YAMAHA®

AUTHORIZED PRODUCT MANUAL

SY35

MUSIC SYNTHESIZER

YAMAHA

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SY35

GETTING STARTED MANUAL

Congratulations!

Your SY35 Music Synthesizer offers extraordinary musical versatility and control with a "vector synthesis" system than combines Yamaha's advanced AWM sample playback technology with high-performance FM tone generation.

Vector synthesis allows you to create and control synthesized sound with unprecedented ease — in a very intimate, "human" way, putting you more closely in touch with your instrument and music. The vector control lets you blend sounds manually in real time, and dynamic vectors let you "record" dynamic vector sweeps that will play automatically whenever you play a note. For even more expressive capability, the SY35 keyboard features both velocity sensitivity and after-touch response that can be assigned to a number of musical parameters. The more you play the SY35, the more you'll find that "vectors" will become an indispensable part of your musical repertoire.

- Yamaha AWM and FM tone generators for superior sound and tonal versatility.
- 2-element or 4-element voice architecture brings AWM and FM waveforms together.
- Vector control for 2-axis control of element level and detuning.
- Dynamic level and detune vectors can be recorded easily in real time.
- 128 preset AWM waveforms and 256 preset FM waveforms — all in an extended waveform ROM for superior sound quality — provide an extensive library of sonic "building blocks" from which to create new voices.
- 64 preset voices plus 64 editable internal voice memory locations containing an additional 64 voices.
- External memory cards provide limitless backup and storage capability.
- Easy-edit features make creating new voices quick and virtually programming-free.
- Detailed programming parameters for in-depth programming when necessary.
- Fully programmable 8-part multi-play mode is perfect for sequencer-driven applications, layered multi-voice performance, and split keyboard effects.
- 16 preset multi-play setups plus 16 editable internal multi-play memory locations containing an additional 16 multi-play setups.
- 16 internal digital effects including reverb and delay and distortion.
- Overlapping voice selection capability for seamless voice transitions.
- Velocity and after-touch sensitive keyboard.
- Pitch bend and modulation wheels.
- Stereo output.

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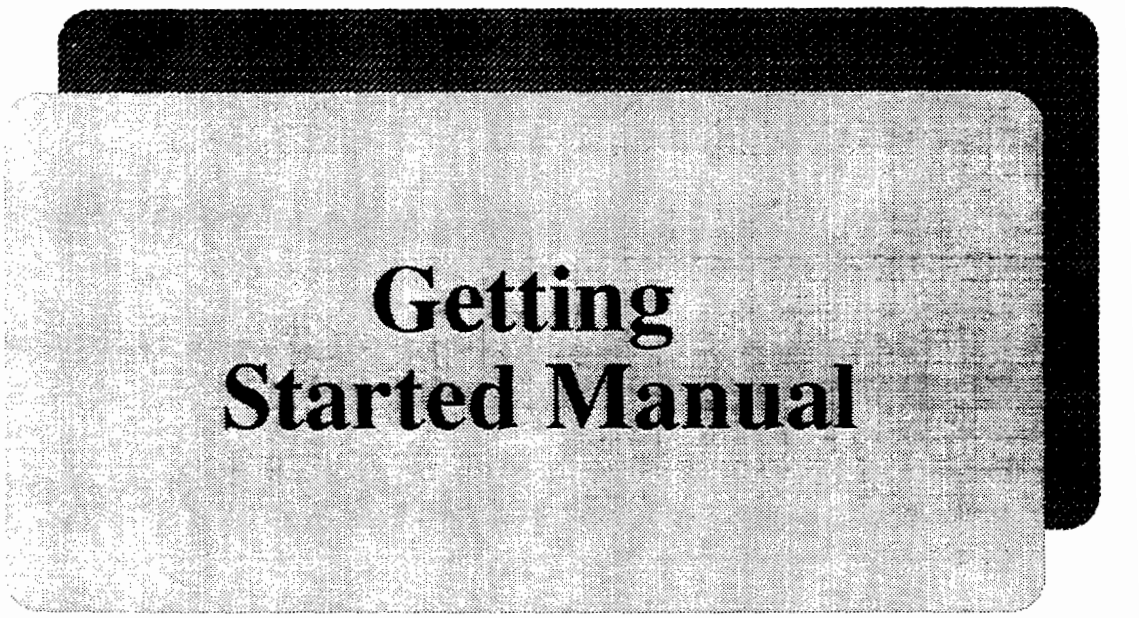

Getting
Started Manual

Precautions

!! PLEASE READ THIS BEFORE PROCEEDING !!

1. AVOID EXCESSIVE HEAT, HUMIDITY, DUST AND VIBRATION

Keep the SY35 away from locations where it is likely to be exposed to high temperatures or humidity — such as near radiators, stoves, etc. Also avoid locations which are subject to excessive dust accumulation or vibration which could cause mechanical damage.

2. AVOID PHYSICAL SHOCKS

Strong physical shocks to the SY35 can cause damage. Handle it with care.

3. DO NOT OPEN THE CASE OR ATTEMPT REPAIRS OR MODIFICATIONS YOURSELF

This product contains no user-serviceable parts. Refer all maintenance to qualified Yamaha service personnel. Opening the case and/or tampering with the internal circuitry will void the warranty.

4. MAKE SURE POWER IS OFF BEFORE MAKING OR REMOVING CONNECTIONS

Always turn the power OFF prior to connecting or disconnecting cables.

5. HANDLE CABLES CAREFULLY

Always plug and unplug cables by gripping the connector, not the cord.

6. CLEAN WITH A SOFT DRY CLOTH

Never use solvents such as benzine or thinner to clean the unit. Wipe clean with a soft, dry cloth.

7. ALWAYS USE THE CORRECT POWER SUPPLY

Always use the supplied AC Adaptor to power your SY35 or, if the original adaptor is lost or broken, a replacement or equivalent type obtained from your Yamaha dealer. Also, make sure that the adaptor you have is appropriate for the AC mains supply voltage in the area where you intend to use the SY35 (the correct INPUT voltage is marked on the adaptor).

8. ELECTRICAL INTERFERENCE

Since the SY35 contains digital circuitry, it may cause interference and noise if placed too close to TV sets, radios or similar equipment. If such a problem does occur, move the SY35 further away from the affected equipment.

9. MIDI CABLES

When connecting the SY35 to MIDI equipment, be sure to use high-quality cables made especially for MIDI data transmission. Also avoid cables longer than about 15 meters, as longer cables can pick up electrical noise that can causes data errors.

10. MEMORY BACKUP

The SY35 contains a special backup battery that will retain the contents of the internal RAM memory for up to approximately five years from the date of manufacture. When the battery finally fails the contents of the RAM memory will be lost, so we recommend that you make regular backup copies of important data by transferring the data to external memory cards (see page 41 of the Feature Reference manual for information on card data storage). For even greater security (memory card data can be lost due to battery failure, accidental erasure, etc.) save your data to floppy disk via a MIDI data filer unit such as the Yamaha MDF2.

Have the backup battery replaced *by qualified Yamaha service personnel* (see your Yamaha dealer) after approximately 5 years.

IMPORTANT!: Yamaha cannot be held responsible for data loss caused by backup failure or improper operation of the SY35!

11. THIRD-PARTY SOFTWARE

Yamaha can not take any responsibility for software produced for this product by third-party manufacturers. Please direct any questions or comments about such software to the manufacturer or their agents.

About the Manuals

The SY35 comes with two manuals — *Getting Started and Feature Reference.*

● The *Getting Started* Manual (this manual)

In addition to an overview of the SY35 controls and connectors (page 8), the *Getting Started* manual contains five separate tutorials that take you step-by-step through the main procedures you will need to know to become familiar with your SY35:

1. **Setting Up Your System [Page 14]**
   Basic system connections.

2. **Selecting And Playing Voices [Page 16]**
   Selecting and playing voices from the PRESET, INTERNAL and CARD voice banks.

3. **Vectors [Page 21]**
   Using and understanding manual and dynamic vectors.

4. **Instant Voice Programming [Page 31]**
   The fast way to create an unlimited range of new voices for the SY35.

5. **The Multi Mode [Page 34]**
   Play several voices simultaneously, or control multiple SY35 voices from an external MIDI sequencer.

We recommend that you go through the tutorials in sequence while actually carrying out procedures on your SY35. Once you've gone through the entire TUTORIALS section in this way, you should be familiar enough with the SY35 to need only the Feature Reference manual in future.

● Icons

The following simple icons are used throughout the Getting Started manual to draw attention to important points and information where necessary. The icons also make it easier to differentiate between information that you should read immediately and information that can be skipped until later, hopefully helping you to become familiar with the SY35 in the quickest, most efficient manner possible.

This icon warns of possible hardware damage, software malfunction, or any other serious problem that may occur due to improper operation or set up.

This icon marks information that you *must read* — i.e. important steps or procedures that are essential for proper, efficient, or easy operation.

The magnifying-glass icon indicates information that may not be essential for general operation, but is a more detailed explanation of a feature, a description of the principle involved, etc. You can skip this information if full details are not required immediately.

Suggestions as to how a feature or function can be applied musically are identified by this icon.

Hints or ideas that are not specifically musical but may make operation easier or more interesting are marked by the light-bulb icon.

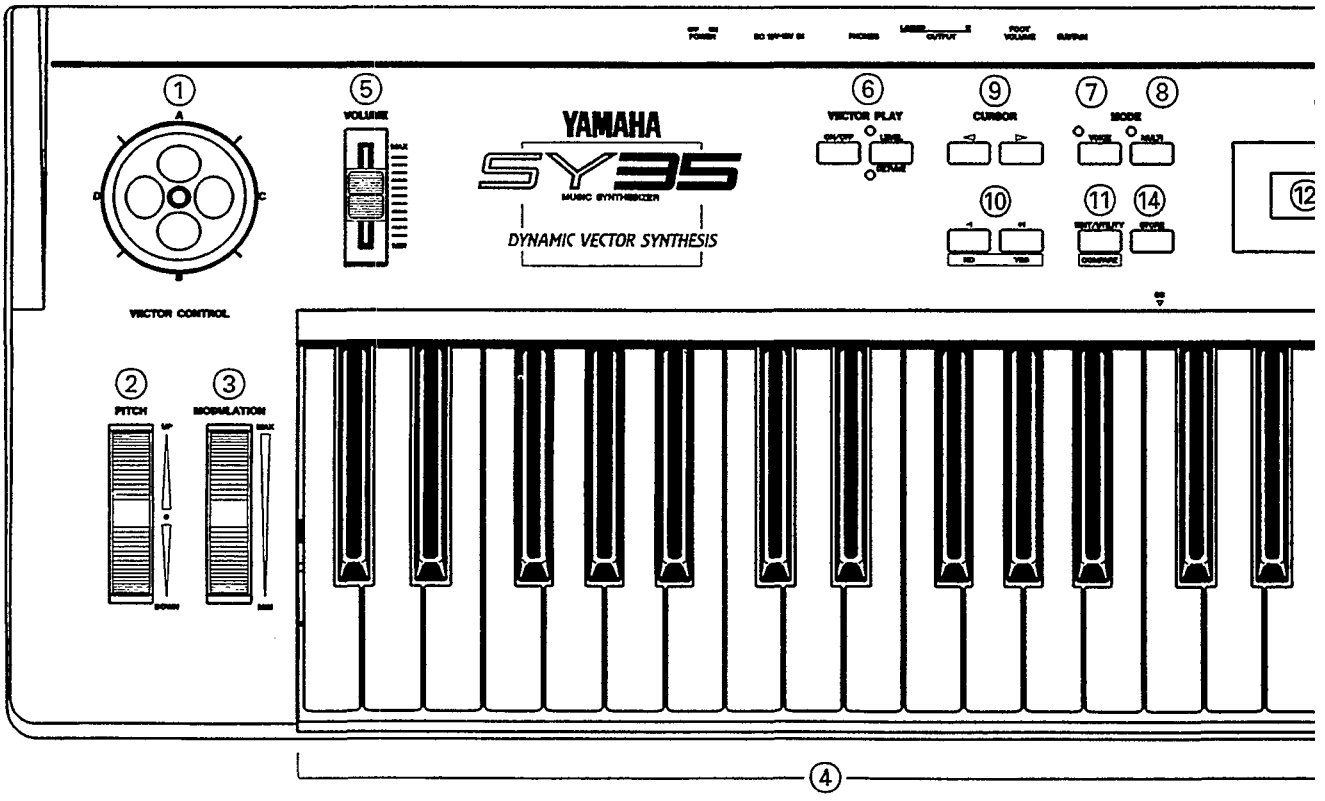
● The *Feature Reference* Manual

The Feature Reference manual is the "nuts and bolts" reference for the SY35, individually describing its many functions in detail. The Feature Reference manual is divided into eight main sections, each describing the various functions within a particular SY35 edit or utility mode.

Once you have become familiar with the way the SY35 works by going through the Getting Started manual, you should only need to refer to the Feature Reference manual from time to time to get details on functions you've never used before, or refresh your memory about functions that you don't use very often.

Each section of the Feature Reference manual has its own table of contents, so you should be able to locate any particular function quickly and easily. Functions and references can also be located by referring to the index at the back of the manual.

■ Front Panel



① VECTOR CONTROL
This is the key to SY35's remarkable vector synthesis system. The VECTOR CONTROL allows manual control of level or detune for 2 or 4 voice "elements" simultaneously. It also allows real-time recording of dynamic level and detune vectors.

➲ Getting Started: page 21...30.
Feature Reference: page 9...13.

② [PITCH BEND] Wheel
This self-centering pitch wheel allows smooth upward and downward pitch bends.

➲ Getting Started: page 19.
Feature Reference: page 6, 55.

③ [MODULATION] Wheel
Can be assigned to apply pitch and/or amplitude modulation for a range of expressive effects.

➲ Getting Started: page 19.
Feature Reference: page 6.

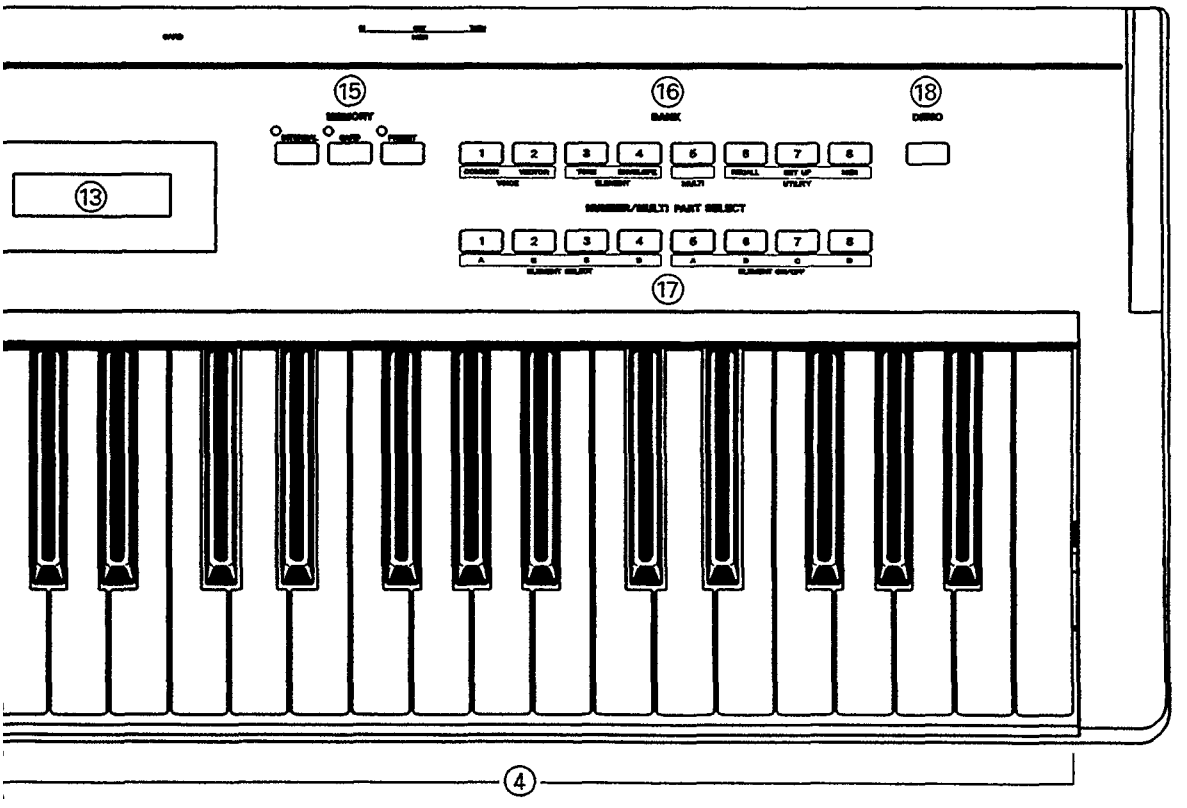
④ Keyboard
The SY35 keyboard is both velocity and after-touch sensitive for broad, intimate expressive control.

➲ Feature Reference: page 7, 20, 21, 55.

⑤ VOLUME Control
Adjusts the volume of the sound delivered via the rear-panel OUTPUT and PHONES jack.

⑥ VECTOR PLAY [ON/OFF] and [LEVEL/DETUNE] Keys & Indicators
The [ON/OFF] key turns manual vector control on or off, while the [LEVEL/DETUNE] key selects level or detune control.

➲ Getting Started: page 21, 22.



⑦ **[VOICE] Key & Indicator**
Selects the normal voice play mode in which any of the SY35's preset, internal or card voices can be played via the keyboard or other controller connected to the MIDI IN connector.

➲ Getting Started: page 16.

⑧ **[MULTI] Key & Indicator**
Selects the MULTI mode in which up to 8 voices can be played via simultaneously via the keyboard or controlled on different MIDI channels via an external MIDI sequencer.

➲ Getting Started: page 34.

⑨ **[◁] and [▷] Cursor Keys**
Move the screen cursor from parameter to parameter in many of the SY35 editing functions.

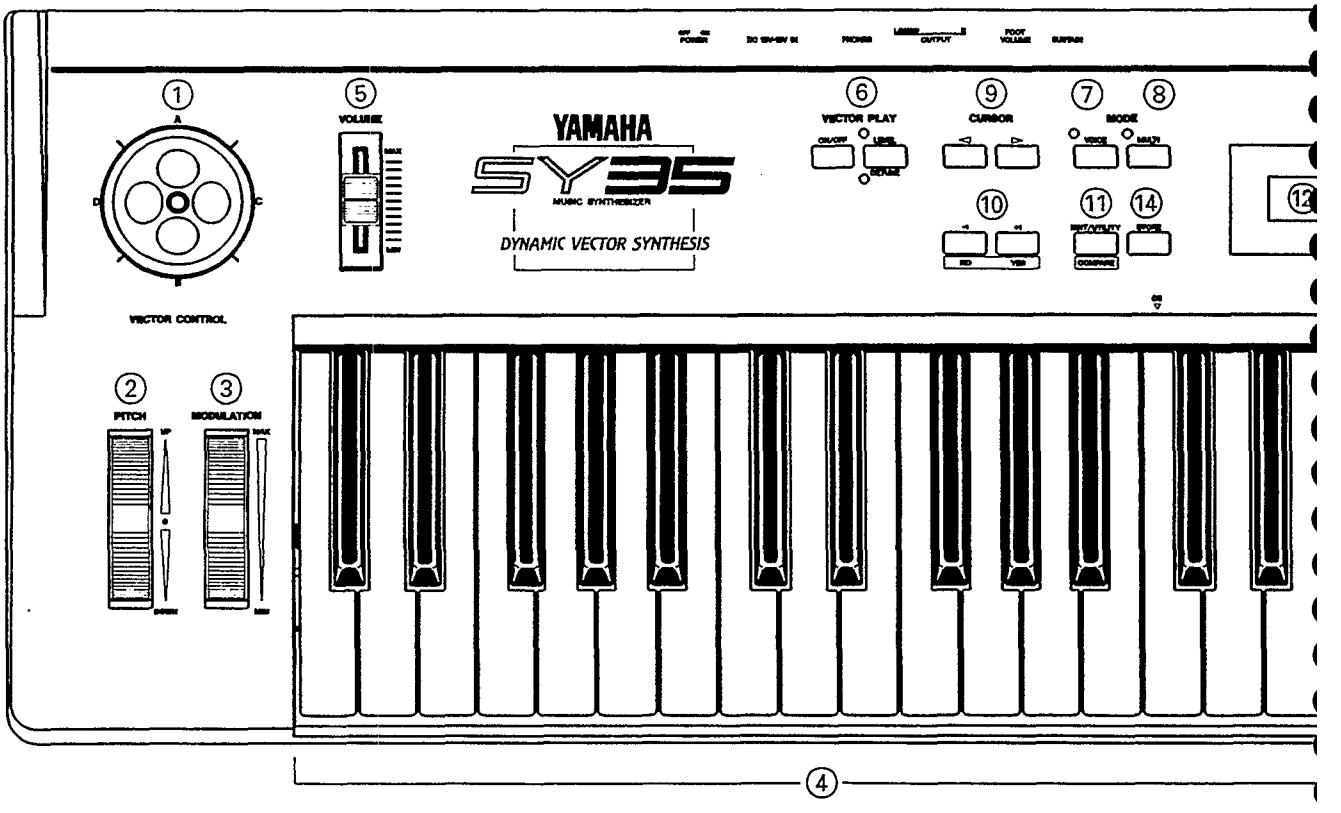
➲ Getting Started: page 26.

⑩ **[-1/NO] and [+1/YES] Keys**
Can be used to select voices and multi setups, and are used to edit parameter values in any of the SY35 edit modes. Either key can be pressed briefly for single stepping in the specified direction, or held for continuous scrolling. These keys are also used to answer the "Are you sure?" confirmation prompt when saving or initializing data.

➲ Getting Started: page 17.

⑪ **[EDIT/UTILITY/COMPARE] Key**
Accesses the SY35's voice edit, multi-play edit and utility modes. Also activates the compare function when in any edit mode, allowing quick comparison of the original and edited voice or multi-play setup.

➲ Getting Started: page 25.
Feature Reference: page 4.



⑫ LED Display

This 2-digit 7-segment LED numeric display shows the bank and number of the currently selected voice or multi-play setup in the VOICE PLAY or MULTI PLAY mode. It also indicates when an edit or utility mode is active, and shows the character — A, B, C or D — of the currently selected element in one of the element edit modes.

➲ Getting Started: page 17.

⑬ Liquid Crystal Display Panel

This 16-character *x* 2-line backlit liquid crystal display panel shows the selected voice or multi-play setup name in the voice or multi-play modes, as well as function names and parameters in the utility and edit modes.

➲ Getting Started: page 17.

⑭ [STORE] Key

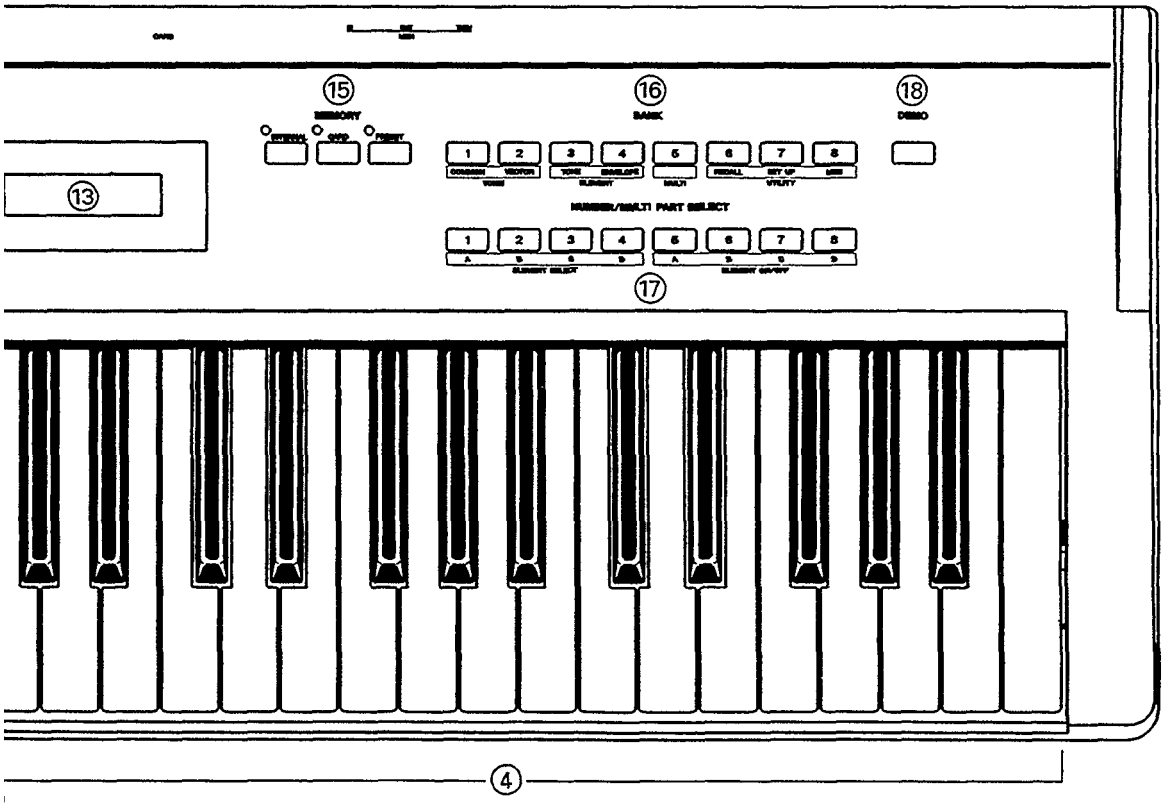
Used to store edited data to an internal or card memory location.

➲ Getting Started: page 38.

⑮ [INTERNAL], [CARD], and [PRESET] Keys & Indicators

Select the data bank — preset, internal or card — from which voices or multi-play setups will be selected.

➲ Getting Started: page 19, 20.



⑯ [BANK] Select and Edit/Utility Mode Access keys

In the VOICE PLAY or MULTI PLAY mode, these keys — [1] through [8] — are used to select the bank of the voice or multi-play setup to be selected.

In an edit or utility mode, or immediately after the [EDIT/UTILITY] key has been pressed to access these modes, these keys are used to selected the desired edit or utility function group (green labels below the keys).

➲ Getting Started: page 17, 37.
Feature Reference: page 4.

⑰ [NUMBER/MULTI PART SELECT] And Element Control Keys

In the VOICE PLAY or MULTI PLAY mode, these keys — [1] through [8] — are used to select the number of the voice or multi-play setup to be selected.

In the MULTI edit mode they select the multi part to be edited, and in the ELEMENT TONE or ELEMENT ENVELOPE edit mode they are used to select individual elements and turn individual elements on and off for editing (green labels below the keys).

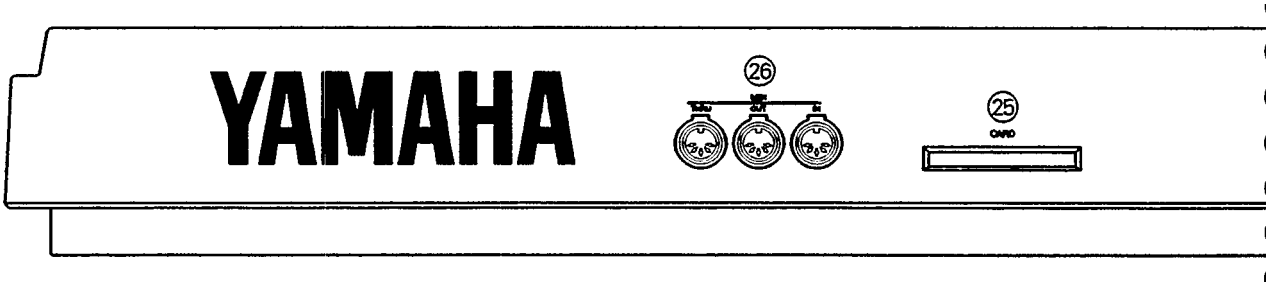
➲ Getting Started: page 17, 34.
Feature Reference: page 16, 26.

⑱ [DEMO] Key

Activates the SY35 built-in demonstration — a great way to hear what the SY35 can do after you set up your system.

➲ Getting Started: page 15.

■ REAR PANEL



⑲ DC 10V-12V IN Jack

The DC output cable from the supplied AC Adaptor should be connected here. When connecting the power supply, make sure that the SY35 POWER switch is in the OFF position (extended), then plug the AC adaptor output cable into the DC 10V-12V IN jack, and finally the adaptor's AC plug into a convenient AC wall outlet. The cable clip located immediately below the DC 10V-12V IN jack helps to prevent accidental unplugging of the power supply during use. Wrap the DC cable firmly around the clip a few centimeters from the plug end.

Do not attempt to use a different AC adaptor to power the SY35. The use of an incompatible adaptor may cause irreparable damage to the SY35, and might pose a serious shock hazard!

➲ Getting Started: page 14.

⑳ [POWER] Switch

Slide to the "ON" position to turn power ON.

➲ Getting Started: page 14.

㉑ PHONES Jack

Accepts a standard pair of stereo headphones (1/4" stereo phone plug) for headphone monitoring of the SY35 sound without the need for external amplification equipment.

㉒ OUTPUT R and L/MONO Jacks

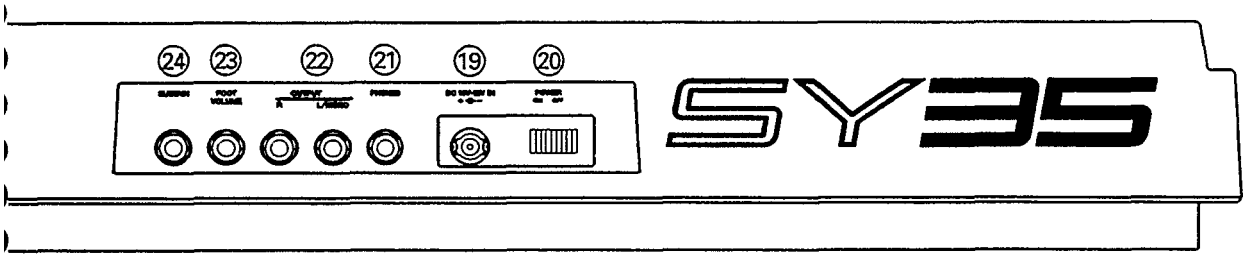
These are the main stereo outputs from the SY35. If a plug is inserted only into the L/MONO jack, the left and right-channel signals are combined and delivered via this jack (for connection to a monaural sound system).

➲ Getting Started: page 14.

㉓ FOOT VOLUME Jack

An optional Yamaha FC7 foot controller connected here can be used for volume control.

➲ Getting Started: page 14.



㉔ SUSTAIN Jack

An optional Yamaha FC4 or FC5 footswitch can be connected here for press-on/release-off sustain control.

⊃ Getting Started: page 14.

㉕ CARD Slot

The CARD slot accepts Yamaha MCD64 or MCD32 Memory Cards for storage and retrieval of SY35 voices.

⊃ Getting Started: page 20. Feature Reference: page 41.

㉖ MIDI IN, OUT and THRU Connectors

The MIDI IN connector receives the data from a sequencer or other MIDI controller which is to control the SY35. The MIDI THRU connector simply retransmits the data received at the MIDI IN connector, allowing convenient chaining of MIDI devices. The MIDI OUT connector transmits data corresponding to all SY35 performance operations, or bulk data when one of the MIDI voice data transmission functions are activated.

⊃ Feature Reference: page 51...56.

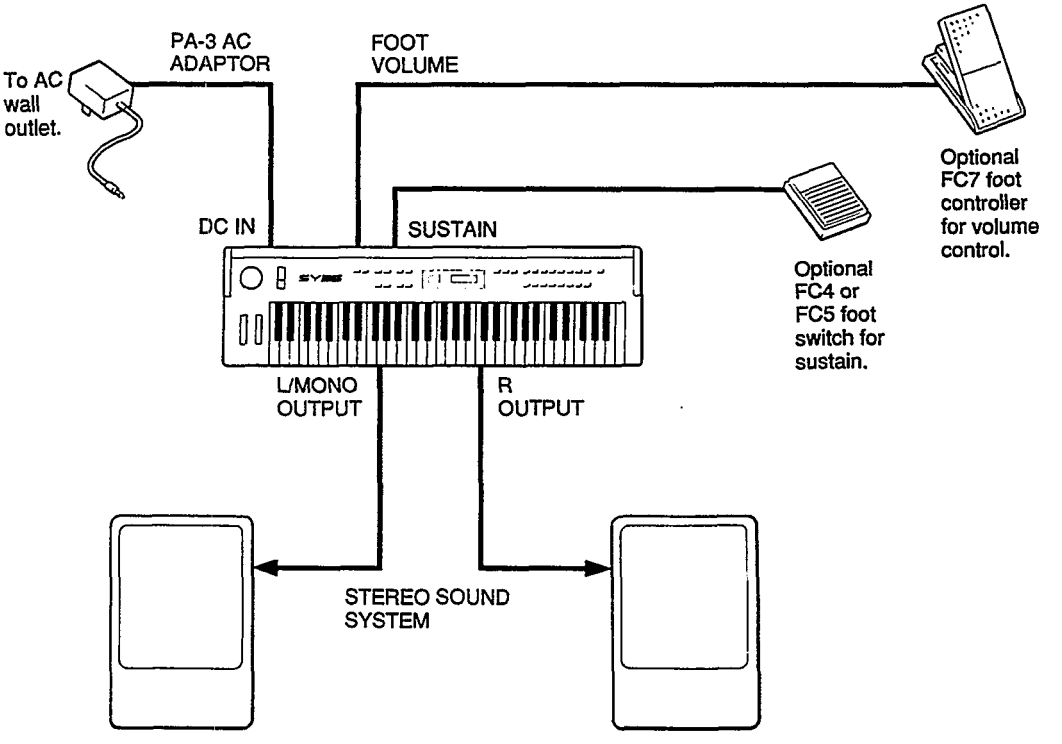
1. Setting Up Your System

Connections

The diagram below shows the basic connections in a setup using only the SY35 and a stereo sound system.

