YAMAHA

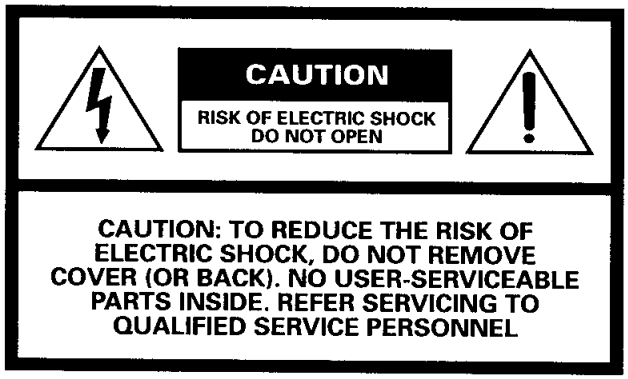
MUSIC SYNTHESIZER

SY99

OPERATING MANUAL

SPECIAL MESSAGE SECTION

PRODUCT SAFETY MARKINGS: Yamaha electronic products will have either labels similar to the graphics shown below or molded/stamped facsimiles of these graphics on the enclosure. The explanation of these graphics appears on this page. Please observe all cautions indicated on this page and those indicated in the safety instruction section.



● Explanation of Graphical Symbols

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

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

IMPORTANT NOTICE: All Yamaha electronic products are tested and approvend by an independent safety testing laboratory in order that you may be sure that when it is properly installed and used in its normal and customary manner, all foreseeable risks have been eliminated. DO NOT modify this unit or commission others to do so unless specifically authorized by Yamaha. Product performance and/or safety standards may be diminished. Claims filed under the expressed warranty may be denied if the unit is/has been modified. Implied warranties may also be affected.

SPECFICATIONS 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.

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:

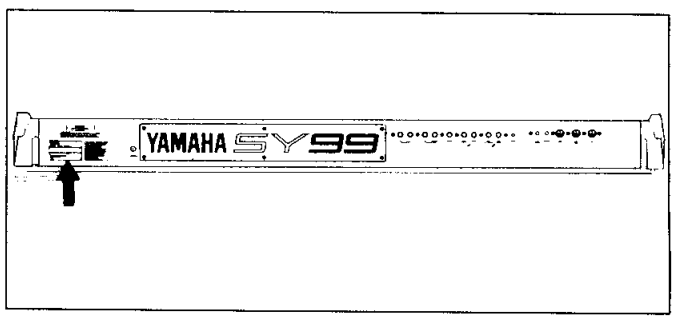
Battery Notice: This product MAY contain a small non-rechargcable battery which (if applicable) is soldered in place. The average life span of this type of battery is approximately five years. When replacement becomes neccessary, contact a qualified service representative to perform the replacement.

Warning: Do not attempt to recharge, disassemble, or incinerate this type of battery. Keep all batteries away from children. Dispose of used batteries promptly and as regulated by applicable laws. Note: In some areas, the servicer is required by law to return the defective parts. However, you do have the option of having the servicer dispose of these parts for you.

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.

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.

NAME PLATE LOCATION: The graphic below indicates the location of the name plate. The model number, serial number, power requirements, etc., are located on this plate. You should record the model number, serial nunber, 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 _____

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

IMPORTANT SAFETY INSTRUCTIONS

INFORMATION RELATING TO PERSONAL INJURY, ELECTRICAL SHOCK, AND FIER HAZARD POSSIBILITIES HAS BEEN INCLUDED IN THIS LIST.

WARNING — When using any electrical or electronic product, basic precautions should always be followed. These precautions include, but are not limited to, the following:

1. Read all Safety Instructions, Installation Instructions, Special Message Section items, and any Assembly Instructions found in this manual BEFORE making any connections, including connection to the main supply.
2. Main Power Suplly Verifications: Yamaha products are manufactured specifically for the supply voltage in the area where they are to be sold. If you should move, or if any doubt exists about the supply voltage in your area, please contact your dealer for supply voltage verification and (if applicable) instructions. The required supply voltage is printed on the name plate. For name plate location, please refer to the graphic found in the Special Message Section of this manual.
3. This product may be equipped with a polarized plug (one blade wider than the other). If you are unable to insert the plug into the outlet, turn the plug over and try again. If the problem persists, contact electrician to have the obsolete outlet replaced. Do NOT defeat the safety purpose of the plug.
4. Some electronic products utilize external power supplies or adapters. DO NOT connect this type of product to any power supply or adapter other than one described in the owners manual, on the name plate, or specifically recommended by Yamaha.
5. WARNING: Do not place this product or any other objects on the power cord or place it 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 minimume wire size for a 25' cord (or less) is 18 AWG. NOTE: The smaller the AWG number, the larger the current handling capacity. For longer extension cords, consult a local electrician.
6. Ventilation: Electronic products, unless specifically designed for enclosed installations, should be placed in locations that do not interfere with proper ventilation. If instructions for enclosed installations are not provided, it must be assumed that unobstructed ventilation is required.
7. Temperature considerations: Electronic products should be installed in locations that do not significantly contribute to their operating temperature. Placement of this product close to heat sources such as; radiators, heat registers and other devices that produce heat should be avoided.
8. This product was NOT designed for use in wet/damp locations and should not be used near water or exposed to rain. Examples of wet/damp locations are; near a swimming pool, spa, tub, sink, or wet basement.
9. This product should be used only with the components supplied or; a cart, rack, or stand that is recommended by the manufacturer. If a cart, rack, or stand is used, please observe all safety markings and instructions that accompany the accessory product.
10. The power supply cord (plug) should be disconnected from the outlet when electronic products are to be left unused for extended periods of time. Cords should also be disconnected when there is a high probability of lightening and/or electrical storm activity.
11. Care should be taken that objects do not fall and liquids are not spilled into the enclosure through any openings that may exist.
12. Electrical/electronic products should be serviced by a qualified service person when:
    a. The power supply cord has been damaged; or
    b. Objects have fallen, been inserted, or liquids have been spilled into the enclosure through openings; or
    c. The product has been exposed to rain; or
    d. The product does not operate, exhibits a marked change in performance; or
    e. The product has been dropped, or the enclosure of the product has been damaged.
13. 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.
14. 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 a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the cars, you should cousult an audiologist. IMPORTANT: The louder the sound, the shorter the time period before damage occurs.
15. Some Yamaha products may have benches and/or accessory mounting fixtures that are either supplied as a part of 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 secured BEFORE using. Benches supplied by Yamaha are designed for seating only. No other uses are recommended.

PLEASE KEEP THIS MANUAL

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

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!
   This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. 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 the following measures:

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

   Utilize power outlets that are 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 Orangethorpe 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 the letter N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.
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.

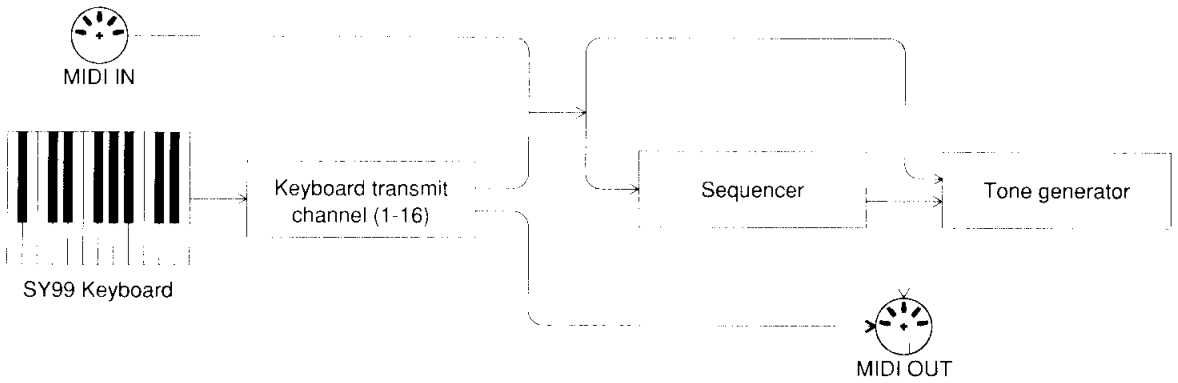
* This applies only to products distributed by YAMAHA CANADA MUSIC LTD.

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.

SY99 BASIC CONFIGURATION



The SY99 is composed of a tone generator, a sequencer, and a keyboard. The tone generator is always in either VOICE mode or MULTI mode. The sequencer is always in either SONG mode or PATTERN mode.

INTRODUCTORY SECTION

REFERENCE SECTION

APPENDIX

Thank you for purchasing the Yamaha SY99 digital synthesizer. The SY99 represents a new generation of Yamaha synthesizers featuring the new Realtime Convolution and Modulation (RCM) hybrid tone generation system, which uses Advanced FM (AFM) tone generation and Advanced Wave Memory (AWM) tone generation in conjunction with realtime digital filtering.

The SY99 can function as up to 16 independent synthesizers with dynamically allocated voices, and includes an on-board 16-track 99-pattern sequencer which can contain up to ten songs at a time. It also features an enhanced effect system, zoned aftertouch, powerful master keyboard functions, a MIDI data recorder function, and the ability to accept MIDI sample dumps.

To take full advantage of the SY99 and enjoy long and trouble-free use, please read this manual carefully.

How to use this manual

This manual is divided into three sections: an introductory section, a reference section, and an appendix.

Introductory section: This section contains the information you need to start using your SY99 right away. (If you are already familiar with the SY77, an earlier member of the Yamaha SY series, you may wish to read *How the SY99 differs from the SY77* on page 308.)

- Introducing the SY99: Please be sure to read this section. It will tell you how to play the sounds, about the main features of the SY99, and about basic operation.
- How to use the sequencer: This explains how to use the built-in sequencer to record your own songs, each having as many as 16 parts, with the SY99 functioning as up to sixteen independent instruments.
- How to edit a voice: Read this when you want to modify a voice or create a completely new voice.

Reference section: This section contains a full explanation of all the SY99's functions. Once you have worked through the introductory section and are comfortable with basic operation, glance through this section to get an idea of the SY99's capabilities. Refer to the details when necessary.

Appendix: This section contains technical information that may be of interest to advanced users or programmers.

Conventions in this manual

In order to present information as clearly as possible, the following conventions are used in this manual.

- The names of front panel buttons and controls are set in small capital type; e.g., press the EDIT button.
- Italics are used mainly when referring to a section in this manual; e.g., for details refer to *AFM element job 5. AFM sensitivity*.
- Most of the LCDs in the SY99 have a unique Page Jump number to which you can jump by pressing JUMP and entering the number. These numbers will be prefixed by a "#" sign; e.g. JUMP #312.
- Function names will be capitalized when they first occur or when necessary for emphasis, but will be uncapitalized in subsequent occurrences; e.g., adjust the LFO Speed ... after adjusting the LFO speed, ...
- The beginning of each two-page subsection in the introductory section contains a short abstract or summary of the entire subsection, printed in bold type.
- Three periods between two numbers are used to indicate that a parameter can be set to any value in this range; e.g., Velocity Sensitivity (-7...+7). Since some parameters can be set to negative values, this avoids the possibility of confusing a dash with a minus sign.

PRECAUTIONS

Location

Avoid placing the SY99 in direct sunlight, or in locations where it will be subjected to temperature extremes, moisture, excessive dust, or heavy vibration.

Data backup

It is possible for data in internal memory to be lost as a result of inappropriate operation or other reasons. We recommend that you keep backups of important voice, multi, system, sequencer, sample, MDR data on a floppy disk or memory card (MCD64). It is also possible for the data in a floppy disk or memory card to be lost as a result of static electricity, magnetic fields, or other causes. For very important data it is always a good idea to make double backups.

Multi Play mode

If many multi-element voices are played simultaneously when in Multi Play mode, note timing may sometimes be slightly delayed. In such cases, select voices that use fewer elements, or reduce the number of notes.

Backup battery

The SY99 contains a backup battery which preserves settings such as for voice and multi data when the power is turned off. The life of this battery is approximately 5 years. However depending on the date of purchase, battery life may be shorter than this.

If the backup battery runs low, a message "Change internal Battery!" will appear in the display when the power is turned on. If the backup battery runs down completely, the voice and multi data will be lost, so when this display appears, immediately store your data to a floppy disk or memory card and contact the dealer where you purchased the SY99 or your nearby Yamaha service center to have the battery replaced. Again, when the battery is replaced, all internal voice data, multi data, and data contained in the MDR/sample RAM area will be lost. Be sure to save the data to a floppy disk or memory card before having the battery replaced.

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.

CONTENTS

INTRODUCTORY SECTION

REFERENCE SECTION

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INTRODUCTORY SECTION

INTRODUCING THE SY99

This section will tell you how to play the sounds, introduce you to the main features of the SY99, and explain basic operation.

Contents of this section page

How to set up and play

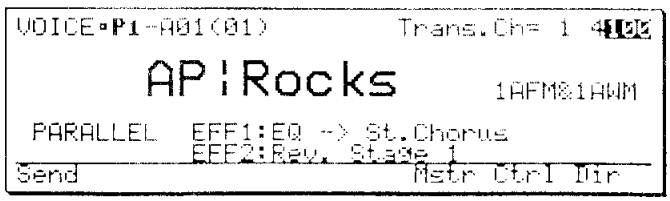
The first thing you will probably want to do is play the voices (sounds) of your new SY99. Here's how to select and play the SY99's voices:

Connections

Make sure that your amp/speaker system and the SY99 are switched off. Connect the rear panel output OUTPUT 1/1+2 jacks (L/MONO and R) to the inputs of your amp/speaker system. Or, if you are using a set of stereo headphones, plug them into the rear panel PHONES jack.

Turn the power on

Turn down the SY99's two VOLUME sliders marked OUTPUT 1 and 2, located at the far left. Then turn the power on by pressing the POWER switch located on the rear panel to your right. After displaying a greeting message for about two seconds, a display similar to the following should appear. If the SY99 was in Voice Play mode when the power was last turned off, the upper left of the LCD will read "VOICE".



If the upper line of the display does not show VOICE then press the VOICE button located at the upper left of the front panel.

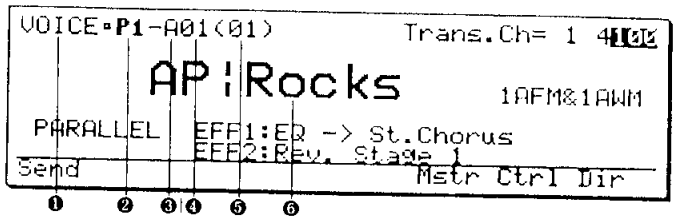
Make sure that the volume of your amp/speaker system is turned down, and turn its power on. Set the volume of your amp/speaker system to an appropriate level, and gradually raise the SY99's OUTPUT 1 and 2 sliders while playing the keyboard. If you don't hear anything, re-check the connections, and make sure that your amp/speaker system is functioning correctly.

How to select and play voices

What you hear when you play the keyboard is defined as a voice. The SY99 has 128 voices that are preset in permanent memory, and 64 others stored in editable internal memory. The 64 internal memory locations can also be used to store your own original voices or voices loaded from a card or disk (the 64 voices originally stored in the internal memory are also provided on disk and can be reloaded if erased*). An optional RAM or ROM card can be inserted into the VOICE card slot to provide 64 more voices.

The preset voices are organized into two locations, PRESET 1 and PRESET 2.

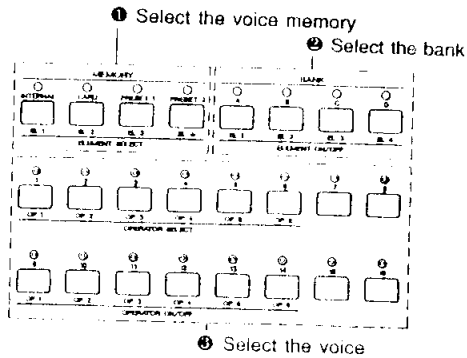
* *The original internal voices can be re-loaded by loading the file named "INTVOICE" from the "Chick Corea" demo disk. Use the load procedure described on page 6, selecting "02:Synth all" instead of "01:All data" in step 4. Each of these has four banks (A–D) with 16 voices in each. The LCD shows the ten-character voice name, and also tells you which memory the voice is from. The number in parentheses indicates what number the voice would be if you started counting from the beginning of the bank.*



❶ This indicates that you are in Voice Play mode.
❷ Memory PRESET 1.
❸ Bank A.
❹ Voice number "1" of 16 in bank A.
❺ Voice number "1" of 64 in Preset 1.
❻ The voice name is "AP:Rocks".

You will learn about the other parts of the display later. For now, here's how to select voices:

1. Select the voice memory: INTERNAL, CARD (only if a card is inserted into the DATA slot), PRESET 1, or PRESET 2. The selected LED will light.
2. Select a bank A, B, C, or D. The selected LED will flash.
3. Select a voice 1–16. The selected LED will light, and the LCD display will show the newly selected voice name.



Notice that the voice does not actually change until you specify the number 1–16. If you want to play a different voice in the same bank, simply specify a different number 1–16. There's no need to re-select the voice memory and the bank each time.

Go ahead and try out each of the preset and internal voices. When you are ready to learn more about the SY99, continue reading.

PRESET 1 (64 voices)

#	Bank A	Bank B	Bank C	Bank D
1	AP:Rocks	SP:Alaska	BR:TrmpSec	ST▪Concert
2	AP:CrsRock	SP:SawPad	BR:BigBand	ST▪Chestra
3	AP:Concert	SP:Square	BR:JazzTmp	BR▪Spitz
4	AP:StgLayr	SP:Elegant	BR. MuteTmp	ME▪BigNeck
5	EP:76Stage	SP:DigiPad	BR:FrHorns	PC:Snapper
6	EP:Classic	SP:Lashed	BR:DrkHorn	PC:Marimba
7	EP:NiteHwk	SP:Sweeper	BR:Azen 16	PC. Vibes
8	EP:Belrose	SP:Flash	BR:DaBurbs	PC:MusicBx
9	EP:BellRng	SP:HrpsiPd	BR:Splatz	PC:Tahiti
10	EP:Dxism	SP. Skylane	BR:Pumped	PC:Cloche
11	EP:GrnDual	SP:Arpeggi	BR:StgLayr	PC:Balan
12	EP:VoxLayr	SP:Vecktar	ST:Octaves	PC:Berim
13	KY:Smokey	SP:Crystal	ST:ChorAna	SE:Slither
14	KY:CrsClav	SP:Twinks	ST:Rosin	DR Kits
15	KY:Clavint	SP:Polydor	ST:Quartz	DR Perc
16	KY:ResoClv	SP:WarmJet	ST:Pizza	DR Mixed

PRESET 2 (64 voices)

#	Bank A	Bank B	Bank C	Bank D
1	SC:Heretic	PL:Steel6	BA:Picked	WN:Tenor
2	SC:AeroPno	PL:JazzGtr	BA:Slapped	WN:SaxSect
3	SC:Jupiter	PL:Nylon6	BA:Fingers	WN:Alto
4	SC. RezWhap	PL:12Strng	BA. Fretles	WN:Soprano
5	SC:Plectar	PL:Eko12St	BA. Classic	WN:Clarine
6	SC:Quatar	PL:Echoes6	BA:Upright	WN:PanPipe
7	SC:Plastiq	PL:Caster	BA:DXSlap	ME▪Phantom
8	SC:Tanjeln	PL:SloLead	BA. Anabass	ME:5thsMan
9	SC:Gizmo	PL:RockAT	BA:ResoSyn	ME▪Emperor
10	SC:Healing	SL:SawLead	BA:FatSyn	ME:SloLoop
11	SC:Angelic	SL. EchoSaw	BA:Mogue	ME▪Asia
12	CH:Glasine	SL:Duke	OR:BJazzy	ME:Dreams
13	CH:Itopian	SL:Sync	OR:BookerB	ME:Galaxy
14	CH. Vespers	SL:Square	OR:Deep	ME:Isis
15	CH:Nebula	SL. PulseWM	OR:Purple	ME:ZoZoid
16	CH:Witches	SL:Lyle	OR:Bsilica	ME▪Thusian

See page 297 for internal voice list.

How to load and play the disk demo songs

The disk included with the SY99 contains demo songs which take advantage of its capabilities. Here's how to load and play the songs:

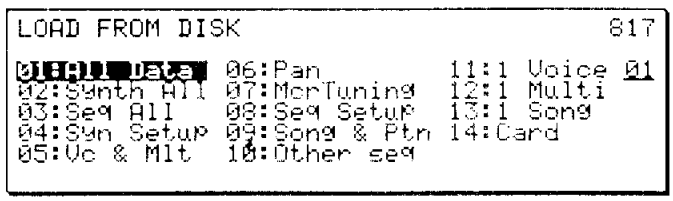
CAUTION
If the internal memory contains data you wish to keep, be sure to save it before loading the demo.

Load the demo song data from disk

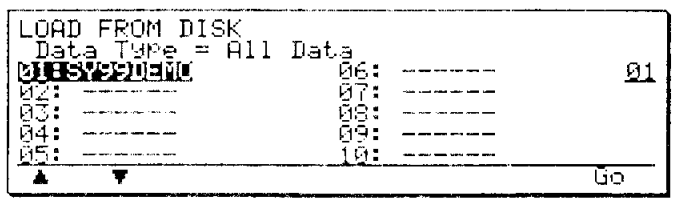
1. Insert one of the demo disk into the disk drive, with the shutter going in first and the label facing up. Push it gently in until it clicks into position.

2. Press UTILITY, and then press F4 (Disk) to get the following display. (If you have been editing voice or multi data, the top line of the LCD will blink "AUTO-STORE". For details on Auto-Store, refer to page 74.)

3. Press ▽ once to move the cursor to 02:Load From Disk, and press ENTER to get the following display.



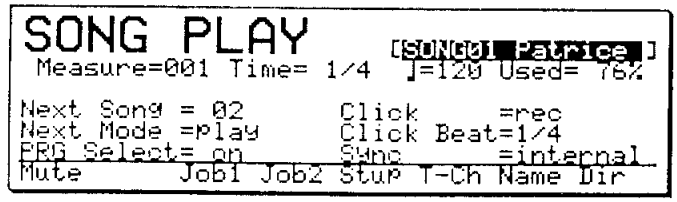
4. With the cursor located at 01:All Data, press ENTER to get a display like the following. (The filename may be different.)



5. Press F8 (Go). The display will ask "Are you sure". Press YES if you are sure you want to load the data from disk. Loading data from disk will erase any data which was previously held in the SY99's sequencer and internal voice and MDR/Sample memories.

6. While the data is being read from disk, the bottom line of the LCD will show "Now executing".

7. When the data is loaded, the SONG LED will light red, and a display like the following will appear. Press RUN to begin the playback.



To listen to the demo songs contained in another demo disk, repeat the above procedure.

Note:

The voices contained in the SY99's internal memory are replaced by other data when you load data from either of the demo song files. You can restore the internal voices by loading the file named "INTVOICE" from the "Chick Corea" demo disk. To do this, use the load procedure described above, selecting 02:Synth all instead of 01:All data in Step 4.

How to record a song

The SY99 can function as 16 independent synthesizers, and also contains a built-in 16 track sequencer. This allows you to create sixteen-part compositions without using any other equipment. This section will explain the simplest way to record a multi-part song.

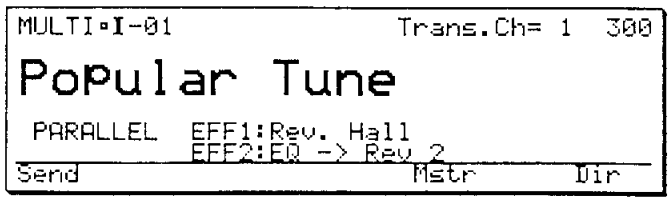
Clear the sequencer memory

1. Turn the SY99 power off, and all data in the sequencer memory will be cleared.

Select a Multi

In multi mode the SY99 can function as 16 independent synthesizers. The multi settings determine which voices are used.

2. Press MULTI to enter multi mode. The MULTI LED will light red and a display similar to the following will appear.

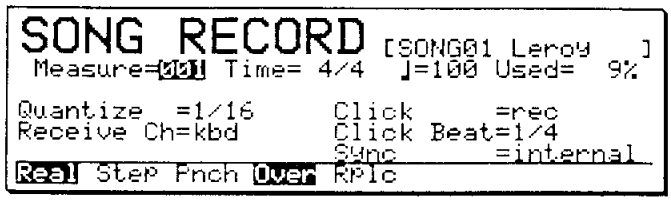


3. Press PRESET 1, then press a memory select button 1–16 to select one of the 16 preset Multis. A table of the preset Multis is given on page 299.

Prepare for recording

4. Press SONG. The SONG LED will light red.

5. Press RECORD to get the following display.



Record the first track

6. Press a program select key to select the track you wish to record. With the default settings, the tracks of the sequencer will transmit on the channel of the corresponding number, and will be played by the corresponding channel of the multi you have selected. For example if you have selected Multi 01 Popular Tune and wish to record the Picked Bass part, press 2. If you select a channel for which the multi does not use a voice, there will be no sound.

7. Press RUN. After a two-measure countdown, recording will begin. Play along with the metronome to record the part. When you are finished, press STOP. Press |◁ to return to measure 1.

Record additional tracks

8. As desired, repeat steps 5, 6 and 7 to select and record additional tracks.

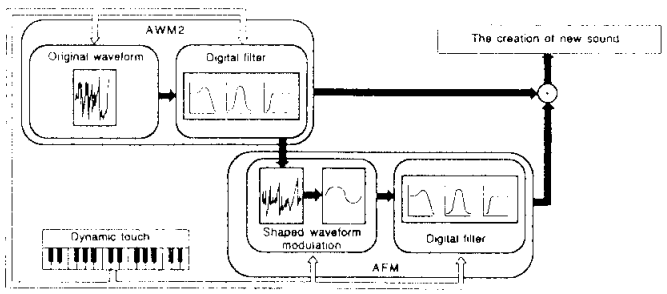
Note:

A more complete explanation of using the SY99 sequencer is given in the following section How to use the sequencer, which explains how to set up your own Multi, create rhythm patterns, arrange the rhythm patterns in track 16 (the pattern track), record additional tracks, edit the song, name it, and save the finished song to disk. Refer to page 48 for details regarding the save procedure..

About the SY99: RCM hybrid synthesis

The SY99's RCM hybrid tone generation system fuses the realism of digital samples with the expressive power of FM. It uses Advanced Wave Memory 2 (AWM2) and Advanced Frequency Modulation (AFM) in conjunction with digital filters to allow a wide variety of sound creation techniques.

System diagram



Advanced Wave Memory 2 (AWM2)

AWM2 uses 16 bit linear sample reproduction with proprietary Yamaha convolution technology (digital filtering) that allows you to emphasize or cut any desired portion of the frequency spectrum with full realtime control.

Advanced Frequency Modulation (AFM)

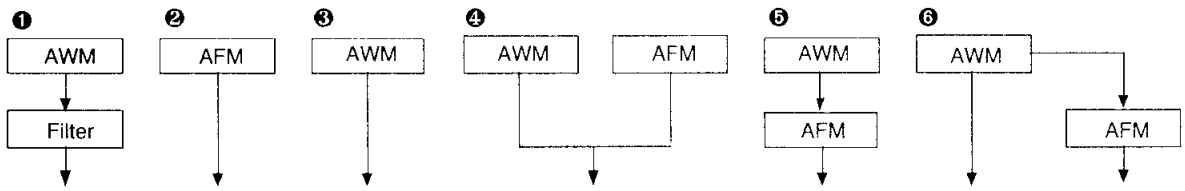
In addition to advancing beyond the FM synthesis capabilities of the DX7 and previous Yamaha synthesizers, AFM allows you to filter and envelope any AWM waveform and use the shaped waveform as part of an FM algorithm to apply frequency modulation, creating partials that were not present in the original AWM waveform. This modulated waveform can be processed by additional digital filtering.

Dynamic touch and control

One of the greatest advantages of RCM hybrid tone generation is that it fuses the realism of digital sampling with the expressive power of FM. Keyboard dynamics and controllers can be used to control nearly any aspect of the sound, allowing great musical expresiveness.

The possibilities of RCM hybrid synthesis

The SY99 allows a wide variety of synthesis techniques to be used, and digital filtering is always provided for each AFM or AWM element. The following diagrams show how the RCM hybrid synthesis system can simulate many of the analog and digital synthesizers of the past.



❶ Filter style "analog" synthesis: Single cycle AWM waveforms can be enveloped and filtered to simulate analog synthesizers. (Various sawtooth and pulse waves are provided, and the SY99's filters can be configured as 24dB/octave filters with resonance adjustable into oscillation.)

❷ Traditional FM: The AFM tone generator can be used alone to produce any sound that the DX series was capable of, and much more.

❸ AWM sample playback: The AWM tone generator can be used to play back high quality digital samples from internal AWM memory or an optional waveform card.

❹ AWM sample playback mixed with FM: The sounds of the AWM and AFM tone generators can be layered.

❺ FM modulated by AWM: AWM digital samples can be used to modulate one or more operators in an FM algorithm, for very complex FM sounds.

❻ AWM sample playback + FM modulated by AWM: In a variation of ❺, the original sound of the AWM sample can be mixed with the complex AFM sound.

For techniques which use both AWM and AFM (❹ ❺ ❻) there are two additional possibilities.

- Both AFM and AWM can be used to create sustaining sounds.
- The AFM and AWM tone generators can be used to create different components of the sound, with short transient AWM waveforms used to create an attack and the AFM tone generator used to create the sustain component of the sound (or vice versa).

Since each voice can use one, two, or four AFM or AWM elements, these synthesis strategies can be combined in complex ways.

About the SY99: AFM and AWM voices

The SY99 produces sound using two proprietary Yamaha technologies; Advanced Frequency Modulation (AFM) synthesis and Advanced Wave Memory 2 (AWM2). A special Drum Voice assigns a different AWM percussion sound to each note of the keyboard.

AFM — Advanced Frequency Modulation

Frequency Modulation (FM) is a patented Yamaha technology for producing complex and controllable musical sounds, and was first made famous by the DX7 synthesizer. The SY99's Advanced FM (AFM) takes FM synthesis to new levels of realism, expression, and programmability.

Each of the six FM operators in the SY99 can use one of 16 different waveforms, and be connected to each other in 45 basic algorithms (patterns). In addition, each operator has two inputs which can be modulated by feedback from any other operator, from a noise generator, or from an AWM sample. Compared to previous FM instruments, many parameters have a wider range of control, and the SY99 envelope generators have six segments with looping.

AFM can produce sounds that change dramatically in response to your playing, allowing a wide range of expressiveness.

AWM2 — Advanced Wave Memory 2

Advanced Wave Memory 2 (AWM2) is a patented Yamaha technology for storing and reproducing digital sound. The SY99 contains 4 Mwords (8 Mbytes) of AWM samples in Read Only Memory (ROM), including piano, strings, choir, and percussive sounds among many others. Optional cards can be inserted into the front panel WAVEFORM slot to make additional sounds available. The sounds are sampled in 16-bit linear format with a maximum sampling frequency of 48 kHz.

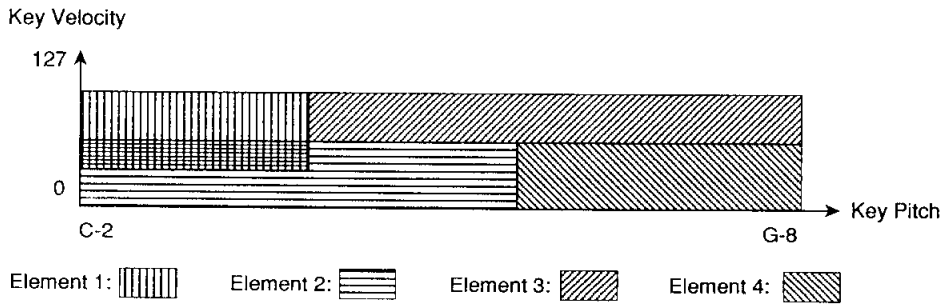
In addition to the AWM samples in ROM and in optional WAVEFORM cards, you can load samples into the SY99 from any sampler that supports the MIDI sample dump standard, or from a disk created by the Yamaha TX16W sampler. These samples can be assigned across the keyboard to create a *waveform*, which can then be used in the same way as preset or card waveform data.

AWM sounds are high-quality digital recordings of actual instruments.

A voice consists of one, two, or four Elements

Each sound that you have been playing from the SY99's keyboard is defined as a voice, and consists of one, two, or four elements. (The drum voice explained below is a special case.) Each of these elements is actually the equivalent of an independent synthesizer; either AFM or AWM.

An element can be set to produce sound for only a specific range of the keyboard, or for a specific range of velocities. This allows you to create a voice which produces different sounds for different ranges of the keyboard, or for loudly or softly played notes.



The one, two, or four elements in a voice can produce many types of keyboard split and layer effects.

On earlier Yamaha synthesizers such as the DX7-II, layers and splits were created by combining two or more Voices into a "Performance". This meant that sometimes you played Voices and other times you played Performances. However on the SY99, layers and splits can be included in a voice, so you can simply select a voice and play without considering whether it contains layers or splits.

Two realtime digital filters for each element

Each AFM or AWM element in a voice includes two 12 dB/octave realtime digital filters, each filter independently controlled by its own envelope generator (EG). One filter is fixed as a Low Pass Filter (LPF) and the other filter can be used either as a LPF or a High Pass Filter (HPF). This allows you to use the two in conjunction to create a 12 dB/octave Band Pass Filter (BPF) or a 24 dB/octave LPF. Veterans of analog synthesizers will be happy to hear that the filter resonance (or "Q") can be adjusted all the way into filter oscillation.

Since a voice can consist of one, two, or four elements, a single voice can use 2, 4 or 8 independent filters.

AFM x AWM x Filtering = the SY99

The SY99 can utilize most of the programming techniques of previous synthesizers; FM, sample playback, and realtime filtering. This means that the SY99 can produce the sounds of the classic 24 dB/octave analog synthesizers of the past, the FM sounds of the DX series, the sampled sounds of many of today's instruments ... and also sounds that have never been heard before.

Play up to 16 AFM notes and 16 AWM notes at once

The SY99 contains two tone generators; an AFM tone generator and an AWM tone generator. The AFM tone generator can produce up to 16 simultaneous notes of FM sound, and the AWM tone generator can produce up to 16 simultaneous notes of digitally sampled sound.

Some voices consist of only one element, some of two elements, and others of four elements. (The Voice mode setting inside each voice determines how many elements are used.) The important thing to remember is that up to a total of 16 notes of AFM sound and 16 notes of AWM sound can be sounding at any time. If a voice plays two or more elements for a single key, the sound will be more complex and richer, but you will be able to play fewer simultaneous notes.

A Drum voice consists of 76 percussive sounds

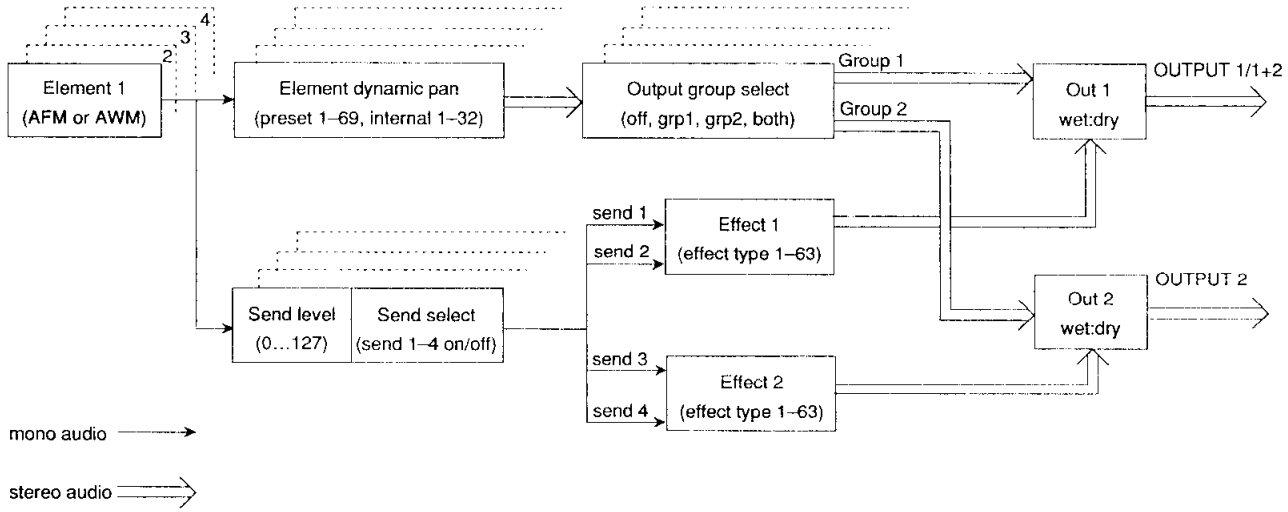
In addition to the "normal" voices explained above which consist of one, two, or four elements, the SY99 provides a special type of voice; the Drum voice. A drum voice has no elements, but consists of a different AWM sample for each of the 76 keys of the SY99 keyboard.

A drum voice can be played from the keyboard just like a normal voice. Usually you will use a sequencer to play a drum voice, providing drums and percussion accompaniment. Either the SY99's internal sequencer or an external MIDI sequencer can be used to play a drum voice.

There is no distinction between normal voice memory and drum voice memory; either type of voice can be stored in any of the voice memories.

About the SY99: pan, effects, and output

Each of the one, two, or four elements in a voice has two independent digital filters, and is sent through its own pan table. The SY99 also has two built-in digital signal processing (DSP) effect systems which can be controlled in realtime, and effect settings are stored as part of each voice.



Dynamic pan table for each element

Each element in a normal voice is sent through a dynamic pan table (64 preset and 32 user pan tables are provided) that determines how the sound will move between the left and right outputs. Each pan table has its own EG, and also allows you to select a pan source (velocity, key note number, or LFO). Another controller can be assigned to further bias the panning movement.

Each of the 76 notes in a drum voice can be panned to a fixed position.

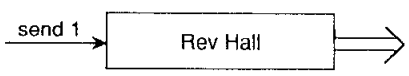
Two DSP effect units

The SY99 contains two high quality DSP effect units. Each effect unit can produce 63 different effects, including reverb, delay, tone control, distortion, rotary speaker, and ring modulator.

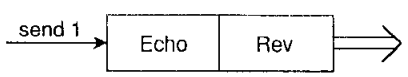
Effect types 1–29 are *single* effects, in which the effect unit creates only one effect. Effect types 29–51 are *cascade* type effects, in which the effect unit functions as two independent units connected in series. Effect types 52–63 are *dual* type effects, in which the effect unit functions as two independent units connected in parallel.

Each effect type has up to 10 parameters which you can adjust.

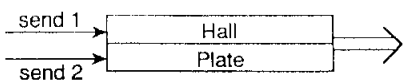
Effect type = 1–29 (single type)
ex., 1. Rev Hall



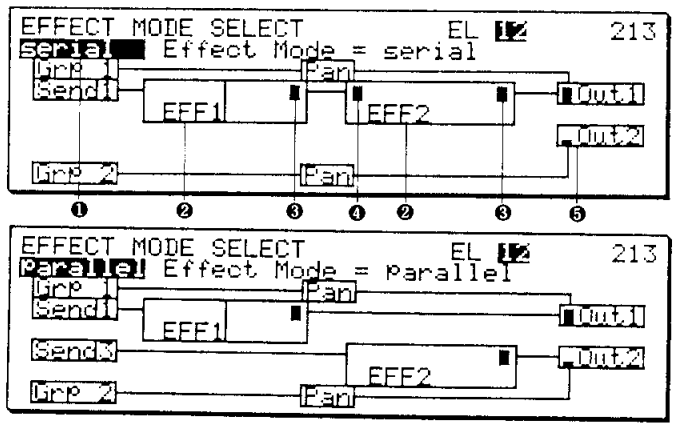
Effect type = 30–51 (cascade type)
ex., 29. Echo→Rev



Effect type = 52–63 (dual type)
ex., 51. Hall&Plate



These two effect units can be arranged in either *serial* or *parallel* mode. (The diagram at the beginning of this section shows the effect units arranged in *parallel* mode.)



Depending on the effect type (single, cascade, or dual), each effect unit is driven by either one or two effect sends. Depending on the effect mode (serial or parallel), the two effect units will be driven by a total of 1–4 effect sends. Each of the one, two, or four elements in a normal voice (and each of the 76 AWM sounds in a drum voice) has its own effect send level adjustment for each of the four effect sends. Velocity and keyboard scaling can also be made to affect the effect send level, for example allowing you to apply a greater amount of reverb (or other effect) for loudly (or softly) played notes, or for high or low notes. This allows you to apply effects to a voice with great precision.

In addition, you can specify any two parameters of the two effect units to be controlled from two assigned control sources (control change messages, after-touch, velocity, key scaling, or the effect LFO).

All effect settings are stored as part of each voice.

Two output groups

The stereo output from the dynamic pan table of each element can be sent to either or both of the two output groups, where it is mixed with the stereo output from each effect unit. The output level of each effect and the "wet:dry" balance for each output group can be set independently.

The final mix is sent from the two stereo pairs of rear panel jacks OUTPUT 1/1+2 and OUTPUT 2.

About the SY99: multi-timbral sequencing

In Multi mode, the SY99 acts as 16 synthesizers, each able to be controlled independently and produce its own sound. The SY99's built-in 16-track sequencer records and plays back musical data. Each track 1–15 contains an independent musical performance; notes, pitch bends, controller movements, and program changes. You can create 99 patterns and place them in track 16 (the pattern track). Using the sequencer together with multi mode lets you use the SY99 to create sixteen-part compositions.

In Multi mode the SY99 is 16 independent synthesizers

In Voice mode, the SY99 plays a single voice in response to the notes you play and the controllers (wheels, foot pedals, etc.) you move. However in Multi mode, the SY99 acts as 16 completely independent synthesizers, each sounding a different voice and responding independently to notes and controller movements.

Use the sequencer to play a multi

To create multi-part compositions, you will play and record one part at a time using the SY99 sequencer.

A sequencer is a device that records music, but instead of recording the *sound* of a musical performance, a sequencer records the *musical data*; the precise timing of the keys you press, program changes, movements of the sustain pedal, foot controllers, and wheels, etc. When this data is played back, the result is exactly the same as if you were playing the keys and moving the controllers. You can record Tracks (musical parts played by one instrument) one at a time, and then play back all the tracks together.

The SY99 sequencer has 16 tracks, and each track plays the corresponding channel of a Multi. (A multi can also be played by an external sequencer connected to the MIDI IN terminal, and the sequencer can also transmit data from MIDI OUT to control external synthesizers.) For example, you might select a piano voice for channel 1 and record the piano part on track 1, select a strings voice for channel 2 and record the strings part on track 2, and so on for all sixteen tracks and voices.

SEQUENCER					MULTI
Measure	1	2	...		Each channel in the multi can play a different voice
Track 1				→	Piano
Track 2				→	Strings
Track 3				→	Brass
...					
Track 16	(pattern track)			→	Percussion

Three ways to record — realtime, punch-in, and step

The SY99 sequencer lets you record in three ways.

Realtime: In realtime recording, notes and controller movements are recorded with the exact timing that you play them.

Punch-in: Punch-in recording is like realtime recording, except that the data is recorded only for the measures you specify. This is useful for fixing minor mistakes in an otherwise well-recorded track.

Step: Step recording allows you to enter notes and other data one step at a time. This allows you to record complex musical phrases that would be impossible for a human to play, and also can be used to edit individual notes that have already been recorded.

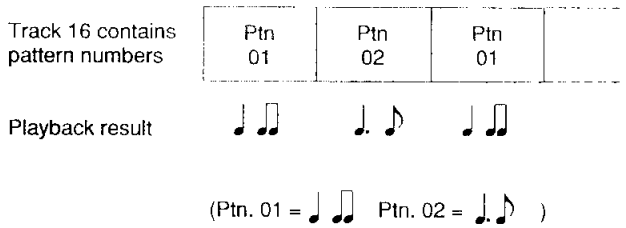
Sequence editing jobs

A wide variety of "sequence editing jobs" are provided to allow you to modify the musical data that has been recorded.

- Tracks can be moved forward or backward in time, mixed, or deleted.
- Measures can be copied, erased, deleted, or created.
- For specified measures you can quantize the data (adjust each note to a specified timing precision), transpose it to a different pitch, adjust the velocity (playing strength), or modify the gate time (note length).

99 Patterns can be used in a song

In Pattern mode you can create up to 99 patterns; short phrases one to thirty-two measures long. Then in Song Edit mode you can edit track 16 (the pattern track), placing pattern numbers and repeat marks to determine which patterns will be played as the song plays back. Patterns are especially suitable for rhythm parts; since the same basic drum pattern may be repeated many times during a song, you can record a single pattern and place it in the pattern track wherever you want it to play back. When song playback reaches that point, the pattern will play back along with tracks 1–15.

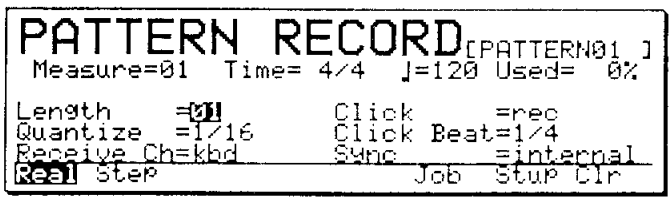


Pattern recording — realtime or step

Patterns can be created either by realtime recording or step recording.

Realtime recording: Since patterns are sometimes used for drum and percussion parts, realtime pattern recording has features that make it easy for you to build up complex drum parts. There is no need to play all the rhythm instruments at once. When you record a pattern in realtime, the pattern will continue repeating, and you can add each instrument one by one as the pattern repeats.

Step recording: When step recording a pattern, the LCD will graphically indicate exactly where you are in the pattern. You can move back and forth, entering notes on each subdivision of the beat to build up a pattern of any complexity.



Front panel: left side

In order to understand the rest of this manual and take full advantage of the SY99, you will need to know the names and uses of the controls and other features of the front panel. This page explains the left side of the front panel, including the LCD.

Keyboard:

The 76-note keyboard of the SY99 is sensitive to key-on velocity and to channel aftertouch.

Pitch and modulation wheels:

The PITCH wheel bends the pitch up or down, and is spring-loaded to return to center position. The MODULATION 1 wheel affects the sound as specified by the voice parameters; usually controlling the amount of vibrato or tremolo. The MODULATION 2 wheel also affects the sound as specified by the voice parameters, but is center-detented to help you return it to exactly center position.

Disk drive:

The 3.5" 2DD floppy disk drive can economically store large amounts of the various types of data used by the SY99. The disk drive indicator LED will light when the disk is being read or written. *Never attempt to remove the disk while this LED is lit. Doing so could damage the disk.*

Insert the disk with the label facing up, from the end with the shutter. To remove the disk, press the button at the lower right of the drive.

DATA card slot:

An optional RAM card (MCD64) can be inserted into the DATA slot to store data for the SY99's tone generator.

Waveform card slot:

An optional waveform ROM card can be inserted into the WAVEFORM slot to provide additional AWM sounds.

Volume sliders:

These sliders regulate the output volume from the two pairs of stereo output on the rear panel.

Liquid Crystal Display (LCD):

The 240 x 64 pixel LCD is backlit for readability even in dark locations. Adjust the CONTRAST control on the rear panel to suit your viewing angle.

Mode select keys:

The functions of the SY99 are divided into five modes. Press one of these buttons to select the mode, and the LED above the button will light red to indicate the selected mode.

The SY99's Synthesizer is always in one of two modes; Voice mode or Multi mode. One of the LEDs above these two keys will always be lit (green, if neither Voice nor Multi mode is selected) to indicate which mode the synthesizer is in.

The SY99's Sequencer is always in one of two modes; Song mode or Pattern mode. One of the LEDs above these two keys will always be lit (green, if neither Song nor Pattern mode is selected) to indicate which mode the sequencer is in.

The Utility mode LED is either red (when Utility mode is selected) or off (when a different mode is selected).

Edit/Compare:

Press this button to edit the data of the currently selected Voice, Multi, Sequencer Song, or Sequencer Pattern. In voice edit or multi edit mode, pressing this button allows you to compare the original data with the edited data.

Copy:

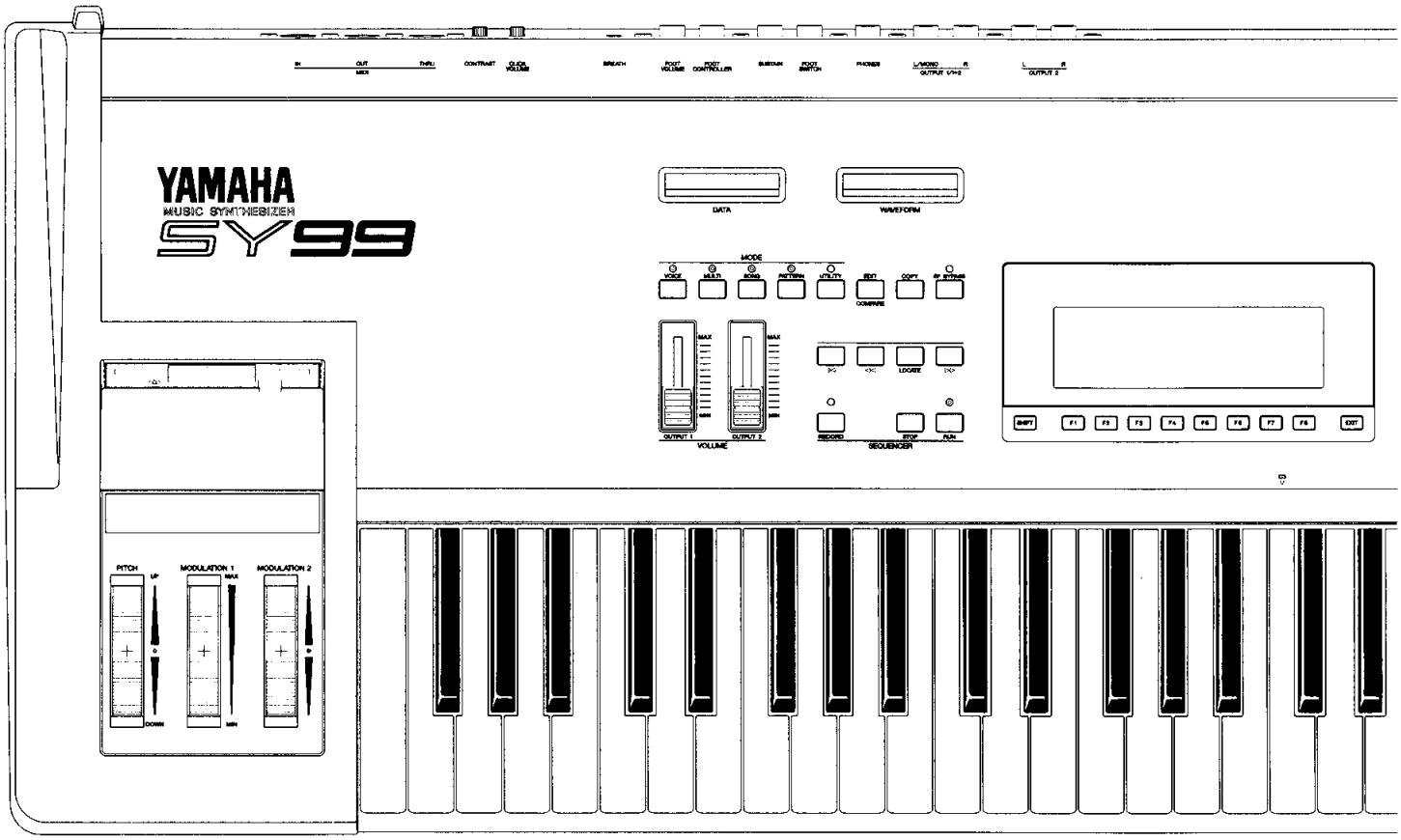
While editing, this button is used to copy various types of data.

Effect Bypass:

At any time, pressing this button will allow you to hear the sound without the DSP effects. The red LED will light to indicate that the effects are bypassed. To defeat effect bypass, press the button again.

Sequencer control:

The SY99 sequencer can be used at any time, even while editing a voice or multi. The data played or recorded will depend on whether the sequencer is in Song or Pattern mode.



|◁ : Move to the beginning of the song

◁◁ : Move back one measure (press and hold to move backward continuously)

LOCATE : Move to a previously specified location

▷▷ : Move forward one measure (press and hold to move forward continuously)

RECORD : Start recording (during recording, LED lights red)

STOP : Stop playback or recording

RUN : Begin playback (blinks green on each beat of the click, and blinks red to indicate the first beat of the measure)

Shift:

While the SHIFT button is held down, the function keys F1–F8 will act as F9–F16. Also, pressing the JUMP key while SHIFT is held down will mark the current page. Finally, you can press one of the program select keys 1–16 while holding the SHIFT key to change the SY99's transmit channel.

Function keys:

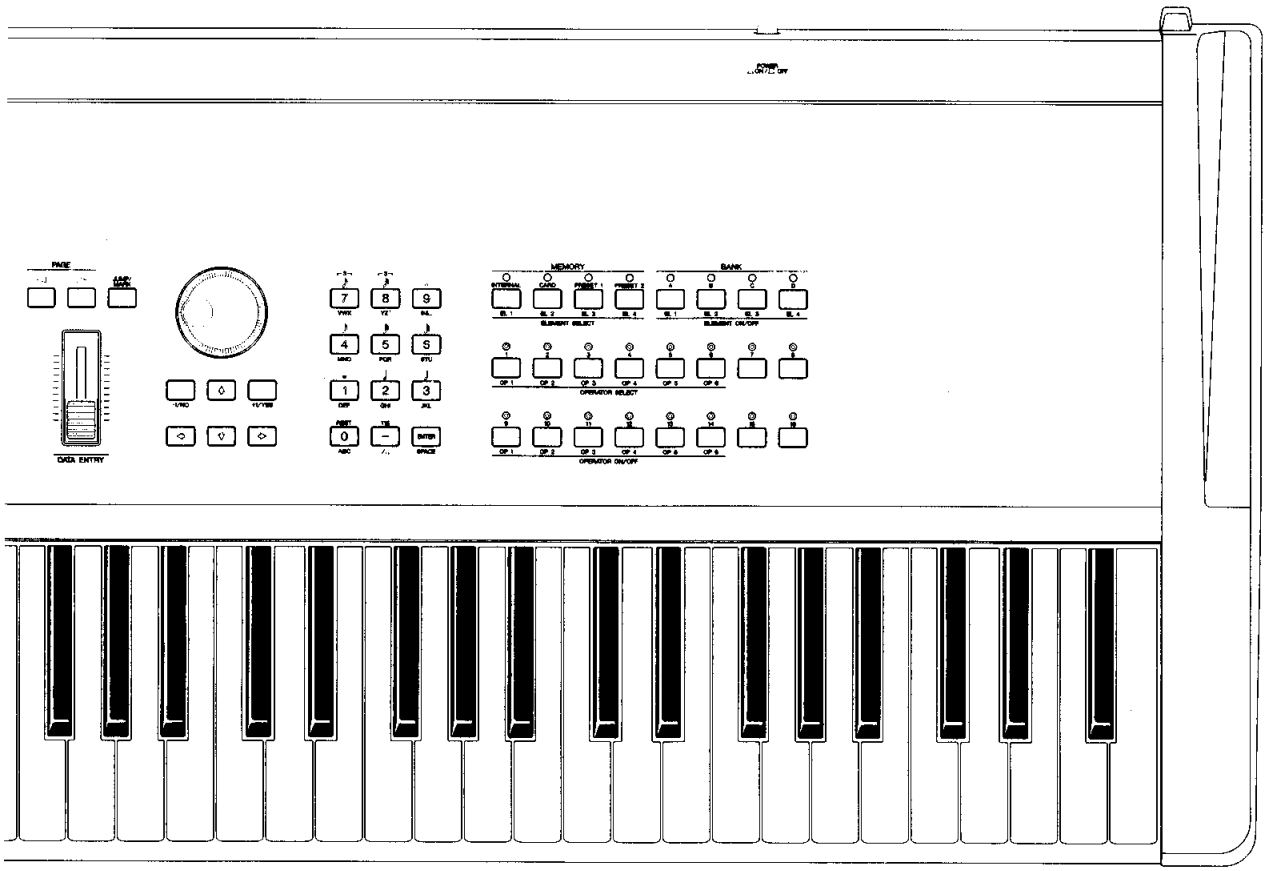
In some jobs, the bottom line of the LCD will display a function for F1–F8 (F9–F16 while the Shift key is held down). These keys are used in various ways, such as selecting menu items shown in the function key display, moving the cursor in the display, or executing a function shown in the function key display.

Exit:

This key moves back to where you last were before entering the level you are now in; i.e., it moves back to the previous branch of the function tree.

Front panel: right side

This page explains the front panel features to the right of the LCD.



Page ◁▷:

These keys move to the next or previous function within the same level; i.e., they move from branch to branch of the "function tree".

Jump/Mark:

The LCD of each function in the SY99 has a "system page number", which is displayed at the upper right of each LCD. If you know the number of the page to which you want to jump; press JUMP, use the numeric key pad to enter the page number, press ENTER, and you will be taken to the specified page. The page numbers for each function are listed in the REFERENCE section of this manual and on the supplied JOB TABLE card.

You can press MARK while holding SHIFT to mark the current page. A total of five pages can be marked in this manner. To jump to one of these five pages, press JUMP followed by the function key (F1 to F5) which corresponds to the desired page.

Data entry slider, data entry wheel, –1/+1:

The data entry slider, data entry wheel, and –1/+1 keys are all used to modify the data value indicated by the cursor.

When you move the DATA ENTRY slider, the data is directly set to the value corresponding to the slider position.

The data entry wheel can be rotated freely in either direction, and will change the current data value continuously. In job or voice directories it will also move the cursor around the screen.

The –1/+1 buttons will decrease/increase the current data value in steps of one. (These buttons also act as "yes/no" or "on/off" for various functions.)

The data entry wheel and –1/+1 buttons can also be used to select programs (voice or multi).

The slider, wheel, and –1/+1 will not necessarily act in the same way for all functions. Exceptions will be noted when each function is explained.

Cursor keys:

Use these keys to move the cursor in the LCD to select items or data. (Simply moving the cursor will not modify the data.)

Numeric key pad:

Use these keys to enter data as an absolute number.

- to select a voice or multi
- after pressing JUMP to specify the page to which you want to jump
- to directly enter a value for the data indicated by the cursor
- to directly select an item from a directory

When step recording sequencer data, the numeric key pad is used to enter the note values printed above each key. When specifying a voice name etc., the numeric key pad enters the characters printed below each key.

In general to enter a value, use keys 0–9 to specify the value, press +/– to change the sign if necessary, and press ENTER. In some cases, ENTER is not necessary.

Memory source select:

When selecting a memory, press one of these buttons to select the source; INTERNAL (internal user memory), CARD (card memory), and PRESET 1 or 2 (internal ROM preset data). The LED above each button will light to indicate the selected memory.

When in Voice Edit mode, these buttons are also used to directly select elements 1–4.

Bank select:

When selecting a Voice program, press one of these buttons to select the bank; A–D. The LED above each button will light to indicate the selected bank.

When in Voice Edit mode, these buttons are also used to turn elements 1–4 on/off.

Program select:

These keys are normally used to select programs (voice or multi). The selected button will light red. In addition, they have the following special uses.

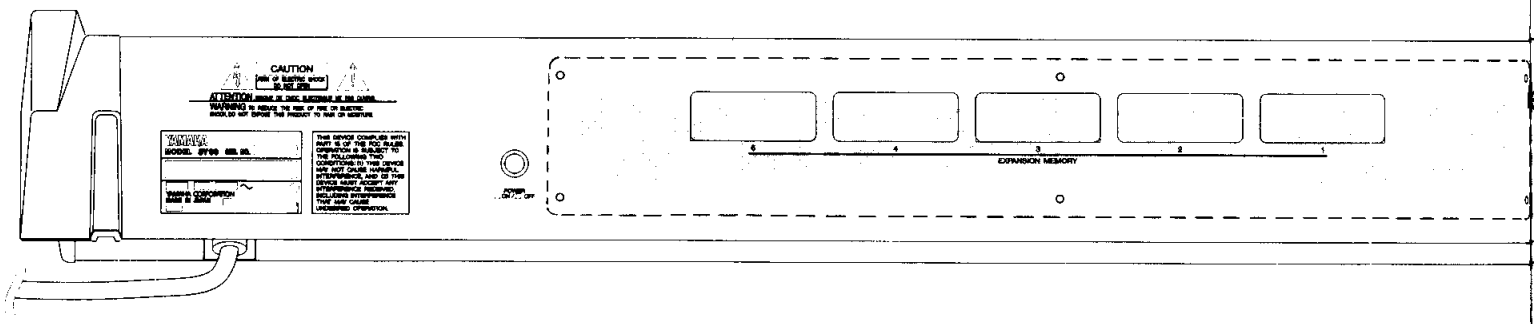
Voice edit mode: While you are editing an AFM element, buttons 1–6 select operators 1–6, and buttons 9–14 turn operators 1–6 on/off.

Sequencer mode: Buttons 1–16 will mute/unmute tracks 1–16 in the play mode or select tracks for recording in the record mode. The LEDs will light green to indicate tracks which contain data. Muted tracks which contain data will blink green during playback. Tracks selected for recording or editing will light red.

At any time, you can hold SHIFT and press a program select button 1–16 to select the channel on which the SY99 will transmit MIDI messages. This also determines which channel of a Multi the keyboard will play.

Rear panel

In order to connect the SY99 to other devices (an amp/speaker system, MIDI equipment, footswitches, etc.), you will need to know the names and uses of the various items on the rear panel.



MIDI IN, OUT, THRU:

Any MIDI device (sequencer, keyboard, WX7/11 wind controller, G10 guitar controller, etc.) can be connected to MIDI IN to play the sounds of the SY99.

Data produced by the SY99 keyboard and the SY99 internal sequencer is transmitted from MIDI OUT. By connecting a tone generator module or synthesizer to this terminal, you can play it from the SY99 keyboard.

The data received at MIDI IN is re-transmitted unchanged from MIDI THRU. Another MIDI device connected to this terminal will receive the same MIDI data that the SY99 receives.

Contrast:

This knob adjusts the contrast of the LCD. Adjust it to suit your viewing angle. (At extreme settings the display will not be readable.)

Breath:

By connecting an optional BC1 or BC2 breath controller to this jack, you can expressively control various aspects of a sound by blowing into the breath controller. For example, a voice might be programmed so that the tone or volume changes in response to breath controller signals. (The effect will depend on the breath control sensitivity parameter settings of each voice.)

Click volume:

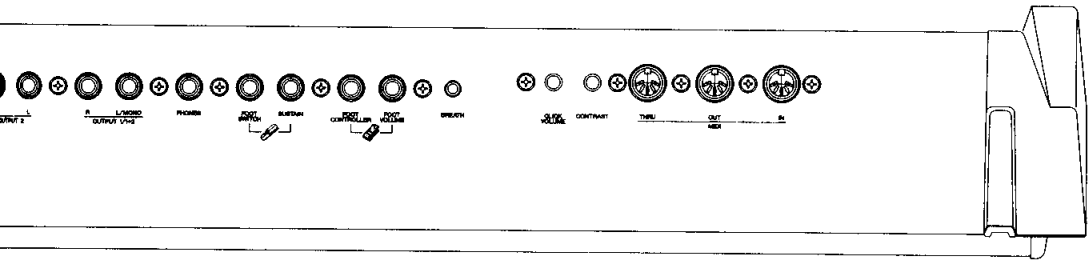
This knob adjusts the volume of the click (metronome) produced by the sequencer.

Foot volume:

An optional foot controller (FC7, FC9, etc.) can be connected here to regulate the overall volume of the SY99.

Foot controller:

An optional foot controller (FC7, FC9, etc.) can be connected here to use in realtime modulation of voice parameters assigned to the foot controller in Voice Edit mode.



Sustain: An optional foot switch (FC4, FC5) can be connected here to act as a sustain pedal.

Foot switch: An optional foot switch (FC4, FC5, etc.) can be connected here to perform the function (hold on/off, portamento on/off, etc.) determined by the Assignable Foot Switch setting of Utility mode.

Phones: A pair of stereo headphones can be connected here to monitor the combined stereo sounds of outputs 1 and 2.

Output 1/1+2 (L/MONO, R): If the OUTPUT 2 L/R jacks are not plugged in, these jacks will output the combined stereo signal from output group 1 and group 2. If the OUTPUT 2 L/R jacks are plugged in, these jacks will output the sound from the group 1 stereo output.

