpot (A:B Panpot)	C
1011 nnnn (Bn)	0000 1011 (0B)	0vvv vvvv (vv)	Expression	C
1011 gggg (Bg)	0000 1100 (0C)	0vvv vvvv (vv)	Effect Control (Dyna Mod Src= PEDAL1)	C
1011 gggg (Bg)	0000 1101 (0D)	0vvv vvvv (vv)	Effect Control (Dyna Mod Src= PEDAL2)	C
1011 nnnn (Bn)	0010 0000 (20)	0bbb bbbb (bb)	Bank Select(LSB)	*1 P
1011 nnnn (Bn)	0010 0110 (26)	0vvv vvvv (vv)	Data Entry (LSB) (For RPN)	C
1011 nnnn (Bn)	0100 0000 (40)	00xx xxxx(≤3P)	Hold Off (Damper Off)	C
1011 nnnn (Bn)	0100 0000 (40)	01xx xxxx(≥40)	" On (Damper On)	C
1011 nnnn (Bn)	0100 1000 (48)	0vvv vvvv (vv)	Release Time (Perf Edit Rel Time)*4	C
1011 nnnn (Bn)	0100 1000 (48)	0vvv vvvv (vv)	Attack Time (" " Atk Time)*4	C
1011 nnnn (Bn)	0100 1000 (4A)	0vvv vvvv (vv)	Brightness (" " Cutoff) *4	C
1011 nnnn (Bn)	0101 1011 (5B)	0vvv vvvv (vv)	Reverb Level (Send C Level)	C
1011 gggg (Bg)	0101 1100 (5C)	0000 0000 (00)	Effect1 Level (FX1 Off)	C
1011 gggg (Bg)	0101 1100 (5C)	0xxx xxxx (≥1)	" " (FX1 On)	C
1011 nnnn (Bn)	0101 1101 (5D)	0vvv vvvv (vv)	Chorus Level (Send D Level)	C
1011 gggg (Bg)	0101 1110 (5E)	0000 0000 (00)	Effect2 Level (FX2 Off)	C
1011 gggg (Bg)	0101 1110 (5E)	0xxx xxxx (≥1)	" " (FX2 On)	C
1011 nnnn (Bn)	0110 0000 (60)	0000 0000 (00)	DATA Increment (For RPN Edit)	C
1011 nnnn (Bn)	0110 0001 (61)	0000 0000 (00)	DATA Decrement (For RPN Edit)	C
1011 nnnn (Bn)	0110 0100 (64)	0000 00rr (0r)	RPN Parameter No. (LSB)	*3 A
1011 nnnn (Bn)	0110 0101 (65)	0000 0000 (00)	RPN Parameter No. (MSB)	*3 A
1011 nnnn (Bn)	0111 1000 (78)	0000 0000 (00)	All Sound Off	C
1011 nnnn (Bn)	0111 1001 (79)	0000 0000 (00)	Reset All Controllers	C
1011 nnnn (Bn)	0ccc cccc (cc)	0vvv vvvv (vv)	Control Data (For Seq.Recording)	C,Q
			ccc cccc=00~101	
1011 nnnn (Bn)	0111 1011 (7B)	0000 0000 (00)	All Notes Off	A
1011 nnnn (Bn)	0111 110x (7x)	0000 0000 (00)	Omni Mode Off/On (All Notes Off)	A
1011 nnnn (Bn)	0111 1110 (7E)	000n nnnn(≤10)	Mono Mode On (All Notes Off)	A
			n nnnn=0~16	
1011 nnnn (Bn)	0111 1111 (7F)	0000 0000 (00)	Poly mode On (All Notes Off)	A
1100 nnnn (Cn)	0ppp pppp (pp)	---- ----	Program Change (Prog,Comb CHG)	*1,2 P
1101 nnnn (Dn)	0vvv vvvv (vv)	---- ----	Channel Pressure (After Touch)	T
1110 nnnn (En)	0bbb bbbb (bb)	0bbb bbbb (bb)	Bender Change (Pitch Bend)	C

nnnn : MIDI Channel No.(0~15) Usually Global Channel.

When in Combi/Seq Mode, each timbre's/Track's channel.

gggg : Always Global Channel No.(0~15)

x : Random

ENA Same as TRANSMITTED DATA

*1 : MIDI In (Hex) Program
 mm,bb,pp = 00,00,00~83 : BankA 00~99
 00,00,64~7F : " A 00~27
 00,01,00~83 : " B 00~99
 00,01,64~7F : " B 00~27
 00,02,00~83 : " C 00~99
 00,02,64~7F : " C 00~27
 00,03,00~83 : " D 00~99
 00,03,64~7F : " D 00~27
 38,xx,00~7F : " G 01~128
 38,xx,00~7F : " G 01~128
 3A~3D,xx,xx : OFF *1-1
 3E,xx,00~0F : BankG 129
 3E,xx,10~17 : " G 130
 3E,xx,18 : " G 135
 3E,xx,18 : " G 131
 3E,xx,1A~1F : " G 135
 3E,xx,20~27 : " G 132
 3E,xx,28~2F : " G 133
 3E,xx,30~37 : " G 136
 3E,xx,38~3F : " G 129
 3E,xx,40~47 : " G 134
 3E,xx,48~7F : " G 129
 3F,xx,xx : OFF *1-1

MIDI In (Hex) Combination
 mm,bb,pp = 00,00,00~83 : BankA 00~99
 00,00,64~7F : " A 00~27
 00,01,00~83 : " B 00~99
 00,01,64~7F : " B 00~27
 00,02,00~83 : " C 00~99
 00,02,64~7F : " C 00~27
 00,03,00~83 : " D 00~99
 00,03,64~7F : " D 00~27

xx : Random
 *1-1: When in PROGRAM Mode,
 It is ignored.

*2 : After Processing (While Exclusive ENA),
 Transmits Exclusive Message[DATA LOAD COMPLETED]or[DATA LOAD ERROR].

*3 : rr = 0 : Pitch Bend Sens (Only in SEQ Mode).
 = 1 : Detune (") . When Received Ch = Global Ch,
 = 2 : Transpose (") . Act as Master Tune (Other Mode).