CAUTION!

Make sure that both the SY35 and your sound system are turned OFF when making connections.



Power-on Procedure

Believe it or not, there's actually a "right" way to turn on a sound system that will minimize the possibility of damage to the equipment (and your ears!).

1. Make sure your sound system's volume control and the SY35 volume control are turned all the way down prior to turning power on.
2. Turn on the SY35.
3. Turn on the sound system.
4. Raise the sound system volume to a reasonable level.
5. Gradually raise the SY35 VOLUME control while playing the keyboard to set the desired listening level.

IMPORTANT

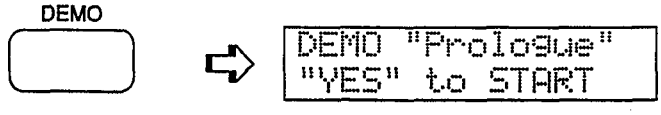
The SY35 automatically transmits MIDI control change data corresponding to its control status when its power switch is turned ON or OFF. This can interfere with operation of other MIDI equipment connected to the SY35 MIDI OUT connector. If the SY35 is connected to other MIDI equipment, the SY35 power switch should be turned ON first, and turned OFF last.

Play the Demo

The SY35 is programmed with a demonstration sequence that you might enjoy listening to after setting up your system. Take a short break and enjoy the demo:

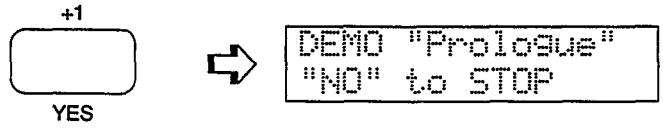
1 Press [DEMO] Key

Press the [DEMO] key. "Yes to Start" will appear on the LCD display.



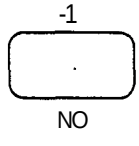
2 [+1/YES] to Start the Demo

Press the [+1/YES] key to start demo playback. "No to Stop" will appear on the LCD display. The demonstration will play continuously.



3 [-1/NO] to Stop the Demo

Press the [-1/NO] key when you want to stop demo playback.



IMPORTANT

Since the SY35 demonstration sequence uses voices in the INTERNAL memory, demo playback may not sound right if any of the internal voices have been edited and changed in any way. Use the Factory Voice & Multi Restore function described on page 45 of the Feature Reference manual to restore the original internal voices prior to playing the demo. Be sure to save any edited data that you want to keep to card before restoring the voices (see page 41 of the Feature Reference manual), because the Factory Voice & Multi Restore function will overwrite all data in the internal memory.

2. Selecting And Playing Voices

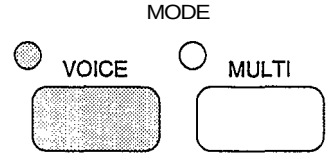
The first thing you'll want to do with your SY35 is select and play some of its outstanding voices ... this section will show you how to do just that. We'll also look at the overall SY35 voice memory configuration.

Play the Presets

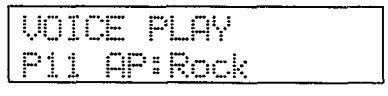
Although the SY35 can access three different voice memories — PRESET, INTERNAL, and CARD — let's begin by selecting and playing some of the preset voices.

1 Select the Voice Play Mode

If the MODE [VOICE] key indicator is lit, then the Voice Play mode is already selected and you can go directly to the next step. If it isn't, press the [VOICE] key to select it.

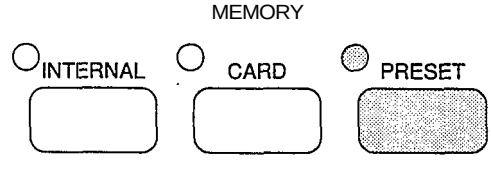


The words "VOICE PLAY" also appear on the top line of the LCD panel when the Voice Play mode is selected.



2 Select the PRESET Voice Memory

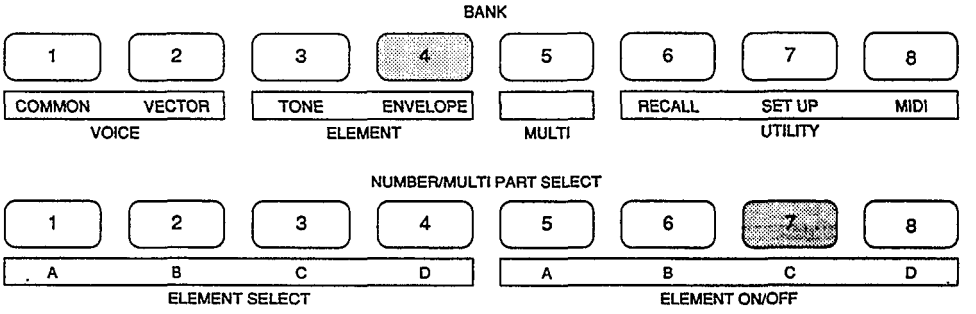
If the MEMORY [PRESET] key indicator is already lit, then the PRESET voice memory is already selected and you can go straight to the next step. If it isn't, press the [PRESET] key to select it.



3 Select a Voice

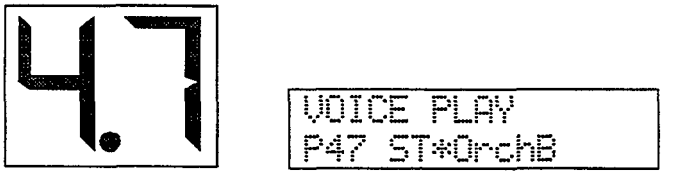
The SY35's 64 preset voices are organized into 8 banks of 8 voices each (8 x 8 = 64). Any voice can be selected by specifying its bank using the BANK keys, and its number using the NUMBER/MULTI PART SELECT keys.

To select voice bank 4 number 7, for example, press the BANK [4] key and NUMBER/MULTI PART SELECT [7] key — in any order.



Voice numbers are displayed on the LCD in the same way. "P25," for example, is not preset voice number 25, but rather preset voice bank 2, number 5. On the large LED display, this would be shown as "2.5". The 64th preset voice, therefore, is displayed as "P88" on the LCD or "8.8" on the LED display.

After selecting voice bank 4, number 7, the displays should look something like this:



To select a different number within the same bank it is only necessary to press the appropriate NUMBER key. In the same way, to select the same number in a different bank all you have to do is press the appropriate BANK key.

The [-1/NO] and [+1/YES] keys can also be used to select a voice in the VOICE PLAY mode. Holding the [-1/NO] or [+1/YES] key causes continuous scrolling in the specified direction.

4 Play

Try playing the selected voice on the keyboard. Select a number of different voices and try them out.

The SY35 INTERNAL memory initially contains an additional 64 voices that you can select and play in the same way. Press the [INTERNAL] key and then select any of the 64 internal voices in the same way as described in step 3, above. The following is a list of the PRESET and INTERNAL voices.

PRESET VOICE LIST

No.	Voice Name	No.	Voice Name	No.	Voice Name	No.	Voice Name
11	AP:Rock	31	BR:Trmpt	51	BA:Wood	71	PL:Gypsy
12	AP:Clsic	32	BR:Mute	52	BA:Frtis	72	PL:Folk
13	AP*Chors	33	BR:Tromb	53	BA*Slap	73	PL*Wide
14	AP:HTonk	34	BR:Flugl	54	BA:Fingr	74	PL*Mute
15	AP:Soft	35	BR:FrHrn	55	BA:Pick	75	PL:Rock
16	AP*Pf&St	36	BR*Sect1	56	BA:Synth	76	PL*Dist
17	AP:Blend	37	BR*Sect2	57	BA:Tchno	77	PL:Chrng
18	AP*Bell	38	BR*Fanfr	58	BA:Groov	78	PL:Sitar
21	EP*Tine	41	ST*Arco1	61	WN:Sax	81	CH*Pure
22	EP:Light	42	ST:Arco2	62	WN:Flute	82	CH*Itopy
23	EP:Old	43	ST:Cello	63	WN:Clari	83	CH*Uhh-
24	EP*Malet	44	ST*SlwAt	64	WN:Oboe	84	CH*Angel
25	KY*Clav1	45	ST*Pizz	65	WN*PanFl	85	CH*Bell
26	KY:Clav2	46	ST*Treml	66	WN*SaxEm	86	CH*Snow
27	KY:Celst	47	ST*OrchB	67	WN*Ensmb	87	CH*Vcodr
28	KY:Hrpsi	48	ST*OrchS	68	WN *Orch	88	CH*Marin

INTERNAL VOICE LIST

No.	Voice Name	No.	Voice Name	No.	Voice Name	No.	Voice Name
11	SP*Warm	31	SL*Saw	51	BR*Punch	71	ME*Wide!
12	SP*Resnc	32	SL:Squar	52	BR*Power	72	ME*Drama
13	SP*Full!	33	SL*Sync	53	BR*Fat	73	ME*SlwSg
14	SP*Bell	34	SL*Power	54	BR:Lite	74	ME*Grand
15	SP*Filtr	35	SL*Whstl	55	ST*Modrn	75	ME*Typhn
16	SP*Deep	36	SL*2VCO	56	ST*Soft	76	ME*Tzone
17	SP*Fog	37	SL*Fat	57	ST*Mild	77	ME*Space
18	SP*Dyna	38	SL*AnaSy	58	ST:Lite	78	ME*Memry
21	SC*Dgcrd	41	OR:Tango	61	SE*Hit	81	PC:Vibe
22	SC*Elgnt	42	OR:Paris	62	SE*Start	82	PC*Marim
23	SC*sFz<	43	OR*Rock1	63	SE*Who?	83	PC:M.Box
24	SC*Coin	44	OR*Rock2	64	SE*Open	84	PC:Timp
25	SC*Brash	45	OR*Rock3	65	SE*Emgsy	85	PC*Batl
26	SC:Water	46	OR*Cat	66	SE*Elect	86	PC*Human
27	SC*Sand	47	OR*Big	67	SE*GoUp!	87	DR*Auto
28	SC*Reso	48	OR*Combo	68	SE*and>?	88	DR:Kit

Note that the voices are arranged in categories for easier access. For example, preset bank 1 contains acoustic piano voices, preset bank 2 contains electric piano and other keyboards, bank 3 is all brass, bank 4 is strings, and so on. The category of each voice is identified by a two-character prefix, as follows:

AP = Acoustic Piano	WN = Wind	OR = Organ
EP = Electric Piano	PL = Plucked	SE = Sound Effect
KY = Keyboard	CH = Chorus	ME = Musical Effect
BR = Brass	SP = Synth Pad	PC = Percussive
ST = Strings	SC = Synth Comp	DR = Drums
BA = Bass	SL = Synth Lead	

Also note that the delimiter which separates the category prefix from the voice name indicates whether the voice is a 2-element or 4-element type: colon (:) = 2-element voice, asterisk (*) = 4-element voice.

A more detailed voice list is provided in the Feature Reference manual appendix, on page 59.

If you don't get any sound at this point: Make sure your sound system is turned ON and the volume is turned up to a reasonable level, make sure that the SY35 VOLUME control is turned up to a reasonable level, and check all connections carefully.

5 **Try Out the Pitch Bend & Modulation Wheels**
While you're experimenting with the PRESET and INTERNAL voices, try out the PITCH BEND and MODULATION wheels to the left of the keyboard.

PITCH BEND WHEEL: Rolling the PITCH BEND wheel upward (away from you) will raise the pitch of notes played on the keyboard, while rolling the wheel in the opposite direction will lower the pitch. The PITCH BEND wheel is self-centering and will always return to center position (normal pitch) when released.

The maximum range of the PITCH BEND wheel can be set using the PITCH BEND function described on page 6 of the Feature reference manual.

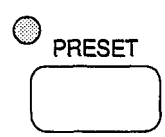
MODULATION WHEEL: Rolling the MODULATION wheel upward (away from you) will increase the depth of the type of modulation set for the currently selected voice. The MODULATION wheel stays wherever it is set, so you can set it and leave it at any position that produces the desired modulation effect.

The MODULATION wheel can control both pitch and amplitude modulation, and the the type of modulation applied to each voice is determined by the settings of the voice's LFO AM and LFO PM parameters described on page 22 of the Feature Reference manual.

The PRESET, INTERNAL, and CARD Voice Memories

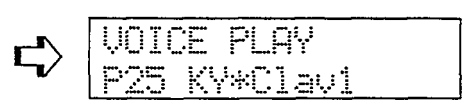
Now that you're familiar with the PRESET voices and how they're selected and played, let's look at the overall SY35 voice memory configuration.

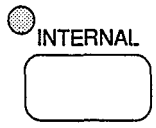
Voices played by the SY35 can come from three different sources: the PRESET voice memory, the INTERNAL voice memory, or a CARD voice memory. Any voice in any of these voice memories can be selected and played while the SY35 is in the VOICE PLAY mode. Simply press the [PRESET], [INTERNAL] or [CARD] MEMORY key, and then select the desired voice BANK and NUMBER as described in the preceding section.



When you press the MEMORY [PRESET] key you select the PRESET voice memory. The PRESET voice memory contains 64 pre-programmed voices in ROM (Read Only Memory) that cannot be overwritten or changed in any way. The PRESET voice memory is represented on the display by the letter "P".

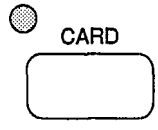
For example, PRESET bank 2, voice number 5 looks like this...





The INTERNAL voice memory is a RAM (Random Access Memory) area which initially contains 64 more voices that you can use "as-is" or edit to create variations or totally new voices. Voices in the INTERNAL memory can also be moved around and stored in different INTERNAL memory locations, or new voices can be loaded from an external memory card. The initial factory-set INTERNAL voices can be restored at any time by using the "Factory Voice Restore" function described on page 45 of the Feature Reference manual. The INTERNAL voice memory is represented on the display by the letter "I".

For example, INTERNAL bank 4, voice number 2 looks like this...



The CARD memory is an optional Yamaha MCD64 or MCD32 Memory Card (or pre-programmed voice card) plugged into the SY35 CARD slot on the rear panel. Memory cards are convenient for external storage and transportation of voices you or others create. You can also store sets of related voices on different memory cards. An MCD32 Memory Card allows storage of up to 64 voices. An MCD64 Memory Card holds two banks of 64 voices each — a total of 128 voices per card. The CARD voice memory is represented on the display by the letter "C".

For example, CARD bank 3, voice number 3 looks like this ...

A properly formatted Yamaha MCD32 or MCD64 memory card (or an appropriate pre-programmed voice card) must be inserted in the rear-panel CARD slot before the CARD memory can be selected. If no memory card is present, the "Card not ready!" display will appear when you attempt to select the card voice memory.

Overlapping Voice Selection

The SY35 has been designed to allow overlapping voice selection. That is, if you select a new voice while holding notes on the keyboard, the held notes will continue playing the previous voice while subsequently played notes will use the new voice.

Although the primary reason for this feature is to allow smooth switching between voices without unnatural sound cutoff or gaps, it is actually possible to play several voices at once by holding a note or two, selecting a new voice, holding a couple more notes, selecting a second new voice, and so on.

3. Vectors

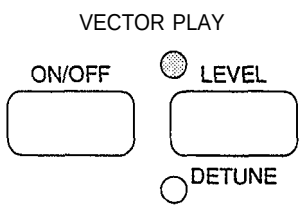
Vectors are a versatile musical tool. You can simply use the VECTOR CONTROL as an expressive controller while playing, or spend some time programming sophisticated "dynamic vectors" that play automatically.

Manual Vector Control

Before we get into the details of vector synthesis, try using the VECTOR CONTROL with some of the preset voices to get a feel for what this versatile feature can do.

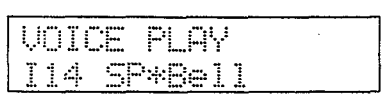
1 Select the Vector Play LEVEL Mode

While in the Voice Play mode (see the preceding section if you don't know how to select the Voice Play mode), turn the Vector Play mode ON by pressing the VECTOR PLAY [ON/OFF] key so that either the [LEVEL] or [DETUNE] indicator lights, then press the [LEVEL/DETUNE] key to select the [LEVEL] indicator (the [LEVEL] and [DETUNE] indicators are selected alternately when the key is pressed).



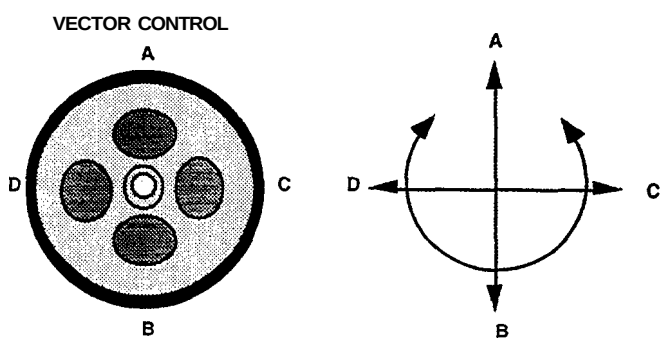
2 Select the SP*Bell Voice

The SP*Bell voice (INTERNAL bank 1, number 4) is a good choice to experiment with the VECTOR CONTROL.

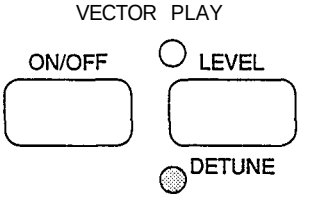


3 Move the Vector Control While Playing

Try moving the VECTOR CONTROL vertically, sideways, and in circles while you play on the keyboard, and listen carefully to how the sound changes.



4 **Try DETUNE Vector Control ...**
Press the VECTOR PLAY [LEVEL/DETUNE] key so that the [DETUNE] indicator lights, move the VECTOR CONTROL while playing, and listen for the difference in sound.



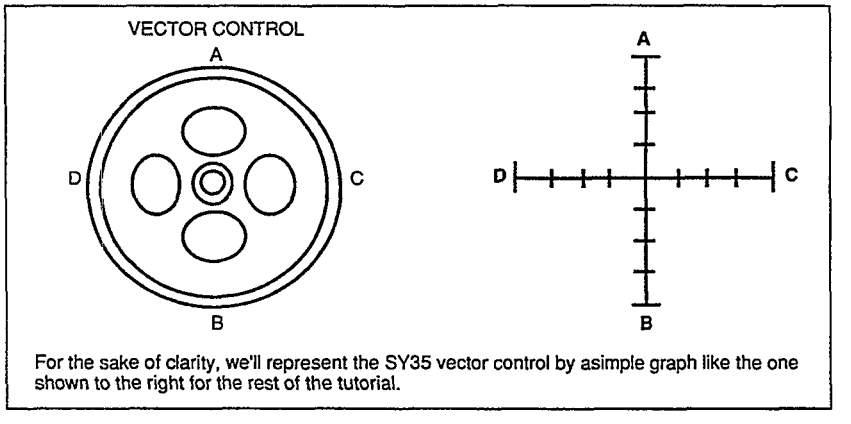
5 **Also Try the Vector Control With These Voices ...**
The following voices also effectively demonstrate the power of the VECTOR CONTROL. Select them and apply LEVEL and DETUNE vector control as you play:

- P68WN*Orch
- I74 ME*Grand
- I78 ME*Memry

How the VECTOR CONTROL Works

SY35 voices can have either a "2-element" or "4-element" configuration. Each element is actually an independent sound or "waveform," and vector control allows the 2 or 4 different waveforms in a voice to be blended and detuned in a variety of ways — manually or automatically.

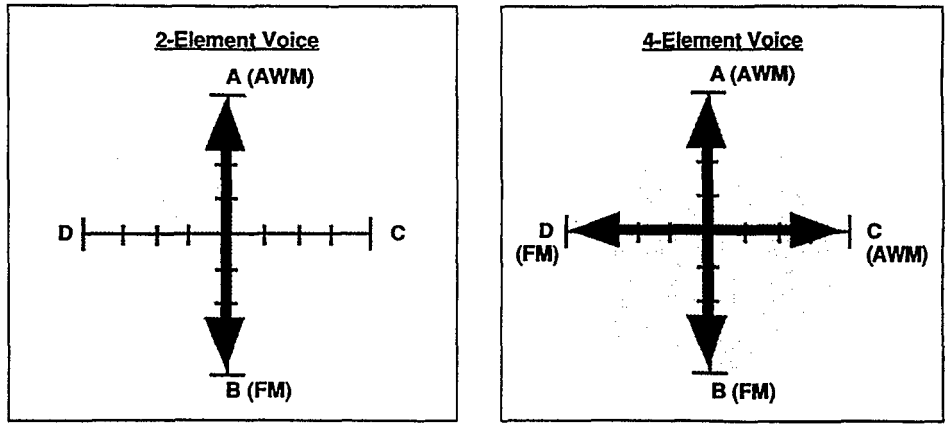
The "A," "B," "C," and "D" markings around the VECTOR CONTROL correspond to the voice elements. A 2-element voice uses only elements A and B, while a 4-element voice uses all four elements — A, B, C and D.



For the sake of clarity, we'll represent the SY35 vector control by asimple graph like the one shown to the right for the rest of the tutorial.

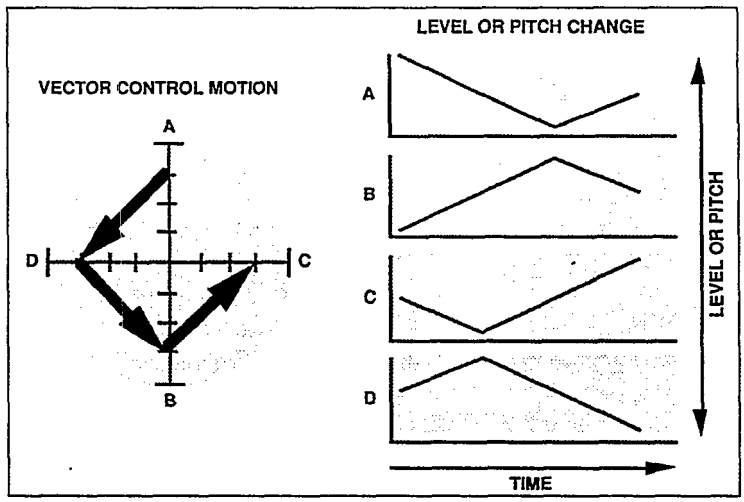
Elements A and C are always *"AWM" elements, while B and D are* always *"FM" elements. AWM stands for "Advanced Wave Memory," Yamaha's sophisticated sampling technology that allows high-fidelity reproduction of digitally recorded "live" sound. FM is Yamaha's proven Frequency Modulation synthesis technology which is capable of creating extraordinarily warm, vibrant simulations of actual instruments, as well as an infinite variety of original sounds. When you start programming your own voices you can assign any of 128 preset AWM waveforms to elements A and C, and any of 256 preset FM waveforms to elements B and D (Feature Reference manual, page 17).*

The VECTOR CONTROL can be used to control the relative amount of either level or detune between the elements of the voice — along the vertical axis only if a 2-element voice is selected, or along both the vertical and horizontal axes if a 4-element voice is selected.



When LEVEL vector control is selected, moving the control towards one element (A, B, C or D) increases the level of that element while decreasing the level of the others proportionally. The VECTOR CONTROL works in a similar way when DETUNE vector control is selected — moving the control towards one element increases the pitch of that element while decreasing the pitch of the others.

The following diagrams should give you a rough idea of how the level or pitch of each element in a 4-element voice is affected by VECTOR CONTROL motion.



Advanced Control: Dynamic Vectors

In addition to the manual vector control capability described so far, the SY35 features advanced automatic vector recording and playback capability. Automatic vectors are called "dynamic vectors" in the SY35, and these play automatically whenever you play a note on the keyboard. Dynamic vectors can be recorded in real time via the VECTOR CONTROL by using the procedure described in the "Recording an Original Dynamic Vector" section, below. While manual vector control is possible whenever the VECTOR PLAY mode is ON — i.e. when either the VECTOR PLAY [LEVEL] or [DETUNE] indicator is lit, dynamic vectors operate only when the VECTOR PLAY mode is OFF — i.e. when both the VECTOR PLAY [LEVEL] and [DETUNE] indicators are out.

Try Out the SE*Elect Dynamic Vector

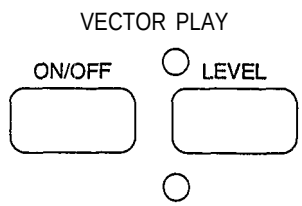
Before we dive in and record an original dynamic vector, spend a few minutes familiarizing yourself with the SE*Elect voice and its preset dynamic vector.

1 Select the SE*Elect Voice

The SE*Elect voice (166) features a distinct dynamic vector that will serve as an ideal foundation for a few initial experiments.

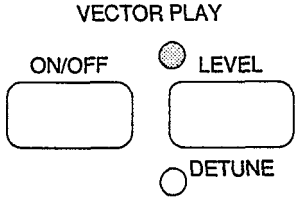
2 Turn Vector Play OFF and Play the Voice

Make sure the manual VECTOR PLAY mode is turned OFF, using the VECTOR PLAY [ON/OFF] key to turn it off if necessary (neither the [LEVEL] or [DETUNE] indicators should be lit).

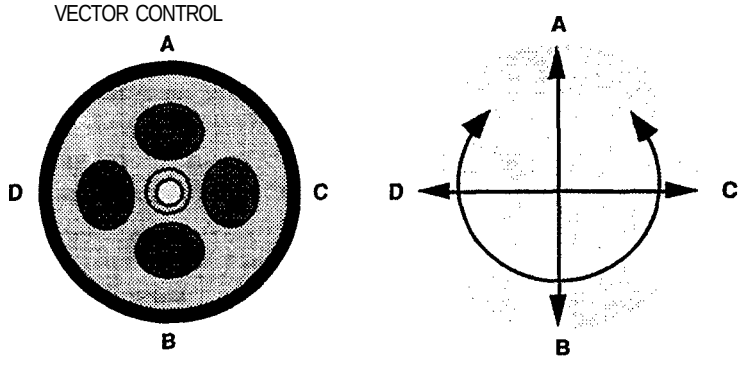


Play a nice long note or chord. Notice how the various elements are gradually brought in and blended automatically — this is the result of a dynamic vector.

3 **Turn Vector Play ON**
Now press the VECTOR PLAY [ON/OFF] key to turn the VECTOR PLAY mode ON, and select [LEVEL] control.



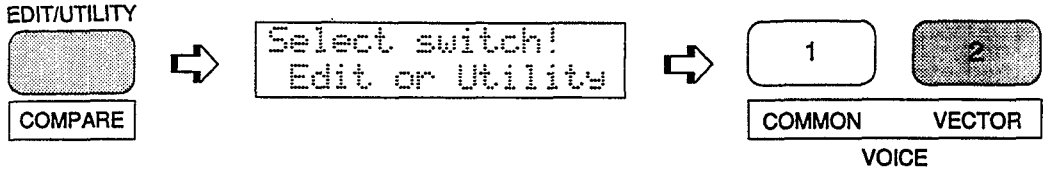
Since Vector Play is ON, the dynamic vector will not play. Set the VECTOR CONTROL to center position and play another note or chord. You should hear all 4 elements at the same time, in approximately equal proportions. Play with the VECTOR CONTROL a bit to get a feel for this particular combination of elements.



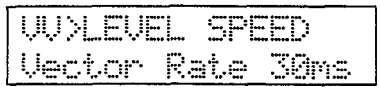
Recording An Original Dynamic Vector

Now we'll go ahead and record an original dynamic level vector for the SP*Bell voice.

1 **Select the VOICE VECTOR Edit Mode**
The first step is to enter the VOICE VECTOR edit mode, which we do by pressing the [EDIT/UTILITY] key and then the [VOICE VECTOR] key.

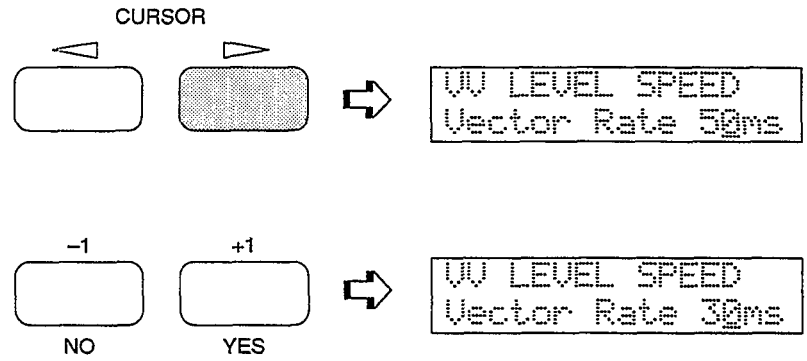


2 **Select the LEVEL SPEED Function**
If the LEVEL SPEED function does not appear immediately when you enter the VOICE VECTOR edit mode, press the [VOICE VECTOR] key a few times until it does appear (Feature Reference manual, page 11).

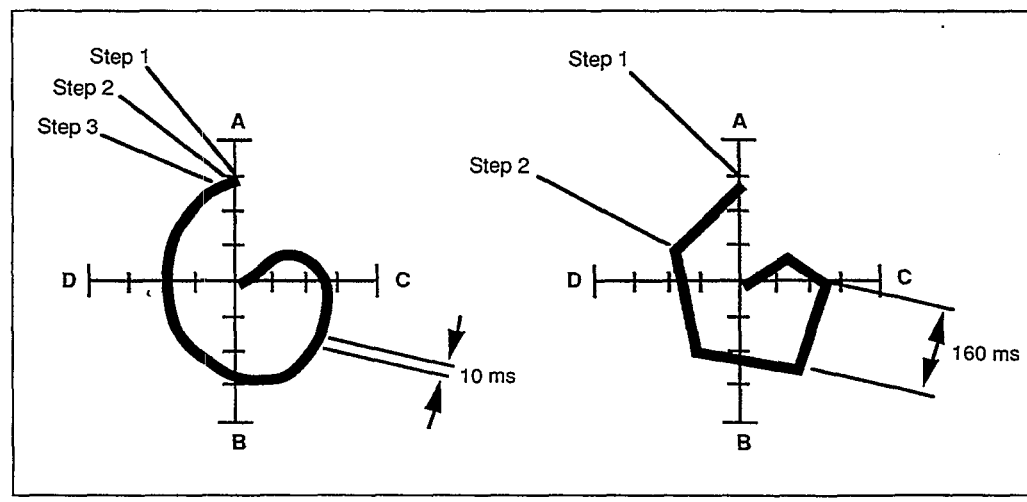


3 Set the Vector Rate

Move the cursor to the lower display line by pressing the CURSOR [▷] key, then use the [-1/NO] and [+1/YES] keys to set the vector rate parameter to "30ms." This is a fairly "average" vector rate, and is a good place to start experimenting with dynamic vectors (in fact, it is the default rate so you might not have to change the setting).

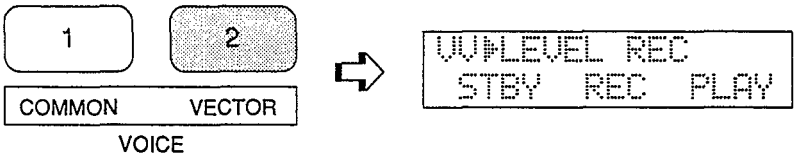


Vectors are recorded by "sampling" the position of the VECTOR CONTROL at evenly-spaced steps. The Vector Rate function allows you to set the time between each sample step. Quite logically, short vector rates are best for quick control movements while longer vector rates are better for slow control movements. If you set the vector rate to too long a value for a rapid control movement, you may end up with a "jerky" sounding vector. The diagrams below show the same control movement recorded at 10-millisecond and 160-millisecond vector rates.

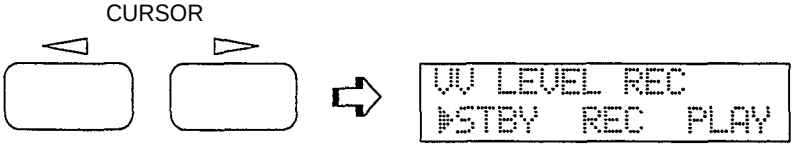


4 **Select the LEVEL REC Function**

Press the [VOICE VECTOR] key once to move ahead to the LEVEL REC display.



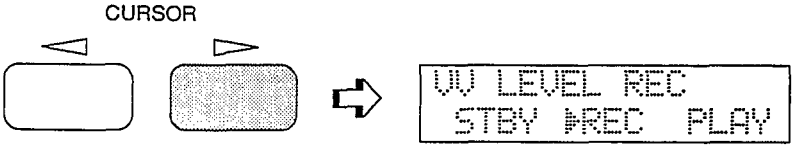
Use the [◁] and [▷] cursor keys to move the cursor to the STBY (standby) parameter. (The VECTOR PLAY LEVEL LED will light.)



At this point the VECTOR CONTROL will be active in the level control mode, and you can rehearse the level vector you are about to record.