If only the L/MONO jack is used, it will carry the combined output of L and R. (Use the L/MONO jack if your mixer/amp system has only one input.)

Output 2 (L, R): These jacks output the sound from the group 2 stereo output. If your mixer/amp system has four or more inputs, using both the OUTPUT 1 and the OUTPUT 2 jacks will allow you to treat the two output groups in different ways, perhaps by panning them to different locations, or processing them through different external effect devices.

Expansion slots: There are five expansion memory slots behind the YAMAHA SY99 logo plate. You can install optional expansion memory boards (model SYEMB05) in these slots to expand the SY99's MDR/sample memory area to a maximum of 3 Mbytes. For details, refer to *Memory expansion boards* in the appendix (page 325).

Power switch: Press to turn the power on or off. The front panel display will light when the power is turned on.

Power cable: Plug the power cable into an AC outlet of the correct voltage.

How to move around: job directories

The functions of the SY99 are organized into five main Modes and four editing modes. Some modes have a Job Directory that shows the various jobs (functions) in the mode. Move to the desired function by selecting a job from the job directory.

Five main modes (1)

The SY99 operates in five main modes. Press one of the five mode select buttons to enter the corresponding mode. (A red LED will light to indicate the selected mode.)

Press	to enter	where you can
VOICE	Voice mode	Select and play a Voice.
MULTI	Multi mode	Select and play a Multi.
SONG	Song mode	Playback the song in sequencer memory.
PATTERN	Pattern mode	Select and playback a pattern from sequencer memory.
UTILITY	Utility mode	Make overall settings for the SY99, manage disk and card data, etc.

Play modes and Edit modes (2)

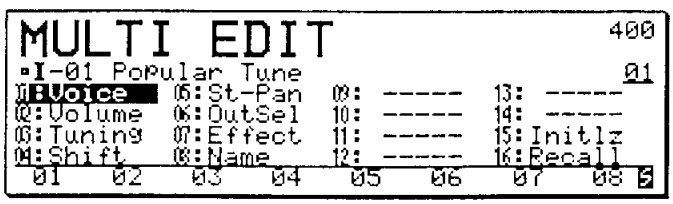
While in voice, multi, song, or pattern mode, press EDIT to move to the corresponding edit mode. For example Voice Edit mode is where you modify the settings that make up a voice, and Song Edit mode is where you modify the data that makes up a song. (There is no "utility edit" mode.)

Press	to enter	then press	where you can
VOICE	Voice mode	EDIT	Voice Edit mode
MULTI	Multi mode	EDIT	Multi Edit mode
SONG	Song mode	EDIT	Song Edit mode
PATTERN	Pattern mode	EDIT	Pattern Edit mode

To leave an edit mode, simply re-select any of the five main modes (or press EXIT from the top level of the edit mode to return to the main mode from which you came).

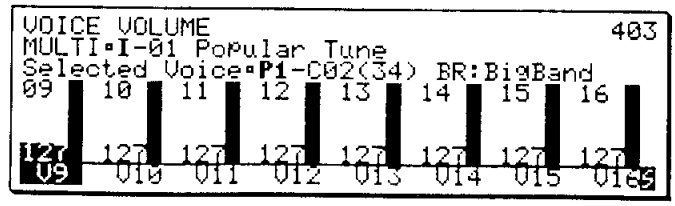
Select a job from the job directory (3)

Whenever a mode or function is sub-divided into more than one job, there will be a "job directory" that lists the various items or operations. For example, when you enter Multi Edit mode, the following display will appear.



This lists the various parameters that can be adjusted in Multi Edit mode; 1.Voice, 2.Volume, 3.Tuning, etc.

To select an item from a job directory, use the arrow keys to move the cursor to the desired item and press ENTER. For example, if from the above display you press ▽ once to move the cursor to "2.Volume" and press ENTER, the following display will appear.



To return to the job directory, press EXIT.

Function keys (4)

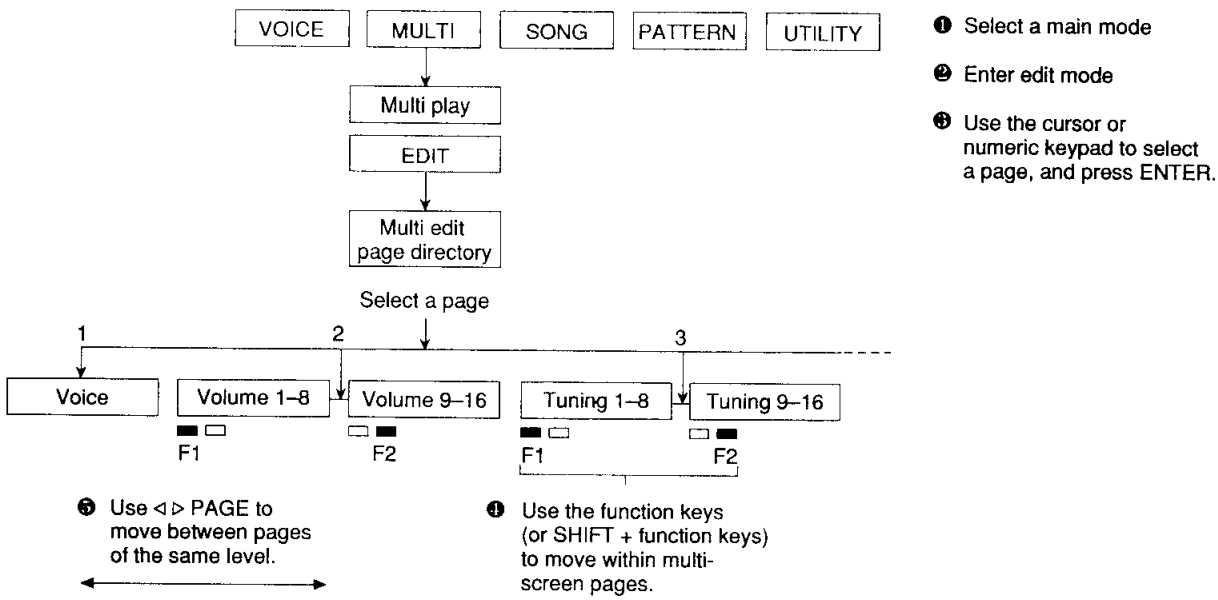
In most screens, you can press the function keys F1–F8 to move the cursor or perform various operations. In the above display for "2.Volume", pressing F1–F8 will move the cursor to channels 1–8 of the multi

Notice that an inverted "S" is displayed at the bottom right. This means that the function keys will perform additional functions when pressed while holding the SHIFT key. While you press and hold the SHIFT key in this screen, function keys F1 and F2 will switch the screen between channels 1–8 and channels 9–16 of the multi.

Move between jobs using ◁ ▷ (page) (5)

Suppose that you wanted to move from the "2.Volume" job to the "3.Tuning" job. You could press EXIT to return to the job directory, and then press 3 and ENTER to move to "3.Tuning", but there is a faster way.

To move between jobs of the same level (i.e., inside the same job directory), use the PAGE ◁ ▷ keys. For example if you are now in the "2.Volume" job, pressing PAGE ◁ would take you to the "1.Voice" job, and pressing PAGE ▷ would take you to the "3.Tuning" job. When moving to a nearby job, this is usually faster than returning to the job directory.



How to move around: the jump function

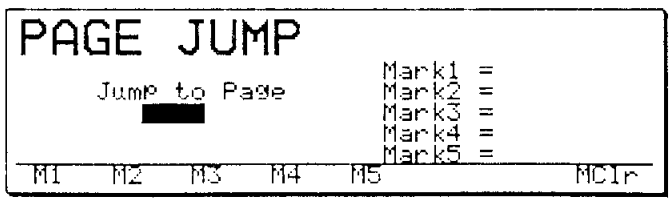
If you already know the exact function you need to use, it is possible to jump directly to a specific page number instead of working your way through the job directories. The jump function also allows you to mark frequently used pages for easy jumping.

Jump to a specified page number

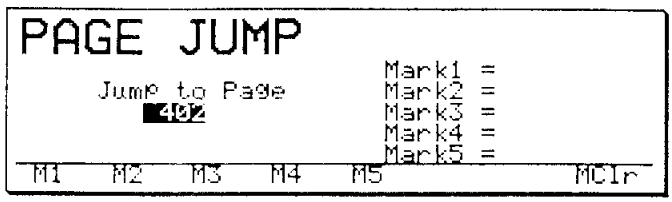
If you need to move to a distant job, it may sometimes be necessary to press EXIT several times, and then move down through two or more job directories. In such cases, it is much faster to jump directly to a specific page.

You may have noticed that most page displays have a unique three-digit number in the upper right corner. This is the Display Page number. For example, "Multi edit 2. Multi Volume" is page #402. If you frequently need to adjust the settings of this page, remember this page number. Then, no matter where you are, you can press JUMP, 4, 0, 2, and ENTER to jump instantly to that page.

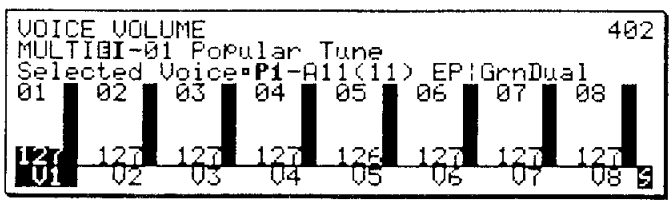
1. Press JUMP.



2. Enter the three digit page number.



3. Press ENTER and you will jump to the specified page.

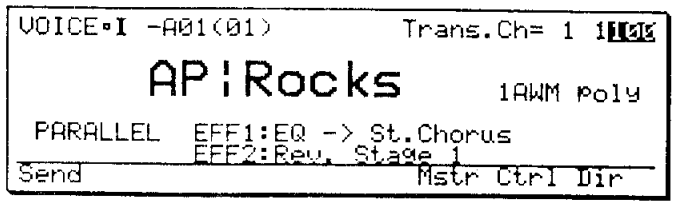


While you are becoming familiar with the SY99 it will probably be easier for you to select the desired page while viewing a page directory. However as you gain more experience, you may find it convenient to use the JUMP key to go directly to frequently-used pages. The page numbers for each function are listed in the REFERENCE section of this manual and on the supplied JOB TABLE card.

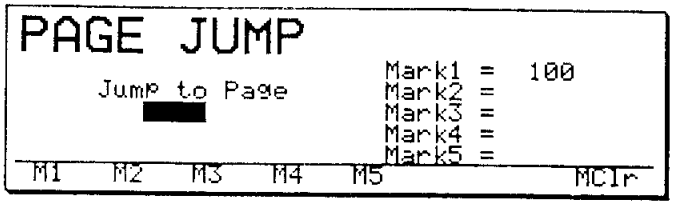
Mark frequently used pages

Practiced programmers may even find the jump function a bit tiresome, since each jump requires five keystrokes. You will be happy to know that there is a solution to this, too: you can mark up to five frequently used pages for easy access with just a couple of keystrokes.

1. To mark a page, press JUMP while holding the SHIFT key down.



2. The page will be added to the menu of marked pages which appears whenever you press the JUMP key.



3. To jump to one of the marked pages, simply press the JUMP key followed by the function key corresponding to the page you wish to jump to.

You will notice that newly marked pages are added to the function key menu in sequence, from F1 to F5. Once marked pages have been assigned to each of these five keys, however, new pages are added on a first in/first out basis. This means that whenever a page is marked, it is assigned to function key F5. At the same time, the page that was assigned to F1 becomes unmarked, and the other marked pages (assigned to F2 through F5) shift up to take its place.

You can clear all of the marked pages at once by pressing JUMP followed by F8 (MClr).

Jump and the Auto-Store function

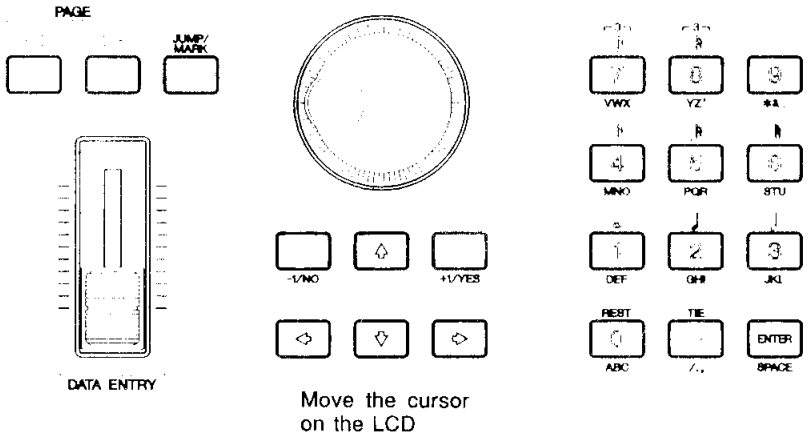
Whenever you leave Multi Edit or Voice Edit mode after modifying the data, whether by pressing EXIT or by using the jump function, the Auto-Store message will appear to ask you whether you want to save your modifications. At this point you must press F6 (Ret) to return to the edit mode, F7 (Quit) to quit without storing the changes, or F8 (Stor) to store the data.

How to enter data

To select a voice, adjust a parameter, or give a name to a newly created setting, you will need to enter various types of data into the SY99. The –1/+1 keys, data entry slider, and data entry dial provide various ways to enter data. Use the data entry method that is most appropriate for each situation. (page 30 explains how to use the numeric key pad.)

Select the data to enter

First, use the arrow keys ◁ ▷ △ ▽ to move the inverse cursor to the data you want to modify.

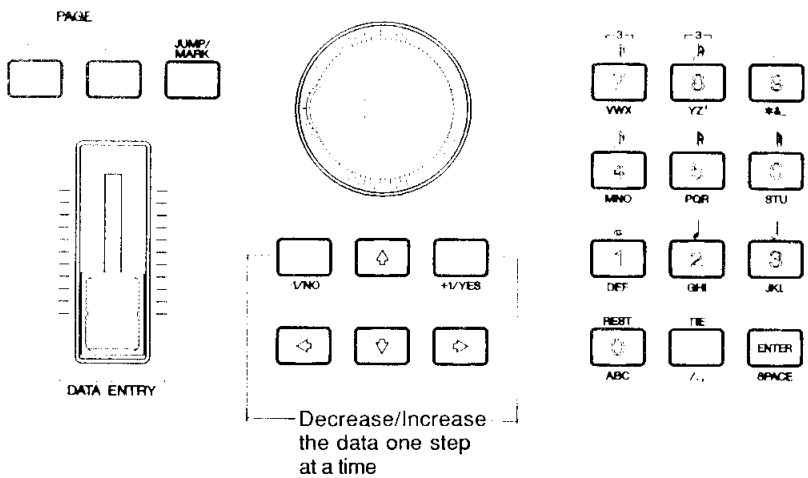


Next you will modify the value using one of the following; –1/+1 keys, data entry wheel, data entry slider, or the numeric key pad. The method you use will depend on how you want to modify the data.

–1/+1 (no/yes)

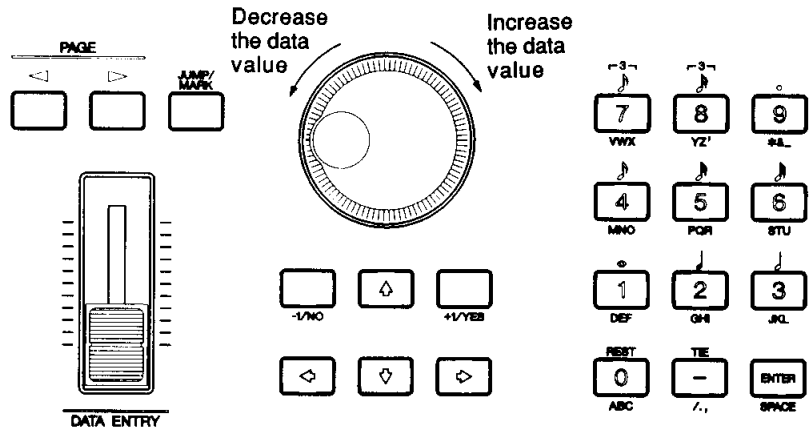
If you want to decrease or increase the existing data value one step at a time, use the –1/+1 keys. Each time you press the –1 or +1 key, the data will decrease or increase one step. This method allows you to move in precise steps, but can take a long time when you need to make a major change in the value.

Some parameters consist of a "off/on" setting, and sometimes you will be asked to reply "no/yes" to a question (such as "Are you sure ?"). In such cases, press –1 to turn something off or to answer "no", and press +1 to turn something on or to answer "yes".



Data entry wheel

If you want to decrease or increase the existing data value by a significant amount, use the data entry wheel. As you rotate the wheel to the right (clockwise) the data will increase, and as you rotate the wheel to the left (counter-clockwise) the data will decrease. The wheel rotates freely; it modifies the data by its *movement*, not by its position. Like the –1/+1 keys, the data entry wheel modifies the existing value, but is more suitable for making larger continuous changes. In job or voice directories, the wheel can be used to select jobs and voices.

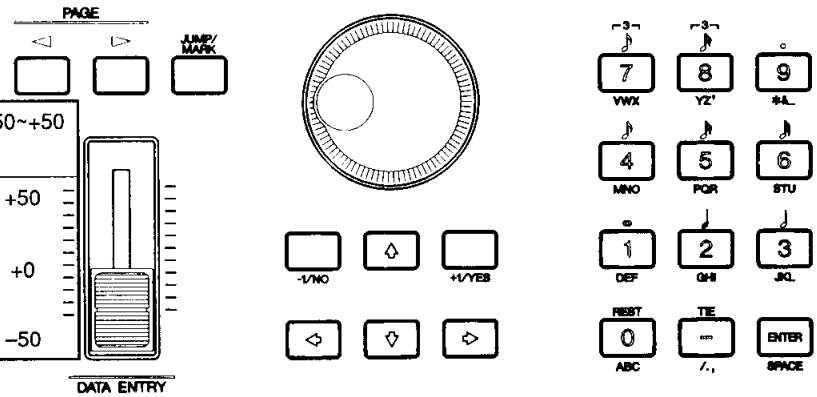


Data entry slider

If you want to set a data value to some setting relative to the entire range of that value (for example "maximum", "minimum", or "about 90% of maximum"), use the data entry slider. When you move the slider, the data value is immediately changed to correspond to the position of the slider. The range of the slider will match the range of the parameter value. For example if the parameter being modified has a value range of 0–127, pulling the slider fully towards you will set a value of 0, and pushing the slider fully away from you will set a value of 127. Setting the slider exactly in the middle of its range would set a value of 64.

Since the range of the slider always matches the range of the parameter you are adjusting, there is no need to remember the range of the parameter; just move the slider to the position that corresponds to the relative setting you want.

Range of parameter	0~99	0~7	–50~+50
Position of DATA ENTRY slider	99	7	+50
	50	3	+0
	0	0	–50

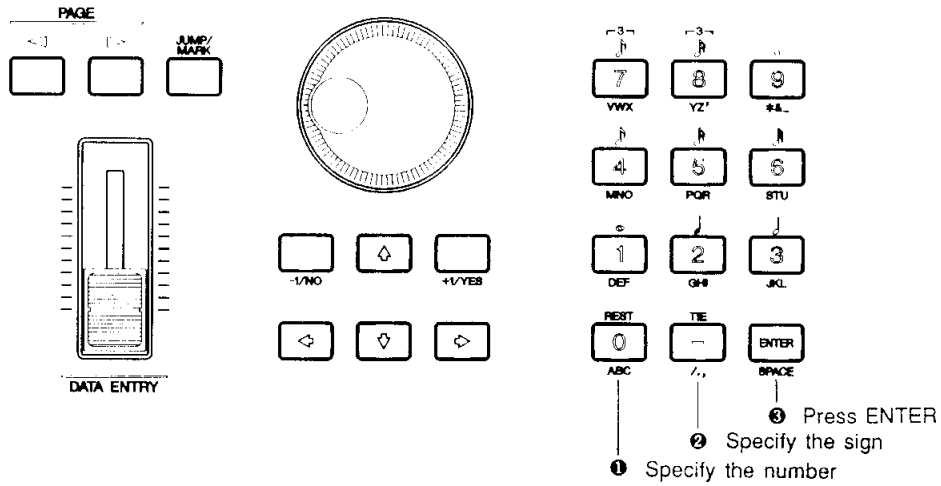


How to use the numeric key pad

The numeric key pad can be used to enter an absolute data values, as well as characters for a memory name or disk file name.

How to enter absolute numerical data

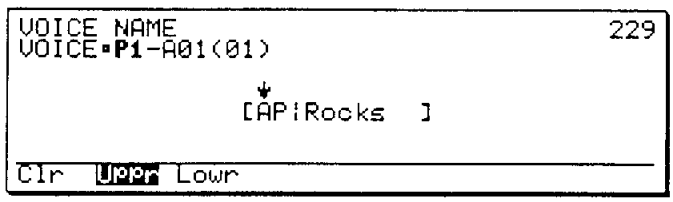
If you want to set a data value to some specific number (for example "57" or "121"), use the numeric key pad. Press one or more keys 0–9 to specify the number, press the – key to change the sign if necessary (when entering a negative number), and press ENTER. For example if you wanted to enter the number "–18", you would press 1, 8, –, ENTER. If the data value has a three-place range (such as 0–127), there is no need to add a zero in front.



In most displays, the first digit you enter from the numeric key pad will be displayed blinking. When you enter the second digit the number will be finalized.

How to enter character data

You will sometimes need to enter character data to specify a voice name, multi name, file name, etc. When the currently selected parameter requires that you enter character data, the numeric key pad will act in a different way than usual. To try this out, jump to the Voice Name page by pressing the following keys in order; JUMP, 2, 2, 9, ENTER. The following display will appear.



This display is essentially the same as for any other job that requires you to enter character data. Press F1 (Clr) to clear the currently set name, and press F2 (Uppr) or F3 (Lowr) to select uppercase or lowercase letters.

Notice that below the 0 key are printed the characters "A", "B", and "C". Press the 0 key, and the numeral "0" will appear. Press it again for the character "A", again for "B", and again for "C". Press it once more and "0" will reappear. In this way, each time you press a key, the character indicated by the cursor will alternate through the alphabetical characters printed below it and the numeral printed on the key itself. (If you press another of the numeric keys, the cycle will begin from the first character.) Notice that the third press of 8 is an apostrophe, that 9 gives you an asterisk, ampersand, and an underline character, and that - enters a hyphen, slash, comma, and period.

Other characters are available in addition to the characters entered using the numeric key pad. These characters can be selected using the DATA ENTRY slider or the -1 +1 keys. Moving the DATA ENTRY slider will scroll through all available characters in the following order.

(Space) ! " # $ % & ' ( ) * + , - . / 0 ~ 9 : ;
< = > ? @ A ~ Z [\ ] ^ _ ` a ~ z { | } ~ (Space.)

Use the ◁ ▷ keys to move the cursor, and enter characters for the desired name. Pressing the ENTER (space) key will enter a blank and move the cursor to the right.

Other uses of the numeric key pad

In step recording mode, the numeric keys specify the note value printed above each key. For example key 1 will enter a whole note and key 6 will enter a 32nd note. Details will be explained in the section on step recording.

In jobs where you are required to set parameters and execute, you will execute the specified job by pressing the ENTER button. Details will be explained when necessary.

HOW TO USE THE SEQUENCER

This section is a step by step explanation of how to create a song using the SY99's built-in sequencer. By using the sequencer in conjunction with Multi mode, you can create songs of up to 16 independent parts.

Contents of this section **page**

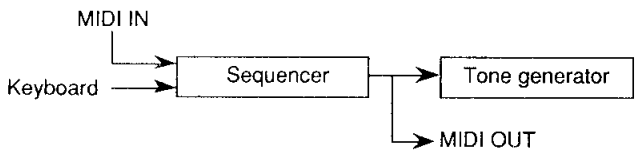
How the sequencer controls the tone generator

Although the SY99's tone generator and sequencer are contained in the same unit, they are independent. When the tone generator is in Multi mode, each channel of the multi can be played by a different track of musical data from the sequencer.

The tone generator and sequencer are independent

The SY99 is divided into two sections; a tone generator which produces sound, and a sequencer which records and plays back data such as notes and controller movements to control sound. The sequencer is completely independent of the tone generator, and has its own set of control buttons. This allows you to start or stop, record or playback at any time even while editing a voice or multi. It is especially helpful to edit a voice while it is being played by a sequencer pattern, or to make adjustments to the volume balance or pan settings of a multi while listening to the song playback.

The sequencer will record data from the SY99's keyboard and also from MIDI IN, and will play back data to the SY99's tone generator and also transmit it from MIDI OUT. The tone generator will produce sound in response to data from the sequencer and also from MIDI IN.



How the sequencer controls the tone generator

Depending on whether the SONG or the PATTERN button was last pressed, the sequencer will record and playback data either in Song mode or in Pattern mode. Depending on whether the VOICE or the MULTI button was last pressed, the tone generator will produce sound either in Voice mode or in Multi mode. This means that the sequencer and tone generator can work together in four possible ways as shown in the following table.

Sequencer	Mode	SONG	SONG	PATTERN	PATTERN
	Transmits	16 channels	16 channels	1 channel	1 channel
		↓	↓	↓	↓
Tone generator	Mode	VOICE	MULTI	VOICE	MULTI
	Receives	1 channel	16 channels	1 channel	16 channels

As you can see from the above table, the greatest musical complexity is possible when the sequencer is used in Song mode to play the tone generator in Multi mode. However other combinations of sequencer and tone generator will be useful when creating sequences, patterns, or voices. For example it is often helpful to keep a sequencer Pattern playing while you edit a Drum Voice.

Fifteen tracks + pattern track + patterns = one song

Each track 1–15 contains an independent musical performance; notes, pitch bends, controller movement, and program changes. Track 16 is a dedicated Pattern track. It contains pattern numbers and repeat marks. When playback comes to a pattern number, the specified pattern will be played.

About this tutorial

In the following pages of this section, we will be explaining the entire process of creating a song; creating patterns and arranging them in the pattern track, recording other tracks, and editing. Finally we will save the completed song to disk. Our procedure will be as follows.

1. Create a Multi by selecting a voice for each of the 16 channels, and making settings for volume, pan, etc. for each channel.
2. Enter Pattern mode and create several rhythm patterns.
3. Enter Song mode and place these patterns in track 16 (the pattern track).
4. Record one or more tracks in realtime.
5. Punch-in on a section of the track to fix a mistake.
6. Use song edit mode to correct and insert individual data events.
7. Use a song edit job to transpose specified measures.
8. Save the completed sequence to disk.

Note:

The output channel of the sequencer tracks can be changed if desired, allowing you to use two or more tracks to control a single channel of the multi. However to keep this tutorial simple, we will select normal voices (piano, bass, strings, etc.) for channels 1–15 of the multi and a drum voice for channel 16 of the multi. Tracks 1–15 of the sequencer will contain the music for the normal voices, and track 16 will contain the patterns to play the drum voice.

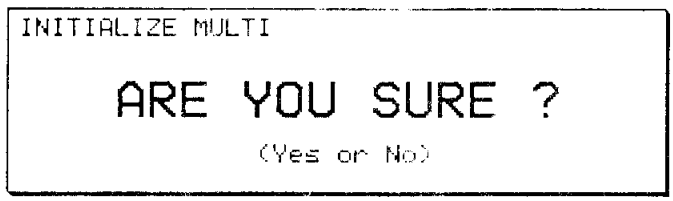
Set up a multi

When the SY99's tone generator is used in Multi mode, it will function as 16 independent synthesizers. This allows each track of the sequencer to play a different sound.

Start with an initialized multi

Since we will be creating a song with more than one track, we will use the SY99's tone generator in multi mode so that it will function as 16 independent synthesizers.

Press MULTI, then press EDIT. While holding SHIFT press F7 (15) to select the Initialize job.

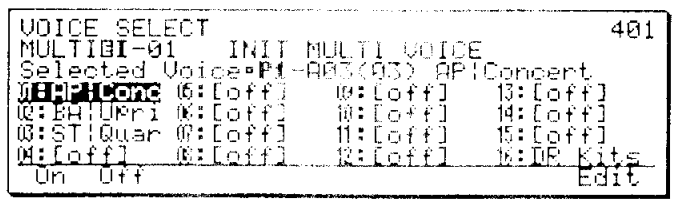


Press +1/YES. The display will show "Completed!".

Select a voice for each channel of the multi

Press F1 (01) to get the Voice Select display. Here you can specify the voice that will be played by each channel 1–16 of the multi. Move the cursor and use the MEMORY, BANK, and memory select buttons 1–16 to select a voice for each channel.

In this example we will assume that you have selected Multi number 1, and assigned the following voices: P1-A03 Concert (a grand piano) for channel 1; P2-C06 Upright (an acoustic bass) for channel 2; P1-C15 Quartz (a string section) for channel 3; and P1-D14 Kits (drums) for channel 16. (Feel free to select voices for other channels of the multi as well.) Turn off unused channels of the multi by pressing F2 (Off). The display should appear as shown below:

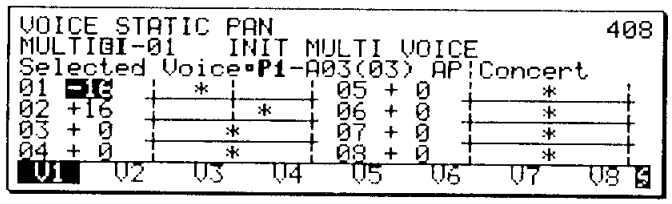


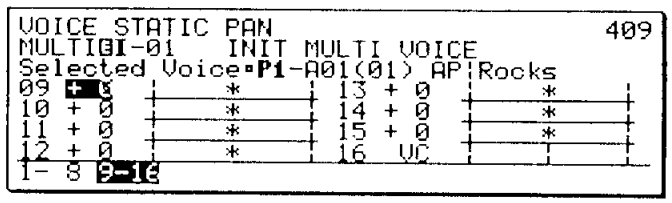
Press EXIT to return to the Multi Edit job directory.

Make pan settings for the multi

Press F5 (05) to select 05:St Pan. In this display you can make pan settings for each channel of the multi. For this example, we will pan the piano to the left, the strings to the center, and the bass to the right. Since the drum voice has a different pan setting for each of the 76 notes, we will let the drum voice use its own pan settings by setting it to "VC" (voice).

Make settings as shown in the following displays. To switch between the displays for channels 1–8 and channels 9–16, hold SHIFT and press F1 (1–8) or F2 (9–16). The pan range is from –31 (full left) through 0 (center) to +31 (full right). The asterisks show the approximate pan position for each channel. The "VC" setting can be selected by panning *past* the –31 setting.

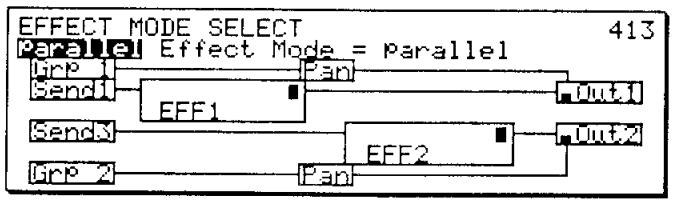




Press EXIT to return to the Multi Edit job directory.

Make effect settings for the multi

Press F7 (07) to select 07:Effect from the Multi Edit job directory and then press F1 (01) to select 01:Effect Mode Select. With the initial settings the Effect Mode will be off. Press +1/YES twice to set the effect mode to "parallel".



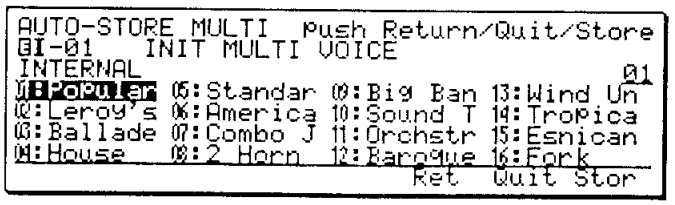
With the initial settings, effect type 1:Rev.Hall is selected for both effect units. Press EXIT twice to return to the Multi Edit job directory.

Other settings in multi edit mode

To keep this example simple, we will leave the rest of the multi settings at their initial values. After completing this tutorial, you can read about *Multi edit* in the *Reference* section to learn more about setting up a multi.

Save the newly created multi

From the Multi Edit job directory press EXIT. Since you have modified the data, the top line of the display will blink "Auto-store multi".



Press F8 (Stor) and the multi will be stored into the currently selected multi memory. Or, if you want to keep the previous data of that multi, use the memory select buttons 1–16 to specify a different memory before you press F8 (Stor).

The bottom line of the display will ask "Are you sure?". Press +1/YES and the newly edited multi will be stored, and you will return to multi play mode.

Create rhythm patterns and edit the pattern track

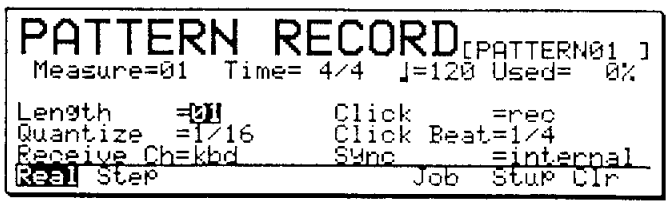
Pattern mode allows you to create short phrases of 1–32 measures. In Song mode, these patterns can be placed in track 16 (the pattern track) of a song for use as rhythm parts or for phrases which appear frequently.

Make settings for pattern recording

Press PATTERN, then press RECORD to make the RECORD LED light. Make the following settings.

PATTERN01			(we will record pattern 01)
Time	=	4/4	(the pattern will be in 4/4 time)
Length	=	01	(the pattern will be one measure long)
Quantize	=	1/16	(notes will be corrected to the nearest 1/16th
Receive Ch	=	kbd	(notes will be recorded from the SY99 keyboard)
Click	=	rec	(the click will sound only while recording)
Click Beat	=	1/4	(the click will sound on each quarter note)
Sync	=	internal	(the SY99 will keep time to its own internal clock)

Press F1 (Real) to select realtime recording. The LCD should now appear as follows:



Record the pattern

When you enter pattern recording mode, the keyboard will transmit the channel selected for track 16 (the pattern track) of the sequencer. With the default settings this will be channel 16, which will play the drum voice we selected for channel 16 of the multi.

Before you begin recording, play the keyboard to locate the rhythm sounds you will be using. Our first pattern will be a simple rhythm backing of bass drum, snare, and hi-hat.

Press RUN and pattern recording will begin. Keep time to the click and play the bass drum part (the A1 key) for one measure. The pattern will continue to repeat from beginning to end, and you can hear the bass drum pattern just recorded. Next, play the snare notes (E2), and finally play the hi-hat notes (A2 and B2). Of course it is possible to record more than one note at a time, and as you become more skilled you may wish to do so. You can delete any given note from the pattern by pressing SHIFT while holding down the key of the unwanted note, and allowing the pattern to run through the section you wish to erase.

Press STOP and pattern recording will end. Notice that the upper right corner of the LCD now shows PATTERN01w. The "w" indicates that data has been written into the pattern.

Record another pattern

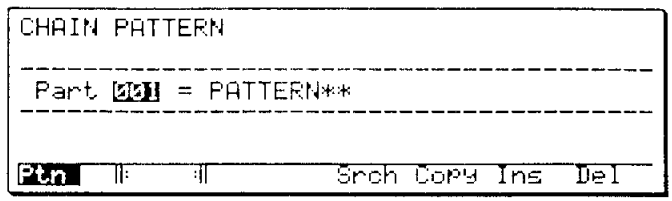
For the second pattern we will record a fill-in with toms (B1, C2, D2, F2) and crash cymbal (C#3). Press RECORD to make the RECORD LED light, and move the cursor to the upper right and select PATTERN02. Notice that there is no "w" after the pattern number, since no data has been written into this pattern.

Press RUN and pattern recording will begin. Now you can record an appropriate fill-in pattern.

Press STOP and pattern recording will end.

Chain Pattern mode

Before recording the other tracks, we will place the previously recorded patterns into track 16. Press SONG and then EDIT to enter song edit mode. Press program select key 16 to select track 16 (the pattern track) for editing. While editing track 16 you will be in Chain Pattern mode.



Using repeat marks

In this example, we will chain patterns so that three measures of the basic rhythm are followed by a fill-in, and make this four-measure chain repeat eight times. Although is is possible to input all 32 parts (the four-measure chain x 8 times), it is more efficient to use repeat marks. To do this we will input data for each part as follows.

Part 001 : ||:
Part 002 : 01
Part 003 : 01
Part 004 : 01
Part 005 : 02
Part 006 : :|| x 7

Input the data for each part

Move the cursor to the right and press F2 (||:) to enter a repeat begin mark for part 001, then press ENTER. The "Part" display will advance to 002.
Select pattern "01w" for Part 002, and press ENTER.

In the same way input pattern 01 for parts 003 and 004, and pattern 02 for part 005.

For part 006, press F3 (:||). Use -1 +1 to specify "x 7" so that the range of parts between the begin and end repeat marks repeat 7 times. Be sure to press ENTER to enter each part.

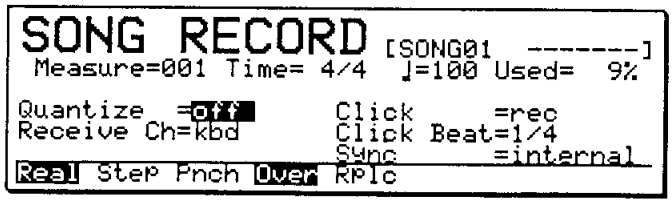
When you are finished editing the chain of patterns, press EXIT to return to Song Play mode. Press RUN and you will hear the newly edited chain of patterns.

In realtime recording the notes you play will be recorded in the exact timing with which you play them.

Make settings for realtime recording

From the song play display press RECORD to enter song record mode and press F1 (Real) to select realtime recording.

If you have been following along with the previous pages of this section, the various settings will be the same as you specified in Pattern recording. However, for realtime recording a track, you may wish to turn off quantization. Move the cursor to Quantize and press -1 several times to select "off".



Record the first track

In song mode, the memory buttons 1–15 select the track to record. For this example, press the select button 1 to make the track 1 LED light red. With the default settings track 1 of the sequencer will transmit its data on channel 1. Since in this example you have selected a piano voice for channel 1 of the multi, you will hear the piano voice when you play the keyboard.

To begin recording press RUN. The RUN LED will blink and after a two-measure countdown recording will begin. Play the keyboard. As you record, the Measure display will advance to show the number of the measure currently being recorded.

When you are finished recording the track, press STOP. You will return to the song play display.

Press |◁ to return to measure 1, and press RUN to hear the track you just recorded. Press STOP to stop playback.

Record additional tracks

To record additional tracks,

- press RECORD
- press a memory button 2–15 to select another track (LED lights red)
- and press RUN to record the track while listening to previously recorded parts. Press STOP to stop playback.

In this way, record all the tracks of the song. As you record each track you will hear the previously recorded tracks play back. The multi we created in the beginning of this example uses the following voices.

Multi channel	Voice number	Voice name
1	P1-A03	APiConcert
2	P2-C06	BAiUpright
3	P1-C15	STiQuartz
...		
16	P1-D14	DR Kits

With the initial settings of the sequencer, tracks 1–16 will transmit their data on channels 1–16 (this can be changed) and be received by channels 1–16 (this cannot be changed) of the multi. If you are following this example, record the piano on track 1, bass on track 2, and strings on track 3.

Punch-in recording

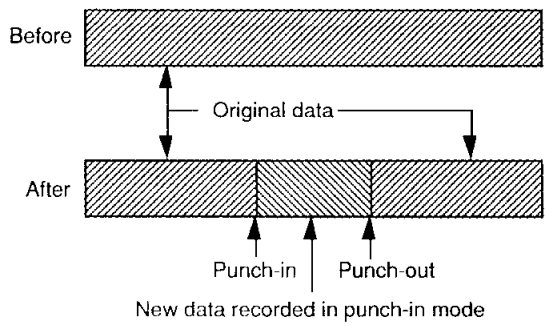
In punch-in recording the notes you play will be recorded in the exact timing with with you play them, but only over the measures you specify. This is useful when you wish to re-record only a specific section of a previously recorded track.

When to use punch-in recording

Suppose that while recording track 2, you made a few mistakes in measures 15 and 16. While it is possible to re-record the entire track, it is more efficient to use punch-in recording to re-record only the measures necessary. There is no point in using punch-in recording on a track which contains no data.

Punch-in recording allows you to specify the measure at which recording will begin and the measure at which recording will end. Measures before and after this area will not be affected.

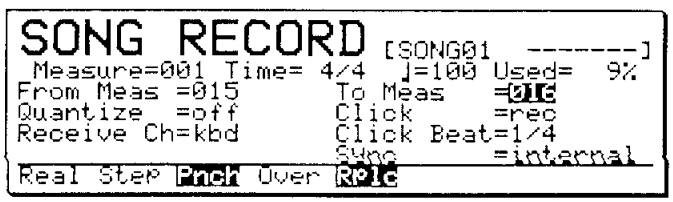
The following diagram shows the result of punch-in recording.



Specify the area of measures to re-record

In this example we will assume that you wish to re-record measures 15 and 16 of track 2.

1. Press SONG to enter song play mode.
2. Press RECORD to enter song record mode.
3. Press F3 (Pnch) to select punch-in recording.
4. Press the program select button 2 to select track 2 for recording.
5. Specify "From Meas =015" and "To Meas =016".



Re-record the specified measures

Move the cursor to Measure and select a point a few measures before 015. This will give you a chance to get the feel of the section you are going to re-record.

To begin recording press RUN. The RUN LED will blink on the beats. Play along with the original. When measure 15 is reached, the original recording on track 2 will disappear and your new playing will be recorded. When measure 16 ends, the original recording of track 2 will reappear, but playback will continue.

Press STOP and you will return to the song play display.

Song edit mode allows you to modify, insert, or delete individual events that have been recorded in tracks 1–15.

When to use song edit

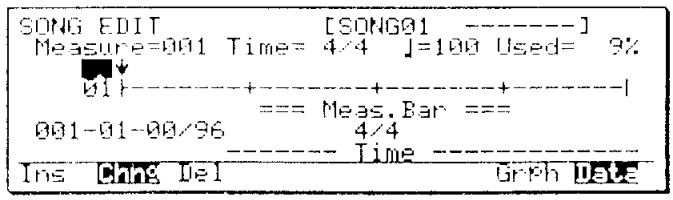
As explained earlier, a sequencer records not the *sound* of a musical performance but the *musical data*. Notes, controller movements, program changes, and other data are recorded as individual *events*. Song edit mode allows you to edit individual events that have been recorded in tracks 1–15.

In this example we will assume that the piano part in track 1 was perfect except for one F3 in the tenth measure that should have been an F#3.

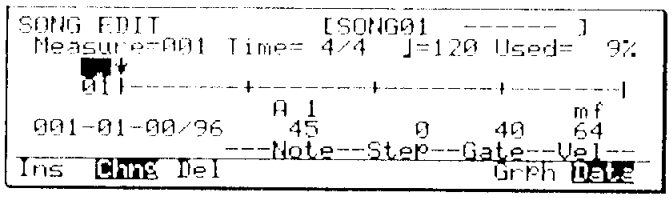
Use Data Change mode to modify the data

From the song play mode or song record mode display, press EDIT. Press a memory select button 1–15 to select the track to edit (track 1 in this example).

If you are in Data Insert or Graph modes as explained below, press F8 (Data) and then press F2 (Chng) to select data change mode. The following display will appear.



In this mode you can view and edit data in numerical form. With the cursor located at the measure number, use the dial or the -1 +1 keys to move through the data in the track. The lower part of the display will show the location (measure, beat, clock) and parameters of each data event.



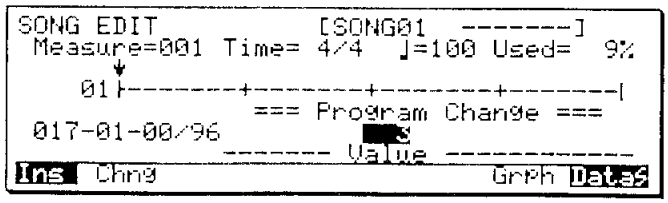
When you find the data you wish to modify (in this example, the mistaken note F3), move the cursor to Note and press +1 to change the F3 to F#3. Press ENTER to finalize the change.

Use Data Insert mode to insert new data

Song edit also allows you to insert new data into the track. In this example we will insert a program change at the beginning of measure 17 to change the voice played by this track. Press F1 (Ins) to select data insert mode.

To specify the type of data to be inserted, press and hold SHIFT. Then press F2 (Prog) to insert a program change.

With the cursor at the far left, specify measure 17 as the location where the program change will be inserted. Next, move the cursor to the value parameter to the right and specify the data (program change number 000...127). For this example, specify a program change of 3 to select P1-A06 EP:Classic.



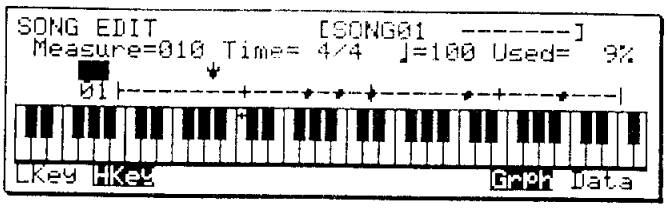
Press ENTER to insert the program change data. In the same way, insert another program change number 1 at the beginning of the track (measure 001-01-00/96) so that the original voice P1-A03 AP:Concert will be selected when the track begins.

Press F2 (Chng) to return to data change mode. Move the dial to scroll through the data and notice that the program change data has been inserted into the track.

When you return to song play mode and playback this track, the piano voice originally selected for this track will change to voice P1-A06 EP:Classic when playback reaches measure 17.

Use Graph mode to view notes

Song edit Graph mode allows you to view notes as dots on a keyboard diagram. Press F7 (Grph) to enter Graph mode. The following display will appear.



A horizontal line will be displayed with dots indicating the position of note data in the measure. To select the measure, place the cursor on the measure number and use the dial or -1 +1 keys. To move through the data note by note, place the cursor on the same row as the downward pointing arrow and use the dial or -1 +1 keys. As you move, the keyboard diagram in the lower part of the LCD will indicate the notes at the currently selected 32nd note area. The notes will also be played as you come to them.

Since the 76-note keyboard is too large to be completely displayed in the LCD, you may need to press F5 (Lkey) or F6 (Hkey) to view notes which have been played in the very highest or lowest ranges.

Graph mode displays only note data, and does not allow you to modify the data. However since it displays a diagram of the keyboard, you may find it convenient to use graph mode to find the note you wish to edit, and then press F8 (Data) to move to Data mode to change or insert data.

Playback the corrected song

Press EXIT to leave song edit mode and return to song play mode. Press |◁ and then RUN to playback the song. Check that the F3 note has been corrected to F#3, and that the voice changes to program number 3 at measure 17.

Using a song edit job

Song edit jobs allow you to make overall changes in specified measures of a track, and to copy, erase, delete, insert, or apply other operations to entire measures

When to use a song edit job

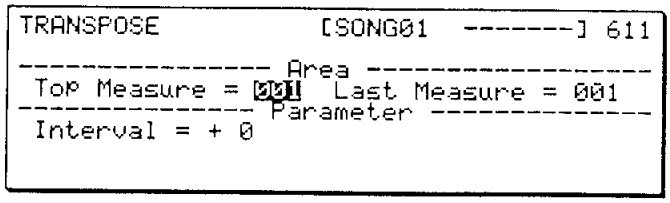
As explained in the previous section, song edit mode allows you to modify, insert, or delete individual events of tracks 1–15. This gives you very precise control over individual data events, but it is often useful to use a Song Edit Job to make overall changes that apply to all the data in one or more entire measures.

Fifteen different song edit jobs are provided, allowing you to modify the data of specified measures in various ways. You can copy, erase, delete, or insert entire measures. In this example, we will use a song edit job to transpose the notes in measures 17–32 of track 3 an octave up.

Select the song edit job

From the song play display, press F4 (Job 2) to get the Song Edit Job display.

Press F5 (05) to select the 05:Transps (transpose) job.



Set parameters and execute the job

Now we will specify the track to be affected, the area of measures, and the amount by which the data will be transposed.

1. Press memory select button 3 to select track 3.
2. Set the Top Measure =017 and the Last Measure =032.
3. Set the Interval =+12 (one octave up).

After setting the parameters, press ENTER. The bottom line of the LCD will ask "Are you sure ?". Press +1/YES and the job will be executed.

Press EXIT twice to leave song edit mode and return to song play mode.

Press RUN to playback the song, and notice that measures 17–32 of track 3 play an octave higher than measures 1–16.

Saving your sequence to disk

You may be so pleased with the fruits of your recording efforts that you would like to keep it on hand for playback in the future. Since all data is cleared from the SY99's sequencer memory when the power is turned off, you will want to save your song on a floppy disk.

In fact, it is a good idea to save your work periodically during the recording process, to prevent the accidental loss of valuable data should power to the SY99 be cut off for some reason.

Enter disk utility mode

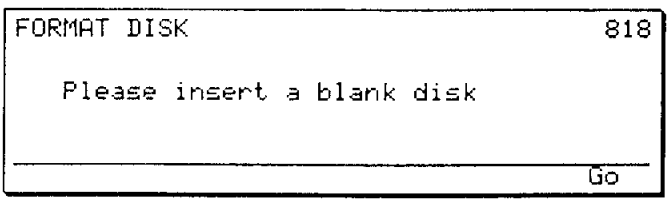
Press UTILITY to enter utility mode, make sure that a floppy disk of the correct type (3.5" 2DD) is inserted into the disk drive, and press F4 (Disk) to select disk utility mode.

Format a new disk

Before a disk can be used it must be formatted to accept SY99 data. If the disk currently inserted into the disk drive has never before been used to store SY99 data, you must format it. *Formatting the disk will erase all the data on the disk.* Be careful not to accidentally format a disk which contains valuable data.

If the currently inserted disk has already been formatted, skip to the next step.

To format the disk, select 04:Format Disk (JUMP #818). The following display will appear.



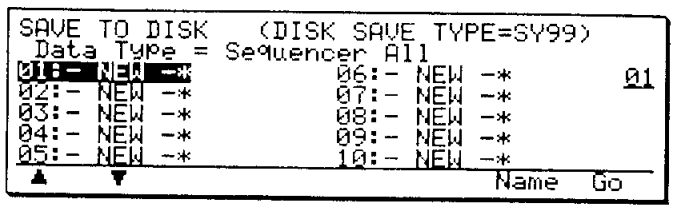
To execute the formatting operation press F8 (Go). You will be asked "Are you sure". If you are, press YES.

While the disk is being formatted the display will show "xx% Formatted". When the number reaches 100% the display will show "*** Completed ! ***". Press EXIT to return to the Disk Utility job directory.

Select the type of data to be saved

Select 03:Save To Disk and press ENTER. The disk drive will operate briefly, and the following display will appear.

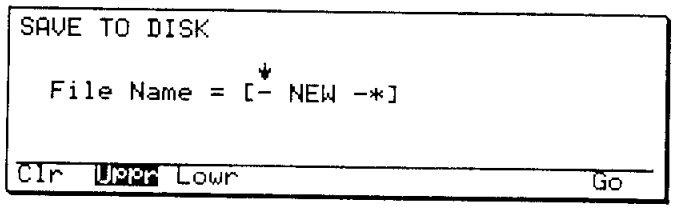
Select 03:Sequencer All, and press ENTER to get the following display.



If files containing *Sequencer All* data have already been saved on this disk, the filenames will be displayed. Move the cursor in this area to select a disk file to which you want to save your newly recorded song. For this example, select any filename of "– NEW –*".

Specify a filename

Press F7 (Name). This allows you to give an eight character name to the file.



Press F1 (Clr) to clear the currently entered name. Then specify a filename, using the numeric keypad to enter characters. Each time you press one of the numeric keys, the LCD will cycle through the number printed on the numeric key and the three alphabetical characters printed below it. Press F2 (Uppr) to switch to upper-case characters. Press F3 (Lowr) to switch to lower-case characters.

Save the data to disk

After you have entered a name for the disk file press F8 (Go). The bottom line of the display will ask "Are you sure ?" If you are sure that you want to save the data, press YES and the data will be saved to the specified disk file.
Press any mode select button to leave this job.

HOW TO EDIT A VOICE

This section explains how to edit an existing voice or create a new voice from scratch. Although it is possible to enjoy the SY99 just by playing preset voices, we suggest that you take some time to learn how to edit your own voices. It will take a bit of practice to create the sounds you want, but as you become more experienced you will find that creating voices is enjoyable and rewarding.

Contents of this section **page**

Each normal voice consists of settings for one, two, or four AFM or AWM elements (Element data) and settings which affect the entire voice (Common data). Each drum voice consists of a different AWM waveform for each of the SY99's 76 keys.

The Voice Mode determines the number of elements

The SY99 contains a 16-note AFM tone generator and a 16-note AWM tone generator. The Voice Mode setting determines how these tone generators are used to create a Voice, and how many elements are used for each note you play. Each voice uses one of these eleven voice modes.

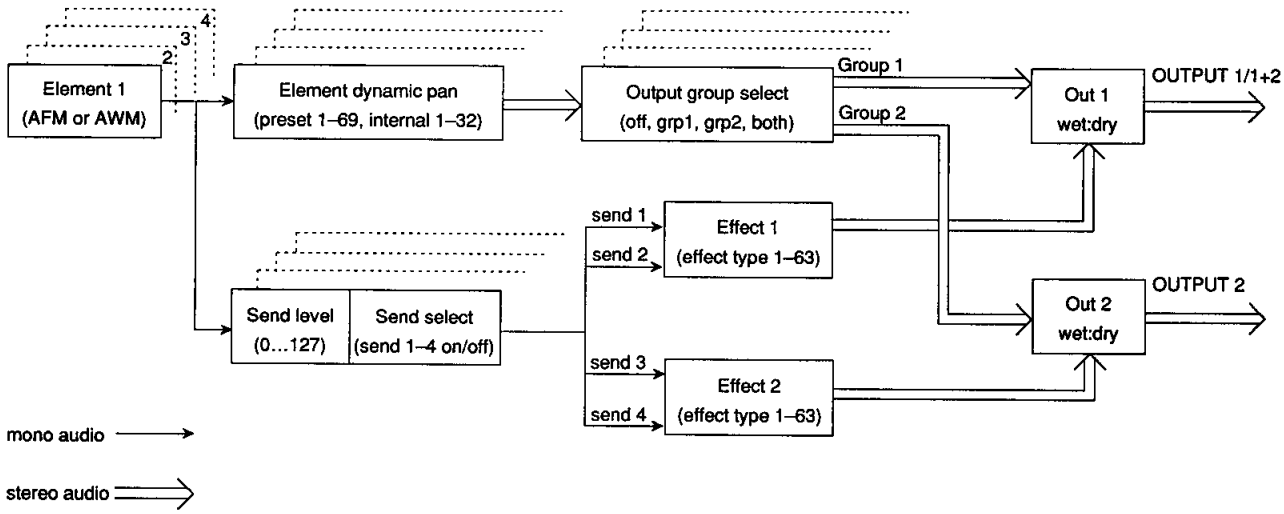
Mode	Element	E1	E2	E3	E4
01	1AFM mono	AFM	—	—	—
02	2AFM mono	AFM	AFM	—	—
03	4AFM mono	AFM	AFM	AFM	AFM
04	1AFM poly	AFM	—	—	—
05	2AFM poly	AFM	AFM	—	—
06	1AWM poly	AWM	—	—	—
07	2AWM poly	AWM	AWM	—	—
08	4AWM poly	AWM	AWM	AWM	AWM
09	1AFM & 1AWM poly	AFM	AWM	—	—
10	2AFM & 2AWM poly	AFM	AFM	AWM	AWM
11	Drum Set	76 AWM waveforms			

A normal voice uses one, two, or four elements

Voices created using modes 1–10 consist of Common data that affects all elements, and Element data for one, two, or four elements.

Common data includes a complete set of Effect data for the four DSP units, Controller data such as pitch bend and aftertouch assignments, and other data such as microtuning table selection, random pitch fluctuation, and portamento settings. Common data also contains settings such as element volume level, detune, note shift, note limit, and velocity limit for each element.

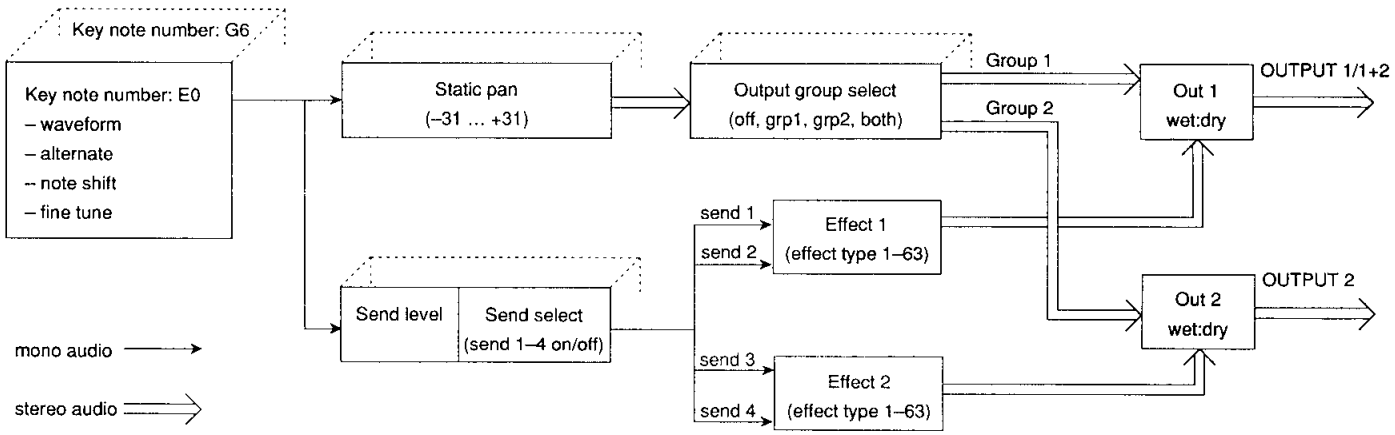
Element data includes AFM or AWM data for one, two, or four AFM or AWM elements. The voice mode will determine whether each element uses AFM tone generation or AWM tone generation. Details of AFM and AWM element data are covered separately in following sections.



A drum voice uses 76 AWM waveforms

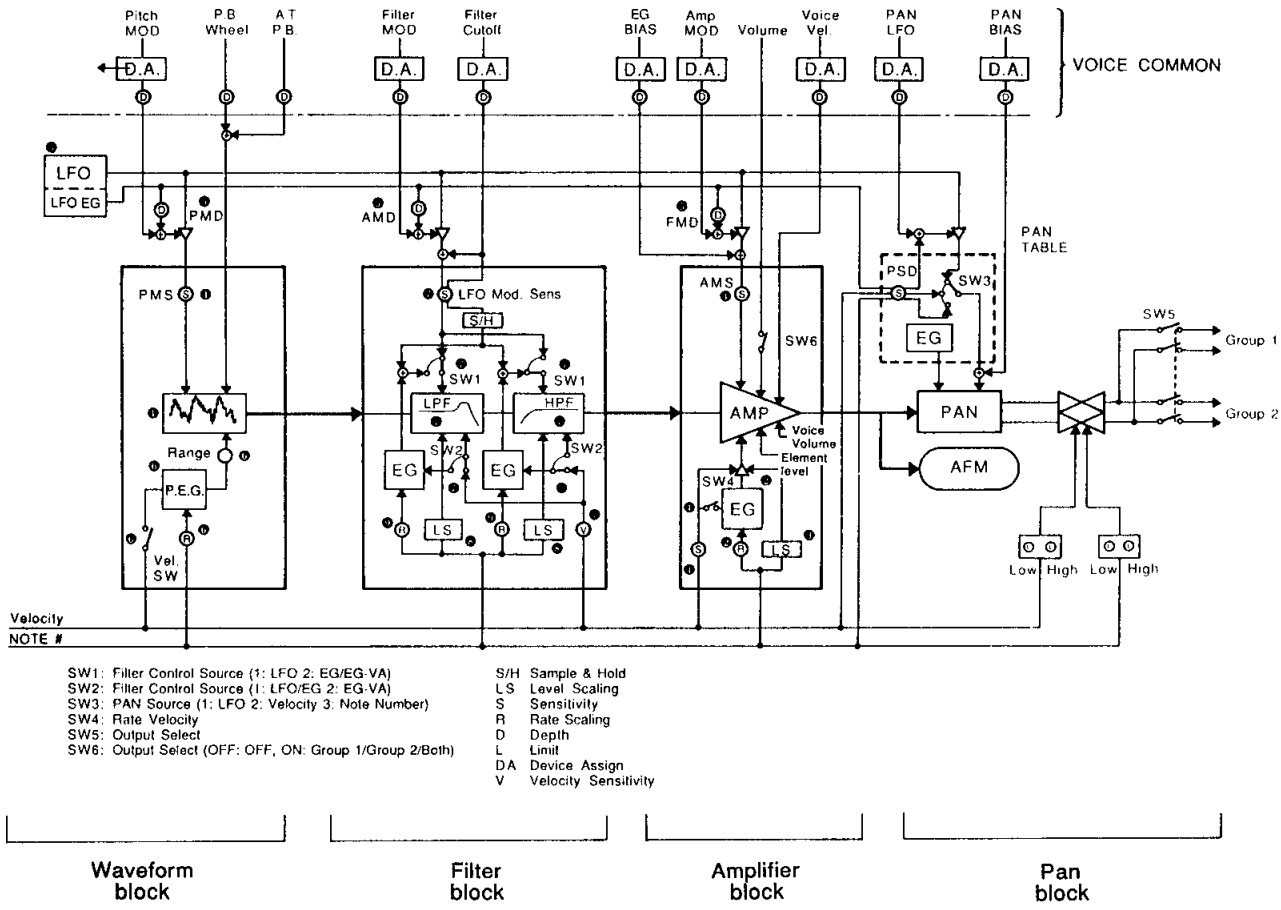
Voices created using mode 11 will have a different AWM waveform assigned to each of the 76 keys (E0–G6) of the SY99. Each key also has independent settings for volume, tuning, note shift, pan, etc.

This type of voice is most often used to arrange drums and percussion sounds across the keyboard so that each key will produce a different percussive sound. For example a bass drum might be assigned to C3, a snare to C#3, and a cymbal to D3. Drum voices may be played from the keyboard in real time or recorded from the keyboard into a sequencer track. Details of how to edit drum voices are given at the end of this section.



What is an AWM element?

An AWM element consists of four main blocks. The Waveform block plays back a sampled sound and determines the pitch, the Filter block modifies the tone, the Amplifier block modifies the volume, and the Pan block moves the sound between left and right outputs. Each block can be controlled in a variety of ways.



The above diagram shows how the various blocks in an AWM element are related, and how they can be controlled.

Many different ways to control sound

All interesting sounds are constantly changing. For instruments such as piano, the tone and volume of each note changes in a predictable way over time. For other instruments such as violin, the volume, tone, or pitch can be continuously and freely modified by the musician. The SY99 provides several ways to control various aspects of the sound.

- Envelope Generator (EG): An EG produces a fixed pattern of change over time. For example to simulate the attack and decay of a piano, you would set the volume EG to be loud when the note is first played and then gradually diminish in volume.

- Note Number: The number of the note which is played can be used to affect various aspects of the sound. For example, high notes can be made to decay more rapidly than low notes. Or, low notes can be made to change in pitch, tone, or volume more than high notes.
- Key Velocity: The velocity (speed) with which you play each key can affect various aspects of the sound. For example, strongly and softly played notes can differ in pitch, tone, or volume.
- Low Frequency Oscillator (LFO): The LFO produces various patterns of cyclical change. Vibrato is the result when the LFO is applied to the waveform block; wah-wah when applied to the filter block; and tremolo when applied to the amplitude block.
- Controllers: Controllers such as the pitch and modulation wheels, after-touch, and optional foot controllers can be used to control the sound in various ways. Some controllers such as the pitch bend wheel can directly determine the pitch. Other aspects of the sound can be controlled by the controller you assign. For example you might assign Aftertouch so that the amount of vibrato (LFO modulation to the Waveform block) is increased as you press down on the keyboard.

The waveform block determines the pitch and basic tone

The basic sound of each AWM element is produced by a waveform (a digitally sampled sound). The SY99 contains 267 different waveforms in internal ROM, and an optional waveform card can be inserted into the WAVEFORM slot to provide additional waveforms. Samples loaded from disk or via MIDI sample dump can be assigned to your own waveforms, and used in the same way as preset or card waveforms.