*4 : vv ≤3F : Past or Dark
 =40 : No change
 ≥41 : Slow or Bright

2-2 SYSTEM COMMON MESSAGES

Status (Hex)	Second (Hex)	Third (Hex)	Description
1111 0010 (F2)	0sss ssss (ss)	Ottt tttt (tt)	Song Position Pointer
1111 0011 (F3)	000s ssss (ss)	---- ----	Song Select

Receive when in Sequencer Mode (External Clock)

2-3 SYSTEM REALTIME MESSAGES

Status (Hex)	Description	
1111 1000 (F8)	Timing Clock	*5
1111 1010 (FA)	Start	*5
1111 1011 (FB)	Continue	*5
1111 1100 (FC)	Stop	*5
1111 1110 (FE)	Active Sensing	

*5 : Receive when in Sequencer Mode (External Clock)

2-4 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (NON REALTIME)

Byte (Hex)	Description	
1111 0000 (F0)	EXCLUSIVE STATUS	
0111 1110 (7E)	NON REALTIME MESSAGE	
0ggg gggg (gg)	MIDI CHANNEL	*6
0000 aaaa (0a)	SUB ID 1	*7
0000 00bb (0b)	SUB ID 2	*7
1111 0111 (F7)	END OF EXCLUSIVE	

*6 : gg = 0~F : Receive if Global Channel
 = 7F : Receive any Channel

*7 : a,b = 06,01 : INQUIRY MESSAGE REQUEST
 = 09,01 : GENERAL MIDI MODE ON
 (Receive anytime except for Seq playing/Recording, DATA FILER Page)

2-5 UNIVERSAL SYSTEM EXCLUSIVE MESSAGE (REALTIME)

Byte (Hex)	Description	
1111 0000 (F0)	EXCLUSIVE STATUS	
0111 1111 (7F)	REALTIME MESSAGE	
0ggg gggg (gg)	MIDI CHANNEL	*6
0000 0100 (04)	SUB ID 1	
0000 00bb (0b)	SUB ID 2	*8
0vvv vvvv (vv)	VALUE(LSB)	*8
0mmn mmmn (mm)	VALUE(MSB)	*8
1111 0111 (F7)	END OF EXCLUSIVE	

*8 : b = 01 : MASTER VOLUME (mm,vv = 00,00~7F,7F : Min~Max)
 = 02 : MASTER BALANCE (mm,vv = 00,00~40,00~7F,7F : L~Center~R)

2-6 SYSTEM EXCLUSIVE MESSAGES

* Doesn't receive when Sequencer is Playing,Recording and If in the DATA FILER Page, It is saved.

Function Code List

Func	Description	G	C	P	A	No.
12	MODE REQUEST	○	○	○	○	42
1F	ALL DRUM SOUND (PCM CARD)NAME DUMP REQUEST	○	○	○	○	47
18	ALL MULTISOUND (PCM CARD)NAME DUMP REQUEST	○	○	○	○	45
10	PROGRAM PARAMETER DUMP REQUEST	○	○	○	○	40
1C	ALL PROGRAM PARAMETER DUMP REQUEST	●	○	○	○	4C
19	COMBINATION PARAMETER DUMP REQUEST	○	○	○	○	49
1D	ALL COMBINATION PARAMETER DUMP REQUEST	●	○	○	○	4D
18	ALL SEQUENCE DATA DUMP REQUEST	●	○	○	○	48
0E	GLOBAL DATA DUMP REQUEST	●	○	○	○	51
0D	DRUMS DATA DUMP REQUEST	●	○	○	○	52
0F	ALL DATA(GLOBAL,DRUMS,COMBI,PROG,SEQ)DUMP REQ	●	○	○	○	50
11	PROGRAM WRITE REQUEST			○		21
1A	COMBINATION WRITE REQUEST		○			21
40	PROGRAM PARAMETER DUMP			○		23
4C	ALL PROGRAM PARAMETER DUMP	●	○	○	○	23
49	COMBINATION PARAMETER DUMP			○		23
4D	ALL COMBINATION PARAMETER DUMP	●	○	○	○	23
48	ALL SEQUENCE DATA DUMP	●	○	○	○	23
51	GLOBAL DATA DUMP	●	○	○	○	23
52	DRUMS DATA DUMP	●	○	○	○	23
50	ALL DATA(GLOBAL,DRUMS,COMBI,PROG,SEQ) DUMP	●	○	○	○	23
4E	MODE CHANGE	○	○	○	○	23
41	PARAMETER CHANGE	○	○	○	○	23
53	DRUM KIT PARAMETER CHANGE	○				23

Receive when in
 G : GLOBAL Mode
 (●---Does not respond to Exclusive ENA,DIS in DATA DUMP Page)
 C : COMBI, E.COMBI Mode
 P : PROG, E.PROG Mode
 A : ANY OTHER Mode

No. : MIDI Out Function No.
 (transmitted after the message has been received.)

3. MIDI EXCLUSIVE FORMAT (R : Receive, T : Transmit)

See 1-5 STRUCTURE OF KORG SYSTEM EXCLUSIVE MESSAGES'

(1) MODE REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0001 0010 (12)	MODE REQUEST	12H
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=42 message.

(2) PROGRAM PARAMETER DUMP REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0001 0000 (10)	PROGRAM PARAMETER DUMP REQUEST	10H
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=40 or Func=24 message.

(3) ALL DRUM SOUND (PCM CARD) NAME DUMP REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0001 1111 (1F)	ALL DRUM SOUND NAME DUMP REQUEST	1FH
0000 0000 (00)		
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=47 or Func=24 message.

(4) ALL MULTISOUND (PCM CARD) NAME DUMP REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0001 0110 (18)	ALL MULTISOUND NAME DUMP REQUEST	18H
0000 0000 (00)		
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=45 or Func=24 message.

(5) ALL PROGRAM PARAMETER DUMP REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0001 1100 (1C)	ALL PROGRAM PARAMETER DUMP REQUESTS	1CH
0000 0000 (00)		
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=4C or Func=24 message.

(6) COMBINATION PARAMETER DUMP REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0001 1001 (19)	COMBINATION PARAMETER DUMP REQUEST	19H
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=49 or Func=24 message.

(7) ALL COMBINATION PARAMETER DUMP REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0001 1101 (1D)	ALL COMBI. PARAMETER DUMP REQUEST	1DH
0000 0000 (00)		
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=4D or Func=24 message.

(8) ALL SEQUENCE DATA DUMP REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0001 1000 (18)	ALL SEQUENCE DATA DUMP REQUEST	18H
0000 0000 (00)		
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=48 or Func=24 message.

(9) GLOBAL DATA DUMP REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0000 1110 (0E)	GLOBAL DATA DUMP REQUEST	0EH
0000 0000 (00)		
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=51 or Func=24 message.

(10) DRUMS DATA DUMP REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0000 1101 (0D)	DRUMS DATA DUMP REQUEST	0DH
0000 0000 (00)		
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=52 or Func=24 message.