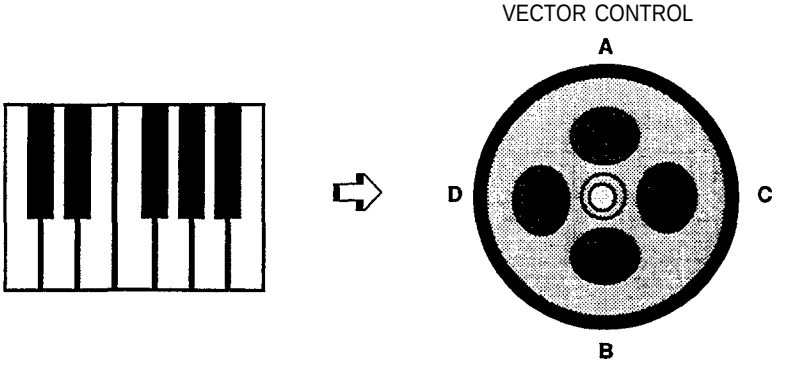
5 **Select REC**

Move the cursor to the REC parameter (press the CURSOR [▷] key).

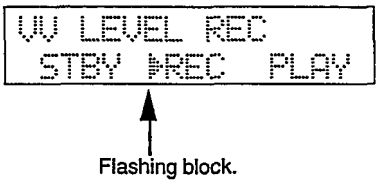


6 **Record the Dynamic Vector**

Vector recording will begin the instant you play a note on the keyboard. Play a note (or chord), and begin moving the VECTOR CONTROL.



A rectangular block will flash at the cursor position while recording.



Recording will end automatically when the note or chord you are playing is released, or when the maximum of 50 sampling steps has been reached — how long this takes depends both on the vector rate setting and how fast you move the VECTOR CONTROL. When recording finishes, the cursor will move automatically to the PLAY parameter position. At the same time the VECTOR PLAY mode will automatically be turned OFF so that the dynamic vector just recorded is active.

7 Try Out Your Original Dynamic Vector

Now you can play on the keyboard to hear how your dynamic level vector turned out. If you don't like the results, simply move the cursor back to REC (by pressing the CURSOR [◁] key) and record again.

Although you've just recorded a dynamic level vector, dynamic detune vectors can be recorded in exactly the same way using the DETUNE SPEED and DETUNE REC functions which are also accessible in the VOICE VECTOR edit mode (see the Feature Reference manual, page 13).

Store Your Voice & Vector In INTERNAL Memory

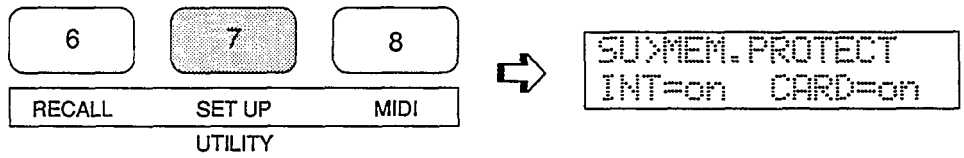
When you're satisfied with your first vector masterpiece, you can return to the VOICE PLAY mode with the option of storing the voice you have just edited into one of the SY35's INTERNAL memory locations.

There is, however, a slight catch. If you simply go ahead and attempt to store the voice at this point the SY35 may inform you that the internal memory is protected, preventing the store operation. Both INTERNAL and CARD memories feature protect functions that can be turned on to prevent accidental erasure of important voices.

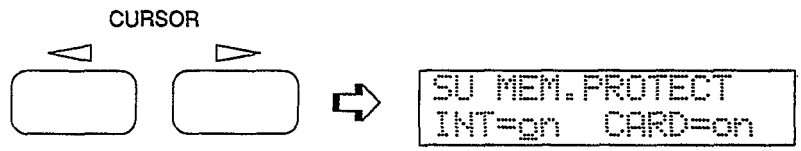
When you store a new voice to an INTERNAL memory location, the voice that was initially in that location will be overwritten and therefore lost. The initial factory-set voices can be restored at any time by using the Factory Voice Restore function described on page 45 of the Feature Reference manual.

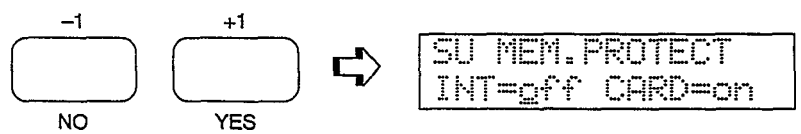
1 Turn Memory Protect OFF

To turn the memory protect function off, press the [UTILITY SETUP] key a few times until the MEM. PROTECT function appears.



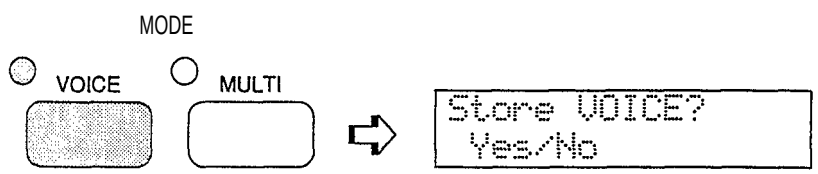
Move the cursor to the INT parameter and press the [-1/NO] or [+1/YES] key to turn the internal memory protection off.





2 Press [VOICE]

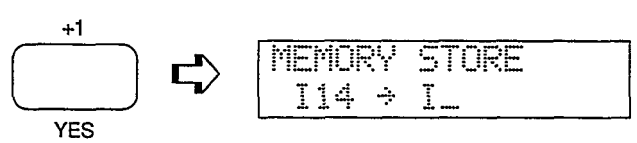
Now press the [VOICE] key to return to the VOICE PLAY mode. Before actually returning you to the VOICE PLAY mode, however, the SY35 will ask you whether you want to store the voice you have just edited into one of the INTERNAL memory locations.



You can skip this step and go straight to the VOICE PLAY mode by pressing the [-1/NO] key, or you can press [+1/YES] to initiate the voice storage procedure.

3 Press [+1/YES] If You Want to Store the Voice

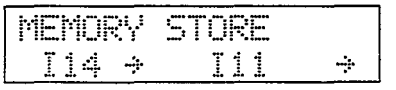
If you press [+1/YES], a display similar to the following will appear:



The number of the voice you edited will be shown to the left of the lower display line, and the cursor will be placed to the right of the arrow.

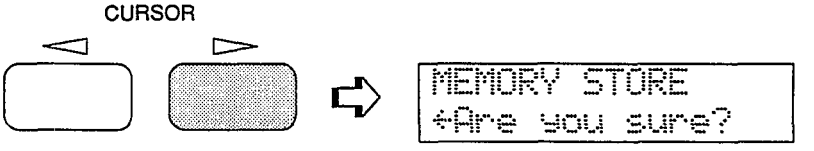
4 **Select the Destination Memory Location**

Select the memory location to which you want to store the new voice using the standard voice selection procedure.



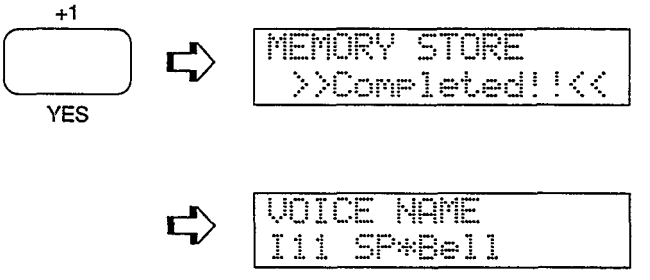
5 **Press CURSOR [▷]**

When the target memory location has been selected, press the [▷] cursor key. "Are you sure?" will appear on the display.



6 **Press [+1/YES] to Confirm and Store**

Confirm your intention to store the new voice by pressing the [+1/YES] key, and the store operation will begin. "»Completed!«" will appear on the display briefly when the store operation is finished, and the SY35 will return to the VOICE PLAY mode.



The SY35 also has a [STORE] key that can be used to store voices and multi setups (described on page 38) to INTERNAL or CARD memory locations. Operation of the [STORE] key is described on page 10.

For More Detailed Vector Control ...

You now have a edited version of SP*Bell featuring your own original dynamic level vector. You could use the VOICE COMMON edit mode NAME function (Feature Reference manual, page 5) to give the voice a new name — VectBell for example. Using the same procedure you could create an infinite range of variations on the preset voices.

The method of dynamic vector recording just described is quick and easy — all you have to do is operate the VECTOR CONTROL and use your ears. This quick-and-easy method is recommended for most applications. If you want really fine control, however, the SY35 offers a number of level and detune vector editing functions that allow the position and length of each vector step to be precisely programmed as required. See pages 11 through 14 of the Feature Reference manual for details.

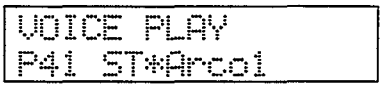
4. Instant Voice Programming

Although the SY35 allows you to program voices in considerable detail, in this section we'll present a simple way to create an unlimited range of new and useful voices.

Detailed parameters for programming individual elements are available in the ELEMENT TONE and ELEMENT ENVELOPE edit modes described in the Feature Reference manual, beginning on pages 15 and 25, respectively. Everything we need to have loads of fun — and to create some very serious voices — is available in the VOICE COMMON edit mode.

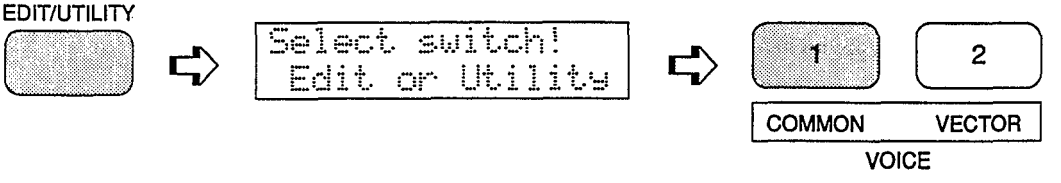
1 Select a Preset Voice To Start With

Select any preset voice while in the VOICE PLAY mode to serve as a "platform" for your new voice. ST*Arcol (P41) is a good choice to start with.



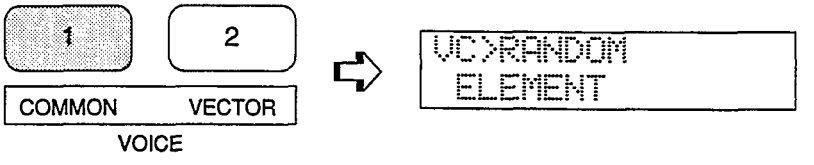
2 Select the VOICE COMMON Edit Mode

Select the VOICE COMMON edit mode by pressing the [EDIT/UTILITY] key and then the [VOICE COMMON] key.



3 Select the RANDOM Function

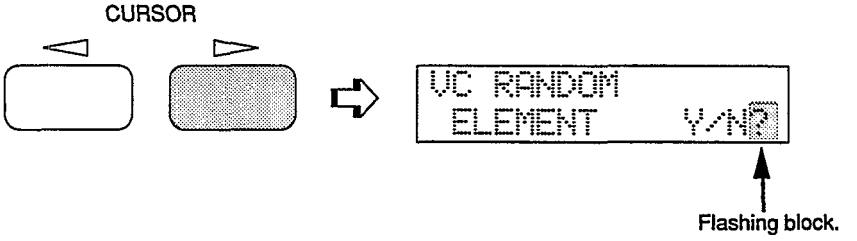
Press the [VOICE COMMON] key. a few times until "RANDOM" appears on the top display line. As long as the cursor is on the top display line next to the function name, it is also possible to scroll backward and forward through the function list by using the [-1/NO] and [+1/YES] keys.



If the "ELEMENT" parameter does not appear in the RANDOM display, as pictured above, use the CURSOR [◁] and/or [▷] keys to move the cursor to the left-hand parameter on the lower display line (this will either be ELEMENT, LEVEL VEC, or DETUNE VEC) and, if necessary, select "ELEMENT" using the [-1/NO] and [+1/YES] keys.

4 **Press CURSOR [▷]**

Press the CURSOR [▷] key once so that the cursor appears as a flashing block to the right of the "Y/N?" parameter.



5 **Press** [+1/YES] **To Create a** New **Voice**

Now, each time you press the [+1/YES] key the SY35 will randomly assign different waveforms to the four elements in what used to be the CH*Pure voice.

Try it a few times: press [+1/YES] then play on the keyboard to hear a totally new voice. Since the element combinations are generated randomly, some are not particularly useful ... but others will surprise you. Every few tries you'll probably come up with a combination which, if not ready to use without further modification, can be turned into a very fine voice with a little "brushing up" in the various SY35 editing modes.

Please note that the RANDOM ELEMENT function only *replaces the element waveforms in the voice you started with, so, unless you go into further programming, the voice you choose as your platform will determine how controllers like the pitch and modulation wheels function (Feature Reference manual, page 6), the shape of the amplitude envelopes used for each element (Feature Reference manual, page 27), the type of effect (reverb, delay, etc.) applied to the voice (Feature Reference manual, page 5), and more.*

While trying out the new voices you create, you can turn the VECTOR PLAY mode ON and experiment manually with different vectors. You can also enter the VOICE VECTOR mode by pressing the [VOICE VECTOR] key and record a dynamic vector as described in the previous section.

6 **Store Your New Voice**

If you come up with something you want to keep, use the same voice store procedure as described on page 28 when returning to the VOICE PLAY mode.

For Serious Voice Editing...

You're now equipped to create a world of vibrant and very useful new voices with very little actual programming indeed. If you do want to get deep into the details and fine tune your voices until they are perfect, please take the time to read through the Feature Reference manual. In it, each editing function is described individually, often with a few helpful hints that will help you use it most effectively.

5. The Multi Mode

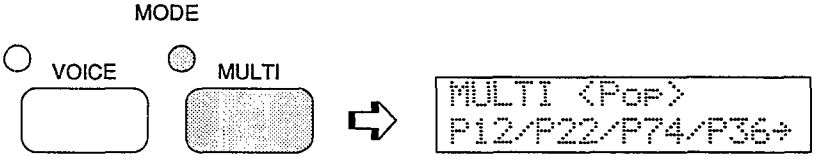
The SY35 MULTI PLAY mode allows up to 8 different voices to be played simultaneously, either via the SY35 keyboard or from an external MIDI sequencer.

Try Out the Preset Multi Setups

The SY35 has 16 preset Multi setups that you can simply select and use. Here's how ...

1 Select the Multi Play Mode

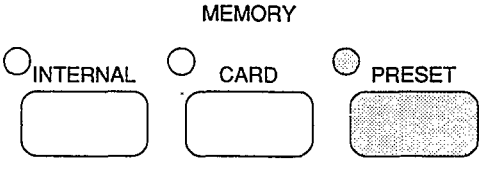
If the MODE [MULTI] key indicator is lit, then the Multi Play mode is already selected and you can go directly to the next step. If it isn't, press the [MULTI] key to select it.



The name of the currently selected Multi setup is shown on the upper line of the display, while the numbers of the individual voices assigned to the Multi setup are shown on the lower display line, four at a time. You can use the CURSOR [◁] and [▷] keys to display voices 1 through 4 or 5 through 8.

2 Select the PRESET Multi Memory

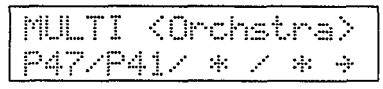
The MEMORY [INTERNAL], [CARD], and [PRESET] keys are used to select the desired MULTI memory. Press [PRESET] to select the PRESET memory.



The INTERNAL memory initially contains another 16 Multi setups that you can use or edit as required. The initial factory INTERNAL Multi setups can be restored at any time by using the Factory Multi Restore function described on page 45 of the Feature Reference manual.

3 **Select the Orchstra Multi**

If it's not already selected, select the Orchstra Multi (P11) by pressing the BANK key [1] and [NUMBER/MULTI PART SELECT] key [1].



Since there are 16 Multi setups in each memory area, they are organized into two banks of 8 Multi setups each. That is: 1.1 through 1.8, and 2.1 through 2.8. In the Multi mode BANK keys 3 through 8 have no effect. As with voice selection, to select a different number within the same bank it is only necessary to press the appropriate bottom-row key. In the same way, to select the same number in a different bank all you have to do is press the appropriate upper-row key. The [-1/NO] and [+1/YES] keys can also he used to select a MULTI PLAY setup in the MULTI PLAY mode. Holding the [-1/NO] or [+1/YES] key causes continuous scrolling in the specified direction.

4 **Play**

Play the Orchstra Multi setup on the keyboard. You'll hear a thick orchestra sound that is created by playing the. SY35's OrchestraBrass and Strings voices simultaneously. This is a "layered" multi since the two voices are played simultaneously over the entire range of the keyboard.

5 **Select and Play the Wb/Piano Multi**

Now select the Wb/Piano Multi (P22 ... press BANK [2] and NUMBER [2]). You'll find that you can now play a wood bass voice on the left-hand section of the keyboard and a piano voice on the right-hand section of the keyboard. This is a "split" Multi in which the wood bass and piano voices are both played from the keyboard, but are limited to different areas of the keyboard by the NOTE LIMIT function available in the MULTI EDIT mode.

Layered and split Multi setups that allow several voices to be played simultaneously from the SY35 keyboard are created by setting the MIDI receive channels of the voices to the same MIDI channel that the SY35 is set to transmit on.

6 **Select and Try the Other Multi Setups**

Here's a list of the 16 PRESET Multi setups and the factory INTERNAL Multi setups. Setups marked either "Layer" or "Split" can all be played from the SY35 keyboard. Select them and listen to how they sound.

"SY35 **Multi List"**

PRESET MULTI LIST

No.	MULTI Name	Type	Voice Numbers								Comments
11	Orchstra	Layer	P47	P41							Big orchestra.
12	BigBand	Layer	P36	P37							Big-band brass section.
13	SuperCIv	Layer	P25	P26							Layered clavi sound.
14	PianoStr	Layer	P15	P42							Layered piano and strings.
15	VoiceBs	Layer	P52	P87							Layered bass and human voice.
16	FullBrs	Layer	P35	P38							Powerful brass.
17	PanLead	Layer	P63	P63	P65	P65					Pan-flute type lead voice.
18	Str&Cho	Layer	P42	P85							Layered strings and choir.
21	DistLead	Layer	P76	P76	P76	P76	P76	P76	P76	P76	Distortion lead voice.
22	Wb/Piano	Split	P51	P12							Wood bass and piano split.
23	B/BrsSec	Split	P54	P37							Electric bass and brass split.
24	Celo/FIt	Split	P43	P62							Cello and flute split.
25	<Pop>	MIDI Multi	P12	P22	P74	P36	P61	P42	P54	I88	Pop music ensemble.
26	<Rock>	MIDI Multi	P11	I43	P74	P37	P61	P41	P55	I88	Rock group.
27	<Jazz>	MIDI Muiti	P15	I46	P71	P32	P61	P42	P51	I88	Jazz ensemble.
28	<Demo>	MIDI Multi	P72	P42	P61	P58	P12	I35	I64	I88	SY35 demo multi.

INTERNAL MULTI LIST

No.	MULTI Name	Type	Voice Numbers								Comments
11	SyncLead	Layer	I33	I33	I33	I33					Fat "sync" lead.
12	SuperSaw	Layer	I31	I31	I31	I31	.I31	I31	I31	I31	Extra-fat sawtooth lead.
13	BellPad	Layer	I11	I14							Filter sweep synth pad.
14	SunBeam	Layer	I22	I24							"Sunny" sound for backing.
15	WideDcy	Layer	I25	I27							Bright backing layer.
16	AnaPad1	Layer	I13	I51							Analog synth pad 1.
17	AnaPad2	Layer	I15	I23							Analog synth pad 2.
18	AnaPad3	Layer	I13	I55							Analog synth pad 3.
21	FatBrass	Layer	I51	I53							Fat analog synth brass.
22	HyuhPad	Layer	I71	I76							Synth pad with wind effect.
23	Reggae	Layer	I46	I82							Ideal for Reggae music.
24	Mikado	Layer	I67	I18							Musical effect.
25	Prologue	Layer	I62	I18							Musical effect.
26	Epilogue	Layer	I64	I72							Musical effect.
27	SolidSet	Split	I37	I31							Bass and synth lead split.
28	RytmSec.	Split	I87	I36							Auto drum and bass pattern.

PRESET Multi setups 25 through 28 (labelled "MIDI" in the above list) are designed for use with an external MIDI sequencer. Each has 8 voices assigned to different MIDI channels as shown in the chart below.

PRESET MULTI MIDI CHANNEL ASSIGNMENTS

No.	MULTIName	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch16
25	<Pop>	P12	P22	P74	P36	P61	P42	P54	—	I88
26	<Rock>	P11	I43	P74	P37	P61	P41	P55	—	I88
27	<Jazz>	P15	I46	P71	P32	P61	P42	P51	—	I88
28	<Demo>	P72	P42	P61	P58	P12	I35	I64	I88	—

When You Want To Create an Original Multi...

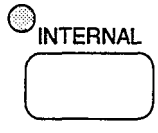
The SY35 MULTI EDIT mode allows you to create your own multi setups, which can then be stored in the INTERNAL or CARD memory (described below). In the MULTI EDIT mode you can assign any of the SY35 voices to the 8 mulli parts, assign any of the 16 available MIDI channels to each part, and assign an effect (reverb, delay, etc.) for that multi setup. The following characteristics can also be individually programmed for each voice:

- Volume: allows the voices to be ideally balanced.
- Detune: slight detuning to thicken the sound.
- Note limit: allows split keyboard setups.
- Note shift: transposes up or down in semitone steps.
- Name: assigns an original name to each multi setup.

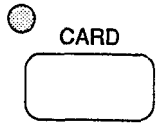
Full details on each of these functions, as well as general editing instructions, are provided in the MULTI section of the Feature Reference manual (page 33). Now that you've had some experience with the SY35, you should be able to access and use the MULTI EDIT mode functions with no problem.

The INTERNAL and CARD Memories

In addition to the PRESET Multi memory, the SY35 provides 16 INTERNAL memory locations into which you can store original Multi setups created in the MULTI EDIT mode. Multi setups can also be stored on external memory cards in the same way as ordinary voices.



The INTERNAL MULTI memory is a RAM (Random Access Memory) area into which you can store up to 16 Multi setups that you create in the MULTI EDIT mode or load from an external memory card. Initially, the INTERNAL MULTI memory contains 16 factory-programmed Multi setups that you can use "as-is" or edit as required. The factory INTERNAL Multi setups can later be restored by using the Factory Multi Restore function described on page 45 of the Feature Reference manual. The INTERNAL multi memory is represented on the display by the letter "I".



The CARD memory bank is a Yamaha MCD64 or MCD32 Memory Card plugged into the SY35 card slot. An MCD32 Memory Card allows storage of up to 16 Multi setups in addition to 64 voices. An MCD64 Memory Card holds two banks of 16 Multi setups each — in addition to 64 voices in each bank. The CARD multi memory is represented on the display by the letter "C".

Multi Polyphony & Dynamic Voice Allocation

Since the SY35 can produce a maximum of 16 notes at the same time (16-note polyphony ... see the "DETAILS" column, below), the number of simultaneous notes that each voice in a Multi setup can produce depends on the number of voices being played at the time. If all 16 voices are played at once, each can produce a maximum of one note. On the other hand, if only one voice is being played the SY35's "Dynamic Voice Allocation" feature allows 16 notes to be played simultaneously by that one voice even if 16 voices are assigned.

The only thing you have to be concerned about in programming sequences to drive the SY35, is that the maximum polyphony of 16 notes is never exceeded.

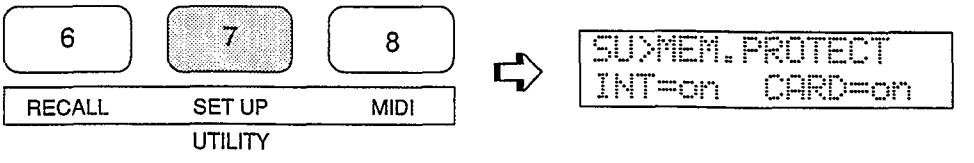
In actual fact, 16-note polyphony is only available with 2-element voices. Voices that use the maximum of 4 elements can produce a maximum of 8 notes simultaneously. This means that the total number of simultaneous notes available in the Multi mode will depend on the voices used — more 4-element voices means that fewer simultaneous notes will be available.

Using the [STORE] Key to Store Voices and Multi Setups in INTERNAL or CARD Memory

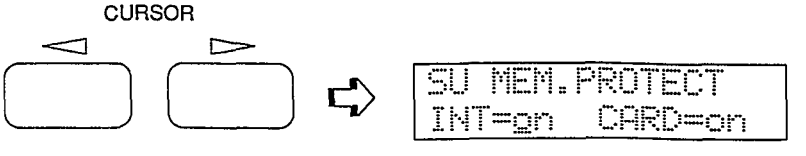
As we've already seen, the SY35 automatically gives you the option to store a voice you've just edited when you switch back to the VOICE play mode. You can also activate the store function to store the currently selected voice to a different INTERNAL or CARD memory location by pressing the [STORE] key while in the VOICE play mode. Likewise, the selected Multi setup (see the following section) can be stored to a different INTERNAL or CARD memory location by pressing the [STORE] key while in the MULTI play mode. In either case, the memory protect function for the memory to which you intend to store the voice or multi-play setup — INTERNAL or CARD — must first be turned OFF via the UTILITY mode MEMORY PROTECT function.

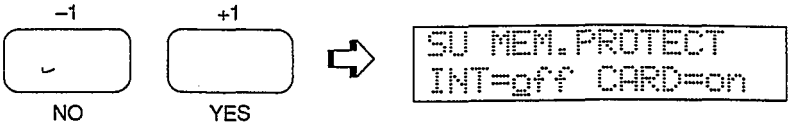
1 Turn Memory Protect OFF

To turn the memory protect function off, press the [UTILITY SETUP] key a few times until the MEM. PROTECT function appears.



Move the cursor to the INT (internal memory) or CARD (card memory) parameter as required, and press the [-1/NO] or [+1/YES] key to turn memory protection off.



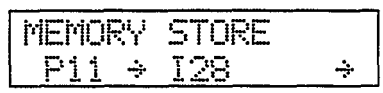


2 Select the Source Voice or Multi

Select the VOICE PLAY or MULTI PLAY mode, and select the voice or multi setup you want to store to a different memory location (P11 for this example).

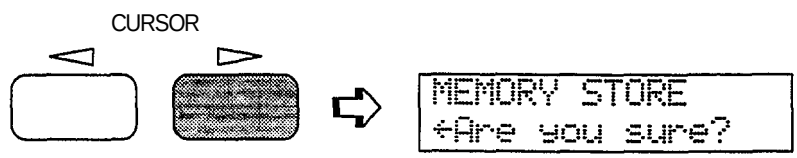
3 **Press [STORE]**
Press the [STORE] key to engage the MEMORY STORE function.

4 **Select the Destination Voice or Multi**
If necessary, select the destination memory by pressing the [INTERNAL] or [CARD] key, then enter the bank and number of the destination memory location (I28 for this example).

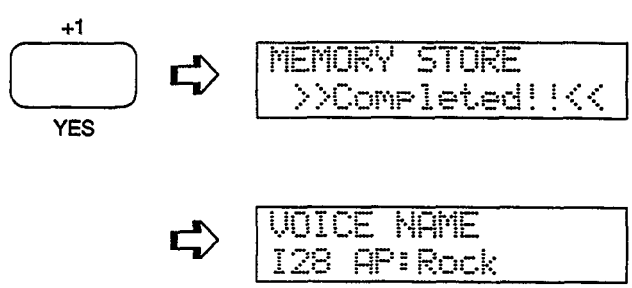


To store a voice or multi to a CARD memory location, a properly formatted MCD32 or MCD64 memory card must be inserted in the rear-panel CARD slot. See page 42 of the Feature Reference manual for card formatting instructions. The card's WRITE PROTECT switch must also be turned OFF — see the instructions accompanying your memory card.

5 **Press CURSOR [▷]**
Press the CURSOR [▷] key and the "Are you sure?" display will appear.



6 **Press [+1/YES] to Confirm and Store**
Press [+1/YES] to execute the store operation, or [-1/NO] to cancel. The store procedure can be exited at any time by pressing the [-1/NO] key.



Conclusion

In the preceding tutorials we've covered quite a lot of ground, and by now you should be quite familiar with the SY35. You know how to select and play the voices, how to use manual vector control, how to record dynamic vectors and store the results in memory, how to quickly create new voices, and how to use the multi mode. When you get the urge to go further, please take the time to read through the Feature Reference manual ... or at least the section or sections that pertain directly to what you want to do. The more you program and play, the easier it will be!

Glossary

If you're relatively new to electronic music, you might be confused by some of the jargon you run across in the literature you read (such as this manual). The following is a very brief glossary of some terms that are unique to this field.

Aftertouch

Aftertouch response refers to the capability to vary the sound of a note after the note has been struck on the keyboard. This is normally accomplished by varying finger pressure on the key. Depending on the synthesizer, aftertouch can be used to bend the pitch of a note, apply modulation, or apply just about any other effect. In the SY35 aftertouch can be assigned to pitch bend, level control, pitch modulation, or amplitude modulation.

AWM Synthesis

AWM stands for "Advanced Wave Memory," Yamaha's sophisticated sampling technology that allows high-fidelity reproduction of digitally recorded "live" sound.

Cent

Just as a cent coin is one-hundredth of a dollar, a cent in musical lingo is one-hundredth of a semitone. The cent is a useful unit when dealing with very small changes in pitch — such as in synthesizer tuning or detuning functions.

Element

Normally the word "element" refers to a part of something larger. The same applies in synthesizers. In Yamaha synthesizers, an element is an individually controllable part of a voice. In the SY35, each voice can have two or four elements. Each element is actually an independent waveform, so you could have a 4-element voice that is made up of a piano element, a brass element, a strings element, and a wind element.

Envelope

You'll hear the terms "envelope" and "envelope generator" quite a lot in synthesizer talk. Like the envelope that encloses a letter, a synthesizer envelope "encloses" the sound, mainly in one of two ways. An *amplitude envelope* determines the overall "shape" of the sound — i.e. the speed and shape of the attack, how fast the sound decays, etc. A *pitch envelope* determines how the pitch of a note changes over time- Next to the basic waveform, the amplitude and pitch envelopes are the most important factors in determining how a voice sounds.

FM Synthesis

FM is Yamaha's proven Frequency Modulation synthesis technology which is capable of creating extraordinarily warm, vibrant simulations of actual instruments, as well as an infinite variety of original sounds. The reason for the "FM" name is that this tone generator system employs a number of independent oscillator blocks known as "operators," that are arranged in a variety of configurations known as "algorithms." Depending on their positions in the algorithm, each operator functions either as a "modulator," or a "carrier" that is modulated by a modulator. Since modulators modulate the frequency of carriers, the system is a form of *frequency modulation* — therefore, "FM Synthesis."

LFO

LFO stands for "Low Frequency Oscillator." This is the oscillator, usually with a frequency variable from about 0.1 to 20 hertz, that is responsible for creating the periodic variation in tremolo, vibrato, chorus, phasing, and other modulation type effects.

MIDI

"MIDI" is an acronym standing for "Musical Instrument Digital Interface." MIDI allows musical instruments, sequencers, signal processing devices, computers, and other devices to communicate and control each other via a simple cable connection. The introduction of MIDI has revolutionized the music field, making control of the music production process easier and more efficient than ever before.

Modulation

In synthesizers, the term "modulation" usually means to vary the amplitude or frequency of a sound in accordance with some other signal. This "other signal" is most commonly the output from the synthesizer's LFO (described above), although in Yamaha FM synthesis (also see above) it can also be the signal from a modulator operator in an FM algorithm.

Multi

Although normally a prefix, as in "multi-talented," the term "multi" on its own has come to refer to multi-timbre setups in the synthesizer world. A multi is usually a group of 8 or 16 voices that can be played simultaneously either from the instrument's keyboard, sometimes in split-keyboard configurations, or via MIDI. For MIDI control each voice receives on a different MIDI channel number, allowing multi to be handled as multiple tone generators by the controlling sequencer or computer. Multis also allow a number of parameters to be programmed individually for each voice: volume, pitch, effects, etc.

Pan

The word "pan" is derived from the "pan pot" controls found on mixing consoles, which is in turn derived from "panoramic potentiometer." A pan control or parameter determines the position of a specific sound — e.g. an element of a voice or a drum instrument — within the output stereo sound field. Panning to the left means that more of the corresponding sound is delivered via the left channel than the right channel, and vice versa. The listener then hears the sound at the appropriate position between the stereo speakers or headphones.

Preset

A "preset" can be any unit of data — a voice or multi (see above), for example — that is pre-programmed by the manufacturer and provided with a synthesizer. Presets make life easier for beginning synthesizer users as well as performance-oriented players who simply want to select a sound and play without having to do any programming of their own. The quality of the presets included with an instrument is therefore critical to the value of the instrument.

Vector

Mathematically speaking, a "vector" is a physical quantity with both magnitude and direction. This applies in a similar way to vector synthesis in that the vector control controls the magnitude and direction of a quantity that can be pitch or level.

Velocity

Normally, velocity is simply defined as speed. In a synthesizer, however, it generally refers specifically to the speed with which the keys are played. When we think of playing a keyboard we normally think of playing the keys softer or harder to produce softer and louder notes with the attendant timbre variations. In reality, however, the instrument is responding to how fast the keys are played — therefore the term "velocity response." A synthesizer that has velocity response lets the player produce expressive dynamics and timbre variations according to the way he or she plays the keys.

Voice

Although this term is used in slightly different ways by different manufacturers, at Yamaha a "voice" is any basic sound that can be selected and played on a synthesizer. This is in contrast to a "performance" which is a combination of two or more voices, and a "multi" (see above) which is a group of several voices that can be controlled independently via the MIDI interface.