The waveform block can be controlled in various ways to modify the *pitch* of the sound. The pitch EG can be used to give each note a fixed pattern of pitch change, and this pitch change can also be affected by the note number or by key velocity. Vibrato (pitch modulation) can be created using the LFO, and the amount of vibrato can be regulated by a controller. The pitch can be controlled directly using the pitch bend wheel and/or aftertouch.

The filter block modifies the tone

The filter block can be controlled in various ways to modify the *tone* of the sound. Each note can be given a fixed pattern of tonal change by using the filter EG, and this can be also affected by the note number or key velocity. Wah-wah (filter modulation) can be created using the LFO, and wah-wah depth can be regulated by a controller. The tone can also be directly affected by a controller.

The amplifier block modifies the volume

The amplifier block can be controlled in various ways to control the *volume* of the sound. Each note can be given a fixed pattern of volume change by using the amplifier EG, and this can also be affected by the note number or key velocity. Tremolo (volume modulation) can be created using the LFO, and tremolo depth can be regulated by a controller. The volume can also be directly affected by a controller.

The pan block moves the sound

The pan block can be controlled in various ways to move the sound between left and right outputs. Each note can be given a fixed pattern of panning by using the pan EG, and this panning can be further affected by either note number, key velocity, or LFO.

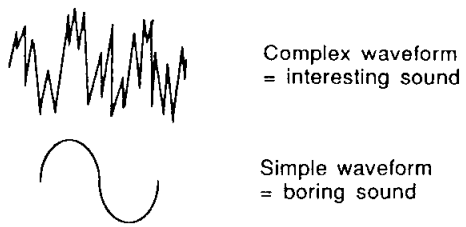
The basics of FM synthesis

FM synthesis is a patented Yamaha method for using Frequency Modulation (FM) to produce complex waveforms that can be controlled in musically useful ways.

Interesting sounds have complex waveforms

The sounds produced by most musical instruments have a very complex waveform, which is constantly changing.

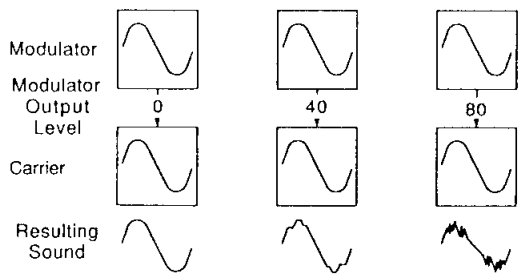
Electronic instruments use an oscillator to produce a waveform. Unfortunately, electronic oscillators are best at producing simple and repetitive waveforms. These waveforms sound "artificial" or "electronic", and are not very interesting to listen to. A major concern of electronic musical instrument design is to find a simple way to electronically produce a complex waveform and be able to control it.



FM is a simple way to make a complex waveform

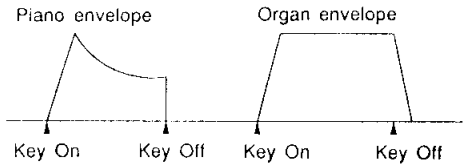
The advantage of FM synthesis is that waveforms with very complicated harmonic structure can be simply and economically created, and controlled in many different musically useful ways. In FM synthesis, one waveform is used to modulate another waveform. Even if the two original waveforms are simple, the result can be a complex and interesting sound.

In the following diagram, the upper oscillator is called the Modulator and the lower oscillator is called the Carrier. The complexity or brightness of the resulting waveform that we hear will depend on the output level of the Modulator; i.e., as we increase the modulation, the complexity or brightness will increase. Increasing the output level of the Carrier will simply increase the volume.



Interesting sounds change over time

Many instruments have a characteristic pattern with which the sound changes as time goes by. This "shape in time" is called the envelope. The following diagram shows how a piano envelope differs from an organ envelope. A piano begins loud and then gradually diminishes in volume and tonal complexity. An organ however maintains the same volume and tone as long as the key is pressed.



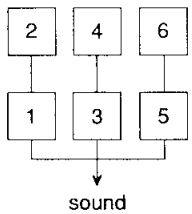
In synthesizers, a device called an Envelope Generator (EG) is used to produce a "shape in time" which can be used to control various aspects of the sound.

An algorithm is an arrangement of six operators

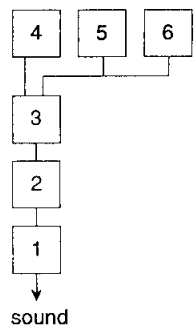
In Yamaha FM synthesizers, each oscillator has its own Envelope Generator (EG) to vary its output level over time. This package of oscillator and EG is called an Operator.

The FM tone generator of the SY99 uses six operators to produce sounds. These six operators can be arranged in 45 different basic Algorithms (patterns or combinations). Each operator acts either as a modulator or carrier depending on its *location* in the algorithm. Only operators that appear at the *bottom* of an algorithm are *carriers*.

For example algorithm 42 uses the six operators as three separate FM pairs; operators 2, 4, and 6 (the modulators) are modulating operators 1, 3, and 5 (the carriers). On the other hand, algorithm 6 has only one carrier; operators 4, 5, and 6 are all modulating operator 3, which is modulating operator 2, which is modulating operator 1.



Algorithm 42



Algorithm 6

How to change the tone of an FM sound

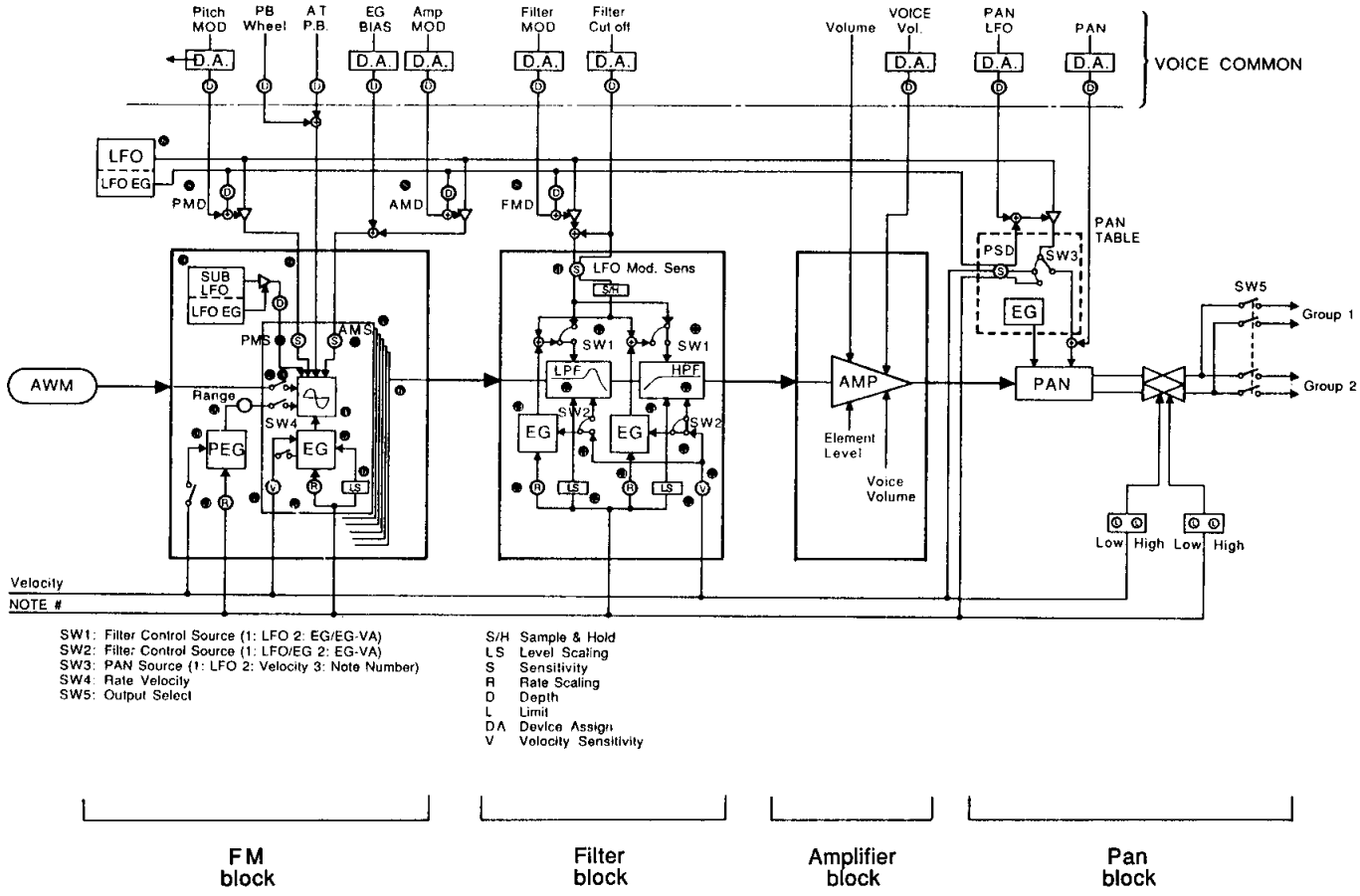
We have learned that the output level of a modulator operator determines how complex or bright the resulting sound will be. This means that changing the output level of a modulator will affect the tone. The output of the carrier operator is what we actually hear, so changing the output level of a carrier will affect the volume.

Before you begin editing an FM sound, check the algorithm to see how the operators are arranged. Notice which operators are acting as carriers and which are acting as modulators. Then you can adjust the output levels of the various operators to modify the tone or volume.

Each operator has its own EG to vary the operator output level over time. Adjusting the EG of a modulator will modify how the tone will change over time. Adjusting the EG of a carrier will modify how volume will change over time.

What is an AFM element?

An AFM element consists of four main blocks. The FM block uses six operators to create a complex sound and determines the pitch and basic tone, the Filter block modifies the tone, the Amplifier block modifies the volume, and the Pan block moves the sound between left and right outputs. Each block can be controlled in a variety of ways.



The above diagram shows how the various blocks in an AFM element are related, and how they can be controlled.

Many different ways to control sound

As explained in the previous section "What is an AWM element", an AFM element can be controlled in various ways using EG, note number, key velocity, LFO, and controllers.

The FM block determines pitch, tone, and volume

The basic sound of each AFM element is produced by six FM operators arranged in an algorithm. The FM block can be controlled in various ways to modify the *pitch*, *tone*, and *volume* of the sound.

- EGs of the six operators determine how the volume and tone will change over time. Each operator EG can also be affected by the note number or key velocity.

- Pitch EG determines how each note will change in pitch over time. This pitch change can also be affected by the note number or by key velocity.
- LFO signal can be used to create vibrato (by modulating operator pitch) or tremolo (by modulating the output level of a carrier operator) or wah-wah (by modulating the output level of a modulator operator). The amount of pitch modulation or amplitude modulation from the main LFO can be regulated by a controller. In addition, the FM block of an AFM element contains a Sub LFO that can be used to modulate the pitch independently of the main LFO.
- The pitch of all operators can be controlled directly using the pitch bend wheel and/or aftertouch.
- As indicated by the "AWM" in the oval at the far left of the diagram, an AWM digital sample can be used to modulate an FM operator. This is one of the most significant features of the SY99's tone generation system.

The filter block modifies the tone

The filter block can be controlled in various ways to modify the *tone* of the sound. Each note can be given a fixed pattern of tonal change by using the filter EG, and this can be also affected by the note number or key velocity. Wah-wah (filter modulation) can be created using the LFO, and wah-wah depth can be regulated by a controller. The tone can also be directly affected by a controller.

The filter blocks of AFM and AWM elements are identical.

The amplifier block modifies the volume

The amplifier block can be controlled directly by an assigned controller. Since the change in volume over time of an AFM element is determined by the EGs of carrier operators in the FM block, the amplifier block of an AFM element does not have its own EG.

The pan block moves the sound

The pan block can be controlled in various ways to move the sound between left and right outputs. Each note can be given a fixed pattern of panning by using the pan EG, and this panning can be further affected by either note number, key velocity, or LFO.

The pan blocks of AFM and AWM elements are identical.

Editing a voice is a three-step process: select a voice, modify parameters as necessary, and store the edited voice. If you do not store the voice after editing it, the original voice will reappear and your edits will be lost.

1. Select the voice to edit

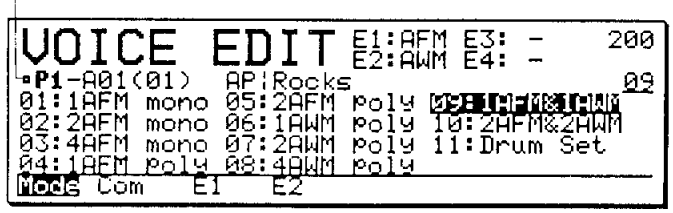
The first step in the voice editing process is to select the voice you wish to edit. Although it is possible to create a voice starting with the initialized data (a voice where all parameters are set to zero or some basic value), it is usually more efficient to start with a voice that is similar to what you want, and edit it to meet your requirements.

To select a voice, press VOICE to enter voice play mode. The VOICE LED will light red. Select voice memory INTERNAL, CARD, PRESET 1, or PRESET 2. Then select bank A, B, C, or D. Finally select a voice 1–16. The LCD will show the selected voice name.

2. Edit parameters/ compare with the original voice

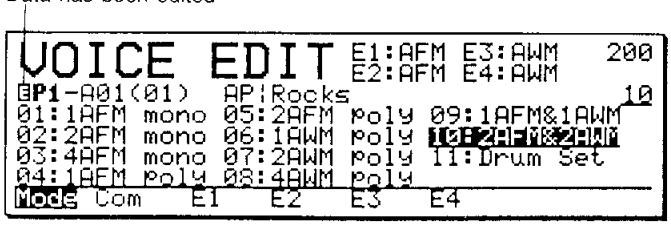
Now that you have selected a voice, press EDIT to edit it. The upper left of the LCD will show "VOICE EDIT". If "Mode" at the lower left is not displayed in inverse, press F1 to get the following display.

Original data unchanged



Notice that a small square is displayed at the left of the voice number. This indicates that the voice has not yet been edited. Press –1/+1 to modify the voice mode parameter. (For now, don't worry about what this parameter actually does. Here we are simply learning the *process* of voice editing.) The voice data has now been edited, and this is indicated by a inverse "E" displayed at the left of the voice number.

Data has been edited

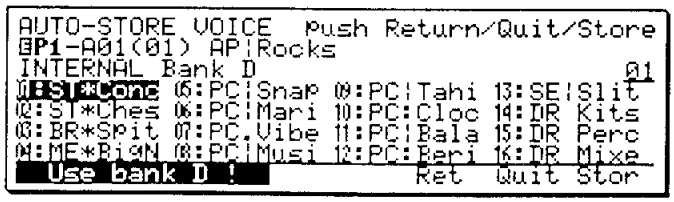


Note:

While editing, it is often useful to see and hear the original data. (This Compare function is available in most editing screens, but NOT in the screen shown above. Move to another editing screen to try out the Compare function.) To temporarily bring back the original data, press EDIT (COMPARE). Notice that a "C" is now displayed, indicating that you are in Compare mode. While in compare mode you can view the various parameters, but will not be able to modify them. To return to Edit mode, press EDIT (COMPARE) once again, and the "C" will change back to an "E".

3. Store the edited voice

When you have finished editing, you must store the voice if you want to keep it. After you finish editing, exit voice edit mode by pressing EXIT or any mode select key: VOICE, MULTI, SONG, PATTERN, or UTILITY. If you have edited the voice data in any way, the top line of the display will ask "AUTO-STORE VOICE" ?



Note:

Voices which use voice mode 3 (4AFM mono), 8 (4AWM poly), and 10 (2AFM&2AWM) occupy extra memory, and can be stored only in bank D. The AUTO-STORE display for such voices will automatically show bank D, and will show "Use bank D" in the bottom line as a reminder.

Voices which use other voice modes can be stored in bank D as well.

The LCD will show the first seven characters of the voice names in the currently selected bank of voices. The voice name displayed in inverse indicates the voice memory into which the edited data will be stored.

Storing data will overwrite the data that previously occupied that memory, so if you do not want to overwrite the original data, use INTERNAL or CARD to specify the voice memory, select a bank A–D, and select the voice memory 1–16 in which you want to store your newly edited voice.

Procedure:

When: you exit editing mode and LCD blinks "AUTO-STORE VOICE"

Specify: the memory into which you wish to store the voice.

To return: to edit mode and continue editing without storing, press F6 (Ret).

To quit: editing and return to voice play mode without storing the edited data, press F7 (Quit). You will exit voice edit mode, and the bottom line of the LCD will show "Store cancelled !" until you press another button.

To store: the data press F8 (Stor). The bottom line will ask "Are you sure ? (Yes or No)". If you are sure you want to store the edited voice, press +1/YES and the bottom line of the LCD will show "Store completed". If you decide not to store, press –1/NO and the bottom line of the LCD will show "Store cancelled".

How voice edit mode is organized

The parameters of a voice are organized into two or more Job Directories, depending on the voice mode. Each job directory lists several groups of parameters. Select a job from the job directory, and edit the parameters in each job.

Normal voice

If a voice mode of 1–10 is selected, the voice will consist of 1, 2, or 4 elements. Each element will be either an AFM element or an AWM element, depending on the selected voice mode.

Voice parameters will be organized into the following job directories. Press a function key F1–F6 to see the job directories, and select the job you want to edit.

F1 (Mode)

Specify the Voice Mode

1. 1AFM mono
2. 2AFM mono
3. 4AFM mono
4. 1AFM poly
5. 2AFM poly
6. 1AWM poly
7. 2AWM poly
8. 4AWM poly
9. 1AFM&1AWM poly
10. 2AFM&2AWM poly
11. Drum set

F2 (Com)

Common data edit job directory

1. Element level
2. Element detune
3. Element note shift
4. Element note limit
5. Element velocity limit
6. Element dynamic pan
7. Output group select
8. Random pitch
9. Portamento
10. Effect set
11. Micro tuning set
12. Controller set
13. Voice name

...

15. Initialize voice
16. Recall voice

F3 (E1) F4 (E2)

AFM element edit job directory

OR

1. AFM algorithm
2. AFM oscillator
3. AFM EG
4. AFM operator output
5. AFM sensitivity
6. AFM LFO
7. AFM pitch EG
8. AFM filter

...

15. Initialize AFM element
16. Recall AFM element

F5 (E3) F6 (E4)

AWM element edit job directory

1. _____
2. AWM waveform set
3. AWM EG
4. AWM output
5. AWM sensitivity
6. AWM LFO
7. AWM pitch EG
8. AWM filter

...

15. Initialize AWM element
16. Recall AWM element

Drum voice

If voice mode 11 has been selected, the voice will consist of 76 AWM waveforms, with a different waveform assigned to each key of the SY99's keyboard. Voice parameters will be organized into the following job directories. Press a function key F1–F2 to see the job directories, and select the job you want to edit.

F1 (Mode)

Specify the Voice Mode

1. 1AFM mono
2. 2AFM mono
3. 4AFM mono
4. 1AFM poly
5. 2AFM poly
6. 1AWM poly
7. 2AWM poly
8. 4AWM poly
9. 1AFM&1AWM poly
10. 2AFM&2AWM poly
11. Drum set

F2 (Com)

Drum Set edit job directory

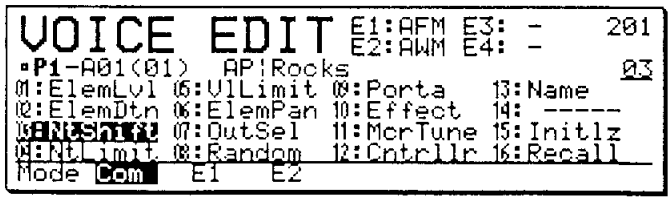
1. Voice volume
2. Wave data set
3. Effect set
4. Controller set
5. Name

...

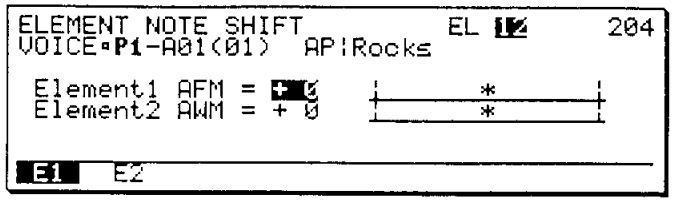
7. Initialize
8. Recall

How to select a job

Suppose that you are editing a normal voice and want to edit the Note Shift settings for each element. Press F2 to select the Voice Common data job directory.



Notice that the note shift parameter is job 03. Use the cursor keys or press 0 then 3 on the numeric key pad to move the inverse cursor to "03.NtShift". Then press ENTER and you will enter the Element Note Shift job.



To return to the job directory, press EXIT.

You can use the ◁▷ (PAGE) keys to move to other jobs in the same directory. For example from the note shift job, pressing ◁ would take you to job 02.Element Detune, and pressing ▷ would take you to job 04.Note Limit.

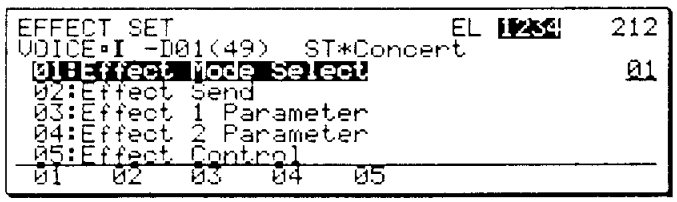
Simple editing: reverb (Effect)

The effect units allow you to add a variety of effects such as chorus, flanging, echo, delay, reverb, pitch change, rotary speaker, and ring modulator, etc. Adjusting the effect is an easy way to change the overall character of a voice.

Select a voice and enter edit mode

Press VOICE and select a voice. So that it will be easy to hear the result of this editing example (and the editing examples in the following sections), select any bright, sustained voice. The voice names and parameter settings shown in the LCDs in this and following sections are for purpose of example, and do not necessarily correspond to any factory preset data.

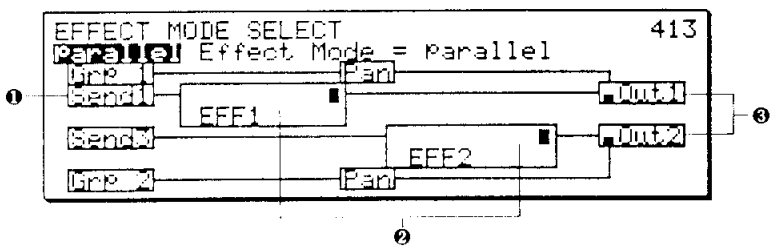
Press EDIT to enter voice edit mode. Press F2 to select the voice edit Common data job directory, and press the numeric keys 1 then 0 or use the arrow keys to select "10.Effect". Press ENTER and the Effect parameter job directory will appear.



First we will be selecting the effect mode and effect types. Press F1 to select "01.Effect Mode Select".

Select the effect modes

The SY99 contains two effect units, which can be connected either in serial or parallel. Use the -1/+1 keys to select the effect mode. The LCD will graphically indicate how the signal flows from the effect sends into the effect units, and then combined with the dry (unprocessed) sound from the stereo output groups. If "off" is selected the effect units will not be used.



The sound from the effect sends 1–4 ❶ is sent to the effect units ❷ and mixed ❸ with the dry stereo sound from the output groups.
For this example, select "parallel" mode.

Select the effect type for effect 1

Press the cursor key ▷ once to move the cursor to the "EFF1" area. The LCD will show the currently selected effect type above the graphic. You can select one of the 63 effect types for each of the SY99's two effect units. You will want to try out the various settings later; for now, set this to "1:Rev.Hall".

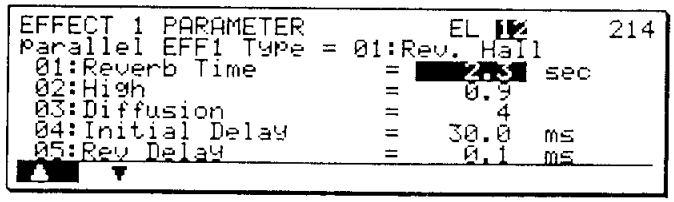
Adjust the wet:dry balance

Press the cursor key ▷ key twice to move the cursor to the "Out1" area. The LCD will show "Out1 wet:dry =" above the graphic, followed by a ratio indicating the balance between effect and unprocessed sound that is output by the voice selected. The first number indicates the amount of effect sound that is output; the second indicates the amount of unprocessed sound which the effect sound is mixed with. Use the DATA ENTRY slider or the data entry wheel to change this value to 100:0, and notice how the sound changes. (Actually you will still hear some dry sound from Output 2.)

In order to make the result of the following edits obvious, leave the wet:dry setting at 0:100.

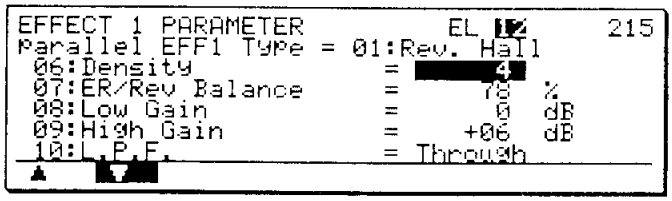
Adjust parameters for effect 1

Press the PAGE ▷ key twice to get the following display.
If the lowest parameter numbers are not showing, press F1 (△) to scroll up.



Here you can edit the parameters of effect 1. With the cursor located at the value for "01:Reverb Time" (initially 2.6 seconds), increase the value while playing the keyboard. Notice that longer reverb times give the impression of a larger more reverberant hall.

You may wish to adjust some of the other parameters of the effect. The number of parameters will depend on the effect type. "01:Rev.Hall" has ten parameters. To adjust the other parameters, press F2 (▽) to get the following display.



When finished, press EXIT twice to return to the voice edit Common data job directory.

Bypass the effect to hear the unprocessed sound

Whether you are in play mode or edit mode, you can press the EF BYPASS switch at any time to bypass the effect units. When you press EF BYPASS the LED will light, and you can hear the sound without the effect. Press it once again, and the LED will go out and the effect will be applied once again.

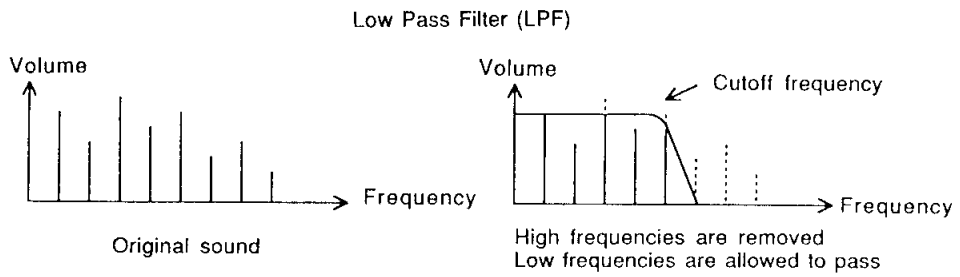
While the effect is bypassed, the volume will be compensated so that you will hear at least –12dB of direct sound.

Simple editing: tone (Filter)

Each element in a voice has two filters which can be used to make overall adjustments in tone. A filter can be controlled in various ways. Controlling a filter by key-on velocity is a simple way to make a voice respond expressively to your keyboard playing.

What is a filter

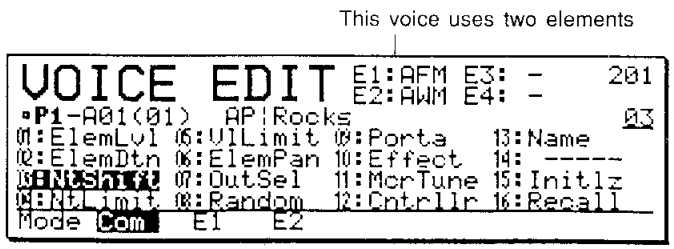
In electronic musical instruments, a filter removes a specified range of frequencies from the sound, and allows the rest to pass through. For example if the high frequencies are removed and the low frequencies allowed to pass through, the sound will be made darker. This type of filter is called a Low Pass Filter (LPF). The frequency at which the filter begins to affect the sound is called the Cutoff Frequency.



Each of the one, two, or four elements in a normal voice contains two filters, which can be controlled independently. One filter is fixed as a Low Pass Filter (LPF). The other filter can be used either as a LPF or as a High Pass Filter (HPF); i.e., a filter that allows only high frequencies to pass, resulting in a thinner tone.

Turn off unwanted elements

Each normal voice consists of one, two, or four elements, and each element has its own set of two filters. If the voice you are editing contains two or four elements, it may be helpful to listen to only one element as you adjust its filters. To the right of the voice name displayed in the voice edit job directory is a list of the elements used by the currently selected voice.

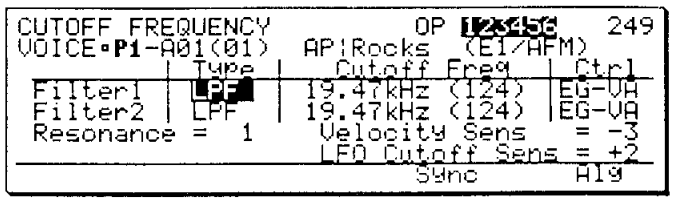


The voice selected in the above display uses two elements. Press EL 2 (the bank B button) to turn off element 2. Now you will hear only element 1. Press EL 2 once again and it will be turned on. You can turn each element on/off at any time while editing.

Specify the type of filter and the cutoff frequency

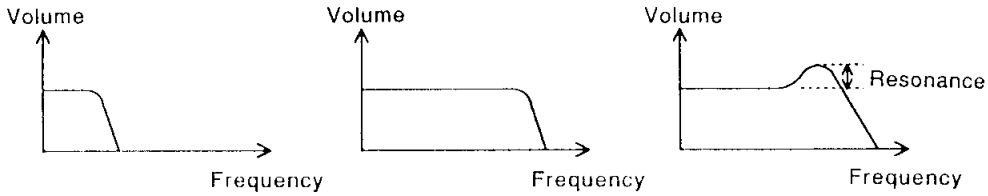
Press F3 to select the voice edit Element 1 job directory, select 08:Filter, and press ENTER.

Filter parameters are divided into three jobs. Press F1 to select 01:Cutoff Frequency.



Set both filters 1 and 2 to LPF and 9.510 kHz, and set Velocity Sens = +7. Play notes on the keyboard, softly and then strongly. Notice that as the keyboard is played more strongly, the tone is brighter. This is because the velocity sensitivity setting of +7 allows the key velocity to increase the cutoff frequency of the filter.

Increasing the Resonance setting will boost the frequencies at the cutoff point, making the effect of the filter more noticeable.



The cutoff frequency is lower for softly played notes = dark tone

The cutoff frequency is higher for strongly played notes = bright tone

Resonance adds a boost or peak at the cutoff point

Other ways to control the filter

The SY99 provides many ways to control the filter in addition to key velocity.

EG: Each of the two filters has its own independent EG, which can be be used to give each note a fixed pattern of tonal change, such as the characteristic "whaaa" of a brass instrument.

Note Number: The note number can affect the rate at which each filter EG changes the tone, and/or affect the width of the change in tone. For example high notes can be made to change in tone more rapidly than low notes, or low notes can be made to change in tone more than high notes.

Key velocity: Key velocity can be used to affect the amount of tonal change produced by each filter EG. For example strongly played notes can be made to have a greater change in tone.

LFO: Wah-wah (cyclical tone change) occurs when the LFO is applied to the filter block.

Controllers: A specified controller (such as modulation wheel or foot controller) can be used to adjust the depth of the wah-wah (Filter Modulation) caused by the LFO.

For example to assign MODULATION 2 to filter depth, you must

1. go to System Utility, 3. Controllers (JUMP #803) and make sure that controller number 13 is assigned to MODULATION 2.
2. go to Voice Common Job 12.Controller Set (JUMP #226) and press F3 (Mod)
3. select controller number 13 to affect filter depth
4. go to element filter page (for an AFM element JUMP #249, for an AWM element JUMP #265), assign Filter to be controlled by LFO,
5. adjust LFO cutoff sensitivity for the amount of control you wish.
6. If the LFO has already been assigned to affect filter cutoff, you may wish to decrease the LFO F.Mod Depth (for an AFM element JUMP #244, for an AWM element JUMP #261).

Or, a device can be used to directly control the filter EG, for example allowing you to use a controller to continuously adjust the tone during a note.

Simple editing: vibrato (LFO)

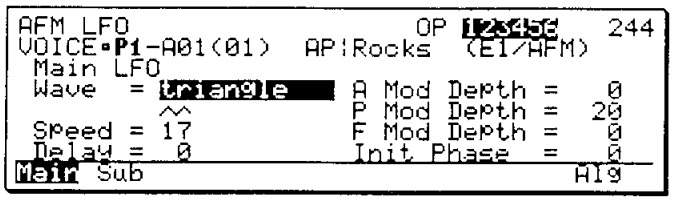
The LFO produces a repeating pattern of change. Vibrato is created by applying the LFO to the pitch.

What is an LFO

A Low Frequency Oscillator (LFO) is a device that produces a waveform at a slow speed (low frequency). This slowly repeating waveform can be applied to various aspects of the sound to cause repeating patterns of change. When the LFO is applied to the pitch, vibrato is the result. When the LFO is applied to the filter, wah-wah is the result. When the LFO is applied to the volume, tremolo is the result.

Adjust the LFO

In this example we will use the LFO to add vibrato to the sound. Move to the Voice Edit job directory, and press F3 to get the Element 1 job directory. If element 1 is AWM, select job 06:LFO. If element 1 is AFM, select job 06:LFO and press F1 to select the Main LFO.



The Main LFOs of AWM and AFM elements are the same. (AFM elements have a Sub LFO which we will not be using in this example.)

Increase the P Mod Depth setting (Pitch Modulation Depth) while playing a note, and you will hear vibrato. If you do not hear any change when you increase the LFO P Mod Depth, you may need to increase the Pitch Modulation Sensitivity (PMS) as explained in the last two paragraphs below.

Other LFO parameters — Speed and Wave

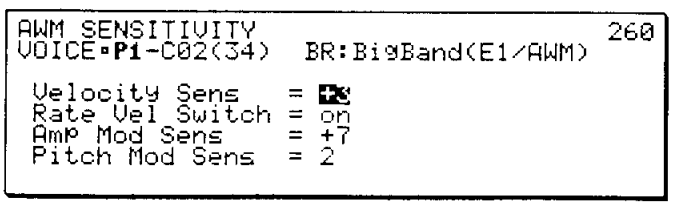
To regulate the speed of vibrato, move the cursor to Speed and adjust the value over a range of 0–99. Extremely high settings will result in a buzzing sound, and extremely low settings will result in a very slow pitch change.

To modify the shape of the vibrato, move the cursor to Wave and select a different LFO waveform. The selected LFO waveform will be graphically shown in the line below.

Before you proceed to the next section of this example, set P Mod Depth to 0.

Increase the modulation sensitivity for an AWM element

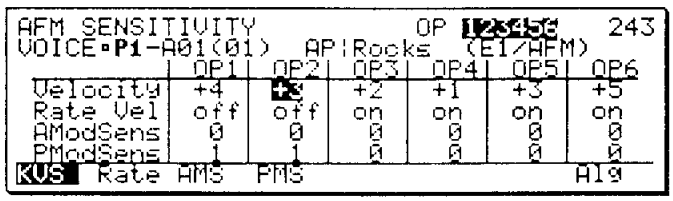
Press EXIT to return to the Element 1 job directory, and select 05:Sensitv (sensitivity).



Pitch Mod Sense (pitch modulation sensitivity) determines how sensitive the pitch will be to modulation from the LFO.

Increase the modulation sensitivity for an AFM element

Press EXIT to return to the Element 1 job directory and select 05:Sensitv (sensitivity).



PModSens (pitch modulation sensitivity) is adjustable independently for each operator over a range of 0–7. To create normal vibrato, all operators must be pitch modulated equally by the LFO. Increase the PModSens equally for all operators. (If the LFO affects the pitch of some operators more than others, the harmonic structure of the sound will vary, which can be an interesting effect in its own right.)

Simple editing: using a controller

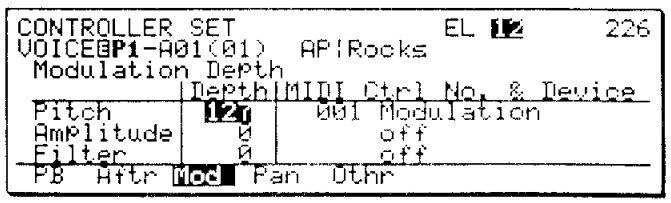
Many acoustic instruments allow the musician to modify the volume, tone, or pitch while a note is being played. The SY99's controllers can be assigned to continuously affect various aspects of the sound for musically expressive control.

Control makes musical expressiveness possible

On instruments such as piano or organ, there is little that the musician can do to modify the sound once the note has been played. However on instruments such as wind, brass, or strings, the volume, tone, or pitch can be continuously and freely modified even while sound is being produced. The SY99's Controllers (pitch and modulation wheels, aftertouch, optional foot controllers, etc.) can be used to control various aspects of the sound over the duration of a note. This allows the SY99 to be played with the musical expressiveness of an acoustic instrument.

Assign a controller to regulate vibrato

In the voice edit job directory, press F2 to get the Common data job directory and select 12:Cntrllr (controller). In this example, press F3 (Mod) to get the LFO modulation controller assignment job.

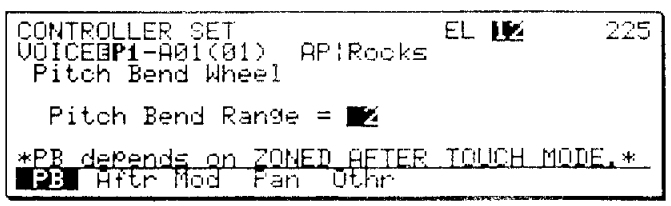


Move the cursor to the Pitch row. Set Depth to its maximum value of 127 and the MIDI Controller Number to 001 Modulation. With this setting, the MODULATION 1 wheel will regulate the depth of pitch modulation over its full range. Move the MODULATION 1 wheel and notice that vibrato deepens as you move the wheel forward. You will probably find that when the wheel is fully forward, the effect is too extreme to be musically useful. Decrease the Depth setting so that the full range of the wheel is musically useful.

In this example, you assigned the MODULATION 1 wheel to control pitch modulation, but any other controller could have been used instead. It is also possible to assign two or more parameters to be regulated by the same controller.

Adjust the pitch bend range

The PITCH wheel located at the left of the keyboard always controls the pitch. Its function cannot be reassigned, but you can adjust its range. Press F1 (PB) to get the following display.



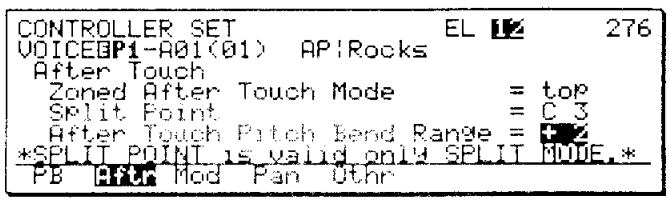
With the settings as shown in the display, the PITCH wheel will bend the pitch up or down by two half steps. Modify the Pitch Bend Wheel value in the display, and move the PITCH wheel up and down to hear how the pitch is affected.

Note: *The action of the PITCH wheel may be modified using the Zoned Aftertouch settings, described below. This allows for rather sophisticated usage of the PITCH wheel.*

Use zoned aftertouch

The keyboard of the SY99 is sensitive to aftertouch (pressure on the keyboard after a note is played). A single aftertouch value is produced for the entire keyboard; not independently for each note. However, the SY99's Zoned Aftertouch parameter allows you to restrict the effect of aftertouch to a specified zone (area) of the keyboard, or even to the single highest or lowest note currently being pressed.

Press F2 (Aftr) to get a display like the following.



As shown in the display, set Zoned After Touch Mode to "top", and After Touch Pitch Bend Range to "+2". Now play and hold a chord, and press firmly down on the keyboard. Notice that only the top note of the chord rises in pitch.

In this example, aftertouch is affecting the pitch bend. However just as you assigned vibrato to be affected by the MODULATION 1 wheel, you can also assign vibrato (or any other parameter) to be affected by aftertouch. In this case, zoned aftertouch would allow you to apply vibrato to just the top note of a chord when you press down on the keyboard. Since the melody line is usually the highest in pitch, zoned aftertouch can be used to make the melody stand out expressively from the other notes being played.

Other settings of Zoned After Touch Mode allow aftertouch to affect all notes, the bottom note, notes above a split point, or notes below a split point.

Other controller assignments

F4 (Pan) allows you to make assign controllers to regulate panning (stereo position), and F5 (Othr) allows you to make controller assignments for various other parameters.

Except for pitch bend, a different controller can be assigned to each parameter. It is also possible to assign the same controller to affect two or more parameters.

The Envelope Generator (EG) determines how a sound attacks (begins) and decays (ends).

What is an envelope generator

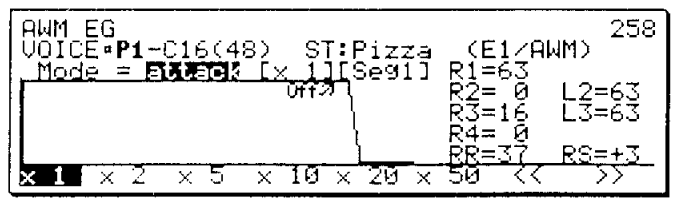
Most instruments have a characteristic pattern in which the volume or tone changes over time. In electronic instruments, this is determined by the envelope generator (EG). The EG produces a fixed pattern of change over time. For example to simulate the attack and decay of a piano, you would set the volume EG to be loud when the note is first played and then gradually diminish in volume. The EGs of the SY99 allow you to specify a change over time by settings Levels and Rates. The levels are volume levels, and the rates determines the speed of change that leads to the next level.

In this example, we will be adjusting only R1 (rate 1) to change the attack of the sound.

AWM element EGs are slightly different from AFM element EGs. If you are editing an AWM element, continue to the next section "Adjusting the attack of an AWM element". If you are editing an AFM element, skip to the last section "Adjusting the attack of an AFM element".

Adjusting the attack of an AWM element

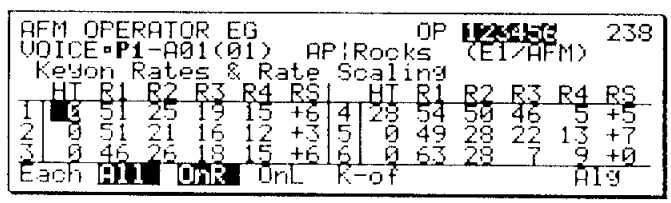
For an AWM element, the amplifier block EG determines how the volume of each note will change over time. From the AWM element 1 job directory, select 03:EG. If the Mode is set to "hold", change it to "attack".



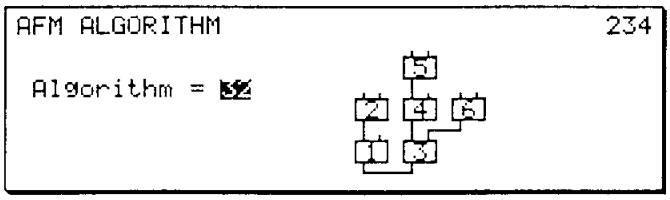
Move the cursor to R1 (rate 1) and decrease the value while repeatedly playing notes. Notice that as R1 decreases, the attack becomes slower.

Adjusting the attack of an AFM element

For an AFM element, the combined effect of the operator EGs determines the way the element's volume and tone change over time. From the AFM element 1 job directory, select 03:EG. Press F2 (All) and then press F3 (OnR) (key-on rates).



The EGs of carrier operators determine how the volume will change over time, and the EGs of modulator operators determine how the tone will change over time. To see which operators are acting as carriers, press F8 (Alg) to get a graphic display of the algorithm. The operators in the bottom row are acting as carriers.



In the algorithm used by this AFM element, operators 1 and 4 are the carriers. Press EXIT to return to the AFM operator EG display.

Move the cursor to R1 (rate 1) of the carrier operator(s), and decrease the value while playing. Notice that as R1 decreases, the attack becomes slower.

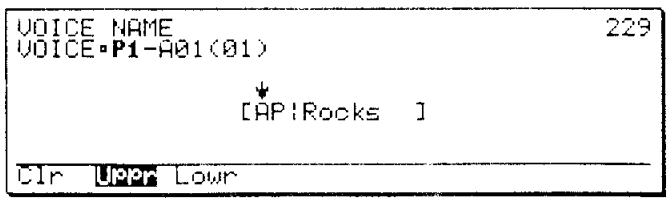
Depending on how the modulator operators are being used, it may be necessary to decrease R1 for modulator operators as well.

How to name and store your new voice

If you have followed along with the last five "Simple editing" sections, the voice is now probably quite different than when you first selected it. Even if the voice sounds rather strange, give it a new name and store it as explained in this section.

Enter a 10-character voice name

From the voice edit Common data job directory, select 13:Name.

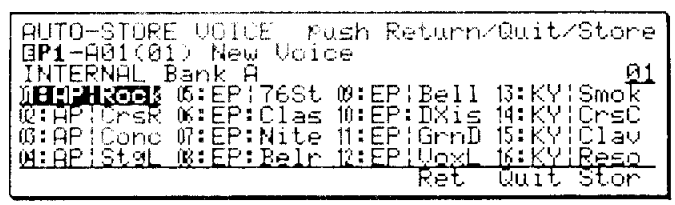


Press F1 (Clr) to clear the currently set voice name, and use the numeric keypad to enter the characters printed below each key. Press F2 to select uppercase characters and press F3 to select lowercase characters. Use ◁▷ to move the cursor.

For example to enter the voice name "New1", use ◁ to move the cursor to the beginning of the line, and press the following buttons; F2 to select uppercase, 4 three times to enter "N", ▷, F3 to select lowercase, 1 three times to enter "e", ▷, 7 three times to enter "w", ▷, and 1 once to enter "1".

Store the edited voice

When you have finished entering the voice name, press the mode select key VOICE to exit to the voice edit Common job directory. Since the voice data has been edited, the top line of the display will blink "AUTO-STORE VOICE"



Note:

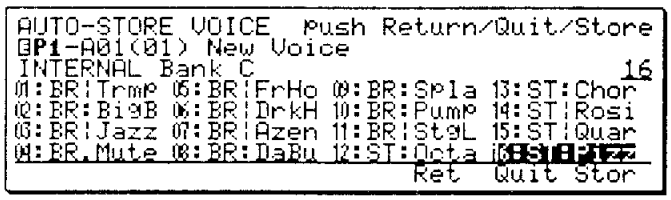
Voices which use voice mode 3 (4AFM mono), 8 (4AWM poly), and 10 (2AFM&2AWM) occupy extra memory, and can be stored only in bank D. The AUTO-STORE display for such voices will automatically show bank D, and blink "Use bank D" in the bottom line as a reminder.

Voices which use other voice modes can be stored in bank D as well.

The LCD will show the first seven characters of the voice names in the currently selected bank of voices. The voice name displayed in inverse indicates the voice memory into which the edited data will be stored.

Storing data will overwrite the data that previously occupied that memory, so if you do not want to overwrite the original data, use INTERNAL or CARD to specify the voice memory, select a bank A–D, and select the voice memory 1–16 in which you want to store your newly edited voice.

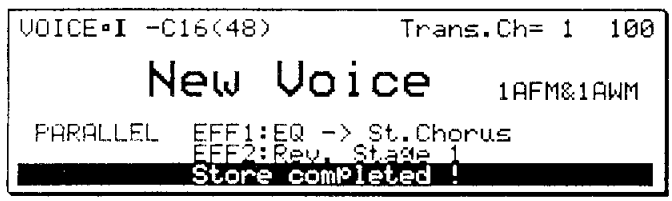
For example to store your new voice in Internal memory bank C memory number 16, press INTERNAL, then C then 16.



The voice will be stored into this memory

Press F8 (Stor), and the bottom line will ask "Are you sure ? (Yes or No)". If you are sure you want to store the edited voice, press +1/YES and the bottom line of the LCD will show "Store completed". If you decide not to store, press –1/NO and the bottom line of the LCD will show "Store cancelled".

You will then return to voice play mode.

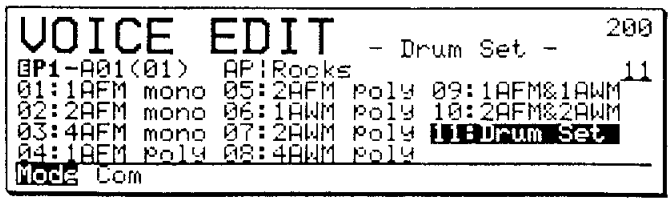


How to edit a drum voice

A drum voice is a special type of voice which plays a different AWM wave on each key of the SY99's 76-note keyboard. This is normally used to assign drums and percussion sounds to the keyboard when creating rhythm accompaniments.

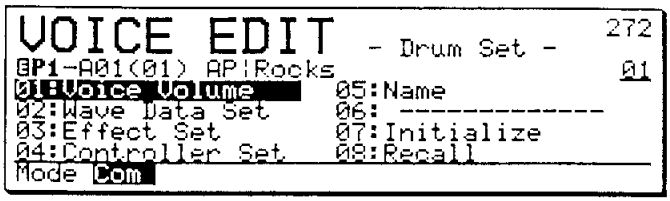
Set the voice mode to Drum Voice

In the top level of voice edit mode, press F1 (Mode) to get the voice mode job and select 11:Drum Set.



Drum voice parameters

Press F2 (Com) to get the voice common data job directory. All drum voice parameters are contained in this job directory.

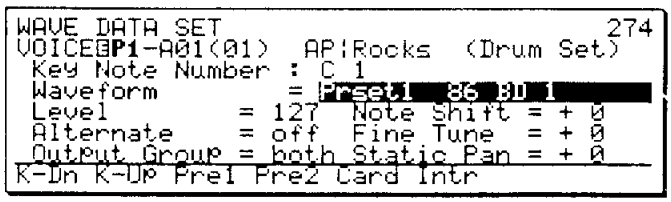


As when editing a normal voice, a drum voice allows you to set the overall volume of the voice (01:Voice volume), make settings for the DSP effect units (03:Effect Set), specify the controller which will regulate the volume of the voice 04:Controller Set), and assign a name (05:Drum Set Name).

A drum voice differs from other voices mainly in the second parameter job, 02:Wave Data Set.

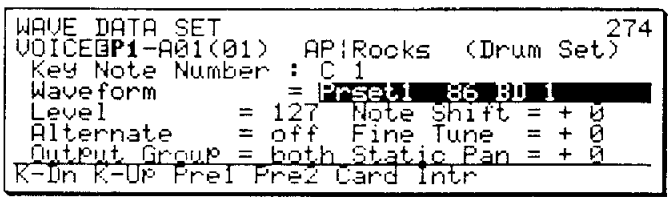
Wave Data Set — select a wave for each key

From the voice common data job directory, select 02:Wave Data Set.

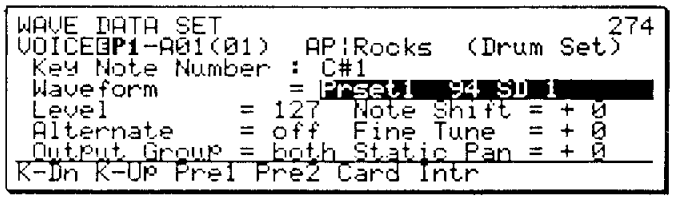


This job is where you specify the AWM wave played by each key. Adjustments for level, pan, etc. can also be made independently for each key.

Press the C1 key or use F1 (K-Dn) and F2 (K-Up) to select C1 (two octaves below the C3 mark on the SY99 keyboard). Move the cursor to Waveform and select preset wave number 86 BD 1 (bass drum).



Next select note C#1 and specify preset wave number 94 SD 1 (snare drum).



In this way, make the following settings for notes C1–F#1 to create the simple seven-instrument drum set shown in the table below. For notes F and F# set Alternate to "on".

Note	Wave no.	Wave name	Alternate
C1	86	BD 1	off
C#1	94	SD 1	off
D1	104	Tom 1	off
D#1	105	Tom 2	off
E1	118	Ride	off
F1	112	HH mid	on
F#1	114	HH open	on

Alternate On/Off

Play notes C1–F#1 to play your new drum set. Notice that when you play F#1 (hi-hat open) and then quickly play F1 (hi-hat mid), the open hi-hat will stop sounding when the closed sound begins. It is impossible for a real hi-hat to produce closed and open sounds at the same time, and this is the reason that we set these two waves to Alternate on. When two or more waves are set to alternate on, the last-played wave will take priority and the previously played wave will be turned off.

Other wave data settings

The volume of each note is adjusted by Level. The tuning of each note is adjusted in half steps by Note Shift and finely by Fine Tune. The stereo position of each note is determined by Static Pan.

The *Voice edit mode, Drum set data* section explains the details of these and other parameters.

Name and store your new drum voice

As explained in the previous section, give your newly created drum voice a name and store it into memory. The previous section of this manual *How to use the sequencer* has shown how to use the sequencer to play a drum voice along with other parts in a song.

Note: *Drum voices may be stored in any of the four banks A through D. However, since these voices contain a large volume of data, only the data for notes C1 to C6 will be saved if a drum voice is stored in banks A, B, or C. Store drum voices in bank D if you wish to save the data for the full range of notes from E0 to G6.*

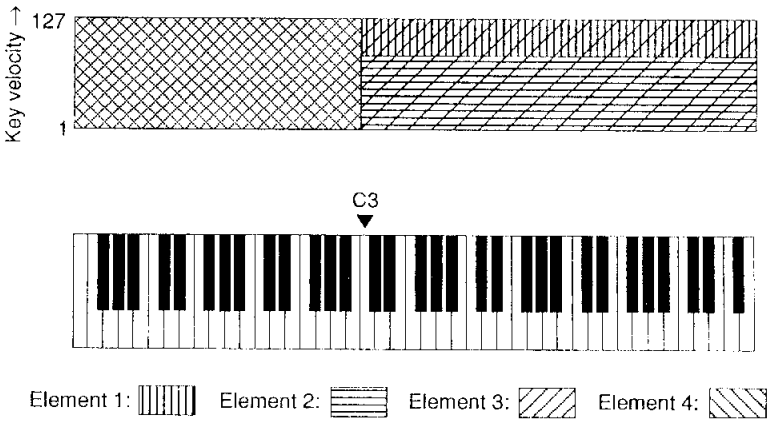
How to create a split and layered voice

Each normal voice consists of one, two, or four elements. By restricting each element to a specified range of the keyboard or a specified range of velocity values, you can create a split and/or layered voice.

Copy elements into the current voice

In this example, we will create a four-element voice by copying element data from other voices, and then setting the voice common parameters Element Note Limit and Element Velocity Limit so that each voice plays only in the range we specify.

Element 1: AFM brass (from P1-C06 DrkHorn) for notes above C3, sounded by velocities above 80
Element 2: AFM strings (from P2-C11 StgLayr) for notes above C3, sounded by velocities up to 79
Element 3: AWM piano (from P1-A01 Rocks) across the entire keyboard, all velocities
Element 4: AWM bass (from P2-C06 Upright) for notes up to C3, all velocities

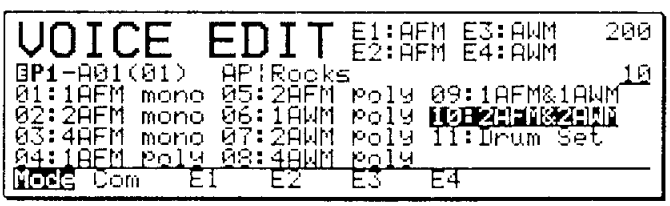


Initialize the voice common data

We will begin by initializing the voice common data. (The data of each element will be overwritten by the elements we copy into the voice.) Select a non-drum voice. From the top level of voice edit mode, press F2 (Com), select job 15:Initlz., and press ENTER. Press YES in response to the "Are you sure?" display.

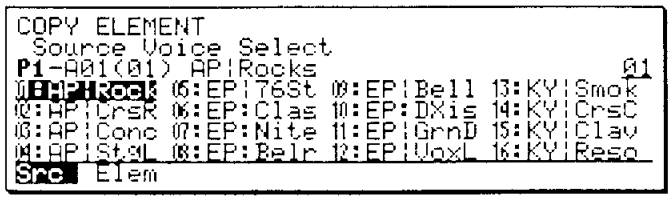
Set the voice mode to 10:2AFM&2AWM

In this example we will create a four-element voice containing two AFM elements and two AWM elements. In the top level of voice edit mode, press F1 (Mode) to get the voice mode job, and select voice mode 10:2AFM&2AWM.

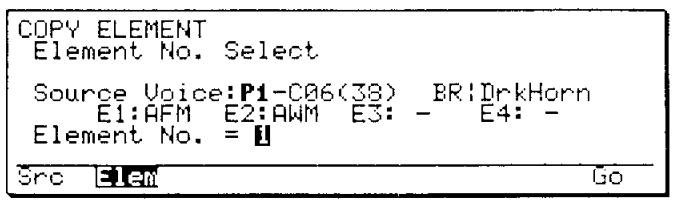


Copy an element into element 1

In the top level of voice edit mode, press F3 (E1) to select the AFM element edit job directory, select 1:Algrthm, and press ENTER. (The *Copy element* function is available only while in AFM element jobs 1, 2, 6, or 7.) Press COPY to get the following display.



Here you can select the voice from which to copy the element. In this example, select P1-C06 DrkHorn. Then press F2 (Elem) to get the following display.

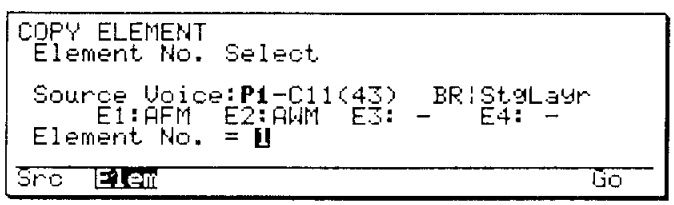


Here you can specify which element of the selected voice will be copied into the voice you are currently editing. AFM elements can be copied only into an AFM element, and AWM elements can be copied only into an AWM element. Since element 1 of DrkHorn is the only AFM element it contains, this is the only possible selection. Press F8 (Go), and then confirm YES to execute the copy element operation. The bottom line will show "Completed!" Press EXIT to exit the copy element display.

Copy other elements into elements 2–4

The element select buttons are located at the upper right of the front panel. In voice play mode they are used to select internal, card, or preset voices. In voice edit mode they are used to move between elements 1–4. Press element select button EL 2 to move to element 2. You will still be in the *AFM algorithm* editing display, but the EL 2 LED will be lit to indicate that element 2 is selected for editing.

Press COPY to get the Copy Element display, and select P1-C11 StgLayr element 1 to be copied into element 2 of your new voice.



Press F8 (Go) to execute the copy element operation, and then press EXIT to return to the editing display.

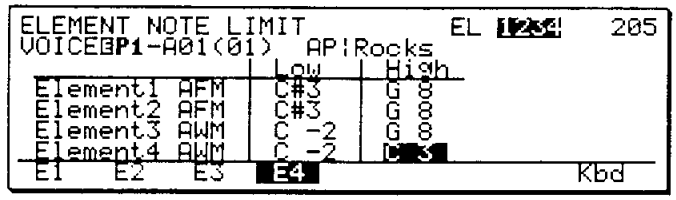
In the same way, press element select button EL 3 to select element 3, and copy P1-A01 Rocks element 2 into element 3 of your new voice.

Then press element select button EL 4 to select element 4, and copy P2-C06 Upright element 2 into element 4 of your new voice.

Your new voice now consists of four elements: AFM brass, AFM strings, AWM piano, and AWM bass. Play the keyboard, and notice that each note sounds all four elements.

Assign key limits to each element

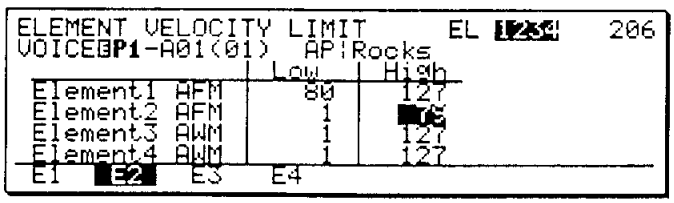
Press EXIT once to return to the top level of voice edit mode, and press F2 (Com) to get the voice common data job directory. Select job 04:NtLimit (note limit) and press ENTER to get the Element Note Limit display. Make settings so that the display looks like the following.



Play the keyboard and notice that the brass and strings will sound only for C#3 and above, and the bass only for C3 and below.

Assign velocity limits to each element

Press the PAGE ▷ key once to get the Element Velocity Limit display. Make settings so that the display looks like the following.



Play the keyboard and notice that the notes C#3 and above will sound either brass or strings depending on how strongly you play.

Name and store your new split/layer voice

Using the procedure explained on page 74, give your newly created voice a name and store it into memory.

Other possibilities

You may wish to adjust the volume of each element (press PAGE ◁ four times to get the *Element level* display, or JUMP #202).

The *Element note limit* setting in the above example creates abrupt changes; e.g., the bass plays at full volume on C3 and not at all on C#3. If you wish to make gradual keyboard crossfades between elements, set the output level scaling for each element. Refer to *4.AFM operator output* (JUMP #241) and *4.AWM output* (JUMP #259).

The *Element velocity limit* setting in the above example allows playing dynamics to create sudden change. If you wish to create gradual velocity cross-fades between elements, set the velocity sensitivity parameters of each element to opposite settings (positive or negative values). See the velocity sensitivity parameters in *5.AFM sensitivity* (JUMP #243), *8.1 Cutoff frequency* (JUMP #249), and *5.AWM sensitivity* (JUMP #260).

The Utility mode setting *Velocity set* (JUMP #802) allows you to specify how the SY99 keyboard transmits velocity. When using velocity crossfades, you may wish to select Velocity curve 6 or 7. This will produce exponential crossfading which may sound more effective than the normal linear velocity curve.

REFERENCE SECTION

VOICE PLAY MODE

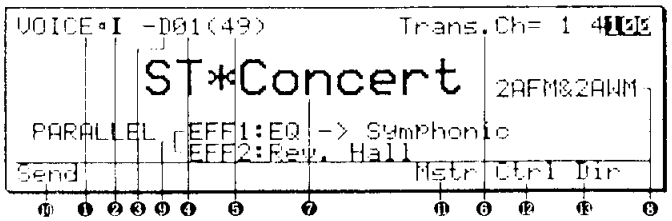
You will normally play the SY99 in Voice Play mode. In Voice Play mode you can do the following things.

- Select voices from preset, internal, or card memory.
- View a directory of the 16 voices in the currently selected bank of internal, card, or preset memory.
- Copy the currently selected voice to any internal or card memory.
- View the controller assignments for the currently selected voice.
- Send a program change to an external device.

Voice select

JUMP #100

Press VOICE to enter voice play mode. The following LCD will appear:



❶ VOICE indicates that you are in Voice Play mode.

❷ Voice memory (I, C, P1, P2): This indicates the voice memory: Internal, Card, Preset 1, or Preset 2.

❸ Bank (A–D): This indicates the voice memory bank.

❹ Voice number in individual bank (1–16): This indicates the number of the voice in the bank.

❺ Voice number in banks A–D (1–64): This indicates the voice as a number between 1 (voice 1 of bank A) to 64 (voice 16 of bank D).

❻ Transmit channel (1–16): This indicates the transmit channel you selected in *MIDI Utility 1. Setting* (JUMP #807). The SY99 keyboard will transmit data from MIDI OUT on this channel, except when a master control setup is selected. You can also set the transmit channel at any time by holding SHIFT and pressing a voice select key 1–16.

❼ Voice name: The voice name is displayed in large characters.

❽ Voice mode: This indicates the type and number of elements used by this voice. For details refer to *Voice Edit mode, Voice Mode Select* (page 95).

❾ Effect settings: This area displays the effect mode (OFF, SERIAL, or PARALLEL), and the effect type for each of the two effect units. For details refer to *Voice edit, Common data 10.Effect set*, page 104.

❿ Press F1 to send bank select and program change messages via MIDI. Refer to the following section *Send bank select and program change* (page 88).

⓫ Press F6 to jump to the master control select display. Refer to the following section *Master control select* (page 89).

⓬ Press F7 to view the controller assignments for the currently selected voice. Refer to the following section *Controller view* (page 87).

⓭ Press F8 to view the voice directory. Refer to *Voice directory*, below.

To select a voice use the following procedure. The voice will not actually change until you specify the voice number 1–16. If you want to play a different voice in the same bank, simply specify a different number 1–16.

1. Select the voice memory: INTERNAL, CARD (only if a card is inserted into the DATA slot), PRESET 1, or PRESET 2. The selected LED will blink.
2. Select a bank A, B, C, or D. The selected LED will blink.
3. Select a voice 1–16. The selected LED will light, and the LCD display will show the newly selected voice name.