(11) ALL DATA (GLOB, DRUMS, COMBI, PROG, SEQ) DUMP REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0000 1111 (0F)	ALL DATA (GLB, CMB, PRG, SEQ) DUMP REQ	0FH
0000 0000 (00)		
1111 0111 (F7)	EOX	

Receives this message, and transmits Func=50 or Func=24 message.

(12) PROGRAM WRITE REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0001 0001 (11)	PROGRAM WRITE REQUEST	11H
0000 00bb (0b)	Write Program Bank	(NOTE 1)
0ppp pppp (pp)	Write Program No. (0-99)	
1111 0111 (F7)	EOX	

If pp > 99 pp ← pp-100
Don't change a Bank

Receives this message, writes the data and transmits Func=21 or Func=22 message.

(13) COMBINATION WRITE REQUEST R

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0001 1010 (1A)	COMBINATION WRITE REQUEST	1AH
0000 00bb (0b)	Write Combination Bank	(NOTE 1)
0ppp pppp (pp)	Write Combination No. (0-99)	
1111 0111 (F7)	EOX	

If pp > 99 pp ← pp-100
Don't change a Bank

Receives this message, writes the data and transmits Func=21 or Func=22 message.

(14) PROGRAM PARAMETER DUMP R, T

Byte	Description	
FO,42,3g,35	EXCLUSIVE HEADER	
0100 0000 (40)	PROGRAM PARAMETER DUMP	40H
Oddd dddd (dd)	Data	(NOTE 2,3)
1111 0111 (F7)	EOX	

Receives this message & data, and transmits Func=23 or Func=24 message.

Receives Func=10 message, and transmits this message & data.

When Enter the EDIT PROGRAM Mode or Edit the PERFORMANCE EDIT by SW, transmits this message & data.

(15) ALL PROGRAM(BANK A,B) PARAMETER DUMP R, T

Byte	Description
F0,42,3g,35	EXCLUSIVE HEADER
0100 1100 (4C)	ALL PROGRAM PARAMETER DUMP 4CH
0000 0000 (00)	|
0ddd dddd (dd)	Data (NOTE 2,4)
1111 0111 (F7)	EOX

Receives this message & data, and transmits Func=23 or Func=24 message.
 Receives Func=1C message, and transmits this message & data.
 Transmits this message & data when DATA DUMP is executed.

(16) COMBINATION PARAMETER DUMP R, T

Byte	Description
F0,42,3g,35	EXCLUSIVE HEADER
0100 1001 (49)	COMBINATION PARAMETER DUMP 49H
0000 0000 (00)	|
0ddd dddd (dd)	Data (NOTE2,5)
1111 0111 (F7)	EOX

Receives this message & data, and transmits Func=23 or Func=24 message.
 Receives Func=19 message, and transmits this message & data.
 When the Combi No.is changed by SW, transmits this message & data.

(17) ALL COMBINATION(BANK A,B) PARAMETER DUMP R, T

Byte	Description
F0,42,3g,35	EXCLUSIVE HEADER
0100 1101 (4D)	ALL COMBINATION PARAMETER DUMP 4DH
0000 0000 (00)	|
0ddd dddd (dd)	Data (NOTE 2,8)
1111 0111 (F7)	EOX

Receives this message & data, and transmits Func=23 or Func=24 message.
 Receives Func=1D message, and transmits this message & data.
 Transmits this message & data when DATA DUMP is executed.

(18) ALL SEQUENCE DATA(INTERNAL) DUMP R, T

Byte	Description
F0,42,3g,35	EXCLUSIVE HEADER
0100 1000 (48)	ALL SEQUENCE DATA DUMP 48H
0000 0000 (00)	|
0sss ssss (ss)	Seq.Data Size (NOTE 7-1)
0ddd dddd (dd)	Control Data (NOTE 2,7-2)
0ddd dddd (dd)	Sequence Data (NOTE 2,7-3)
1111 0111 (F7)	EOX

Receives this message & data, and transmits Func=23 or Func=24 message.
 Receives Func=18 message, and transmits this message & data.
 Transmits this message & data when DATA DUMP is executed.

(19) GLOBAL DATA DUMP R, T

Byte	Description
F0,42,3g,35	EXCLUSIVE HEADER
0101 0001 (51)	GLOBAL DATA DUMP 51H
0000 0000 (00)	|
0ddd dddd (dd)	Data (NOTE 2,8)
1111 0111 (F7)	EOX

Receives this message & data, and transmits Func=23 or Func=24 message.
 Receives Func=0E message, and transmits this message & data.
 Transmits this message & data when DATA DUMP is executed.

(20) DRUMS DATA(BANK A,B) DUMP R, T

Byte	Description
F0,42,3g,35	EXCLUSIVE HEADER
0101 0010 (52)	DRUMS DATA DUMP 52H
0000 0000 (00)	|
0ddd dddd (dd)	Data (NOTE 2,9)
1111 0111 (F7)	EOX

Receives this message & data, and transmits Func=23 or Func=24 message.
 Receives Func=0D message, and transmits this message & data.
 Transmits this message & data when DATA DUMP is executed.

(21) ALL DATA(GLOBAL,DRUMS,COMBI,PROG,SEQ.) DUMP R, T

Byte	Description
F0,42,3g,35	EXCLUSIVE HEADER
0101 0000 (50)	ALL DATA(GLBL,COMBI,PROG,SEQ.) DUMP 50H
0000 0000 (00)	|
0sss ssss (ss)	Seq.Data Size (NOTE 7-1)
0ddd dddd (dd)	Data (NOTE 2,10)
1111 0111 (F7)	EOX

Receives this message & data, and transmits Func=23 or Func=24 message.
 Receives Func=0F message, and transmits this message & data.
 Transmits this message & data when DATA DUMP is executed.

(22) MODE CHANGE R, T

Byte	Description
F0,42,3g,35	EXCLUSIVE HEADER
0100 1110 (4E)	MODE CHANGE 4EH
0000 mmmm (0m)	Mode Data (NOTE 11)
0000 0000 (00)	|
1111 0111 (F7)	EOX

Receives this message & data, changes the Mode, and transmits Func=23 or Func=24.
 When the Mode is changed by SW, transmits this message & data.

(23) PARAMETER CHANGE R, T

Byte	Description
FO,42,3g,35	EXCLUSIVE HEADER
0100 0001 (41)	PARAMETER CHANGE 41H
0ppp pppp (pp)	Parameter No.(LSB) (TABLE 6~9)
0ppp pppp (pp)	Parameter No.(MSB) (TABLE 6~9)
0vvv vvvv (vv)	Value (LSB bit8~0) (NOTE 12)
0vvv vvvv (vv)	Value (MSB bit13~7) (NOTE 12)
1111 0111 (F7)	EOX

Receives this message & data, and transmits Func=23 or Func=24 message. When the Parameter No. is changed by SW, transmits this message & data.