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V

YAMAHA SY35 WAVEFORM LIST

AWM WAVEFORM LIST

Category	No.	Name	Category	No.	Name	Category	No.	Name	Category	No.	Name	Category	No.	Name	Category	No.	Name	Category	No.	Name
Piano	0	Piano	Wood	19	Sax	Str.	38	Strings	Synth	57	SynLead1	Hits	76	Metal 3	OSC	95	Str wv 2	OSC	114	Pulse 5
	1	E.Piano	Gtr	20	Gut		39	Vn.Ens.		58	SynLead2		77	Metal 4		96	Pad wv		115	Pulse 6
	2	Clavi		21	Steel		40	Cello		59	Bell Mix		78	Wood		97	Digital1		116	Tri
	3	Cembalo		22	E.Gtr 1		41	Pizz.		60	Sweep		79	Bamboo		98	Digital2		117	Sin8'
	4	Celesta		23	E.Gtr 2		42	Syn Str		61	HumanAtk		80	Slam		99	Digital3		118	Sin8'+4'
Organ	5	P.Organ		24	Mute Gtr	Vocal	43	Choir		62	Noise 1	Tran.	81	Tp. Body		100	Digital4	SEQ	119	SEQ 1
	6	E.Organ1		25	Sitar		44	Itopia		63	Noise 2		82	Tb. Body		101	Digital5		120	SEQ 2
	7	E.Organ2		26	Pluck 1		45	Choir pa		64	PopsHit		83	HornBody		102	Saw 1		121	SEQ 3
	8	Bandneon		27	Pluck 2	Perc.	46	Vibes	SFX	65	NoisPad1		84	Fl. Body		103	Saw 2		122	SEQ 4
Brass	9	Trumpet	Bass	28	Wood B 1		47	Marimba		66	NoisPad2		85	Str.Body		104	Saw 3		123	SEQ 5
	10	Mute Trp		29	Wood B 2		48	Bells		67	NoisPad3		86	AirBlown		105	Saw 4		124	SEQ 6
	11	Trombone		30	E.Bass 1		49	Timpani		68	Coin		87	Reverse1		106	Square 1		125	SEQ 7
	12	Flugel		31	E.Bass 2		50	Tom		69	Crash		88	Reverse2		107	Square 2		126	SEQ 8
	13	Fr Horn		32	E.Bass 3		51	E. Tom		70	Bottle		89	Reverse3		108	Square 3	Drum	127	Drum set
	14	BrasEns		33	E.Bass 4		52	Cuica		71	BottleOpn	OSC	90	EP wv		109	Square 4			
	15	SynBrass		34	Slap		53	Whistle		72	Cracker		91	Organ wv		110	Pulse 1			
Wood	16	Flute		35	Fretless		54	ThumbStr		73	Scratch		92	M.Tp wv		111	Pulse 2			
	17	Clarinet		36	SynBass1	Synth	55	SynPad	Hits	74	Metal 1		93	Gtr wv		112	Pulse 3			
	18	Oboe		37	SynBass2		56	Harmonic		75	Metal 2		94	Str wv 1		113	Pulse 4			

FM WAVEFORM LIST

Category	No.	Name	Category	No.	Name	Category	No.	Name	Category	No.	Name	Category	No.	Name	Category	No.	Name	Category	No.	Name
Piano	0	E.Piano1	Wood	30	Wood 3	Bass	60	Bass 7	Perc.	90	Metal 6	Syn.M	120	Move 3	OSC 1	150	Sin 16'	OSC 2	220	wave17-1
	1	E.Piano2		31	Wood 4		61	Bass 8	Syn.S	91	Lead 1		121	Move 4		151	Sin 8'		221	wave17-2
	2	E.Piano3		32	Wood 5		62	Bass 9		92	Lead 2		122	Move 5		152	Sin 4'		222	wave17-3
	3	E.Piano4		33	Wood 6	Str.	63	Str 1		93	Lead 3		123	Move 6		153	Sin2 2/3	OSC 3	223	wave18-1
	4	E.Piano5		34	Wood 7		64	Str 2		94	Lead 4		124	Move 7		154	Sin 2'		224	wave18-2
	5	E.Piano6		35	Wood 8		65	Str 3		95	Lead 5	Syn.D	125	Decay 1		155	Saw 1		225	wave18-3
Organ	6	E.Organ1	Reed	36	Reed 1		66	Str 4		96	Lead 6		126	Decay 2		156	Saw 2		:	:
	7	E.Organ2		37	Reed 2		67	Str 5		97	Lead 7		127	Decay 3		157	Square		:	:
	8	E.Organ3		38	Reed 3		68	Str 6		98	Sus. 1		128	Decay 4		158	LFOnoise		250	wave27-1
	9	E.Organ4		39	Reed 4		69	Str 7		99	Sus. 2		129	Decay 5		159	Noise 1		251	wave27-2
	10	E.Organ5		40	Reed 5	Perc.	70	Vibes 1		100	Sus. 3		130	Decay 6		160	Noise 2		252	wave27-3
	11	E.Organ6		41	Reed 6		71	Vibes 2		101	Sus. 4		131	Decay 7		161	Digi 1		253	wave28
	12	E.Organ7	Pluck	42	Clavi 1		72	Vibes 3		102	Sus. 5		132	Decay 8		162	Digi 2		254	wave29
	13	E.Organ8		43	Clavi 2		73	Vibes 4		103	Sus. 6		133	Decay 9		163	Digi 3		255	wave30
Brass	14	Brass 1		44	Clavi 3		74	Marimba1		104	Sus. 7		134	Decay 10		164	Digi 4			
	15	Brass 2		45	Clavi 4		75	Marimba2		105	Sus. 8		135	Decay 11		165	Digi 5			
	16	Brass 3		46	Guitar 1		76	Marimba3		106	Sus. 9		136	Decay 12		166	Digi 6			
	17	Brass 4		47	Guitar 2		77	Bells 1		107	Sus. 10		137	Decay 13		167	Digi 7			
	18	Brass 5		48	Guitar 3		78	Bells 2		108	Sus. 11		138	Decay 14		168	Digi 8			
	19	Brass 6		49	Guitar 4		79	Bells 3		109	Sus. 12		139	Decay 15		169	Digi 9			
	20	Brass 7		50	Guitar 5		80	Bells 4		110	Sus. 13		140	Decay 16		170	Digi 10			
	21	Brass 8		51	Guitar 6		81	Bells 5		111	Sus. 14		141	Decay 17		171	Digi 11			
	22	Brass 9		52	Guitar 7		82	Bells 6		112	Sus. 15		142	Decay 18	OSC 2	172	wave1-1			
	23	Brass 10		53	Guitar 8		83	Bells 7		113	Attack 1	SFX	143	SFX 1		173	wave1-2			
	24	Brass 11	Bass	54	Bass 1		84	Bells 8		114	Attack 2		144	SFX 2		174	wave1-3			
	25	Brass 12		55	Bass 2		85	Metal 1		115	Attack 3		145	SFX 3		175	wave2-1			
	26	Brass 13		56	Bass 3		86	Metal 2		116	Attack 4		146	SFX 4		176	wave2-2			
	27	Brass 14		57	Bass 4		87	Metal 3		117	Attack 5		147	SFX 5		177	wave2-3			
Wood	28	Wood 1		58	Bass 5		88	Metal 4	Syn.M	118	Move 1		148	SFX 6		:	:			
	29	Wood 2		59	Bass 6		89	Metal 5		119	Move 2		149	SFX 7						

YAMAHA SY35

EDIT REFERENCE

VOICE

VOICE COMMON

NAME	A~Z, a~z, 0~9, Symbols
CONFIGURATION	A-B/A-B-C-D
EFFECT	16TYPE DEPTH 0~7
PITCH BEND	0~12! (! = range limited)
WHEEL	
AM	On/Off
PM	On/Off
AFTER TOUCH	
AM	On/Off
PM	On/Off
PITCH	–12!~0~+12!
LEVEL	On/Off
ENVELOPE	
ATTACK	–99!~0~+99!
RELEASE	–99!~0~+99!
RANDOM	
ELEMENT	Yes/No
LEVEL VECTOR	Yes/No
DETUNE VECTOR	Yes/No

VOICE VECTOR

LEVEL SPEED	10~160msec (10ms STEP)
LEVEL RECORD	
STANBY	
REC.	
PLAY	
LEVEL EDIT	
STEP	1~50
X-axis	–31~0~+31
Y-axis	–31~0~+31
TIME	1~254, Repeat, End
DETUNE SPEED	10~160msec (10ms STEP)
DETUNE RECORD	
STANBY	
REC.	
PLAY	

DETUNE EDIT

STEP	1~50
X-axis	–31~0~+31
Y-axis	–31~0~+31
TIME	1~254, Repeat, End

ELEMENT TONE

WAVE SELECT	
WAVE TYPE	Piano/Organ/...
SUB TYPE	Piano/E.Piano/... AWM: 128, FM: 256 TYPE
ELEMENT COPY	
SOURCE	I/C/P
BANK	1~8
NUMBER	1~8
ELEMENT	A/C (AWM) or B/D (FM)
Are You Sure	Yes/No.
FREQ. SHIFT	–12~0~+12
VOLUME	0~99
PAN	L/LC/C/RC/R
VELOCITY SENS	–5~0~+5
AFTER SENSE	–3~0~+3
TONE	
LEVEL	0~99 (FM only)
FEED BACK	0~7 (FM only)
LFO	
AM DEPTH	0~15
PM DEPTH	0~31
TYPE	5 TYPE
DELAY	0~99
RATE	0~99
SPEED	0~31

ELEMENT ENV.

TYPE	USER/PRESET/PIANO/...
ENV. COPY	
ELEMENT	A/B/C/D
Are You Sure	Yes/No
DELAY	
DELAY RATE	0~99: Affects all elements
ELE. On/Off	On/Off
INITIAL LEVEL	0~99
ATTACK	
ATTACK LEVEL	0~99
ATTACK RATE	0~99
DECAY1	
DECAY1 LEVEL	0~99
DECAY1 RATE	0~99
DECAY2	
DECAY2 LEVEL	0~99
DECAY2 RATE	0~99
RELEASE RATE	0~99
LEVEL SCALE	1~16
RATE SCALE	1~8

MULTI

MULTI

NAME	A~Z, a~z, 0~9, Symbols
EFFECT	16TYPE DEPTH 0~7
VOICE NO.	
SOURCE	I/C/P
BANK	1~8
NUMBER	1~8
MIDI Rec. ch	1~16, off
VOLUME	0~99
DETUNE	–50~0~+50 (3~4 STEP)
KEY LIMIT	
LOW	C-2~G8
HIGH	C-2~G8
NOTE SHIFT	–24~0~+24

ED/UTIL

SETUP

MASTER TUNE	–50~0~+50 (3~4 STEP)
TRANSPOSE	–12~0~+12
CARD	
SAVE	Yes/No
LOAD	Yes/No
FORMAT	Yes/No
BANK	1/2
VOICE INIT	Yes/No
MULTI INIT	Yes/No
MEM. PROTECT	
INTERNAL	On/Off
CARD	On/Off
FACTORY V&M RESTORE	On/Off
RECALL	**Yes/No**

MIDI

MIDI	On/Off
BASIC Rcv. ch	1~16, OMNI
TRANSMIT ch	1~16
LOCAL	On/Off
PROGRAM CHANGE	Off/Com/Ind.
CONTROL CHNG	On/Off
AFTER TOUCH	On/Off
PITCH BEND	On/Off
EXCLUSIVE	On/Off
ALL V/M TRANS.	Yes/No
1 VOICE TRANS.	
SOURCE	I/C/P
BANK	1~8
NUMBER	1~8
Yes/No?	Yes/No

YAMAHA

MUSIC SYNTHESIZER

SY35

FEATURE REFERENCE MANUAL

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!
   This product, when installed as indicated in ihe instructions contained in this manual, meets FCC rcquiremenis. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.
2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.
3. NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and. if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of Ihc following measures:

   Relocate either this product or the device that is being affected by the interference.

   Utilize power outlets that arc on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

   In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to co-axial type cable.

   If these corrective measures do not produce satisfactory results, please contact the local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangcthorpe Ave, Buena Park, CA 90620

* This applies only to products distributed by YAMAHA CORPORATION OF AMERICA.

Dette apparat overholder det gaeldende EF-direktiv vedrørende radiostøj.

Cet appareil est conforme aux prescriptions de la directive communautaire 87/308/CEE.

Diese Geräte entsprechen der EG-Richtlinie 82/499/EWG und/oder 87/308/EWG.

This product complies with the radio frequency interference requirements of the Council Directive 82/499/EEC and/or 87/308/EEC.

Questo apparecchio è conforme al D.M.13 aprile 1989 (Direttiva CEE/87/308) sulla soppressione dei radiodisturbi.

Este producto está de acuerdo con los requisitos sobre interferencias de radio frequencia fijados por el Consejo Directivo 87/308/CEE.

YAMAHA CORPORATION

IMPORTANT NOTICE FOR THE UNITED KINGDOM

Connecting the Plug and Cord

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

Blue: NEUTRAL
Brown: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured, markings identifying the terminals in your plug. proceed as follows: The wire which is coloured BLUE must be connected to the terminal which is marked with thc lettcr N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.
Making sure that neither core is connected to the earth terminal of the three pin plug.

CANADA

THIS DIGITAL APPARATUS DOES NOT EXCEED THE "CLASS B" LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATION OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

LE PRESENT APPAREIL NUMERIQUE N'EMET PAS DE BRUITS RADIOELECTRIQUES DEPASSANT LES LIMITES APPLICABLES AUX APPAREILS NUMERIQUES DE LA "CLASSE B" PRESCRITES DANS LE REGLEMENT SUR LE BROUILLAGE RADIOELECTRIQUE EDICTE PAR LE MINISTERE DES COMMUNICATIONS DU CANADA.

* This applies only to products distributed by YAMAHA CANADA MUSIC LTD.

Litiumbatteri!
Bör endast bytas av servicepersonal.
Explosionsfara vid felaktig hantering.

VAROITUS!
Lithiumparisto, Räjähdysvaara.
Pariston saa vaihtaa ainoastaan alan ammattimies.

ADVARSEL!
Lithiumbatteri!
Eksplosionsfare. Udskiftning må kun foretages af en sagkyndig, – og som beskrevet i servicemanualen.

SPECIAL MESSAGE SECTION

This product utilizes batteries or an external power supply (adapter). DO NOT connect this product to any power supply or adapter other than one described in the manual. on the name plate, or specifically recommended by Yamaha.

WARNING: Do not place this product in a position where anyone could walk on. trip over. or roll anything over power or connecting cords of any kind. The use of an extension cord is not recommended! If you must use an extension cord. the minimum wire size for a 25' cord (or 1 cm) is IS AWG. NOTE: The smaller the AWG number, the larger the current handling capacity. For longer extension cords. consult a local electrician.

This product should be used only with the components supplied MMM a cart, rack, or stand that is recommended by Yamaha. If a cart, etc., is used, please observe all safety markings and instructions that accompany the accessory product.

SPECIFICATIONS SUBJECT TO CHANGE: The information contained in this manual is believed to be correct at the time of printing. However. Yamaha reserves the right to change or modify any of the specifications without notice or obligation to update existing units.

Do not attempt to service this product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

This product, either alone or in combination with an amplifier and headphones or speaker/s. may be capable of producing sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears. you should consult an audiologist. IMPORTANT: The louder the sound, the shorter the lime period before damage occurs.

Some Yamaha products may have benches and/or accessory mounting fixtures that are either supplied with the product or as optional accessories. Some of these items are designed to be dealer assembled or installed. Please make sure that benches are stable and any optional fixtures (where applicable) are well MMM BEFORE using. Benches supplied by Yamaha are designed for MMM only. No other uses are recommended.

NOTICE: Service charges incurred due to lack of knowledge relating to how a function or effect works (when the unit is operating as designed) are not covered by the manufacturer's warranty, and are therefore the owners responsibility. Please study this manual carefully and consult your dealer before requesting service.

ENVIRONMENTAL ISSUES: Yamaha strives to produce products that are both user safe and environmentally friendly. We sincerely believe that our products and the production methods used to produce them, meet these goals. In keeping with both the letter and the spirit of the law. we want you to be aware of the following:

Battery Notice: This product MAY contain a small non-rechargeable battery which (if applicable) is soldered in place. The average life span of this type of battery is approximately five years. When replacement becomes necessary, contact a qualified service representative to perform the replacement.

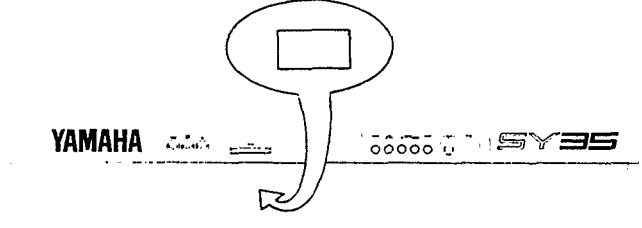
This product may also use "household" type batteries. Some of these may be rechargeable. Make sure that the battery being charged is a rechargeable type and that the charger is intended for the battery being charged.

When installing batteries, do not mix old batteries with new, or with batteries of a different type. Batteries MUST be installed correctly. Mismatches or incorrect installation may result in overheating and battery case rupture.

Warning: Do not attempt to disassemble, or incinerate any battery. Keep all batteries away from children. Dispose of used batteries promptly and as regulated by the laws in your area. Note: Check with any retailer of household type batteries in your area for battery disposal information.

Disposal Notice: Should this product become damaged beyond repair, or for some reason its useful life is considered to be at an end, please observe all local, state, and federal regulations that relate to the disposal of products that contain lead. batteries, plastics, etc. If your dealer is unable to assist you, please contact Yamaha directly.

NAME PLATE LOCATION: The graphic below indicates the location of the name plate for this model. The model number, serial number, power requirements, etc., are located on this plate. You should record the model number, serial number, and the date of purchase in the spaces provided below and retain this manual as a permanent record of your purchase.



Model _____

Serial No. _____

Purchase Date _____

PLEASE KEEP THIS MANUAL

CONTENTS

About This Manual

The SY35 Feature Reference manual individually describes the SY35 functions in detail, providing a summary, operating procedure, and additional details for each function. It is divided into eight main sections, each describing the various functions within a particular SY35 edit or utility mode.

We recommend that you start by going through the Getting Started manual in order to become familiar with the SY35 and the way it works, then you can refer to the Feature Reference manual from time to time to get details on functions you've never used before, or refresh your memory about functions that you don't use very often.

Each section of this manual has its own table of contents, so you should be able to locate any particular function quickly and easily. Functions and references can also be located by referring to the index at the back of the manual.

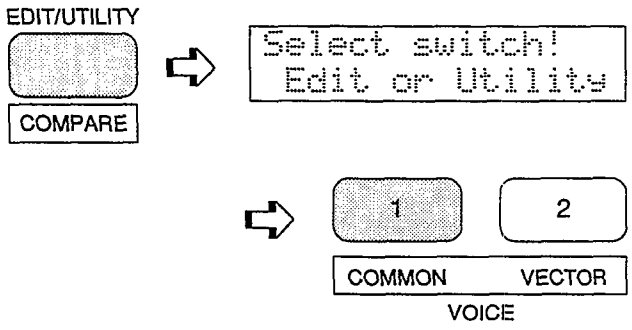
Feature Reference Manual

VOICE COMMON

The VOICE COMMON mode provides access to a range of parameters that affect the selected voice as a whole. Detailed programming of individual elements is provided by the ELEMENT TONE and ELEMENT ENVELOPE edit modes.

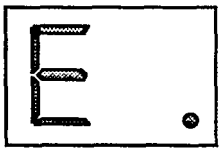
Selecting the VOICE COMMON Edit Mode

From the VOICE or MULTI mode:



From another edit or utility mode simply press [VOICE COMMON].

An "E" will appear on the LED display, indicating that an edit mode has been selected. The dot to the right of the "E" will appear as soon as any parameter is edited.

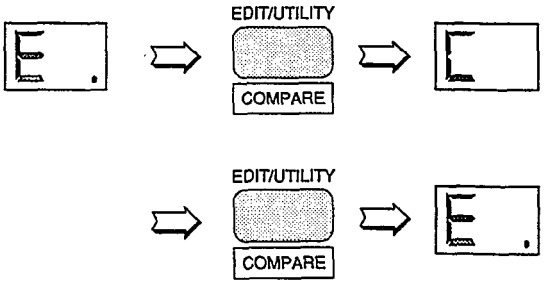


Selecting the VOICE COMMON Edit Mode Functions

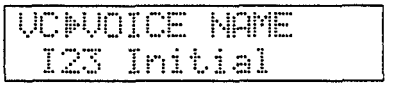
The various VOICE COMMON edit mode functions can be selected in sequence by pressing the [VOICE COMMON] key, or by using the [-1/NO] and [+1/YES] keys when the cursor (▷)is located immediately before the function name on the upper display line.

The COMPARE Function

You can compare the sound of the edited voice with the sound of the voice before it was edited by pressing the [EDIT/COMPARE] key to activate the COMPARE function. A "C" will appear on the LED display while the COMPARE function is active, and the sound of the voice prior to editing will be heard when you play the keyboard. Press the [EDIT/COMPARE] key again to return to the edit mode.

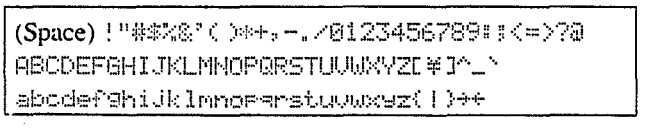


NAME



Summary: Assigns a name of up to 8 characters to the current voice.

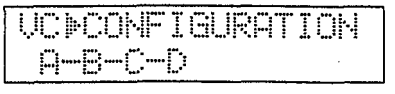
Settings: The following characters are available for use in voice names:



Procedure: Use the **[◁] and [▷]** cursor keys to place the underline cursor under the character to be changed. Use the [-1/NO] and [+1/YES] keys to select the desired character. Continue until the entire voice name has been programmed.

Details: It's a good idea to give your voices names that make them easily identifiable. If you've created a new voice that combines piano and organ elements, for example, you could call it something like "PianOrg".
When selecting characters, scrolling will pause at the beginning of each character group (capitals, lower case, numbers, and symbols).

CONFIGURATION



Summary: Selects the two-element (A-B) or four-element (A-B-C-D) voice configuration.

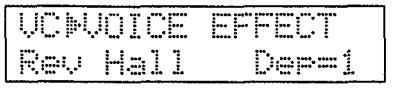
Settings: A-B, A-B-C-D

Procedure: Use the **[▷]** key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired configuration.

Details: In the 2-element "A-B" configuration, element A is AWM and element B is FM. In the 4-element "A-B-C-D" configuration elements A and B are the same as in the "A-B" configuration, while element C is AWM and element D is FM.

A-B: A = AWM, B = FM.
A-B-C-D: A = AWM, B = FM, C = AWM, D = FM.

EFFECT(Type & Depth)



Summary: Selects one of sixteen digital effects, and sets the depth of the selected effect for the current voice.

Settings: Effect type:

Rev Hall	(Reverb Hall)
Rev Room	(Reverb Room)
Rev Plate	(Reverb Plate)
Rev Club	(Reverb Club)
Rev Metal	(Reverb Metal)
Delay 1	(Short Single Delay)
Delay 2	(Long Delay)
Delay 3	(Long Delay)
Doubler	(Doubler)
Ping-Pong	(Ping Pong Delay)
Pan Ref	(Panned Reflections)
Early Ref	(Early Reflections)
Gate Rev	(Gated Reverb)
Dly&Rev 1	(Delay & Reverb 1)
Dly&Rev 2	(Delay & Reverb 2)
Dist&Rev	(Distortion & Reverb)

Depth: 0…7

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the effect type or depth parameter. Use the [-1/NO] and [+1/YES] keys to select the desired effect or effect depth.

Details: Setting the depth parameter to "0" is equivalent to turning the effect OFF. A depth setting of "7" produces the greatest effect.

PITCH BEND

Summary: Sets the range of the pitch bend wheel.

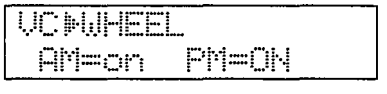
Settings: 0 ... 12 max.*

Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired pitch bend range.

Details: Each increment from "0" to "12" represents a semitone. A setting of "0" produces no pitch bend. A setting of "12" allows a maximum pitch bend of plus or minus one octave, while a setting of "4" allows a maximum pitch bend of plus or minus a major third.

* This range may be more limited in some cases. An exclamation mark (!) will appear after the range value when the limit is reached.

WHEEL (Amplitude & Pitch Modulation)



Summary: Assigns the modulation wheel to amplitude and/or pitch modulation.

Settings: AM (Amplitude Modulation): off, on
PM (Pitch Modulation): off, on

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the AM or PM parameter. Use the [-1/NO] and [+1/YES] keys to turn the selected parameter on or off.

Details: Amplitude modulation produces a *tremolo* effect while pitch modulation produced a *vibrato* effect. This function allows the modulation wheel to be assigned to produce either or both. This is only an "off/on" switch, however, and the maximum depth of modulation to be applied must be set using the LFO AM Depth and PM Depth parameters in the ELEMENT TONE edit mode.
When the modulation wheel is assigned to amplitude or pitch modulation, LFO modulation can *only* be applied via the wheel.
If both WHEEL and AFTER TOUCH are assigned to modulation control, the controller via which the highest modulation level is applied will take priority when both are used simultaneously.

AFTER TOUCH (Amplitude & Pitch Modulation, Pitch & Level Control)

Summary: Assigns keyboard after-touch to amplitude modulation, pitch modulation, pitch control, or level control — or any combination of the above.

Settings: AM (Amplitude Modulation): off, on
PM (Pitch Modulation): off, on
Pit (Pitch Control): -12 ... 0 ... +12 max.*
Lev (Level Control): off, on

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the AM, PM, Pit, or Lev parameter. The arrows at either end of the display mean that more parameters can be accessed by scrolling in the indicated direction. Use the [-1/NO] and [+1/YES] keys to turn the AM, PM, and/or Lev parameter on or off, or to select the desired Pit control range.

Details: As with the modulation wheel, amplitude modulation produces a *tremolo* effect while pitch modulation produced a *vibrato* effect. The harder you press a key, the deeper the modulation. This is only an "off/on" switch, however, and the maximum depth of modulation to be applied must be set using the LFO AM Depth and PM Depth parameters in the ELEMENT TONE edit mode.

When after touch is assigned to amplitude or pitch modulation, LFO modulation can *only* be applied via after touch.

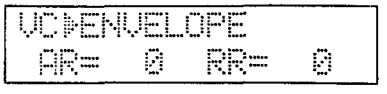
The Pit parameter allows keyboard after touch to be used for note bending. The greater the key pressure the greater the amount of pitch bend. Positive values produce an upward bend when key pressure is applied, and minus values produce a downward bend. Each increment from represents a semitone. A setting of "0" produces no pitch bend. A setting of "12" allows a maximum upward pitch bend of one octave, while a setting of "-4" allows a maximum downward pitch bend of a major third.

When the Lev parameter is turned on it becomes possible to control the level of the sound over a limited range by keyboard after touch. The amount and direction (i.e. an increase or decrease) of level change depends on the setting of the AFTER TOUCH SENSITIVITY parameter in the ELEMENT TONE edit mode.

If both WHEEL and AFTER TOUCH are assigned to modulation control, the controller via which the highest modulation level is applied will take priority when both are used simultaneously.

* This range may be more limited in some cases. An exclamation mark (!) will appear after the range value when the limit is reached.

ENVELOPE (Attack & Release Rates)



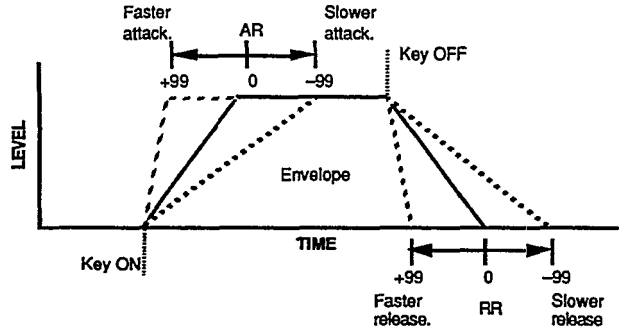
Summary: Sets the overall attack and release rates for the current voice.

Settings: AR (Attack Rate): -99 ... 0 ... +99 max.*
RR (Release Rate): -99 ... 0 ... +99 max.*

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the AR or RR parameter. Use the [-1/NO] and [+1/YES] keys to set the selected parameter as required.

Details: Although much more detailed envelope programming capability is available for individual elements (see the ELEMENT ENVELOPE edit mode), these functions provide an easy way to adjust the most important envelope parameters for the overall voice. Positive values produce a faster attack or release time, while negative values produce a slower attack or release time. You might want to lengthen the release time of a voice, for example, to produce a lingering sustain effect after you release the keys.

Please note that the AR parameter will have no effect on elements in which the INITIAL LEVEL parameter (page 28) is set to 99.



* This range may be more limited in some cases. An exclamation mark (!) will appear after the range value when the limit is reached.

RANDOM (Element, Level & Detune)

```
VC▸RANDOM
  ELEMENT
```

Summary: Automatically produces random combinations of elements, level vectors, or detune vectors.

Settings: None.

Procedure: Use the **[◁] and [▷]** cursor keys to place the left parameter on the lower display line, then use the [-1/NO] and [+1/YES] keys to select ELEMENT, LEVEL or DETUNE. Press the **[▷]** to move the cursor to "Y/N," then press the [+1/YES] key to generate random values of the select type. A new set of random values is generated each time the [+1/YES] key is pressed while the cursor is in this position. Pressing the [-1/NO] returns the cursor to the left parameter.

Details: This function is actually a very useful programming aid. It allows you try out a virtually unlimited variety of element combinations or level/detune vectors by simply pressing a single key. The random element combinations, in particular, can produce some very surprising and often pleasant results.

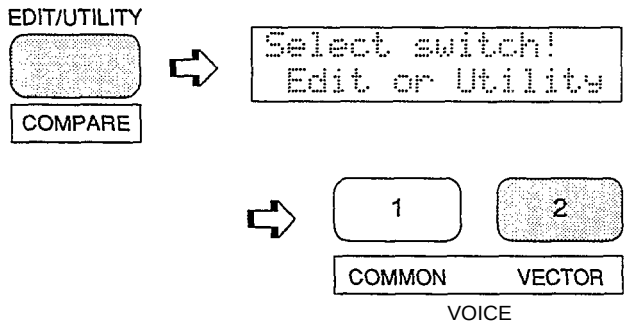
When the "A-B" voice configuration is selected (see CONFIGURATION on page 5), random element combinations will always consist of only two elements. When the "A-B-C-D" voice configuration is selected, random element generation will produce combinations of four elements.

VOICE VECTOR

The VOICE VECTOR edit mode allows recording and fine editing of dynamic level and detune vectors.

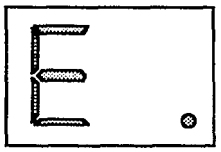
Selecting the VOICE VECTOR Edit Mode

From the VOICE or MULTI mode:



From another edit or utility mode simply press [VOICE VECTOR].

An "E" will appear on the LED display, indicating that an edit mode has been selected. The dot to the right of the "E" will appear as soon as any parameter is edited.

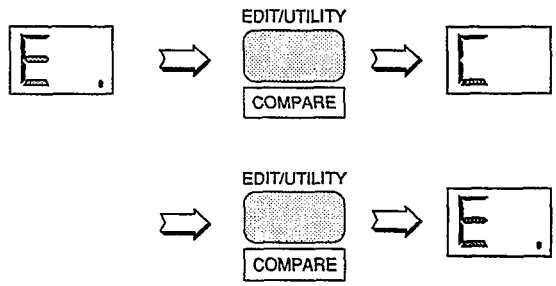


Selecting the VOICE VECTOR Edit Mode Functions

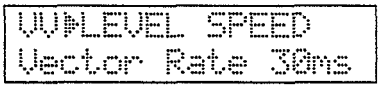
The various VOICE VECTOR edit mode functions can be selected in sequence by pressing the [VOICE VECTOR] key, or by using the [-1/NO] and [+1/YES] keys when the cursor (▷)is located immediately before the function name on the upper display line.

The COMPARE Function

You can compare the sound of the edited voice with the sound of the voice before it was edited by pressing the [EDIT/COMPARE] key to activate the COMPARE function. A "C" will appear on the LED display while the COMPARE function is active, and the sound of the voice prior to editing will be heard when you play the keyboard. Press the [EDIT/COMPARE] key again to return to the edit mode.



LEVEL SPEED (Vector Rate)



Summary: Sets the time between level vector steps.

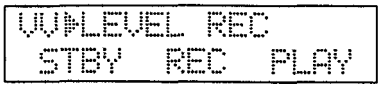
Settings: 10 ... 160 milliseconds (in 10-millisecond steps)

Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired vector rate.

Details: Each dynamic vector is composed of up to 50 "steps" corresponding to points along the path followed by the vector control. This function sets the initial time between each step. The Time parameter in the LEVEL EDIT function, described later, allows the length of individual steps to be edited. The vector rate parameter can be changed even after recording a vector, producing a corresponding change in the spacing between the steps.

The LEVEL SPEED parameter can also be used to change the playback speed of a pre-recorded vector.

LEVEL RECORD



Summary: Allows recording of a dynamic level vector.