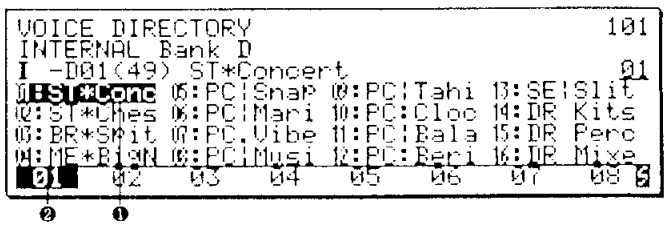
Voice directory

JUMP #101

Summary: This function allows you select voices while viewing a directory of the sixteen voices in the currently selected voice bank.

Procedure:

From:	voice play mode	(JUMP #100)
Select:	F8 (Dir)	(JUMP #101)
Specify:	one of the displayed voices	
To quit:	and return to the voice play display press EXIT.	



❶ The first seven characters of each ten-character voice name will be displayed. When you select a

different voice memory (internal, card, preset 1, or preset 2) and voice bank (A–D) the sixteen voices in the newly selected bank will be displayed. In addition to the usual methods of selecting a voice, you can also use the arrow keys to select a voice. When the voice directory is displayed, pressing a memory select button or bank select button will immediately select a voice.

❷ Pressing F1–F8 (01)–(08) will select a voice 1–8 from the displayed voice bank. Holding SHIFT and pressing F1–F8 (09)–(16) will select a voice 9–16 from the displayed voice bank.

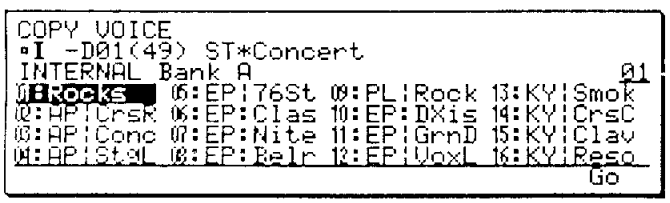
To return to the voice play display with the voice name displayed in large characters press EXIT.

Copy voice

Summary: You can copy the currently selected voice to another voice memory anytime you are in voice play mode.

Procedure:

From: voice play mode (JUMP #100)
Press: COPY
Specify: the destination to which the voice will be copied.
To execute: the copy operation press F8 (Go).
To quit: without executing press EXIT.



The names of the sixteen voices in the currently selected bank of Internal or Card memory are displayed as explained in *Voice Directory*. Press INTERNAL or CARD, press a bank button A–D, and press a memory select button 1–16 to specify the copy destination.

After specifying the copy destination press F8 (Go). You will be asked "Are you sure?" If you are sure you want to copy the voice, press YES and the data will be copied. To quit without copying press NO.

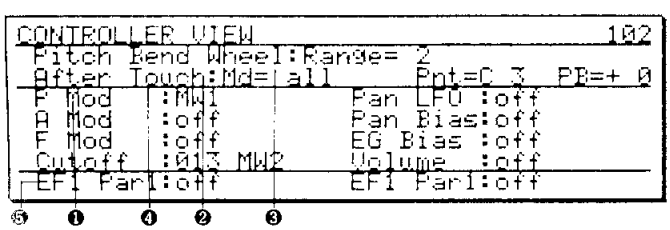
Controller view

JUMP #102

Summary: This function allows you to view the controller assignments for the voice as a reminder of how the voice can be controlled.

Procedure:

From: voice play mode (JUMP #100)
Select: F7 (Ctrl) (JUMP #102)
To quit: and return to voice play mode press EXIT.



❶ The left side of each column displays the parameter which is being controlled. The actual effect that a controller will have on the parameter to which it is assigned will depend on the depth that is specified for each controller assignment as explained in *Voice Common job 12. Controller* (page 127).

❷ The right side of each column displays the controller which has been assigned to control the parameter ❶. Controllers which have standard definitions will be displayed as an abbreviation (see below). Other controllers will be indicated by their MIDI control change number.
In cases where the controller has been assigned but will have no effect (such as when the control range is 0), an inverse "X" will be displayed.

❸ Pitch Bend Wheel Range: This displays the range over which the PITCH wheel can raise or lower the pitch.

❹ After Touch: This area displays the zoned aftertouch mode, the split point, and the aftertouch pitch bend setting.

❺ The bottom line displays the two effect parameters which have been selected for realtime control, and the controller which is affecting each effect parameter.

Controller abbreviations: The following abbreviations will be displayed to indicated commonly-used control sources

MW1	Modulation Wheel
MW2	Assignable Modulation Wheel
BC	Breath Controller
VOL	Volume
FC	Foot Controller
DE	Data Entry Slider
SUS	Sustain Switch
FS	Assignable Foot Switch
AFT	Aftertouch
VEL	Velocity
SCL	Scaling
LFO	Effect LFO

This function only allows you to view the controller assignments. To edit them, refer to *Voice Common job 12. Controller* (page 127), and *Voice Common job 10.5 Effect control* (page 123).

Send bank select and program change

Summary: While in voice play mode you can transmit bank select and program change messages from MIDI OUT without affecting the SY99's own tone generator. This allows you to switch a tone generator module connected to the SY99 MIDI OUT to another memory without changing the SY99's own memory selection. (An identical function is available in multi play mode.)

Procedure:

From:	voice play mode (JUMP #100)
Select:	F1 (Send)
Specify:	a bank select number (1–16,384) and a program change number (1–128).
To transmit:	the bank select and program change messages press ENTER.
To quit:	without sending a bank select or program change message, press EXIT.

1. Use the numeric key pad to enter a bank number between 1 and 16,384, then press ENTER to move the cursor to the program change item. (To send a program change message but no bank select message, simply press ENTER.)
2. Use the numeric keypad to enter a program change number between 1 and 128.
3. Press ENTER and the specified bank select and program change messages will be transmitted on the keyboard transmit channel (Kyb Trans Ch) specified in *MIDI Utility job 1.Setting* (JUMP #807).
   If, for the program change, you enter a number below 1 it will be transmitted as 1. If you enter a number above 128, it will be transmitted as 128.
   In addition to the program change message transmitted by this function, a program change message will be transmitted every time you select a SY99 voice or multi unless Program Change has been turned off using *MIDI utility job 1.Setting*, page 258.

Remark: Refer to the *MIDI Data Format* booklet for details regarding the use of MIDI bank select numbers.

Note: *If a master control setup is activated, the transmit filter for that setup may prevent the sending of bank select and program change messages using this function. Refer to the explanation of the Master control utility on page 284 for further details.*

Master control select

Summary: While the SY99 is in voice play mode, you can jump to the master control select display (JUMP #832) by pressing a single function key. This feature makes it easy to use the MIDI master control function while playing the SY99.

Procedure:

From: voice play mode (JUMP #100)
Select: F6 (Mstr)

The controller select display will appear, just as if you had pressed JUMP, entered 832 using the numeric keypad, and then pressed ENTER. This display can be used to send a variety of control information to MIDI instruments connected to the SY99.

If you perform live using the SY99, you will probably want to use the master control function often while playing the SY99's keyboard. You will probably find the master control function especially convenient because it is available with the press of a single button. See page 284 for details.

VOICE EDIT MODE

This section explains the details of all voice edit parameters.

Contents of this section **page**

The organization of Voice Edit mode will depend on whether the voice is a normal voice or a drum voice.

Normal voice (voice modes 1–10)

F1 (Mode)

Specify the Voice Mode

1. 1AFM mono
2. 2AFM mono
3. 4AFM mono
4. 1AFM poly
5. 2AFM poly
6. 1AWM poly
7. 2AWM poly
8. 4AWM poly
9. 1AFM&1AWM poly
10. 2AFM&2AWM poly
11. Drum set

F2 (Com)

Common data edit job directory

1. Element level
2. Element detune
3. Element note shift
4. Element note limit
5. Element velocity limit
6. Element dynamic pan
7. Output group select
8. Random pitch
9. Portamento
10. Effect set
11. Micro tuning set
12. Controller set
13. Voice name

...

15. Initialize voice
16. Recall voice

F3 (E1) **F4 (E2)**

AFM element edit job directory OR

1. AFM algorithm
2. AFM oscillator
3. AFM EG
4. AFM operator output
5. AFM sensitivity
6. AFM LFO
7. AFM pitch EG
8. AFM filter

...

15. Initialize AFM element
16. Recall AFM element

F5 (E3) **F6 (E4)**

AWM element edit job directory

1. _____
2. AWM waveform set
3. AWM EG
4. AWM output
5. AWM sensitivity
6. AWM LFO
7. AWM pitch EG
8. AWM filter

...

15. Initialize AWM element
16. Recall AWM element

Drum voice (voice mode 11)

F1 (Mode)

Specify the Voice Mode

1. 1AFM mono
2. 2AFM mono
3. 4AFM mono
4. 1AFM poly
5. 2AFM poly
6. 1AWM poly
7. 2AWM poly
8. 4AWM poly
9. 1AFM&1AWM poly
10. 2AFM&2AWM poly
11. Drum set

F2 (Com)

Drum Set edit job directory

1. Voice volume
2. Wave data set
3. Effect set
4. Controller set
5. Name

...

7. Initialize
8. Recall

Compare

When you are in edit mode but have have not yet modified the data, a small square □ is displayed at the left of the voice number to indicate that the voice has not yet been edited. If the data is edited in any way, this will change to a inverse "E".

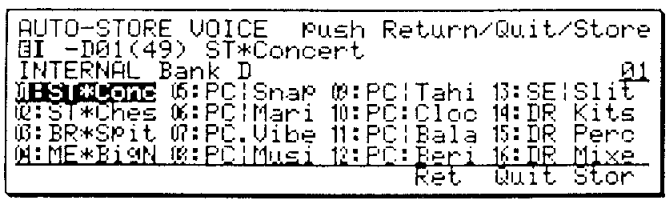
If you want to see and hear the original data press EDIT (COMPARE) and the inverse "E" will change to a "C" indicating that you are in compare mode. To return to edit mode press EDIT (COMPARE) once again and the "C" will change back to an "E".

Note:

- *The Compare function is not available in the job directory displays, nor while editing Dynamic Pan, Micro Tuning, or waveform data.*
- *If the Voice Mode has been changed, the Compare function will not be available.*
- *While comparing, it is not possible to modify parameter values. (However there are some exceptions.)*
- *If you compare while editing a card voice, a card error will cancel compare after displaying an error message.*
- *While comparing, EXIT, mode select, page, cursor, JUMP, COPY, and some of F1–F8 will not function.*

Store voice

When you press EXIT or use the JUMP button to exit Voice Edit mode after editing the data, the top line of the display will blink "AUTO-STORE VOICE"



Note 1:

Four-element voices, i.e., voices using voice mode 3 (4AFM mono), 8 (4AWM poly), or 10 (2AFM&2AWM) occupy extra memory, and can be stored only in bank D. The AUTO-STORE display for such voices will automatically show bank D, and blink "Use bank D" in the bottom line as a reminder.

Voices which use other voice modes can be stored in bank D as well.

Drum voices may be stored in any of the four banks A through D. However, since these voices contain a large volume of data, only the data for notes C1 to C6 will be saved if a drum voice is stored in banks A, B, or C. Store drum voices in bank D if you wish to save the data for the full range of notes from E0 to G6.

Note 2:

When storing a voice which uses an AWM waveform card, make sure that the correct card is inserted when you store, since the waveform card ID number is stored as part of the voice.

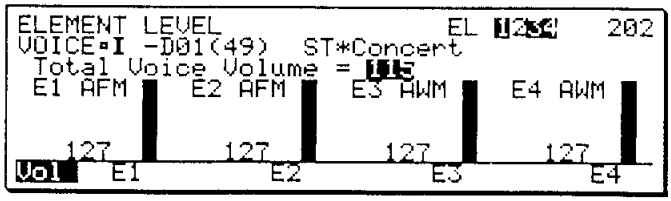
The LCD will show the first seven characters of the voice names in the currently selected bank of voices. The voice name displayed in inverse indicates the voice memory into which the edited data will be stored.

1. Use INTERNAL or CARD to specify the voice memory, select a bank A–D, and select the voice memory 1–16 in which you want to store your newly edited voice.
2. Press F8 (Stor), and the bottom line will ask "Are you sure ? (Yes or No)".
3. If you are sure you want to store the edited voice, press +1/YES and the bottom line of the LCD will show "Store completed". If you decide not to store, press -1/NO and the bottom line of the LCD will show "Store cancelled".
4. You will then return to voice play mode or the jump destination.

Element on/off

When editing a voice which uses two or more elements, it is often useful to hear only the element being edited. At any time while editing a normal voice, pressing the ELEMENT ON/OFF buttons located at the upper right of the front panel will turn individual elements off/on. When editing voice common data, the number of elements used by the voice will be shown in the upper right corner of the display. Elements that are on will be displayed in inverse. In addition the LEDs above the ELEMENT ON/OFF buttons will light if the element is on and be darkened when the element is turned off. In the following LCD, element 2 has been turned off, and will not be heard.

Element 2 has been turned off.



When editing Drum Set data the ELEMENT ON/OFF buttons will have no effect.

When you move to the Voice Mode Select display, the element on/off settings will automatically be cancelled.

Element select

At any time while editing the element data of a normal voice, you can use the ELEMENT SELECT buttons located at the upper right of the front panel to select an element to edit. This is often faster than returning to the top level of voice edit mode and pressing F3–F6 to select the job directory of a different element.

When editing Voice Common data, Drum Set data, or waveforms, the ELEMENT SELECT buttons will have no effect.

Voice mode select

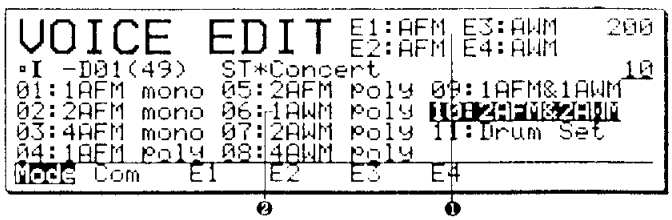
Summary: The voice mode setting determines whether a voice will consist of one, two, or four AWM or AFM elements (modes 1–10), or 76 AWM waves (mode 11).

Procedure:

From: the top level of voice edit mode
(JUMP #200, #201, #230, #256)

Press: F1 (Mode) to get the following display.
(JUMP #200)

Specify: the desired voice mode.



❶ This area shows the number (1, 2, or 4) and type (AWM or AFM) of elements in the selected voice mode.

❷ Move the cursor to the desired voice mode 1–11. The selected voice mode will become effective immediately.

01: 1AFM mono: The voice consists of one AFM element.

02: 2AFM mono: The voice consists of two AFM elements.

03: 4AFM mono: The voice consists of four AFM elements. (See note)

04: 1AFM poly: The voice consists of one AFM element.

05: 2AFM poly: The voice consists of two AFM elements.

06: 1AWM poly: The voice consists of one AWM element.

07: 2AWM poly: The voice consists of two AWM elements.

08: 4AWM poly: The voice consists of four AWM elements. (See note)

09: 1AFM&1AWM: The voice consists of one AFM and one AWM element.

10: 2AFM&2AWM: The voice consists of two AFM and two AWM elements. (See note)

11: Drum Set: The voice consists of seventy-six AWM samples.

Mono modes (1–3): Voices which use modes 1–3 are monophonic. Only one note can be produced at a time. If a note is played while the previous note is still sounding, the previous note will be cut off. Mono mode is useful when simulating instruments that naturally produce only one note at a time. Mono mode also allows you to use a special type of portamento; *fingered portamento.* For details refer to *Voice Common 9. Portamento* (page 104).

Polyphonic modes (4–10): Voices which use modes 4–10 are polyphonic, and will allow you to play chords of as many notes as can be produced by the SY99's tone generator. The AWM and AFM tone generators can each produce up to 16 simultaneous notes. For some voice modes more than one element may be sounded by a single key, and this will correspondingly reduce the number of simultaneous notes you can play.

Drum Set mode (11): Drum set voices use only the AWM tone generator, and up to 16 AWM samples can be sounded simultaneously.

Note: Four-element voices (modes 3, 8, and 10) can be stored only in bank D.

Drum voices may be stored in any of the four banks A through D. However, since these voices contain a large volume of data, only the data for notes C1 to C6 will be saved if a drum voice is stored in banks A, B, or C. Store drum voices in bank D if you wish to save the data for the full range of notes from E0 to G6.

A slight delay may occur in the sounding of some notes when a large number of notes are played simultaneously (either manually or in response to MIDI note on messages) using four-element voices. To avoid this delay in such cases, you may wish to use a voice using fewer elements, or reduce the number of notes being played simultaneously.

Common data

COMMON DATA

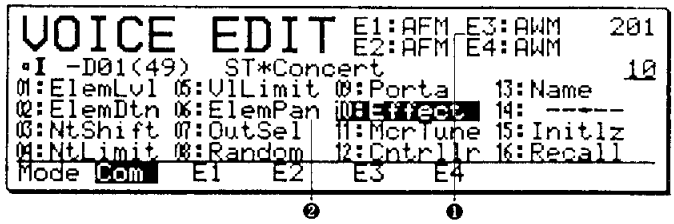
Common data job directory

JUMP #201

Summary: This job directory shows the jobs containing data that affects all elements in the voice.

Procedure:

From: the top level of voice edit mode
When: editing a normal voice
Press: F2 (Com) (JUMP #201)
Select: the desired job



❶ This area shows the number (1, 2, or 4) and type (AWM or AFM) of elements in the selected voice mode.

❷ Move the cursor in this area to select a job:

01: ElemLvl (Element level): Total voice volume, and element level
02: ElemDtn (Element detune): Fine tuning for each element
03: NtShft (Element note shift): Transpose each element
04: NtLimt (Element note limit): Range of notes that play each element
05: VlLimt (Element velocity limit): Range of key-on velocities that play each element
06: ElemPan (Element dynamic pan): Dynamic panning table for each element
07: OutSel (Output group select): Output group for each element
08: Random (Random pitch): Random pitch variation for entire voice
09: Porta (Portamento): Portamento mode and time
10: Effect (Effect set): Effect set job directory
11: McrTune (Micro tuning): Micro tuning select for entire voice, and micro tuning on/off for each element.
12: Ctrllr (Controller set): Controller assignments and depth for pitch bend, modulation, pan, etc.
13: Name (Voice name): Ten-character voice name
15: Initlz (Initialize voice): Initialize the voice common data being edited
16: Recall (Recall voice): Recall all data (common and element) of the previously edited voice

COMMON DATA

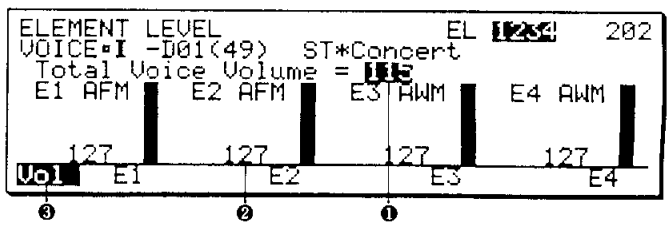
1. Element level

JUMP #202

Summary: Adjust the overall volume of the entire voice, and the volume of individual elements 1–4.

Procedure:

From: voice common job directory (JUMP #201)
Select: job 01:ElemLvl (JUMP #202)
Specify: the total voice volume and the levels of each element



❶ Total voice volume (0...127): This determines the overall volume of the entire voice.

❷ Element level (0...127) E1–E4: These determine the volume level of each element. Press F2, F4, F6, F8 to move the cursor to elements 1–4. The level of each element is displayed as a vertical bar graph.

❸ Pressing F1 will move the cursor to Total Voice Volume. Pressing F2, F4, F6, F8 will move the cursor to elements 1–4.

Remarks: Since the total voice volume setting is part of the voice data, it can be used to even out the volume differences between voices. This is important when editing a set of voices for live performance, and allows you to avoid any sudden jumps in volume when a voice is selected.

COMMON DATA

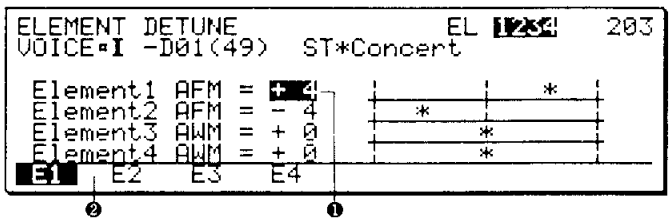
2. Element detune

JUMP #203

Summary: Adjust the fine tuning of individual elements 1–4.

Procedure:

From: voice common job directory (JUMP #201)
Select: job 02:ElemDtn (JUMP #203)
Specify: the tuning of each element



❶ Detune (–7...+7) E1–E4: When this is set to 0, the element will play the correct pitch for the key that was pressed. Negative settings will lower the pitch, and positive settings will raise the pitch. The tuning of each element is indicated graphically by the position of the asterisk on a horizontal scale.

❷ Pressing F1–F4 will move the cursor to elements 1–4.

Remarks: If you are creating a voice that plays two or more elements for a single note, slightly detuning the elements will create a natural chorus effect, giving a richer quality to the sound.

Element detune is intended to change the *relative* pitch of two or more elements. Setting all elements to the same detune value will not be useful, nor will this setting be useful if the voice contains only one element.

COMMON DATA

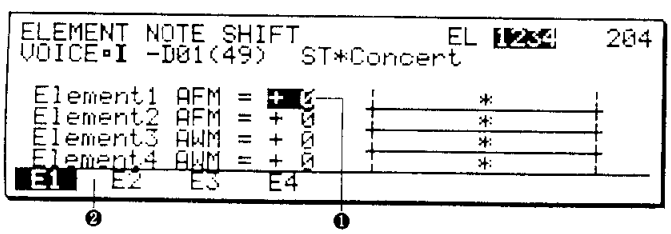
3. Element note shift

JUMP #204

Summary: Transpose the pitch of individual elements 1–4.

Procedure:

From: voice common job directory (JUMP #201)
Select: job 03:NtShft (JUMP #204)
Specify: the transposition of each element



❶ Note Shift (–64...+63) E1–E4: When this is set to 0, the element will play the correct pitch for the key that was pressed. This setting adjusts the pitch in semitone increments. For example if set to –12 the pitch will be one octave lower than normal, and if set to +24 the pitch will be two octaves higher than normal.

❷ Pressing F1–F4 will move the cursor to elements 1–4.

Remarks: The note shift setting can be useful when you need play notes that are beyond the range of the SY99's 76-note keyboard. For voices which play two or more elements for each key, note shift can be used to create automatic parallel harmony.

COMMON DATA

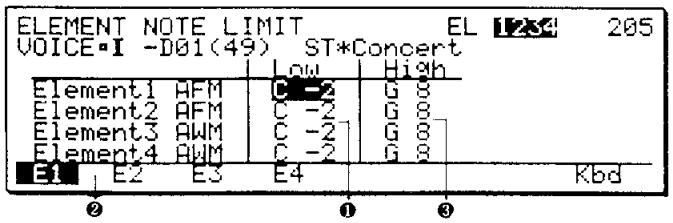
4. Element note limit

JUMP #205

Summary: Specify the range of notes that will play each element.

Procedure:

From: voice common job directory (JUMP #201)
Select: job 04:NtLimt (JUMP #205)
Specify: the note range for each element



❶ Low Note Limit (C-2...G8) E1–E4: This specifies the lowest note that will be played by the element.

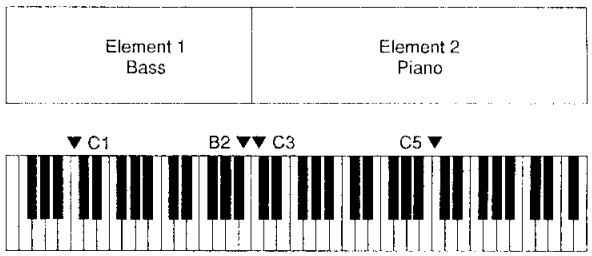
❷ High Note Limit (C-2...G8) E1–E4: This specifies the highest note that will be played by the element.

❸ Pressing F1–F4 will move the cursor to elements 1–4.

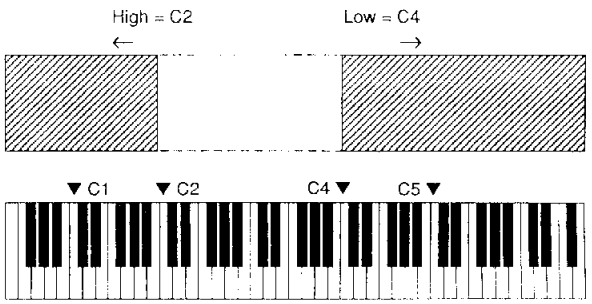
Remarks: After moving the cursor to the parameter you want to set, you can modify the data in the usual way or press F8 (Kbd) and then press a key of the SY99's keyboard to enter a note. (The notes of the SY99 keyboard are E0–G6.)

If you want to play an element over the entire range of the keyboard, leave this parameter set at Low=C-2 and High=G8.

This parameter can be used to create keyboard split effects where different elements are played by different keyboard areas. For example in a two-element voice where element 1 is a bass sound and element 2 is a piano sound, set element 1 to Low=C1 and High=B2 and set element 2 to Low=C3 and High=C5. With these settings, notes below middle C will play bass (element 1) and notes above middle C will play piano (element 2).



It is possible to set the low limit above the high limit. In this case, the element will be played by notes above the low limit and below the high limit. The following diagram shows the keyboard range that would play an element set to Low=C4 and High=C2.



Note: *This note limit setting will be ignored if the voice mode is mono (voice mode 1:1AFM mono, 2:2AFM mono, and 3:4AFM mono).*

COMMON DATA

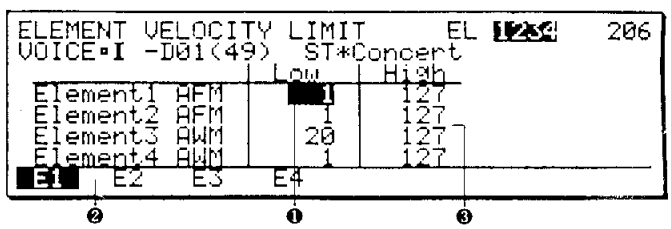
5. Element velocity limit

JUMP #206

Summary: Specify the range of key-on velocities that will play each element.

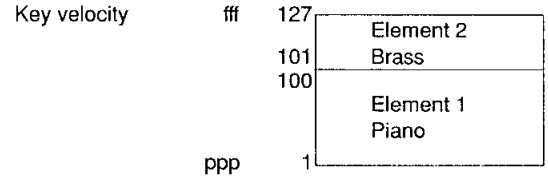
Procedure:

From: voice common job directory (JUMP #201)
Select: job 05:VlLimit (JUMP #206)
Specify: the range of velocities for which the element will sound

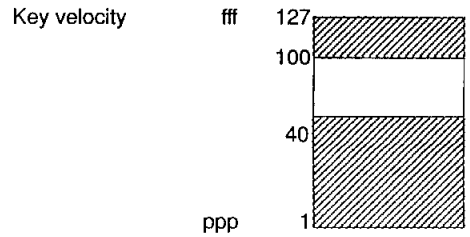


❶ Low Velocity Limit (1...127): This is the lowest key-on velocity for which the element will sound.
❷ High Velocity Limit (1...127): This is the highest key-on velocity for which the element will sound.
❸ Press F1–F4 to move the cursor to elements 1–4.

Remarks: If you want to play an element over the full range of key velocities, leave this parameter set at Low=1 and High=127. This parameter can be used to make strongly played notes play different elements than softly played notes. For example in a two-element voice where element 1 is a piano sound and element 2 is a brass sound, set element 1 to Low=1 and High=100 and set element 2 to Low=101 and High=127. With these settings, soft notes will play the piano (element 1) and strong notes will play brass (element 2). If desired, you could overlap the velocity limits of the elements, or use more than two elements.



It is possible to set the low limit above the high limit. In this case, the element will be sounded by key-on velocities outside the limits. The following diagram shows the velocity range that would play an element set to Low=100 and High=40.



COMMON DATA

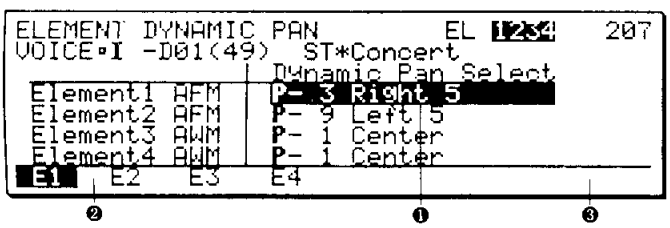
6. Element dynamic pan

JUMP #207

Summary: Select the Dynamic Pan data used by each element. The selected dynamic pan data will determine how the stereo position of the element will change over time.

Procedure:

From: Voice Common job directory (JUMP #201)
Select: job 06:ElemPan (JUMP #207)
Specify: the Dynamic Pan data used by each element



❶ Dynamic Pan Select (I1...32, C1...32, P1...64): This specifies the dynamic pan data that will move the stereo position of this element over time. The number and name of the selected pan data will be displayed. For an internal voice, select a pan data memory from Internal or Preset. For a card voice, select a pan data memory from Card or Preset.
❷ Pressing F1–F4 will move the cursor to elements 1–4.
❸ Press F8 to edit the currently selected pan data. (Only Internal pan data can be edited.)

Remarks: Each Dynamic Pan memory contains the following data.

- a Pan Source which allows the panning movement to be controlled by velocity, note number, or LFO
- EG settings which determine panning movement over time
- a Pan Name

64 preset dynamic pan memories are provided, as explained in the following table. In addition, 32 internal memories are provided for you to store your own pan data, and a RAM card can accommodate 32 more pan data memories. The following section 6.0 Dynamic Pan Edit explains how to edit the Dynamic Pan data.

Preset Dynamic Pan data

#	Name	Description
1	Center	fixed at center
2	Right 6	fixed full right
3	Right 5	...
4	Right 4	...
5	Right 3	...
6	Right 2	...
7	Right 1	fixed slightly right
8	Left 6	fixed full left
9	Left 5	...
10	Left 4	...
11	Left 3	...
12	Left 2	...
13	Left 1	fixed slightly left
14	L>R slow	slowly move L→R
15	L>R	move L→R
16	L>R fast	quickly move L→R
17	R>L slow	slowly move R→L
18	R>L	move R→L
19	R>L fast	quickly move R→L
20	C>R slow	slowly move C→R
21	C>R	move C→R
22	C>R fast	quickly move C→R
23	C→R slow	pause at center then slowly move C→R
24	C→R	pause at center then move C→R
25	C→R fast	pause at center then quickly move C→R
26	C>L slow	slowly move C→L
27	C>L	move C→L
28	C>L fast	quickly move C→L
29	C→L slow	pause at center then slowly move C→L
30	C→L	pause at center then move C→L
31	C→L fast	pause at center then quickly move C→L
32	L<>R slow	start at L then slowly move between LR
33	L<>R	start at L then move between LR
34	L<>R narrow	start at L then move (narrowly) between LR
35	L<>R fast	start at L then move quickly between LR

#	Name	Description
36	R<>L slow	start at R then slowly move between RL
37	R<>L	start at R then move between RL
38	R<>L narrow	start at R then move narrowly between RL
39	R<>L fast	start at R then move quickly between RL
40	C>R<>L slw	start at C then move slowly between RL
41	C>R<>L s&n	start at C then move slowly and narrowly between RL
42	C>R<>L	start at C then move between RL
43	C>R<>L fst	start at C then move quickly between RL
44	C→R<>L sl	pause at C then move slowly between RL
45	C→R<>L	pause at C then move between RL
46	C→R<>L fs	pause at C then move quickly between RL
47	C>L<>R slw	start at C then move slowly between LR
48	C>L<>R s&n	start at C then move slowly and narrowly between LR
49	C>L<>R	start at C then move between LR
50	C>L<>R fst	start at C then move quickly between LR
51	C→L<>R sl	pause at C then move slowly between LR
52	C→L<>R	pause at C then move between LR
53	C→L<>R fs	pause at C then move quickly between LR
54	LFO MWheel	controller regulates the width (initially 0) of LFO panning
55	LFO wide	broad panning by LFO
56	Note wide	broad panning by note number
57	Note narrw	narrow panning by note number
58	Notew+EG n	broad panning by note number + narrow LR movement
59	Noten+EG w	narrow panning by note number + broad LR movement
60	Vel wide	broad panning by key velocity
61	Vel narrow	narrow panning by key velocity
62	Vel w+EG n	broad panning by key velocity + narrow LR movement
63	R&L 1	variation of repeated LR movement
64	R&L 2	variation of repeated LR movement

COMMON DATA / ELEMENT DYNAMIC PAN

6.0 Dynamic pan edit

Summary: This function allows you to edit the currently selected Dynamic Pan data.

Procedure:

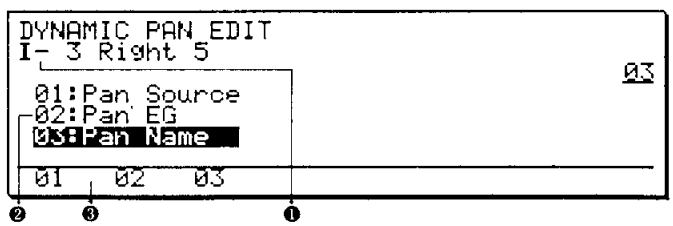
From: Voice Common job 06.ElemPan (JUMP #207)

When: an Internal dynamic pan memory is selected

Press: F8 (Edit)

Select: the Dynamic Pan parameter you wish to edit

Editing is possible only when an Internal pan memory is selected. If you want to edit one of the preset pan memories, press COPY to copy it to an Internal pan memory as explained in the following section 6.0.1 Copy Pan Data.



❶ The name and number of the currently selected Dynamic Pan data are displayed.

❷ Move the cursor in this area to select a job.

01: Pan Source: Select a control source (velocity, note number, or LFO) to affect dynamic panning. (See 6.1 Pan Source)

02: Pan EG: Set the panning EG. (See 6.2 Pan EG)

03: Pan Name: Assign a ten-character name to the pan data. (See 6.3 Pan Name)

❸ Pressing F1–F3 will select the corresponding job.

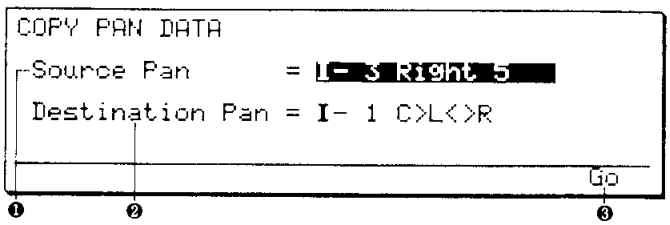
COMMON DATA / ELEMENT DYNAMIC PAN

6.0.1 Copy pan data

Summary: This function copies dynamic pan data from another memory into an Internal pan data memory.

Procedure:

When: editing dynamic pan data
Press: COPY to get the following display.
Specify: the source and destination pan.
To copy: the pan data press F8.
To quit: without copying press EXIT.



❶ Source Pan: Select the dynamic pan data to copy.
❷ Destination Pan: Select the dynamic pan data (internal 1–32) into which to copy the Source Pan data.
❸ After selecting Source Pan and Destination Pan, press F8 (Go) to copy the data. You will be asked "Are you sure?". Press YES and the data will be copied.

Remarks: Only Internal Pan Data memories can be edited. If you want to edit one of the preset pan tables, use this function to copy it into an Internal pan memory.

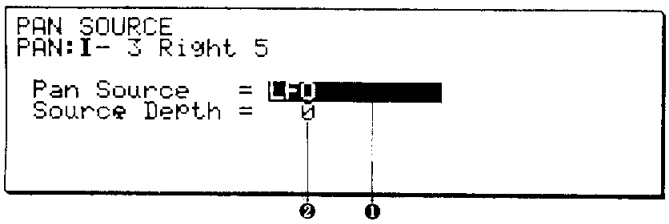
COMMON DATA / ELEMENT DYNAMIC PAN

6.1 Pan source

Summary: This determines how the dynamic panning will be affected; either by Velocity, or Note Number, or LFO.

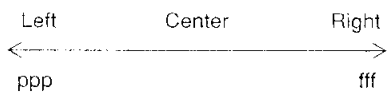
Procedure:

From: Dynamic Pan Edit job directory
Select: 01:Pan Source
Specify: the pan source and depth

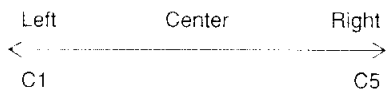


❶ Pan Source (Velocity, Key Note Number, LFO): Select the control source which will affect dynamic panning. When velocity is selected, the strength at which each note is played will affect panning. When note number is selected, notes above middle C will be panned increasingly right, and notes below middle C will be panned increasingly left. When LFO is selected, the LFO of the element will continuously pan the sound.
❷ Source Depth (0...127): This determines how much the selected Pan Source will affect panning. When this is set to 0, the selected pan source will have no effect. When this is set to 127, the selected pan source will pan the element from full left to full right.

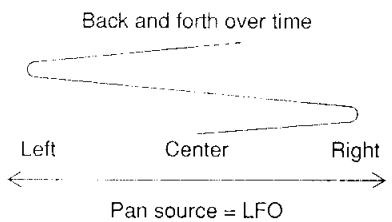
Pan source = Velocity



Pan source = Key note number



Pan source = LFO



Remarks: Dynamic panning is controlled by two factors working together; the Pan Source and the Pan EG. Refer to the diagram in 6.2 Pan EG for an example of this.

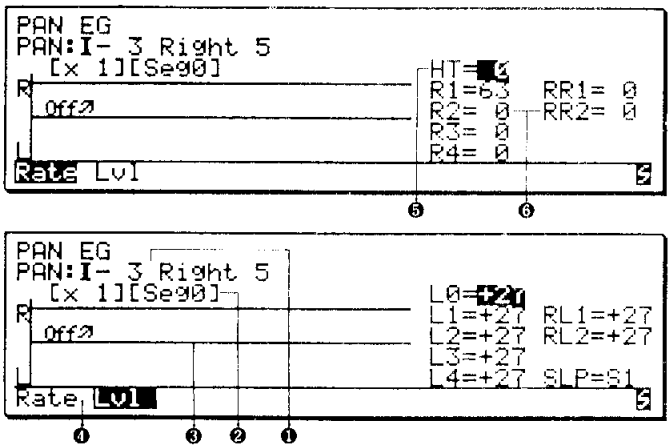
COMMON DATA / ELEMENT DYNAMIC PAN

6.2 Pan EG

Summary: Specify how the element will be panned over time, starting when each note is played.

Procedure:

From: Dynamic Pan Edit job directory
Select: 02:Pan EG.
Press: F1 (Rate) to set pan EG rates.
Press: F2 (Lvl) to set pan EG levels.



❶ The number and name of the currently selected Dynamic Pan data are displayed.

❷ This indicates the displayed segment and range of the EG graphic display. To change the range, hold SHIFT and press F1–F6 (x1, x2, x5, x10, x20, x50). To shift the EG graphic display to a different segment, hold SHIFT and press F7 or F8 to select Seg0–Seg4, Rel1.

❸ The pan EG is graphically displayed.

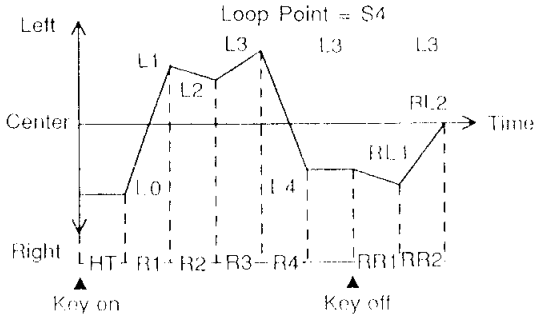
❹ Press F1 (Rate) to set EG rates. Press F2 (Lvl) to set EG levels.

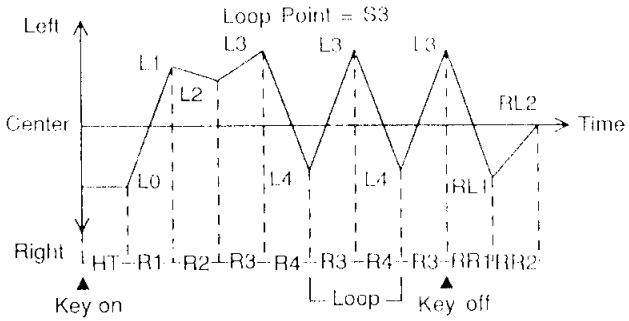
❺ HT (Keyon Delay Time 63...0): When this is set to 0, the pan EG will begin immediately after a key is pressed. For higher settings, there will be an increasingly longer delay before the pan EG begins.

❻ R1–R4, RR1–RR2 (Keyon Rates, Release Rates 0...63): Keyon Rates 1–4 and Release Rates 1–2 determine the speed of the pan EG. Higher settings result in faster change. Refer to the diagram below.

❼ L0–L4, RL1–2 (Keyon Levels, Release Levels –32...+32): Keyon Levels 0–4 and Release Levels 1–2 determine the panning direction and distance of the pan EG. Negative settings move left, and positive settings move right. Refer to the following diagram.

❽ SLP (Loop Point S1–S4): This specifies the segment from which the EG will continue looping if a key remains depressed after the EG has come to the end. Refer to the following diagram.





When you press a key, the sound will be output at the pan position of L0. When the specified hold time (HT) has elapsed, the pan position will change at the rate of R1 to level L1. When the pan position reaches L1, it will change at the rate of R2 to the position of L2. When the pan position reaches L2, it will change at the rate of R3 to the position of L3. When the pan position reaches L3, it will change at the rate of R4 to the position of L4. When the pan position reaches L4, the EG will begin looping from the specified segment (in the above diagram, SLP=S3).

When you release the key, the pan position will change at the rate of RR1 to the position of RL1. When the pan position reaches RL1, it will change at the rate of RR2 to the position of RL2.

Remarks: Hold Time (HT) is a *time* setting, but the various Rates are *speed*. Higher settings for Hold Time will result in a longer delay before the pan EG begins, but higher settings for Rates will result in faster change. The final result of the Pan EG will depend on the Pan Source settings.

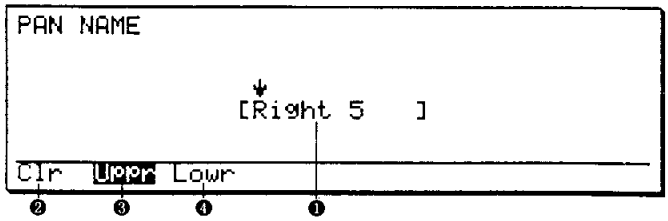
COMMON DATA / ELEMENT DYNAMIC PAN

6.3 Pan name

Summary: Specify a ten-character name for the internal Pan data memory being edited.

Procedure:

From: Dynamic Pan Edit job directory
Select: 03:Pan Name
Specify: a name for the pan memory



❶ Enter a ten-character name for the Pan data.
❷ To clear the currently entered name press F1 (Clr).
❸ To switch to upper-case characters press F2 (Uppr).
❹ To switch to lower-case characters press F3 (Lowr).

Methods of entering character data are explained in *How to enter character data,* on page 30.

COMMON DATA

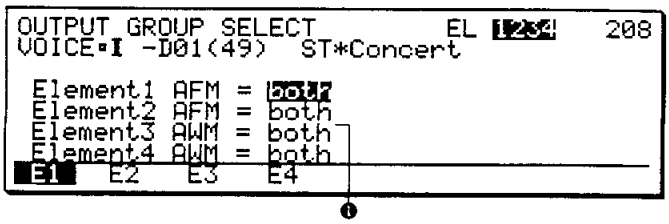
7. Output group select

JUMP #208

Summary: Specify the output group for each element.

Procedure:

From: voice common job directory (JUMP #201)
Select: job 07:OutSel (JUMP #208)
Specify: the output group for each element



❶ Element 1–4 (off, grp1, grp2, both): Each of the elements in a voice must be assigned to one or both output groups. The element is then panned as specified by the dynamic pan table, and the stereo signal is sent to the corresponding output channel.

If you turn off the output group select for an element, that element will not be sent to the effect unit.

Remarks: The effect wet:dry setting determines the mix between the effect processed sound from each effect unit and the stereo signal from the dynamic pan tables. If the wet:dry setting is 100:0, the stereo pan will have no effect, since all the output sound will be coming from the effect unit. If the wet:dry setting is 0:100, the sound from the effect unit will not be heard. Refer to the figure in *10.Effect set,* page 104.

COMMON DATA

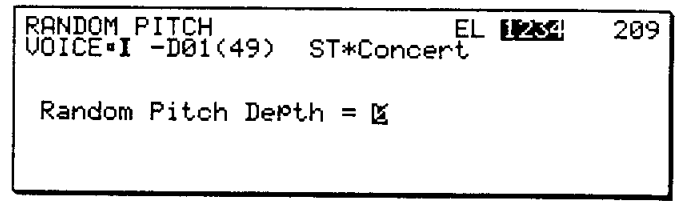
8. Random pitch

JUMP #209

Summary: Specify the amount of random pitch variation for the voice.

Procedure:

From: voice common job directory (JUMP #201)
Select: job 08:Random (JUMP #209)
Specify: the amount of random pitch variation



❶ Random Pitch Depth (0...7): For a setting of 0, a key will produce the same pitch each time it is pressed. For settings of 1...7, a key will produce a random deviation in pitch. Higher settings result in greater deviation from the standard key pitch.

Remarks: This parameter is helpful when simulating instruments which have a naturally varying pitch.

The random pitch deviation is applied separately to each element in the voice, meaning that pitch differences may appear between elements.

COMMON DATA

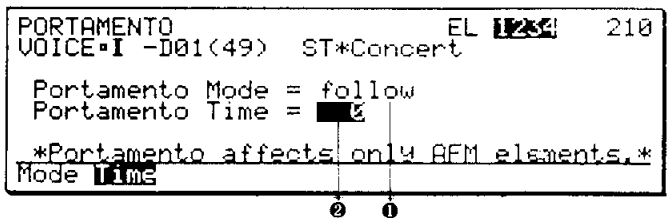
9. Portamento

JUMP #210

Summary: Specify the Portamento mode and time. Portamento creates a smooth glide in pitch between one note and the next.

Procedure:

From: voice common job directory (JUMP #201)
Select: job 09:Porta (JUMP #210)
Specify: the portamento mode and time



❶ Portamento Mode: If the currently selected voice mode is polyphonic (voice modes 4–10), the portamento mode is fixed at Follow mode. If the currently selected voice mode is monophonic (voice modes 1–3), the portamento mode can be set either to Fingered or Fulltime.

Fingered portamento: Portamento is applied only if you press a note before releasing the previous one; i.e., when you play legato.
Full Time portamento: Portamento is applied between all notes.

❷ Portamento Time (0...127): This determines the time of the pitch glide between notes. Higher settings result in a longer (slower) glide.

Remarks: If you do not want portamento, set Portamento Time to 0 so that the pitch change between notes is instantaneous.

As noted in the display, portamento applies only to AFM elements. It will have no effect on voices which use only AWM elements (voice modes 6–8). If a voice uses both AFM and AWM elements (voice modes 9 and 10), portamento will apply only to the AFM elements in the voice.

COMMON DATA

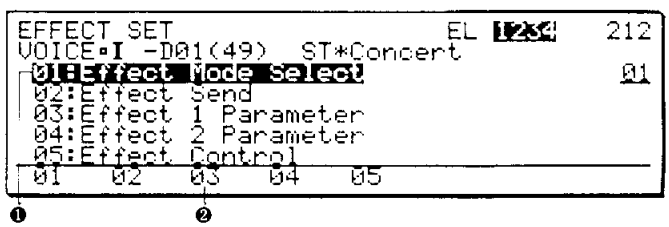
10. Effect set

JUMP #212

Summary: Specify how the effect units are connected, how the sound from each element of the voice is sent to the effect units, parameters for each effect unit, and how the effect parameters are controlled in realtime.

Procedure:

From: voice common job directory (JUMP #201)
Select: job 10:Effect (JUMP #212)
Select: the effect parameter you wish to edit



❶ Move the cursor in this area to select a job.

01: Effect Mode Select: Specify how the two effect units are connected, the effect type, effect output level, and wet:dry balance. Refer to *10.1 Effect Mode Select.*

02: Effect Send: Specify how the sound of each element of the voice will be sent to the effect units. Refer to *10.2 Effect Send*.

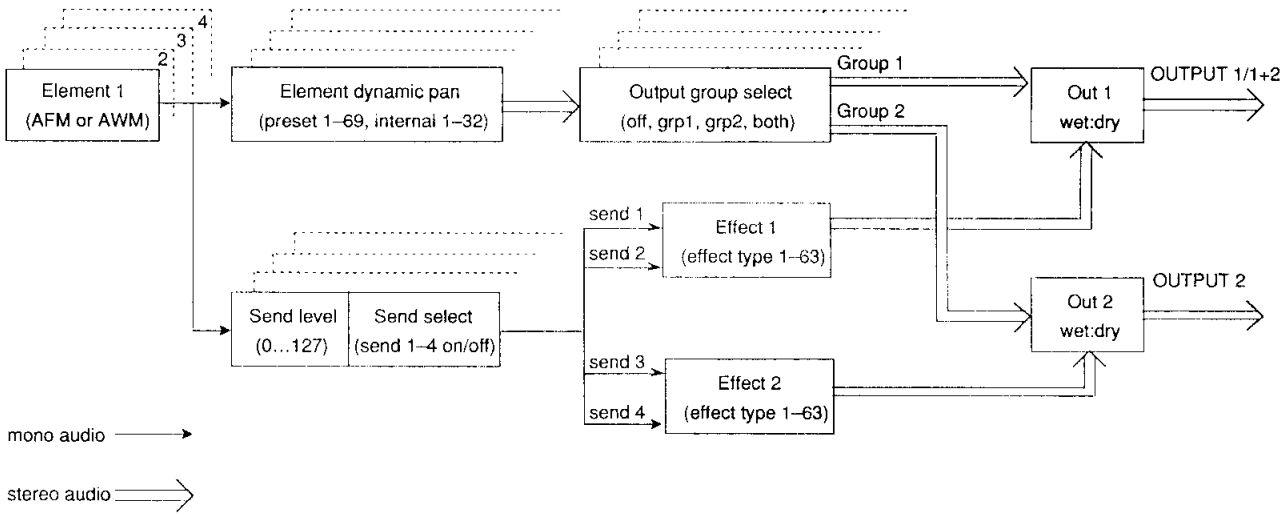
03: Effect 1 Parameter: Make settings for effect unit 1. Refer to *10.3 Effect 1 Parameter*.

04: Effect 2 Parameter: Make settings for effect unit 2. These parameters are exactly the same as for Effect 1. Refer to *10.3 Effect 1 Parameter*.

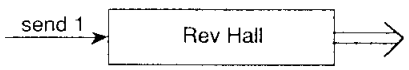
05: Effect Control: Specify how effect parameters will be affected by control change messages, aftertouch, velocity, key scaling, and LFO. Refer to *10.5 Effect Control*.

❷ Pressing F1–F5 will select the corresponding job.

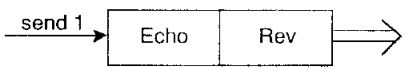
The following figure shows how the signal flow of a normal voice is related to the effect system.



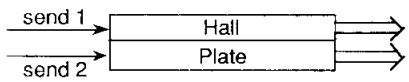
Effect type = 1–29 (single type)
ex., 1. Rev Hall



Effect type = 30–51 (cascade type)
ex., 30. Echo→Rev



Effect type = 52–63 (dual type)
ex., 52. Hall&Plate



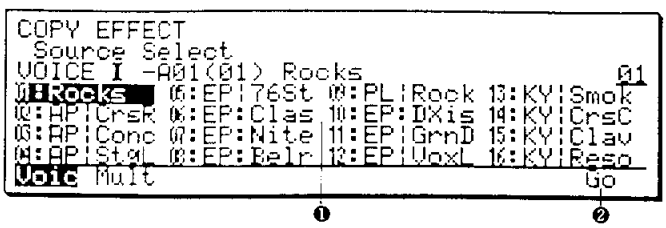
COMMON DATA / EFFECT SET

10.0.1 Copy voice effect

Summary: This function copies Effect data from another voice into the effect data of the currently edited voice.

Procedure:

When: editing Effect data (jobs 10.0–10.5)
Press: COPY to get the following display.
Specify: the voice from which to copy the effect data
To copy: the data press F8 (Go)
To quit: without copying press EXIT



❶ Use the voice memory buttons, bank button A–D, and voice select buttons 1–16 to select a source voice from which to copy the Effect data.

❷ Press F8 (Go) and you will be asked "Are you sure?". If you are sure you want to copy the effect data, press YES and the effect data will be copied from the selected voice to the voice being edited.

Note: The effect send settings (see 10.2 Effect send*) will not be copied.*

COMMON DATA / EFFECT SET

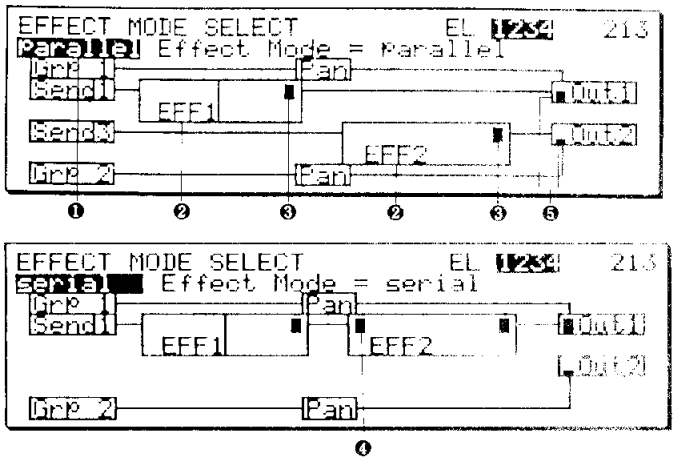
10.1 Effect mode select

JUMP #213

Summary: Specify the effect mode to determine how the two effect units are connected, the effect type for each unit, effect output levels, and the volume balance between processed and unprocessed sound.

Procedure:

From: Effect Set job directory (JUMP #212)
Select: 01:Effect Mode Select (JUMP #213)
Specify: the effect mode, effect types, and effect levels, and wet:dry balance.



❶ Effect Mode (off, serial, parallel): This determines how the two effect units will be connected. The effect mode will be graphically shown in the display.

When the Effect Mode is set to Off, the effect units will not be used. No effect processed sound will be added to the sound sent to output groups 1 and 2 from the two stereo groups.

When the Effect Mode is set to Serial, the audio signal from the sends (one, two, or three, depending on the type of effect selected for each effect unit) will be sent to the two effect units as shown in the display. The output of effect 1 will be sent through effect 2; i.e., the effect units will be connected in "series".

When the Effect Mode is set to Parallel, the audio signal from the sends (one, two, three, or four, depending on the type of effect selected for each effect unit) will be sent to the two effect units as shown in the display.

❷ Effect 1 Type, Effect 2 Type (1...63): These determine the type of effect for each of the two effect units. A list of the 63 effects and their parameters is given in the following section *10.3 Effect 1 parameter* (page 108).

❸ EFF1/EFF2 Output level 1, 2 (0...100%): These determine the output level of each effect. The level is indicated as a number and also as a bar graph. If a dual-type effect (52–63) is selected, the output level can be set independently for each effect. At a setting of 0% the effect unit will output no sound, and at a setting of 100% the output of the effect unit will be at full volume.

❹ Effect 2 Mix Level (0...100%): This will appear only if the Effect Mode is set to Serial. It determines the amount of Effect 2 that is added to the effect chain.

❺ Out1/Out2 wet:dry (100:0...0:100): These determine the mix between the processed (wet) and unprocessed (dry) sounds for each output 1 and 2. When set to 100:0, only the processed sound from the effect unit will be heard. When set to 0:100, only the unprocessed sound from the dynamic pan will be heard.

If the wet:dry balance is set to 100:0, the sound from the stereo pan will not be heard, meaning that the element dynamic pan settings will have no effect.

Single type effects

01. Rev Hall
02. Rev Room 1
03. Rev Room 2
04. Rev Room 3
05. Rev Stage 1
06. Rev Stage 2
07. Rev Plate
08. Rev White Room
09. Rev Tunnel
10. Rev Canyon
11. Rev Basement
12. Early Reflection 1
13. Early Reflection 2
14. Gate Rev
15. Reverse
16. Delay L,R
17. Delay L,C,R
18. Stereo Echo
19. Pitch Change 1
20. Pitch Change 2
21. Pitch Change 3
22. Aural Exciter®*
23. EG Flange
24. EG Chorus
25. EG Symphonic
26. EG Phasing
27. Rotary SP
28. Ring Modulator
29. D. Filter (Wah)

Cascade type effects

30. Echo → Rev
31. Delay L,R → Rev
32. Flange → Rev
33. Chorus → Rev
34. Sympho → Rev
35. Phase → Rev
36. Aural Exciter®* → Rev
37. Dist → Rev
38. Dist → Dly L,R
39. Dist → St.Echo
40 EQ → Rev 1 (Hall)
41. EQ → Rev 2 (Room)
42. EQ → Delay L,R
43. EQ → St.Echo
44. EQ → St.Flange
45. EQ → St.Chorus
46. EQ → Symphonic
47. EQ → St.Phasing
48. St.Flange → Delay L,R
49. St.Chorus → Delay L,R
50. Symphonic → Delay L,R
51. St.Phasing → Delay L,R

Dual type effects

52. Hall & Plate
53. Echo & Rev
54. Delay & Rev
55. St.Flange & St.Chorus
56. St.Flange & Symphonic
57. Symphonic & St.Chorus
58. St.Flange & Rev
59. St.Chorus & Rev
60. Symphonic & Rev
61. St.Flange & Delay L,R
62. St.Chorus & Delay L,R
63. Symphonic & Delay L,R

* *Aural Exciter ® is a registered trademark and is manufactured under license from APHEX Systems Ltd.*

COMMON DATA / EFFECT SET

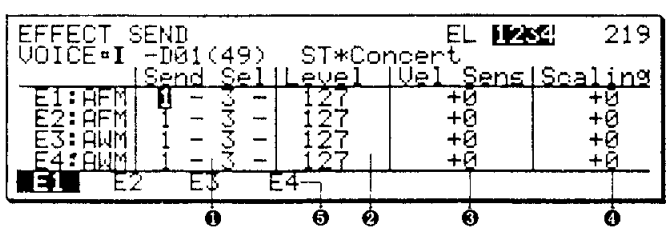
10.2 Effect send

JUMP #219

Summary: Specify how the sound from each element of the voice will sent to each of the one, two, three, or four effect sends.

Procedure:

From: Effect Set job directory (JUMP #212)
Select: job 02:Effect Send (JUMP #219)
Specify: the effect send settings for each element



❶ Send Sel (send select 1–4): Specify whether or not to send the sound from the element to each effect send 1–4. The number of effect sends available will depend on the effect mode and the effect type. Non-existent sends will be indicated by a dash (–), and cannot be selected. In the above display, effect sends 1 and 2 are available. If an effect send is turned on, its number will be displayed, and the sound of the element will be sent to that effect send. If an effect send is turned off, a period (.) will be displayed, and the sound of the element will not be sent to that effect send. In the above display, element 1 is being sent to effect sends 1 and 3 only.

❷ Level (0...127): Specify how much sound will be sent from the element to the effect unit.

❸ Vel Sens (–7...+7): Specify how key velocity will affect the effect send level of the element. For positive settings (+1...+7), more sound will be sent to the effect unit for strongly played notes. For negative settings (–1...–7), less sound will be sent to the effect unit for strongly played notes.

❹ Scaling (–7...+7): Specify how key position will affect the effect send level of the element. For positive settings (+1...+7), higher notes will send more sound to the effect unit. For negative settings (–1...–7), higher notes will send less sound to the effect unit.

❺ Pressing F1–F4 will move the cursor to elements 1–4.

COMMON DATA / EFFECT SET

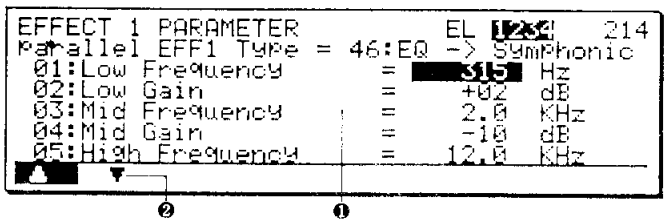
10.3 Effect 1 parameter

JUMP #214

Summary: Set effect parameters for the effect type selected for effect 1. This explanation also applies to effect 1.

Procedure:

From: Effect Set job directory (JUMP #212)
Select: job 03:Effect 1 Parameter (JUMP #214)
Specify: parameter settings for the selected effect.



❶ The number and type of effect parameters will depend on the selected Effect Type. Refer to the following effect parameter tables. Parameter numbers which do not exist for the selected effect type will be displayed as a dash (–).

❷ Press F1 or F2 to move between effect parameters 1–5 and effect parameters 6–10.

Effect parameters: Many of the effect types have similar parameters. Commonly-appearing parameters are explained below. Parameters unique to a specific effect type will be explained after the parameter list for that effect type.

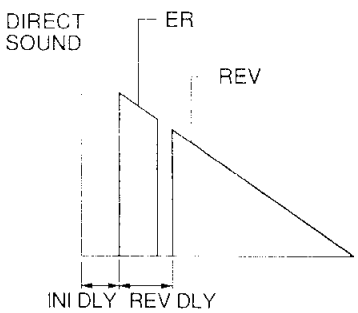
AM Depth: the amount of amplitude modulation
Delay Time: the delay before the processed sound is heard
Density: the density of reverberation
Diffusion: the spatial spread of the reverberant sound
Feedback Delay (FB Delay Time): the interval between repeated echoes
Feedback Gain: the volume ratio of each echo to the previous one (negative settings will invert the phase)
Fine (Pitch Fine): fine adjustment in cents (1/100th of a semitone) to the pitch change
High (Rev High): the proportion at which high frequency reverb will decay in relation to the overall reverb time
High Control: the proportion at which high frequencies will be retained in each successive feedback echo
High Gain: boost or cut of the high frequencies
HPF (high-pass filter): frequencies above this setting will be allowed to pass
Initial Delay: the delay before the processed sound will be heard
Low Gain: boost or cut of the low frequencies
LPF (low-pass filter): frequencies below this setting will be allowed to pass
PM Depth: the amount of pitch modulation
Modulation Delay: the time delay before the modulation begins to occur

Modulation Depth: the amount of modulation (flanging, chorusing, etc.)
Modulation Frequency: the speed of modulation (flanging, chorusing, etc.)
Pitch: the amount of pitch change in semi-tones
Reverb Time: the time during which the level of the reverb sound will decrease by 60 dB

Single type effects

1:Rev Hall, 2:Rev Room 1, 3:Rev Room 2, 4:Rev Room 3, 5:Rev Stage 1, 6:Rev Stage 2, 7:Rev Plate

No.	Parameter Name	Range
1	Reverb Time	0.3 ... 30.0 sec
2	High	0.1 ... 1.0
3	Diffusion	0 ... 10
4	Initial Delay	0.1 ... 200.0 ms
5	Rev Delay	0.1 ... 200.0 ms
6	Density	0 ... 4
7	ER/Rev Balance	0 ... 100 %
8	Low Gain	–12 ... +12 dB
9	High Gain	–12 ... +12 dB
10	LPF	1 ... 16 kHz, Thru



Initial Delay: This parameter sets the time delay before the early reflections begin.
Rev Delay: This parameter sets the delay between the beginning of the early reflections and the beginning of the reverb.
ER/Rev Balance: This determines the level balance between early reflections and reverb. At a setting of 0%, only the reverb will be heard. At a setting of 100%, only the early reflections will be heard.

8:Rev White Room, 9:Rev Tunnel, 10:Rev Canyon, 11:Rev Basement

No.	Parameter Name	Range
1	Reverb Time	0.3 ... 30.0 sec
2	High	0.1 ... 1.0
3	Diffusion	0 ... 10
4	Initial Delay	0.1 ... 200.0 ms
5	Width	0.5 ... 30.2 m
6	Height	0.5 ... 30.2 m
7	Depth	0.5 ... 30.2 m
8	Wall Vary	0 ... 30
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

Width, Height, Depth: These parameters determine the size of the simulated room in units of meters.
Wall Vary: This parameter determines the irregularity of the wall surfaces. At a setting of 0, the walls will be perfectly regular. Higher settings will simulate more irregular walls, creating more complex reverberation.