(24) DRUM KIT PARAMETER CHANGE R, T

Byte	Description
FO,42,3g,35	EXCLUSIVE HEADER
0101 0011 (53)	DRUM KIT PARAMETER CHANGE 53H
0000 00kk (0k)	DRUM KIT No. (NOTE 17)
00ss ssss (ss)	Index No. (ss=00~59)
0000 pppp (0p)	Parameter No. (TABLE10)
0vvv vvvv (vv)	Value (LSB bit8~0) (NOTE 12)
0vvv vvvv (vv)	Value (MSB bit13~7) (NOTE 12)
1111 0111 (F7)	EOX

Receives this message & data, and transmits Func=23 or Func=24 message.

(25) ALL DRUM SOUND (PCM CARD)NAME T

Byte	Description
FO,42,3g,35	EXCLUSIVE HEADER
0100 0111 (47)	ALL DRUM SOUND NAME 47H
0000 0000 (00)	
0nnn nnnn (nn)	Number of Drum Sound (NOTE 13-1)
0ddd dddd (dd)	Data (NOTE 13-2)
1111 0111 (F7)	EOX

Receives Func=1F message, and transmits this message & data or transmits Func=24 message.

(28) ALL MULTISOUND (PCM CARD)NAME T

Byte	Description
FO,42,3g,35	EXCLUSIVE HEADER
0100 0101 (45)	ALL MULTISOUND NAME 45H
0000 0000 (00)	
0nnn nnnn (nn)	Number of Multisound (NOTE 14-1)
0ddd dddd (dd)	Data (NOTE 14-2)
1111 0111 (F7)	EOX

Receives Func=16 message, and transmits this message & data or transmits Func=24 message.

(27) MODE DATA T

Byte	Description
FO,42,3g,35	EXCLUSIVE HEADER
0100 0010 (42)	MODE DATA 42H
0000 mmmm (0m)	Mode Data (NOTE 11)
0000 0000 (00)	
00cc 00vv (cv)	Card Variation (NOTE 15)
0000 01cc (0c)	PCM Memory Status (NOTE 16)
1111 0111 (F7)	EOX

Receives Func=12 message, and transmits this message & data.

(28) MIDI IN DATA FORMAT ERROR T

Byte	Description
FO,42,3g,35	EXCLUSIVE HEADER
0010 0110 (28)	MIDI IN DATA FORMAT ERROR 28H
1111 0111 (F7)	EOX

Transmits this message when there is an error in the MIDI IN message (ex.data length).

(29) DATA LOAD COMPLETED (ACK) T

Byte	Description
FO,42,3g,35	EXCLUSIVE HEADER
0010 0011 (23)	DATA LOAD COMPLETED 23H
1111 0111 (F7)	EOX

Transmits this message when DATA LOAD,PROCESSING have been completed.

(30) DATA LOAD ERROR (NAK) T

Byte	Description
FO,42,3g,35	EXCLUSIVE HEADER
0010 0100 (24)	DATA LOAD ERROR 24H
1111 0111 (F7)	EOX

Transmits this message when DATA LOAD,PROCESSING have not been completed (ex.protected).

(31) WRITE COMPLETED T

Byte	Description
FO,42,3g,35	EXCLUSIVE HEADER
0010 0001 (21)	WRITE COMPLETED 21H
1111 0111 (F7)	EOX

Transmits this message when DATA WRITE MIDI has been completed.

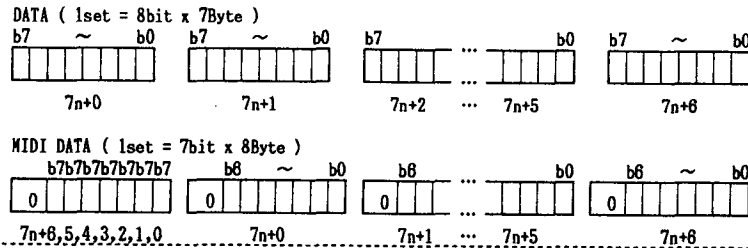
(32) WRITE ERROR T

Byte	Description
FO,42,3g,35	EXCLUSIVE HEADER
0010 0010 (22)	WRITE ERROR 22H
1111 0111 (F7)	EOX

Transmits this message when DATA WRITE MIDI has not been completed.

NOTE 1 : PROGRAM, COMBINATION BANK
 bb=0 : Bank A
 1 : Bank B
 2 : Bank C (Card)
 3 : Bank D (Card)

NOTE 2 :
 DUMP DATA CONVERT n=0~ for NOTE 3, 4, 5, 6, 7-2, 7-3, 8, 9, 10, 13-2, 14-2



NOTE 3 : PROGRAM PARAMETER (IN CURRENT BUFFER) DUMP FORMAT (See TABLE 1 , NOTE 2)
 [Parameter No.00], ..., [Parameter No.183]
 184Byte = 7x23+3 → 8x23+(1+3) = 188Byte

NOTE 4 : ALL PROGRAM PARAMETER (IN INTERNAL MEMORY) DUMP FORMAT (See NOTE 2)
 [Prog A 00 (184Byte)], ..., [Prog B 99 (184Byte)]
 184x200Byte = 7x4685+5 → 8x4685+(1+5) = 37488Byte (12.0Sec)

NOTE 5 : COMBINATION PARAMETER (IN CURRENT BUFFER) DUMP FORMAT (See TABLE 2 , NOTE 2)
 [Parameter No.00], ..., [Parameter No.135]
 136Byte = 7x19+3 → 8x19+(1+3) = 156Byte

NOTE 6 : ALL COMBINATION PARAMETER (IN INTERNAL MEMORY) DUMP FORMAT (See NOTE 2)
 [Combi A 00 (136Byte)], ..., [Combi B 99 (136Byte)]
 136x200Byte = 7x3885+5 → 8x3885+(1+5) = 31088Byte (9.8Sec)

NOTE 7 : ALL SEQUENCE DATA (IN INTERNAL MEMORY) DUMP FORMAT
 7-1 : Sequence Data Size (2Byte) 4Step(16Byte)/1Size (See 7-3)
 [Data Size (bit6~0)],
 [Data Size (bit13~7)]