Settings: STBY, REC, PLAY

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under STBY. The vector control LEVEL mode will be automatically selected and you can rehearse the vector sweep you wish to record.

Move the cursor to REC. Recording will actually begin as soon as you play a key on the keyboard. When you release the key or when 50 steps have been recorded (See "LEVEL SPEED" above), recording will end and the cursor will move to the PLAY position. You can now play the keyboard to hear how the vector sweep you just recorded sounds.

Details: The amount of time available for recording depends both on the vector rate setting and how much the vector control is moved.

LEVEL EDIT (Step, X-axis, Y-axis & Time)

● ***Step***

Summary: Selects any of the 50 steps in a recorded level vector for editing.

Settings: 1 ... 50

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the leftmost value on the lower display line (Step). Use the [-1/NO] and [+1/YES] keys to select the step to be edited.

Details: Step 1 is the first step recorded and step 50 is the last. Experience will give you a feel for relating specific points in a dynamic vector to the corresponding steps.

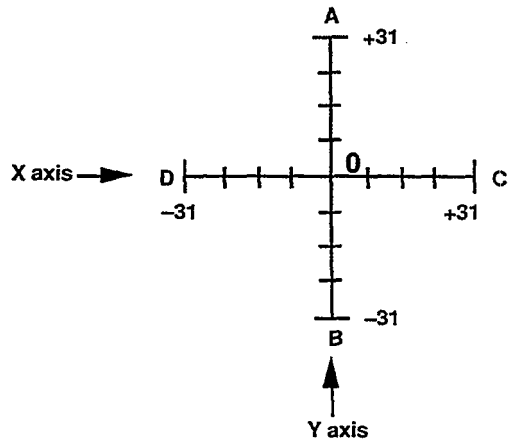
● ***X-axis & Y-axis***

Summary: These parameters define the position of the currently selected step on the X and Y axes of the level vector control range.

Settings:-31 ...0...+31

Procedure: After selecting the step to be recorded as described in the previous function, use the [◁] and [▷] cursor keys to place the underline cursor under the X or Y parameter. Use the [-1/NO] and [+1/YES] keys to set the value as required.

Details: On the X (D-C) axis, a setting of -31 places the step as far as possible toward the D element while a setting of +31 places it as far as possible toward the C element. The Y (A-B) axis values work in the same way: a setting of -31 places the step as far as possible toward the B element while a setting of +31 places it as far as possible toward the A element. In both axes a setting of 0 places the step at center position.



● ***Time***

Summary: Multiplies the vector rate setting of the current level vector step only. Also allows vectors to be looped or ended at the current step.

Settings: 1 ... 254, Rep, End

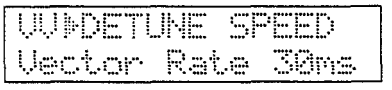
Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the rightmost value on the lower display line (Time). Use the [-1/NO] and [+1/YES] keys to select the required time value, repeat, or end.

Details: Time values multiply the vector rate setting for the current step. If the vector rate parameter is set to 30ms, for example, setting the time parameter to 2 results in a step length of 60ms, setting it to 3 results in a step length of 90ms, and so on. Since the maximum time value is 254, extremely long steps can be created.

If you select the "End" setting, the vector will end at the current step.

The "Rep" setting causes the vector to loop back to the first step from the current step, repeating continuously.

DETUNE SPEED (Vector rate)



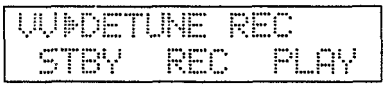
Summary: Sets the time between detune vector steps.

Settings: 10 ... 160 milliseconds

Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired vector rate.

Details: Each automatic vector sweep is composed of up to 50 "steps," corresponding to equally-spaced points along the path followed by the vector control. This function sets the initial time between each step.

DETUNE RECORD



Summary: Allows recording of a dynamic detune vector.

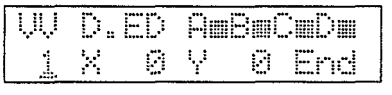
Settings: STBY, REC, PLAY

Procedure: Use the [◁] and [▷] cursor keys to place the STBY. The vector control DETUNE mode will be automatically selected and you can rehearse the vector sweep you wish to record.
Move the cursor to REC. Recording will actually begin as soon as you play a key on the key board. When you release the key or when all 50 steps have been recorded (See "DETUNE SPEED" above), recording will end and the cursor will move to the PLAY position. You can now play the keyboard to hear how the vector sweep you just recorded sounds.

Details: The amount of time available for recording depends both on the vector rate setting and how much the vector control is moved.
Moving the vector control towards an element raises the pitch of that element while lowering the pitch of the others.

DETUNE EDIT (Step, X-axis, Y-axis & Time)

● ***Step***



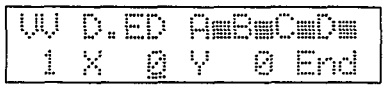
Summary: Selects any of the 50 steps in a recorded detune vector for editing.

Settings: 1 ... 50

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the leftmost value on the lower display line (Step). Use the [-1/NO] and l+l/YES] keys to select the step to be edited.

Details: Step 1 is the first step recorded and step 50 is the last. Experience will give you a feel for relating specific points in a dynamic vector to the corresponding steps.

● ***X-axis & Y-axis***

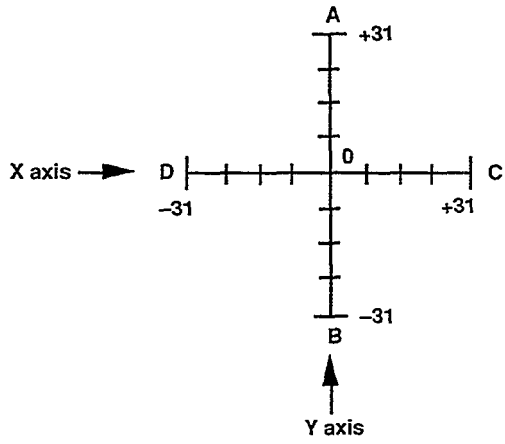


Summary: These parameters define the position of the currently selected step on the X and Y axes of the detune vector control range.

Settings:-31 ... 0 ...+31

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the X or Y parameter. Use the [-1/NO] and [+1/YES] keys to set the value as required.

Details: On the X (D-C) axis, a setting of -31 places the step as far as possible toward the D element while a setting of +31 places it as far as possible toward the C element. The Y (A-B) axis values work in the same way: a setting of -31 places the step as far as possible toward the B element while a setting of +31 places it as far as possible toward the A element. In both axes a setting of 0 places the step at center position.



● ***Time***

Summary: Multiplies the vector rate setting of the current detune vector step only. Also allows vectors to be looped or ended at the current step.

Settings: 1 **...** 254, Rep, End

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the rightmost value on the lower display line (Time). Use the [-1/NO] and [+1/YES] keys to select the required time value.

Details: Time values multiply the vector rate setting for the current step. If the vector rate parameter is set to 30ms, for example, setting the time parameter to 2 results in a step length of 60ms, setting it to 3 results in a step length of 90ms, and so on. Since the maximum time value is 254, extremely long steps can be created.

If you select the "End" setting, the vector will end at the current step.

The "Rep" setting causes the vector to loop back to the first step from the current step. repeating continuously.

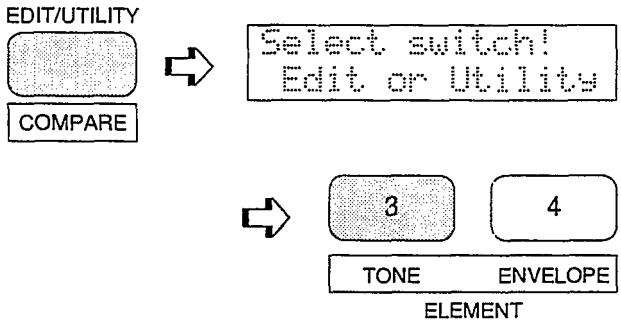
ELEMENT TONE

The ELEMENT TONE edit mode allows editing many of the most important sound-determining parameters of each individual element — A and B in a 2-element voice; A, B, C and D in a 4-element voice.

* These four parameters are not available for an AWM element in which wave number 127 (Drum Set) is selected — "Cannot edit" display appears.

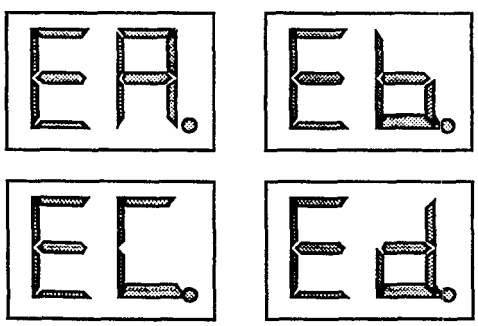
Selecting the ELEMENT TONE Edit Mode

From the VOICE or MULTI mode:



From another edit or utility mode simply press [ELEMENT TONE].

An "E" will appear to the left of the LED display to indicate that an edit mode is selected, and the element selected for editing will be displayed to the right of the display — "A", "b", "C", or "d". A dot will appear to the right of the element character as soon as any parameter has been edited.



Different elements can be selected for editing by pressing the appropriate [ELEMENT SELECT] key — [A], [B], [C] or [D]. If a 2-element voice is being edited, only elements A and B can be selected.

Any of the available elements can also be turned on or off by pressing the appropriate [ELEMENT ON/OFF] key. Each key alternately turns the associated element on and off, and the on/off status of the elements is shown to the right of the upper LCD line. If the element character is showing, the associated element is ON, if a dash appears in place of the element character, that element is OFF. The ability to turn elements on or off while editing makes it easier to hear the effect of parameter changes on a single element. The currently selected element is also shown on the LCD as a reversed (white on black) character.

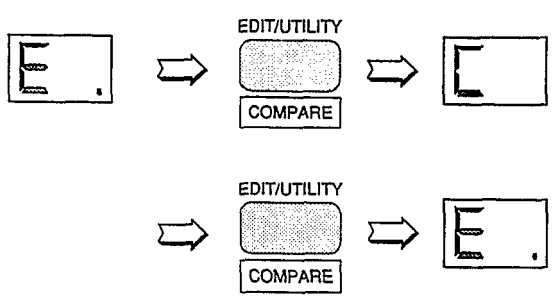
In this example elements A, B and D are ON, while element C is OFF. Element A is currently selected for editing.

Selecting the ELEMENT TONE Edit Mode Functions

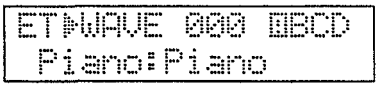
The various ELEMENT TONE edit mode functions can be selected in sequence by pressing the [ELEMENT TONE] key, or by using the [-1/NO] and [+1/YES] keys when the cursor (▷)is located immediately before the function name on the upper display line.

The COMPARE Function

You can compare the sound of the edited voice with the sound of the voice before it was edited by pressing the [EDIT/COMPARE] key to activate the COMPARE function. A "C" will appear on the LED display while the COMPARE function is active, and the sound of the voice prior to editing will be heard when you play the keyboard. Press the [EDIT/COMPARE] key again to return to the edit mode.



WAVE TYPE



Summary: Assigns a preset wave to the selected element.

Settings: Elements A and C (AWM): 0 ... 127
Elements B and D (FM): 0 ... 255

Procedure: Use the [◁] **and** [▷] cursor keys to place the underline cursor under the left parameter on the lower display line to directly select the different wave categories, or under the right parameter to select individual waves. Use the [-1/NO] and [+1/YES] keys to select the desired wave (refer to the wave list, below).

Details: The number of waves available depends on whether the currently selected element is an AWM element (A or C) or an FM element (B or D). The SY35 has 128 preset AWM waves (0 ... 127) and 256 preset FM waves (0 ... 255).

AWM WAVEFORM LIST

Category	No.	Name	Category	No.	Name	Category	No.	Name	Category	No.	Name
Piano	0	Piano	Bass	32	E.Bass 3	Synth	64	PopsHit	OSC	96	Pad wv
	1	E.Piano		33	E.Bass 4	SFX	65	NoisPad1		97	Digital1
	2	Clavi		34	Slap		66	NoisPad2		98	Digital2
	3	Cembalo		35	Fretless		67	NoisPad3		99	Digital3
	4	Celesta		36	SynBass1		68	Coin		100	Digital4
Organ	5	P.Organ		37	SynBass2		69	Crash		101	Digital5
	6	E.Organ1	Str.	38	Strings		70	Bottle		102	Saw 1
	7	E.Organ2		39	Vn.Ens.		71	BotleOpn		103	Saw 2
	8	Bandneon		40	Cello		72	Cracker		104	Saw 3
Brass	9	Trumpet		41	Pizz.		73	Scratch		105	Saw 4
	10	Mute Trp		42	Syn Str	Hits	74	Metal 1		106	Square 1
	11	Trombone	Vocal	43	Choir		75	Metal 2		107	Square 2
	12	Flugel		44	Itopia		76	Metal 3		108	Square 3
	13	Fr Horn		45	Choir pa		77	Metal 4		109	Square 4
	14	BrasEns	Perc.	46	Vibes		78	Wood		110	Pulse 1
	15	SynBrass		47	Marimba		79	Bamboo		111	Pulse 2
Wood	16	Flute		48	Bells		80	Slam		112	Pulse 3
	17	Clarinet		49	Timpani	Tran.	81	Tp. Body		113	Pulse 4
	18	Oboe		50	Tom		82	Tb. Body		114	Pulse 5
	19	Sax		51	E. Tom		83	HornBody		115	Pulse 6
Gtr	20	Gut		52	Cuica		84	Fl. Body		116	Tri
	21	Steel		53	Whistle		85	Str.Body		117	Sin8'
	22	E.Gtr 1		54	ThumbStr		86	AirBlown		118	Sin8'+4'
	23	E.Gtr 2	Synth	55	SynPad		87	Reverse1	SEQ	119	SEQ 1
	24	Mute Gtr		56	Harmonic		88	Reverse2		120	SEQ 2
	25	Sitar		57	SynLead1		89	Reverse3		121	SEQ 3
	26	Pluck 1		58	SynLead2	OSC	90	EP wv		122	SEQ 4
	27	Pluck 2		59	Bell Mix		91	Organ wv		123	SEQ 5
Bass	28	Wood B 1		60	Sweep		92	M.Tp wv		124	SEQ 6
	29	Wood B 2		61	HumanAtk		93	Gtr wv		125	SEQ 7
	30	E.Bass 1		62	Noise 1		94	Str wv 1		126	SEQ 8
	31	E.Bass 2		63	Noise 2		95	Str wv 2	Drum	127	Drum set

AWM Waveform Category Descriptions

Piano	Piano, clavi, and other decay-type keyboard sounds.	Synth	A range of synth sounds (including noise).
Organ	Pipe, electric and reed organs.	SFX	Special effects - crash, bottle, etc.
Brass	Acoustic and synthesized brass sounds.	Hits	Struck metal and woods.
Wood	Flute, sax and other woodwind sounds.	Tran.	Transient attack waves and some reverse sounds.
Gtr	Acoustic and electric guitars.	OSC	Standard synth waveforms and the basic waveforms from some actual instruments.
Bass	Acoustic, electric, and synth bass.		
Str.	Violin ensemble and other strings.	SEQ	Sequences of sampled sounds.
Vocal	Choir and other vocal-type sounds.	Drum	Drum set waves.
Perc.	Vibes, timpani, etc.		

FM WAVEFORM LIST

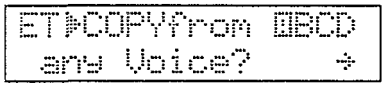
Category	No.	Name	Category	No.	Name	Category	No.	Name	Category	No.	Name
Piano	0	E.Piano1	Pluck	49	Guitar 4	Syn.S	98	Sus. 1	SFX	147	SFX 5
	1	E.Piano2		50	Guitar 5		99	Sus. 2		148	SFX 6
	2	E.Piano3		51	Guitar 6		100	Sus. 3		149	SFX 7
	3	E.Piano4		52	Guitar 7		101	Sus. 4	OSC 1	150	Sin 16'
	4	E.Piano5		53	Guitar 8		102	Sus. 5		151	Sin 8'
	5	E.Piano6	Bass.	54	Bass 1		103	Sus. 6		152	Sin 4'
Organ	6	E.Organ1		55	Bass 2		104	Sus. 7		153	Sin2 2/3
	7	E.Organ2		56	Bass 3		105	Sus. 8		154	Sin 2'
	8	E.Organ3		57	Bass 4		106	Sus. 9		155	Saw 1
	9	E.Organ4		58	Bass 5		107	Sus. 10		156	Saw 2
	10	E.Organ5		59	Bass 6		108	Sus. 11		157	Square
	11	E.Organ6		60	Bass 7		109	Sus. 12		158	LFOnoise
	12	E.Organ7		61	Bass 8		110	Sus. 13		159	Noise 1
	13	E.Organ8		62	Bass 9		111	Sus. 14		160	Noise 2
Brass	14	Brass 1	Str.	63	Str 1		112	Sus. 15		161	Digi 1
	15	Brass 2		64	Str 2		113	Attack 1		162	Digi 2
	16	Brass 3		65	Str 3		114	Attack 2		163	Digi 3
	17	Brass 4		66	Str 4		115	Attack 3		164	Digi 4
	18	Brass 5		67	Str 5		116	Attack 4		165	Digi 5
	19	Brass 6		68	Str 6		117	Attack 5		166	Digi 6
	20	Brass 7		69	Str 7	Syn.M	118	Move 1		167	Digi 7
	21	Brass 8	Perc.	70	Vibes 1		119	Move 2		168	Digi 8
	22	Brass 9		71	Vibes 2		120	Move 3		169	Digi 9
	23	Brass 10		72	Vibes 3		121	Move 4		170	Digi 10
	24	Brass 11		73	Vibes 4		122	Move 5		171	Digi 11
	25	Brass 12		74	Marimba1		123	Move 6	OSC 2	172	wave1-1
	26	Brass 13		75	Marimba2		124	Move 7		173	wave1-2
	27	Brass 14		76	Marimba3	Syn.D	125	Decay 1		174	wave1-3
Wood	28	Wood 1		77	Bells 1		126	Decay 2		175	wave2-1
	29	Wood 2		78	Bells 2		127	Decay 3		176	wave2-2
	30	Wood 3		79	Bells 3		128	Decay 4		177	wave2-3
	31	Wood 4		80	Bells 4		129	Decay 5			:
	32	Wood 5		81	Bells 5		130	Decay 6			:
	33	Wood 6		82	Bells 6		131	Decay 7		220	wave17-1
	34	Wood 7		83	Bells 7		132	Decay 8		221	wave17-2
	35	Wood 8		84	Bells 8		133	Decay 9		222	wave17-3
Reed	36	Reed 1		85	Metal 1		134	Decay 10	OSC 3	223	wave18-1
	37	Reed 2		86	Metal 2		135	Decay 11		224	wave18-2
	38	Reed 3		87	Metal 3		136	Decay 12		225	wave18-3
	39	Reed 4		88	Metal 4		137	Decay 13			:
	40	Reed 5		89	Metal 5		138	Decay 14			:
	41	Reed 6		90	Metal 6		139	Decay 15		250	wave27-1
Pluck	42	Clavi 1	Syn.S	91	Lead 1		140	Decay 16		251	wave27-2
	43	Clavi 2		92	Lead 2		141	Decay 17		252	wave27-3
	44	Clavi 3		93	Lead 3		142	Decay 18		253	wave28
	45	Clavi 4		94	Lead 4	SFX	143	SFX 1		254	wave29
	46	Guitar 1		95	Lead 5.		144	SFX 2		255	wave30
	47	Guitar 2		96	Lead 6		145	SFX 3			
	48	Guitar 3		97	Lead 7		146	SFX 4			

FM Voice Category Descriptions

Piano	Electric pianos.	Perc.	Vibes, marimba, bells and other percussion sounds.
Organ	Electric organs.	Syn.S	Sustained lead synth sounds.
Brass	A variety of brass sounds.	Syn.M	Synth sounds that vary with time.
Wood	Woodwind instrument sounds.	Syn.D	Decay-type synth sounds.
Reed	Sax, oboe and other reed instruments.	SFX	A range of sound-effect type synth sounds.
Pluck	Guitar, clavi, and other plucked instrument sounds.	OSC1	Sine, sawtooth, and other standard synth waveforms.
Bass	Bass sounds.	OSC2	Basic FM timbres, group 1.
Str.	Strings.	OSC3	Basic FM timbres, group 2.

If the TYPE parameter in the ELEMENT ENVELOPE edit mode (page 27) is set to PRESET, selecting a WAVE TYPE also selects the corresponding preset envelope. If a different envelope type is selected, the preset envelope is *not* selected together with the wave.

ELEMENT COPY



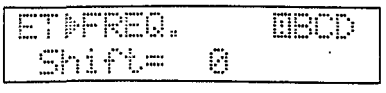
Summary: Copies all element parameters from an element of the same type (AWM or FM) in another voice to the current element of the current voice.

Settings: Source: I, C, P
Bank: 1 ... 8
Number: 1 ... 8
Element: A/C or B/D

Procedure: Use the [◁] and [▷] cursor keys to move the cursor to the source, bank, or number of the source voice (the voice from which the element parameters are to be copied) to the left of the lower display line. Use the [-1/NO] and [+1/YES] keys to set the selected parameter as necessary.
Next move the cursor to the element type parameter to the right of the lower display line, and select the element from which the data is to be copied using the [-1/NO] and [+1/YES] keys.
Press the [▷] cursor key one more time and the "Are you sure?" display will appear. Press [+1/YES] to execute the element copy operation or [-1/NO] to cancel. ">>Completed!!<<" will appear briefly when the copy operation has finished.

Details: In this display the source, bank and number parameters are shown in the standard SY35 voice number format. "P12," for example, is preset bank 1, number 2; "135" is internal bank 3, number 5, etc.
Data can only be copied between elements of the same type. If the element currently being edited is an AWM element (A or C), only element A or C of the source voice can be copied from. the same applies to FM elements.
The data for all parameters contained in the ELEMENT TONE mode will be copied.

FREQUENCY SHIFT



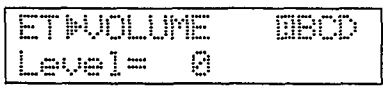
Summary: Shifts the frequency (pitch) of the selected element up or down in semitone steps.

Settings: -12...0 ...+12.

Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired amount of frequency shift.

Details: A setting of "-12," for example, shifts the pitch of the selected element down by one octave; a setting of "+4" shifts the pitch up by a major third.
The Frequency Shift function can be used to transpose an element to its most useful range, or to create harmony (intervals) between different elements.

VOLUME



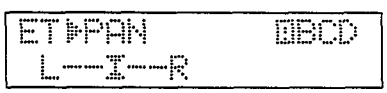
Summary: Adjusts the volume of the selected element.

Settings: 0... 99

Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired volume level.

Details: A setting of "0" produces no sound while a setting of "99" produces maximum volume.
The ability to independently adjust the volume of each element makes it simple to set up the optimum balance or "mix" between elements.

PAN



Summary: Determines the position in the stereo sound field in which the sound from selected element will be heard (left to right).

Settings: Graphic Display: L--+--R, 5 positions from left to right.

Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired pan position.

Details: The lower line of the display shows a graphic representation of the stereo sound field with "L" representing "left" and "R" representing "right." As you edit the pan parameter the position indicator will appear at the corresponding position on the graphic display. A total of five different positions are available, corresponding to left, left-center, center, right-center, and right.
Interesting stereo effects can be produced by placing the output from different elements at different locations in the stereo sound field.

VELOCITY SENSITIVITY

Summary: Determines how the output level of the selected element changes in response to velocity changes (keyboard initial touch response).

Settings: -5 ... 0 ...+5

Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired velocity sensitivity.

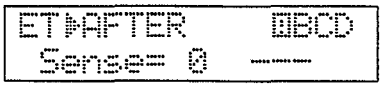
Details: Plus "+" settings produce higher output level in response to higher velocity values — i.e. the harder a key is played, the louder the sound. Minus "-" settings produce the opposite effect: lower level in response to higher velocity. A setting of "0" results in no level variation.

0 No response.
+1 Narrow change between medium-hard and hard velocity.

+2 Broader change between medium and hard velocity.
+3 Smooth change all the way from soft to hard velocity.
+4 Large change over small velocity range.
+5 Sudden change from no sound to maximum level at about medium velocity.

"-" Settings have the same effect, but the sound level decreases rather than increasing with increased key velocity. A graphic display to the right of the sensitivity value provides a visual indication as to the type of change produced by each setting.

AFTER TOUCH SENSITIVITY



Summary: Determines how the output level of the selected element changes in response to keyboard after touch pressure changes when the Lev (Level) parameter of the AFTER TOUCH function in the VOICE COMMON mode is set to "on" (see page 7).

Settings: -3 ...0...+3

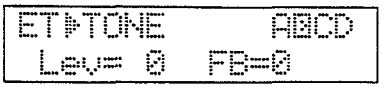
Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired after touch sensitivity.

Details: Plus "+" settings produce higher output level in response to higher after touch pressure. Minus "-" settings produce the opposite effect: lower level in response to higher pressure. A setting of "0" results in no level variation.

0 No response.
+1 Narrow change between medium-high and high pressure.
+2 Broader change between medium and high pressure.
+3 Smooth change all the way from low to high pressure.

"-" Settings have the same effect, but the sound level decreases rather than increasing with increased after touch pressure. A graphic display to the right of the sensitivity value provides a visual clue as to the type of change produced by each setting.

TONE (FM Elements B and D Only)



Summary: Adjusts the tone of the selected FM element — B or D.

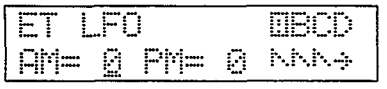
Settings: Lev (Level): 0 ... 99
FB (Feedback): 0 ... 7

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the Lev or FB parameter. Use the [-1/NO] and [+1/YES] keys to set the level or feedback as required.

Details: The Lev parameter adjusts the modulation level of the select FM element, so higher values produce a brighter, sharper tone while lower values produce a rounder, more mellow tone. The effect of the feedback parameter varies from element to element, but in general higher values make the sound more brassy or noisy, while lower values make the sound smoother.

LFO (Low Frequency Oscillator) AM Depth, PM Depth, Type, Delay, Rate & Speed

• ***AM (Amplitude Modulation Depth)***



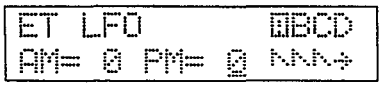
Summary: Determines the maximum amount of amplitude modulation that can be applied to the selected element by the modulation wheel or keyboard after touch.

Settings: 0... 15

Procedure: Use the [◁] and [▷] cursor keys to select the AM parameter. Use the [-1/NO] and [+1/YES] keys to set the desired degree of amplitude modulation.

Details: A "0" setting produces no modulation while a setting of "15" produces maximum modulation. Amplitude modulation produces a periodic variation in the volume of the sound, thus creating a tremolo effect.
Please note that the AM parameter of the WHEEL and/or AFTER TOUCH function in the VOICE COMMON edit mode must be set to "on" before amplitude modulation can be applied manually (see page 7). Amplitude modulation is applied automatically when these parameters are off.

• ***PM (Pitch Modulation Depth)***



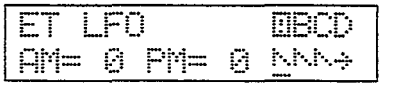
Summary: Determines the maximum amount of pitch modulation that can be applied to the selected element by the modulation wheel or keyboard after touch.

Settings: 0...31

Procedure: Use the [◁] and [▷] cursor keys to select the PM parameter. Use the [-1/NO] and [+1/YES] keys to set the desired degree of pitch modulation.

Details: A "0" setting produces no modulation while a setting of "31" produces maximum modulation. Pitch modulation produces a periodic pitch variation, thereby creating a vibrato effect.
Please note that the PM parameter of the WHEEL and/or AFTER TOUCH function in the VOICE COMMON edit mode must be set to "on" before pitch modulation can be applied manually. Pitch modulation is applied automatically when these parameters are off.

• ***Type***



Summary: Determines the waveform of the LFO for the selected element.

Settings:

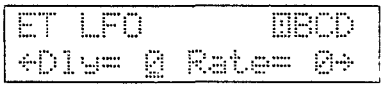
SAW UP	SAW DOWN	TRIANGLE
SQUARE	SAMPLE&HOLD	

Procedure: Use the [◁] and [▷] cursor keys to select the waveform parameter. Use the [-1/NO] and [+1/YES] keys to select the desired LFO waveform.

Details:

= Upward sawtooth.
= Downward sawtooth.
= Triangle.
= Square.
= Sample and hold.

• ***Dly (Delay)***



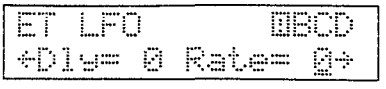
Summary: Sets the delay time between the beginning of a note and the beginning of LFO operation for the selected element when the WHEEL and AFTER TOUCH parameters in the VOICE COMMON edit mode are both turned off.

Settings: 0 ... 99

Procedure: Use the [◁] and [▷] cursor keys to select the Dly parameter. Use the [-1/NO] and [+1/YES] keys to set the desired LFO delay.

Details: The minimum setting "0" results in no delay, while the maximum setting of "99" produces maximum delay before the LFO begins operation.

• ***Rate***



Summary: Sets the rate of LFO "fade in" for the selected element when the WHEEL and AFTER TOUCH parameters in the VOICE COMMON edit mode are both turned off.

Settings: 0 ... 99

Procedure: Use the [◁] and [▷] cursor keys to select the Rate parameter. Use the [-1/NO] and [+1/YES] keys to set the desired LFO fade-in rate.

Details: "0" is the fastest rate. causing the LFO to start operation at full depth immediately. A setting of 99 produces the longest LFO fade in.

• ***Spd (Speed)***

Summary: Sets the speed of the LFO for the selected element.

Settings: 0 ... 31

Procedure: Use the [◁] and [▷] cursor keys to select the Spd parameter. Use the [-1/NO] and [+1/YES] keys to set the desired LFO speed.

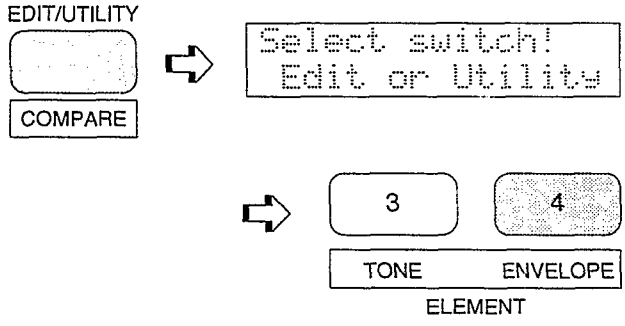
Details: "0" is slowest LFO speed setting; "31" is the fastest.
The speed parameter can not be edited when the sample-and-hold (⋰⋱⋰) LFO TYPE is selected.

ELEMENT ENVELOPE

The ELEMENT ENVELOPE edit mode allows detailed programming of the amplitude envelopes for each element in the selected voice.

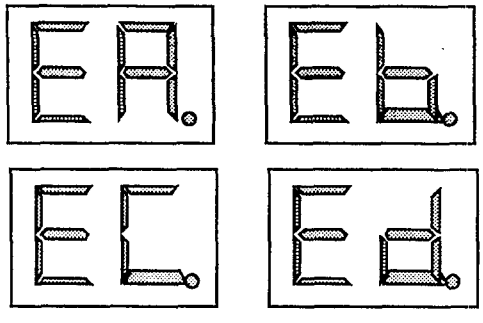
Selecting the ELEMENT ENVELOPE Edit Mode

From the VOICE or MULTI mode:



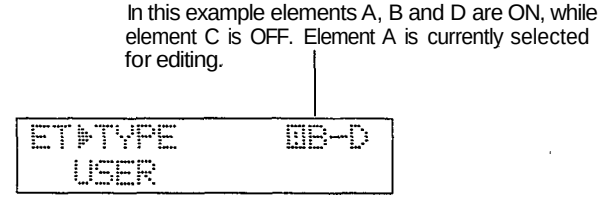
From another edit or utility mode simply press [ELEMENT ENVELOPE].

An "E" will appear to the left of the LED display to indicate that an edit mode is selected, and the element selected for editing will be displayed to the right of the display — "A", "b", "C", or "d". A dot will appear to the right of the element character as soon as any parameter has been edited.



Different elements can be selected for editing by pressing the appropriate [ELEMENT SELECT] key — [A], [B], [C] or [D]. If a 2-element voice is being edited, only elements A and B can be selected.

Any of the available elements can also be turned on or off by pressing the appropriate [ELEMENT ON/OFF] key. Each key alternately turns the associated element on and off, and the on/off status of the elements is shown to the right of the upper LCD line. If the element character is showing, the associated element is ON, if a dash appears in place of the element character, that element is OFF. The ability to turn elements on or off while editing makes it easier to hear the effect of parameter changes on a single element. The currently selected element is also shown on the LCD as a reversed (white on black) character.

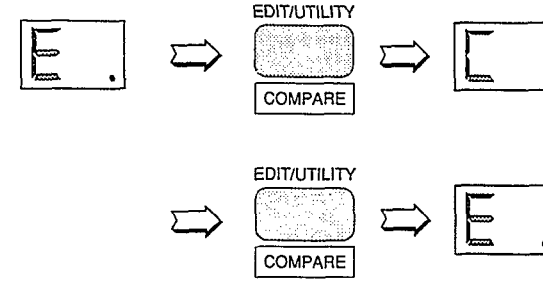


Selecting the ELEMENT ENVELOPE Edit Mode Functions

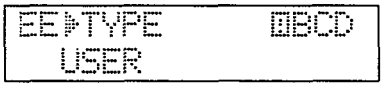
The various ELEMENT ENVELOPE edit mode functions can be selected in sequence by pressing the [ELEMENT ENVELOPE] key, or by using the [-1/NO] and [+1/YES] keys when the cursor (▷)is located immediately before the function name on the upper display line.