12:Early Ref. 1, 13:Early Ref. 2

No.	Parameter Name	Range
1	Type	S-Hall, L-Hall, Random, Reverse, Plate, Spring
2	Room Size	0.1 ... 20.0
3	Liveness	0 ... 10
4	Diffusion	0 ... 10
5	Initial Delay	0.1 ... 400.0 ms
6	ER Number	1 ... 19
7	Feedback Delay	0.1 ... 800.0 ms
8	Feedback Gain	–99 ... +99 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

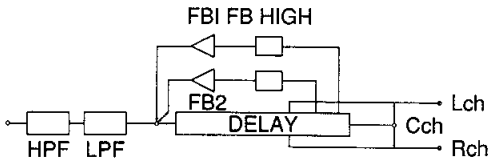
Room Size: This parameter determines the size of the simulated room in arbitrary units. Higher settings will result in a larger room with more space between reflections.
Liveness: This parameter determines how early reflections will decay. Higher settings will result in a more live sound.
ER Number: This parameter determines the number of early reflections that will occur.

14:Gate Reverb, 15: Reverse Gate

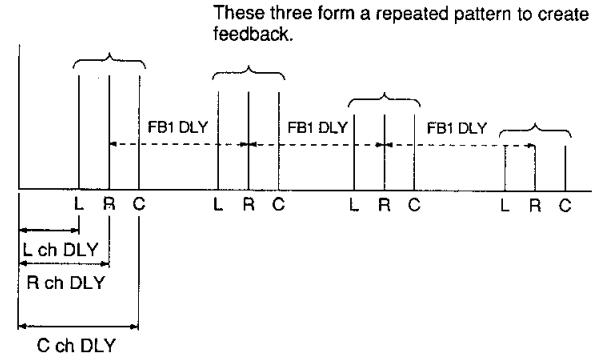
No.	Parameter Name	Range
1	Type	Type A, Type B
2	Room Size	0.1 ... 20.0
3	Liveness	0 ... 10
4	Diffusion	0 ... 10
5	Initial Delay	0.1 ... 400.0 ms
6	ER Number	1 ... 19
7	Feedback Delay	0.1 ... 800.0 ms
8	Feedback Gain	–99 ... +99 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

16:Delay L,R

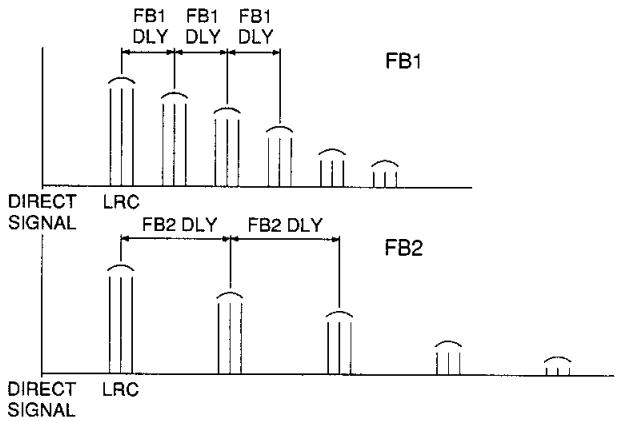
No.	Parameter Name	Range
1	Lch Delay Time	0.1 ... 1360.0 ms
2	Rch Delay Time	0.1 ... 1360.0 ms
3	—	—
4	FB1 Delay Time	0.1 ... 1360.0 ms
5	FB2 Delay Time	0.1 ... 1360.0 ms
6	FB Gain	–99 ... +99 %
7	FB1 High Control	0.1 ... 1.0
8	FB2 High Control	0.1 ... 1.0
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru



These delay programs provide a dual delay (16.Delay L,R) or triple delay (17.Delay L,C,R) with two feedback loops. The following diagram shows the pattern created by the two/three delay times, and the effect of FB1.



The following diagram shows how the pattern of the two/three delayed sounds (Lch Delay Time, Rch Delay Time, Center Delay Time) is repeated at intervals of the feedback time values FB1 and FB2.

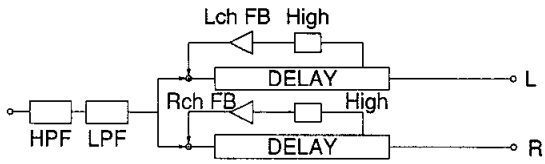


17:Delay L,C,R

No.	Parameter Name	Range
1	Lch Delay Time	0.1 ... 1360.0 ms
2	Rch Delay Time	0.1 ... 1360.0 ms
3	Center Delay Time	0.1 ... 1360.0 ms
4	FB1 Delay Time	0.1 ... 1360.0 ms
5	FB2 Delay Time	0.1 ... 1360.0 ms
6	FB Gain	–99 ... +99 %
7	FB1 High Control	0.1 ... 1.0
8	FB2 High Control	0.1 ... 1.0
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

18:Stereo Echo

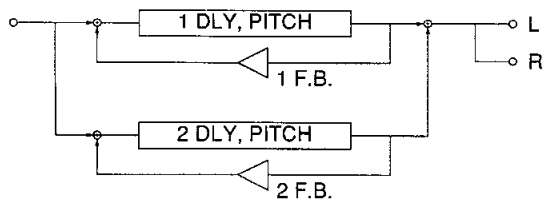
No.	Parameter Name	Range
1	Lch Init Dly Time	0.1 ... 680.0 ms
2	Lch FB Delay Time	0.1 ... 680.0 ms
3	Lch FB Gain	–99 ... +99 %
4	Rch Init Dly Time	0.1 ... 680.0 ms
5	Rch FB Delay Time	0.1 ... 680.0 ms
6	Rch FB Gain	–99 ... +99 %
7	Lch FB High con.	0.1 ... 1.0
8	Rch FB High con.	0.1 ... 1.0
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru



This effect type provides two independent delays with independent feedback.

19:Pitch Change 1

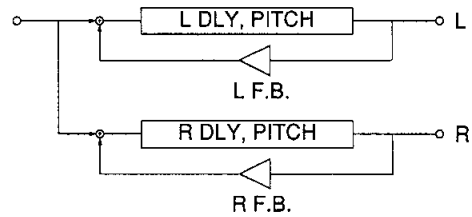
No.	Parameter Name	Range
1	1 Pitch	–24 ... +24
2	1 Fine	–100 ... +100
3	1 Delay	0.1 ... 650.0 ms
4	1 FB Gain	–99 ... +99 %
5	1 Level	0 ... 100 %
6	2 Pitch	–24 ... +24
7	2 Fine	–100 ... +100
8	2 Delay	0.1 ... 650.0 ms
9	2 FB Gain	–99 ... +99 %
10	2 Level	0 ... 100 %



This effect type provides two independent pitch changes, each with delay and feedback. The sound of both pitch changes is combined into both the left and right outputs.

20:Pitch Change 2

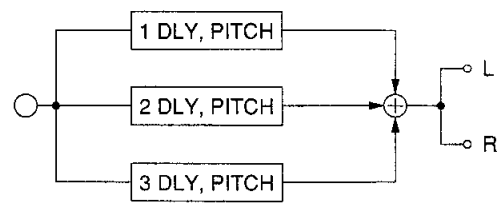
No.	Parameter Name	Range
1	L Pitch	–24 ... +24
2	L Fine	–100 ... +100
3	L Delay	0.1 ... 650.0 ms
4	L FB Gain	–99 ... +99 %
5	R Pitch	–24 ... +24
6	R Fine	–100 ... +100
7	R Delay	0.1 ... 650.0 ms
8	R FB Gain	–99 ... +99 %
9	—	—
10	—	—



This effect type provides two independent pitch changes, each with delay and feedback. The sound of each pitch change is sent independently from the left and right outputs.

21:Pitch Change 3

No.	Parameter Name	Range
1	1 Pitch	–24 ... +24
2	1 Fine	–100 ... +100
3	1 Delay	0.1 ... 1300.0 ms
4	2 Pitch	–24 ... +24
5	2 Fine	–100 ... +100
6	2 Delay	0.1 ... 1300.0 ms
7	3 Pitch	–24 ... +24
8	3 Fine	–100 ... +100
9	3 Delay	0.1 ... 1300.0 ms
10	—	—



This effect type provides three independent pitch changes, each with delay. The sound of all three pitch changes is combined into both left and right outputs.

22: Aural Exciter®*

No.	Parameter Name	Range
1	HPF	500 Hz ... 16 kHz
2	Enhance	0 ... 100 %
3	Mix Level	0 ... 100 %
4	Delay Time	0.1 ... 650 ms
5	—	—
6	—	—
7	—	—
8	—	—
9	—	—
10	—	—

This effect adds new harmonics to a sound to make it "stand out" in the mix.

HPF: Overtones will be added to frequencies above this frequency.

Enhance: Higher settings of this value will increase the level of the newly generated harmonics.

Mix Level: This determines the mix of the direct sound and the sound produced by the exciter. Higher settings will increase the amount of sound from the exciter.

Delay: This determines the delay which will be applied to the sound produced by the exciter.

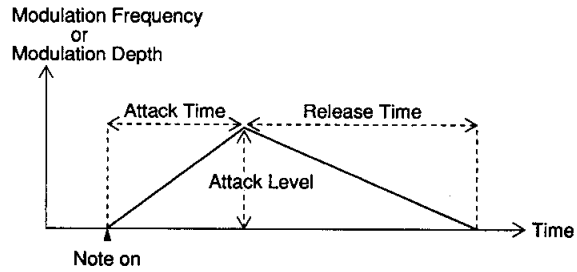
* *Aural Exciter® is a registered trademark and is manufactured under license from APHEX Systems Ltd.*

23:EG Flange

No.	Parameter Name	Range
1	Attack Time	2.0 ... 22000 ms
2	Attack Level	0 ... 100 %
3	Release Time	2.0 ... 22000 ms
4	EG Target	0:M.Freq, 1:M.Dep
5	Low Gain	–12 ... +12 dB
6	High Gain	–12 ... +12 dB
7	Modulation Freq.	0.05 ... 40 Hz
8	Modulation Depth	0 ... 100 %.
9	Modulation Delay	0.1 ... 100.0 ms
10	Mod. FB Gain	0 ... 99 %

This effect provides a Flanger whose modulation frequency or modulation depth can be controlled over time by a simple envelope.

EG Target: This determines which parameter will be controlled by the envelope. If "M.Freq" is selected, the envelope will increase and then decrease the modulation frequency over time. If "M.Dep" is selected, the envelope will increase and then decrease the modulation depth over time. Attack Time, Attack Level, Release Time: These parameters determine the shape of the envelope. This envelope is re-started each time a note is played, and will go through its full contour regardless of whether the note is held or released.



24:EG Chorus

No.	Parameter Name	Range
1	Attack Time	2.0 ... 22000 ms
2	Attack Level	0 ... 100 %
3	Release Time	2.0 ... 22000 ms
4	EG Target	0:M.Freq, 1:M.Dep
5	Low Gain	–12 ... +12 dB
6	High Gain	–12 ... +12 dB
7	Chorus Mod. Freq.	0.05 ... 40 Hz
8	Chorus PM Depth	0 ... 100 %
9	Chorus AM Depth	0 ... 100 %
10	—	—

This effect provides a Chorus whose modulation frequency or modulation depth can be controlled over time by a simple envelope. For details, refer to the explanation of *23.EG Flange.*

25:EG Symphonic

No.	Parameter Name	Range
1	Attack Time	2.0 ... 22000 ms
2	Attack Level	0 ... 100 %
3	Release Time	2.0 ... 22000 ms
4	EG Target	0:M.Freq, 1:M.Dep
5	Low Gain	–12 ... +12 dB
6	High Gain	–12 ... +12 dB
7	Modulation Freq.	0.05 ... 40.0 Hz
8	Modulation Depth	0 ... 100 %
9	—	—
10	—	—

This effect provides a Symphonic effect whose modulation frequency or modulation depth can be controlled over time by a simple envelope. For details, refer to the explanation of *23.EG Flange*. Symphonic is an effect that is similar to chorusing, but with multiple modulation and more delay time modulation.

26:EG Phase

No.	Parameter Name	Range
1	Attack Time	3.0 ... 22000 ms
2	Attack Level	0 ... 100 %
3	Release Time	3.0 ... 22000 ms
4	EG Target	0:M.Freq, 1:M.Dep
5	Low Gain	–12 ... +12 dB
6	High Gain	–12 ... +12 dB
7	Modulation Freq.	0.05 ... 40 Hz
8	Modulation Depth	0 ... 100 %
9	Modulation Delay	0.1 ... 5.0 ms
10	—	—

This effect provides a Phasing effect whose modulation frequency or modulation depth can be controlled over time by a simple envelope. For details, refer to *23.EG Flange* (page 112).

27:Rotary Speaker

No.	Parameter Name	Range
1	Mid Speed	0.05 ... 40 Hz
2	Depth	0 ... 100 %
3	Transition Time	2 ... 22000 ms
4	L/M/H Speed Diff.	0.05 ... 5.80 Hz
5	Switch L/M/H	0:Low, 1:Mid, 2:High
6	Low Gain	–12 ... +12 dB
7	High Gain	–12 ... +12 dB
8	—	—
9	—	—
10	—	—

This effect simulates a rotary speaker that can be made to change smoothly between high, mid and low speeds. By assigning a controller to affect parameter 5 (Switch L/M/H) of this effect, you can switch between slow and fast rotor speeds as you play.

Mid Speed: This determines the mid rotor speed.

Transition time: This determines the time over which the rotor will speed up or slow down when switched between low, mid, and high speed.

L/M/H Speed Diff.: The high speed is faster than mid speed, and the low speed is slower than mid speed, by this amount.

Switch L/M/H: This switch is used to select low, mid, or high rotor speed. It may be useful musically to assign a controller to affect this parameter.

28:Ring Modulator

No.	Parameter Name	Range
1	Wave PM Depth	0 ... 100 %
2	Wave PM Frq.	0.05 ... 40.0 Hz
3	Wave AM Depth	0 ... 100 %
4	Wave AM Frq.	0.05 ... 40.0 Hz
5	Low Gain	–12 ... +12 dB
6	High Gain	–12 ... +12 dB
7	—	—
8	—	—
9	—	—
10	—	—

This effect modifies the input waveform by multiplying it with a sine wave. The pitch and amplitude characteristics of this sine wave may be altered freely.

Wave PM Depth: This determines the depth of sine wave pitch modulation depth.

Wave PM Frq.: This determines the depth of sine wave pitch modulation frequency.

Wave AM Depth: This determines the depth of sine wave amplitude modulation depth.

Wave AM Frq.: This determines the depth of sine wave amplitude modulation frequency.

29:D. Filter (Wah)

No.	Parameter Name	Range
1	Filter Frq.	125 Hz ... 14 kHz
2	Filter 1 Q	1.0 ... 5.0
3	Filter 1 Gain	0 ... +12 dB
4	Filter 2 Q	0.1 ... 0.7
5	—	—
6	—	—
7	—	—
8	—	—
9	—	—
10	—	—

This effect applies a wah-wah effect to the input sound using two filters. Filter 1 is a presence filter; Filter 2 is a band pass filter (BPF).

Filter Frq.: This determines the frequencies of Filters 1 and 2.

Filter 1 Q: This determines the width characteristic of Filter 1.

Filter 1 Gain: This determines the gain of Filter 1.

Filter 2 Q: This determines the width characteristic of Filter 2.

30:Echo → Rev

No.	Parameter Name	Range
1	Echo Lch Delay	0.1 ... 320.0 ms
2	Echo Lch FB Gain	-99 ... +99 %
3	Echo Rch Delay	0.1 ... 320.0 ms
4	Echo Rch FB Gain	-99 ... +99 %
5	Reverb Time	0.3 ... 30.0 sec
6	Rev High	0.1 ... 1.0
7	Rev ER/Rev Balance	0 ... 100 %
8	Rev Mix Level	0 ... 100 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect type provides an echo effect which is then fed into a reverb effect. For details refer to 18.Stereo Echo (page 111) and 1.Rev Hall (page 109).

Rev Mix Level: This determines the proportion between echo and reverb sound. At a setting of 0%, only the echo sound will be heard. At a setting of 100%, only the reverb sound will be heard.

31:Delay L,R → Rev

No.	Parameter Name	Range
1	Dly Lch Delay	0.1 ... 640.0 ms
2	Dly Rch Delay	0.1 ... 640.0 ms
3	Dly FB Gain	-99 ... +99 %
4	Dly FB High	0.1 ... 1.0
5	Reverb Time	0.3 ... 30.0 sec
6	Rev High	0.1 ... 1.0
7	Rev ER/Rev Balance	0 ... 100 %
8	Rev Mix Level	0 ... 100 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect type provides an delay effect which is then fed into a reverb effect. For details refer to 16.Delay L,R (page 110) and 1.Rev Hall (page 109).

Rev Mix Level: This determines the proportion between delay and reverb sound. At a setting of 0%, only the delay sound will be heard. At a setting of 100%, only the reverb sound will be heard.

32:Flange → Rev

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40 Hz
2	Modulation Depth	0 ... 100 %
3	Modulation Delay	0.1 ... 100.0 ms
4	Mod. FB Gain	0 ... 99 %
5	Reverb Time	0.3 ... 30.0 sec
6	Rev High	0.1 ... 1.0
7	Rev Initial Delay	0.1 ... 200.0 ms
8	Rev Mix Level	0 ... 100 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect type provides a flange effect which is then fed into a reverb effect. For details refer to 23.EG Flange (page 112) and 1.Rev Hall (page 109).

Rev Mix Level: This determines the proportion between flange and reverb sound. At a setting of 0%, only the flange sound will be heard. At a setting of 100%, only the reverb sound will be heard.

33:Chorus → Rev

No.	Parameter Name	Range
1	Chorus Mod. Freq.	0.05 ... 40 Hz
2	Chorus PM Depth	0 ... 100 %
3	Chorus AM Depth	0 ... 100 %
4	—	—
5	Reverb Time	0.3 ... 30.0 sec
6	Rev High	0.1 ... 1.0
7	Rev Initial Delay	0.1 ... 200.0 ms
8	Rev Mix Level	0 ... 100 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect type provides a chorus effect which is then fed into a reverb effect. For details refer to 24.EG Chorus (page 112) and 1.Rev Hall (page 109).

Rev Mix Level: This determines the proportion between chorus and reverb sound. At a setting of 0%, only the chorus sound will be heard. At a setting of 100%, only the reverb sound will be heard.

34:Sympo → Rev

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40 Hz
2	Modulation Depth	0 ... 100 %
3	—	—
4	—	—
5	Reverb Time	0.3 ... 30.0 sec
6	Rev High	0.1 ... 1.0
7	Rev Initial Delay	0.1 ... 200.0 ms
8	Rev Mix Level	0 ... 100 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect type provides a symphonic effect which is then fed into a reverb effect. For details refer to 25.EG Symphonic (page 113) and 1.Rev Hall (page 109).

Rev Mix Level: This determines the proportion between symphonic and reverb sound. At a setting of 0%, only the symphonic sound will be heard. At a setting of 100%, only the reverb sound will be heard.

35:Phaser → Rev

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40.0 Hz
2	Modulation Depth	0 ... 100 %
3	Modulation Delay	0.1 ... 5.0 ms
4	—	—
5	Reverb Time	0.3 ... 30.0 sec
6	Rev High	0.1 ... 1.0
7	Rev Initial Delay	0.1 ... 200.0 ms
8	Rev Mix Level	0 ... 100 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect type provides a phase effect which is then fed into a reverb effect. For details refer to 26.EG Phase (page 113) and 1.Rev Hall (page 109).

Rev Mix Level: This determines the proportion between phase and reverb sound. At a setting of 0%, only the phase sound will be heard. At a setting of 100%, only the reverb sound will be heard.

36:Aural Exc → Rev (Aural Exciter®*)

No.	Parameter Name	Range
1	Ex. HPF	500 Hz ... 16 kHz
2	Ex. Enhance	0 ... 100 %
3	Ex. Mix Level	0 ... 100 %
4	Reverb Time	0.3 ... 30.0 sec
5	Rev High	0.1 ... 1.0
6	Rev Diffusion	0 ... 10
7	Rev Initial Delay	0.1 ... 400.0 ms
8	Rev Mix Level	0 ... 100 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect type provides an exciter effect which is then fed into a reverb effect. For details refer to 22.Aural Exciter (page 112) and 1.Rev Hall (page 109).

Rev Mix Level: This determines the proportion between exciter and reverb sound. At a setting of 0%, only the exciter sound will be heard. At a setting of 100%, only the reverb sound will be heard.

* *Aural Exciter® is a registered trademark and is manufactured under license from APHEX Systems Ltd.*

37:Dist → Rev

No.	Parameter Name	Range
1	Distortion Level	0 ... 100 %
2	Middle Frequency	315 Hz ... 6.3 kHz
3	Mid Gain	–12 ... +12 dB
4	Treble Gain	–12 ... +12 dB
5	Reverb Time	0.3 ... 30.0 sec
6	Rev High	0.1 ... 1.0
7	Rev Initial Delay	0.1 ... 400.0 ms
8	Rev Mix Level	0 ... 100 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect type provides a distortion effect which is then fed into a reverb effect. For details of the reverb parameters, refer to 1.Rev Hall (page 109).

Distortion Level: This determines the degree of distortion. At higher settings, the sound will be strongly distorted.

Rev Mix Level: This determines the proportion between distortion and reverb sound. At a setting of 0%, only the distortion sound will be heard. At a setting of 100%, only the reverb sound will be heard.

38:Dist → Dly L,R

No.	Parameter Name	Range
1	Distortion Level	0 ... 100 %
2	Middle Frequency	315 Hz ... 6.3 kHz
3	Mid Gain	–12 ... +12 dB
4	Treble Gain	–12 ... +12 dB
5	Dly Lch Delay	0.1 ... 1360.0 ms
6	Dly Rch Delay	0.1 ... 1360.0 ms
7	Dly FB Gain	–99 ... +99 %
8	Delay Mix Level	0 ... 100 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect type provides a distortion effect which is then fed into a delay effect. For details refer to 36.Dist→Rev above and 16.Delay L,R (page 110).

Delay Mix Level: This determines the proportion between distortion and delay sound. At a setting of 0%, only the distortion sound will be heard. At a setting of 100%, only the delay sound will be heard.

39:Dist → Echo

No.	Parameter Name	Range
1	Distortion Level	0 ... 100 %
2	Middle Frequency	315 Hz ... 6.3 kHz
3	Mid Gain	–12 ... +12 dB
4	Treble Gain	–12 ... +12 dB
5	Echo Lch Delay	0.1 ... 680.0 ms
6	Echo Rch Delay	0.1 ... 680.0 ms
7	Echo FB Gain	–99 ... +99 %
8	Echo Mix Level	0 ... 100 %
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect type provides a distortion effect which is then fed into a stereo echo effect. For details refer to 36.Dist→Rev above and 18.Stereo Echo (page 111).

Echo Mix Level: This determines the proportion between distortion and echo sound. At a setting of 0%, only the distortion sound will be heard. At a setting of 100%, only the echo sound will be heard.

40:EQ → Rev 1, 41:EQ → Rev 2

No.	Parameter Name	Range
1	Low Frequency	32 Hz ... 2.0 kHz
2	Low Gain	–12 ... +12 dB
3	Middle Frequency	315 Hz ... 6.3 kHz
4	Mid Gain	–12 ... +12 dB
5	High Frequency	500 Hz ... 16 kHz
6	High Gain	–12 ... +12 dB
7	Reverb Time	0.3 ... 30.0 sec
8	Rev Initial Delay	0.1 ... 400.0 ms
9	Rev ER/Rev Balance	0 ... 100 %
10	Rev Mix Level	0 ... 100 %

These effect types provide a three-band sweepable equalizer which is then fed into a reverb effect. For details refer to 1.Hall Rev (page 109).

42:EQ → Dly L,R

No.	Parameter Name	Range
1	Low Frequency	32 Hz ... 2.0 kHz
2	Low Gain	–12 ... +12 dB
3	Middle Frequency	315 Hz ... 6.3 kHz
4	Mid Gain	–12 ... +12 dB
5	High Frequency	500 Hz ... 16 kHz
6	High Gain	–12 ... +12 dB
7	Dly Lch Delay	0.1 ... 1360.0 ms
8	Dly Rch Delay	0.1 ... 1360.0 ms
9	Dly FB Gain	–99 ... +99 %
10	Delay Mix Level	0 ... 100 %

This effect type provides a three-band sweepable equalizer which is then fed into a delay effect. For details refer to 16.Delay L,R (page 110).

43:EQ → Echo

No.	Parameter Name	Range
1	Low Frequency	32 Hz ... 2.0 kHz
2	Low Gain	–12 ... +12 dB
3	Middle Frequency	315 Hz ... 6.3 kHz
4	Mid Gain	–12 ... +12 dB
5	High Frequency	500 Hz ... 16 kHz
6	High Gain	–12 ... +12 dB
7	Echo Lch Delay	0.1 ... 680.0 ms
8	Echo Rch Delay	0.1 ... 680.0 ms
9	Echo FB Gain	–99 ... +99 %
10	Echo Mix Level	0 ... 100 %

This effect type provides a three-band sweepable equalizer which is then fed into a stereo echo effect. For details refer to 18.Stereo Echo (page 111).

44:EQ → Flange

No.	Parameter Name	Range
1	Low Frequency	32 Hz ... 2.0 kHz
2	Low Gain	–12 ... +12 dB
3	Middle Frequency	315 Hz ... 6.3 kHz
4	Mid Gain	–12 ... +12 dB
5	High Frequency	500 Hz ... 16 kHz
6	High Gain	–12 ... +12 dB
7	Modulation Freq.	0.05 ... 40.0 Hz
8	Modulation Depth	0 ... 100 %
9	Mod. FB Gain	0 ... 99 %
10	Flange Mix Level	0 ... 100 %

This effect type provides a three-band sweepable equalizer which is then fed into a flange effect. For details refer to 23.EG Flange (page 112).

45:EQ → Chorus

No.	Parameter Name	Range
1	Low Frequency	32 Hz ... 2.0 kHz
2	Low Gain	–12 ... +12 dB
3	Middle Frequency	315 Hz ... 6.3 kHz
4	Mid Gain	–12 ... +12 dB
5	High Frequency	500 Hz ... 16 kHz
6	High Gain	–12 ... +12 dB
7	Chorus Mod. Freq.	0.05 ... 40.0 Hz
8	Chorus PM Depth	0 ... 100 %
9	Chorus AM Depth	0 ... 100 %
10	Chorus Mix Level	0 ... 100 %

This effect type provides a three-band sweepable equalizer which is then fed into a chorus effect. For details refer to 24.EG Chorus (page 112).

46:EQ → Symphonic

No.	Parameter Name	Range
1	Low Frequency	32 Hz ... 2.0 kHz
2	Low Gain	–12 ... +12 dB
3	Middle Frequency	315 Hz ... 6.3 kHz
4	Mid Gain	–12 ... +12 dB
5	High Frequency	500 Hz ... 16 kHz
6	High Gain	–12 ... +12 dB
7	Modulation Freq.	0.05 ... 40.0 Hz
8	Modulation Depth	0 ... 100 %
9	—	—
10	Sympho Mix Level	0 ... 100 %

This effect type provides a three-band sweepable equalizer which is then fed into a symphonic effect. For details refer to 25.EG Symphonic (page 113).

47:EQ → Phaser

No.	Parameter Name	Range
1	Low Frequency	32 Hz ... 2.0 kHz
2	Low Gain	–12 ... +12 dB
3	Middle Frequency	315 Hz ... 6.3 kHz
4	Mid Gain	–12 ... +12 dB
5	High Frequency	500 Hz ... 16 kHz
6	High Gain	–12 ... +12 dB
7	Modulation Freq.	0.05 ... 40.0 Hz
8	Modulation Depth	0 ... 100 %
9	Modulation Delay	0.1 ... 5.0 ms
10	Phase Mix Level	0 ... 100 %

This effect type provides a three-band sweepable equalizer which is then fed into a phaser effect. For details refer to 26.EG Phase (page 113).

48:St.Flange → Delay L,R

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40.0 Hz
2	Modulation Depth	0 ... 100 %
3	Modulation Delay	0.1 ... 100.0 ms
4	Mod. FB Gain	0 ... 99 %
5	Delay Lch Delay	0.1 ... 800.0 ms
6	Delay Rch Delay	0.1 ... 800.0 ms
7	Delay FB1 Delay	0.1 ... 800.0 ms
8	Delay FB2 Delay	0.1 ... 800.0 ms
9	Delay FB Gain	-99 ... +99 %
10	Delay Mix Level	0 ... 100 %

This effect type provides a flange effect which is then fed into a stereo delay. For details refer to 23.EG Flange (page 112) and 16.Delay L,R (page 110)

49:St.Chorus → Delay L,R

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40.0 Hz
2	Chorus PM Depth	0 ... 100 %
3	Chorus AM Depth	0 ... 100 %
4	—	—
5	Delay Lch Delay	0.1 ... 800.0 ms
6	Delay Rch Delay	0.1 ... 800.0 ms
7	Delay FB1 Delay	0.1 ... 800.0 ms
8	Delay FB2 Delay	0.1 ... 800.0 ms
9	Delay FB Gain	–99 ... +99 %
10	Delay Mix Level	0 ... 100 %

This effect type provides a chorus effect which is then fed into a stereo delay. For details refer to 24.EG Chorus (page 112) and 16.Delay L,R (page 110)

50:Symphonic → Delay L,R

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40.0 Hz
2	Modulation Depth	0 ... 100 %
3	—	—
4	—	—
5	Delay Lch Delay	0.1 ... 800.0 ms
6	Delay Rch Delay	0.1 ... 800.0 ms
7	Delay FB1 Delay	0.1 ... 800.0 ms
8	Delay FB2 Delay	0.1 ... 800.0 ms
9	Delay FB Gain	–99 ... +99 %
10	Delay Mix Level	0 ... 100 %

This effect type provides a symphonic effect which is then fed into a stereo delay. For details refer to 25.EG Symphonic (page 113) and 16.Delay L,R (page 110)

51:St.Phasing → Delay L,R

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40.0 Hz
2	Modulation Depth	0 ... 100 %
3	Modulation Delay	0.1 ... 5.0 ms
4	—	—
5	Delay Lch Delay	0.1 ... 800.0 ms
6	Delay Rch Delay	0.1 ... 800.0 ms
7	Delay FB1 Delay	0.1 ... 800.0 ms
8	Delay FB2 Delay	0.1 ... 800.0 ms
9	Delay FB Gain	–99 ... +99 %
10	Delay Mix Level	0 ... 100 %

This effect type provides a phaser effect which is then fed into a stereo delay. For details refer to 26.EG Phase (page 113) and 16.Delay L,R (page 110)

Dual type effects

52:Hall & Plate

No.	Parameter Name	Range
1	Hall Reverb Time	0.3 ... 30.0 sec
2	Hall High	0.1 ... 1.0
3	Hall Diffusion	0 ... 10
4	Hall Initial Delay	0.1 ... 200.0 ms
5	Hall LPF	1 ... 16 kHz, Thru
6	Plate Reverb Time	0.3 ... 30.0 sec
7	Plate High	0.1 ... 1.0
8	Plate Diffusion	0 ... 10
9	Plate Initial Delay	0.1 ... 200.0 ms
10	Plate LPF	1 ... 16 kHz, Thru

This effect provides plate reverb and hall reverb in parallel. For details of the parameters, refer to 1.Rev Hall (page 109).

53:Echo & Rev

No.	Parameter Name	Range
1	Echo Lch Delay Time	0.1 ... 320.0 ms
2	Echo Rch Delay Time	0.1 ... 320.0 ms
3	Echo FB Gain	–99 ... +99 %
4	Reverb Time	0.3 ... 30.0 sec
5	Rev High	0.1 ... 1.0
6	Rev Diffusion	0 ... 10
7	Rev Initial Delay	0.1 ... 100.0 ms
8	Rev ER/Rev Balance	0 ... 100 %
9	Rev HPF	Thru, 32 ... 1000 Hz
10	Rev LPF	1 ... 16 kHz, Thru

This effect provides echo and reverb in parallel. For details refer to 18.Stereo Echo (page 111) and 1.Rev Hall (page 109).

54:Delay & Rev

No.	Parameter Name	Range
1	Dly Lch Delay Time	0.1 ... 640.0 ms
2	Dly Rch Delay Time	0.1 ... 640.0 ms
3	Dly FB Gain	–99 ... +99 %
4	Reverb Time	0.3 ... 30.0 sec
5	Rev High	0.1 ... 1.0
6	Rev Diffusion	0 ... 10
7	Rev Initial Delay	0.1 ... 100.0 ms
8	Rev ER/Rev Balance	0 ... 100 %
9	Rev HPF	Thru, 32 ... 1000 Hz
10	Rev LPF	1 ... 16 kHz, Thru

This effect provides delay and reverb in parallel. For details refer to 16.Delay L,R (page 110) and 1.Rev Hall (page 109).

55:Flange & Chorus

No.	Parameter Name	Range
1	Flg Mod. Freq.	0.05 ... 40.0 Hz
2	Flg Mod. Depth	0 ... 100 %
3	Flg Mod. Delay	0.1 ... 100.0 ms
4	Flg Mod. FB Gain	0 ... 99 %
5	—	—
6	Chorus Mod. Freq.	0.05 ... 40.0 Hz
7	Chorus PM Depth	0 ... 100 %
8	Chorus AM Depth	0 ... 100 %
9	—	—
10	—	—

This effect provides flange and chorus in parallel. For details refer to 23.EG Flange (page 112) and 24.EG Chorus (page 112).

56:Flange & Sympho

No.	Parameter Name	Range
1	Flg Mod. Freq.	0.05 ... 40.0 Hz
2	Flg Mod. Depth	0 ... 100 %
3	Flg Mod. Delay	0.1 ... 100.0 ms
4	Flg Mod. FB Gain	0 ... 99 %
5	—	—
6	Sym Mod. Freq.	0.05 ... 40.0 Hz
7	Sym Mod. Depth	0 ... 100 %
8	—	—
9	—	—
10	—	—

This effect provides flange and symphonic in parallel. For details refer to 23.EG Flange (page 112) and 25.EG Symphonic (page 113).

57:Sympho & Chorus

No.	Parameter Name	Range
1	Sym Mod. Freq.	0.05 ... 40.0 Hz
2	Sym Mod. Depth	0 ... 100 %
3	—	—
4	—	—
5	—	—
6	Chorus Mod. Freq.	0.05 ... 40.0 Hz
7	Chorus PM Depth	0 ... 100 %
8	Chorus AM Depth	0 ... 100 %
9	—	—
10	—	—

This effect provides chorus and symphonic in parallel. For details refer to 24.EG Chorus (page 112) and 25.EG Symphonic (page 113).

58:Flange & Rev

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40.0 Hz
2	Modulation Depth	0 ... 100 %
3	Modulation Delay	0.1 ... 100.0 ms
4	Mod. FB Gain	0 ... 99 %
5	Reverb Time	0.3 ... 30.0 sec
6	Rev High	0.1 ... 1.0
7	Diffusion	0 ... 10
8	Initial Delay	0.1 ... 200.0 ms
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect provides flange and reverb in parallel. For details refer to 23.EG Flange (page 112) and 1.Rev Hall (page 109).

59:Chorus & Rev

No.	Parameter Name	Range
1	Chorus Mod. Freq.	0.05 ... 40.0 Hz
2	Chorus PM Depth	0 ... 100 %
3	Chorus AM Depth	0 ... 100 %
4	—	—
5	Reverb Time	0.3 ... 30.0 sec
6	Rev High	0.1 ... 1.0
7	Diffusion	0 ... 10
8	Initial Delay	0.1 ... 200.0 ms
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect provides chorus and reverb in parallel. For details refer to 24.EG Chorus (page 112) and 1.Rev Hall (page 109).

60:Sympho & Rev

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40.0 Hz
2	Modulation Depth	0 ... 100 %
3	—	—
4	—	—
5	Reverb Time	0.3 ... 30.0 sec
6	Rev High	0.1 ... 1.0
7	Diffusion	0 ... 10
8	Initial Delay	0.1 ... 200.0 ms
9	HPF	Thru, 32 ... 1000 Hz
10	LPF	1 ... 16 kHz, Thru

This effect provides symphonic and reverb in parallel. For details refer to 25.EG Symphonic (page 104) and 1.Rev Hall (page 109).

61:Flange & Dly L,R

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40.0 Hz
2	Modulation Depth	0 ... 100 %
3	Modulation Delay	0.1 ... 100.0 ms
4	Mod. FB Gain	0 ... 99 %
5	Delay Lch Delay	0.1 ... 800.0 ms
6	Delay Rch Delay	0.1 ... 800.0 ms
7	Delay FB1 Delay	0.1 ... 800.0 ms
8	Delay FB2 Delay	0.1 ... 800.0 ms
9	Delay FB Gain	-99 ... +99 %
10	LPF	1 ... 16 kHz, Thru

This effect provides flange and delay in parallel. For details refer to 23.EG Flange (page 112) and 16.Delay L,R (page 110).

62:Chorus & Dly L,R

No.	Parameter Name	Range
1	Chorus Mod. Freq.	0.05 ... 40.0 Hz
2	Chorus PM Depth	0 ... 100 %
3	Chorus AM Depth	0 ... 100 %
4	—	—
5	Delay Lch Delay	0.1 ... 800.0 ms
6	Delay Rch Delay	0.1 ... 800.0 ms
7	Delay FB1 Delay	0.1 ... 800.0 ms
8	Delay FB2 Delay	0.1 ... 800.0 ms
9	Delay FB Gain	-99 ... +99 %
10	LPF	1 ... 16 kHz, Thru

This effect provides chorus and delay in parallel. For details refer to 24.EG Chorus (page 112) and 16.Delay L,R (page 110).

63:Sympho & Dly L,R

No.	Parameter Name	Range
1	Modulation Freq.	0.05 ... 40.0 Hz
2	Modulation Depth	0 ... 100 %
3	—	—
4	—	—
5	Delay Lch Delay	0.1 ... 800.0 ms
6	Delay Rch Delay	0.1 ... 800.0 ms
7	Delay FB1 Delay	0.1 ... 800.0 ms
8	Delay FB2 Delay	0.1 ... 800.0 ms
9	Delay FB Gain	-99 ... +99 %
10	LPF	1 ... 16 kHz, Thru

This effect provides symphonic and delay in parallel. For details refer to 25.EG Symphonic (page 113) and 16.Delay L,R (page 110).

COMMON DATA / EFFECT SET

10.4 Effect 2 parameter

JUMP #216

Summary: Specify effect parameters for the effect type selected for Effect 2.

Procedure:

From: Effect Set job directory (JUMP #212)
Select: job 04:Effect 2 Parameter (JUMP #216)
Specify: parameter settings for the selected effect.

Remark: Effect selection and parameter settings for Effect 2 are made in the same manner as those for Effect 1. Please refer to the explanation in the preceding section, *10.3 Effect 1 parameter* (page 108).

COMMON DATA / EFFECT SET

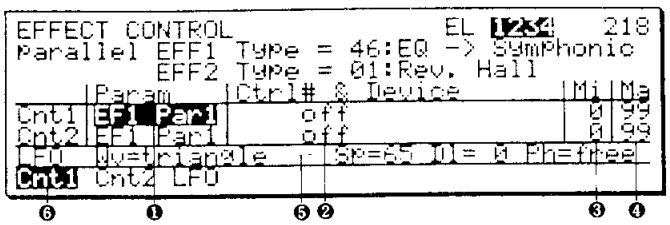
10.5 Effect control

JUMP #218

Summary: Specify how two selected parameters of the effect unit will be controlled in realtime.

Procedure:

From: Effect Set job directory (JUMP #212)
Select: job 05:Effect Control (JUMP #218)
Specify: the parameters to be controlled and the controller for each



❶ Param (see below): Select any two of the following effect parameters to be controlled. The selected controller will affect ...EF1 Par1–10: a parameter 1–10 of effect unit 1.
EF1 Level1/2: the effect level 1 or 2 of effect unit 1.
EF2 Mix Level: the amount of Effect 2 that is present in the effect chain. (This parameter is meaningful only when the Effect Mode is Serial.)
EF2 Par1–10: a parameter 1–10 of effect unit 2.
EF2 Level1/2: the effect level 1 or 2 of effect unit 2.
Out1/2 w:d: the wet:dry balance of output 1 or 2.
Cnt1 MIN: the percentage of a parameter's full range that will result when a controller moves to its minimum position (see ❸).
Cnt1 MAX: the percentage of a parameter's full range that will result when a controller moves to its maximum position (see ❹).
LFO Wave: the waveform of the Effect LFO (see ❺).
LFO Spd: Control the speed of the Effect LFO (see ❺).
LFO Dly: Control the delay time of the Effect LFO (see ❺).
LFO Phs: Control the initial phase of the Effect LFO (see ❺).

❷ Ctrl# & Device (001...120, Aftertouch, Velocity, Key Scale, LFO): Select the control source which will affect the selected effect parameter.001 Modulation ... 120 Non-Assign: This control change message will affect the effect parameter selected in ❶. (Control numbers 000 and 032 are reserved for the Bank Select message, and are not available.) For more details on controllers, refer to *Common data 12.(F2) Controller set (Modulation).*
Aftertouch: Pressing down on the keyboard after playing a note will affect the effect parameter selected in ❶.
Velocity: The key-on velocity of the most recently played note will affect the effect parameter selected in ❶.
Key Scale: The keyboard position of the most recently played note will affect the effect parameter selected in ❶. If "Mi" ❸ is below "Ma" ❹, higher notes will result in a higher parameter setting.
LFO: The Effect LFO will affect the effect parameter selected in ❶. See ❺ below.

❸ Mi (0...99): When the controller is at minimum position (e.g., the modulation wheel is moved fully toward you, no aftertouch pressure is being applied, etc.), the parameter will be set to this percentage of its maximum value. (See also "Ma" ❹.)

❹ Ma (0...99): When the controller is at maximum position (e.g., the modulation wheel is moved fully away from you, the maximum aftertouch pressure is being applied, etc.), the parameter will be set to this percentage of its maximum value.

You can set the "Mi" value above the "Ma" value to reverse the effect of the controller. For example if "Mi" is 99 and "Ma" is 50, and you have set the "Ctrl# & Device" to be "001 Modulation", the selected parameter will be at 100% of its full range when the modulation wheel is moved fully toward you, and at 50% of its full range when the modulation wheel is moved fully away from you.

❺ LFO: A special Effect LFO is provided for controlling the effect parameters you select in ❶. You can set the waveform (WV= triangle, saw down, saw up, square, sine, sample&hold), the speed (Sp= 0...99), the delay (Dl= 0...99), and the initial phase (Ph= 0...99, free) of the Effect LFO. For a detailed explanation of these parameters, refer to *AFM element data 6.(F1) AFM*

LFO (Main) (page 146), which is essentially identical to this Effect LFO.

The initial phase parameter determines the point of the LFO waveform from which the LFO will begin each time a key is pressed. When this is set to "free", the Effect LFO will not be restarted for each note.

This Effect LFO is independent of the LFO which provides the "modulation" for some effect types. For example, you could even use this Effect LFO to modulate the modulation frequency of a chorus effect.

❻ Pressing F1–F3 will move the cursor to the Control 1, Control 2, or LFO area.

Remark: The assignment of some effect parameters to realtime control can result in noise. Should this happen, try modifying the settings.

COMMON DATA

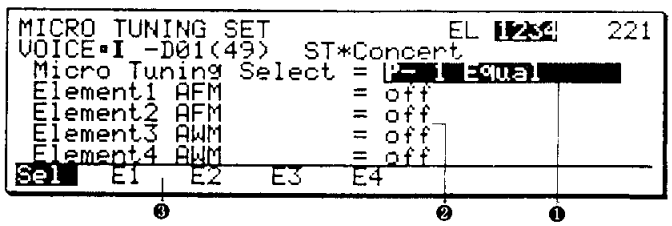
11. Micro tuning set

JUMP #221

Summary: Select a micro tuning for the entire voice, and specify whether or not each element will use this micro tuning.

Procedure:

From: Voice Common job directory (JUMP #201)
Select: job 11:McrTune (JUMP #221)
Specify: the micro tuning, and element micro tuning on/off



❶ Micro Tuning Select (I-1, I-2, C-1, C-2, P-1... P-64): Select a micro tuning to be used by the voice. 64 micro tuning memories are preset inside the SY99 (see the following remarks). Two of your own micro tunings can be stored in Internal memory, and a card can accommodate another two micro tunings. Internal voices cannot use card micro tunings, nor can card voices use internal micro tunings.

❷ Element 1–4 (off, on): When this is turned on, the element will use the micro tuning selected by Micro Tuning Select. When this is turned off, the element will use equal temperament scale instead of the selected micro tuning.

❸ Pressing F1 (Sel) will move the cursor to Micro Tuning Select. Pressing F2–F5 will move the cursor to Element 1–4.

Remarks: As with Pan data, Micro Tuning data is not part of the voice. This Micro Tuning Select setting merely specifies which micro tuning will be used.

The sixty-four micro tunings preset inside the SY99 are as follows.

01 Equal temperament: The "compromise" tuning used for most of the last 200 years of Western music, and found on most electronic keyboards. Each half step is exactly 1/12th of an octave, and music can be played in any key with equal ease. However, none of the intervals are perfectly in tune.

02–13 Pure major (C...B): This tuning is designed so that most of the intervals (especially the major third and perfect fifth) in the major scale are pure. This means that other intervals will be correspondingly out of tune. You need to specify the key (C...B) you will be playing in.

14–25 Pure minor (A...G#): The same as Pure Major, but designed for the minor scale.

26–37 Mean tone (C...B): This is an adjustment of the Pure and Pythagorean tunings. The interval between the root and fifth is tuned slightly flat, so that the interval between the root and second degree is exactly halfway between a major and minor pure second; i.e., an average or "mean".

38–49 Pythagorean (C...B): This scale is derived by tuning pure perfect fifths upward from the root. This causes the octave to be flat, so one of the fourths is mistuned to compensate. (In the key of C, the Ab – Eb interval.)

50 Werckmeister: Andreas Werckmeister, a contemporary of Bach, designed this tuning so that keyboard instruments could be played in any key. Each key has a unique character.
51 Kirnberger: Johan Philipp Kirnberber was also concerned with tempering the scale to allow performances in any key.
52 Vallotti & Young: Francescantonio Vallotti and Thomas Young (both mid-1700s) devised this adjustment to the Pythagorean tuning in which the first six fifths are lower by the same amount.
53 1/4 shifted equal: This is the normal equal tempered scale shifted up 50 cents.
54 1/4 tone: Twenty-four equally spaced notes per octave. (Play twenty-four notes to move one octave.)
55 1/8 tone: Forty-eight equally spaced notes per octave. (Play forty-eight notes to move one octave.)
56 JustAdjust: This is a special tuning used to make fine adjustments in the pitch of an AWM waveform.
57 Big Chord: The pitch is adjusted down one octave for every 8 half notes, allowing chords to be played anywhere without becoming overly heavy.
58 Log Equal: A variation of conventional equal temperament.
59 1/4 Tonelo: The same as micro tuning 54, but lower in pitch.
60 Harmonic A: The white keys will play the harmonic series beginning on A, and the black keys will play the harmonic series beginning on E.
61 Reverse: The conventional equal tempered scale is inverted.
62 Far East: The black keys and white keys will each play a different eastern scale.
63 Blue: The white keys will play the blues scale. The black keys add a blue flavor
64 Question-1: Play the white keys consecutively upwards starting from C2.
Play the black keys consecutively upwards starting from C#1.

Editing: To edit the currently selected Internal micro tuning, press F8 (Edit). Preset or Card micro tunings cannot be edited. If you want to edit a preset or card micro tuning, you must first copy it to an internal micro tuning memory.

COMMON DATA / MICRO TUNING SET

11.0 Micro tuning edit

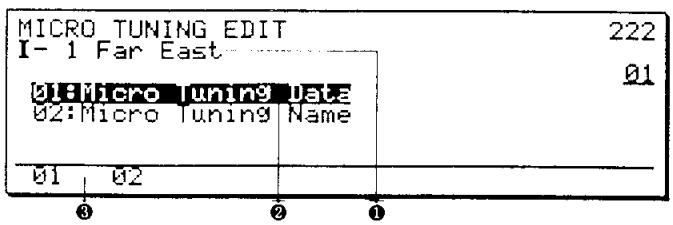
JUMP #222

Summary: This function allows you to edit the currently selected Micro Tuning data.

Procedure:

From: Voice Common job 11. Micro Tuning Set (JUMP #221)
When: an Internal micro tuning is selected
Press: F8 (Edit) (JUMP #222)
Select: the micro tuning data you wish to edit

Editing is possible only when an Internal micro tuning memory is selected. If you want to edit a Preset or Card micro tuning memory, press COPY to copy it to an Internal micro tuning memory as explained in the following section *11.0.1 Copy Micro Tuning Data*.



❶ The number and name of the currently selected Micro Tuning data are displayed.
❷ Move the cursor in this area to select a job, and press ENTER.
01: Micro Tuning Data: Edit the tuning for each note of the scale. See 11.1 Micro Tuning Data
02: Micro Tuning Name: Assign a ten-character name to the micro tuning data. See 11.2 Micro Tuning Name.
❸ Pressing F1 or F2 will select the corresponding job.

COMMON DATA / MICRO TUNING SET

11.0.1 Copy micro tuning

Summary: This function copies micro tuning data from another memory into an Internal micro tuning memory.

Procedure:

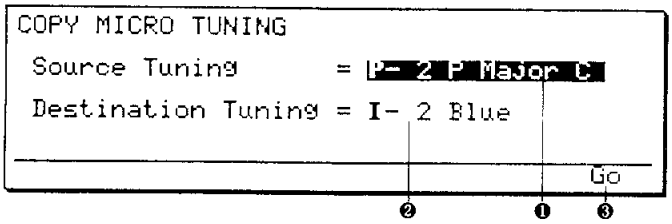
When: editing micro tuning data (JUMP #223, #224)

Press: COPY to get the following display.

Select: the micro tuning copy source and destination

To copy: the data press F8

To quit: without copying press EXIT



❶ Source Tuning (I-1, I-2, C-1, C-2, P-1...P-64): Select the micro tuning data to copy. C-1 and C-2 (card) can be selected only if a VOICE card is

❷ Destination Tuning (I-1, I-2): Select the micro tuning (internal 1 or 2) into which to copy the Source Tuning data.

❸ After selecting Source Tuning and Destination Tuning, press F8 (Go) to copy the data. You will be asked "Are you sure?". Press YES and the data will be copied.

Remarks: Only Internal micro tuning data can be edited. If you want to edit one of the preset or card micro tunings, use this function to copy it into an Internal micro tuning memory.

COMMON DATA / MICRO TUNING SET

11.1 Micro tuning data

JUMP #223

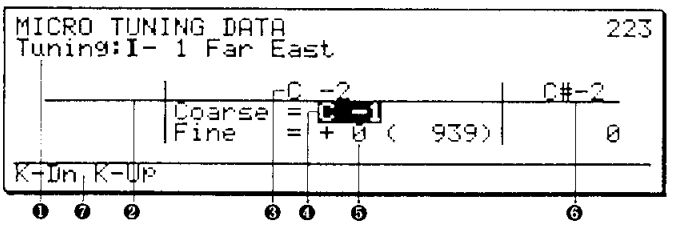
Summary: Edit the tuning for each note of the selected micro tuning data.

Procedure:

From: Micro Tuning Edit job directory (JUMP #222)

Select: 01:Micro Tuning Data (JUMP #223)

Specify: the tuning for each note



❶ The number and name of the micro tuning data being edited are displayed.

❷ The previous note and its absolute tuning value.

❸ The note whose tuning you are editing.

❹ Coarse Tuning (C#-1...G8): With the cursor located at Coarse, adjust the tuning of the currently edited note in half steps.

❺ Fine Tuning (–43 or –42...+42): With the cursor located at Fine, adjust the tuning of the currently edited note in fine steps of 1.171875 cents. The absolute tuning value displayed in parentheses indicates the number of these steps starting from 0 steps at C#-2. The lowest setting of this parameter will be either –43 or –42 depending on the Coarse Tuning value.

❻ The next note name and its absolute tuning value.

❼ Pressing F1 (K-Dn) or F2 (K-Up) will move to the previous or next note. You can also play a note on the keyboard to select a note at any time.

Remarks: First use F1 (K-Dn) and F2 (K-Up) to select the note you want to edit. You can also use the SY99 keyboard to select the note. The currently edited note will appear in the center of the display, with the previous note shown at left and the next note shown at right.

Next set the Coarse and Tune tuning for the selected note. If you adjust Fine Tuning beyond the range of ±42, the Coarse Tuning will be moved up or down as appropriate.

COMMON DATA / MICRO TUNING SET

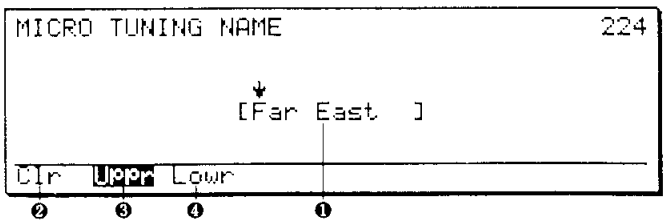
11.2 Micro tuning name

JUMP #224

Summary: Specify a ten-character name for the internal Micro Tuning memory being edited.

Procedure:

From: Micro Tuning Edit job directory (JUMP #222)
Select: 02:Micro Tuning Name (JUMP #224)
Specify: a name for the micro tuning data



❶ Enter a ten-character name for the Micro Tuning data.
❷ To clear the currently entered name press F1 (Clr).
❸ To switch to upper-case characters press F2 (Uppr).
❹ To switch to lower-case characters press F3 (Lowr).

Remarks: Methods of entering character data are explained in *How to enter character data*, on page 30.

COMMON DATA

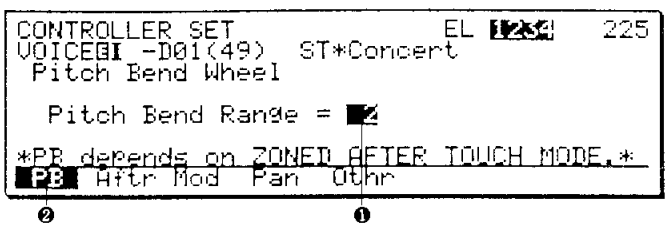
12. (F1) Controller set (Pitch bend)

JUMP #225

Summary: Specify the range over which the PITCH wheel will affect the pitch.

Procedure:

From: Common Data job directory (JUMP #201)
Select: job 12:Ctrllr
Press: F1 (PB)
Specify: the range of the pitch bend wheel



❶ Pitch Bend Range (0...12): This determines the range (0...12 half steps) over which the PITCH wheel will affect the pitch. When this is set to 12, the PITCH wheel will move the pitch one octave up or down. When this is set to 0, the PITCH wheel will have no effect.
❷ To make controller settings for Aftertouch, Modulation, Pan, or Other, press F2, F3, F4, or F5. Refer to sections 12.(F2), 12.(F3), 12.(F4), or 12.(F2).

Note: The action of the PITCH wheel may be modified using the Zoned Aftertouch settings, described in the following section. This allows for more sophisticated usage of the PITCH wheel.

COMMON DATA

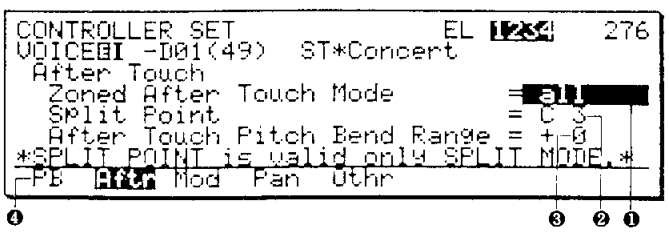
12. (F2) Controller set (Aftertouch)

JUMP #276

Summary: Specify how aftertouch will affect the pitch and any other parameters to which it is assigned.

Procedure:

From: Common Data job directory (JUMP #201)
Select: job 12:Ctrllr
Press: F2 (Aftr)
Specify: the aftertouch mode, split point, and bend range



❶ Zoned After Touch Mode (all, top, bottom, split hi, split lo): This setting determines which notes of the voice will be affected by aftertouch. Note that this includes aftertouch pitch bend set in ❸ and also any Modulation, Pan, or Other parameter controlled by aftertouch. For example, if you have assigned pitch modulation to be affected by aftertouch, pressure on the keyboard will increase the pitch modulation only for the note(s) determined by this Zoned After Touch Mode setting. Refer to the following sections 12.(F3)–12.(F5).

All: Aftertouch will affect all notes of the voice.

Top: Aftertouch will affect only the highest of the currently played notes.

Bottom: Aftertouch will affect only the lowest of the currently played notes.

Split hi: Aftertouch will affect only notes at or above the split point specified in ❷.

Split lo: Aftertouch will affect only notes below the split point specified in ❷.

❷ Split Point (C-2...G8): This determine the split point for Zoned After Touch Mode settings of "split hi" or "split lo". If the Zoned After Touch Mode is set to "all", "top", or "bottom, this Split Point setting will have no effect.

❸ After Touch Pitch Bend Range (–12...+12): This determines how aftertouch will affect the pitch. Pressing strongly down on the keyboard after playing a note will move the pitch down one octave (for a setting of –12) or up one octave (for a setting of +12).

❹ To make controller settings for Pitch Bend, Modulation, Pan, or Other, press F1, F3, F4, or F5. Refer to sections 12.(F1), 12.(F3), 12.(F4), or 12.(F5).

Keyboard: When the cursor is located at Split Point, you can press F8 (Kbd) and then press a note to set the split point.

COMMON DATA

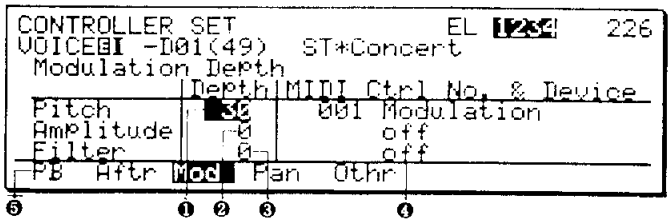
12. (F3) Controller set (Modulation)

JUMP #226

Summary: Specify the controller device that will add vibrato (pitch modulation), tremolo (amplitude modulation), and wah-wah (filter modulation).

Procedure:

From: Common Data job directory (JUMP #201)
Select: job 12:Ctrllr
Press: F3 (Mod) (JUMP #226)
Specify: the controller and depth for each parameter



❶ Pitch Modulation Depth (0...127): This setting determines the range over which the specified device will add vibrato (pitch modulation). For a setting of 127, the selected controller will be able to add the maximum amount of vibrato. For a setting of 0, the selected controller will not be able to add vibrato.

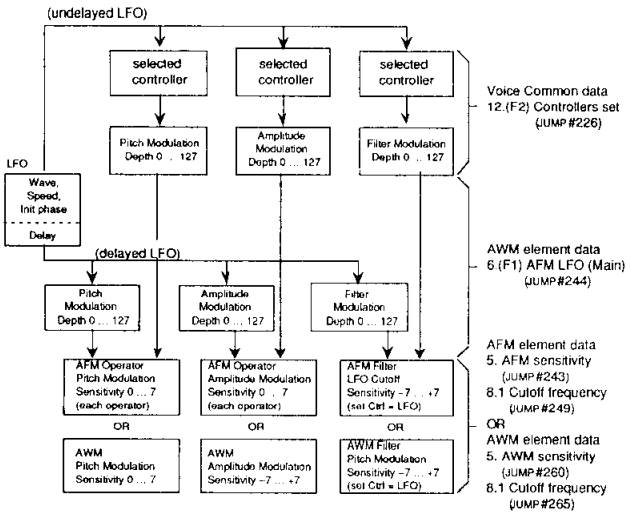
❷ Amplitude Modulation Depth (0...127): This setting determines the range over which the specified device will add tremolo (amplitude modulation). Details are the same as in ❶.

❸ Filter Modulation Depth (0...127): This setting determines the range over which the specified device will add wah-wah (filter modulation). Details are the same as in ❶.

❹ MIDI Ctrl No. & Device (1...120, After Touch): These settings determine the controller devices that will add Pitch modulation, Amplitude modulation, and Filter modulation. The selected MIDI control number (1...120) is displayed at left, and the function which is defined for that number is displayed at right. Control numbers 0 and 32 are reserved for the Bank Select message, and cannot be selected here.

❺ To make controller settings for Pitch Bend, Aftertouch, Pan, or Other, press F1, F3, F4, or F5. Refer to sections 12.(F1), 12.(F3), 12.(F4) or 12.(F5).

Remarks: As shown by the following diagram, the controllers selected here will be able to *add* pitch, amplitude, and filter modulation *in addition to* the pitch, amplitude, and filter modulation specified by the PModDepth, AModDepth, and FModDepth settings of each element LFO. The effect of the resulting modulation will depend on the *sensitivity* settings of each element.



Fixed controllers: The control numbers transmitted by the following five controllers built into the SY99 are fixed, and cannot be changed. When these controllers are moved, they will transmit MIDI control messages of the corresponding number. When the following control numbers are selected, these built-in controllers will regulate the assigned function. The official MIDI standard defines Aftertouch not as a control number but as a different type of message, so it is not given a control number.

001: The MODULATION 1 wheel located at the left of the keyboard
002: An optional breath controller connected to the rear panel BREATH jack
004: An optional foot controller connected to the rear panel FOOT CONTROLLER jack
006: Data entry slider
007: Foot volume
064: An optional foot switch connected to the rear panel SUSTAIN jack
Aftertouch: (i.e., pressing down on the keyboard after playing a note)

Assignable controllers: In addition to these five controllers which have fixed functions, the SY99 has the following two assignable controllers. With the factory settings, the MODULATION 2 wheel is assigned MIDI control number 13, and the FOOT SWITCH is assigned control number 65. The control number transmitted by these controllers can be changed by the setting in *Utility mode System Utility 3. Controllers* (JUMP #803).

- The MODULATION 2 wheel located at the left of the keyboard (initially set to transmit control number 013:Non-assigned)
- An optional foot switch connected to the rear panel FOOT SWITCH jack (initially set to transmit control number 065:Portamento Switch)

MIDI controllers: The specified MIDI Ctrl No.& Device applies both to the built-in controllers of the SY99 and to incoming MIDI control data received at MIDI IN. For example if you have specified that Amplitude Modulation Depth be regulated by 001:Modulation Wheel, it will be regulated by incoming MIDI Control Change 001 messages in addition to movements of the SY99's own MODULATION 1 wheel.

The official MIDI standard does not define the purpose of all of the MIDI Control Change messages 1–120. If the selected control number has not been defined, the LCD will show "Non-assigned no.". You can use these control numbers just like any other control number. For example you might assign an assignable controller (see *Utility mode System Utility 3. Controllers*, page 254) to one of these numbers, and then select that control number to regulate Pitch Modulation depth. "Non-assigned no." simply means that there is no official agreement as to the use of that control number.

COMMON DATA

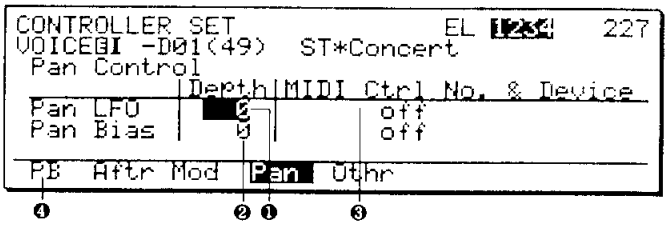
12. (F4) Controller set (Pan)

JUMP #227

Summary: Specify the controller device that will regulate the depth of the cyclical panning movement (Pan LFO), and the controller that will directly adjust the pan position (Pan Bias).

Procedure:

From: Voice Common job directory (JUMP #201)
Select: job 12:Ctrllr
Press: F4 (Pan) (JUMP #227)
Specify: the controller and depth for each parameter



❶ Pan LFO Depth (0...127): This determines the range over which the specified controller will regulate the depth of the Pan LFO. When this is set to 127, the selected controller will regulate LFO panning over the full range from no LFO panning to maximum LFO panning. When this is set to 0, the selected controller will have no effect on LFO panning.

❷ Pan Bias Depth (0...127): This determines the range over which the specified controller will affect pan position.

❸ MIDI Ctrl No. & Device (0...120, After Touch): These settings determine which controllers will regulate the depth of LFO panning and Pan Bias.

❹ To make controller settings for Pitch Bend, Aftertouch, Modulation, or Other, press F1, F2, F3, or F5. Refer to sections 12. (F1), 12. (F2), 12. (F3), or 12. (F5).