7-2 : Control Data Dump Format (3702Byte) (See TABLE 5-1 , NOTE 2)
 [Control Data (Song Size(298) x 10 = 2980Byte)],
 [Pattern Data (200Byte)],
 [Song0-Tr.1 Addr (2Byte)], ..., [Song0-Tr.16 Addr], [Song0-Tempo Track Addr],
 [Song1-Tr.1 Addr], ..., [Song9-Tr.16 Addr], [Song9-Tempo Track Addr] (340Byte),
 [Pattern0 Addr (2Byte)], ..., [Pattern99 Addr] (200Byte),
 [Pattern End Addr (2Byte)]

7-3 : Sequence Data Dump Format (See TABLE 5-2 , NOTE 2)
 [Sequence 1st Data(4Byte)], ..., [Seq.nth Data]
 n : Seq.Data Step = 0 ~ 32000
 3702Byte+4x[Seq.Data Step]Byte = 7xA+B → 8xA+(1+B)Byte
 ∴ 7-1,7-2,7-3 = 2+8xA+(1+B)Byte (1.4~48.2Sec)

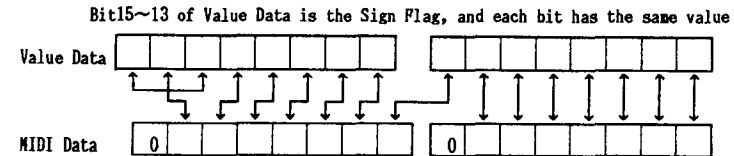
NOTE 8 : GLOBAL DATA (IN INTERNAL MEMORY) DUMP FORMAT (See TABLE 3 , NOTE 2)
 [Global Data (288Byte)]
 28=7x4+0 → 8x4 =32Byte

NOTE 9 : DRUMS DATA (IN INTERNAL MEMORY) DUMP FORMAT (See TABLE 4 , NOTE 2)
 [Drum Kit Data (7x80x2x2Byte)]
 1880Byte =7x240+0 → 8x240 =1920Byte (0.6Sec)

NOTE 10 : ALL DATA (GLOBAL,DRUMS,COMBI,PROG,SEQ) DUMP FORMAT (See NOTE 2)
 [Global Data], (See NOTE 8)
 [Drums Data], (See NOTE 9)
 [All Combination Parameter Data], (See NOTE 6)
 [All Program Parameter Data], (See NOTE 4)
 [All Sequence Data] (See NOTE 7-2,7-3)
 28+1680+27200+32800+3702+4x[Seq.Data Step]Byte = 7xC+D
 → 8xC+(1+D)Byte (24.0~70.8Sec)

NOTE 11 : mmm = 0 : COMBINATION 3 : EDIT PROG. 6 : GLOBAL
 1 : EDIT COMBI. 4 : SEQUENCER 7 : DISK
 2 : PROGRAM 5 : EDIT SEQUENCER

NOTE 12 : VALUE DATA FORMAT (Use at PARAMETER CHANGE, DRUM KIT PARAMETER CHANGE)



NOTE 13-1 : NUMBER OF DRUMSOUND
 nnn nnn = 1 ~

NOTE 13-2 : ALL DRUM SOUND (PCM CARD) NAME DATA FORMAT
 [Drum Sound 1 Name (10Byte)], ..., [Drum Sound n Name (10Byte)]
 n : Number of DrumSound (Data ... ASCII Format)

NOTE 14-1 : NUMBER OF MULTISOUND
 nnn nnn = 1 ~

NOTE 14-2 : ALL MULTISOUND (PCM CARD) NAME DATA FORMAT
 [Multisound 1 Name (10Byte)], ..., [Multisound n Name (10Byte)]
 n : Number of Multisound (Data ... ASCII Format)

NOTE 15 : cc, vv = 0,0 : Card Off
 = 0,1 : NG Card (ROM or protected RAM)
 = 0,2 : " (RAM)
 cc = 1 : ROM Card vv = bit0...Bank C, bit1...Bank D
 = 2 : RAM Card (Protect Off) = 0 : Prog/Combi Data
 = 3 : " (" On) = 1 : Seq Data

NOTE 16 : cc = 0 : Card Off
 = 1 : NG Card
 = 2 : PCM Card In

NOTE 17 : kk = 00 : BankA DrumKit1
 01 : " A " 2
 02 : " B " 1
 03 : " B " 2

PROGRAM PARAMETER (TABLE 1)

No.	PARAMETER	DATA(Hex) : VALUE
00	PROGRAM NAME (Head)	20~7F : ' ' ~ ' ' ←
09	PROGRAM NAME (Tail)	
OSCILLATOR		
10	OSCILLATOR MODE	0,1,2 *1
11	ASSIGN HOLD	bit0=0:POL, =1:MON bit1=0:OFF, =1:ON
12	OSC-1 M/D.SOUND(LSB)	0~???? : 0~????
13	OSC-1 M/D.SOUND(MSB)	*13
14	OSC-1 OCTAVE	FE~01 : 32'~4'
15	OSC-2 M/D.SOUND(LSB)	0~???? : 0~????
16	OSC-2 M/D.SOUND(MSB)	*13
17	OSC-2 OCTAVE	FE~01 : 32'~4'
18	INTERVAL	F4~0C : -12~12
19	DETUNE	CE~32 : -50~50
20	DELAY START	00~83 : 00~89
PITCH EG		
21	START LEVEL	9D~83 : -99~89
22	ATTACK TIME	00~83 : 00~89
23	ATTACK LEVEL	9D~83 : -99~89
24	DECAY TIME	00~83 : 00~89
25	RELEASE TIME	00~83 : 00~89
26	RELEASE LEVEL	9D~83 : -99~89
27	TIME VELOCITY SENSE	9D~83 : -99~89
28	LEVEL VELOCITY SENSE	9D~83 : -99~89
CUTOFF MG		
29	WAVE FORM	bit0~2 : 0~5 *2
	OSC-1 MG ENABLE	bit5=0:OFF, =1:ON
	OSC-2 MG ENABLE	bit8=0:OFF, =1:ON
	KEY SYNC	bit7=0:OFF, =1:ON
30	FREQUENCY	00~83 : 00~89
31	DELAY	00~83 : 00~89
32	INTENSITY	00~83 : 00~89
AFTER TOUCH		
33	PITCH BEND RANGE	F4~0C : -12~12
34	VDF CUTOFF	9D~83 : -99~89
35	VDF MG INT	00~83 : 00~89
36	VDA AMPLITUDE	9D~83 : -99~89
JOY STICK		
37	PITCH BEND RANGE	F4~0C : -12~12
38	VDF SWEEP INT.	9D~83 : -99~89
39	VDF MG INT.	00~83 : 00~89
OSC-1 PITCH EG		
40	PITCH EG INT	9D~83 : -99~89
OSC-1 PITCH MG		
41	WAVE FORM	bit0~2 : 0~5 *2
	KEY SYNC	bit7=0:OFF, =1:ON
42	FREQUENCY	00~83 : 00~89
43	DELAY	00~83 : 00~89
44	FADE IN	00~83 : 00~89
45	INTENSITY	00~83 : 00~89
46	FREQ MOD BY KBD TRK	9D~83 : -99~89
47	INTENSITY MOD BY AT	00~83 : 00~89
48	INTENSITY MOD BY JS	00~83 : 00~89
49	FREQ MOD BY AT+JS	00~09 : 0~9