The COMPARE Function

You can compare the sound of the edited voice with the sound of the voice before it was edited by pressing the [EDIT/COMPARE] key to activate the COMPARE function. A "C" will appear on the LED display while the COMPARE function is active, and the sound of the voice prior to editing will be heard when you play the keyboard. Press the [EDIT/COMPARE] key again to return to the edit mode.



TYPE



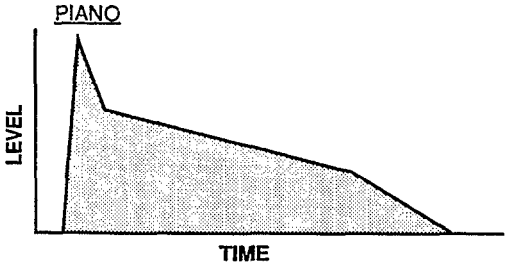
Summary: Selects a user or preset amplitude envelope for the selected element.

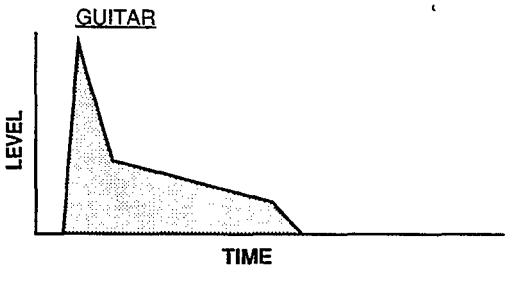
Settings: PRESET, PIANO, GUITAR, PLUCK, BRASS, STRINGS, ORGAN, USER

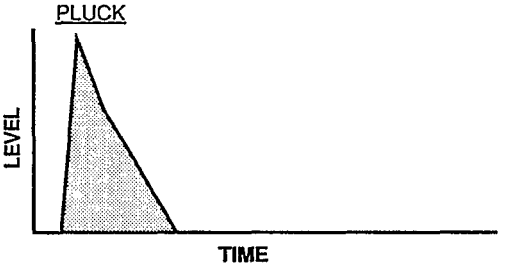
Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired envelope.

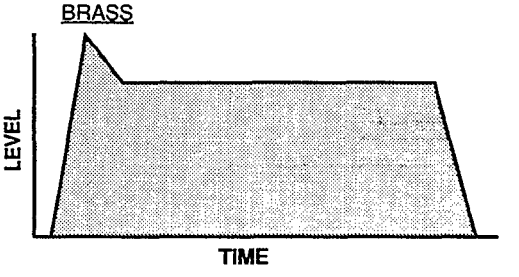
Details: When "PRESET" is selected, the original envelope of the wave selected for the current element is used. For example, if the current uses a guitar wave corresponding guitar envelope will be selected.

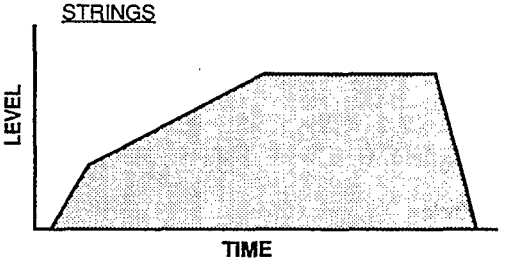
When "PIANO," "GUITAR," "PLUCK," "BRASS," "STRINGS," or "ORGAN" is selected, a generic envelope of the appropriate type is used. Then piano, organ and strings envelopes are roughly as shown below:

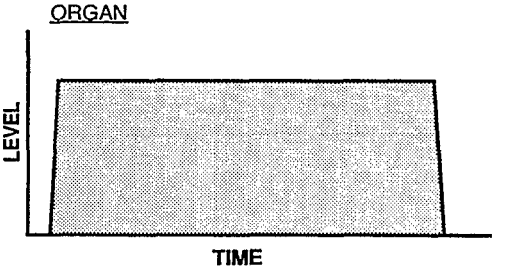












Editing any of the envelope parameters for one of the above types turns the envelope into a "USER" type.

When "USER" is selected, an original envelope can be programmed using the attack, decay, and release parameters described on pages 29, 30.

ENVELOPE COPY

Summary: Copies envelope parameters from a selected element to the current element.

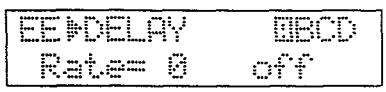
Settings: Element: A, B, C, D

Procedure: Use the [◁] and [▷] cursor keys to move the cursor to the "from" element parameter. Use the [-1/NO] and [+1/YES] keys to select the element from which the envelope data is to be copied.

Press the [▷] cursor key one more time and the "Are you sure?" display will appear. Press [+1/YES] to execute the copy operation or [-1/NO] to cancel. "»Completed!!«" will appear briefly when the copy operation has finished.

Details: This function can save a lot of programming time by allowing easy copying of complex USER type envelope data between elements.

DELAY (Delay Rate & ON/OFF)



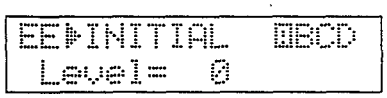
Summary: Sets a delay before the envelopes of all elements begin.

Settings: Delay: 0 ... 99
Mode: on/off

Procedure: Use the [◁] and [▷] cursor keys to move the cursor to the "Rate" parameter. Use the [-1/NO] and [+1/YES] keys to select the desired delay rate.
Press the [▷] cursor key one more time to move to the on/off mode parameter, and use the [-1/NO] and [+1/YES] keys to set as required.

Details: The envelope delay rate parameter affects all envelopes simultaneously. A setting of "0" produces almost no delay while a setting of "99" produces maximum delay.

INITIAL LEVEL

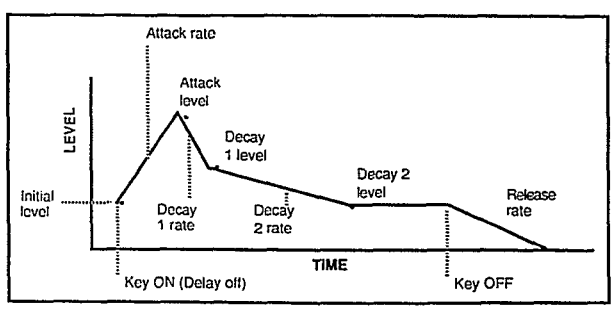


Summary: Sets the starting level of the amplitude envelope for the current element.

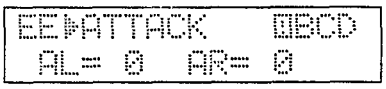
Settings: 0... 99

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to set the initial level.

Details: A setting of "0" means that the envelope will begin from zero (minimum) level, while a setting of "99"causes the envelope to begin immediately from maximum level. The highest setting produces the sharpest attack.



ATTACK (Level & Rate)



Summary: Sets the rate and peak level of the attack of the amplitude envelope for the current element.

Settings: AL (Attack Level): 0 ... 99
AR (Attack Rate): 0 ... 99

Procedure: Use the [◁] and [▷] cursor keys to move the cursor to the "AL" or "AR" parameter. Use the [-1/NO] and [+1/YES] keys to set the selected level or rate parameter.

Details: Refer to the INITIAL LEVEL function for a complete envelope diagram.
A rate setting of "0" produces the slowest attack, and a setting of "99" produces the fastest attack.
A level setting of "0" produces the lowest attack level, while a setting of "99" produces the highest level.
Please note that the attack may be "biased" by the ENVELOPE Attack Rate parameter in the VOICE COMMON edit mode.

DECAY 1 (Level & Rate)

Summary: Sets the rate and final level of the first decay of the amplitude envelope for the current element.

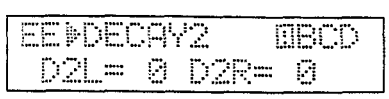
Settings: D1L (Decay 1 Level): 0 ... 99
D1R (Decay 1 Rate): 0 ... 99

Procedure: Use the [◁] and [▷] cursor keys to move the cursor to the "D1L" or "D1R" parameter.

Use the [-1/NO] and [+1/YES] keys to set the selected level or rate parameter.

Details: Refer to the INITIAL LEVEL function for a complete envelope diagram.
A rate setting of "0" produces the slowest decay, and a setting of "99" produces the fastest decay.
A level setting of "0" produces the lowest decay level, while a setting of "99" produces the highest level.

DECAY 2 (Level & Rate)



Summary: Sets the rate and final level of the second decay of the amplitude envelope for the current element.

Settings: D2L (Decay 2 Level): 0 ... 99
D2R (Decay 2 Rate): 0 ... 99

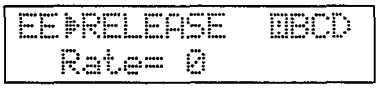
Procedure: Use the [◁] and [▷] cursor keys to move the cursor to the "D2L" or "D2R" parameter. Use the [-1/NO] and [+1/YES] keys to set the selected level or rate parameter.

Details: Refer to the INITIAL LEVEL function for a complete envelope diagram.
A rate setting of "0" produces the slowest decay, and a setting of "99" produces the fastest decay.

A level setting of "0" produces the lowest decay level, while a setting of "99" produces the highest level.

The decay 2 level parameter also sets the hold level at which the note is sustained until released.

RELEASE RATE



Summary: Sets the release rate of the amplitude envelope for the current element.

Settings: 0... 99

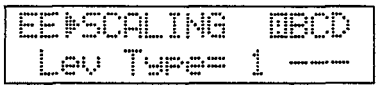
Procedure: Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to set the release rate.

Details: Refer to the INITIAL LEVEL function for a complete envelope diagram.

A release rate setting of "0" produces the slowest release, and a setting of "99" produces the fastest release.

Please note that the release note may be "biased" by the ENVELOPE Release Rate parameter in the VOICE COMMON edit mode.

LEVEL SCALING



Summary: Determines how the level of the current element changes across the range of the keyboard.

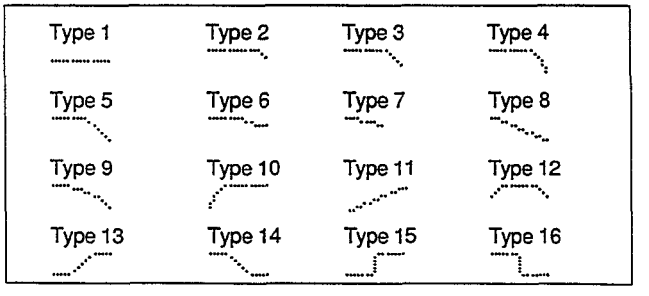
Settings: 1 ... 16

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to set the desired level scaling curve.

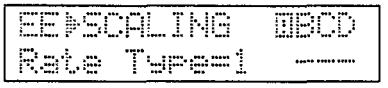
Details: Most acoustic instruments do not produce a uniform sound level throughout their pitch range. This results in a level curve that can be simulated by appropriate settings of the level scaling parameter. Often, for example, the level decreases slightly as the pitch increases.

Each of the 16 available level scaling curves is shown in graphic form on the LCD when selected, making it easy to locate and select the optimum curve for each application.

• ***Level Scaling LCD Graphic***



RATE SCALING



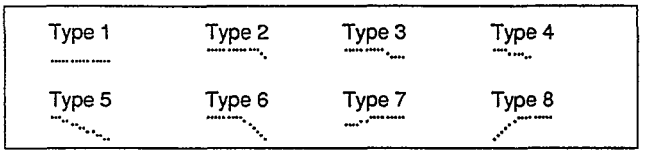
Summary: Determines how the overall rate of the amplitude envelope for the current element changes across the range of the keyboard.

Settings: 1 ... 8

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to set the desired rate scaling curve.

Details: Many acoustic instruments do not produce uniform note length throughout their pitch range. This results in a rate curve that can be simulated by appropriate settings of the rate scaling parameter. Often, for example, the overall note length decreases slightly as the pitch increases. Each of the 8 available rate scaling curves is shown in graphic form on the LCD when selected, making it easy to locate and select the optimum curve for each application.

- ***Rate Scaling LCD Graphic***

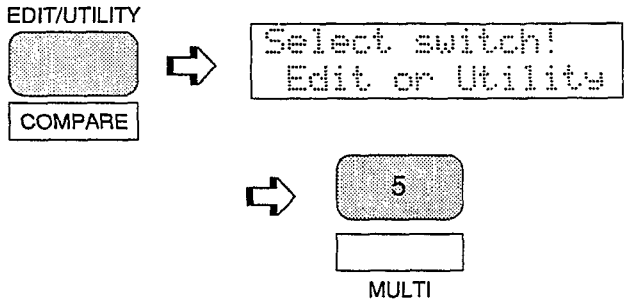


MULTI

The MULTI edit mode allows 8 different voices to be assigned to different MIDI channels. The assigned voices can then be individually controlled over the appropriate channels from an external MIDI sequence recorder or other controller. If a number of these channel/voice "parts" are assigned to the MIDI transmit channel of the SY35, they can all be played simultaneously from the SY35 keyboard. Individual characteristics of each voice, such as volume and detune, can also be programmed.

Selecting the MULTI Edit Mode

From the VOICE or MULTI mode:



From another edit or utility mode simply press [MULTI].

An "E" will appear to the left. of the LED display to indicate that an edit mode is selected, and the multi-setup part selected for editing will be displayed to the right of the display — "1" through "8." A dot will appear to the right of the part number as soon as any parameter has been edited.

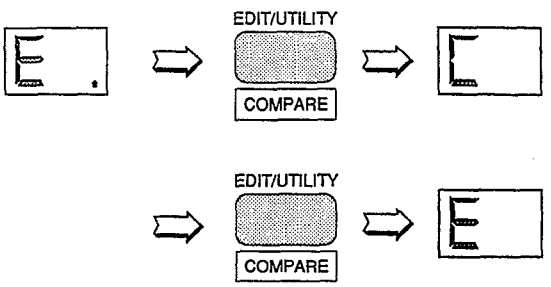
Different parts can be selected for editing by pressing the appropriate [NUMBER/MULTI PART SELECT] key — [1] through [8].

Selecting the MULTI Edit Mode Functions

The various MULTI edit mode functions can be selected in sequence by pressing the [MULTI] key, or by using the [-1/NO] and [+1/YES] keys when the cursor (▷)is located immediately before the function name on the upper display line.

The COMPARE Function

You can compare the sound of the edited multi-play setup with the sound of the setup before it was edited by pressing the [EDIT/COMPARE] key to activate the COMPARE function. A "C" will appear on the LED display while the COMPARE function is active, and the sound of the setup prior to editing will be heard when you play the keyboard. Press the [EDIT/COMPARE] key again to return to the edit mode.



SY35 PRESET MULTI Performance Note

No.	MULTI Name	Type	Comments	No.	MULTI Name	Type	Comments
11	Orchstra	Layer	Big orchestra.	21	DistLead	Layer	Distortion lead voice.
12	BigBand	Layer	Big-band brass section.	22	Wb/Piano	Split	Wood bass and piano split.
13	SuperClv	Layer	Layered clavi sound.	23	B/BrsSec	Split	Electric bass and brass split.
14	PianoStr	Layer	Layered piano and strings.	24	Celo/Flt	Split	Cello and flute split.
15	VoiceBs	Layer	Layered bass and human voice.	25	<Pop>	MIDI Multi	Pop music ensemble.
16	FullBrs	Layer	Powerful brass.	26	<Rock>	MIDI Multi	Rock group.
17	PanLead	Layer	Pan-flute type lead voice.	27	<Jazz>	MIDI Multi	Jazz ensemble.
18	Str&Cho	Layer	Layered strings and choir.	28	<Demo>	MIDI Multi	SY35 demo multi.

SY35 INTERNAL MULTI Performance Note

No.	MULTI Name	Type	Comments	No.	MULTI Name	Type	Comments
11	SyncLead	Layer	Fat "sync" lead.	21	FatBrass	Layer	Fat analog synth brass.
12	SuperSaw	Layer	Extra-fat sawtooth lead.	22	HyuhPad	Layer	Synth pad with wind effect.
13	BellPad	Layer	Filter sweep synth pad.	23	Reggae	Layer	Ideal for Reggae music.
14	SunBeam	Layer	"Sunny" sound for backing.	24	Mikado	Layer	Musical effect.
15	WideDcy	Layer	Bright backing layer.	25	Prologue	Layer	Musical effect.
16	AnaPad1	Layer	Analog synth pad 1.	26	Epilogue	Layer	Musical effect.
17	AnaPad2	Layer	Analog synth pad 2.	27	SolidSet	Split	Bass and synth lead split.
18	AnaPad3	Layer	Analog synth pad 3.	28	RytmSec.	Split	Auto drum and bass pattern.

NAME

```
MU▶NAME
 P11 Initial
```

Summary: Assigns a name of up to 8 characters to the current multi-play setup.

Settings: The following characters are available for use in multi-play names:

```
(Space) !"#$%&'()*+,-./0123456789:;<=>?@
ABCDEFGHIJKLMNOPQRSTUVWXYZ[¥]^_`
abcdefghijklmnopqrstuvwxyz{|}→←
```

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the character to be changed. Use the [-1/NO] and [+1/YES] keys to select the desired character. Continue until the entire multi-play name has been programmed.

Details: It's a good idea to give your multi-play setups names that make them easily identifiable. If you've created a new setup using three voices intended for rock music, you could call it something like "RockTrio".

EFFECT (Type & Depth)

```
MU▶EFFECT
Rev Hall    Dep=1
```

Summary: Selects one of sixteen digital effects, and sets the depth of the selected effect for the current multi-play setup.

Settings: Effect type:

Rev Hall	(Reverb Hall)
Rev Room	(Reverb Room)
Rev Plate	(Reverb Plate)
Rev Club	(Reverb Club)
Rev Metal	(Reverb Metal)
Delay 1	(Short Single Delay)
Delay 2	(Long Delay)
Delay 3	(Long Delay)
Doubler	(Doubler)
Ping-Pong	(Ping Pong Delay)
Pan Ref	(Panned Reflections)
Early Ref	(Early Reflections)
Gate Rev	(Gated Reverb)
Dly&Rev 1	(Delay & Reverb 1)
Dly&Rev 2	(Delay & Reverb 2)
Dist&Rev	(Distortion & Reverb)

Depth: 0... 7

Procedure: Use the [◁] and [▷] cursor keys to place the underline cursor under the effect type or depth parameter. Use the [-1/NO] and [+1/YES] keys to select the desired effect or effect depth.

Details: Setting the depth parameter to "0" is equivalent to turning the effect OFF. A depth setting of "7" produces the greatest effect.

VOICE NUMBER

```
MU▶VOICE NUMBER
 I11 Initial
```

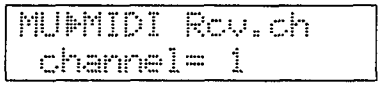
Summary: Assigns a preset, card or internal voice to the selected multi-play part.

Settings: Source: I, C, P
Bank: 1 ... 8
Number: 1 ... 8

Procedure: Press the [NUMBER/MULTI PART SELECT] key corresponding to the desired multi-play part.
Use the [◁] and [▷] cursor keys to move the cursor to the source, bank, or number parameter. Use the [-1/NO] and [+1/YES] keys to set the selected parameter as necessary.

Details: In this display the source, bank and number parameters are shown in the standard SY35 voice number format. "P12," for example, is preset bank 1, number 2: "135" is internal bank 3, number 5, etc.

MIDI RECEIVE CHANNEL



Summary: Sets the MIDI receive channel for the selected multi-play part to any channel between 1 and 16. or off.

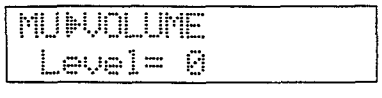
Settings: 0 ... 16, off

Procedure: Press the [NUMBER/MULTI PART SELECT] key corresponding to the desired multi-playpart.

Use the [▷] cursor key to move the cursor to the lower display line. The [-1/NO] and [+1/YES] keys are used to select the desired MIDI channel or turn MIDI reception for that part off.

Details: The most logical and easy-to-follow settings for multi-play parts 1 through 8 are, naturally, MIDI channels 1 through 8. Turn MIDI reception "off for parts you do not intend to use.

VOLUME



Summary: Adjusts the volume of the selected multi-play part.

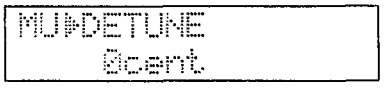
Settings: 0... 99

Procedure: Press the [NUMBER/MULTI PART SELECT] key corresponding to the desired multi-play part.

Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired volume level.

Details: A setting of "0" produces no sound while a setting of "99" produces maximum volume.
The ability to independently adjust the volume of each multi-play part makes it simple to set up the optimum balance or "mix" between parts.

DETUNE



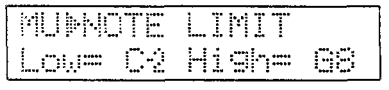
Summary: Allows slight upward or downward pitch adjustment of the selected multi-play part.

Settings: -50 ... 0 ... +50

Procedure: Press the [NUMBER/MULTI PART SELECT] key corresponding to the desired multi-play part.
Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired amount of detuning.

Details: The Detune function allows different parts in a multi-play setup to be slightly detuned in relation to each other, thereby "thickening" the overall sound.
Detuning occurs in 3 or 4-cent steps. Since 100 cents equals one semitone, the overall detune range is approximately one semitone. Plus settings tune upward from normal pitch, and minus settings tune downward. A setting of "0" produces normal pitch.

NOTE LIMIT (Low & High)



Summary: Sets the low and high note limits for the selected multi-play part.

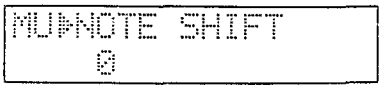
Settings: C-2 ... G8

Procedure: Press the [NUMBER/MULTI PART SELECT] key corresponding to the desired multi-play part.
Use the [◁] and [▷] cursor keys to select the Low or High parameter. The [-1/NO] and [+1/YES] keys are used to set the low or high note limit.

Details: The C-2 to G8 range of this function covers a full 10-1/2 octaves. "C3" corresponds to "middle C" on a keyboard.

This function allows the sound from a multi-play part to be limited to a specific region of the keyboard. If the Low Note Limit is set to C3 and the High Note Limit is set to C4, for example, the sound from that part will only be produced between C3 and C4 — the octave immediately above middle C. This makes it simple to produce split voices.
If the High Note Limit is set to a note that is *lower* than the Low Note Limit, the keys between the limits will produce no sound while all others will operate normally.

NOTE SHIFT



Summary: Shifts the pitch of the selected multi-play part up or down in semitone steps.

Settings:-24 ... 0 ... +24.

Procedure: Press the [NUMBER/MULTI PART SELECT] key corresponding to the desired multi-play part.
Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired degree of note shift.

Details: A setting of "-12," for example, shifts the pitch of the selected voice down by one octave; a setting of "+4" shifts the pitch up by a major third. The maximum range is plus or minus two octaves.

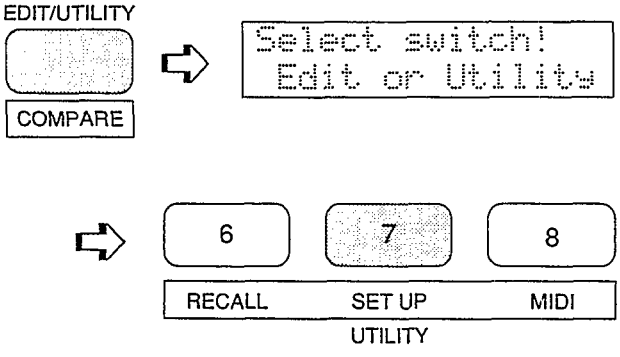
The Note Shift function can be used to transpose a voice to its most useful range, or to create harmony (intervals) between different parts in a multi-play setup.

UTILITY SETUP

The UTILITY SETUP mode provides access to a range of basic utility functions that are essential for general operation of the SY35.

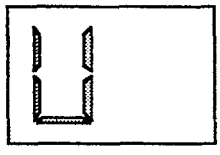
Selecting the UTILITY SETUP Mode

From the VOICE or MULTI mode:



From another edit or utility mode simply press [UTILITY SETUP].

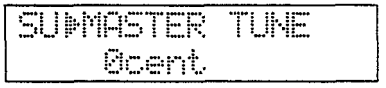
A "U" will appear on the LED display to indicate that a utility mode has been selected



Selecting the UTILITY SETUP Mode Functions

The various UTILITY SETUP mode functions can be selected in sequence by pressing the [UTILITY SETUP] key, or by using the [-1/NO] and [+1/YES] keys when the cursor (▷)is located immediately before the function name on the upper display line.

MASTER TUNE



Summary: Tunes the overall pitch of the SY35 over approximately a 100-cent range.

Settings:-50 ...0...+50

Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to set the desired degree of tuning.

Details: Tuning occurs in 3 or 4-cent steps. Since 100 cents equals one semitone, the overall tuning range is approximately one semitone — i.e. plus or minus a quarter tone. Plus settings tune upward from normal pitch, and minus settings tune downward. A setting of "0" produces normal pitch.

TRANSPOSE

Summary: Transposes the overall pitch of the SY35 up or down in semitone steps.

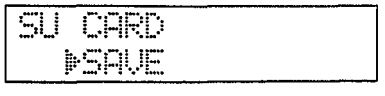
Settings:-12 ...0...+12

Procedure: Use the [▷] key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to set the desired degree of transposition.

Details: A setting of "-12," for example, transposes down by one octave; a setting of "+4" transposes up by a major third.

MEMORY CARD (Save, Load, Format, & Bank)

● ***Save***



Summary: Saves all internal voice and multi-play data to a memory card.

Settings: SAVE

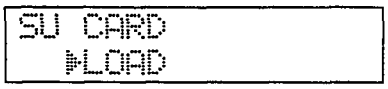
Procedure: Use the [▷] key to move the cursor to the lower display line, then use the [-1/NO] and [+1/YES] keys to select "SAVE." Now press the [▷] key again and the "SAVE TO CARD?" display will appear. Press the [+/YES] key to start the save operation, or the [-1/NO] key to cancel. "****SAVE NOW****" will appear on the display while the operation is in progress, and "»Completed!!«" will appear briefly when the save operation has finished.

Details: The SAVE operation can only be executed if the CARD parameter of the MEMORY PROTECT function described on page 45 is turned "off," and the WRITE PROTECT switch of the MCD32 or MCD64 Memory Card loaded in into the CARD slot is turned "off."

When an MCD64 Memory Card is used, the bank to which the data is to be save can be selected using the BANK function described on page 42.

Exercise caution when saving data to a memory card — the previous card data will be erased and completely replaced by the saved data.

● ***Load***



Summary: Loads voice and multi-play data from a memory card into the SY35 internal memory.

Settings: LOAD

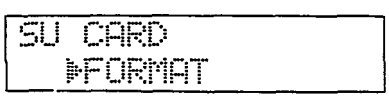
Procedure: Use the [▷] key to move the cursor to the lower display line, then use the [-1/NO] and [+1/YES] keys to select "LOAD." Now press the [▷] key again and the "LOAD from CARD?" display will appear. Press the [+1/YES] key to start the load operation, or the [-1/NO] key to cancel. "****LOAD NOW****" will appear on the display while the operation is in progress, and "»Completed!!«" will appear briefly when the load operation has finished.

Details: The LOAD operation can only be executed if the INTERNAL parameter of the MEMORY PROTECT function described on page 45 is turned "off."

When an MCD64 Memory Card is used, the bank from which the data is to be loaded can be selected using the BANK function described on this page.

Exercise caution when loading data from a memory card — the corresponding internal SY35 data will be erased and completely replaced by the loaded data.

● ***Format***



Summary: Formats MCD64 or MCD32 Memory Cards so that they can be used by the SY35 to save and load voice and multi-play data.

Settings: FORMAT

Procedure: Use the [▷] key to move the cursor to the lower display line, then use the [-1/NO] and [+1/YES] keys to select "FORMAT." Now press the [▷] key again and the "FORMAT ?" display will appear. Press the [+1/YES] key to start the format operation, or the [-1/NO] key to cancel. "»Completed!!«" will appear briefly when the format operation has finished.

Details: Formatting can only be carried out if the memory card WRITE PROTECT switch is turned OFF (refer to your MCD64 or MCD32 Memory Card instructions for details).

● ***Bank***

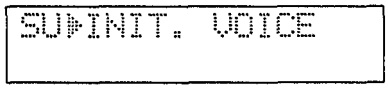
Summary: Selects bank 1 or bank 2 of a Yamaha MCD64 type memory card prior to formatting or load/save operations.

Settings: 1, 2

Procedure: Use the [▷] key to move the cursor to the lower display line, then use the [-1/NO] and [+1/YES] keys to select "BANK." Now press the [▷] key again to move the cursor to the bank number. Use the [-1/NO] and [+1/YES] keys to select the desired bank.

Details: MCD32 memory cards only have a single bank, so bank 2 cannot be selected if this type of card is used. MCD64 memory cards allow selection of bank 1 or 2. Each bank holds 64 voices and 16 multi-play setups.

VOICE INITIALIZE



Summary: Initializes all parameters of the current voice.

Settings: None.

Procedure: Select the UTILITY SETUP mode from the VOICE play mode. Then, after selecting the "INIT. VOICE" display, press the [▷] key. "Are you sure?" will appear on the lower line of the display. Press the [+1/YES] to initialize or [-1/NO] to cancel the initialize operation. "»Completed!!«" will appear briefly when the initialization is finished.

Details: When Voice Initialize is executed, the voice parameters are initialized to the following values:

INITIAL VOICE

COMMON		
VOICE NAME		Initial
CONFIGURATION		A-B-C-D
EFFECT		Rev.Hall
	Dep	1
PITCH BEND		2
WHEEL	AM	off
	PM	on
AFTER TOUCH	AM	off
	PM	off
	Pit	0
	Lev	off
ENVELOPE	AR	0
	RR	0

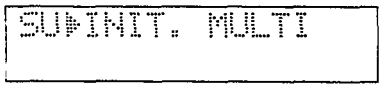
VECTOR	
VECTOR LEVEL SPEED	30 ms
STEP/X/Y/TIME	1 0 0 End
VECTOR DETUNE SPEED	30 ms
STEP/X/Y/TIME	1 0 0 End

	A	B	C	D
ELEMENT TONE				
WAVE	000:PIANO:PIANO	151:OSC1:sin8'	039:Str:Vn.Ens	152:OSC1:sin4'
FREQ. shift	0	0	0	0
VOLUME	99	99	99	99
PAN	L-I-R	L-I-R	L-I-R	L-I-R
VELOCITY Sense	2	2	2	2
AFTER Sense	0	0	0	0
TONE Lev	—	92	—	92
TONE FB	—	0	—	0
LFO AM	0	0	0	0
LFO PM	16	16	16	16
LFO TYPE	^^	^^	^^	^^
LFO Dly	0	0	0	0
LFO Rate	99	99	99	99
LFO Spd	20	20	20	20

	A	B	C	D
ELEMENT ENV				
TYPE	PRESET	PRESET	PRESET	PRESET
DELAY Rate	99	99	99	99
DELAY ELE.	off	off	off	off
INITIAL Level	67	0	90	0
ATTACK AL	99	92	97	92
ATTACK AR	99	99	64	99
DECAY1 D1L	99	92	95	92
DECAY1 D1R	0	0	32	0
DECAY2 D2L	0	92	95	92
DECAY2 D2R	26	0	0	0
RELEASE Rate	60	76	52	76
SCALING Lev Type	2	1	4	1
Rate Type	3	1	2	1

The voice initialize function is useful if you want to begin programming a voice "from scratch."

MULTI INITIALIZE



Summary: Initializes all parameters of the current multi-play setup.

Settings: None.

Procedure: Select the UTILITY SETUP mode from the MULTI play mode. Then, after selecting the "INIT. MULTI" display, press the [▷] key. "Are you sure?" will appear on the lower line of the display. Press the [+1/YES] to initialize or [-1/NO] to cancel the initialize operation. "»Completed!!«" will appear briefly when the initialization is finished.

Details: When multi-play Initialize is executed, the multi-play setup parameters are initialized to the following values:

INITIAL MULTI

	PART1	PART2	PART3	PART4	PART5	PART6	PART7	PART8
NAME	Initial							
EFFECT	Rev Hall							
EFFECT Dep	1							
VOICE NUMBER	P11 AP:Rock	P11 AP:Rock	P11 AP:Rock	P11 AP:Rock	P11 AP:Rock	P11 AP:Rock	P11 AP:Rock	P11 AP:Rock
MIDI Rcv.ch	1	2	3	4	5	6	7	8
VOLUME	99	99	99	99	99	99	99	99
DETUNE	0	0	0	0	0	0	0	0
NOTE LIMIT Low	c-2	c-2	c-2	c-2	c-2	c-2	c-2	c-2
NOTE LIMIT High	G8	G8	G8	G8	G8	G8	G8	G8
NOTE SHIFT	0	0	0	0	0	0	0	0

The multi initialize function is useful if you want to begin programming a voice "from scratch."

MEMORY PROTECT (Internal & Card)

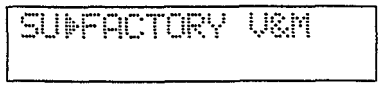
Summary: Turns internal or card memory protection on or off.