MIDI Ctrl No. & Device: For details refer to *12. (F3) Controller set (Modulation).*

Remarks: Since the MODULATION 2 wheel is detented at the center position, it is especially useful for controlling pan. Since the MODULATION 2 wheel is assignable, to use it you must select the MIDI Ctrl No. to which it has been assigned. Check the *Utility mode System Utility 3. Controllers* (JUMP #803) settings to see the MIDI Control Number to which the assignable wheel has been set. For example if the assignable wheel has been set to its initial setting of MIDI Control Number 13, you would select "013:Non-assigned no." for the Pan Bias control number in order to use WHEEL 2 to control panning.

Note: *When a voice is used in Multi Play mode, these Pan Control settings will be effective only if the Static Pan is set to Voice. Refer to Multi Edit 5. Voice static pan (JUMP #408, #409).*

COMMON DATA

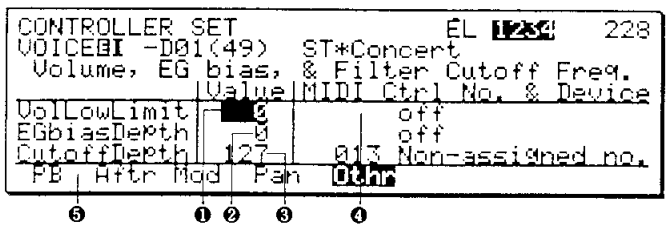
12. (F5) Controller set (Other)

JUMP #228

Summary: Specify controller devices that will regulate the volume, the EG bias and the Cutoff Frequency of the filters in each element of the voice.

Procedure:

From: Voice Common job directory (JUMP #201)
Select: job 12:Ctrllr
Press: F5 (Othr) (JUMP #228)
Specify: the controller and depth for each parameter



❶ VolLowLimit (Volume Low Limit 0...127): This determines the lowest volume that can be set by the specified controller. For example when this is set to 80, the controller will reduce the volume

no lower than 80. When this is set to 0, the controller can reduce the volume to silence. When this is set to 127, the controller will have no effect on the volume. In addition to the controller specified here, the volume can always be controlled over its full range by an optional foot controller connected to the rear panel VOLUME jack.

❷ EGbiasDepth (Eg Bias Depth 0...127): This determines the range over which the specified controller will control the EG bias. The result of controlling EG Bias for an AFM element will depend on the AModSens setting for each operator. If AModSens is set for carrier operators, the controller assigned to EG Bias will affect the volume of an AFM element. If AModSens is set for modulator operators, the controller assigned to EG Bias will affect the tone of an AFM element. For details refer to *Voice AFM Element job 5. Sensitivity* (page 145). For an AWM element, this setting will affect the Volume.

❸ CutoffDepth (Filter Cutoff Depth 0...127): This determines the range over which the specified controller will increase the cutoff frequency specified for the filters of each element. Higher settings will allow the controller to brighten the tone. If the filter cutoff frequencies are already at maximum, this will have no effect.

❹ MIDI Ctrl No. & Device (0...120, Aftertouch): These settings determine which controllers will regulate each parameter.

❺ To make controller settings for Pitch Bend, Modulation, or Pan, press F1, F2, or F3. Refer to sections 12. (F1), 12. (F2), or 12. (F3).

MIDI Ctrl No. & Device: For details refer to *12. (F2) Controllers set (Modulation).*

Filter Cutoff Depth: The controller assigned to CutoffDepth can be used in two ways to affect the filter, depending on the Control Source setting of each filter. Refer to *Voice AFM Element 8.3 Cutoff EG* (page 153) or *Voice AWM Element 8.3 Cutoff EG* (page 169).

- Continuously control the filter cutoff: If the Control Source of a filter is set to LFO then the controller assigned to CutoffDepth can be used to continuously control the cutoff frequency even while a note is sounding.
- Control the filter cutoff at key-on: If the Control Source of a filter is set to EG or EG-VA then the controller assigned to CutoffDepth will be used only at the instant the note is played; i.e., after playing a note you can move the controller without affecting the sound. This can be used to give different filter cutoffs to individual notes as you play them.

COMMON DATA

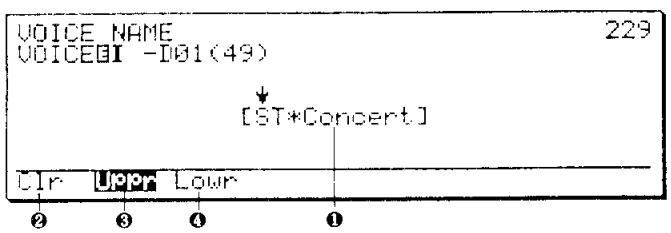
13. Voice name

JUMP #229

Summary: Specify a ten-character name for the voice being edited. In voice play mode, this voice name will be displayed in large characters.

Procedure:

From: Voice Common job directory (JUMP #201)
Select: job 13:Name (JUMP #229)
Specify: the voice name



❶ Enter a ten-character name for the voice.

❷ To clear the currently entered name press F1 (Clr).

❸ To switch to upper-case characters press F2 (Uppr).

❹ To switch to lower-case characters press F3 (Lowr).

Remarks: Methods of entering character data are explained in *How to enter character data,* on page 30.

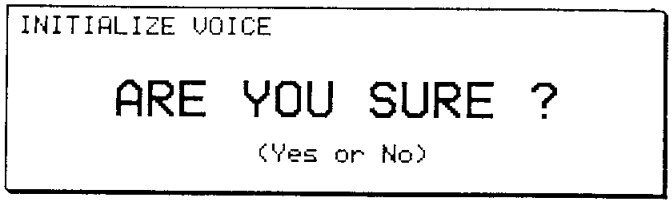
COMMON DATA

15. Initialize voice

Summary: Initialize the Voice Common data being edited to a set of standard values. The Voice Mode will not change.

Procedure:

From: Voice Common job directory (JUMP #201)
Select: job 15:Init
To execute: initialization press YES
To quit: without initializing press NO



This function sets all voice common data values to the minimum or simplest possible settings. When creating your own new voices, it is usually best to begin by editing an existing voice. However if you want to start from scratch, this Initialize function can often be helpful.

If you are sure you want to initialize the voice data, press YES and the voice common data of the voice being edited will be set to the values shown below. If you decide not to initialize, press NO.

This function initializes only Voice Common data. Other initialize functions are provided for initializing AFM Element or AWM Element data. Refer to *Voice AFM Element 15. Initialize* (page 154) or *Voice AWM Element 15. Initialize* (page 170).

Initialized settings for Voice Common Data

01 Element Levels
Voice Volume = 127
Element level = 127 (all elements)

02 Element Detune
Element detune = ±0 (all elements)

03 Element Note Shift
Shift = ±0 (all elements)

04 Element Note Limit
Low Limit = C-2 (all elements)
High Limit = G8 (all elements)

05 Element Velocity Limit
Low Limit = 1
High Limit = 127

06 Element Dynamic Pan
Element Preset 1-01 "Center" (all elements)
(Pan Source = velocity, Source Depth = 0, Pan EG; HT=0, R1–RR2=63, L0–RL2=0, SLP=S1)

07 Output Select
Output Group = Both (all elements)

08 Random Pitch
Random Pitch Depth = 0

09 Portamento
Mode = Follow (poly)/ Fingered (mono)
Speed = 0

10 Effect Set
Effect Mode = off
Effect Type = 01:Rev.Hall (both effect units)
Output Level = 100% (both effect units)
Effect 2 Mix Level = 100%
wet:dry = 50:50 (both effect units)
Control Parameter = EFF1 par1 (both effect units)
Control Device = off (both effect units)
Control MIN = 0% (both effect units)
Control MAX = 99% (both effect units)
Effect LFO Wave = triangle
Effect LFO Speed = 65
Effect LFO Delay Time = 0
Effect LFO Initial Phase = free
Effect send select = all on (all elements)
Effect send level = 127 (both effect units)
Effect send vel sense = 0 (both effect units)
Effect send level scale = 0 (both effect units)

11 Micro Tuning Set
Preset-01 Equal Temperament
Element = off (all elements)

12 Controller Set

Pitch Bend Wheel Depth	= 2
Zoned Aftertouch Mode	= all
Zoned Aftertouch Split Point	= C3
Aftertouch Pitch Bend Depth	= 0
Pitch Modulation Depth	= 64
Pitch Modulation Device	= 1
Amplitude Modulation Depth	= 64
Amplitude Modulation Device	= 12
Filter Modulation Depth	= 0
Filter Modulation Device	= 1
Pan LFO Depth	= 64
Pan LFO Device	= 13
Pan Bias Depth	= 0
Pan Bias Device	= 10
Volume Low Limit	= 0
Volume Low Device	= 14
EG Bias Depth	= 0
EG Bias Device	= 2
Filter Cutoff Frequency Depth	= 0
Filter Cutoff Frequency Device	= 12

13 Name Voice
Name = INIT VOICE

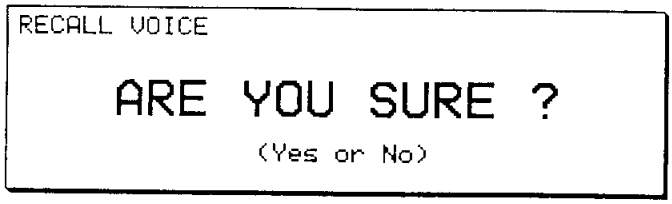
COMMON DATA

16. Recall voice

Summary: Recall the previously edited voice data.

Procedure:

From: Voice Common job directory (JUMP #201)
Select: job 16:Recall
To recall: the data press YES
To quit: without recalling press NO



If after editing a voice you exit voice edit mode without storing, the edited voice data will be lost. In such cases, you can use this function to recall the previously edited voice data into the editing buffer.

If you are sure you want to recall, press YES and the previously edited voice data will be recalled into the editing buffer. If you decide not to recall, press NO.

This function recalls all voice data; element data as well as common data. The same function is also available when editing AFM Element or AWM Element data.

AFM element data

AFM ELEMENT DATA

AFM element job directory

JUMP #230

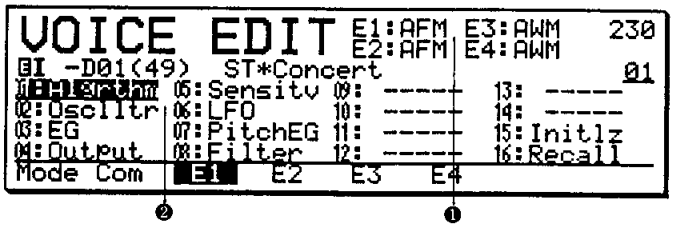
Summary: This job directory shows the editing jobs for an AFM element.

Procedure:

From: voice edit mode (JUMP #200 or #201)

When: editing a normal voice that contains AFM elements

Select: an AFM element F3–F6 (JUMP #230) (E1–E4).



❶ This area shows the number (1–4) and type (AFM or AWM) of elements in the selected voice mode.

❷ Move the cursor in this area to select a job and press ENTER to go to the selected job.

01:Algrthm (AFM algorithm):

F1; The algorithm determines how the six operators are connected. Three feedback sources can be selected and sent to other operators.

F2; Each operator can be modulated from an external source such as an AWM waveform or the noise generator.

F3; Each operator has two inputs In1 and In2 with input level settings for each input.

02:Oscilltr (AFM oscillator): The frequency produced by each operator can either be fixed or made to change according to the note played.

03:EG (AFM operator EG):

F1; Make operator EG settings for an individual operator while viewing a graphic display.

F2; Make operator EG settings for all operators.

04:Output (AFM operator output):

F1; The output level of each operator can be made to vary across the keyboard.

F2; The output level of each operator can be set.

05:Sensitv (AFM sensitivity): The output level and frequency of each operator can be affected by key-on velocity or the LFO, and the EG rates of each operator can also be affected by key-on velocity.

06:LFO (AFM LFO):

F1; The Main LFO is used to create tremolo (amplitude modulation), vibrato (pitch modulation), or wah-wah (filter modulation).

F2; The Sub LFO is used to create vibrato (pitch modulation).

07:PitchEG (AFM pitch EG): The pitch EG creates a fixed shape of pitch change over time for each note, and can be switched on/off for each operator.

08:Filter (AFM filter): The two filters of each element can be used to control the tone in various ways. The filter EG creates a fixed pattern of tonal change over time, and a periodic signal from the LFO can be applied to the filter to create wah-wah.

15:Initlz (Initialize AFM element): The AFM element data being edited can be set to the minimum or simplest possible setting as a convenience when creating an element from scratch.

16:Recall (Recall voice): All data of the previously edited voice.

AFM ELEMENT DATA

Operator on/off

Summary: Any time while editing an AFM element, you can turn the output of each operator off/on. This is useful when you want to hear how each operator affects the others, or when you want to hear only certain operators.

Procedure:

From: any job in the AFM job directory

Press: the OPERATOR ON/OFF buttons (memory select buttons 9–14) to turn operators 1–6 on/off.

The on/off condition of each operator is shown in the upper right of the LCD when editing an AFM element, and also indicated by the OPERATOR ON/OFF LEDs. Operators that are on are displayed in inverse. In the following LCD all operators are on.

Remarks: If you turn off all the carrier operators there will be no sound.

This function is provided as a help in editing. Operator on/off settings are not stored as part of voice data.

When you select a different AFM or AWM element or exit element editing, all operators you turned off will be turned back on.

AFM ELEMENT DATA

AFM algorithm

JUMP #234

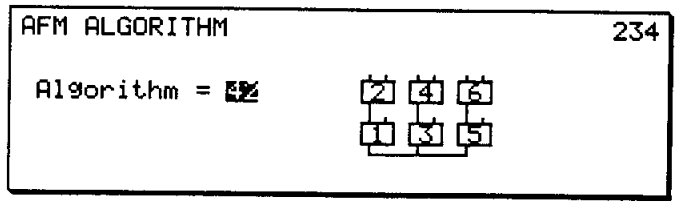
Summary: You can view a graphic display of the current algorithm at any time while editing an AFM element and select a different algorithm if you wish. Since the algorithm determines how each operator functions, you should always be aware of the algorithm when editing AFM operator data.

Procedure:

From: any job in the AFM job directory (JUMP #231–#255)

Press: F8 (Alg) (JUMP #234)

To exit: to the previous editing job press EXIT



To return to the previous display, press EXIT.

Note: When you select an algorithm, all settings which modify the routings in the algorithm (feedback, input, etc.) will be cleared to their initial settings.

AFM ELEMENT DATA

Copy element

Summary: While editing AFM element parameters other than EG, Output, Filter, or Effect, you can copy data from an element of another voice to the element you are now editing.

Procedure:

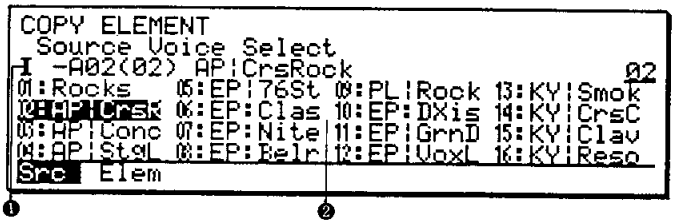
From: AFM element job 1, 2, 6, or 7

Press: COPY

Press: F1 (Src) and select the source voice

Press: F2 (Elem) and select the source element

To execute: the copy operation press F8 (Go)



❶ Source Voice Select: Specify the memory (internal, card, preset 1 or preset 2), the bank A–D, and the number 1–16 of the voice from which you want to copy element data.

❷ Source Voice: The number and name of the selected source voice is displayed.

Source Element Type: The type (AWM or AFM) of each element in the selected voice is displayed.

Destination Element Number: Specify the element 1–4 of the selected Source Voice which you want to copy into the currently edited element. The type (AWM or AFM) of the selected element will be displayed in the Element Type line above. The selected source element must be the same type as the currently edited element. If not, the bottom line will show "Element type mismatch!"

After specifying the source voice and element, press F8 (Go). The display will ask "Are you sure?". If you are sure you want to copy the element data then press YES, and the data will be copied.

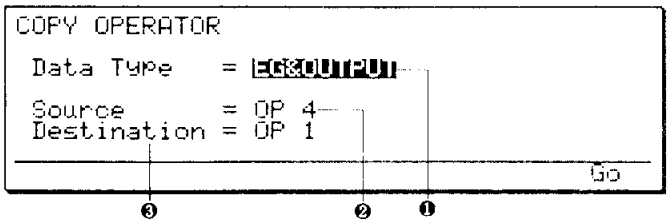
AFM ELEMENT DATA

Copy operator

Summary: While editing the parameters for operator EG or Output, you can copy EG and Output data from one operator to another.

Procedure:

From: AFM element job 3 or 4 (JUMP #236–242)
Press: COPY
Select: the data type, source operator, and destination operator
To execute: the copy operation press F8 (Go)



❶ Data Type: Select one of the following types of data to be copied.
EG&OUTPUT: Envelope generator, output level and scaling
EG: Envelope generator
OUTPUT: Output level and scaling
❷ Source: The specified data will be copied from this operator.
❸ Destination: The specified data will be copied to this operator.

Remarks: It is often the case that many or all operators in a voice have similar settings, especially for EG parameters. In such cases you can save time by setting the average EG for the voice on one operator, and then copying it to the others.

AFM ELEMENT DATA

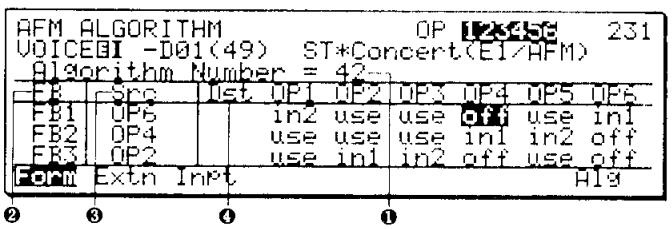
1. (F1) AFM algorithm (Form)

JUMP #231

Summary: Select the Algorithm and specify feedback routings between operators.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 01:Algrthm., and press F1 (Form) (JUMP #231)
Specify: the algorithm number, and feedback sources and destinations



❶ Algorithm Number (1...45): Select the algorithm to determine the "arrangement" of the six operators in an AFM element. Refer to the chart of the 45 algorithms on page 302. When you change the Algorithm, the Src ❸ and Dst ❹ settings explained below and the external input settings explained in the following section will be initialized.
❷ FB1–FB3: Feedback can be drawn from three of the operators in the algorithm and applied to any operator that has an unused input.
❸ Src 1–3 (OP1...OP6): Select the source of feedback for the three feedback routings. Any operator can be selected as the source of feedback. In some algorithms, one or more feedback

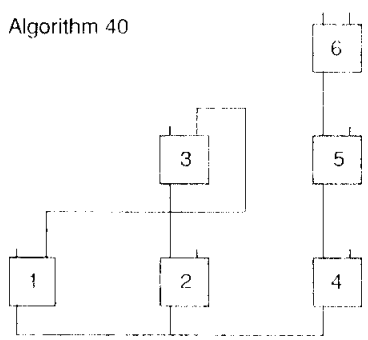
sources may be fixed by the choice of algorithm, and cannot be changed. In such cases, an "F" will be displayed after the Source (e.g., OP3F) and the Destination operator explained in ❹ will be displayed in uppercase characters (e.g., IN1).

❹ Dst OP1...OP6 (in1, in2): Select the destination of each feedback source. Each feedback source can be sent to as many destinations as you like. Each operator has two inputs, and an operator can be selected as a feedback destination only if at least one of its inputs is free. It makes no difference whether in1 or in2 is used, but remember that the input levels of each operator are set independently for in1 and in2. Refer to the following section 1.3 Algorithm Input.

If both inputs of an operator are already used by the algorithm connection, "-" will be displayed. If both inputs are already used because of a feedback assignment, "use" will be displayed. If the algorithm has a fixed feedback loop, the feedback destination operator will be displayed in uppercase characters (e.g., IN1). The cursor cannot be moved to the Dst setting for such operators.

Having three selectable feedback sources which can be sent to any or all other operators allows you to connect the operators in very complex ways. The following diagrams show how the operators would be connected for algorithm 40 when feedback sources and destinations are set as shown in the following table. Thin lines indicate the connections defined by the algorithm, and heavy lines indicate the feedback connections. Whether a connection between two operators is the result of the algorithm or the result of feedback routing has no influence on the sound.

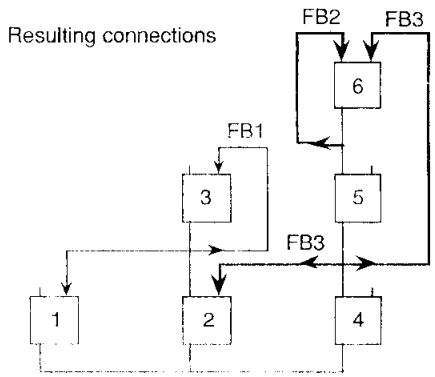
Algorithm 40



Feedback settings

FB	SRC	DST OP1	OP2	OP3	OP4	OP5	OP6
FB1	OP3F	off	use	IN2	off	off	use
FB2	OP6	off	use	off	off	off	in1
FB3	OP5	off	in2	off	off	off	in2

Resulting connections



Remarks: In previous Yamaha 6-operator FM synthesizers, you had a choice of 32 algorithms each of which included one feedback loop. The SY99 provides broader possibilities with 45 algorithms, and three feedback loops that can be sent to more than one operator. In addition, operators can be modulated by external waveforms.

Feedback from a carrier: The output level of carrier operators is automatically adjusted according to the number of carriers in the algorithm, in order to keep the resulting output volume consistant. If the nominal output of a one-carrier algorithm is considered to be 0 dB, each carrier in a two-carrier algorithm will be reduced –3.010 dB, in a three-carrier algorithm –8.278 dB, in a four-carrier algorithm –9.783 dB, in a five-carrier algorithm –12.041 dB, and in a six-carrier algorithm –14.299 dB.

If you use a carrier operator as a feedback source, be aware that even if the output level of the carrier operator is the same, the actual output (and therefore the amount of feedback produced by the carrier operator) will depend on the number of carriers in the algorithm.

Free Algorithm: By sending exclusive messages from a computer with the appropriate software to the SY99, it is possible to select a "free algorithm" in which all algorithm routings can be specified arbitrarily.

If the free algorithm has been selected, algorithm-related parameters can be edited only by system exclusive parameter change messages from MIDI IN, and cannot be modified from the SY99 front panel.

It is not possible to select or edit the free algorithm from the SY99 itself. This display will never appear unless you are programming the SY99 from a personal computer with editing software that takes advantage of this capability.

AFM ELEMENT DATA

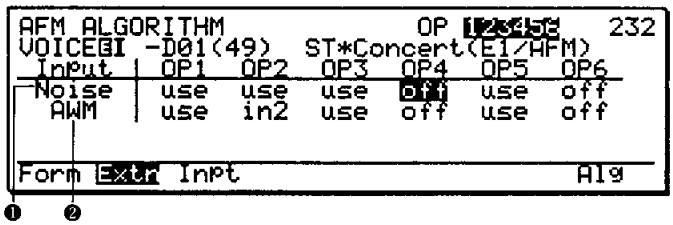
1. (F2) AFM algorithm (External input)

JUMP #232

Summary: Modulate an operator from an external source such as an AWM waveform or the noise generator.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 01:Algrthm., and press F2 (Extn) (JUMP #232)
Specify: noise and/or AWM input for each operator

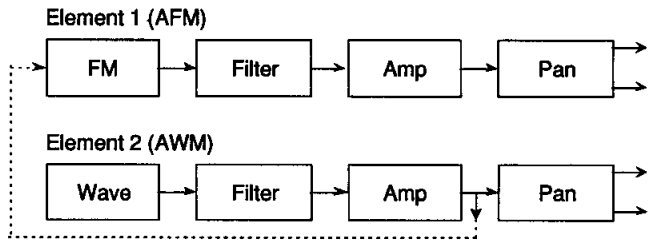


❶ Noise (off, in1, in2): The SY99 contains a noise generator which produces a type of white noise. This can be sent to any free operator input to modulate the operator.

❷ AWM (off, in1, in2): If the voice contains both AFM and AWM elements (ie., if the voice mode is either 9:1AFM&1AWM or 10:2AFM&2AWM), an AWM waveform can be received at any free operator input to modulate the operator.

For voice mode 9:1AFM&1AWM, the waveform of AWM element 2 will be used to modulate AFM element 1. For voice mode 10:2AFM&2AWM, the waveform of AWM element 3 will be used to modulate AFM element 1, and the waveform of AWM element 4 will be used to modulate AFM element 2.

❶ and ❷: If both inputs of an operator are already used by the algorithm connection, "–" will be displayed. If both inputs are already used because of a feedback assignment, "use" will be displayed. The cursor cannot be moved to the Dst setting for such operators.



Remarks: Noise modulation makes it possible to create sounds that were difficult for previous FM synthesizers.

By using an AWM waveform to modulate one or more AFM operators, new harmonics can be added to the AWM sample. A simple example of this is given in *Using RCM Hybrid Synthesis* in the appendix.

AFM ELEMENT DATA

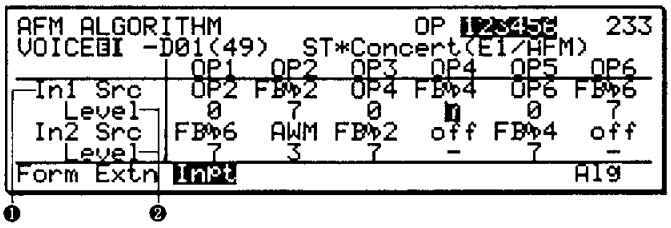
1. (F3) AFM algorithm (Input level)

JUMP #233

Summary: Set input levels In1 and In2 for each operator.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 01:Algrthm. and press F3 (Inpt) (JUMP #233)
Specify: the input level for each operator input



❶ In1 Src, In2 Src: This displays the input sources for input In1 and In2 of each operator, as determined by Algorithm and Feedback settings (F1) and External input settings (F2). The input sources cannot be changed from this job.

❷ In1 Level, In2 Level (0...7): Adjust the input level of In1 and In2 for each operator.
If an operator input is not used, the Src will display "off" and the "Level will display "–". The cursor cannot be moved to the Level setting for such operators.

Remarks: Previous FM synthesizers allowed you to set only the output level of each operator. However on the SY99, the input levels In1 and In2 of each operator can also be set. If the input source is the feedback from another operator, the input level setting functions as the feedback level.

Correct adjustment of input levels is especially important when bringing in AWM to AFM as a modulator.

AFM ELEMENT DATA

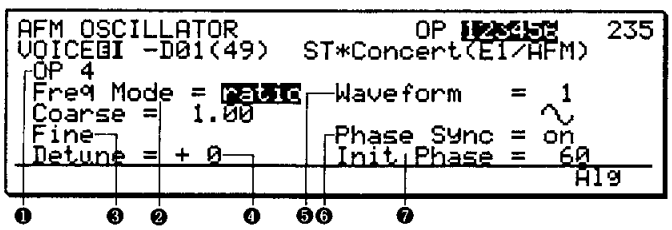
2. AFM oscillator

JUMP #235

Summary: Set frequency-related parameters for each operator.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 02:Oscltr (JUMP #235)



❶ Operator (1–6): This displays the operator being edited. To move to another operator, use the OPERATOR SELECT buttons OP1...OP6.

❷ Freq Mode (fixed, ratio): When "fixed" is selected the operator will produce the same pitch regardless of what note is played. When "ratio" is selected the operator pitch will depend on the note that is played

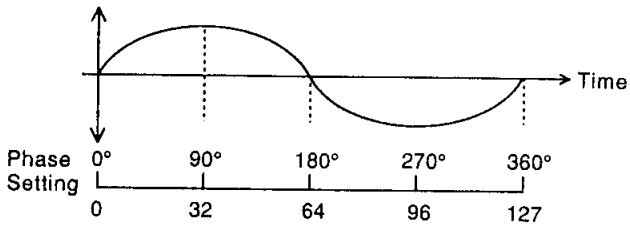
❸ Coarse/Fine (0 Hz...9762 Hz in Fixed Frequency mode, 0.5...61.69 in Ratio Frequency mode): This setting specifies the pitch produced by the operator. By moving the cursor to coarse or fine you can adjust the pitch in large steps or in small steps. When the Freq Mode is set to "fixed" the range is 0 Hz...9762 Hz. When the Freq Mode is set to "ratio" the range is 0.5...61.69. (In "ratio" mode with a Coarse/Fine setting of 1.0 the A3 key will produce the standard pitch of 440 Hz.)

❹ Detune (–15...+15): The pitch of each operator can be adjusted in fine steps of 1.171875 cents.

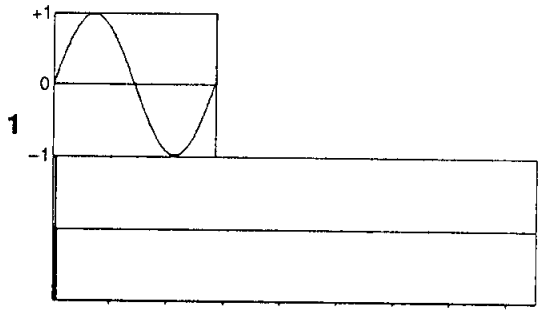
❺ Waveform (1...16): Each operator can produce sixteen different waveforms; a sine wave with no harmonics, and fifteen other more complex waveforms containing additional harmonics. This allows you to create complex waveforms using fewer operators. A graphic display of the selected waveform is shown below the waveform number. The table below shows the harmonic content of each waveform.

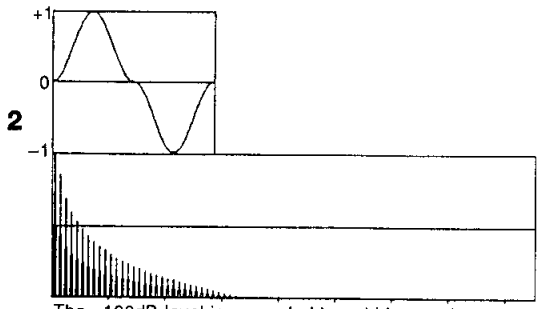
❻ Phase Sync (on, off): When phase sync is on, the selected waveform will be re-started each time a key is pressed.

❼ Init Phase (0...127): This determines the initial phase position from which the selected waveform will be re-started when phase sync is on. The init phase range of 0...127 corresponds to a range of 0...360 degree starting phase. This setting is effective only when Phase Sync is on.

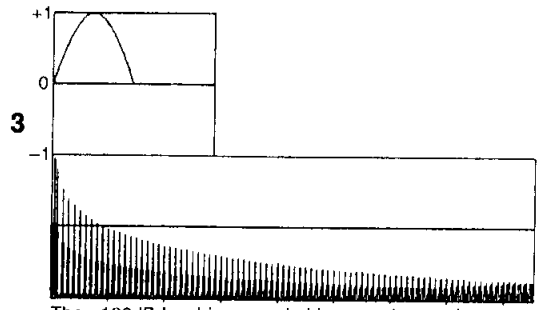


Waveform: The sixteen waveforms that can be produced by each operator are not modeled after any "real" instrument but are mathematical transformations of sinewaves. The following chart shows the harmonic content of each waveform. The amplitude of each harmonic partial is given as a percentage of the fundamental.

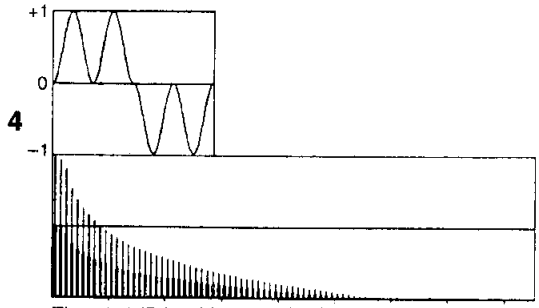




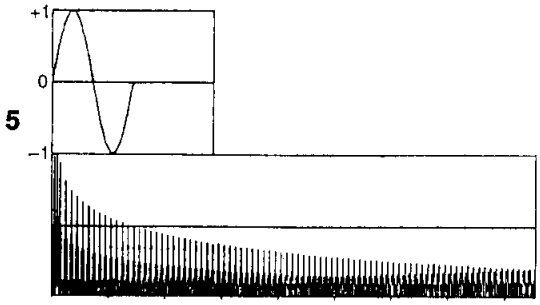
The –100dB level is exceeded by odd harmonics up to the 65th harmonic.



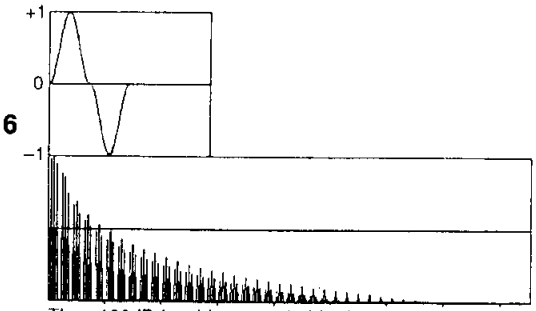
The –100dB level is exceeded by even harmonics up to the 392nd harmonic.



The –100dB level is exceeded by odd harmonics up to the 113th harmonic.

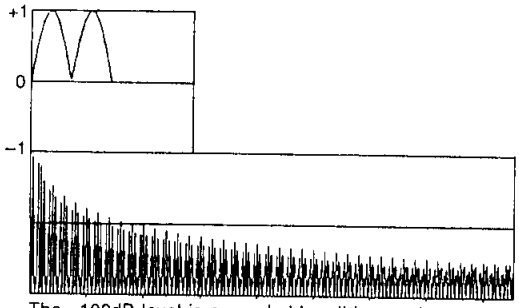


The –100dB level is exceeded by the 2nd harmonic, and all odd harmonics.



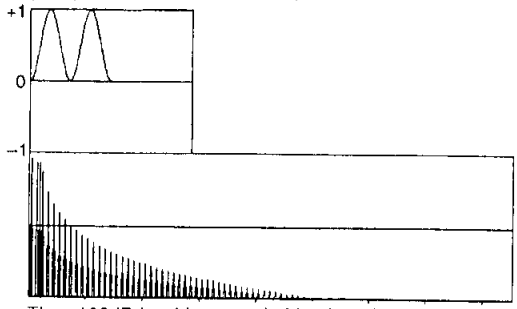
The –100dB level is exceeded by harmonics up to the 130th harmonic. [4th terms do not exist]

7



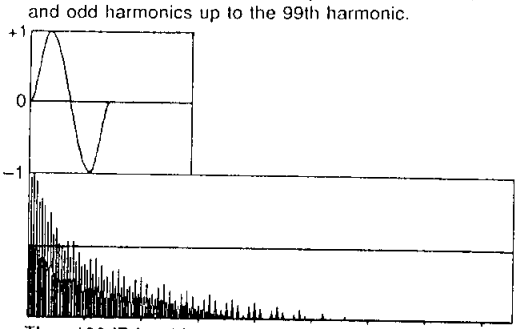
The −100dB level is exceeded by all harmonics except (4n-2) terms which do not exist.

8



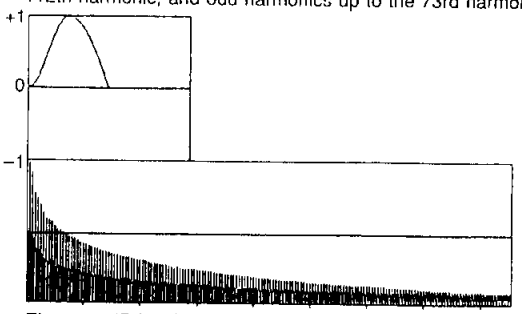
The −100dB level is exceeded by the 4th harmonic, and odd harmonics up to the 99th harmonic.

9



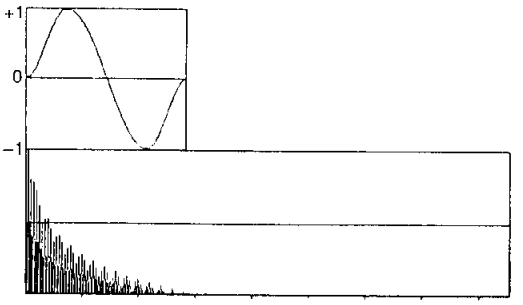
The −100dB level is exceeded by even harmonics up to the 112th harmonic, and odd harmonics up to the 73rd harmonic.

10



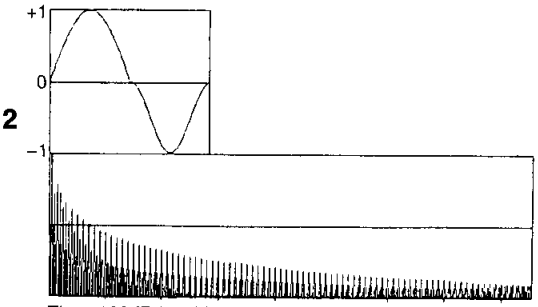
The −100dB level is exceeded by all harmonics up to the 270th harmonic.

11



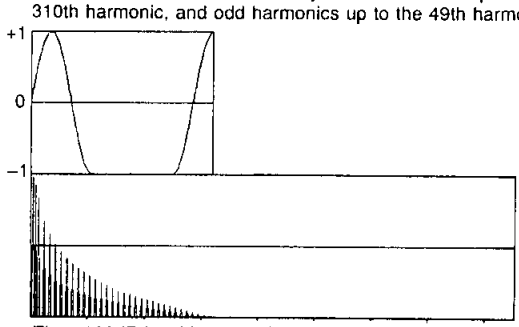
The −100dB level is exceeded by harmonics up to the 66th harmonic.

12



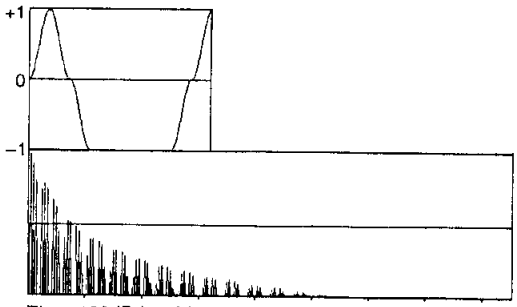
The −100dB level is exceeded by even harmonics up to the 310th harmonic, and odd harmonics up to the 49th harmonic.

13



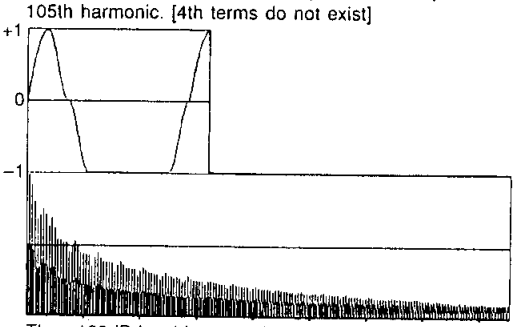
The −100dB level is exceeded by the 21nd harmonic, and odd numbered harmonics up to the 63rd harmonic.

14



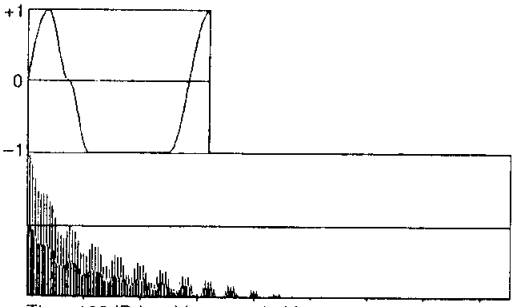
The −100dB level is exceeded by harmonics up to the 105th harmonic. [4th terms do not exist]

15



The −100dB level is exceeded by all harmonics up to the 300th harmonic.

16



The −100dB level is exceeded by harmonics up to the 91st harmonic.

AFM ELEMENT DATA

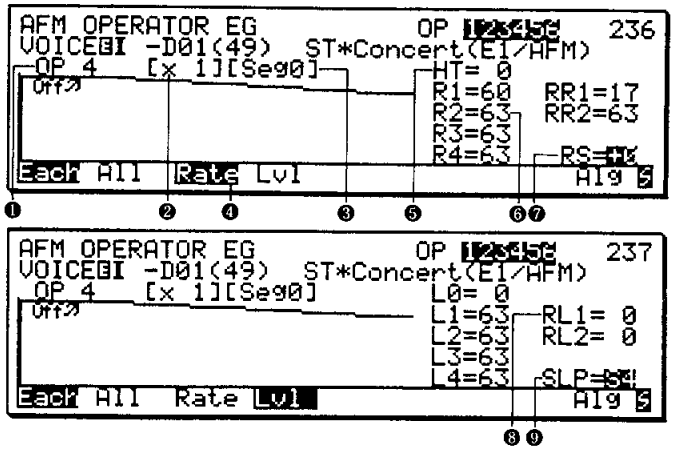
3. (F1) AFM operator EG (Each operator)

JUMP #236

Summary: Make EG settings for a single operator while viewing a graphic display of the operator envelope.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 03:EG and press F1 (Each)
EG rates press F3 (Rate) (JUMP #236)
EG levels press F4 (Lvl) (JUMP #237)
Specify: envelope parameters for the selected operator



❶ The number of the currently selected operator is displayed. To move to another operator, use the OPERATOR SELECT buttons OP1...OP6.

❷ This indicates the time range of the EG graphic display. A range of "x1" shows the shortest time and gives the greatest detail. To change the range, hold SHIFT and press F1–F6 (x1, x2, x5, x10, x20, x50).

❸ This indicates the segment from which the EG graphic display begins. To shift the display to a different segment, hold SHIFT and press F7 or F8 to select Seg0–Seg4 or Rel1.

❹ Press F3 (Rate) to set EG rates. Press F4 (Lvl) to set EG levels.

❺ HT (Keyon Delay Time 63...0): When this is set to 0, the operator EG will begin immediately after a key is pressed. For higher settings, there will be an increasingly longer delay before the operator EG begins.

❻ R1–R4, RR1–RR2 (Keyon Rates, Release Rates 0...63): Keyon Rates 1–4 and Release Rates 1–2 determine the speed of the operator EG. Higher settings result in faster change.

❼ RS (Rate Scaling –7...+7): Rate Scaling allows the operator EG rates to be increased or decreased depending on the key that is played. For positive settings the EG rates will increase as you play higher notes, resulting in shorter envelopes. For negative settings the EG rates will decrease as you play higher notes, resulting in longer envelopes.

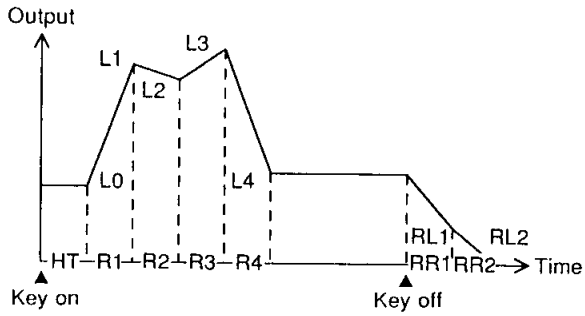
❽ L0–L4, RL1–2 (Keyon Levels, Release Levels 0...63): Keyon Levels 0–4 and Release Levels 1–2 determine the levels of the operator EG.

❾ SLP (Segment Loop Point S1...S4): This specifies the segment from which the EG will continue looping if a key remains depressed after the EG has arrived at level L4.

Rates and Levels: When you press a key, the operator output will be at the level of L0. When the specified hold time (HT) has elapsed, the level will change at the rate of R1 to level L1. When the level reaches L1, it will change at the rate of R2 to the level of L2. When the level reaches L2, it will change at the rate of R3 to the level of L3. When the level reaches L3, it will change at the rate of R4 to the level of L4. When the level reaches RL1, the EG will begin looping from the specified segment.

When you release the key, the level will change at the rate of RR1 to the level of RL1. When the level reaches RL1, it will change at the rate of RR2 to the level of RL2.

Remember that Hold Time (HT) is a *time* setting, but the various Rates are *speed* settings. Higher settings for Hold Time will result in a longer delay before the operator EG begins, but higher settings for Rates will result in faster change.



Segment Loop Point: The SLP setting determines the Level from which the EG will loop. If you continue holding a note after Level 4 is reached, when SLP is set to ...

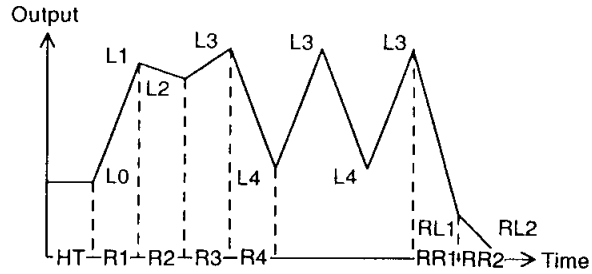
SLP=S1 the level will change L4 → L1 → L2 → L3 → L4 → L1 → ...

SLP=S2 the level will change L4 → L2 → L3 → L4 → L2 → ...

SLP=S3 the level will change L4 → L3 → L4 → L3 → ...

SLP=S4 the level will remain at L4

The following diagram shows how EG levels would change when SLP=S3



Rate Scaling: On most acoustic instruments, high notes have a naturally shorter attack and decay. This can be simulated by setting rate scaling to a positive value (+1...+7). The following diagram shows how higher notes will have faster rates (shorter EGs). Negative settings will have the opposite effect.

AFM ELEMENT DATA

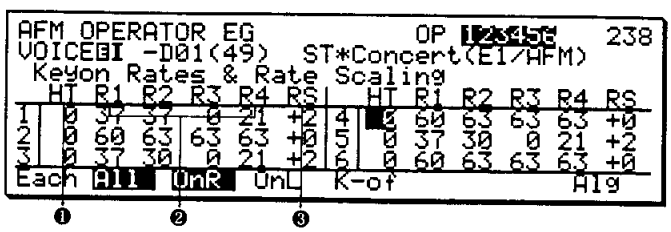
3. (F2) AFM operator EG (All operators)

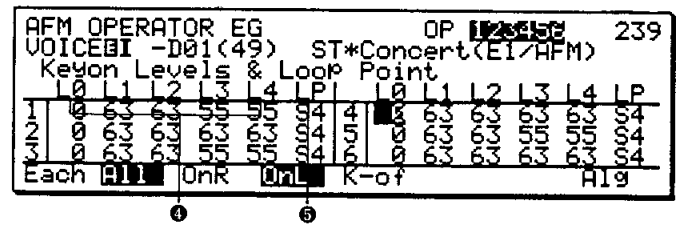
JUMP #238

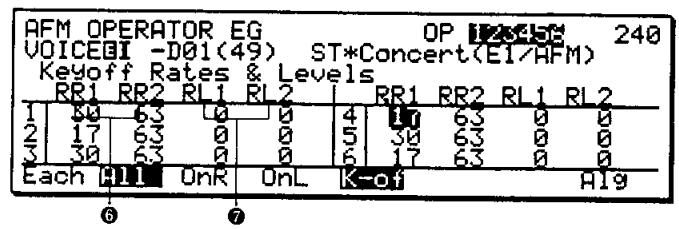
Summary: Make operator EG settings for all operators while viewing the data for all operator EGs in a single screen.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 03:EG and press F2 (All)
Specify: EG key-on rates (R1–R4) (JUMP #238)
EG key-on levels (L1–L4) (JUMP #239)
EG key-off rates and levels (RR1–2, RL1–2) (JUMP #240)







❶ HT (Keyon Delay Time 63...0): This specifies the time by which the beginning of the EG will be delayed after a key is pressed.

❷ R1–R4 (Keyon Rates 0...63): Keyon Rates 1–4 determine the speed of the operator EG while a key is being pressed.

❸ RS (Rate Scaling –7...+7): Rate Scaling determines how the key position will affect the operator EG rates.

❹ L0–L4 (Keyon Levels 0...63): These determine the levels to which the operator EG will move while a key is being pressed.

❺ LP (Segment Loop Point S1...S4): This specifies the segment from which the EG will continue looping if a key remains depressed after the EG has arrived at level L4.

❻ R1, R2 (KeyOff Rates 0...63): These determine the speed with which the operator EG will change levels after a key is released.

❼ L1, L2 (KeyOff Levels 0...63): These determine the levels to which the operator EG will change after a key is released.

The meaning of these EG parameters is explained in the previous section *3.1 Operator EG.*

In this *AFM operator EG (All)* display, the OPERATOR SELECT buttons cannot be used to select operators.

AFM ELEMENT DATA

4. (F1) AFM operator output (Each)

JUMP #241

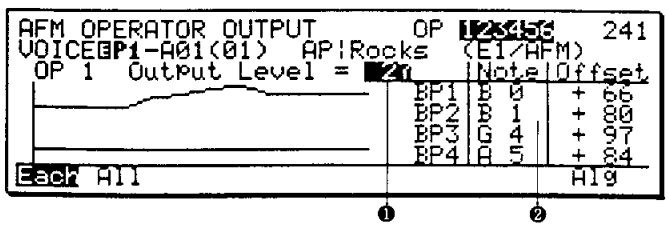
Summary: Set output level and scaling for a single operator while viewing a graphic display of the scaling.

Procedure:

From: AFM Element job directory (JUMP #230)

Select: job 04:Output and press F1 (Each) (JUMP #241)

Specify: the output level and scaling for the selected operator



❶ Output Level (0...127): The output level of the operator

❷ BP1–4 (Break Point 1–4): Note (C-2...G-8) and Offset (–127...#127) of each Break Point determine how the output level of each operator will vary across the keyboard. When the cursor is located at note, you can press F7 (Kbd) and press a key to enter the new note setting.

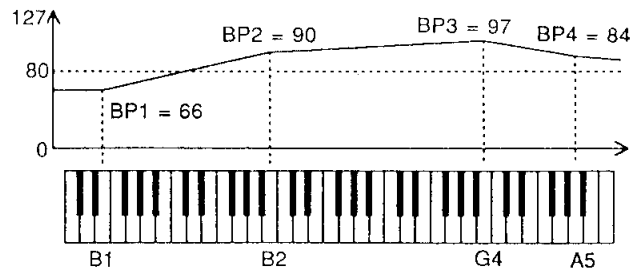
Output Level: This sets the output level of each operator. The output level of a carrier operator will affect the volume, and the output level of a modulator operator will affect the tone. Remember that the input levels of each operator input In1 and In2 can also be adjusted as explained in *1. (F3) Algorithm (Input level)* (JUMP #233). Even if the output level of an operator is raised, it will have no effect on another operator to which it is connected if the corresponding input level of the operator is set at 0.

Break Point: The operator output level can be made to vary depending on the note that is played. On most acoustic instruments, notes differ in volume and tone depending on the range in which they are played. For example the low notes of a piano are more tonally complex and louder than the high notes.

Use the four break points to specify how the operator output level will be adjusted across the keyboard.

- Offset (–127...+127) determines the output level adjustment for each of the four points specified by Note.
- The four note settings must be in ascending order. It is not possible to set a break point to a note lower or higher than the note settings of the neighboring break points.

The following diagram shows how the operator output level would be adjusted across the keyboard for the settings shown in the above LCD.



Each offset is added to the overall operator output level of 80. For example the offset at break point 1 (E1) is –4, so the resulting operator output level at E1 is 76. The resulting operator output level is limited to the range of 0...127.

AFM ELEMENT DATA

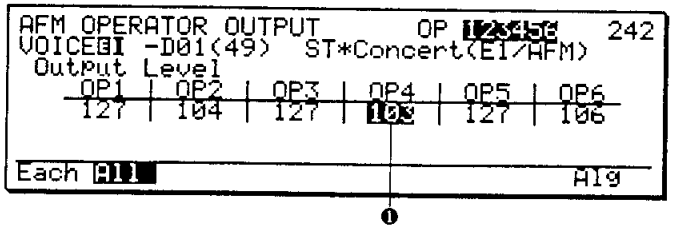
4. (F2) AFM operator output (All)

JUMP #242

Summary: Set operator output level while viewing output levels for all operators. (Output scaling cannot be set in this job.)

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 04:Output and press F2 (All) (JUMP #242)
Specify: the output level of each operator



❶ Output Level OP1–OP6 (0...127): Set the output level of each operator. This is the same setting as explained in ❶ of the previous section *4. (F1) AFM operator output*. The difference is that here you can view and set the output level for all six operators at once. However, break point Levels and Offsets cannot be set here.

Remarks: Refer to *4. (F1) AFM operator output* for details.

Note: *In algorithms with two or more carriers, some Velocity Sensitivity settings may cause distortion. In this case, reduce carrier levels.*

AFM ELEMENT DATA

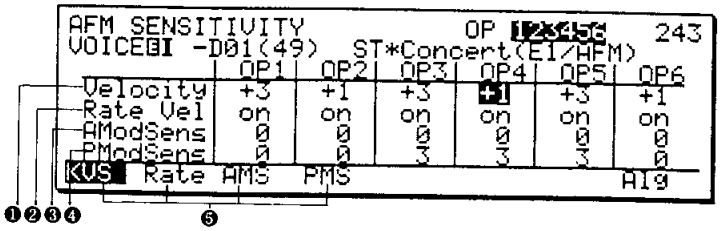
5. AFM sensitivity

JUMP #243

Summary: These settings determine how each operator will be affected by key-on velocity and by the LFO.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 05:Sensitv (JUMP #243)
Specify: the sensitivity of each operator



❶ Velocity (–7...+7): This determines how the output level of each operator will be affected by key-on velocity. For positive settings (+1...+7) the output level will increase as you play more strongly. For negative settings (–1...–7) the output level will decrease as you play more strongly.

❷ Rate Velocity (on/off): When the Rate Velocity switch is "on", key-on velocity will affect the operator EG R1. The result will depend on the Velocity setting.

Velocity = +1...+7: If Rate Velocity is on, strongly played notes will cause the operator EG R1 to increase, resulting in a faster attack. For notes played with maximum velocity, R1 will be at the value specified by the EG settings.

Velocity = –1...–7: If Rate Velocity is on, strongly played notes will cause the operator EG R1 to decrease, resulting in a slower attack. To hear the effect of negative settings you will need to lower the operator output level.

When the Rate Velocity switch is "off", the operator EG R1 will not be affected by key-on velocity.

❸ AModSens (0...7): Amplitude Modulation Sensitivity determines how greatly the output level of each operator will be affected by Amplitude Modulation from the LFO.

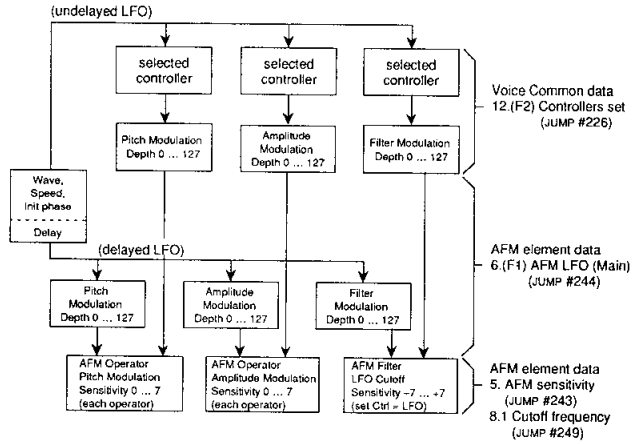
❹ PModSens (0...7): Pitch Modulation Sensitivity determines how greatly the pitch of each operator will be affected by Pitch Modulation from the LFO.

❺ Pressing F1 (KVS), F2 (Rate), F3 (AMS), or F4 (PMS) will move the cursor to Velocity, Rate Vel, AModSens, or PModSens.

AModSens and PModSens: These settings determine the *sensitivity* of each operator to the Amplitude Modulation Depth (AMD) and/or Pitch Modulation Depth (PMD) produced by the LFO. Refer to *6.(F1) AFM LFO (Main)* (JUMP #244). If the LFO settings for AMD and/or PMD are set to 0, these AModSens and PModSens settings will have no effect.

PModSens determines the sensitivity of each operator to PMD from the Main LFO. Independently of this, the pitch of an AFM element can also be affected by the Sub LFO. Refer to *6. (F2) AFM LFO (Sub)* (JUMP #245).

In this *AFM sensitivity* display, the OPERATOR SELECT buttons cannot be used to select operators.



AFM ELEMENT DATA

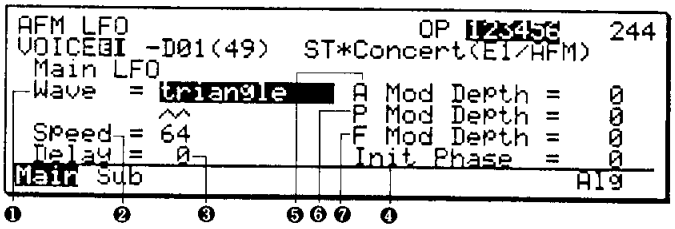
6. (F1) AFM LFO (Main)

JUMP #244

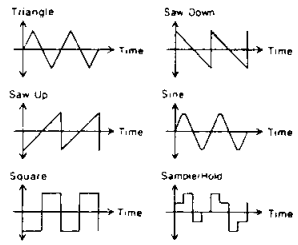
Summary: The Main LFO creates a periodic control signal that can be used to create tremolo (amplitude modulation), vibrato (pitch modulation), and wah-wah (filter modulation).

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 06:LFO and press F1 (Main) (JUMP #244)
Specify: parameters for the main LFO



❶ Wave (triangle, saw down, saw up, square, sine, sample&hold): This selects the wave (shape of modulation) produced by the Main LFO. The selected wave is graphically displayed in the LCD. When sample&hold is selected, the LFO will produce a control signal whose level will change randomly at intervals of time determined by the Speed setting.



❷ Speed (0...99): The speed of the LFO modulation. Higher settings result in faster modulation. At a setting of 0, one cycle will be approximately 34 seconds.

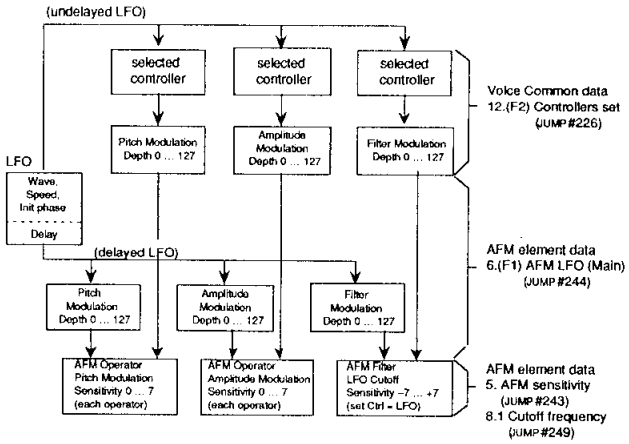
❸ Delay (0...99): The time delay before the LFO modulation begins.

❹ Init Phase (0...99): Initial Phase determines the point of the waveform from which the LFO will begin when a key is pressed. The LFO waveform always starts over again from this initial phase point when each note is played. An initial phase setting of 0...99 corresponds to a phase of 0...360 degrees.

❺ A Mod Depth (0...127): Amplitude Modulation Depth determines how much the LFO will affect the output level (amplitude) of the operators. For this setting to have an effect, the AModSens (amplitude modulation sensitivity) of an operator must be set above 0. Refer to *5. AFM sensitivity*.

❻ P Mod Depth (0...127): Pitch Modulation Depth determines how much the LFO will affect the pitch of the operators. For this setting to have an effect, the PModSens (pitch modulation sensitivity) of an operator must be set above 0. Refer to *5. AFM sensitivity.*

❼ F Mod Depth (0...127): Filter Modulation Depth determines how much the LFO will affect the cutoff frequency of the filter. For this setting to have an effect, the Ctrl setting of a filter must be set to "LFO", and the LFO Cutoff Sens setting must not be 0. Refer to *8.1 Cutoff frequency.*



AFM ELEMENT DATA

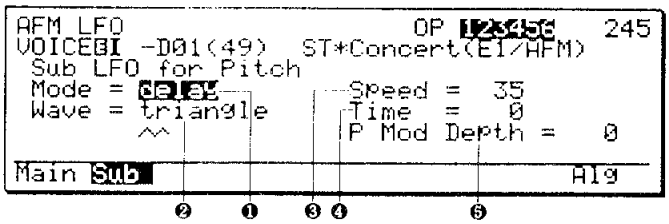
6. (F2) AFM LFO (Sub)

JUMP #245

Summary: The Sub LFO is completely independent of the Main LFO, but can be used only to create vibrato (pitch modulation). This will apply equally to all operators, and is not affected by pitch modulation sensitivity.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 06:LFO and press F2 (Sub) (JUMP #245)
Specify: parameters for the sub LFO



❶ Mode (delay, decay): When this is set to "delay", the Sub LFO will begin after the time delay specified by ❹ Time. When this is set to "decay", the Sub LFO will begin fading out after the time specified by ❹ Time.

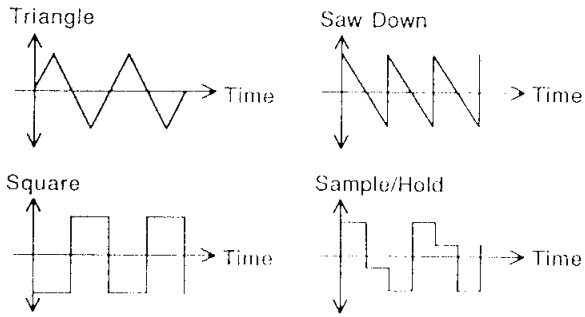
❷ Wave (triangle, saw down, square, sample& hold): The wave produced by the Sub LFO.

❸ Speed (0...99): The speed of the LFO modulation. Higher settings result in faster modulation. The speed of the sample&hold wave will be faster than the other waves.

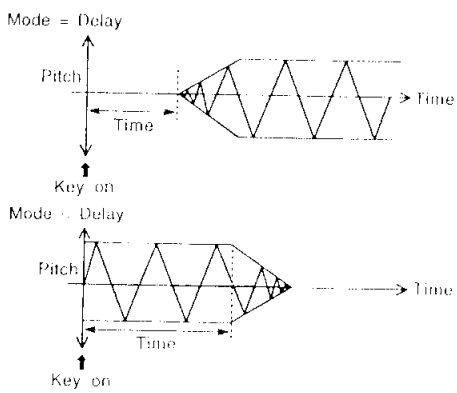
❹ Time (0...99): The time length used for Sub LFO delay or decay.

❺ P Mod Depth (0...127): The depth of pitch modulation produced by the Sub LFO.

Wave: The following four waveforms can be selected for the Sub LFO.



Mode and Time: The mode and time settings work together to determine how the Sub LFO will begin or end. When Mode=delay the Sub LFO will begin after the time delay specified by ❹ Time. When Mode=decay the Sub LFO will affect the sound beginning immediately from when the key is pressed, but will gradually die out after the time delay specified by ❹ Time.



AFM ELEMENT DATA

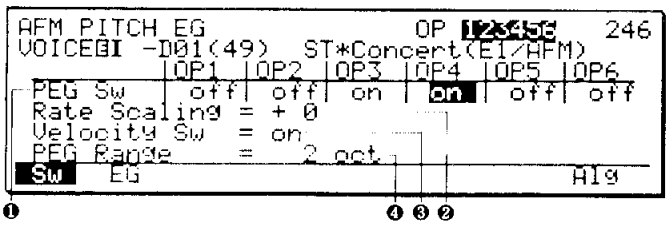
7. (F1) AFM pitch EG (Switch)

JUMP #246

Summary: The pitch change over time created by the pitch EG can be switched on/off for each operator. To set the shape of the pitch EG, see *7. (F2) AFM pitch EG (EG settings).*

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 07:PitchEG and press F1 (Sw) (JUMP #246)
Specify: pitch EG switches, scaling, and range



❶ PEG Sw (off, on): When the Pitch EG Switch is "off" for an operator, it will not be affected by the pitch EG.

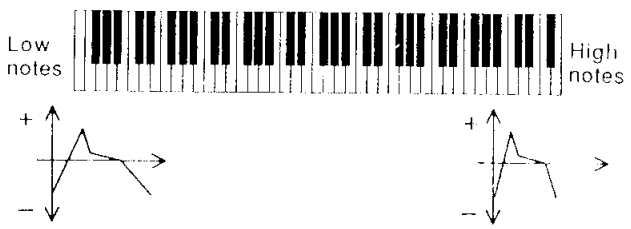
❷ Rate Scaling (–7...+7): Pitch EG Rate Scaling determines how pitch EG rates will change according to the note played. When this is set to +1...+7, the pitch EG will be faster for higher notes. When this is set to –1...–7, the pitch EG will be slower for higher notes. When this is set to 0, the pitch EG will be the same rate for all notes.

❸ Velocity Sw (off, on): When this is on, strongly played notes will cause the pitch EG to change over a greater range.

❹ Range (1/2 oct, 1 oct, 2 oct, 8 oct): This determines the maximum range of the AFM pitch EG, from 1/2 octave to 8 octaves.