COMBINATION PARAMETER (TABLE2)

No.	PARAMETER	DATA(Hex) : VALUE
COMBINATION CONTROLLER		
00	COMBI.NAME (Head)	20~7F : ' ' ~ ' ' ←
09	COMBI.NAME (Tail)	
10	(RESERVE)	00
EFFECT PARAMETER		
11		*17
39		
TIMBRE 1 PARAMETER		
40	PROGRAM NO.	*8
41	OUTPUT LEVEL	00~7F : 00~127
42	TRANSPOSE	E8~18 : -24~24
43	DETUNE	CE~32 : -50~50
44	A:B PAN	00~1E, FF *5
45	D SEND LEVEL	bit0~3 : 0~9, PRG
	C SEND LEVEL	bit4~7 : 0~9, PRG
46	KEY WINDOW TOP	00~7F : C-1~G9
47	KEY WINDOW BOTTOM	00~7F : C-1~G9
48	VEL.WINDOW TOP	01~7F : 01~127
49	VEL.WINDOW BOTTOM	01~7F : 01~127
50	CONTROL FILTER	*7
51	MIDI CHANNEL	bit0~3 : 1~16
	TIMBRE MODE	bit4=0:ON, =1:OFF bit5=0:INT, =1:EXT
TIMBRE 2~8 PARAMETER		
52	SAME AS TIMBRE 1(40~51)	x 7
135		

- *1 : 0 : SINGLE
1 : DOUBLE
2 : DRUMS
- *2 : 0 : TRIANGLE
1 : UP SAW
2 : DOWN SAW
3 : SQUARE1
4 : RANDOM
5 : SQUARE2
- *3 : bit0 : ATTACK TIME SW =0:OFF, =1:ON
bit1 : DECAY TIME SW "
bit2 : SLOPE TIME SW "
bit3 : RELEASE TIME SW "
bit4 : ATTACK TIME POLARITY =0:+, =1:-
bit5 : DECAY TIME " "
bit6 : SLOPE TIME " "
bit7 : RELEASE TIME " "
- *4 : bit0,1 ... VDF [0 : OFF
bit4,5 ... VDA [1 : LOW
2 : HIGH
3 : ALL

GLOBAL PARAMETER (TABLE3)

No.	PARAMETER	DATA(Hex) : VALUE
GLOBAL PARAMETER		
00	MASTER TUNE	CE~32 : -50~50
01	KEY TRANSPOSE	F4~0C : -12~12
02	(RESERVE)	00
03	ASSIGNABLE PEDAL	00~0B *8
04	(RESERVE)	00
05	MAIN SCALE TYPE	00~0A *9
06	MAIN SCALE KEY	00~0B : C~B
07	USER SCALE	CE~32 : -50~50
18		
19	VELOCITY CURVE	0~7 : 1~8
20	AFTER TOUCH CURVE	0~7 : 1~8
21	SUB SCALE TYPE	00~0A *9
22	SUB SCALE KEY	00~0B : C~B
23~27	(RESERVE)	00
DRUMS PARAMETER (TABLE4)		
DRUM KIT A:1-INDEX#0		
00	INST NO.	00:OFF, 01~A4:INT, C0~:CARD
01	KEY	0C~73 : C0~G8
02	A:B PAN	bit0~4 *10
	EXCLUSIVE ASSIGN	bit5~7 *10
03	TUNE	88~78 : -120~120
04	LEVEL	9D~83 : -99~89
05	DECAY	9D~83 : -99~89
06	D SEND LEVEL	bit0~3 : 0~9
	C SEND LEVEL	bit4~7 : 0~9
DRUM KIT A:1-INDEX#1 ~ DRUM KIT B:2-#59		
07	SAME AS DRUM KIT A:1-#0(00~06)	x(60x2x2-1)
1879		

- *5 : 00 : A
| |
| |
0F : CNT
| |
| |
1E : B
1F : PRG (Only Comb,Seq Data)
FF : OFF
- *6 00~83 : Bank A00~A99 or C00~C99
64~C7 : Bank B00~B99 or D00~D99
00~87 : Bank G01~G136
- *7 : bit0 : PROGRAM CHANGE =0:DIS, =1:ENA
bit1 : DAMPER "
bit2 : AFTER TOUCH "
bit3 : CONTROL CHANGE "
bit8,7=0,0 : Bank A,B Program
1,0 : " C,D "
*1 : " G "
- # Program is selected by *6 and *7(bit6,7)

#17 EFFECT PARAMETER

No.	PARAMETER	DATA(Hex) : VALUE
(00)	Effect 1 Type No.	0,1~2F:OFF,1~47
(01)	" 2 " "	0,1~2F:OFF,1~47
(02)	" 1 L-Ch E.Balnc	00~64 : 00~100
(03)	" 1 R-Ch " "	00~64 : 00~100
(04)	" 2 L-Ch " "	00~64 : 00~100
(05)	" 2 R-Ch " "	00~64 : 00~100
(06)	Output 3 Pan	00,01~85 *17-1
(07)	" 4 " "	00,01~85 *17-1
(08)	Effect I/O	bit5~0 *17-2
(09)	Effect 1 Parameter	*17-3
(10)	" " " "	
(16)	" " " "	
(17)	Effect 1 Mod Source	00~0D *17-4
(18)	Effect 1 Mod Amount	F1~0F : -15~15
(19)	Effect 2 Parameter	*17-3
(20)	" " " "	
(26)	" " " "	
(27)	Effect 2 Mod Source	00~0D *17-4
(28)	Effect 2 Mod Amount	F1~0F : -15~15

*17-1 : 00 : Off *17-2 :
 01 : R bit0=0:Efct1 L-Ch Off,=1:0n
 02 : 01:89 bit1=0: " 1 R-Ch Off,=1:0n
 | | bit2=0: " 2 L-Ch Off,=1:0n
 64 : 89:01 bit3=0: " 2 R-Ch Off,=1:0n
 85 : L bit4~8=0:Serial