Settings: INT: on, off
CARD: on, off

Procedure: Use the [◁] and [▷] cursor keys to select the INT or CARD parameter. Use [-1/NO] and [+1/YES] keys to turn memory protection on or off.

Details: When INT memory protection is "on," the internal memory is protected and voice store operations to the internal memory cannot be carried out. The same applies to card memory: when protection is "on" memory card save operations will be blocked even if the memory card WRITE PROTECT switch is turned OFF.

FACTORY VOICE & MULTI RESTORE



Summary: Restores the factory-preset voices and multi-play setups in the INTERNAL VOICE and MULTI memory areas.

Procedure: Make sure the internal memory protect function is turned OFF before using this function (see "MEMORY PROTECT" above).
From the initial "SU>FACTORY V&M" display press [▷] cursor key. "Are you sure?" will appear on the display. Press the [+1/YES] key if you want to go ahead with the factory voice and multi restore operation, or press [-1/NO] to cancel. If you press [+1/YES], "»Completed!!«" will appear on the display when the restore operation has finished.

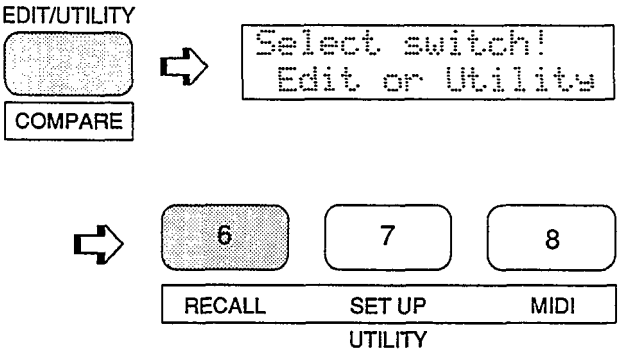
Details: When the factory voice and multi restore operation is executed, all data in the SY35 internal voice and multi memory areas is overwritten by the factory preset data. Make sure you save important voice and multi data to memory card or an external MIDI data filer prior to restoring the factory preset data.
If you attempt to execute the factory voice and multi restore operation when internal memory protect is turned ON, "Memory Protected" will appear on the display and the restore operation will be aborted.

UTILITY RECALL

The UTILITY RECALL mode accesses the VOICE or MULTI recall function, depending on whether the VOICE or MULTI play mode is selected when the RECALL function is called. RECALL makes it possible to recover a voice or multi-play setup that has been "lost" through failure to store the voice or multi-play setup prior to selecting a different voice or multi-play setup.

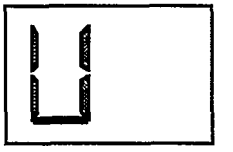
Selecting the UTILITY RECALL Mode

From the VOICE or MULTI mode:



From another edit or utility mode simply press [UTILITY RECALL].

A "U" will appear on the LED display to indicate that a utility mode has been selected



VOICE RECALL (Voice or Multi)

Summary: Recalls the last voice or multi-play setup edited from the SY35 edit buffer memory.

Settings: None

Procedure: The "RECALL VOICE" function is selected if called from the VOICE play mode, while "RECALL MULTI" function is selected if called from the MULTI play mode. "Are you sure?" appears on the lower display line. Press the [+1/YES] key to recall or [-1/NO] to cancel the recall operation.

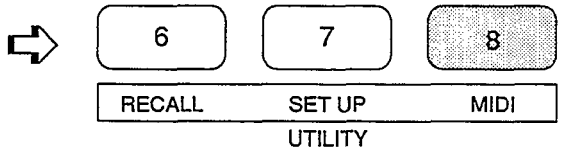
Details: Even if you've exited the edit mode and called a different voice or multi-play setup, this function will recall the last voice or multi-play setup edited with all parameters as they were at the time the edit mode was exited.

UTILITY MIDI

The UTILITY MIDI mode provides access to all of the SY35's MIDI control functions.

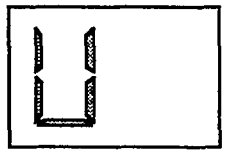
Selecting the UTILITY MIDI Mode

From the VOICE or MULTI mode:



From another edit or utility mode simply press [UTILITY MIDI].

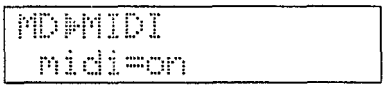
A "U" will appear on the LED display to indicate that a utility mode has been selected.



Selecting the UTILITY MIDI Mode Functions

The various UTILITY MIDI mode functions can be selected in sequence by pressing the [UTILITY MIDI] key, or by using the [-1/NO] and [+1/YES] keys when the cursor (▷)is located immediately before the function name on the upper display line.

MIDI ON/OFF



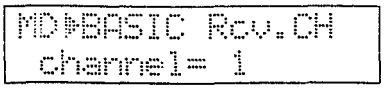
Summary: Turns all MIDI control functions on or off.

Settings: on, off

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+l/YES] keys to turn MIDI control on or off.

Details: MIDI control can be turned "off" to prevent unwanted interference from external MIDI devices connected to the SY35, and/or to prevent the SY35 from affecting operation of the external equipment.

BASIC RECEIVE CHANNEL



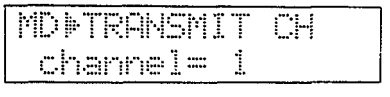
Summary: Sets the SY35 MIDI receive channel to any channel between 1 and 16, or the "omni" mode for reception on all channels.

Settings: 1 **...** 16, omni

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. The [-1/NO] and [+l/YES] keys are used to select the desired MIDI channel or the omni mode.

Details: When the SY35 is to receive data from an external MIDI device such as a sequencer, make sure that the SY35 MIDI receive channel is either set to the channel that the external device is transmitting on, or the omni mode.

TRANSMIT CHANNEL



Summary: Sets the MIDI transmit channel for the SY35.

Settings: 1 ... 16.

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to select the desired MIDI transmit channel number.

Details: The MIDI transmit channel job is used primarily to match the transmit channel of the SY35 with the receive channel of an external MIDI device being driven by the SY35. When a multi-play setup is selected, however, the MIDI transmit channel setting also determines which of the setup's voices is played via the SY35 keyboard.

LOCAL CONTROL ON/OFF

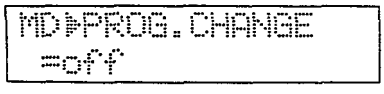
Summary: Determines whether the SY35 keyboard controls the internal tone generator system or not.

Settings: on, off.

Procedure; Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to turn local control on or off.

Details: Normally, local control will be turned "on" so that the SY35 keyboard plays its own internal tone generator system. If you want to control an external MIDI tone generator or other device from the SY35 keyboard *without* playing the internal tone generator, turn local control "off." One possibility is to drive the SY35 tone generator system from an external sequencer while independently playing a separate external tone generator from the SY35 keyboard.

MIDI PROGRAM CHANGE



Summary: Determines how the SY35 will respond to MIDI program change messages for remote voice/muiti selection.

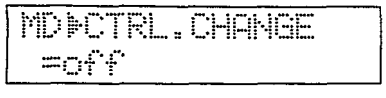
Settings: off, common, individual

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. The [-1/NO] and [+1/YES] keys are used to select the desired MIDI program change mode.

Details: The "off setting turns MIDI program change reception and transmission off, so MIDI program change messages received from external equipment will not cause the corresponding SY35 voice to be selected, and no program change messages will be transmitted by the SY35 when one of its voices are selected.

In the "common" mode, program change numbers 0 through 63 received from external equipment will select SY35 voices 1.1 through 8.8, and program change numbers 64 through 79 select multi-play setups 1.1 through 2.8. The card, internal or preset voice banks cannot be selected via MIDI control. The corresponding program change number will also be transmitted by the SY35 when one of its voices are selected. The "individual" mode allows individual voice selection for each multi-play part when the MULTI play mode is active. Program change between 0 and 63 received in a specific MIDI channel will change only the voice for the multi-play part assigned to that channel.

MIDI CONTROL CHANGE



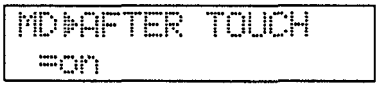
Summary: Determines whether or not the SY35 will receive and transmit MIDI control change messages.

Settings: off. on

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. The [-1/NO] and [+1/YES] keys are used to turn control change reception/transmission on or off.

Details: The "off setting turns MIDI control change reception and transmission off so that control change messages corresponding to modulation, volume and other functions will be ignored by the SY35 when received, and the SY35 will not transmit any control change messages.

AFTER TOUCH ON/OFF



Summary: Turns keyboard after touch on or off.

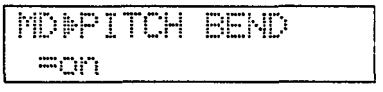
Settings: on, off.

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to turn after touch on or off.

Details: When after touch is turned "off," internal SY35 after touch will function normally but no MIDI after touch data will be transmitted or received.

Keyboard after touch generates a tremendous amount of MIDI data, so you might want to turn after touch "off when recording to a MIDI sequencer in order to preserve memory capacity.

PITCH BEND ON/OFF



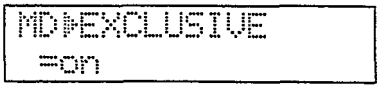
Summary: Turns pitch bend control on or off.

Settings: on, off.

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to turn pitch bend control on or off.

Details: When pitch bend control is turned "off," the SY35 pitch bend wheel will function normally but no MIDI pitch bend wheel data will be transmitted or received.

EXCLUSIVE ON/OFF



Summary: Turns transmission/reception of MIDI system exclusive data on or off.

Settings: on, off.

Procedure: Use the [▷] cursor key to move the cursor to the lower display line. Use the [-1/NO] and [+1/YES] keys to exclusive transmission/reception on or off.

Details: MIDI system exclusive data is transmitted by the SY35 when one of the voice transmit functions described below is used. The same type of data will also be automatically loaded into the SY35 memory when received from a second SY35 or other MIDI device, thus erasing previous data. This function can be turned "off" to prevent accidental erasure of the internal memory, or the memory of external equipment, do to mistaken data reception or transmission.

ALL V/M TRANSMIT

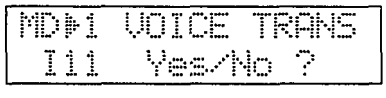
Summary: Initiates MIDI bulk transmission of all voice and multi-play data.

Settings: None

Procedure: Use the [▷] key to move the cursor to the lower display line. "Are you sure?" will appear on the display. Press the [+1/YES] key to begin transmission, or the [-1/NO] key to cancel. "Transmitting!!" will appear on the display during transmission, and "»Completed!!«" will appear briefly when transmission has finished.

Details: This function is useful for transferring all the voice and multi-play data in the INTERNAL memory from one SY35 to another. If the MIDI OUT of the transmitting SY35 is connected to the MIDI IN of the receiving SY35 via a MIDI cable, the receiving unit will automatically receive and load the data as long as its internal memory protect function is turned "off" and EXCLUSIVE ON/OFF is turned "on." Another possibility is to transfer the data to a MIDI bulk data storage device for long-term storage.

1 VOICE TRANSMIT



Summary: Initiates bulk transmission of the data for a specified SY35 voice.

Settings: Source: I, **C,** P
Bank: 1 ... 8
Number: 1 ... 8

Procedure: Use the [◁] and [▷] cursor keys are used to move the cursor to the source, bank, or number parameter. Use the [-1/NO] and [+1/YES] keys to set the selected parameter as necessary. When the desired voice number has been selected, move the cursor to the Yes/No? parameter and press the [+1/YES] key to begin transmission. "Transmitting!!" will appear on the display during transmission, and "»Completed!!«" will appear briefly when transmission has finished.

Details: Like the ALL V/M TRANSMIT function described above, the 1 VOICE TRANSMIT function is ideal for transferring voice from one SY35 to another, or to a MIDI bulk storage device for long-term storage.
In this display the source, bank and number parameters are shown in the standard SY35 voice number format. "P12," for example, is preset bank 1, number 2; "I35" is internal bank 3, number 5, etc.

APPENDIX

VOICE LIST

Preset Voice List

No.	Voice Name	Wave	Effect	Ct	Comment
11	AP:Rock (Rock)	000 Piano 071 Vibes2	Dly&Rev2	MW	Basic rock piano
12	AP:Clsic (Classic)	000 Piano 002 E.Piano3	Rev Hall	MW	Standard classical piano
13	AP*Chors (Chorus)	000 Piano x2 005 E.Piano6x2	Rev Hall		A chorused piano
14	AP:HTonk (HonkyTonk)	000 Piano 057 Bass 4	Dly&Rev2	MW	Gin joint honky-tonk piano
15	AP:Soft (Soft)	000 Piano 002 E.Piano3	Dly&Rev2	MW	Mild piano, tone changes with velocity.
16	AP*Pf&St (PF&Strings)	000 Piano 085 Str.Body 002 E.Piano3 064 Sir 2	Rev Hall		Acoustic piano with orchestral strings
17	AP:Blend (Blend)	000 Piano 073 Vibes4	Rev Hall		Blended acoustic and electric pianos
18	AP*Bell (Bell)	000 Piano 001 E. Piano 079 Bells 3 070 Vibes 1	Rev Hall		Acoustic piano with bell attack
21	EP*Tine (Tine)	001 E.Pianox2 070 Vibes 1x2	Rev Hall		DX-like electric piano
22	EP:Light (Light)	001 E.Piano 000 E.Piano1	Rev Club	MW	Electric piano with light metal attack
23	EP:Old (Old)	001 E.Piano 002 E.Piano3	Rev Hall	MW	Electric piano from the '70s
24	EP*Malet (Malet)	001 E.Pianox2 071 Vibes 2x2	Rev Hall	MW	Bright electric piano with mallet attack
25	KY*Clav1 (Clavi1)	002 Clavi 083 HornBody 057 Bass 4 242 Wave24-2	Dly&Rev2	MW	A standard clavinet
26	KY:Clav2 (Clavi2)	083 HornBody 057 Bass 4	Dly&Rev2	MW AT	Slightly different clavinet, aftertouch produces vibrato.
27	KY:Celst (Celesta)	004 Celesta 152 Sin 4'	Rev Hall	MW	Delicate celesta
28	KY:Hrpsi (Harpsichord)	003 Cembalo 044 Clavi 3	.Dly&Rev2	MW	The classic harpsichord
31	BR:Trmpt (Trumpet)	009 Trumpet 018 Brass 5	Rev Hall	MW AT	Trumpet with aftertouch vibrato
32	BR:Mute (MuteTrumpet)	010 MuteTrp 099 Sus. 2	Rev Hall	MW AT	Muted trumpet
33	BR:Tromb (Trombone)	011 Trombone 017 Brass 4	Rev Room	MW	Trombone, attack goes brassy when played hard.
34	BR:Flugl (FlugelHorn)	012 Flugel 018 Brass 5	Rev Hall	MW AT	Flugelhorn with aftertouch vibrato
35	BR:FrHrn (FrenchHorn)	013 FrHorn 020 Brass 7	Rev Hall	MW AT	French horn with aftertouch vibrato
36	BR*Sect1 (Section1)	014 BrasEnsx2 016 Brass 3 017 Brass 4	Rev Club		Bright pops brass section
37	BR*Sect2 (Section2)	019 Sax 014 BrasEns 038 Reed 3 016 Brass 3	Rev Club	MW AT	Low brass section with sax

: = 2 elements, * = 4 elements

Ct (Controller) MW = Modulation Wheel effective
AT = Aftertouch effective

No.	Voice Name	Wave	Effect	Ct	Comment
38	BR*-Fanfr (Fanfare)	011 Trombone x2 017 Brass 4 016 Brass 3	Rev Hall	MW AT	Classic fanfare brass
41	ST*Arco1 (Arco1)	038 Stringsx2 155 Saw 1x2	Rev Hall		Full orchestral strings
42	ST:Arco2 (Arco2)	039 Vn.Ens. 063 Str 1	Rev Room		Chamber strings
43	ST.Cello (Cello)	040 Cello 065 Str 3	Rev Room	MW AT	A cello, good played stacatto or with aftertouch.
44	ST-*SlwAt (SlowAtack)	038 Strings 039 Vn.Ens 068 Str 6x2	Rev Hall	MW AT	Slow attack strings, level changes with aftertouch.
45	ST*Pizz (Pizzicato)	041 Pizzx2 052 Guitar 7x2	Rev Hall	MW	Pizzicato strings
46	ST*Treml (Tremolo)	039 Vn.Ens.x2 156 Saw 2x2	Rev Hall		Tremolo strings
47	ST*OrchB (OrchestraBrass)	038 Stringsx2 027 Brass 14 023 Brass 10	Rev Hall		Orchestral strings, brass appear when played hard.
48	ST*OrcnS (OrchestraStrings)	038 Stringsx2 127 Decay 3x2	Rev Hall		Orchestral strings
51	BA:Wood (Wood)	028 Wood B 1 055 Bass 2	Rev Room	MW AT	Wood bass
52	BA:Frtls (Fretless)	035 Fretless 055 Bass 2	Rev Hall	MW AT	Fretless bass
53	BA*Slap (Slap)	031 E.Bass 2 054 TumbStr 006 E.Organ1 043 Clavi 2	Rev Hall	MW	Slapped bass, thumps when played hard.
54	BA:Fingr (Finger)	030 E.Bass 1 055 Bass 2	Rev Plate	MW	Fingered electric bass
55	BA:Pick (Pick)	031 E.Bass 2 056 Bass 3	Rev Club	MW	Picked electric bass
56	BA:Synth (Synth)	104 Saw 3 062 Bass 9	Delay 1	MW AT	Synth bass
57	BA:Tchno (Techno)	037 SynBass2 138 Decay 14	Delay 1	MW AT	Technorock-oriented synth bass
58	BA:Groov (Groove)	1 1 1 Pulse 2 061 Bass 8	Gate Rev	MW AT	Fat synth bass with resonance
61	WN:Sax (Sax)	019 Sax 038 Reed 3	Rev Room	MW AT	A bright alto sax
62	WN:Flute (Flute)	016 Flute 028 Wood 1	Rev Hall	MW AT	Flute with aftertouch vibrato
63	WN:Clari (Clarinet)	017 Clarinet 032 Wood 5	Rev Hall	MW AT	Clarinet
64	WN:Oboe (Oboe)	018 Oboe 037 Reed 2	Rev Hall	MW AT	Oboe
65	WN*PanFl (PanFlute)	066 NoisPad2 070 Bottle 034 Wood 7x2	Rev Hall		Pan flute
66	WN*SaxEm (SaxEnsemble)	019 Saxx2 038 Reed 3x2	Rev Club	MW AT	Saxophone ensemble
67	WN*Ensmb (Wind Ensemble)	016 Flute 017 Clarinet 110 Sus. 13 108 Sus. 11	Early Ref	MW AT	Wind ensemble, tone varies with velocity.
68	WN*Orch (Orchestra)	016 Flute 085 Str.Body 121 Move 4 108 Sus. 11	Rev Hall		An orchestra, featuring the wind instruments

: = 2 elements. = 4 elements

Ct (Controller) MW = Modulation Wheel effective
AT = Aftertouch effective

No.	Voice Name	Wave	Effect	Ct	Comment
71	PL:Gypsy (Gypsy)	020 Gut 179 Wave3-2	Rev Hail	MW	Nylon guitar
72	PL:Folk (Folk)	021 Steel 044 Clavi 3	Rev Hall	MW	Steel-string folk guitar
73	PL*Wide (Wide)	021 Steelx2 048 Guitar 3x2	Rev Room		12-string guitar
74	PL*Mute (Mute)	026 Pluck 1 024 MuteGtr 052 Guitar 7 050 Guitar 5	Dly&Rev2	MW	Muted guitar, tone changes with velocity.
75	PL:Rock (Rock)	026 Pluck 1 048 Guitar 3	Dist&Rev	MW	Rock guitar
76	PL*Dist (Distortion)	022 E.Gtr 1 098 Digital2 157 Square 193 Wave8-1	Dist&Rev	MW	Distorted guitar, vectoring produces feedback
77	PL*Chrng (Charango)	021 Steel 048 Guitar 3	Rev Hall	MW	Charango
78	PL:Sitar (Sitar)	025 Sitar 053 Guitar 8	Rev Room		Sitar
81	CH*Pure (Pure)	067 NoisPad3 043 Choir 130 Decay 6x2	Rev Hall		Choir with a clear high tone
82	CH*Itopy (Itopy)	044 Itopiax2 030 Wood 3x2	Rev Hall		Itopia-style synth chorus
83	CH*Uhh-- (Uhh)	043 Choirx2 125 Decay 1 x2	Rev Room		Chorus with a strong attack
84	CH*Angel (Angel)	065 NoisPad1x2 028 Wood 1 x2	Rev Hall		Heavenly female synth chorus
85	CH*Bell (Bell)	043 Choirx2 079 Bells 3x2	Rev Hall	AT	Chorus with a bell attack
86	CH*Snow (Snow)	066 NoisPad2 044 Itopia 131 Decay 7x2	Rev Hall		A cold choir
87	CH*Vcodr (Vocorder)	045 Choir Pax2 109 Sus. 12x2	Dly&Rev2		Vocoder-like chorus
88	CH*Marin (Marin)	043 Choirx2 028 Wood 1 152 Sin 4'	Rev Hall		Mysterious choir sound

: = 2 elements, a = 4 elements

Ct (Controller) MW = Modulation Wheel effective
AT = Aftertouch effective

APPENDIX

Internal Voice List

No.	VoiceName	Wave	Effect	Ct	Comment
11	SP*Warm (Warm)	055 SynPadx2 111 Sus. 14x2	Rev Hall		Warm synth pad on a grand scale
12	SP*Resnc (Resonance)	102 Saw 1 081 Tp.Body 061 Bass 8x2	Rev Room	MW AT	Resonant synth pad with aftertouch vibrato
13	SP*Full! (Full)	042 Syn Strx2 063 Str 1x2	Rev Hall		Analog-like fat synth sound
14	SP*Bell (Bell)	059 Bell Mix 055 SynPad 104 Sus. 7x2	Rev Hall	MW AT	Synth pad with metal attack and aftertouch vibrato
15	SP*Filtr (Filter)	060 Sweepx2 121 Move 4x2	Rev Hall		Synth pad with filter EG tone change
16	SP*Deep (Deep)	046 Vibesx2 078 Bells 2x2	Rev Hall		Deep sea synth, best played low.
17	SP*Fog (Fog)	067 NoisPad3x2 101 Sus. 4x2	Rev Hall		Pad with a touch of London fog
18	SP*Dyna (Dynamic)	044 Itopia 066 NoisPad 2 111 Sus. 14 122 Move 5	Pan Ref		The SY35's theme sound, dynamic and big
21	SC*Dgcrd (Digichord)	101 Digital5x2 045 Clavi 4x2	Rev Hall		Digichord, a buzzy low-range comping synth
22	SC*EIgnt (Elegant)	059 BellMixx2 106 Sus. 9x2	Rev Hall		Soft comping synth, sizzles when held.
23	SC*sFz (Sforzando)	015 SynBrassx2 121 Move 4x2	Dly&Rev 2	MW	Comping with filter EG and distinctive attack
24	SC*Coin (Coin)	068 Coinx2 073 Vibes4x2	Delay 3		Bell-like comping synth
25	SC*Brash (Brash)	015 SynBrassx2 026 Brass 13 017 Brass 4	Rev Club		Comping synth with brass attack
26	SC:Water (Water)	056 Harmonic 090 Metal 6	Rev Hall		Wet synth with water drops
27	SC*Sand (Sand)	067 NoisPad3x2 044 Clavi 3x2	Gate Rev		Comping synth, good for sequencing.
28	SC*Reso (Resonance)	058 SynLoad2x2 140 Decay 16x2	Rev Club	MW AT	Resonant synth with aftertouch vibrato
31	SL*Saw (Saw)	102 Saw 1x2 091 Lead 1x2	Delay 3	MW AT	Typical sawtooth lead with aftertouch vibrato
32	SL:Squar (Square)	107 Square 2 093 Lead 3	Rev Plate	MW AT	Typical square wave lead with aftertouch vibrato
33	SL*Sync (Sync)	058 SynLead2 116 Tri 061 Bass 8x2	Rev Hall	MW AT	Lead synth with unique attack and aftertouch vibrato
34	SL*Power (Power)	067 NoisPad3x2 098 Sus. 1x2	Delay 3	MW AT	Buzzy, powerful lead synth with aftertouch vibrato
35	SL*Whstl (Whistle)	066 NoisPad2x2 073 Vibes4x2	Rev Plate		The sound of two lips whistling
36	SL*2VCO (2VCO)	108 Square 3 095 Str wv 2 135 Decay 11 124 Move 7	Delay 3	MW AT	Lead synth with noisy attack and aftertouch vibrato
37	SL*Fat (Fat)	102 Saw 1x2 095 Lead 5x2	Rev Hall	MW AT	Powerful fat lead synth with aftertouch vibrato
38	SL*AnaSy (AnalogSynth)	057 SynLead1x2 096 Lead 6x2	Rev Hall	MW AT	Analog wind synth lead with aftertouch vibrato
41	OR:Tango (Tango)	008 Bandneon 038 Reed 3	Rev Room		Bandneon

: = 2 elements, a = 4 elements

Ct (Controller) MW = Modulation Wheel effective
AT = Aftertouch effective

No.	Voice Name	Wave	Effect	Ct	Comment
42	OR:Paris (Paris)	008 Bandneon 094 Lead 4	Rev Room		An accordion you might hear at a Paris sidewalk cafe
43	OR*Rock1 (Rock1)	006 E.Organ1 007 E.0rgan2 006'E.Organ1 007 E.0rgan2	Pan Ref	MW AT	Heavy rock organ
44	OR*Rock2 (Rock2)	006 E.Organ1 x2 008 E.Organ3 006 E.Organ1	Rev Room	MW AT	Slightly brighter rock organ
45	OR*Rock3 (Rock3)	007 E.0rgan2x2 153 Sin2 2/3x2	Rev Room	MW	Rock organ with sampled rotary speaker sound
46	OR*Cat (Cat)	090 EP wv 117 Sin8' 153 Sin2 2/3 152 Sin 4'	Rev Room		Jazz organ with a percussive attack
47	OR*Big (Big)	005 P.0rganx2 011 E.0rgan6 250 Wave27-1	Rev Hall	MW	A huge cathedral pipe organ
48	OR*Combo (Combo)	117 Sin8' 090 EP wv 037 Reed 2 153 Sin2 2/3	Rev Room	MW	Combo organ
51	BR*Punch (Punch)	015 SynBrassx2 062 Bass 9x2	Gate Rev	MW AT	Synth brass with a punched attack and aftertouch vibrato
52	BR*Power (Power)	057 SynLead1 015 SynBrass 014 Brass 1x2	Rev Hall		Powerful synth brass
53	BR*Fat (Fat)	015 SynBrassx2 022 Brass 9x2	Rev Club	MW AT	Fat synth brass with aftertouch vibrato
54	BR:Lite (Light)	104 Saw 3 096 Lead 6	Rev Club		Bright synth brass
55	ST*Modm (Modern)	042 Syn Strx2 063 Sir 1x2	Rev Hall		Modern-sounding synth strings
56	ST*Soft (Soft)	038 Stringsx2 091 Lead 1x2	Rev Hall	«	Very basic synth strigns
57	ST*Mild (Mild)	039 Vn.Ens.x2 067 Str 5x2	Rev Hall		Mild synth strings
58	ST:Lite (Light)	085 Str.Body 155 Saw 1	Rev Hall		Bright synth strings
61	SE*Hit (Hit)	064 PopsHit 069 Crash 255 Wave30x2	Rev Hall		Pops hit with crash cymbal
62	SE*Start (Start)	044 Itopia 060 Sweep 150 Sin 16'x2	Rev Metal		Sweep attack followed by an uncanny pitch change
63	SE*Who? (Who)	060 Sweep 059 Bell Mix 144 SFX 2 121 Move 4	Rev Hall	MW	A bell sound appears when held.
64	SE*Open (Open)	068 Coinx2 120 Move 3 118 Move 1	Delay 3		Play a lot of keys while holding the sustain pedal.
65	SE*Emgsy (Emergensy)	055 SynPad 056 Harmonic 156 Saw 2 145 SFX3	Dly&Revl		Emergency! A crisis is approaching ...
66	SE*Elect (Electric)	100 Digital4 098 Digital2 152 Sin 4' 162 Digi 2	Rev Room	MW	The sound of old-fashioned electric machines
67	SE*GoUp! (GoUp)	121 SEQ3 125 SEQ 7 254 Wave29 121 Move 4	Rev Hall		Pitch and tone vary when held.
68	SE*and>? (and>?)	056 Harmonic 071 BotleOpn 123 Move 6 145 SFX3	Rev Hall		The final sound effect: hold it for a long time.
71	ME*Wide! (Wide)	066 NoisPad2x2 124 Move 7x2	Rev Hall		Grand scale and a distinctive sizzle
72	ME*Drama (Drama)	055 SynPad 121 SEQ3 145 SFX 3 091 Lead1	Rev Hall	MW	Dramatic sound, tone changes often when held.

: = 2 elements, * = 4 elements

Ct (Controller) — MW = Modulation Wheel effective
AT = Aftertouch effective

No.	Voice Name	Wave	Effect	Ct	Comment
73	ME*SlwSg (SlowSong)	046 Vibes 083 HornBody 073 Vibes 4 102 Sus. 5	Rev Club		Typical vector effect sound
74	ME*Grand (Grand)	048 Bells 122 SEQ 4 121 Move 4 122 Move 5	Rev Hall	MW AT	Large-scale sound with a bell attack
75	ME*Typhn (Typhoon)	059 Bell Mix 044 Itopia 102 Sus. 5 144 SFX2	Rev Hall		Mysterious chorus sound, broadens when held.
76	ME*Tzone (Tzone)	062 Noise 1x2 154 Sin 2" 153 Sin2 2/3	Rev Hall		A mysterious, somehow sorrowful sound
77	ME*Space (Space)	065 NoisPad1x2 122 Move 5x2	Rev Hall		Outer space synth pad
78	ME*Memry (Memory)	119 SEQ1 121 SEQ 3 121 Move 4 112 Sus. 15	Rev Hall		Two wave sequences appear.
81	PC:Vibe (Vibraphone)	046 Vibes 151 Sin 8'	Rev Club		A cool vibraphone
82	PC*Marim (Marimba)	047 Marimbax2 075 Marimba2x2	Rev Hall		Marimba
83	PC:M.Box (MusicBox)	046 Vibes 088 Metal 4	Rev Room	MW	An old-time music box
84	PC:Timp (Timpani)	049 Timpani 184 Wave5-1	Dly&Rev2	MW	Timpani
85	PC*Batl (Battle)	080 Slamx2 000 E.Piano1x2	Rev Hall		TNT below B1, cannon around C3, machine guns at E4
86	PC*Human (Human)	087 Reversel 061 HumanAtk 151 Sin 8' 152 Sin 4'	Rev Hall		Human voice attack and its reverse, combined
87	DR*Auto (Auto)	124 SEQ 6 051 E.Tom 160 Noise 2 151 Sin 8'	Rev Club		Drum pattern below C2, electric toms above G3
88	DR:Kit (Kit)	127 Drum Set	Rev Plate		Drum set voice

: = 2 elements, * = 4 elements

Ct (Controller) MW = Modulation Wheel effective
AT = Aftertouch effective

Sound Category List

AP= Acoustic Piano	WN =Wind	OR= Organ
EP= Electric Piano	PL = Plucked	SE= Sound Effect
KY= Keyboard	CH = Chorus	ME= Musical Effect
BR= Brass	SP = Synth Pad	PC= Percussive
ST= Strings	SC = Synth Comp	DR= Drums
BA= Bass	SL = Synth Lead	

Voice Number I88 DR:Kit: Drum-set Voice

Key	Wave Name
C1	BD1
C♯1	Analog HH Close
D1	SD1
D♯1	Analog HH Open
E1	E.Tom 1
F1	E.Tom 2
F♯1	E.Tom 3
G1	E.Tom 4
G♯1	BD2
A1	BD3
A♯1	CrossStick
B1	Tom 1
C2	Tom 2
C♯2	SD 2
D2	Tom 3
D♯2	Rimshot
E2	SD 3
F2	Tom 4
F♯2	Claps
G2	Cowbell 1
G♯2	Shaker
A2	HH Close
A♯2	Gong
B2	HH Open

Key	Wave Name
C3	CrashCymbal
C♯3	Splash
D3	Cup
D♯3	Ride
E3	Low Conga
F3	High Conga
F♯3	Mute Conga
G3	HumanAtackLow
G♯3	HumanAtackHigh
A3	LowTimbale
A♯3	HighTimbale
B3	Tambourine
C4	FingerSnap
C♯4	Claves
D4	Low Agogo
D♯4	High Agogo
E4	Low Cuica
F4	High Cuica
F♯4	LowWhistle
G4	HighWhistle
G♯4	Bamboo
A4	Bottle
A♯4	Cowbell 2
B4	MetalCrash

Key	Wave Name
C5	SD4
C♯5	LowScrateh
D5	SD5
D♯5	HighScratch
E5	ReverseCymbal
F5	Slam1
F♯5	Coin
G5	Slam 2
G♯5	BottleOpen
A5	LowTimpani
A♯5	Cracker
B5	HighTimpani
C6	MetalHit

MULTI LIST

PRESET MULTI LIST

No.	MULTI Name	Type	Voice Numbers								Comments
11	Orchstra	Layer	P47	P41							Big orchestra.
12	BigBand	Layer	P36	P37							Big-band brass section.
13	SuperClv	Layer	P25	P26							Layered clavi sound.
14	PianoStr	Layer	P15	P42							Layered piano and strings.
15	VoiceBs	Layer	P52	P87							Layered bass and human voice.
16	FullBrs	Layer	P35	P38							Powerful brass.
17	PanLead	Layer	P63	P63	P65	P65					Pan-flute type lead voice.
18	Str&Cho	Layer	P42	P85							Layered strings and choir.
21	DistLead	Layer	P76	P76	P76	P76	P76	P76	P76	P76	Distortion lead voice.
22	Wb/Piano	Split	P51	P12							Wood bass and piano split.
23	B/BrsSec	Split	P54	P37							Electric bass and brass split.
24	Celo/Flt	Split	P43	P62							Cello and flute split.
25	<Pop>	MIDI Multi	P12	P22	P74	P36	P61	P42	P54	I88	Pop music ensemble.
26	<Rock>	MIDI Multi	P11	143	P74	P37	P61	P41	P55	I88	Rock group.
27	<Jazz>	MIDI Multi	P15	146	P71	P32	P61	P42	P51	I88	Jazz ensemble.
28	<Demo>	MIDI Multi	P72	P42	P61	P58	P12	I35	I64	I88	SY35 demo multi.