PEG Sw: When using the Pitch EG to make the pitch of a sound change over time, you will normally turn the PEG switch on for *all* operators. If the pitch of a modulator operator changes while the pitch of another operator it is modulating remains constant (or vice versa), the *carrier:modulator* ratio will shift during the duration of the sound, changing the overtone structure. This can be an interesting effect in its own right.

Rate Scaling: This setting determines how Pitch EG Rates (the speed of pitch change) will be affected by the key number of each note. The following diagram shows the result when Pitch EG Rate Scaling is set to +7. Notice that high notes have a shorter pitch EG (faster EG rates) than lower notes.



Velocity Sw (velocity switch): When this is "on", strongly played notes will cause the pitch EG to change over a greater range.

AFM ELEMENT DATA

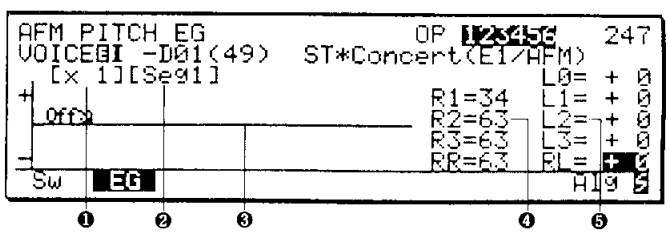
7. (F2) AFM pitch EG (EG settings)

JUMP #247

Summary: The pitch EG creates a fixed shape of pitch change over time for each note. To switch the pitch EG on/off for each operator, see *7. (F1) AFM pitch EG (Switch).*

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 07:PitchEG and press F2 (EG) (JUMP #247)
Specify: pitch EG parameters



❶ This indicates the time length shown by the graphic display. To change this, hold SHIFT and press F1–F6 (x1, x2, x5, x10, x20, x50). The exact length of time will depend on the range. When the pitch EG range is 1 octave, the graphic display will cover approximately 0.5 seconds at "x1" and approximately 5 seconds at "x50".

❷ This indicates the EG segment ("seg1–3" or "rel1") from which the pitch EG graphic display begins. If the EG is too long to be fully shown in the LCD, hold SHIFT and press F7 or F8 to move the pitch EG graphic display to a different segment.

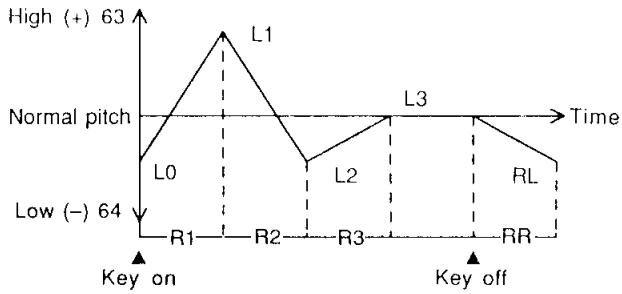
❸ The pitch EG is graphically displayed.

❹ R1–R3, RR1 (0...63): Keyon Rates 1–3 and the Release Rate determine the speed of the pitch EG. Higher settings result in faster change. A rate of 63 will make the pitch jump instantly to the next level.

❺ L0–L3, RL (–64...+63): Keyon Levels 0–3 and the Release Level determine the levels of the pitch EG. Positive settings raise the pitch and negative settings lower the pitch.

Rates and Levels: When you press a key, the pitch will begin at the level of L0, and will change at the rate of R1 to level L1. When the level reaches L1, the pitch will change at the rate of R2 to the level of L2. When the pitch reaches L2, it will change at the rate of R3 to the level of L3 and will stay at L3 as long as the key is pressed.

When the key is released, the pitch will change at the rate of RR to the level of RL.



Note: Even if the AFM pitch EG and the AWM pitch EG have identical Rate settings, there will be slight differences in the timing of the pitch change.

AFM ELEMENT DATA

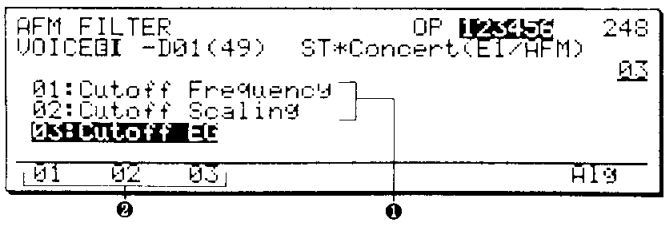
8. AFM filter

JUMP #248

Summary: The two filters of each element can be used to control the tone in various ways.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 08:Filter (JUMP #248)
Specify: the desired job and press ENTER



❶ Move the cursor in this area to select a job and press ENTER to move to the selected job.
- 01: Cutoff Frequency: Make overall settings for the filters.
- 02: Cutoff Scaling: Specify how each filter will be adjusted across the keyboard.
- 03: Cutoff EG: Specify how each filter will change over time.

❷ Pressing F1–F3 will select the corresponding job.

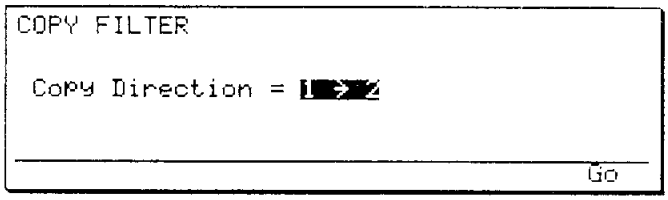
AFM ELEMENT DATA / AFM FILTER

8.0 Copy filter

Summary: Any time while editing a filter, you can copy the data from one filter to the other filter.

Procedure:

From: 8.1 Cutoff Frequency (JUMP #249)
8.2 Cutoff Scaling (JUMP #250)
8.3 Cutoff EG (JUMP #252–#255)
Press: COPY
Select: the copy direction (1→2 or 2→1)
To execute: the copy operation press F8 (Go)
To quit: without copying press EXIT



Specify whether to copy the data from filter 1 to filter 2 (1→2) or from filter 2 to filter 1 (2→1). Press F8 (Go) and the data will be copied. If you decide not to copy the data, press EXIT to exit without copying.

The filter type (HPF/LPF/THRU) will not be copied.

AFM ELEMENT DATA / AFM FILTER

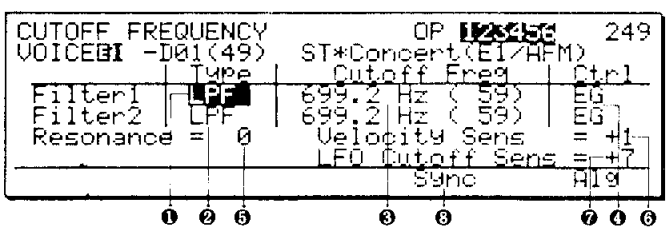
8.1 Cutoff frequency

JUMP #249

Summary: Each filter can be set to a different type, cutoff frequency, and control source. Overall resonance, velocity sensitivity, and LFO Cutoff Sensitivity can also be specified.

Procedure:

From: AFM Element job (JUMP #248)
directory 8. AFM filter
Select: 01:Cutoff Frequency (JUMP #249)
Specify: parameters for filters 1 and 2



❶ Filter 1 Type (Thru, LPF, HPF): Filter 1 can be used either as a Low Pass Filter (LPF) or as a High Pass Filter (HPF). When "Thru" is selected the filter will have no effect.

❷ Filter 2 Type (Thru, LPF): Filter 2 can be used only as a LPF.

❸ Cutoff Freq (HPF = 0 Hz ... 11.66 kHz (0...114); LPF = 0 Hz ... 22.43 kHz (0...127): The cutoff frequency of each filter can be adjusted independently. The number 0...127 displayed in parentheses indicates the data value input when using the numeric keypad. Note that the highest HPF setting is 11.66 kHz.

❹ Ctrl (EG, LFO, EG-VA): Each of the two filters can be controlled in a different way. For details, see the explanations below for *Ctrl = EG*, *Ctrl = LFO*, *Ctrl = EG-VA*.

❺ Resonance (0...99): Higher settings of resonance will result in a more pronounced peak of emphasis at the cutoff frequency. This setting will apply to both filters 1 and 2.

❻ Velocity Sens (–7...+7): This determines how the cutoff frequency of both filters will be affected by key-on velocity. For positive settings (+1...+7) the cutoff frequency will increase as you play more strongly, resulting in a brighter sound. For negative settings (–1...–7) the cutoff frequency will decrease as you play more strongly, resulting in a darker sound.

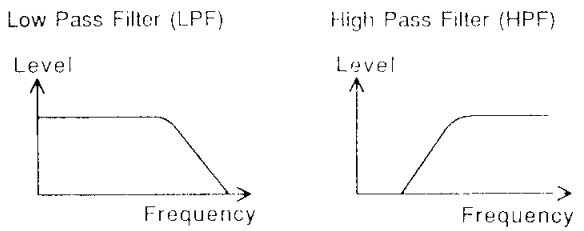
❼ LFO Cutoff Sens (–7...+7): This determines how Filter Modulation from the Main LFO will affect the filters. This setting also determines how sensitive the filters will be to the controller assigned to Filter Bias in *Voice common data 12. (F5) Controller set (Other)* (JUMP #228) (page 130). Negative settings will reverse the effect of the assigned controller.

❽ Sync: This is not a parameter, but a convenience that allows you to adjust both filters together. When you press F6 (Sync), the "Sync" display will be inverted, and all adjustments you make to either filter 1 or filter 2 will be automatically

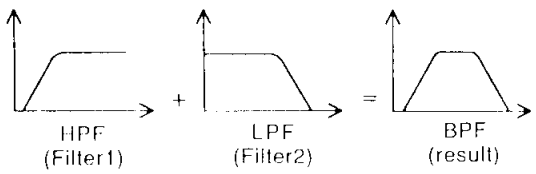
set for the same parameter of the other filter. This is useful when you are using the two filters in tandem to act as a steep 24 dB/octave filter or as a 12 dB/octave band pass filter. See the following explanation *Type and Cutoff Freq.* Press F6 once again to cancel filter sync editing mode.

Type and Cutoff Freq: Filter 1 can be used either as a Low Pass Filter (LPF) or as a High Pass Filter (HPF), and filter 2 can be used only as a LPF.

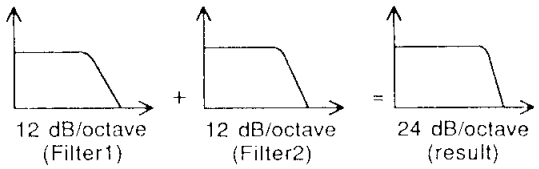
When set to LPF, filters 1 and 2 will allow sound lower than the cutoff frequency to pass unchanged, and will diminish the sound above the cutoff frequency. When set to HPF, filter 1 will allow sound higher than the cutoff frequency to pass, and will diminish the sound below the cutoff frequency.



By setting filter 1 to HPF and filter 2 to LPF, you can create a Band Pass Filter that passes only a central band of frequencies.

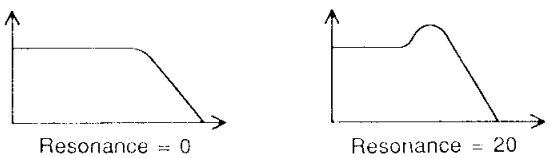


Each of the SY99's filters has a slope of 12 dB/octave. This means that if the cutoff frequency of an LPF is 1 kHz, frequencies at 2 kHz will be reduced by 12 dB and frequencies at 4 kHz will be reduced by 24 dB. If you set both filters 1 and 2 to LPF, set both to the same cutoff frequency, and set both filter EGs in the same way, the result will be the equivalent of a single 24 dB/octave filter. The filter copy function explained in *8.0 Copy filter* is a quick way to give both filters the same settings.



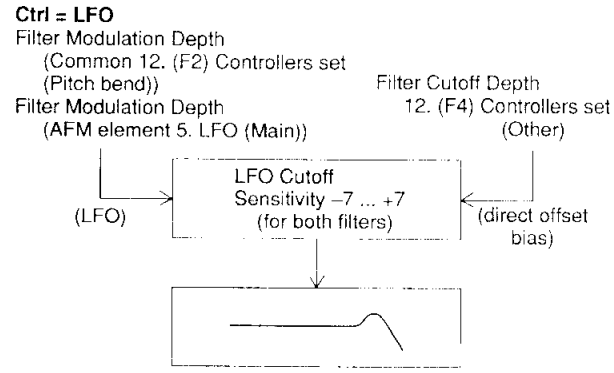
24 dB/octave filtering creates a sharp cutoff which is quite obvious, while 12 dB/octave filtering is a more subtle effect. Analog synthesizers of the past have used both types. 12 dB/octave filtering was considered especially suitable for strings, and 24 dB/octave filtering was commonly used for brass or synth bass sounds.

Resonance: Resonance lowers the level of sound below the cutoff frequency, creating an increased peak of emphasis. (This may reduce the overall volume.) High settings of resonance will make changes in cutoff frequency quite easy to notice. When the two filters are being used in tandem as a Band Pass Filter (i.e., when filter 1 is set to HPF), resonance will have no effect.



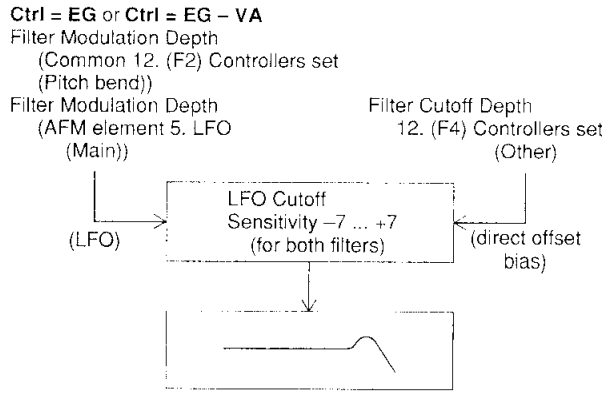
Extremely high settings of filter resonance will make the filter oscillate so that it produces a pitch of its own. This is a technique often used on analog synthesizers of the past.

Ctrl = LFO: When Ctrl is set to LFO, the filter will be controlled both by the Main LFO and by the controller which has been assigned to Filter Cutoff Depth. (Refer to *Voice common data 12. (F4) Controller set (Pan)*, page 130.) Key velocity will shift the cutoff frequency.



Ctrl = EG: When Ctrl is set to EG, the filter will be controlled by its own filter EG as explained in the following section *8.3 Filter EG*. If Velocity Sense is set to a value other than 0, key velocity will shift the overall offset of the EG. The position of the controllers assigned to Filter Modulation Depth and Filter Cutoff Depth will be sampled at the beginning of the note (key on), but will have no effect *during* the note.

Ctrl = EG-VA: When Ctrl is set to EG-VA (EG voice attack), the filter will be controlled by its own filter EG as explained in the following section *8.3 Filter EG*. If Velocity Sense is set to a value other than 0, key velocity will modify L1 (level 1) and R1 (rate 1) of the filter EG.



Note: *When Ctrl=EG or Ctrl=EG-VA, the effect of the controller on the cutoff frequency will be fixed when the note is played. Moving the controller after playing the note will have no effect.*

AFM ELEMENT DATA / AFM FILTER

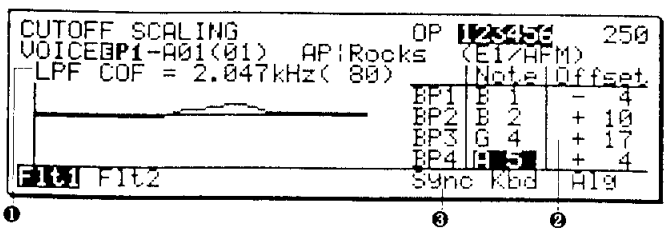
8.2 Cutoff scaling

JUMP #250

Summary: The cutoff frequency of each filter can be adjusted across the keyboard.

Procedure:

From: AFM element job (JUMP #248)
directory 8. AFM filter
Select: 02:Cutoff Scaling
filter 1 press F1 (Flt1) (JUMP #250)
filter 2 press F2 (Filt2) (JUMP #251)
Specify: filter scaling parameters



❶ This indicates the type of the filter being edited, and its cutoff frequency. The cutoff frequency can be modified from this job, but to modify the type of filter you must use job *8.1 Filter cutoff*.

❷ BP1–4 (Break Point): Note (C-2...G-8) and Offset (–127...+127) of each Break Point determine how the cutoff frequency level of the filter will vary across the keyboard. When the cursor is located at note, you can press F7 (Kbd) and press a key to enter the new note setting.

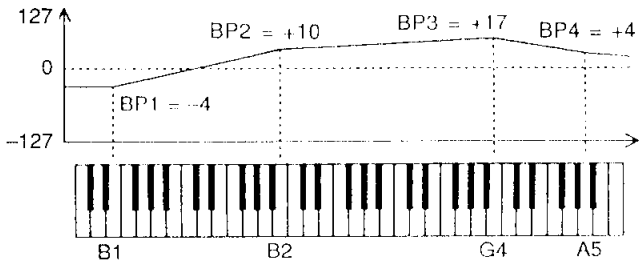
❸ Sync: Press F6 to turn filter sync editing mode on or off. For details, refer to ❸ Sync on page 150.

Break Point: The filter cutoff frequency can be made to vary depending on the note that is played. On most acoustic instruments, notes differ in tone depending on the range in which they are played.

Use the four break points to specify how the filter cutoff frequency will be adjusted across the keyboard. Offset (–127...+127) determines how the cutoff frequency will be adjusted at each of the four points specified by Note (C-2...G-8).

The four note settings must be in ascending order. It is not possible to set a break point to a note lower or higher than the note settings of the neighboring break points.

The following diagram shows how the filter cutoff frequency would be adjusted across the keyboard for the values in the LCD above.



The offset at each break point is added to the cutoff frequency of 80. For example the offset at break point 1 (E1) is –4, so the resulting cutoff frequency at E1 is 76. The resulting cutoff frequency is limited to the range of 0...127.

AFM ELEMENT DATA / AFM FILTER

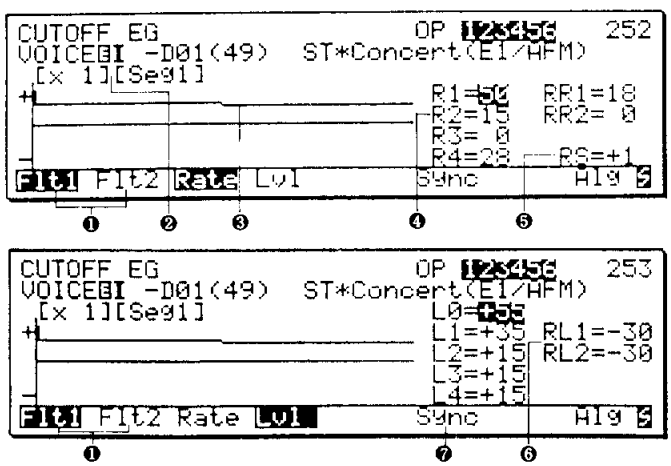
8.3 Cutoff EG

JUMP #252

Summary: The cutoff frequency of each filter can be moved over time by its own EG to make the tone change.

Procedure:

From: AFM element job directory (JUMP #248)
8. AFM filter
Select: 03:Cutoff EG
filter 1 rates press (JUMP #252)
F1 (Flt1), F3 (Rate)
filter 1 levels press (JUMP #253)
F1 (Flt1), F4 (Lvl)
filter 2 rates press (JUMP #254)
F2 (Flt2), F3 (Rate)
filter 2 levels press (JUMP #255)
F2 (Flt2), F4 (Lvl)
Specify: filter EG parameters



❶ This indicates whether you are editing the EG of filter 1 or 2.

❷ This indicates the displayed segment and range of the EG graphic display. To change the display range, hold SHIFT and press F1–F6 (x1, x2, x5, x10, x20, x50). To shift the display to a different segment, hold SHIFT and press F7 or F8 (Seg1...Seg4, Rel1).

❸ The filter EG is graphically displayed.

❹ R1–R4, RR1–RR2 (Keyon Rates, Release Rates 0...63): Keyon Rates 1–4 and Release Rates 1–2 determine the speed of the filter EG. Higher settings result in faster change.

❺ RS (Rate Scaling –7...+7): Rate Scaling allows the filter EG rates to be increased or decreased depending on the key that is played. For positive settings the EG rates will increase as you play higher notes, resulting in shorter envelopes. For negative settings the EG rates will decrease as you play higher notes, resulting in longer envelopes.

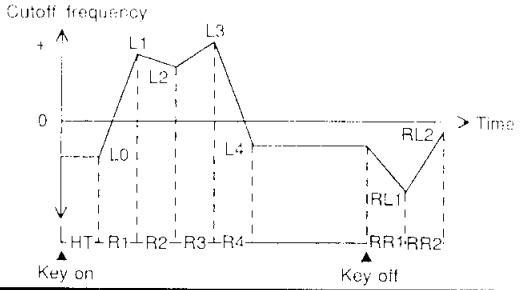
❻ L0–L4, RL1–2 (Keyon Levels, Release Levels –64...+63): Keyon Levels 0–4 and Release Levels 1–2 determine how the filter EG will increase or decrease the cutoff frequency specified for the filter.

❼ Sync: Press F6 to turn filter sync editing mode on or off. For details, refer to ❽ Sync on page 150.

Rates and Levels: The levels of the filter EG do not directly determine the cutoff frequency of the filter, but rather *adjust* the filter cutoff frequency you set in *8.1 Filter cutoff*.

When a note is played, the filter cutoff will be adjusted by the amount of L0, and will change at the rate of R1 to level L1. When the level reaches L1, it will change at the rate of R2 to the level of L2. When the level reaches L2, it will change at the rate of R3 to the level of L3. When the level reaches L3, it will change at the rate of R4 to the level of L4. The filter cutoff frequency will remain at the level of L4 as long as you continue pressing the key.

When you release the key, the filter cutoff frequency will change at the rate of RR1 to the level of RL1. When the level reaches RL1, it will change at the rate of RR2 to the level of RL2.



Rate Scaling: On most acoustic instruments, high notes have a naturally shorter attack and decay. This can be simulated by setting rate scaling to a positive value (+1...+7). The following diagram shows how higher notes will have faster rates (shorter EGs). Negative settings will have the opposite effect.

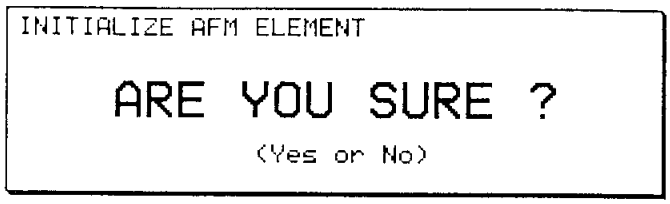
AFM ELEMENT DATA

15. Initialize AFM element

Summary: Initialize the AFM element data being edited to a set of basic values.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 15:Initlz
To execute: the initialize operation press YES
To quit: without executing press NO or EXIT



This function sets all AFM element data values to the minimum or simplest possible settings. When creating your own new voices it is usually best to begin by editing an existing voice. However if you want to start from scratch, this Initialize function can be helpful.

If you are sure you want to initialize the AFM element data, press YES. The AFM element data being edited will be set to the values shown below. If you decide not to initialize, press NO or EXIT.

This function initializes only AFM element data. Other initialize functions are provided for initializing Voice Common data and AWM element data. Refer to *Voice Common 15* (page 132). *Initialize voice* or *AWM element 15. Initialize AWM element* (page 170).

Initialized settings for AFM element data

01 Algorithm Set

Algorithm number	= 30
Feedback 1	= none (free)
Feedback 2	= none (free)
Feedback 3	= none (free)
Input Level 1	= 7 (operator 1–5)
Input Level 1	= 0 (operator 6)
Input Level 2	= 0 (all operators)
Noise	= Off (all operators)
AWM Wave	= Off (all operators)

02 Operator Oscillator (all operators)
- Freq.Mode = Ratio
- Freq = 1.00
- Detune = ±0
- Waveform = 1 (sine)
- Phase Sync = On
- Init Phase = 0

03 Operator EG (all operators)
- Keyon Hold Time = 0
- Keyon Rates 1–4 = 63
- Keyoff Rates 1–2 = 63
- Rate Scaling = ±0
- Keyon Level 0 = 0
- Keyon Levels 1–4 = 63
- Keyoff Levels 1–2 = 0
- Loop Point = S4

04 Operator Output
- Output Level = 127 (operator 1)
- Output Level = 0 (operators 2–6)
- Break Point 1 Note = C1
- Break Point 2 Note = G2
- Break Point 3 Note = E4
- Break Point 4 Note = C6
- Break Point Levels = 0 (break points 1–4)

05 Operator Sensitivity (all operators)
- Keyon Velocity Sens = 0
- Rate Velocity Switch = off
- AMS = 0
- PMS = 3

06 LFO
- Main LFO
  - Wave = triangle
  - Speed = 35
  - Delay Time = 0
  - AMD, PMD, FMD = 0
  - Init Phase = 0
- Sub LFO
  - Mode = delay
  - Wave = triangle
  - Speed = 80
  - Time = 0
  - PMD = 0

07 Pitch EG
- Operator On/Off = on (all operators)
- Rate Scaling = ±0
- Velocity Switch = off
- Range = 8 oct
- Keyon Rates 1–3 = 63
- Keyoff Rate 1 = 63
- Keyon Levels 1–3 = ±0
- Keyoff Level 1 = ±0

08 Filter
- Resonance = 0
- Cutoff Mod Sens = ±0
- Keyon Velocity Sens = ±0

*** following data is same for both filters ***
- Filter Type = thru
- Filter Control = LFO
- Cutoff Frequency = 127
- Break Point 1 Note = C1
- Break Point 2 Note = G2
- Break Point 3 Note = E4
- Break Point 4 Note = C6
- Break Point Offset = 0 (BP 1–4)
- Keyon Rates 1–4 = 63
- Keyoff Rates 1–2 = 63
- Rate Scaling = ±0
- Keyon Levels 0–4 = ±0
- Keyoff Levels 1–2 = ±0

AFM ELEMENT DATA

16. Recall voice

Summary: Recall all data of the previously edited voice.

Procedure:

From: AFM Element job directory (JUMP #230)
Select: job 16:Recall voice
To execute: the recall operation press YES
To quit: without executing press NO or EXIT.

Note: *This operation recalls all voice data, not just AFM element data, and is also available while editing Common data, AWM Element data, or Drum Set data. For details refer to Voice Common 16. Recall voice*, page 133.

AWM element data

AWM ELEMENT DATA

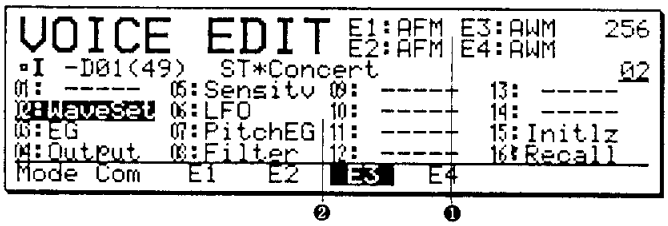
AWM element job directory

JUMP #256

Summary: This directory shows the jobs which edit AWM element data.

Procedure:

From: voice edit mode (JUMP #200 or #201)
When: editing a normal voice that contains AWM elements
Select: an AWM element F3–F6 (JUMP #256) (E1–E4)



❶ This area shows the number (E1–E4) and type (AFM or AWM) of elements in the selected voice mode.

❷ Move the cursor in this area to select a job and press ENTER to go to the selected job.

02:WaveSet (AWM waveform set): Select an AWM sampled waveform and specify the pitch at which it will sound.

03:EG (AWM EG): The AWM Amplitude EG determines how the volume of each note will change over time.

04:Output (AWM output): The output level of an AWM element can be adjusted across the keyboard.

05:Sensitv (AWM sensitivity): Key-on velocity can affect the volume or the speed of attack and decay. The control signal from the AWM LFO can create vibrato, tremolo, or wah-wah.

06:LFO (AWM LFO): The AWM element LFO creates a cyclically changing control signal that can be used for tremolo, vibrato, or wah-wah.

07:PitchEG (AWM pitch EG): The pitch of each note can be made to change in a fixed way over time.

08:Filter (AWM filter): The tone of an AWM element can be made to change in a fixed way over time, or can be controlled by a controller or the LFO.

15:Initlz (Initialize AWM element): When you are creating a voice from scratch, it is sometimes convenient to set all AWM element data to the basic or minimum values.

16:Recall (Recall voice): All data of the previously edited voice can be recalled.

AWM ELEMENT DATA

Copy element

Summary: While editing any AWM parameter (except for 8. AWM filter), you can copy data from an AWM element of another voice into the AWM element you are now editing.

Procedure:

From: AWM element job 2, 3, 4, 5, 6, or 7
Press: COPY
Press: F1 (Src) and select the source voice
Press: F2 (Elem) and select the source element
To execute: the copy operation press F8 (Go).

- This copy operation is identical to the operation explained in *AFM element data, Copy element* (page 135). Please refer to that section for details.
- This copy operation is possible only while *inside* one of the AWM editing jobs. It is not available from the AWM job directory.
- Pressing COPY while editing 8. *AWM filter* will access the Copy Filter operation. For details, refer to *AFM element data, 8.0 Copy filter*, page 150.

AWM ELEMENT DATA

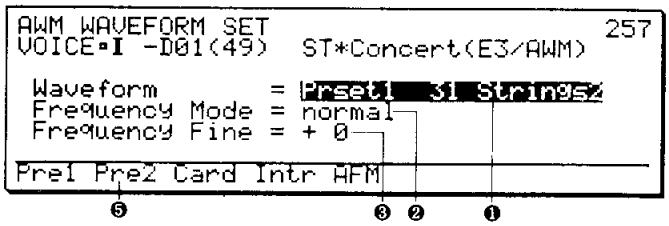
2. AWM waveform set

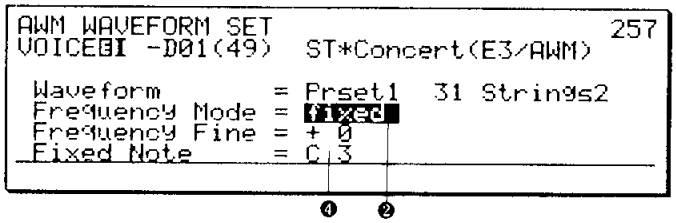
JUMP #257

Summary: Select an AWM waveform and specify the pitch at which it will sound.

Procedure:

From: AWM Element job directory (JUMP #256)
Select: job 02:WaveSet (JUMP #257)
Specify: the waveform and frequency





❶ Waveform: Select an AWM waveform from internal preset memory (Pre1, Pre2), a waveform card (Card), a waveform consisting of user-loaded samples (Intr), or the waveform produced by the output of the AFM element (AFM). When the cursor is located at Waveform, you can press a function key F1–F5 to select the waveform type. For details, refer to the following explanations of *Waveform=*.

❷ Frequency Mode (normal, fixed): When this is set to "normal", each note of the keyboard will play the selected waveform at a different pitch. When this is set to "fixed", the waveform will be played back at the pitch specified by ❹ Note Number regardless of which note was played.

❸ Frequency Fine (–64...+63): This is a fine adjustment of the waveform pitch.

❹ Note Number (C-2...G8): This setting will appear only if frequency mode ❷ has been set to "fixed". This setting determines the pitch at which the selected waveform will be played back. When the cursor is located at Note Number, you can press F8 (Kbd) and then press a key to specify the note number.

❺ When the cursor is located at Waveform ❶, you can press a function key F1–F5 to select the waveform type. Pressing F1–F3 will select Preset 1, Preset 2, or Card waveforms. If the contents of a waveform card have been loaded into sample memory by the *Card utility 4.Load from wave card* operation (page 264), or if you have created waveforms from samples that were loaded into sample memory from disk or via MIDI sample dump, pressing F4 (Intr) will select these waveforms. If the voice mode is 09:1AFM&1AWM or 10:2AFM&2AWM, pressing F5 (AFM) will select the waveform produced by the output of the AFM element. For details, refer to the following explanations of *Waveform=*.

Waveform = Preset 1/2: The 8 Mbytes (4 Mwords) of preset waveforms in internal ROM are organized as follows.

Preset 1

No.	WaveForm
1	Piano
2	Trumpet
3	MuteTp 1
4	MuteTp 2
5	Horn
6	Flugel
7	Trombone
8	Tuba
9	Brass
10	BrsFall
11	Tenor1
12	Tenor2
13	Alto Sax
14	Baritone
15	Soprano
16	Tenors
17	Flute
18	Clarinet
19	Piccolo
20	Reed Wv
21	Basoon
22	Recorder
23	MtReedWv
24	PanFlute
25	Violin
26	Cello
27	ContraBs
28	Pizz
29	SectPizz
30	Strings1
31	Strings2
32	StringsL
33	StringsR
34	Organ 1
35	Organ 2
36	E.P.Wv1
37	E.P.Wv2
38	Clavi 1
39	Clavi 2

No.	WaveForm
40	Celesta
41	Harpsi
42	Pipe Wv
43	AnlgBrs1
44	AnlgBrs2
45	AnlgBrs3
46	Pad 1
47	Pad 2
48	AnlgBass
49	FrtlsSyn
50	Chorus
51	Chorus L
52	Chorus R
53	Itopia
54	Choir
55	OohChoir
56	Vibe
57	Marimba
58	Tubular
59	Xylophon
60	Glocken
61	SteelDrm
62	HandBell
63	Shamisen
64	Koto
65	Harp
66	Sitar
67	E.Bass 1
68	E.Bass 2
69	E.Bass 3
70	ThmpBass
71	SlapBass
72	Fretless
73	WoodBass
74	GtrSteel
75	GtrNylon
76	12string
77	EG Sng1
78	EG Humbk

No.	WaveForm
79	EG Harm1
80	EG Harm2
81	EG Mute
82	EG Comp
83	EG Dist
84	EG Pluk1
85	EG Pluk2
86	BD 1
87	BD 2
88	BD 3
89	BD 4
90	BD 5
91	BD 6
92	BD 7
93	BD 8
94	SD 1
95	SD 2
96	SD 3
97	SD 4
98	SD 5
99	SD 6
100	SD 7
101	SD 8
102	SD 9
103	SD Side
104	Tom 1
105	Tom 2
106	Tom 3
107	Tom 4
108	Tom 5
109	Tom 6
110	HH foot
111	HH light
112	HH mid
113	HH heavy
114	HH open
115	HHclAnlg
116	HHopAnrg
117	Crash

No.	WaveForm
118	Ride
119	Choke
120	Claps 1
121	Claps 2
122	Cowbell1
123	Cowbell2
124	Tambrn
125	Shaker
126	FngrSnap
127	AnlgPerc
128	NoisePrc
129	Scratch
130	Agogo
131	Berimbau
132	Bongo
133	Cabasa
134	Cga Hi
135	CgaHiSlp
136	Cga Lo
137	CgaLoSlp
138	Clave
139	Guiro 1
140	Guiro 2
141	Maracas
142	SD roll
143	Tabla Hi
144	Tabla Lo
145	Temple
146	Timbale1
147	Timbale2
148	Timpani
149	Whisle
150	Belltree
151	BDs Wv
152	SDs Wv
153	Toms Wv
154	CymbalWv
155	Drums Wv

Preset 2

No.	WaveForm
1	Piano Np
2	E.P. Np
3	Vibe Np
4	DmpPiano
5	Bottle 1
6	Bottle 2
7	Bottle 3
8	Tube
9	Vocal Ga
10	Vocal Ba
11	Sax tran
12	Bow tran
13	Blub
14	Tear
15	Bamboo
16	Cup Echo
17	Digi Atk
18	Temp Ra
19	Giri
20	Water
21	Steam
22	Narrow
23	Airy
24	Styroll
25	Noise
26	Bell Mix
27	Haaa
28	OhAttack

No.	WaveForm
29	Typist
30	BellRing
31	SeqLatin
32	EleMagic
33	Vox Bell
34	Mellow
35	BigSyn L
36	BigSyn R
37	VoxGrace
38	Cry Bell
39	Voices
40	AnlgSaw1
41	AnlgSaw2
42	CS Saw
43	CS Sqr
44	Digital1
45	Digital2
46	Digital3
47	Digital4
48	Digital5
49	Digital6
50	Digital7
51	Digital8
52	Digital9
53	Digitl10
54	Digitl11
55	Digitl12
56	DigiVox1

No.	WaveForm
57	DigiVox2
58	DigiVox3
59	DigiVox4
60	DigiVox5
61	Pluse 10
62	Pluse 25
63	Pluse 50
64	Tri
65	DigiWild
66	Stuff 1
67	Stuff 2
68	Stuff 3
69	Stuff 4
70	Stuff 5
71	Stuff 6
72	Stuff 7
73	Stuff 8
74	Stuff 9
75	Stuff 10
76	Stuff 11
77	Stuff 12
78	Stuff 13
79	Stuff 14
80	Stuff 15
81	Stuff 16
82	Stuff 17
83	Stuff 18
84	Stuff 19

No.	WaveForm
85	Stuff 20
86	Stuff 21
87	Stuff 22
88	Stuff 23
89	Stuff 24
90	Stuff 25
91	Stuff 26
92	Stuff 27
93	Stuff 28
94	Stuff 29
95	Stuff 30
96	Stuff 31
97	Stuff 32
98	Stuff 33
99	Stuff 34
100	Stuff 35
101	Stuff 36
102	Stuff 37
103	Stuff 38
104	Stuff 39
105	Stuff 40
106	Stuff 41
107	Stuff 42
108	Stuff 43
109	Stuff 44
110	Stuff 45
111	Stuff 46
112	Stuff 47

AWM ELEMENT DATA

2.0 Waveform edit

Summary: Using these functions, you can edit the samples that have been loaded into the internal sample memory, and assign them as waveforms.

Procedure:

When: internal waveforms have been selected by pressing F4 from waveform set (JUMP #257)

Press: F8 (Edit).

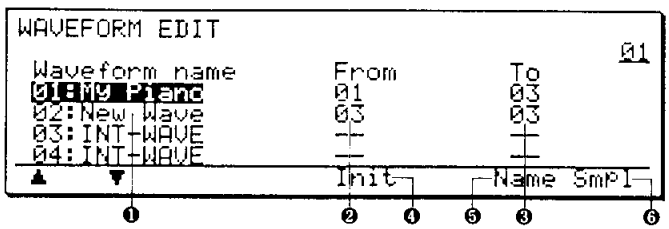
Select: a waveform to edit.

Specify: the first and last samples used by the waveform.

To clear: the sample assignments for the waveform, press F5 (Init).

To rename: the waveform, press F7 (Name).

To edit: sample data, press F8 (Smpl).



❶ This area displays the names and numbers of internal waveforms (1-64). Move the cursor or use the numeric keys to select a waveform. If necessary, press F1 or F2 to scroll the display.

❷ Move the cursor to the "From" column to specify the first sample used by the selected waveform.

❸ Move the cursor to the "To" column to specify the first sample used by the selected waveform. (The samples used by a waveform must be consecutive.)

❹ To initialize the currently selected waveform, press F7 (Init). For details refer to the following section *Initialize waveform.*

❺ To rename the currently selected waveform, press F7 (Name). For details refer to the following section *Waveform name.*

❻ To edit samples or change the sample assignment for the currently selected waveform, press F8 (Smpl). Refer to the following section *Sample assign.*

To copy samples: Samples may be copied within the sample memory using the sample utility function (JUMP #827) described in *Sample utility 1.Sample directory,* page 275.

To load samples: To load samples via MIDI sample dump, simply connect the MIDI OUT of the transmitting device to the MIDI IN of the SY99, and make the transmitting device transmit a sample dump. The SY99 can receive sample dumps at any time, regardless of the mode it is in.

To load sample data from a floppy disk, use the operation described in *Sample utility 3.Load from disk,* page 277. To load waveform data from a waveform card, use the operation described in *Card utility 4.Load from wave card,* page 264. Samples from disks and waveform cards may be edited; keep in mind, however, that sample data loaded to the SY99 from waveform cards and copy-protected disks cannot be saved to disk or output via MIDI sample dump.

Before samples can be used in an AWM element, they must be assigned to a waveform. Refer to the following section *Sample assign.*

Remarks: When referring to this and the following sections, keep in mind the difference between samples and waveforms:

A sample is a piece of digitally recorded sound. You can load up to 99 user samples from disk or via MIDI sample dump, and adjust the pitch, volume, and loop mode of each sample. (It is not possible to edit the samples of a preset or card waveform.)

A waveform consists of one or more samples assigned across the keyboard. You can create 64 user waveforms by specifying a range of samples to assign to the waveform, the key range sounded by each sample, and the key at which each sample will sound its original recorded pitch. (It is not possible to edit preset or card waveforms.) Refer to the following section *2. (F8) Sample assign.*

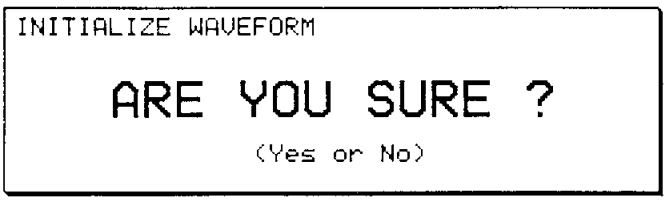
AWM ELEMENT DATA / WAVEFORM EDIT

2. (F5) Initialize waveform

Summary: You can initialize the currently selected waveform using this function.

Procedure:

From: Waveform edit
Press: F7 (Name)
To execute: initialization press YES.
To quit: without initializing press NO.



This function initializes all sample assignments for the currently selected waveform.

If you are sure you want to initialize the waveform, press YES.

When a waveform is initialized, it is renamed "INT-WAVE" automatically. Dashes are displayed in the "From" and "To" columns for initialized waveforms when the Waveform edit function is selected.

Remark: This function initializes the settings for a single waveform only. It does not initialize the SY99's internal sample memory. To initialize sample memory, use the initialize sample procedure described in *Sample utility 5.Initialize sample*, page 278.

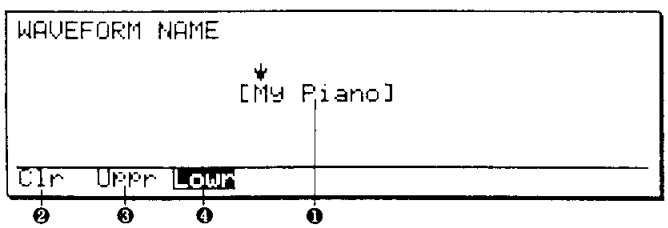
AWM ELEMENT DATA / WAVEFORM EDIT

2. (F7) Waveform name

Summary: You can use this function to change the names of internal waveforms.

Procedure:

From: Waveform edit
Press: F7 (Name)
Specify: the waveform name.



❶ Enter an eight-character name for the waveform.
❷ To clear the currently entered name press F1 (Clr).
❸ To switch to upper-case letters press F2 (Uppr).
❹ To switch to lower-case letters press F3 (Lowr).

Remarks: Methods of entering character data are explained in *How to enter character data*, page 30.

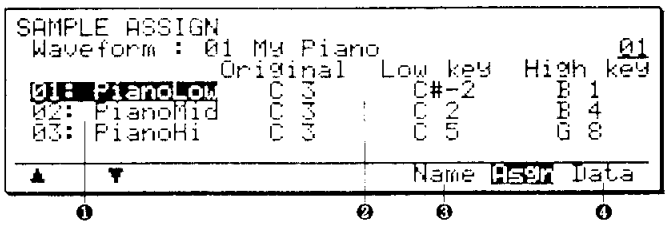
AWM ELEMENT DATA / WAVEFORM EDIT

2. (F8) Sample assign

Summary: Here you can edit the original key, key range, volume, pitch, and loop settings for each sample.

Procedure:

From: waveform edit
Press: F8 (Smpl)
Select: one of the samples assigned to the currently selected waveform.
Specify: the original, low key, and high key assignments for the selected sample.
To rename: the sample, press F7 (Name).
To edit: the volume, pitch and loop settings for the sample, press F8.



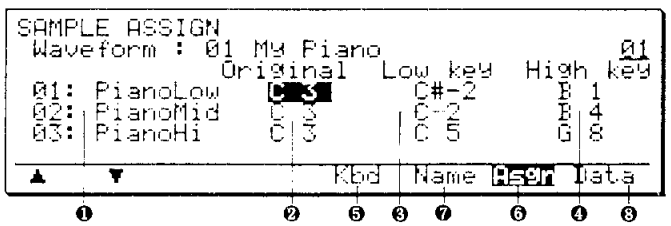
❶ This area displays the names and numbers of the samples that are contained in the SY99's internal sample memory. Move the cursor or use the numeric keys to select a sample. If necessary, press F1 or F2 to scroll the display.

❷ To edit the original key and key range assignments of a sample, move the cursor to one of the columns labelled "Original," "Low key," and "High key." For details, refer to the following *Sample assign* explanation.

❸ To rename the selected sample press F6 (Name). For details, refer to *How to enter character data*, page 30.

❹ To edit the currently selected sample press F8 (Data). For details refer to the following section, *Sample edit*.

Sample assign: After selecting a sample, move the cursor to one of the columns labelled "Original," "Low key," and "High key" to edit the key range and original pitch key assignments of each sample in the waveform. The "Kbd" label will appear for function key F5, as shown below:



❶ This area displays the names and numbers of the samples that are contained in the SY99's internal sample memory.

❷ Original (C-2...G8): The sample will be played back at its original recorded pitch at this key.

❸ Low key (C#-2...G8): This is the lowest key of the range for which this sample will be played back.

❹ High key (C#-2...G8): This is the highest key of the range for which this sample will be played back. Note that the high key of a sample is always one key below the low key of the next sample. It is not possible to overlap samples in a waveform or to leave gaps between them.

❺ If five or more samples have been assigned to the currently selected waveform, use F1 (△) or F2 (▽) to scroll the display through the samples in the waveform.

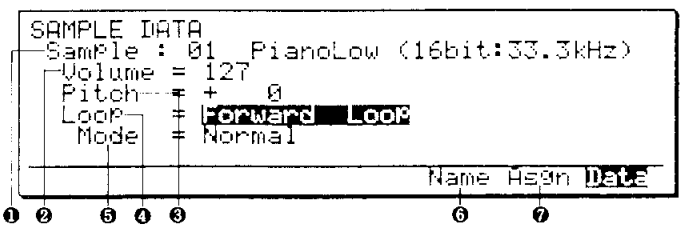
❻ To set a parameter in ❷, ❸, or ❹, you can press F7 and then press a note to enter it as the new setting.

❼ To rename the selected sample press F6 (Name). For details, refer to *How to enter character data*, page 30.

❽ To edit the currently selected sample press F8 (Data). For details refer to the following section, *Sample edit*.

When you finish making key assignments for a sample, press EXIT to return to the *Waveform assign* display.

Sample edit: After selecting a sample, press F8 (Edit) to set the pitch, volume, loop type, and loop mode of the sample. A display similar to the following will appear:



❶ This area displays the number and name of the sample. If the sample is not copy-protected, its resolution and sampling rate will be displayed here as well.

❷ Volume (+0...+127): Adjust the sample volume.

❸ Pitch (–5376...+5376): Adjust the pitch of the sample. (The range in which the pitch can be adjusted may be smaller for certain samples.)

❹ Loop type. One of the following four loop types may be selected: forward once, forward loop, backward once, or backward loop. Specify the direction (forward or backward) in which the sample will be played back, and whether the sample will play once ("...once") or continue looping as long as a key is pressed ("...loop").

❺ Loop mode. This parameter will appear on the display only if a "...loop" mode was selected in ❹. If "normal" looping is selected, the sample will play back continuously in the specified direction. If "alter" looping is selected, the sample will play back alternately forward and backward.

For a sample of "abc", the loop type and mode settings would produce the following results:

Forward only:	abc
Backward only:	cba
Forward loop (normal):	abcabcabca...
Backward loop (normal):	cbacbacbac...
Forward loop (alter):	abccbaabccba...
Backward loop (alter):	cbaabccbaabc...

❻ To rename the selected sample press F6 (Name). For details, refer to *How to enter character data,* page 30.

❼ To return to *Sample assign* to change the key assignments for the currently selected sample, press F7 (Asgn). For details refer to the preceding section, *Sample assign*.

When you finish editing sample data, press EXIT to return to the *Waveform assign* display.

Remark: Some samples loaded from external devices may produce noise when played using the SY99. Try changing the parameter settings of such samples using the external devices.

AWM ELEMENT DATA

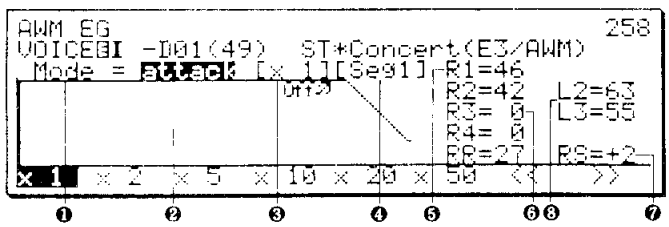
3. AWM EG

JUMP #258

Summary: This determines how the volume of an AWM element will change over time.

Procedure:

From: AWM Element job directory (JUMP #256)
Select: job 03:EG. (JUMP #258)
Specify: volume EG parameters



❶ EG Mode (Mode = hold, attack): This setting determines whether the first segment of the AWM EG will begin from level 0 (attack mode) or from maximum level (hold mode).

❷ The AWM EG is graphically displayed.

❸ This indicates the time range of the EG graphic display; "x1" displays the shortest time with the greatest detail. To change the time range, press F1–F6 (x1, x2, x5, x10, x20, x50).

❹ This indicates the segment from which the EG is displayed. To begin the graphic display from a different segment, press F7 or F8 to select Seg1...Seg4 or Rel1.

❺ Hold Time or Rate 1 (HT=63...0 or R1=0...63): If the EG Mode is set to "hold" this will determine the Hold Time for which the level of the waveform is held at maximum. A setting of HT=63 results in the longest time. If the EG Mode is set to "attack" this will determine Rate 1 of the EG. A R1 setting of 63 results in the fastest attack.

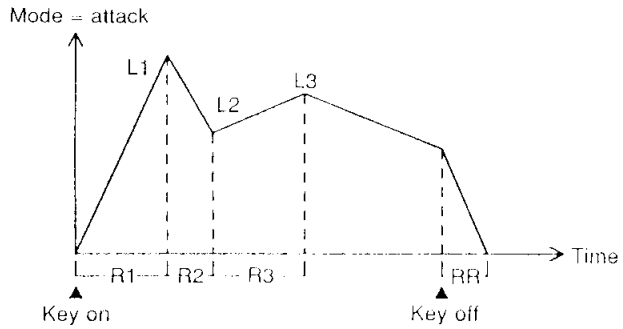
❻ Keyon Rate 2–4, Release Rate (R2–R4 = 0...63, RR = 0...63): These settings determine the speed of the operator EG. Higher values result in faster change.

❼ Rate Scaling (RS = –7...+7): Rate Scaling allows the operator EG rates to be increased or decreased depending on the key that is played. For positive settings the EG rates will increase as you play higher notes, resulting in shorter envelopes. For negative settings the EG rates will decrease as you play higher notes, resulting in longer envelopes.

❽ Keyon Levels 2–3 (L2–L3 = 0...63): These determine the levels of the AWM EG. There is no L1 setting since the AWM EG either begins from 0 and moves toward maximum level (in attack mode), or begins at maximum level and stays there until the hold time has elapsed (hold mode). Nor is there a L4 setting since the level of the AWM EG immediately begins to move toward 0 after reaching L3. If you want the sound to continue sustaining as long as you

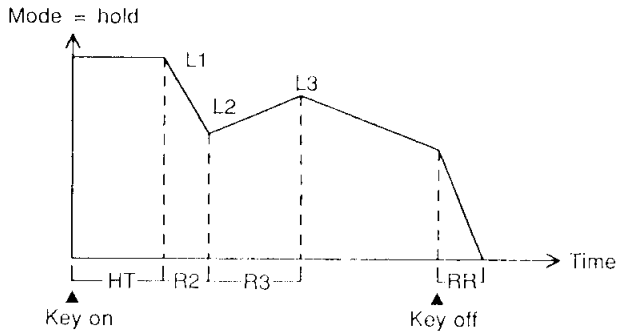
press a key, set R4 to 0. However some AWM waveforms naturally decay to zero, so setting R4 to 0 will not make these waveforms sustain.

Rates and Levels: The AWM EG will function in two ways depending on the Mode setting.



In normal mode the AWM EG level will begin from 0 and rise at the rate of R1 to maximum level. When maximum level is reached it will move at the rate of R2 to level L2. When level L2 is reached it will move at the rate of R3 to level L3. When level L3 is reached it will begin moving at the rate of R4 to 0. (If rate R4 is 0, the sound will move at an infinitely slow rate toward zero; i.e., it will sustain at level L3 as long as the key is pressed.)

When you release the key, the level will move at the rate of RR to a level of 0.

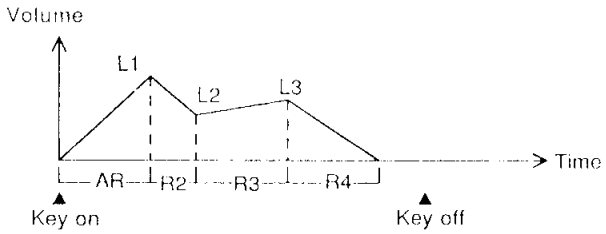


In hold mode the AWM EG level will begin at maximum and stay there for the duration of the specified hold time HT. When the hold time has elapsed, the level will change at the rate of R2 to level L2. The rest of the EG is the same as for normal mode.

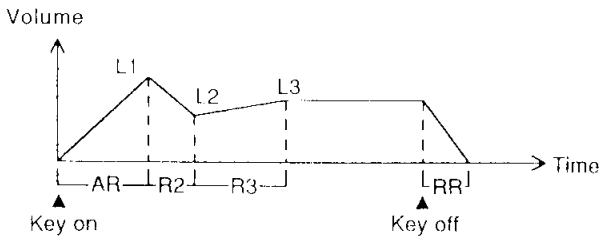
Using the AWM EG in hold mode is especially effective when you are using an AWM waveform which includes a definite attack. Keeping the level at maximum for a while allows the natural attack of the AWM sample to be heard. After the natural sampled attack is over the AWM waveform will continue sustaining, and you can use the remaining AWM EG parameters to create an appropriate decay and release.

Rate 4 and Release Rate: Rate 4 (R4) and Release Rate (RR) can be used in conjunction to create a variety of AWM EG shapes.

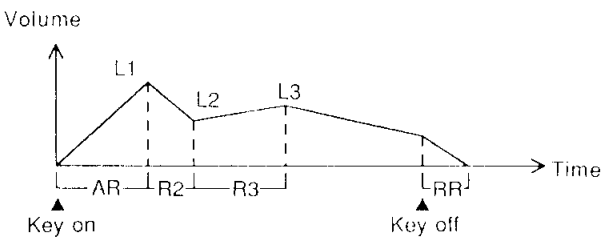
- If R4 is greater than 0 and you continue holding a note, after the level reaches L3 it will decrease at the rate R4 and will move to 0 even though you continue holding the note.



- If R4=0 and you continue holding a note, after the level reaches L3 it will stay at L3 as long as you hold the note. When you release the note, the level will decrease at the rate of RR to a level of 0.



- After reaching L3 the level will decrease at the rate R4, but when you release the note the level will begin decreasing at the rate RR.



Rate Scaling: On most acoustic instruments, high notes have a naturally shorter attack and decay. This can be simulated by setting rate scaling to a positive value (+1...+7). The following diagram shows how higher notes will have faster rates (shorter EGs). Negative settings will have the opposite effect.

AWM ELEMENT DATA

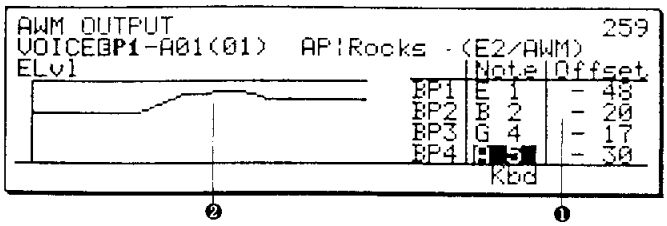
4. AWM output

JUMP #259

Summary: The output level of an AWM element can be adjusted across the keyboard.

Procedure:

From: AWM Element job directory (JUMP #256)
Select: job 04:Output. (JUMP #259)
Specify: the output level scaling



❶ Break Point 1–4 (BP1–4): Note (C-2...G8) and Offset (–127...+127) of each break point determine how the level specified in *Voice common data, 1. Element level* (JUMP #202) (page 96) will be adjusted across the keyboard. When the cursor is located at note, you can press F7 (Kbd) and press a key to enter it as the new note setting.

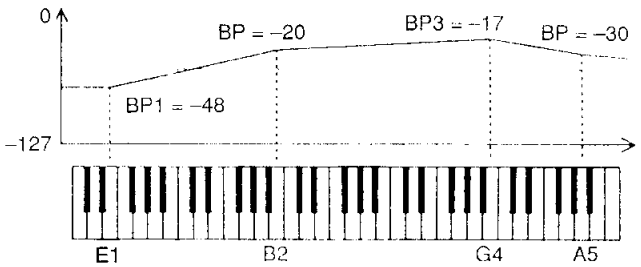
❷ The keyboard level scaling is graphically displayed.

Break Point: The AWM output level can be adjusted according to the note that is played. On most acoustic instruments, notes differ in volume and tone depending on the range in which they are played. For example, the low notes of a piano are louder than the high notes.

Use the four break points to specify how the AWM output level will be adjusted across the keyboard. Offset (–127...+127) determines the output level adjustment for each of the four points specified by the note (C-2...G8).

The four note settings must be in ascending order. It is not possible to set a break point to a note lower or higher than the note settings of the neighboring break points.

The following diagram shows how the AWM output level would be adjusted across the keyboard for the settings shown in the above LCD.



Each offset is added to the element level (80 in this example). For example the offset at break point 1 (E1) is –4, so the resulting element level at E1 is 76. The resulting element level is limited to the range of 0...127.

AWM ELEMENT DATA

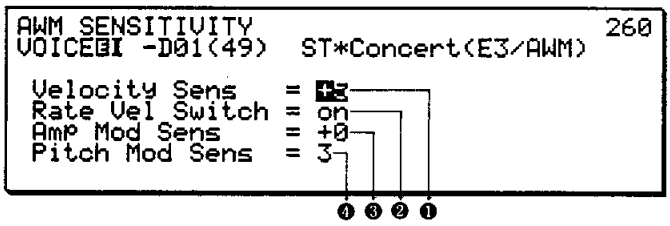
5. AWM sensitivity

JUMP #260

Summary: These settings determine how the AWM element will be affected by key-on velocity and by the LFO.

Procedure:

From: AWM Element job directory (JUMP #256)
Select: job 05:Sensitv (JUMP #260)
Specify: sensitivity to velocity and modulation



❶ Velocity Sensitivity (–7...+7): This determines how the output level of the AWM element will be affected by key-on velocity. For positive settings (+1...+7) the output level will increase as you play more strongly. For negative settings (–1...–7) the output level will decrease as you play more strongly. For negative settings to have an effect the element level must be lowered.

❷ Rate Velocity Switch (on, off): When the Rate Velocity switch is on, key-on velocity will affect the AWM EG attack rate (R1). The effect will depend on the Velocity Sensitivity setting.

Velocity = +1...+7: If Rate Velocity is on, strongly played notes will cause the AWM R1 to increase, resulting in a faster attack. For the strongest possible velocity, the EG attack will change at the speed specified by the EG R1 setting.

Velocity = –1...–7: If Rate Velocity is on, strongly played notes will cause the AWM R1 to decrease, resulting in a slower attack.

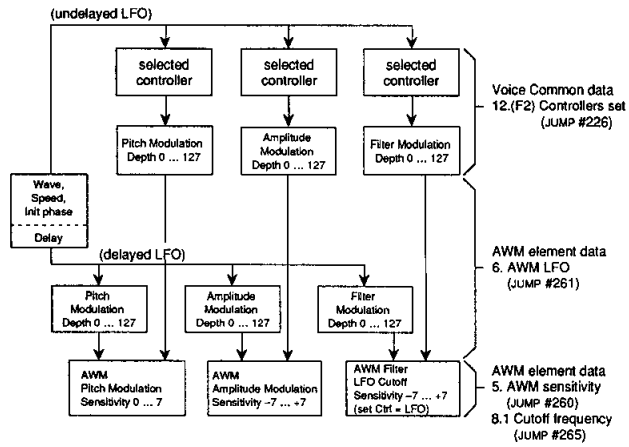
When the Rate Velocity switch is off, the AWM EG attack rate will not be affected by key-on velocity.

❸ Amplitude Modulation Sensitivity (Amp Mod Sens = –7...+7): Amplitude Modulation Sensitivity determines how greatly the output level of the AWM element will be affected by Amplitude Modulation from the LFO. Increasingly higher positive settings (+1...+7) will allow the LFO to have a greater effect.

Negative settings (–1...–7) are effective only for EG Bias. When Amplitude Modulation Sensitivity is set to a negative value, the controller assigned to EG Bias by the setting in *Voice common data, 12. (F4) Controller set* (JUMP #228) (page 130) will decrease the amplitude of the AWM element, and the LFO will have no effect. For example, two AWM elements in a voice might be given opposite Amplitude Modulation Sensitivity settings, so that the controller assigned to *EGbiasDepth* would crossfade between the two elements.

❹ Pitch Modulation Sensitivity (Pitch Mod Sens = 0...7): Pitch Modulation Sensitivity determines how greatly the pitch of the AWM element will be affected by Pitch Modulation from the LFO.

Amplitude Modulation Sensitivity and Pitch Modulation Sensitivity: These settings determine the *sensitivity* of the AWM element to the Amplitude Modulation Depth (AMD) and/or Pitch Modulation Depth (PMD) produced by the AWM element LFO. If the LFO settings for AMD and/or PMD are set to 0, these settings will have no effect.



AWM ELEMENT DATA

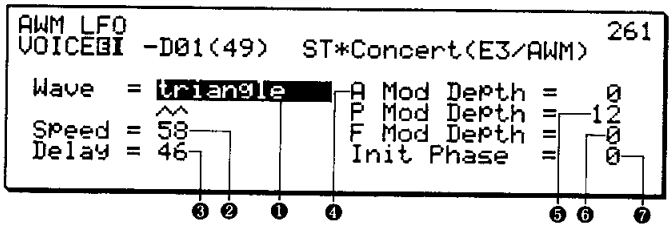
6. AWM LFO

JUMP #261

Summary: The AWM element LFO creates a cyclically changing control signal that can be used to create tremolo (Amplitude modulation), vibrato (pitch modulation), and wah-wah (filter modulation).

Procedure:

From: AWM Element job directory (JUMP #256)
Select: job 06:LFO (JUMP #261)
Specify: the LFO parameters



❶ Wave (triangle, saw down, saw up, square, sine, sample&hold): This selects the wave (shape of modulation) produced by the AWM LFO. The selected wave is graphically displayed in the LCD. When sample&hold is selected, the LFO will produce a control signal whose level will change randomly at intervals of time determined by the Speed setting.

❷ Speed (0...99): The speed of the LFO modulation. Higher settings result in faster modulation. At a setting of 0, one cycle will be approximately 34 seconds.

❸ Delay (0...99): The time delay before the LFO modulation begins.

❹ Amplitude Modulation Depth (0...127): This determines how greatly the LFO will affect the output level (amplitude) of the operators.

❺ Pitch Modulation Depth (0...127): This determines how greatly the LFO will affect the pitch of the operators.

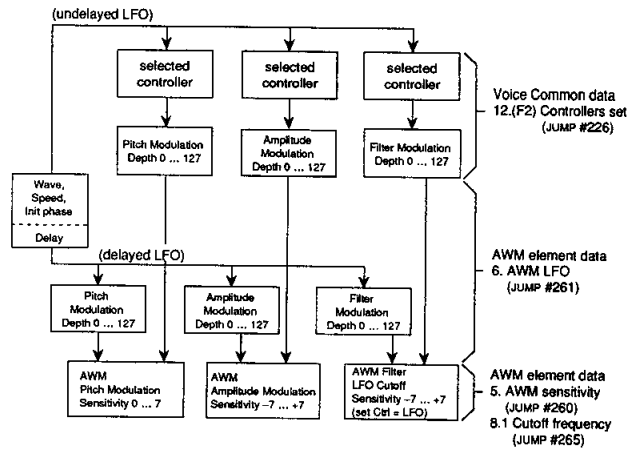
❻ Filter Modulation Depth (0...127): This determines how greatly the LFO will affect the cutoff frequency of the filter.

❼ Initial Phase (0...99): This determines the point of the LFO waveform from which the LFO will start each time a key is pressed.