1:Parallel
 2:Parallel 2
 3:Parallel 3
 4:Serial Sub
 5:Parallel Sub

*17-3 : Effect Parameter (8Byte) 47 Type

offset	PARAMETER	DATA(Hex) : VALUE
1~3:Hall, (4,5:Room, 6:Live Stage)		
(00)	Reverb Time	00~81(2F):0.2~9.9(4.9)
(01)	(NUL)	00
(02)	High Damp	00~63 : 00~99
(03)	Pre Delay	00~C8 : 00~200
(04)	E.R Level	00~63 : 00~99
(05)	(NUL)	00
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

Doesn't state NUL from here, and that must be 00
 7:Wet Plate, 8:Dry Plate, 9:Spring

(00)	Pre Delay(L).....	00~C8 : 00~200
(01)	" " " (H)	
(02)	E.R Level	01~0A : 01~10
(03)	Reverb Time	00~63 : 00~99
(04)	High Damp	00~63 : 00~99
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

10~12:Early Reflection 1,2,3

(00)	E.R Time	00~46 : 100~800
(01)	Pre Delay	00~C8 : 00~200
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

13:Stereo Delay, 14:Cross Delay

(00)	Delay Time L (L).....	00~1F4 : 00~500
(01)	" " " (H)	
(02)	Feed Back	9D~63 : -99~99
(03)	High Damp	00~63 : 00~99
(04)	Delay Time R (L).....	00~1F4 : 00~500
(05)	" " " (H)	
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

15: Dual Delay

(00)	Delay Time L (L).....	00~1F4 : 00~500
(01)	" " " (H)	
(02)	Feed Back L	9D~63 : -99~99
(03)	High Damp L	00~63 : 00~99
(04)	Delay Time R (L).....	00~1F4 : 00~500
(05)	" " " (H)	
(06)	Feed Back R	9D~63 : -99~99
(07)	High Damp R	00~63 : 00~99

16~18:Multi Tap Delay 1,2,3

(00)	Delay Time 1(L).....	00~1F4 : 00~500
(01)	" " " (H)	
(02)	Delay Time 2(L).....	00~1F4 : 00~500
(03)	" " " (H)	
(04)	Feed back	9D~63 : -99~99
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

18,20: Stereo Chorus 1,2

(00)	Mod Depth	00~63 : 00~99
(01)	Mod Speed	00~D8 *17-3-2
(02)	MG Status *17-3-3	bit0=0:Sin, =1:Tri bit1 ← 1 bit2 ← 0
(04)	Delay Time	00~C8 : 00~200
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

21: Quadrature Chorus, 22: X Over Chorus

(00)	Delay Time L	00~FA : 00~250
(01)	Delay Time R	00~FA : 00~250
(02)	Mod Speed	01~63 : 01~99
(03)	Mod Depth	00~63 : 00~99
(04)	Mod Waveform	EB~14 *17-3-4
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

23: Harmonic Chorus

(00)	Delay Time L (L).....	00~1F4 : 00~500
(01)	" " " (H)	
(02)	Delay Time R (L).....	00~1F4 : 00~500
(03)	" " " (H)	
(04)	Mod Speed	01~63 : 01~99
(05)	Mod Depth	00~63 : 00~99
(06)	Filter Split Point	00~12 : 00~18

24: Symphonic Ensemble

(00)	Mod Depth	00~63 : 00~99
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

25,26: Flanger1,2, 27: X Over Flanger

(00)	Delay Time	00~C8 : 00~200
(01)	Mod Depth	00~63 : 00~99
(02)	Mod Speed	01~63 : 01~99
(03)	Resonance	9D~63 : -99~99
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

28: Exciter

(00)	Blend	9D~63 : -99~99
(01)	Emphatic Point	01~0A : 01~10
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

29: Enhancer

(00)	Harmonic Density	01~63 : 01~99
(01)	Hot Spot	01~14 : 01~20
(02)	Stereo Width	00~63 : 00~99
(03)	Delay	01~63 : 01~99
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

30: Distortion, 31: Over Drive

(00)	Drive (Edge)	01~6F : 01~111
(01)	Hot Spot	00~63 : 00~99
(02)	Resonance	00~63 : 00~99
(03)	Out Level	00~63 : 00~99
(06)	EQ Low	F4~0C : -12~12
(07)	EQ High	F4~0C : -12~12

32,33: Phaser 1,(2)

(00)	Mod Depth	00~63 : 01~99
(01)	Mod Speed	00~D8 : *17-3-2
(02)	MG Status *17-3-3	bit0=0:Sin, =1:Tri bit1 ← 1, (0) bit2 ← 0
(03)	Feedback	9D~63 : -99~99
(04)	Manual	00~63 : 00~99

34: Rotary Speaker

(00)	Vibrato Depth	00~0F : 00~15
(01)	Acceleration	01~0F : 01~15
(02)	Slow Speed	01~63 : 01~99
(03)	Fast Speed	01~63 : 01~99

35: Auto Pan, (36: Tremolo)

(00)	Depth	00~63 : 00~99
(01)	Speed	00~D8 : *17-3-2
(02)	MG Status *17-3-3	bit0=0:Sin, =1:Tri bit1 ← 1, (0) bit2 ← 0
(03)	Shape	9D~63 : -99~99
(06)	EQ High	F4~0C : -12~12
(07)	EQ Low	F4~0C : -12~12

37: Parametric EQ

(00)	Low Freq	00~1D : 00~29
(01)	Low Gain	F4~0C : -12~12
(02)	Mid Freq	00~63 : 00~99
(03)	Mid Gain	F4~0C : -12~12
(04)	Mid Width	00~63 : 00~99
(05)	High Freq	00~1D : 00~29
(06)	High Gain	F4~0C : -12~12

38: Chorus-Delay, 39: Flanger-Delay

(00)	Delay Time	00~32 : 00~50
(01)	Mod Speed	01~63 : 01~99
(02)	Mod Depth	00~63 : 00~99
(03)	Feed back	9D~63 : -99~99
(04)	Delay Time	00~E1 : 00~450
(05)	Feed back	9D~63 : -99~99

40: Delay / Hall

(00)	Delay Time (L).....	00~1F4 : 00~500
(01)	Delay Time (H)	
(02)	Feed Back	9D~63 : -99~99
(03)	High Damp	00~63 : 00~99
(04)	Reverb Time	00~81 : 0.2~9.9
(06)	High Damp	00~63 : 00~99
(07)	Pre Delay	00~88 : 00~150