INTERNAL MULTI LIST

No.	MULTI Name	Type	Voice Numbers								Comments
11	SyncLead	Layer	I33	I33	I33	I33					Fat "sync" lead.
12	SuperSaw	Layer	I31	I31	I31	I31	I31	I31	I31	I31	Extra-fat sawtooth lead.
13	BellPad	Layer	I11	I14							Filter sweep synth pad.
14	SunBeam	Layer	I22	I24							"Sunny" sound for backing.
15	WideDcy	Layer	I25	I27							Bright backing layer.
16	AnaPad1	Layer	I13	I51							Analog synth pad 1.
17	AnaPad2	Layer	I15	I23							Analog synth pad 2.
18	AnaPad3	Layer	I13	I55							Analog synth pad 3.
21	FatBrass	Layer	I51	I53							Fat analog synth brass.
22	HyuhPad	Layer	I71	I76							Synth pad with wind effect.
23	Reggae	Layer	I46	I82							Ideal for Reggae music.
24	Mikado	Layer	I67	I18							Musical effect.
25	Prologue	Layer	I62	I18							Musical effect.
26	Epilogue	Layer	I64	I72							Musical effect.
27	SolidSet	Split	I37	I31							Bass and synth lead split.
28	RytmSec.	Split	I87	I36							Auto drum and bass pattern.

PRESET Multi setups 25 through 28 (labelled "MIDI" in the above list) are designed for use with an external MIDI sequencer. Each has 8 voices assigned to different MIDI channels as shown in the chart below.

PRESET MULTI MIDI CHANNEL ASSIGNMENTS

No.	MULTIName	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6	Ch7	Ch8	Ch16
25	<Pop>	P12	P22	P74	P36	P61	P42	P54	—	I88
26	<Rock>	P11	I43	P74	P37	P61	P41	P55	—	I88
27	<Jazz>	P15	I46	P71	P32	P61	P42	P51	—	I88
28	<Demo>	P72	P42	P61	P58	P12	I35	I64	I88	—

WAVEFORM LIST

AWM WAVEFORM LIST

Category	No.	Name
Piano	0	Piano
	1	E.Piano
	2	Clavi
	3	Cembalo
	4	Celesta
Organ	5	P.Organ
	6	E.Organ1
	7	E.Organ2
	8	Bandneon
Brass	9	Trumpet
	10	Mute Trp
	11	Trombone
	12	Flugel
	13	Fr Horn
	14	BrasEns
	15	SynBrass
Wood	16	Flute
	17	Clarinet
	18	Oboe
	19	Sax
Gtr	20	Gut
	21	Steel
	22	E.Gtr 1
	23	E.Gtr 2
	24	Mute Gtr
	25	Sitar
	26	Pluck 1
	27	Pluck 2
Bass	28	Wood B 1
	29	Wood B 2
	30	E.Bass 1
	31	E.Bass 2
Bass	32	E.Bass 3
	33	E.Bass 4
	34	Slap
	35	Fretless
	36	SynBass1
	37	SynBass2
Str.	38	Strings
	39	Vn.Ens.
	40	Cello
	41	Pizz.
	42	Syn Str
Vocal	43	Choir
	44	Itopia
	45	Choir pa
Perc.	46	Vibes
	47	Marimba
	48	Bells
	49	Timpani
	50	Tom
	51	E.Tom
	52	Cuica
	53	Whistle
	54	ThumbStr
Synth	55	SynPad
	56	Harmonic
	57	SynLead1
	58	SynLead2
	59	Bell Mix
	60	Sweep
	61	HumanAtk
	62	Noise1
	63	Noise 2
Synth	64	PopsHit
SFX	65	NoisPad1
	66	NoisPad2
	67	NoisPad3
	68	Coin
	69	Crash
	70	Bottle
	71	BotleOpn
	72	Cracker
	73	Scratch
Hits	74	Metal 1
	75	Metal 2
	76	Metal 3
	77	Metal 4
	78	Wood
	79	Bamboo
	80	Slam
Tran.	81	Tp.Body
	82	Tb.Body
	83	HornBody
	84	Fl. Body
	85	Str.Body
	86	AirBlown
	87	Reverse1
	88	Reverse2
	89	Reverse3
OSC	90	EP wv
	91	Organ wv
	92	M.Tp wv
	93	Gtr wv
	94	Str wv 1
	95	Str wv 2
OSC	96	Pad wv
	97	Digital1
	98	Digital2
	99	Digital3
	100	Digital4
	101	Digitals
	102	Saw1
	103	Saw 2
	104	Saw 3
	105	Saw 4
	106	Square 1
	107	Square 2
	108	Square 3
	109	Square 4
	110	Pulse 1
	111	Pulse 2
	112	Pulse 3
	113	Pulse 4
	114	Pulse 5
	115	Pulse 6
	116	Tri
	117	Sin8'
	118	Sin8'+4'
SEQ	119	SEQ1
	120	SEQ 2
	121	SEQ 3
	122	SEQ 4
	123	SEQ 5
	124	SEQ 6
	125	SEQ 7
	126	SEQ 8
Drum	127	Drum set

AWM Waveform Category Descriptions

Piano	Piano, clavi, and other decay-type keyboard sounds.
Organ	Pipe, electric and reed organs.
Brass	Acoustic and synthesized brass sounds.
Wood	Flute, sax and other woodwind sounds.
Gtr	Acoustic and electric guitars.
Bass	Acoustic, electric, and synth bass.
Str.	Violin ensemble and other strings.
Vocal	Choir and other vocal-type sounds.
Perc.	Vibes, timpani, etc.
Synth	A range of synth sounds (including noise).
SFX	Special effects - crash, bottle, etc.
Hits	Struck metal and woods.
Tran.	Transient attack waves and some reverse sounds.
OSC	Standard synth waveforms and the basic waveforms from some actual instruments.
SEQ	Sequences of sampled sounds.
Drum	Drum set waves.

FM WAVEFORM LIST

Category	No.	Name
Piano	0	E.Piano1
	1	E.Piano2
	2	E.Piano3
	3	E.Piano4
	4	E.Piano5
	5	E.Piano6
Organ	6	E.Organ1
	7	E.0rgan2
	8	E.0rgan3
	9	E.0rgan4
	10	E.0rgan5
	11	E.0rgan6
	12	E.0rgan7
	13	E.Organ8
Brass	14	Brass 1
	15	Brass 2
	16	Brass 3
	17	Brass 4
	18	Brass 5
	19	Brass 6
	20	Brass 7
	21	Brass 8
	22	Brass 9
	23	Brass 10
	24	Brass 11
	25	Brass 12
	26	Brass 13
	27	Brass 14
Wood	28	Wood1
	29	Wood 2
	30	Wood 3
	31	Wood 4
	32	Wood 5
	33	Wood 6
	34	Wood 7
	35	Wood 8
Reed	36	Reed1
	37	Reed 2
	38	Reed 3
	39	Reed 4
	40	Reed 5
	41	Reed 6
Pluck	42	Clavi 1
	43	Clavi 2
	44	Clavi 3
	45	Clavi 4
	46	Guitar 1
	47	Guitar 2
	48	Guitar 3
Pluck	49	Guitar 4
	50	Guitar 5
	51	Guitar 6
	52	Guitar 7
	53	Guitar 8
Bass.	54	Bass1
	55	Bass 2
	56	Bass 3
	57	Bass 4
	58	Bass 5
	59	Bass 6
	60	Bass 7
	61	Bass 8
	62	Bass 9
Str.	63	Str 1
	64	Str 2
	65	Str 3
	66	Str 4
	67	Str 5
	68	Str 6
	69	Str 7
Perc.	70	Vibes 1
	71	Vibes 2
	72	Vibes 3
	73	Vibes 4
	74	Marimba1
	75	Marimba2
	76	Marimba3
	77	Bells 1
	78	Bells 2
	73	Bells 3
	80	Bells 4
	81	Bells 5
	82	Bells 6
	83	Bells 7
	84	Bells 8
	85	Metal 1
	86	Metal 2
	87	Metal 3
	88	Metal 4
	89	Metal 5
	90	Metal 6
Syn.S	91	Lead1
	92	Lead2
	93	Lead 3
	94	Lead 4
	95	Lead 5
	96	Lead 6
	97	Lead 7
Syn.S	98	Sus.1
	99	Sus.2
	100	Sus.3
	101	Sus.4
	102	Sus.5
	103	Sus. 6
	104	Sus.7
	105	Sus. 8
	106	Sus. 9
	107	Sus.10
	108	Sus.11
	109	Sus.12
	110	Sus.13
	111	Sus.14
	112	Sus.15
	113	Attack 1
	114	Attack 2
	115	Attack 3
	116	Attack 4
	117	Attack 5
Syn.M	118	Move 1
	119	Move 2
	120	Move 3
	121	Move 4
	122	Move 5
	123	Move 6
	124	Move 7
Syn.D	125	Decay 1
	126	Decay 2
	127	Decay 3
	128	Decay 4
	129	Decay 5
	130	Decay 6
	131	Decay 7
	132	Decay 8
	133	Decay 9
	134	Decay 10
	135	Decay 11
	136	Decay 12
	137	Decay 13
	138	Decay 14
	139	Decay 15
	140	Decay 16
	141	Decay 17
	142	Decay 18
SFX	143	SFX1
	144	SFX 2
	145	SFX 3
	146	SFX 4
SFX	147	SFX 5
	148	SFX 6
	149	SFX 7
OSC1	150	Sin 16
	151	Sin 8
	152	Sin 4
	153	Sin2 2/3
	154	Sin2'
	155	Saw 1
	156	Saw 2
	157	Square
	158	LFOnoise
	159	Noise 1
	160	Noise 2
	161	Digi1
	162	Digi 2
	163	Digi 3
	164	Digi 4
	165	Digi 5
	166	Digi 6
	167	Digi 7
	168	Digi 8
	169	Digi 9
	170	Digi10
	171	Digi 11
OSC2	172	wave1-1
	173	wave1-2
	174	wave1-3
	175	wave2-1
	176	wave2-2
	177	wave2-3
	220	wave17-1
	221	wave 17-2
	222	wave17-3
OSC3	223	wave18-1
	224	wave18-2
	225	wave18-3
	250	wave27-1
	251	wave27-2
	252	wave27-3
	253	wave28
	254	wave29
	255	wave30

FM Voice Category Descriptions

Piano	Electric pianos.
Organ	Electric organs.
Brass	A variety of brass sounds.
Wood	Woodwind instrument sounds.
Reed	Sax, oboe and other reed instruments.
Pluck	Guitar, clavi, and other plucked instrument sounds.
Bass	Bass sounds.
Str.	Strings.
Perc.	Vibes, marimba, bells and other percussion sounds.
Syn.S	Sustained lead synth sounds.
Syn.M	Synth sounds that vary with time.
Syn.D	Decay-type synth sounds.
SFX	A range of sound-effect type synth sounds.
OSC1	Sine, sawtooth, and other standard synth waveforms.
OSC2	Basic FM timbres, group 1.
OSC3	Basic FM timbres, group 2.

If the TYPE parameter in the ELEMENT ENVELOPE edit mode (page 27) is set to PRESET, selecting a WAVE TYPE also selects the corresponding preset envelope. If a different envelope type is selected, the preset envelope is *not* selected together with the wave.

SPECIFICATIONS

Keyboard: 61 keys, initial and after-touch response.

Tone Generator Systems: AWM (Advanced Wave Memory) & FM (Frequency Modulation).

Internal Memory:
Wave ROM; 128 preset AWM & 256 preset FM waveforms.
Preset ROM; 64 preset voices.
Internal RAM; 64 user voices.

External Memory: Voice & Multi data; MCD64 or MCD32 memory cards + write & read.

Displays:
16-character x 2-line backlit LCD.
7-segment 2-digit LED display.

Controls: VOLUME, VECTOR CONTROL, PITCH BEND, MODULATION.

Key & Switches: POWER; VECTOR PLAY ON/OFF, LEVEL/DETUNE; CURSOR ◁ and ▷; MODE VOICE and MULTI; -1/NO and +1/YES; EDIT/ UTILITY/COMPARE; STORE; INTERNAL, CARD, PRESET; BANK 1-8 (VOICE COMMON and VECTOR; ELEMENT TONE and ENVELOPE; MULTI; UTILITY RECALL, SETUP and MIDI); NUMBER/ MULTI PART SELECT 1-8 (ELEMENT SELECT A-D, ELEMENT ON/OFF A-D); DEMO.

Connectors: DC 10V-12V IN; PHONES; OUTPUT R & L/MONO, FOOT VOLUME, SUSTAIN.

MIDI Connectors:
IN, **OUT, THRU.**

Power requirements:
UL, CSA: 120V
Europe, WG, Australia, BS: 220-240V

Power consumption:
7W (with PA-3 AC Adaptor)

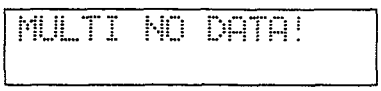
Dimensions (W x D x H):
976 x 285 x 93 mm (37-7/8" x 11-1/4" x 3-5/8")

Weight: 6.8 kg (14 lbs 16 oz)

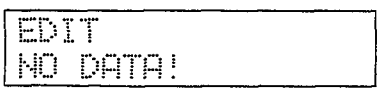
ERROR MESSAGES

Things do go wrong from time to time, and people do make mistakes. When an error occurs, the SY35 will usually display a message that describes the type of error so you can easily take steps to rectify the problem. The following are quick summaries of the SY35 error displays.

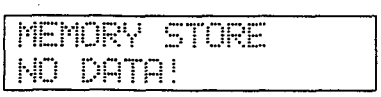
VOICE PLAY (XXX=MEMORY, BANK, NUMBER)



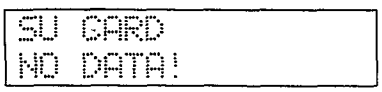
MULTI PLAY



EDIT

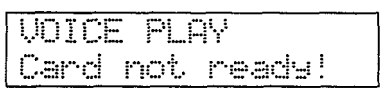


STORE

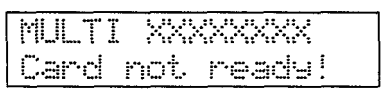


SETUP (CARD LOAD)

The currently loaded memory contains no data or data that is not recognizable by the SY35.

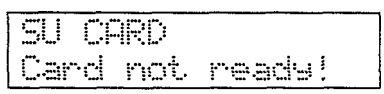


VOICE PLAY



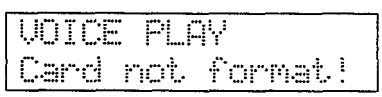
MULTI PLAY (XXXXXXXX= MULTI NAME)

STORE

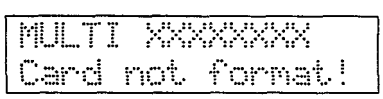


SETUP (CARD SAVE/LOAD/ FORMAT)

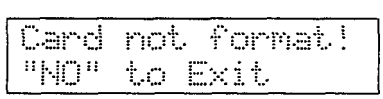
You have attempted to execute a memory card-related operation but no card is inserted in the CARD slot.



VOICE PLAY



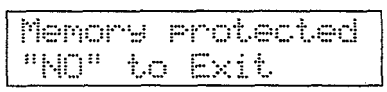
MULTI PLAY (XXXXXXXX= MULTI NAME)



STORE

SETUP (CARD SAVE)

The currently loaded memory card is not properly formatted for use with the SY35.



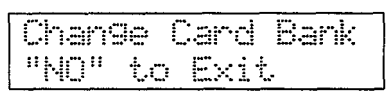
STORE

SETUP (CARD SAVE/LOAD/ FORMAT)

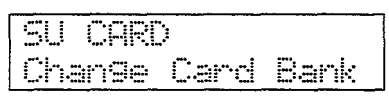
You have attempted to execute an operation that will after the card or internal memory, but the v=card and/or internal memory protect function is turned ON.

VOICE PLAY

MULTI PLAY (XXXXXXXX= MULTI NAME)

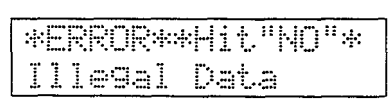


STORE



SETUP (SAVE/LOAD/ FORMAT)

An MCD32 type memory card is loaded but card bank 2 is selected (MCD32 cards only have a single bank — BANK 1 — so it is necessary to select bank 1 if this display appears).



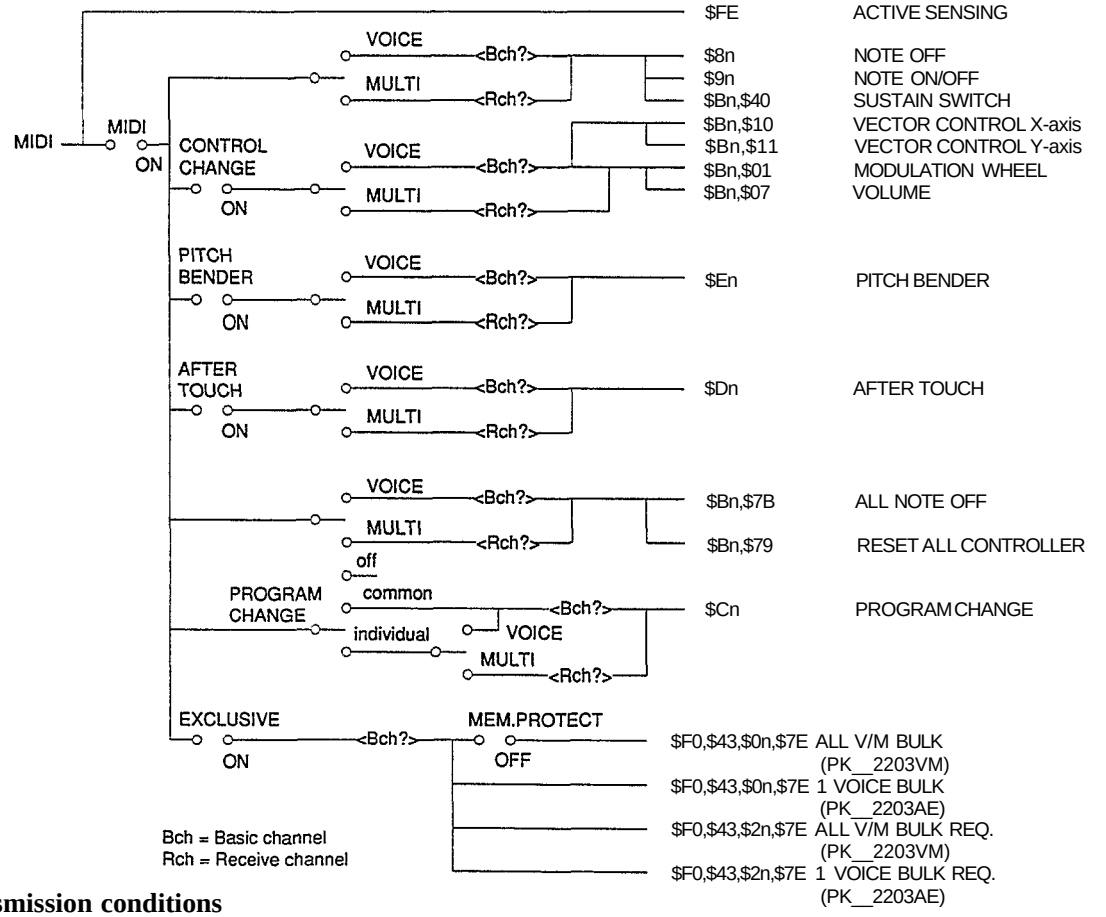
Unrecognizable MIDI bulk data has been received by the SY35.

INDEX

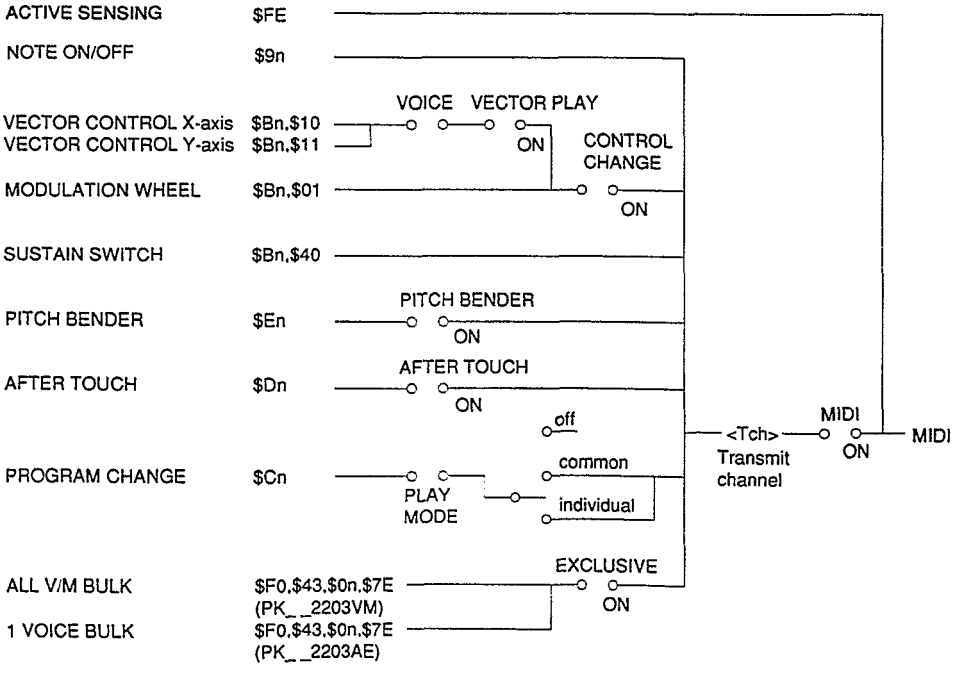
MIDI DATA FORMAT

DATA FORMAT

(1) MIDI reception conditions



(2) MIDI transmission conditions



(3) Channel Messages

3.1 Note On/Off

Transmission:
- Note range = C1($24)~C6($60)
- Velocity range = 0~$7F (0: note off)
- $9n. note, $00 for note off and $8n is not transmitted.

Reception:
- Note range = C-2($00)~G8($7F)
- Velocity range = 0~$7F

3.2 Control Change

MODULATION WHEEL and VECTOR CONTROL is possible to set transmission/reception on/off by the utility control change on/off. (SUSTAIN CONTROL is always or regardless of whether Control Change is on or off.)

Transmission:
- Output to MIDI through the transmit channel when the following controller is operated irrespective of the play, edit, etc. mode.

controller	code	output data range
MODULATION WHEEL	$Bn, $01, $vv	vv = 0~$7F
SUSTAIN SWITCH	$Bn, $40, $vv	off:vv=0, on:vv=$7F
VECTOR CONTROL X-axis Y-axis	 $Bn, $10, $vv $Bn, $11, $vv	 vv=0~$7F vv=0~$7F

- **VECTOR CONTROL** is transmitted only if the VECTOR PLAY ON/OFF switch on the panel is on.

Reception:
- The following parameters arc accepted by MIDI.

parameter	code	Description
MODULATION WHEEL	$Bn,$01,$vv	vv=0(WHEEL:MIN)~ $7F(WHEEL:MAX)
SUSTAIN SWITCH	$Bn,$40,$vv	vv=0-$3F:SUS OFF, vv=$40~$7F:SUS ON
VOLUME	$Bn,$07,$vv	
VECTOR CONTROL X-axis Y-axis	 $Bn,$10,$vv $Bn,$11,$vv	Depends on the panel [VECTOR PLAY ON/ OFF] and [LEVEL/ DETUNE] status.

3-3 Program Change

- It is possible to set transmission/reception on/off by the utility program change on/off.

Transmission:
- The voice and multi Nos. and the program change Nos. correspond to each other as shown below.

		NUMBER							
		1	2	3	4	5	6	7	8
VOICE	1	$00	$01	$02	$03	$04	$05	$06	$07
	2	$08	$09	$0A	$0B	$0C	$0D	$0E	$0F
	B 3	$10	$11	$12	$13	$14	$15	$16	$17
	A 4	$18	$19	$1A	$1B	$1C	$1D	$1E	$1F
	N 5	$20	$21	$22	$23	$24	$25	$26	$27
	K 6	$28	$29	$2A	$2B	$2C	$2D	$2E	$2F
	7	$30	$31	$32	$33	$34	$35	$36	$37
	8	$38	$39	$3A	$3B	$3C	$3D	$3E	$3F
MULTI	1	$40	$41	$42	$43	$44	$45	$46	$47
	2	$48	$49	$4A	$4B	$4C	$4D	$4E	$4F

Reception:
- The above program change Nos. are accepted. Other Nos. are ignored.

3.4 Pitch Bend

- It is possible to set transmission/reception on/off by the utility pitch bend on/off.

Transmission:
- Transmitted at 7-BIT resolution.

Reception:
- Operates by 7 BIT on the MSB side only. The LSB side is ignored.

3.5 After Touch

- It is possible to set transmission/reception on/off by the utility after touch on/off.

Channel mode message

Reception:
- With the following codes, receive is possible in each of the voice and multi modes and the corresponding channel process is performed.
  Not accepted if OMNI ON, however.
  The NOTE OFF process is restricted to the MIDI input NOTE only.
  ALL NOTE OFF $Bn, $7B, $00
  RESET ALL CONTROLLER $Bn, $79, $00

(4) System Common Message

- At statuses $F1~$F6. nothing is done.
- At status $F7, "END OF SYSTEM EXCLUSIVE".

(5) System Realtime Message

Transmission:
- $FE is transmitted about every 270 msec.

Reception:
- If no signal comes from MIDI for about 300 msec or more after once receiving $FE, the MIDI receive buffer is cleared and the MIDI KEY ON is turned OFF.

(6) System Exclusive Messages

4.1 1 VOICE BULK DUMP

Transmission:
The voice data set by input is transmitted.

Reception:
The received data is saved in the voice edit buffer.

Format:

```
$F0   %11110000   Status
$43   %01000011   Yamaha
$0n   %0000nnnn   n=Receive or Transmit channel
$7E   %01111110
$06   %0nnnnnnn   BYTE Count (MSB)
$21   %0nnnnnnn   BYTE Count (LSB)
$50   %01010000   ASCII 'P      ┐
$4B   %01001011   ASCII 'K      │
$20   %00100000   ASCII '_      │
$20   %00100000   ASCII '_      │  Byte count shows this area.
$32   %00110010   ASCII '2      │
$32   %00110010   ASCII '2      │
$30   %00110000   ASCII '0      │
$33   %00110011   ASCII '3      │
$41   %01000001   ASCII 'A      │
$45   %01000101   ASCII 'E      │
$dd   %0ddddddd ┐               │
 |        |     │ 1 VOICE DATA  │
$dd   %0ddddddd ┘               ┘
$ee   %0eeeeeee   CHECK SUM
$F7   %11110111   EOX
```

4.2 ALL V/M BULK DUMP

Transmission:
All the internal voice and multi data is transmitted.

Reception:
The received data is internally saved.

Format:

```
$F0   %11110000   Status
$43   %01000011   Yamaha
$0n   %0000nnnn   n=Receive or Transmit channel
$7E   %01111110
$18   %0nnnnnnn   BYTE Count (MSB)
$66   %0nnnnnnn   BYTE Count (LSB)
$50   %01010000   ASCII 'P      ┐
$4B   %01001011   ASCII 'K      │
$20   %00100000   ASCII '_      │
$20   %00100000   ASCII '_      │  Byte count shows this area.
$32   %00110010   ASCII '2      │
$32   %00110010   ASCII '2      │
$30   %00110000   ASCII '0      │
$33   %00110011   ASCII '3      │
$56   %01010110   ASCII 'V      │
$4D   %01001101   ASCII 'M      │
$dd   %0ddddddd ┐               │
 |        |     │ VOICE DATA    │
$dd   %0ddddddd ┘ (00-03)       ┘
$ee   %0eeeeeee   CHECK SUM
-----100 msec WAIT-----------------------------------------
$18   %0nnnnnnn   BYTE Count (MSB)
$5C   %0nnnnnnn   BYTE Count (LSB)
$dd   %0ddddddd ┐
 |        |     │ VOICE DATA
$dd   %0ddddddd ┘ (04-07)
$ee   %0eeeeeee   CHECK SUM
-----100 msec WAIT-----------------------------------------
Voice data is transmitted as divided per 4 timbres as shown above.
A time interval of a minimum of 100 msec is always allocated
between them.
-----100 msec WAIT-----------------------------------------
$09   %0nnnnnnn   BYTE Count (MSB)
$00   %0nnnnnnn   BYTE Count (LSB)
$dd   %0ddddddd ┐
 |        |     │ MULTI DATA
$dd   %0ddddddd ┘ (00-15)
$ee   %0eeeeeee   CHECK SUM
$F7   %11110111   EOX
```

4.3.1 VOICE BULK REQUEST

Reception:
The request signal of the above Item 4.1. However, the data transmitted by this request is the timbre No. sounded at VOICE instead of being the one set as specified in Item 4.1.

Format:

```
$F0   %11110000   Status
$43   %01000011   Yamaha
$2n   %0010nnnn   n=Receive channel
$7E   %01111110
$50   %01010000   ASCII 'P
$4B   %01001011   ASCII 'K
$20   %00100000   ASCII '_
$20   %00100000   ASCII '_
$32   %00110010   ASCII '2
$32   %00110010   ASCII '2
$30   %00110000   ASCII '0
$33   %00110011   ASCII '3
$41   %01000001   ASCII 'A
$45   %01000101   ASCII 'E
$F7   %11110111   EOX
```

4.4 ALL V/M BULK REQUEST

Reception:
The request signal of the above Item 4.2.

Format:

```
$F0   %11110000   Status
$43   %01000011   Yamaha
$2n   %0010nnnn   n=Receive channel
$7E   %01111110
$50   %01010000   ASCII 'P
$4B   %01001011   ASCII 'K
$20   %00100000   ASCII '_
$20   %00100000   ASCII '_
$32   %00110010   ASCII '2
$32   %00110010   ASCII '2
$30   %00110000   ASCII '0
$33   %00110011   ASCII '3
$56   %01010110   ASCII 'V
$4D   %01001101   ASCII 'M
$F7   %11110111   EOX
```

YAMAHA [Digital synthesizer]

Model SY35 MIDI Implementation Chart Version : 1.0

Function		Transmitted	Recognized	Remarks
Basic	Default	1-16	1-16	memorized
Channel	Changed	1-16	1-16	
Mode	Default	3	1, 3	memorized
	Messages	X	X	
	Altered	**********	X	
Note Number		36-96	0 -127	
	True voice	**********	19-114	
Velocity	Note on	O 9nH,v=1-127	O v=1-127	
	Note off	X 9nH,v=0	X	
After Touch	Key's	X	X	
	Ch's	O *3	O *3	
Pitch Bender		O *2	O 0-12 semi *2	7bit resolution
Control Change	1	O *1	O *1	Modulation wheel
	7	X *1	O *1	Volume
	16	O *1	O *1	Vector control X
	17	O *1	O *1	Vector control Y
	64	O	O	Sustain
Program Change		O 0-79	O 0-79	
	True #	**********	0-79	
System Exclusive		O *4	O *4	
System Common	Song Pos	X	X	
	Song Sel	X	X	
	Tune	X	X	
System Real Time	Clock	X	X	
	Commands	X	X	
Aux Mes- sages	Local ON/OFF	X	X	
	All Notes OFF	X	O (123)	
	Active Sense	O	O	
	Reset	X	X	

Notes : *1 = transmit/recive if control change sw is on.
*2 = transmit/recive if pitch bend sw on.
*3 = transmit/recive if after touch sw is on.
*4 = transmit/recive if exclusive sw is on.

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO O : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO X : No

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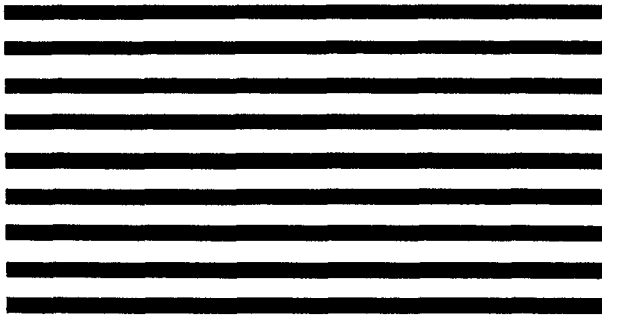

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