41: Delay / Room

(00)	Delay Parameter	*17-3-1
(03)	" " " "	
(04)	Reverb Time	00~2F : 0.2~4.9
(08)	High Damp	00~63 : 00~99
(07)	Pre Delay	00~98 : 00~150

42: Delay / Chorus, (43: Delay / Flanger)

(00)	Delay Parameter	*17-3-1
(03)	" " " "	
(04)	Depth	00~63 : 00~99
(05)	Speed	00~D8 *17-3-2
(06)	MG Status *17-3-3	bit0=0:Sin, =1:Tri bit1 ← 0 bit2 ← 0, (←1)
(07)	Feed Back	0, (9D~63: -99~99)

44: Delay / Distortion, 45: Delay / Over Drive

(00)	Delay Time (L).....	00~1F4 : 00~500
(01)	" " " (H)	
(02)	Feed back	9D~63 : -99~99
(03)	Drive	01~6F : 01~111
(04)	Hot Spot	01~63 : 01~99
(05)	Resonance	00~63 : 00~99
(06)	Out Level	01~63 : 01~99

46: Delay / Phaser

(00)	Delay Parameter	*17-3-1
(03)	" " " "	
(04)	Depth	00~63 : 00~99
(05)	Speed	00~D8 *17-3-2
(06)	Feedback	9D~63 : -99~99

47: Delay / Rotary Speaker

(00)	Delay Time (L).....	00~1F4 : 00~500
(01)	" " " (H)	
(02)	Feed back	9D~63 : -99~99
(03)	Acceleration	01~0F : 01~15
(04)	Slow Speed	01~63 : 01~99
(05)	Fast Speed	01~63 : 01~99

- *17-3-1 : Delay Parameter
Same as 40-(00)~(03)
- *17-3-2 : Data(Hex) Value[Hz]
00~63 0.03~ 3.00 (0.03step)
64~C7 3.1 ~13.0 (0.1 step)
C8~D8 14 ~30.0 (1 step)
- *17-3-3 : MG Status
bit0 : Wave Form =0:Sin, =1:Tri
bit1 : Phase =0:0°, =1:180°
bit2 : Wave Shape =0: Normal
=1: for Flanger
- *17-3-4 : Waveform
EB : T+10
| : |
FP : T-10
00 : S-10
| : |
14 : S+10
- *17-4 : Dynamic Modulation Source
0 : None
1 : Joy Stick (+Y)
2 : Joy Stick (-Y)
3 : After Touch
4 : Assignable Pedal 1
5 : Assignable Pedal 2
6 : VDA EG
7 : Value Knob
8 : V.K + Joy Stick(+Y)
9 : V.K + Joy Stick(-Y)
A : V.K + After Touch
B : V.K + Asgn Pedal 1
C : V.K + Asgn Pedal 2
D : V.K + VDA EG

PROGRAM PARAMETERS PARAMETER No. for PARAMETER CHANGE (TABLE 6)

No.	PARAMETER	No. of TABLE 1
OSCILLATOR		
00	OSC MODE	10
01	ASSIGN	11 bit0
02	HOLD	11 bit1
PITCH EG		
03	START LEVEL	21
04	ATTACK TIME	22
05	ATTACK LEVEL	23
06	DECAY TIME	24
07	RELEASE TIME	25
08	RELEASE LEVEL	26
09	EG INT BY VEL SENSE	28
10	EG TIME BY VEL SENSE	27
CUTOFF MG		
11	WAVE FORM	29 bit0~2
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158	139	EFFECT 2 OFF/ON
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160	141	OUT4 PANPOT (Seri,Paral,2)
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162	143	OUT 3-R LEVEL (Para3)
163	144	OUT 4-L LEVEL (Para3)
164	145	OUT 4-R LEVEL (Para3)
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168	147	DYNAMIC MOD SOURCE
167	148	DYNAMIC MOD INT
168	149	PARAMETER 1
174	155	PARAMETER 7
175	158	BALANCE 1
176	157	BALANCE 2
EFFECT 2		
177	150	SAME AS EFFECT 1
		(168 ~ 176 : PROG)
187	168	(147 ~ 157 : COMB)

In PROGRAM Mode (TABLE 7)

No.	PARAMETER
00	PERFORMANCE EDIT OSC OCTAVE
01	" VDP CUTOFF
02	" VDP EG INTENSITY
03	" VDA ATTACK TIME
04	" VDP,A RELEASE TIME
05	" VDA LEVEL
06	" VELOCITY SENSE
07	" EFFECT LEVEL

COMBINATION PARAMETER

PARAM No. for PARAM CHANGE (TABLE 8)
n = 0~7 (: Timbre 1~8)

No.	PARAMETER	No. of TABLE 2
0+n	PROGRAM NO.	40,50,51+12n *
8+n	OUTPUT LEVEL	41+12n
16+n	MIDI CHANNEL	51+12n b0~3
24+n	KEY WINDOW TOP	46+12n
32+n	KEY WINDOW BOTTOM	47+12n
40+n	VEL WINDOW TOP	48+12n
48+n	VEL WINDOW BOTTOM	49+12n
56+n	TRANSPOSE	42+12n
64+n	DETUNE	43+12n
72+n	PROGRAM CHANGE FILTER	50+12n b0
80+n	DAMPER FILTER	50+12n b1
88+n	AFTER TOUCH FILTER	50+12n b2
96+n	CONTROL CHANGE FILTER	50+12n b3
104+n	A:B PAN	44+12n
112+n	C SEND LEVEL	45+12n b4~7
120+n	D SEND LEVEL	45+12n b0~3
128+n	TIMBRE MODE	51+12n b4,5
EFFECT PARAMETER		
138		(TABLE 6-1)
168		

Value	40+12n	50+12n b8,7	51+12n b4
00	----	----	1
01~100	00~99	0,0	0
101~236	0~135	0,1	0

In COMBINATION Mode
n = 0~7 (: Timbre 1~8) (TABLE 9)

No.	PARAMETER
0+n	PERFORMANCE EDIT PROGRAM NO.
8+n	" OUTPUT LEVEL
16+n	" PANPOT
24+n	" MIDI CHANNEL

DRUM KIT PARAMETERS

PARAM No. for DRUM PARAM CHANGE (TABLE 10)
n : 0~59 (: Index)

No.	PARAMETER	No. of TABLE 4
0	INST NO.	0+7n
1	KEY	1+7n
2	TUNE	3+7n
3	OUTPUT LEVEL	4+7n
4	DECAY	5+7n
5	EXCLUSIVE ASSIGN	2+7n b5~7
6	A:B PAN	2+7n b0~4
7	C SEND LEVEL	6+7n b4~7
8	D SEND LEVEL	6+7n b0~3

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