Wave, Speed, Delay, Initial Phase: Detailed explanations and diagrams of these parameters are given in *AFM element job 6.1 LFO (Main)* (page 146).

Amplitude Modulation Depth and Pitch Modulation Depth: For these setting to have an effect, the AModSens (amplitude modulation sensitivity) or PModSens (pitch modulation sensitivity) of the AWM element must be set above 0. Make these settings in *AWM element job 5. AWM sensitivity* (JUMP #260).

Filter Modulation Depth: For this setting to have an effect, the Ctrl setting of a filter must be set to "LFO", and the LFO Cutoff Sens setting must not be 0. Make these settings in *AWM element data, 8.1 Cutoff frequency* (JUMP #265).



AWM ELEMENT DATA

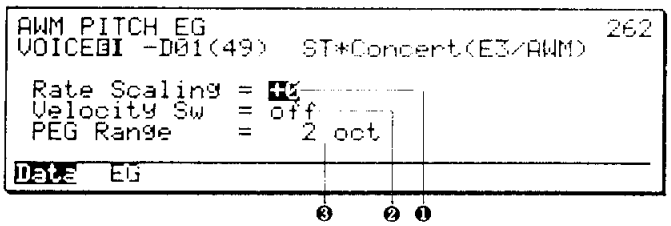
7. (F1) AWM pitch EG (Data)

JUMP #262

Summary: The pitch change over time created by the pitch EG can be affected by key-on velocity and the speed of pitch change can be adjusted across the keyboard. To set the shape of the pitch EG, see *7. (F2) AWM pitch EG (EG).*

Procedure:

From: AWM Element job directory (JUMP #256)
Select: job 07:PitchEG and press F1 (Data) (JUMP #262)
Specify: pitch EG scaling, velocity, and range



❶ Rate Scaling (–7...+7): Pitch EG Rate Scaling determines how pitch EG rates will change according to the note played. When this is set to +1...+7, the pitch EG will be faster for higher notes. When this is set to –1...–7, the pitch EG will be slower for higher notes. When this is set to 0, the pitch EG will be the same rate for all notes.

❷ Velocity Sw (off, on): When this is on, strongly played notes will change in pitch more than softly played notes.

❸ Range (1/2 oct, 1 oct, 2 oct): This determines the maximum range of the AWM pitch EG, from 1/2 octave to 2 octaves. (Note that the 8 octave range of the AFM pitch EG is not available for the AWM pitch EG.)

Rate Scaling: This setting determines how Pitch EG Rates (the speed of pitch change) will be affected by the key number of each note. The following diagram shows the result when Pitch EG Rate Scaling is set to +7. Notice that high notes have a shorter pitch EG (faster EG rates) than lower notes.

Velocity Sw (velocity switch): When this is on, strongly played notes will change in pitch more than softly played notes.

AWM ELEMENT DATA

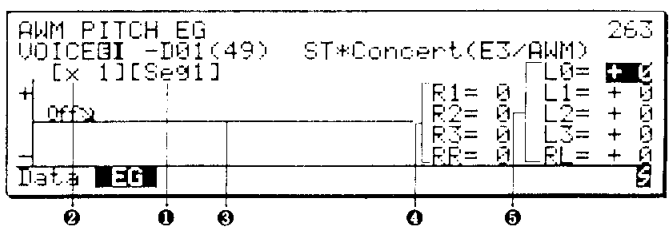
7. (F2) AWM pitch EG (EG settings)

JUMP #263

Summary: The pitch EG creates a fixed shape of pitch change over time for each note. To adjust speed of pitch change across the keyboard, see *7. (F1) AWM pitch EG (Data).*

Procedure:

From: AWM Element job directory (JUMP #256)
Select: job 07:PitchEG and press F2 (EG) (JUMP #263)
Specify: pitch EG parameters



❶ This indicates the time length shown by the graphic display. To change this, hold SHIFT and press F1–F6 (x1, x2, x5, x10, x20, x50). The exact length of time will depend on the range. When the pitch EG range is 1 octave, the graphic display will cover approximately 0.5 seconds at "x1" and approximately 5 seconds at "x50".

❷ This indicates the EG segment ("seg1–3" or "rel1") from which the pitch EG graphic display begins. If the EG is too long to be fully shown in the LCD, hold SHIFT and press F7 or F8 to change the segment from which the display begins.

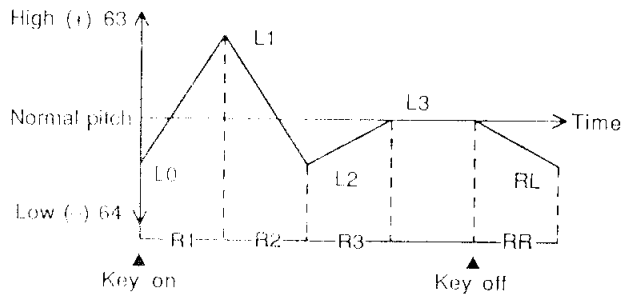
❸ The pitch EG is graphically displayed.

❹ R1–R3, RR1 (0...63): Keyon Rates 1–3 and the Release Rate determine the speed of the pitch EG. Higher settings result in faster change. A rate of 63 will jump immediately to the following level.

❺ L0–L3, RL (–64...+63): Keyon Levels 0–3 and the Release Level determine the levels of the pitch EG. Positive settings raise the pitch and negative settings lower the pitch.

Rates and Levels: When you press a key, the pitch will begin at the level of L0, and will change at the rate of R1 to level L1. When the level reaches L1, the pitch will change at the rate of R2 to the level of L2. When the pitch reaches L2, it will change at the rate of R3 to the level of L3 and will stay at L3 as long as the key is pressed.

When the key is released, the pitch will change at the rate of RR to the level of RL.



Note: Even if the AWM pitch EG and the AFM pitch EG have identical Rate settings, there will be slight differences in the timing of the pitch change.

AWM ELEMENT DATA

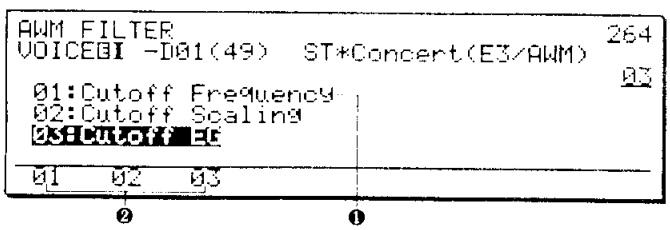
8. AWM filter

JUMP #264

Summary: The two filters of each element can be used to control the tone in various ways.

Procedure:

From: AWM Element job directory (JUMP #256)
Select: job 08:Filter (JUMP #264)
Specify: the desired filter edit job and press ENTER



❶ Move the cursor in this area to select a job and press ENTER to move to the selected job.

01: Cutoff Frequency: Make overall settings for the filters. (JUMP #265)

02: Cutoff Scaling: Specify how each filter will be adjusted across the keyboard. (JUMP #266, #267)

03: Cutoff EG: Specify how each filter will change over time. (JUMP #268, #269, #270, #271)

❷ Pressing F1–F3 will select the corresponding job.

Note: Filter settings for an AWM element are exactly the same as for an AFM element. For details, refer to AFM element job 8. AFM filter, on pages 149–153.

AWM ELEMENT DATA

15. Initialize AWM element

Summary: Initialize the AWM Element data being edited to a set of basic values.

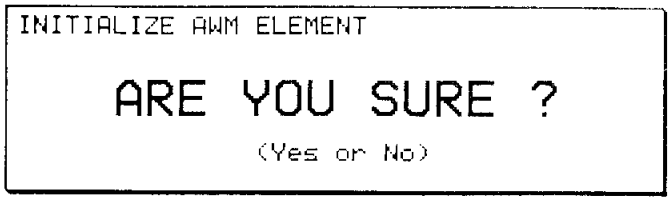
Procedure:

From: AWM Element job (JUMP #256)

Select: job 15:Initlz

To execute: the initialize operation press YES

To quit: without initializing press NO or EXIT



This function sets all AWM element data values to the minimum or simplest possible settings. When creating your own new voices it is usually best to begin by editing an existing voice. However if you want to start from scratch, it is often useful to start from an initialized setting rather than having to re-set all the parameters.

If you are sure you want to initialize the AWM element data, press YES. The AWM element data being edited will be set to the values shown below. If you decide not to initialize, press NO.

This function initializes only AWM element data. Other initialize functions are provided for initializing Voice Common data and AFM element data. Refer to *Voice Common 15. Initialize* (page 132) and *AFM Element 15. Initialize* (page 154).

Initialized settings for AWM Element data

02 AWM Waveform Select
- Waveform = Preset 65 (triangle wave)
- Frequency Mode = normal
- Fixed Mode Note # = C3
- Frequency Fine = ±0

03 AWM Amplitude EG
- Mode = normal
- Keyon Rates 1, 2, 3 = 63
- Keyon Rate 4 = 0
- Keyoff Rate 1 = 63
- Rate Scaling = ±0
- Keyon Level 2, 3 = 63

04 AWM Output
- Break Point 1 Note = C1
- Break Point 2 Note = G2
- Break Point 3 Note = E4
- Break Point 4 Note = C6
- BP1–4 Offset = ±0

05 AWM Sensitivity
- Velocity Sens = ±0
- Rate Velocity Switch = off
- AMS = 0
- PMS = 3

06 AWM LFO
- Wave = Triangle
- Speed = 65
- Delay Time = 0
- AMD, PMD, FMD = 0
- Init Phase = 0

07 AWM Pitch EG
- Rate Scaling = ±0
- Velocity Switch = off
- Range = 2 octaves
- Keyon Rates 1–3 = 63
- Keyon Levels 0–3 = ±0
- Keyoff Rate 1 = 63
- Keyoff Level 1 = ±0

08 AWM Filter
- Resonance = 0
- Cutoff Mod Sens = ±0
- Keyon Velocity Sens = ±0

*** following data is same for both filters ***
- Filter Type = thru
- Filter Control = LFO
- Cutoff Frequency = 127
- Break Point 1 Note = C1
- Break Point 2 Note = G2
- Break Point 3 Note = E4
- Break Point 4 Note = C6
- Break Point Offset = 0 (BP 1–4)
- Keyon Rates 1–4 = 63
- Keyoff Rates 1–2 = 63
- Rate Scaling = ±0
- Keyon Levels 0–4 = ±0
- Keyoff Levels 1–2 = ±0

AWM ELEMENT DATA

16. Recall voice

Summary: Recall all data of the previously edited voice.

Procedure:

From: AWM Element job directory (JUMP #256)
Select: job 16:Recall
To execute: the recall operation press YES
To quit: without executing press NO or EXIT.

Note: *This operation recalls all voice data, not just AWM element data, and is also available while editing Common data, AFM element data, or Drum Set data. For details refer to Voice common data, 16. Recall voice.*

Drum set data

DRUM SET DATA

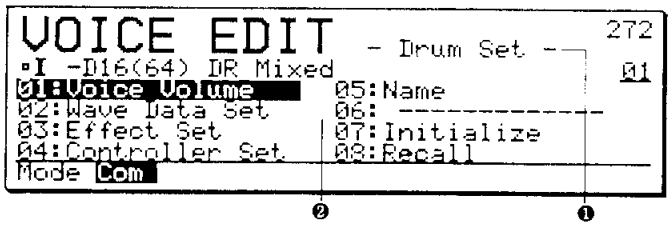
Drum set job directory

JUMP #272

Summary: This job directory shows the jobs containing data for a drum voice.

Procedure:

From: voice edit mode (JUMP #200)
When: the Voice Mode is set to 11:Drum Set
Select: the drum set job directory (JUMP #272)
F2 (Com)



❶ This area indicates that "Drum Set" is the selected voice mode.

❷ Move the cursor in this area to select a job and press ENTER to go to the selected job.

01: Voice Volume: Adjust the overall volume of the entire drum voice.

02: Wave Data Set: Select a waveform for each key of the SY99's 76-note keyboard, and specify tuning and pan for each.

03: Effect Set: Specify how the effect units are connected, how the sound from each note of the drum voice is sent to the effect units, parameter settings for each effect unit, and how the effect parameters are controlled in realtime.

04: Controller Set: The overall volume of a drum set voice can be adjusted using a specified controller.

05: Name: Specify a ten-character name for the voice being edited.

07: Initialize: Initialize the drum set data being edited to the basic or minimum settings.

08: Recall: Recall the previously edited voice into the editing buffer.

DRUM SET DATA

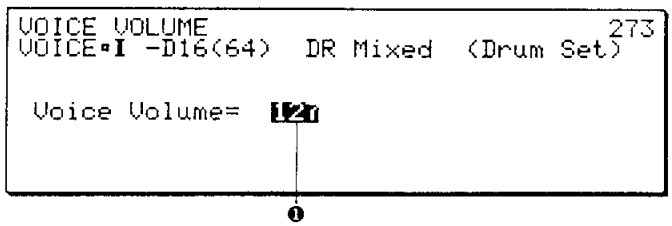
1. Voice volume

JUMP #273

Summary: Adjust the overall volume of the entire drum voice.

Procedure:

From: drum set job directory (JUMP #272)
Select: 01:Voice Volume (JUMP #273)
Specify: the volume of the entire drum set



❶ Voice Volume (0...127): This determines the overall volume of the entire drum voice.

DRUM SET DATA

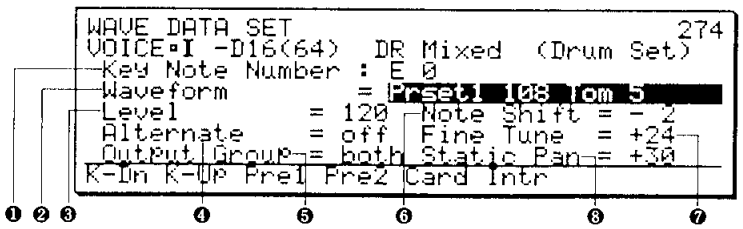
2. Wave data set

JUMP #274

Summary: Select a waveform for each key of the SY99's 76-note keyboard, and specify tuning and pan for each.

Procedure:

From: drum set job directory (JUMP #272)
Select: 02:Wave Data Set (JUMP #274)
Specify: parameters for each key note number



❶ Key Note Number (E0...G6): Press a key on the SY99 keyboard to select a key note number, and it will be displayed here. (It is not possible to move the cursor here.) You can also press F1 (K-Dn) or F2 (K-Up) to select key note numbers.

❷ Waveform (Preset 1: 1...155, Preset 2: 1...112): Select the AWM sample that will be played by the corresponding Key Note Number. A list of the preset waveforms is given in *AWM element data, 2. AWM Waveform Set* (page 157). (Internal and card waveforms may also be selected. The SY99 may contain a maximum of 64 internal waveforms. The number of waveforms available on a waveform card will vary with the card being used.)

❸ Level (0...127): This determines the volume of the waveform.

❹ Alternate (on, off): When this is "on" for two or more key note numbers, the last-played key will take priority and the waveform of the previously played key will be turned off.

❺ Output Group (off, grp1, grp2, both): Select the output group from which the waveform selected for this key note number will be output.

❻ Note Shift (–48...+36 in half steps): Adjust the tuning of the waveform in half steps.

❼ Fine Tuning (–64...+63 in units of 1.171875 cents): Adjust the tuning of the waveform in fine steps.

❽ Static Pan (–31...+31 = Left...Right): Specify the stereo position for each key note number.

Use the following two steps to make settings ❷–❽ for each note of the keyboard. Repeat the two steps as necessary.

1. Press a key on the SY99 keyboard to select a key note number. The selected key note number will be displayed in ❶.
2. Make settings ❷–❽ for the selected key note number.

Alternate: If two or more waveforms would sound unnatural if they were played at the same time, select alternate "on" for each of these waveforms. For example it is impossible for a real drum set to sound the closed hi-hat and open hi-hat at the same time. By selecting alternate "on" for the two key note numbers that play the closed hi-hat and open hi-hat waveforms, playing the closed hi-hat will make the open hi-hat stop, and vice versa.

There is only one alternate group for the entire drum voice; i.e., it is not possible to specify two or more *pairs* of key note numbers to play alternately. You may select alternate "on" for as many key note numbers as you like but they will all be in the same alternate group, and only one of them will sound at any time.

Static Pan: The stereo position of the waveform played by each key note number is determined by the static pan setting. The "dynamic" pan of AFM or AWM element can be moved over time by an EG or LFO, but the "static" pan for each key note number of a drum voice cannot be moved over time.

When using a drum set voice in a Multi, these static pan settings will be used if the multi static pan is set to "VC" (voice). Refer to *Multi edit, 5. Voice static pan*, page 191.

Output Group: The stereo signal from the static pan of each key note number is sent to output group 1, 2, or both. If output group is set "off" the waveform for that key note number will not be heard. The diagram in the following section *3.2 Effect send* shows how the Output Group setting is part of the signal flow in a drum voice.

DRUM SET DATA

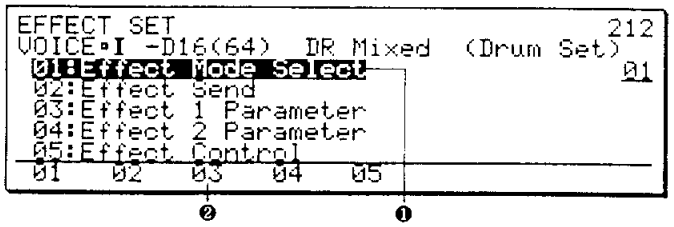
3. Effect set

JUMP #212

Summary: Specify how the effect units are connected, how the sound from each note of the drum voice is sent to the effect units, parameters for each effect unit, and how the effect parameters are controlled in realtime.

Procedure:

From: drum set job directory (JUMP #272)
Select: job 03:Effect Set (JUMP #212)
Select: the effect job you wish to edit



❶ Move the cursor in this area and press ENTER to select a job.

01: Effect Mode Select: Specify how the two effect units are connected, the effect type, and volume balance. This is exactly the same as for a normal voice. Refer to *Common Data job 10.1 Effect Mode Select*, page 106.

02: Effect Send: Specify how the sound of each element of the voice will be sent to the effect units. Refer to the following section *Drum set data 3.2 Effect Send.*

03: Effect 1 Parameter: Make settings for effect unit 1. This is exactly the same as for a normal voice. Refer to *Common Data job 10.3 Effect 1 Parameter*, page 108.

04: Effect 2 Parameter: Make settings for effect unit 2. These parameters are exactly the same as for Effect 1. Refer to *Common Data job 10.3 Effect 1 Parameter*, page 108.

05: Effect Control: Specify how effect parameters will be affected by control change messages. This is exactly the same as for a normal voice. Refer to *Common Data job 10.5 Effect Control*, page 123.

❷ Pressing F1–F5 will select the corresponding job.

Note: *Drum voice effect settings differ from normal voice effect settings only in job 2.Effect Send. A normal voice allows you to specify the effect send level for each of the one, two, or four elements. A drum voice allows you to specify the effect send level for each of the 76 keys.*

3.1 Effect mode select

JUMP #213

Summary: Specify the effect mode to determine how the two effect units are connected, the effect type for each unit, effect output levels, and the volume balance between processed and unprocessed sound.

Procedure:

From: Effect Set job directory (JUMP #212)
Select: 01:Effect Mode Select (JUMP #213)
Specify: the effect mode, effect types, and effect levels, and wet:dry balance.

Remarks: This function is exactly the same as that described for normal voices. For details, refer to *Common Data job 10.1 Effect Mode Select*, page 106.

DRUM SET DATA / EFFECT SET

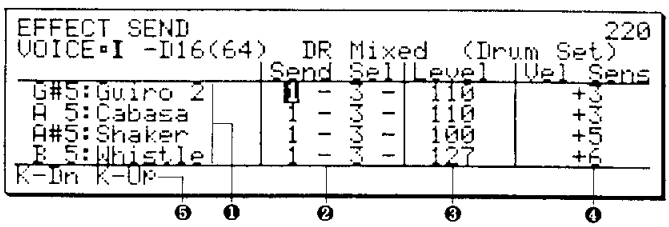
3.2 Effect send

JUMP #220

Summary: Specify how the sound from each key of the drum voice will be sent to each of the one, two, three, or four effect sends.

Procedure:

From: Effect Set job directory (JUMP #212)
When: the voice mode is "Drum"
Select: job 02:Effect Send (JUMP #220)
Specify: the effect send settings for each of the 76 keys



❶ This area displays the key names (E0–G6), and the waveform assigned to each note. (To set the waveform for each key, see *Drum set data 2.Wave data set*, page 157.) To select a key note number, you can press a key on the SY99 keyboard or press F1 (K-Dn) and F2 (K-Up).

❷ Send Sel (send select 1–4): Specify whether or not to send the sound from the key to each effect send 1–4. The number of effect sends available will depend on the effect mode and the effect type. Non-existent sends will be indicated by a dash (–), and cannot be selected. In the above display, effect sends 1 and 2 are available.

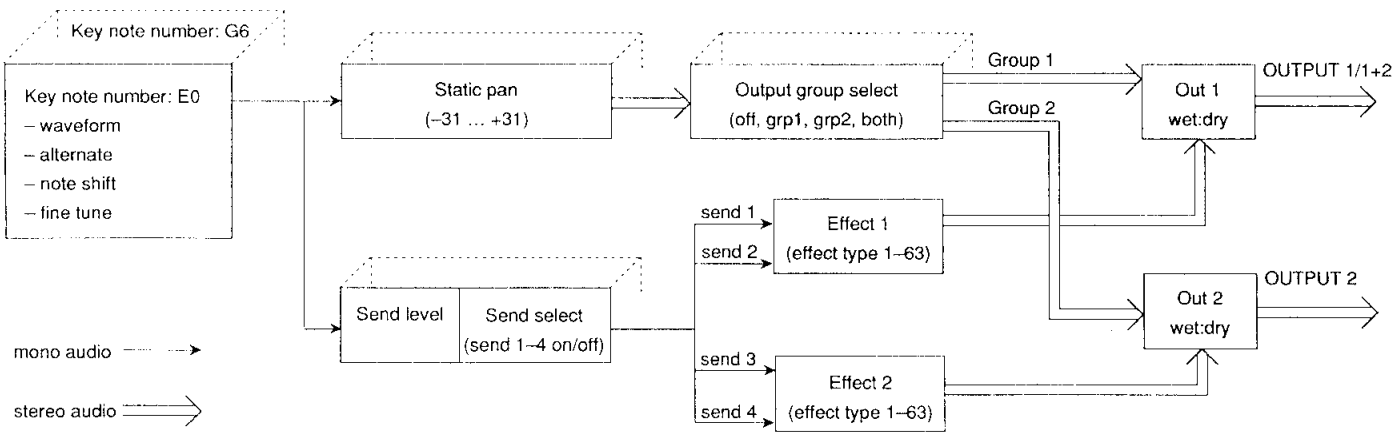
If an effect send is turned on, its number will be displayed, and the sound of the waveform assigned to that key will be sent to that effect send. If an effect send is turned off, a period (.) will be displayed, and the sound of the waveform assigned to that key will not be sent to that effect send. In the above display, C3 (SD1) is being sent to effect send 1 only, and C#3 (Tom1) is being sent to effect sends 1 and 3.

❸ Level (0–127): Specify how much sound will be sent from the element to the effect unit.

❹ Vel Sens (–7...+7): Specify how key velocity will affect the effect send level of the element. For positive settings (+1...+7), more sound will be sent to the effect unit for strongly played notes. For negative settings (–1...–7), less sound will be sent to the effect unit for strongly played notes.

❺ You can scroll through the 76 keys E0–G6 by pressing F1 (K-Dn) or F2 (K-Up), or by pressing a key on the SY99 keyboard.

Remark: The following diagram shows the signal flow for a drum voice.



DRUM SET DATA

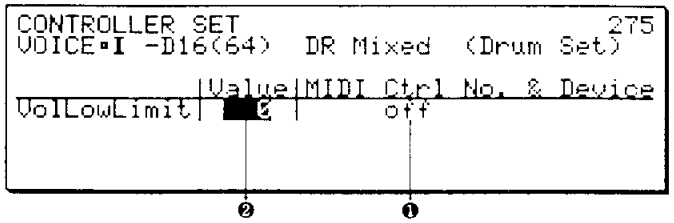
4. Controller set

JUMP #275

Summary: The overall volume of a drum set voice can be adjusted using a specified controller.

Procedure:

From: drum set job directory (JUMP #272)
Select: 04:Controller Set (JUMP #275)
Specify: the minimum level and controller for drum voice volume



❶ Device (MIDI Control #): Select a controller number 1–120 or aftertouch. For example when "001 Modulation" is selected, the MODULATION 1 wheel will regulate the volume of the drum voice. For a detailed explanation of controller numbers, refer to *Voice Common job 12. (F2) Controllers*, page 127.

❷ Vol Low Limit (Value 0...127): This determines the lowest volume that can be set by the selected controller. For example when this is set to 80, the lowest position of the controller will set the volume of the drum voice to 80. When this is set to 0 the lowest position of the controller will reduce the volume of the drum voice to silence. When this is set to 127 the controller will have no effect on the volume.

Remarks: In addition to the controller specified here, the volume of the entire SY99 can always be controlled over its full range by an optional foot controller connected to the rear panel VOLUME jack.

DRUM SET DATA

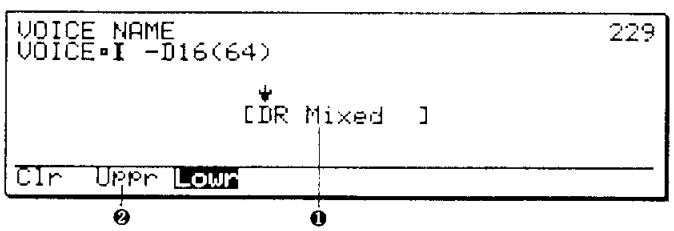
5. Voice name

JUMP #229

Summary: Specify a ten-character name for the voice being edited. In voice play mode this voice name will be displayed in large characters.

Procedure:

From: drum set job directory (JUMP #272)
Select: 05:Drum Set Name (JUMP #229)
Specify: the drum voice name



❶ Enter a ten-character name for the drum voice.
❷ To clear the currently entered name press F1 (Clr). To switch to upper-case characters press F2 (Uppr). To switch to lower-case characters press F3 (Lowr).

For a detailed explanation of how to enter character data, refer to *How to enter character data*.

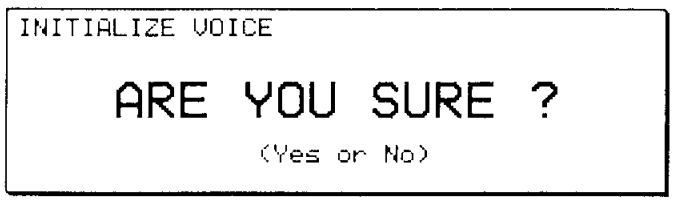
DRUM SET DATA

7. Initialize voice

Summary: Initialize the drum set data being edited to the basic or minimum settings.

Procedure:

From: drum set job directory (JUMP #271)
Select: 07:Initialize
To execute: the initialize operation press YES
To quit: without executing press NO or EXIT



This function sets all drum set data to the basic or minimum settings. If you are creating an entirely new voice, using this initialize function may be faster than resetting all the parameters by hand.

If you are sure you want to initialize the drum set data press YES and the data will be set to the values shown below. If you decide not to initialize, press NO.

This function initializes only Drum Set data. Other initialize functions are provided for initializing Voice Common data, AFM Element data, or AWM Element data.

Initialized settings for Drum Set data

01 Voice volume
Voice volume = 127

02 Wave data set (for each Key Note Number)
Level = 127
Waveform = preset 1 86 BD1
Note shift = 0
Fine tuning = 0
Alternate = off
Output group = both
Static pan = 0

03 Effect set
*** same as normal voice initial data except for Effect Send *** (for each Key Note Number)
Effect send sel = all on
Effect send level = 127
Effect send velocity sense = 0

04 Controller set
Volume Low Limit = 0
Device = 14

05 Drum set name
Name = INIT VOICE

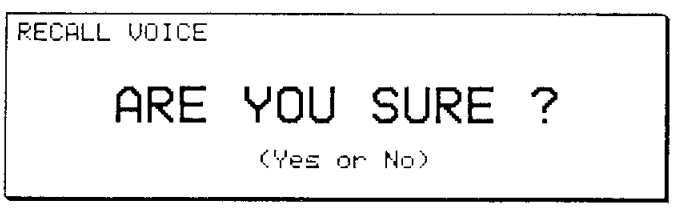
DRUM SET DATA

8. Recall voice

Summary: Recall all data of the previously edited voice.

Procedure:

From: drum set job directory (JUMP #271)
Select: 08:Recall
To execute: the recall operation press YES
To quit: without executing press NO or EXIT.



If after editing a voice you exit voice edit mode without storing, the edited voice data will be lost. In such cases you can use this function to recall the previously edited data into the editing buffer.

Note: *This operation recalls voice data, not just Drum Voice data, and is also available while editing Common data, AFM Element data, or AWM Element data. For details refer to Voice Common 16. Recall voice,* page 133.

MULTI PLAY MODE

Multi mode allows the SY99 to function as sixteen completely independent synthesizers. In multi play mode you can do the following things.

- Select multis from preset, internal, or card memory.
- View a directory of the 16 multis in an internal, card, or preset memory.
- Copy the currently selected multi to any internal or card memory.
- Send a MIDI program change message to an external device.

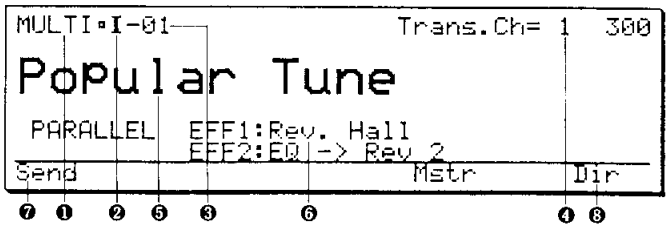
Multi mode allows the SY99 to function as sixteen completely independent synthesizers, each being controlled on its own MIDI channel. Since the keyboard of the SY99 transmits only on one MIDI channel at a time, multi mode is meaningful only when you are using a sequencer (either the SY99's built-in sequencer or an external MIDI sequencer) to send two or more channels of MIDI data to the SY99's tone generator.

Note: *If a multi contains many two-element or four-element voices, the response to Note-on messages may become slightly slower. If this is a problem, either reduce the number of voices in the multi, or select voices which use fewer elements.*

Multi select

JUMP #300

Press MULTI to enter multi play mode. The following LCD will appear.



❶ MULTI: This indicates that you are in Multi Play mode.

❷ Multi memory (I, C, P): This indicates the multi memory; Internal, Card, or Preset. Preset memory contains only a single bank of 16 Multis. It makes no difference whether you press PRESET 1 or PRESET 2.

❸ Multi number (1–16): This indicates the number of the multi.

❹ Transmit channel (1–16): This indicates the MIDI transmit channel you selected in *MIDI Utility 1. Channel set*. The SY99 keyboard will transmit from MIDI OUT on this channel, and will play the corresponding channel of the Multi. You can also change the transmit channel at any time by holding SHIFT and pressing a program select button 1–16.

❺ The Multi name is displayed in large characters.

❻ Effect settings: This area displays the effect mode (OFF, SERIAL, or PARALLEL), and the effect type for each of the two effect units. For details refer to *Multi edit, 7.Effect set*, page 192.

❼ Press F1 to send bank select and program change messages via MIDI. Refer to the following section *Send bank select and program change*.

❽ Press F6 to jump to the master control select display. Press F6 to Refer to the following section *Master control select*.

❾ Press F8 to view the multi directory. Refer to the following section *Multi directory*.

To select a multi use the following procedure. The multi does not actually change until you specify the number 1–16. If you want to play a different multi from the same multi memory, simply specify a different number 1–16.

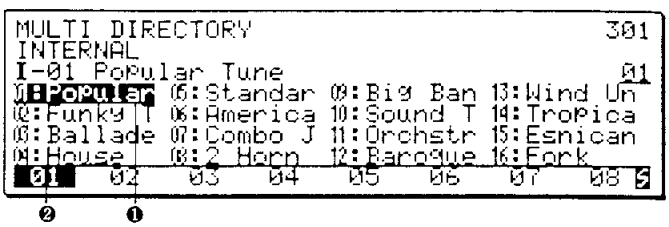
1. Select the multi memory; INTERNAL, CARD (only if a card is inserted into the DATA slot), PRESET. The selected LED will blink.

2. Select a multi 1–16. The selected LED will light, and the LCD display will show the newly selected multi name.

Multi directory

JUMP #301

Summary: While in multi play mode you can press F8 (Dir) to view a directory of the sixteen multis in the currently selected multi memory. The following display will appear.



❶ The first seven characters of each twenty-character multi name will be displayed. When you select a different multi memory (internal, card, or preset) the sixteen multis in the newly selected memory will be displayed. In addition to the usual methods of selecting a multi, you can also use the arrow keys to select a multi. When the multi directory is displayed, pressing a memory select button will immediately select a multi.

❷ Pressing F1–F8 (01)–(08) will select a multi 1–8 from the displayed multi directory. Holding SHIFT and pressing F1–F8 (09)–(16) will select a multi 9–16.

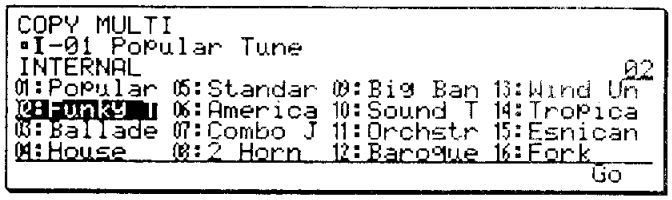
To return to the multi play display with the name of the selected multi displayed in large characters press EXIT.

Copy multi

Summary: Anytime in multi play mode you can copy the currently selected multi to another multi memory.

Procedure:

From: multi play mode (JUMP #300, #301)
Press: COPY
Specify: the destination to which the multi will be copied.
To execute: the copy operation press F8 (Go).
To quit: without executing press EXIT.



The names of the sixteen multis in Internal or Card memory are displayed as explained in *Multi Directory*. Press INTERNAL or CARD, and press a memory select button 1–16 to specify the copy destination.

After specifying the copy destination press F8 (Go). You will be asked "Are you sure?" If you are sure you want to copy the multi, press YES and the data will be copied. To quit without copying press NO.

Note: If you copy a multi from internal memory to card memory, all internal voice numbers used by that multi will be converted into card voice numbers. In the same way, if you copy a multi from card memory to internal memory, all card voice numbers used by that multi will be converted into internal voice numbers.

Send bank select and program change

Summary: While in multi play mode you can transmit bank select and program change messages from MIDI OUT without affecting the SY99's own tone generator. This allows you to switch a tone generator module connected to the SY99 MIDI OUT to another memory without changing the SY99's own memory selection. (An identical function is available in voice play mode.)

Procedure:

From: multi play mode (JUMP #300)
Select: F1 (Send)
Specify: a bank select number (1–16,384) and a program change number (1–128).
To transmit: the bank select and program change messages press ENTER.
To quit: without sending a bank select or program change message, press EXIT.

1. Use the numeric key pad to enter a number between 1 and 16,384, then press ENTER to move the cursor to the program change item. (To send a program change message but no bank select message, simply press ENTER.)
2. Use the numeric key pad to enter a number between 1 and 128.
3. Press ENTER and the specified bank select and program change messages will be transmitted on the (keyboard transmit channel (Kyb Trans Ch) specified in *MIDI Utility job 1.Setting* (JUMP #807).

   If, for the program change, you enter a number below 1 it will be transmitted as 1. If you enter a number above 128, it will be transmitted as 128.

   In addition to the program change message transmitted by this function, a program change message will be transmitted every time you select a SY99 voice or multi unless Program Change has been turned off using *MIDI utility job 1.Setting*, page 258.

Remark: Refer to the *MIDI Data Format* booklet for details regarding the use of MIDI bank select numbers.

Note: *If a master control setup is activated, the transmit filter for that setup may prevent the sending of bank select and program change messages using this function. Refer to the explanation of the Master control utility on page 284 for further details.*

Master control select

Summary: While the SY99 is in multi play mode, you can jump to the master control select display (JUMP #832) by pressing a single function key. This feature makes it easy to use the MIDI master control function while playing the SY99.

Procedure:

From: multi play mode (JUMP #300)
Select: F6 (Mstr)

The controller select display will appear, just as if you had pressed JUMP, entered 832 using the numeric keypad, and then pressed ENTER. This display can be used to send a variety of control information to MIDI instruments connected to the SY99.

If you perform live using the SY99, you will probably want to use the master control function often while playing the SY99's keyboard. You will probably find the master control function especially convenient because it is available with the press of a single button.

MULTI EDIT MODE

This section explains the details of all Multi Edit parameters.

From multi play mode press EDIT to enter multi edit mode. Unlike voice edit mode, multi edit mode has only a single job directory.

You can use the SEQUENCER control keys to playback sequencer song or sequencer pattern data while editing a multi. It is especially helpful to play a sequencer song back while editing a multi, since you will be able to hear the effect your modifications are having on each of the voices. For example you can edit multi parameters to modify the "mix", or even edit a voice, all while the song is playing.

Compare

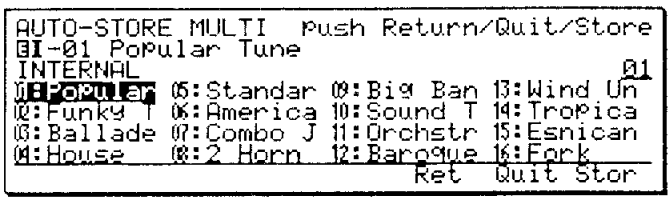
When you are in edit mode but have have not yet modified the data, a small square □ is displayed at the left of the multi number to indicate that the voice has not yet been edited. If the data is edited in any way, this will change to a inverse "E".

If you want to see and hear the original data press EDIT (COMPARE) and the inverse "E" will change to a "C" indicating that you are in compare mode.

Note: While comparing, EXIT, mode select, page, cursor, JUMP, COPY, and some of F1–F8 will not function.

Store multi

When you press EXIT or use the JUMP button to exit Multi Edit mode after editing the data, the top line of the display will ask "AUTO-STORE MULTI?"



The LCD will show the first seven characters of the multi names in the currently selected internal or card multi memory. The multi name displayed in inverse indicates the multi memory into which the edited data will be stored.

1. Use INTERNAL or CARD to specify the multi memory, and select the multi memory 1–16 in which you want to store your newly edited multi.
2. Press F8 (Stor), and the bottom line will ask "Are you sure !" (Yes or No)".
3. If you are sure you want to store the edited multi, press +1/YES and the bottom line of the LCD will show "Store completed". If you decide not to store, press -1/NO and the bottom line of the LCD will show "Store cancelled".
4. You will then return to multi play mode or the jump destination.

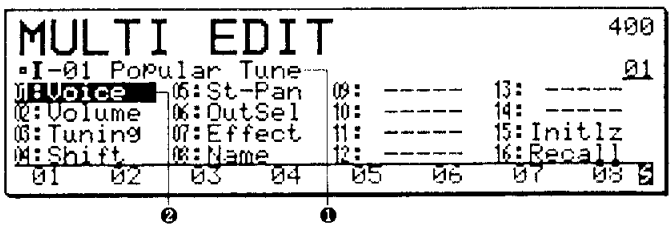
Multi edit job directory

JUMP #400

Summary: The parameters of Multi Edit mode are divided into the jobs shown in this job directory.

Procedure:

From: multi play mode (JUMP #300)
Select: EDIT (JUMP #400)
Specify: the desired multi edit job and press ENTER.



❶ This area shows the number and name of the selected multi.

❷ Move the cursor in this area to select a job and press ENTER to go to the selected job.

❸ Pressing F1–F8 will select the corresponding job 1–8. Holding SHIFT and pressing F7 or F8 will select job 15 or 16.

01: Voice (Voice Select): A multi consist of sixteen voices which are controlled by MIDI channels 1–16. A different voice can be selected for each of the sixteen channels in the multi.

02: Volume (Voice Volume): The volume of the voice played by each channel of the multi can be adjusted.

03: Tuning (Voice Tuning): The fine tuning of the voice played by each channel of the multi can be adjusted in steps of 1.1718875 cents.

04: Shift (Voice Note Shift): The pitch of the voice played by each channel of the multi can be adjusted in half steps.

05: St-Pan (Voice Static Pan): A fixed stereo position can be specified for the voice played by each channel of the multi, or a voice can use its own pan settings.

06: OutSel (Voice Output Group Select): Each voice played by the multi can be sent from output group 1 and/or 2.

07: Effect (Effect Set): Specify how the effect units are connected, how the sound from each voice of the multi is sent to the effect units, parameters for each effect unit, and how the effect parameters are controlled in realtime.

08: Name (Multi Name): The multi being edited can be given a twenty-character name. In multi play mode this name will be displayed in large characters.

15: Initlz (Initialize Multi): The multi data being edited can be initialized to a set of standard values.

16: Recall (Recall Multi): The previously edited multi data can be recalled for additional editing.

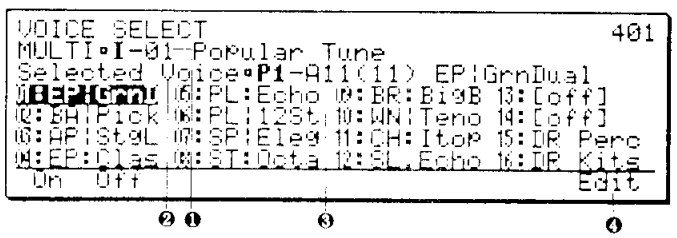
1. Voice select

JUMP #401

Summary: A multi consists of sixteen voices which are controlled by MIDI channels 1–16. A different voice can be selected for each of the sixteen channels in the multi.

Procedure:

From: multi job directory (JUMP #400)
Select: job 01:Voice (JUMP #401)
Specify: the voice for each channel of the multi



❶ This displays the number and name of the multi you are editing.

❷ This displays the number and name of the voice where the cursor is located.

❸ Move the cursor in this area and select a voice for each of the sixteen channels in the multi. This area displays only the first seven characters of the selected voice name, but the voice number and name are fully displayed in ❷. Each channel of the multi can use any voice from internal, card, or preset memories, or can be set to an "off" voice. See *Off Voice* below for details.

A multi in card memory can use only card or preset voices. A multi in internal memory can use only internal or preset voices.

If a selected voice contains an AWM element which uses data from a waveform card, the card must be inserted into the WAVEFORM slot for the voice to sound properly. If a different card is inserted, a diamond-shaped mark will appear in place of the voice number 1–16, and the voice will sound strange. (Each AWM waveform card has a unique ID number which is stored as part of the data for an AWM element.)

❹ To edit the voice selected by the cursor, press F8 (Edit). You will enter voice edit mode. Details are the same as explained in *Voice edit mode*, but when you press EXIT to exit voice edit mode you will return to this *Multi edit 1. Voice select* job.

Since the effect unit settings in multi mode are determined by *Multi edit 7.Effect set* (JUMP #412) and are shared by all the voices of the multi, you will not be able to modify the Effect Mode, the Effect Parameters, or the Effect Control settings. You can adjust the Effect Send settings of the voice, but for these settings to be effective in a multi, the *Multi edit 7.2 Effect send* must be set to "VC" for that voice.

When you select 10:Effect from the Voice Edit Common data job directory, you will go directly to the Effect Send job. Other effect parameters cannot be accessed when editing a voice from inside a multi.

You can also edit the Element Dynamic Pan settings of the voice, but for these settings to be effective in a multi, *Multi edit 5.Voice static pan* setting must be set to "VC" for that voice.

Since the SY99's sequencer can be used at any time even while editing a voice or multi, you can use this function to edit one of the voices in a multi *while that multi is being played from the sequencer*. This capability is very useful, since it allows you to edit a voice while it is being played in a musical context with other instruments.

Off Voice: Each channel of the multi can use any voice from internal, card, or preset memories, or can be turned off. When turned off, the multi will not play a voice in response to data on that channel.

This allows you to play an external MIDI tone generator from certain channels of the SY99's built-in sequencer without sounding the SY99's own tone generator for those channels.

If you set the output level of an unwanted channel of the multi to 0 (see *Multi edit 2. Voice volume*) it will not be heard, but will still use the SY99's tone generator whenever notes on that MIDI channel are received, and will therefore reduce the simultaneous notes available for the other voices. This is why you should turn unneeded channels of the multi "off".

To turn a channel off, move the cursor to the corresponding voice and press F2 (Off). To retore the previous voice selection for a channel, move the cursor to the corresponding voice and press F1 (On).

Remarks: In multi play mode the SY99 keyboard will normally play only the channel of the multi which matches the Keyboard MIDI Transmit Channel setting made in *MIDI utility 1. Channel set*. However in multi edit mode, the SY99 keyboard will play the voice where the cursor is located in this Voice Select job. This will remain in effect as long as you are in multi edit mode.

A slight delay may occur in the sounding of some notes when a large number of notes are played simultaneously (either manually or in response to MIDI note on messages) using four-element voices. To avoid this delay in such cases, you may wish to substitute voices using fewer elements, or reduce the number of notes being played simultaneously.

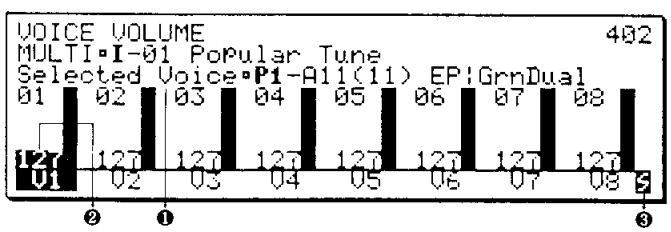
2. Voice volume

JUMP #402

Summary: Set the volume of the voice played by each channel of the multi.

Procedure:

From: multi job directory (JUMP #400)
Select: job 02:Volume
Specify: the volume for each channel
for channels 1–8 press F1 (1–8) (JUMP #402)
for channels 9–16 press F2 (9–16) (JUMP #403)



❶ Selected Voice: This displays the number and name of the voice played by the multi channel where the cursor is located.

❷ Voice Volume (0...127): Set the volume for each voice played by the sixteen channels of the multi. The volume for each voice is displayed as a vertical bar graph.

❸ Press F1–F8 to move the cursor to voices 1–8 or 9–16. Select the role of the function keys by pressing SHIFT+F1 (1–8) or SHIFT+F2 (9–16).

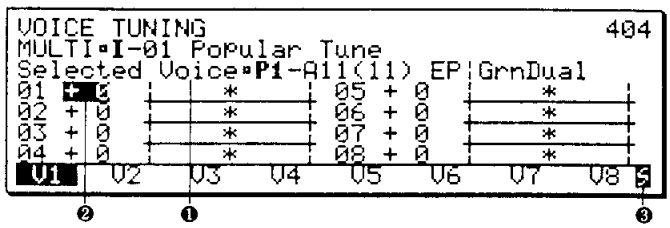
3. Voice tuning

JUMP #404

Summary: Adjust the fine tuning of the voice played by each channel of the multi.

Procedure:

From: multi job directory (JUMP #400)
Select: job 03:Tuning
Specify: the tuning for each channel
for channels 1–8 press F1 (1–8) (JUMP #404)
for channels 9–16 press F2 (9–16) (JUMP #405)



❶ Selected Voice: This displays the number and name of the voice played by the multi channel where the cursor is located.

❷ Voice Tuning (–63...+63 in steps of 1.1718875 cents): Set the tuning for each voice played by the sixteen channels of the multi. The tuning for each voice is displayed as a horizontal bar graph.

❸ Press F1–F8 to move the cursor to voices 1–8 or 9–16. Select the role of the function keys by pressing SHIFT+F1 (1–8) or SHIFT+F2 (9–16).

Note: The actual pitch at which a voice will sound is affected by many other factors; System utility settings 1. Master tuning, Voice common data 2. Element detune, 3. Element note shift, 11. Micro tuning, AFM element data 2. AFM oscillator, 7. AFM pitch EG, and AWM element data 2. AWM waveform set, 7. AWM pitch EG.

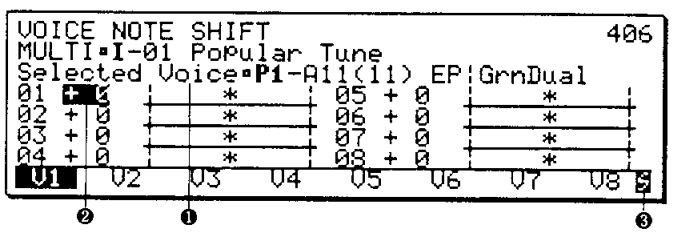
4. Voice note shift

JUMP #406

Summary: Adjust the note shift (transposition) of the voice played by each channel of the multi.

Procedure:

From: multi job directory (JUMP #400)
Select: job 04:Shift
Specify: the note shift for each channel
for channels 1–8 press F1 (1–8) (JUMP #406)
for channels 9–16 press F2 (9–16) (JUMP #407)



❶ Selected Voice: This displays the number and name of the voice played by the multi channel where the cursor is located.

❷ Voice Note Shift (–64...+63 in semitone steps): Set the note shift (transposition) for each voice played by the sixteen channels of the multi. The note shift setting for each voice is displayed as a horizontal bar graph.

❸ Press F1–F8 to move the cursor to voices 1–8 or 9–16. Select the role of the function keys by pressing SHIFT+F1 (1–8) or SHIFT+F2 (9–16).

Note: This setting determines how note numbers received from the keyboard or MIDI IN are sounded, and has no effect on the data transmitted from MIDI OUT.

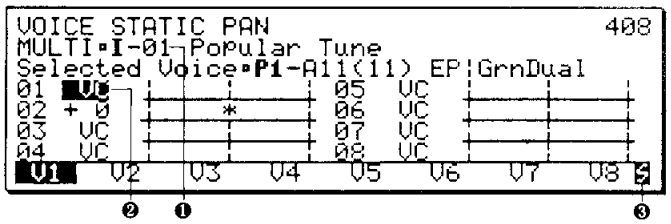
5. Voice static pan

JUMP #408

Summary: Specify the stereo position for the voice played by each channel of the multi.

Procedure:

From: multi job directory (JUMP #400)
Select: job 05:St-Pan
Specify: the static pan position for each channel
for channels 1–8 press (JUMP #408) F1 (1–8)
for channels 9–16 press (JUMP #409) F2 (9–16)



❶ Selected Voice: This displays the number and name of the voice played by the multi channel where the cursor is located.

❷ Voice Static Pan (VC or –31...+31 = left... right): Set the static pan position for each voice played by the sixteen channels of the multi. The static pan setting for each voice is displayed as a horizontal bar graph.

It is also possible to select "VC", when the voice will use its own dynamic pan settings. Refer to *Common data 6.Element dynamic pan* (JUMP #207), page 99. If "VC" is not selected, the dynamic pan settings of the voice will be ignored and the static pan setting you specify here will be used. If "VC" is not selected for a drum voice, all the drum sounds will be panned to the same pan position –31...+31 you specify here.

❸ Press F1–F8 to move the cursor to voices 1–8 or 9–16. Select the role of the function keys by pressing SHIFT+F1 (1–8) or SHIFT+F2 (9–16).

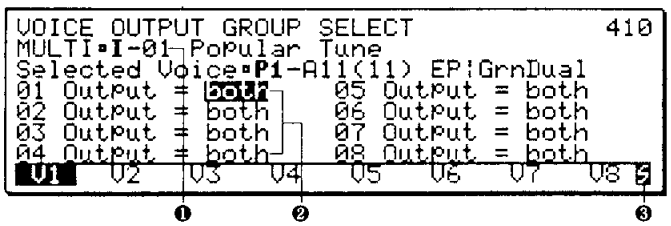
6. Voice output group select

JUMP #410

Summary: Each voice can be sent from either or both output groups.

Procedure:

From: multi job directory (JUMP #400)
Select: job 06:OutSel
Specify: the output group for each channel
for channels 1–8 press (JUMP #410) SHIFT + F1 (1–8)
for channels 9–16 press (JUMP #411) SHIFT + F2 (9–16)



❶ Selected Voice: This displays the number and name of the voice played by the multi channel where the cursor is located.

❷ Output (off, grp1, grp2, both): Each voice played by a multi is independently panned by the setting of *Multi edit 5.Voice static pan*, and sent from either or both output groups 1 and 2. For normal voices, this setting takes priority over the voice's output group setting in *Common data 7.Output group select* (page 103). Drum voices use their own output group settings for each note, as explained below.

The signal from each output group will be combined with the signal from each effect unit as specified by the "wet:dry" settings in *Multi edit 7.1 Effect mode select* (JUMP #413). Refer to the diagram on page 192.

Multi edit settings cannot specify the output group for a multi channel that plays a drum voice, and the cursor cannot be moved to these voices. The display will show "Output = drum", and the drum voice data will determine which output group is used by each drum sound. Refer to *Drum set data, 2. Wave data set* (JUMP #274), page 157.

❸ Press F1–F8 to move the cursor to voices 1–8 or 9–16. Select the role of the function keys by pressing SHIFT+F1 (1–8) or SHIFT+F2 (9–16).

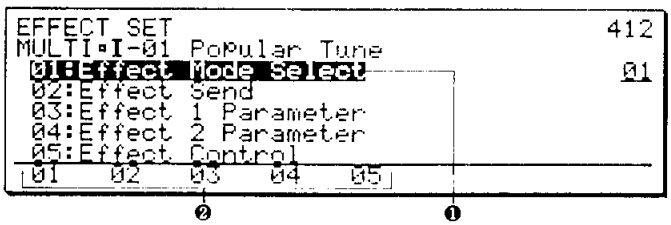
7. Effect set

JUMP #412

Summary: Specify how the effect units are connected, how the sound from each voice of the multi is sent to the effect units, parameters for each effect unit, and how the effect parameters are controlled in realtime.

Procedure:

From: multi job directory (JUMP #400)
Select: job 07:Effect Set (JUMP #412)
Select: the effect parameters you wish to edit



❶ Move the cursor in this area and press ENTER to select a job.

01: Effect Mode Select: Specify how the two effect units are connected, the effect type, and volume balance. This is exactly the same as for voice editing. Refer to *Common Data job 10.1 Effect Mode Select*, page 106.

02: Effect Send: Specify how the sound of each voice of the multi will be sent to the effect units. Refer to the following section *7.2 Effect Send*.

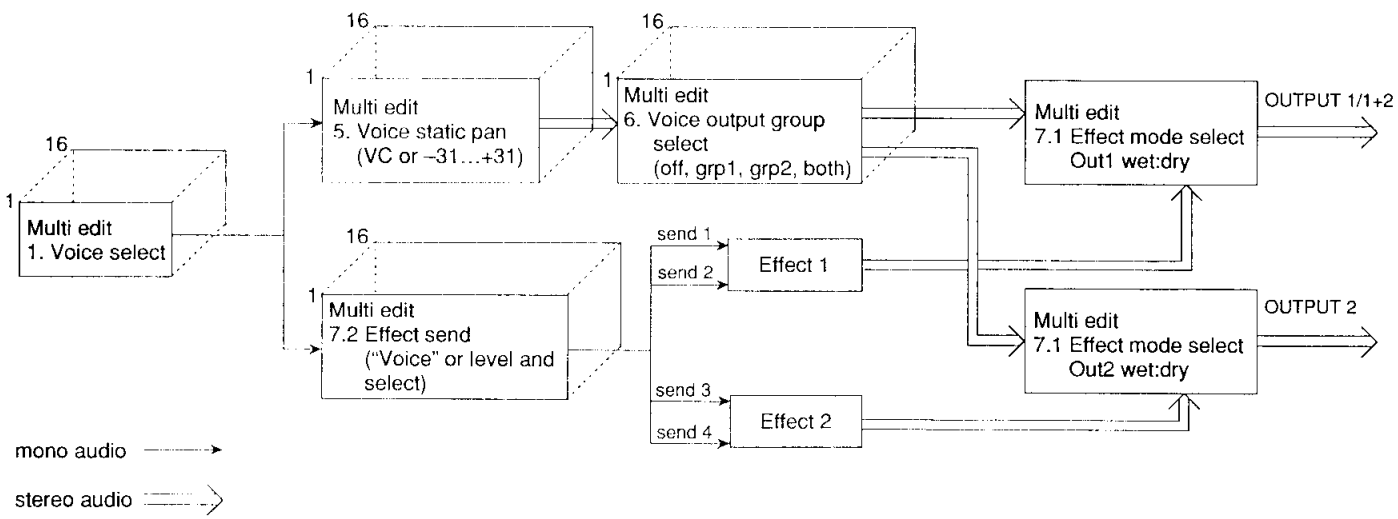
03: Effect 1 Parameter: Make settings for effect unit 1. This is exactly the same as for voice editing. Refer to *Common Data job 10.3 Effect 1 Parameter*, page 108.

04: Effect 2 Parameter: Make settings for effect unit 2. These parameters are exactly the same as for Effect 1. Refer to *Common Data job 10.3 Effect 1 Parameter*, page 108.

05: Effect Control: Specify how effect parameters will be affected by control change messages. This is exactly the same as for voice editing. Refer to *Common Data job 10.5 Effect Control*, page 123.

❷ Pressing F1–F5 will select the corresponding job.

Note: *Multi effect settings differ from voice effect settings only in job 2.Effect Send. A normal voice allows you to specify the effect send level for each of the one, two, or four elements. A drum voice allows you to specify the effect send level for each of the 76 keys. However in multi mode, you can either specify a send level for each voice, or specify that the voice's own effect send settings be used.*



7.1 Effect mode select

JUMP #413

Summary: Specify the effect mode to determine how the two effect units are connected, the effect type for each unit, effect output levels, and the volume balance between processed and unprocessed sound.

Procedure:

From: Effect Set job directory (JUMP #412)
Select: 01:Effect Mode Select (JUMP #413)
Specify: the effect mode, effect types, and effect levels, and wet:dry balance.

Remarks: This function is exactly the same as that described for Voice edit mode. For details, refer to *Common Data job 10.1 Effect mode select,* page 106.

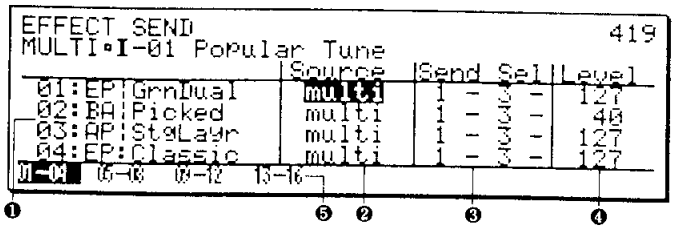
7.2 Effect send

JUMP #418

Summary: Specify how the sound from the voice played by each channel of the multi will be sent to each of the one, two, three, or four effect sends.

Procedure:

From: Effect Set job directory (JUMP #412)
Select: job 02:Effect Send (JUMP #418)
Specify: the effect send settings for each of the 16 channels in the multi



❶ This area displays the voice selected for each channel of the multi. The screen can display the settings for four voices at a time. To make settings for other voices, press F1 (1–4)–F4 (13–16).

❷ Source (voice, multi): If this is set to "voice", the voice will use its own effect send settings as specified in *Voice common, 10.2 Effect send* (page 107) for a normal voice or in *3.2 Effect send* (pqge 174) for a drum voice. A dash (–) will be displayed for the Send Sel ❸ and Level ❹ parameters, and these cannot be set. If you wish to have detailed control over the effect send levels for this channel of the multi, you should set this Source parameter to "voice".

If this is set to "multi", you will be able to specify an overall effect send level ❹ for the entire voice. This effect send level will apply to all elements 1–4 of a normal voice, or all 76 keys of a drum voice. You can also enable or disable the effect sends 1–4 as explained in ❸. Setting the Source parameter to "multi" is more convenient when you need to adjust the effect send levels of several channels in the multi, but does not allow as detailed control as the "voice" setting.

Effect send velocity sensitivity and scaling are available for voices as specified by the individual voice settings, regardless of whether the effect send source is set to "voice" or "multi".

❸ Send Sel (send select 1–4): If the Source has been set to "multi", you can specify whether or not to send the sound from the voice to each effect send 1–4. The number of effect sends available will depend on the effect mode and the effect type. Effect sends which are not available will be indicated by a dash (–), and cannot be selected. In the above display, effect sends 1 and 2 are available.

If an effect send is turned on, its number (1–4) will be displayed, and the sound from the voice will be sent to that effect send. If an effect send is turned off, a period (.) will be displayed, and the sound of the voice will not be sent to that effect send.

❹ Level (0–127): If the Source ❷ has been set to "multi", you can specify how much sound will be sent from the voice to the effect unit. This value applies to all the effect sends that are enabled in Send Sel ❸.

❺ You can press F1 (1–4), F2 (5–8), F3 (9–12), F4 (13–16) to switch the display to other voices of the multi.

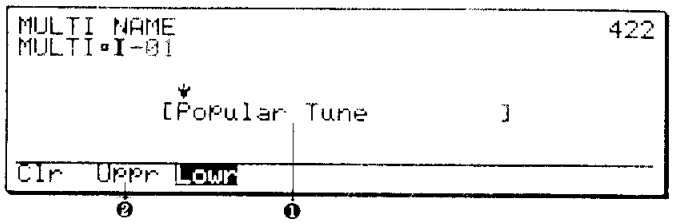
8. Multi name

JUMP #422

Summary: The multi being edited can be given a twenty-character name. In multi play mode, this multi name will be displayed in large characters.

Procedure:

From: multi job directory (JUMP #400)
Select: job 08:Name (JUMP #422)
Specify: the name for the multi



❶ Enter a twenty-character name for the multi.
❷ To clear the currently entered name press F1 (Clr). To switch to upper-case characters press F2 (Uppr). To switch to lower case characters press F3 (Lowr).

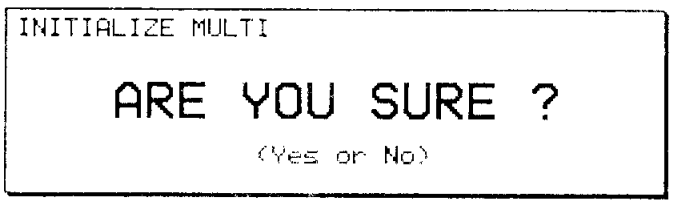
Remarks: Methods of entering character data are explained in *How to enter character data*, on page 30.

15. Initialize multi

Summary: The multi data being edited can be initialized to a set of standard values.

Procedure:

From: multi job directory (JUMP #400)
Select: job 15:Initlz
To execute: the initialize operation press YES.
To quit: without executing press NO or EXIT.



This function sets all multi data values to the minimum or simplest possible settings. When you are creating a new multi it is often convenient to start with the initial settings.

If you are sure you want to initialize the multi data, press YES and the data of the multi being edited will be set to the values shown below. If you decide not to initialize, press NO.

Initialized settings for Multi data

01 Voice select
Preset 1 A01(01) GrandPiano (all channels)

02 Voice volume
Volume = 127 (maximum) (all channels)

03 Voice tuning
Tuning = ±0 (all channels)

04 Voice note shift
Note Shift = ±0 (all channels)

05 Voice static pan
Pan = ±0 (= center) (all channels)

06 Voice output group select
Output = both (all channels)

07 Effect set
*** same as normal voice initial data except for Effect Send ***
(for each channel)
Effect send source = multi
Effect send select = all on
Effect send level = 127

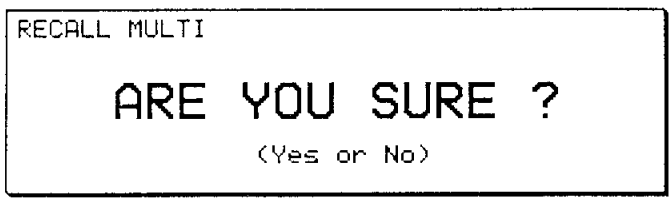
08 Multi name
Name = INIT MULTI VOICE

16. Recall multi

Summary: The previously edited Multi data can be recalled for additional editing.

Procedure:

From: multi job directory (JUMP #400)
Select: job 16:Recall
To execute: the recall operation press YES.
To quit: without executing press NO or EXIT.



If after editing a multi you exit multi edit mode without storing, the edited multi data will be lost. In such cases, you can use this function to recall the previously edited multi data into the editing buffer.

If you are sure you want to recall, press YES and the previously edited multi data will be recalled into the editing buffer. If you decide not to recall, press NO.

SONG MODE

Song mode allows you to create songs with up to 16 tracks, with each track containing an independent musical part. These tracks can be edited in different ways, and the musical data of each track can be transmitted on its own MIDI channel to play a different voice in a Multi or an external synthesizer.

Contents of this section **page**

In Song mode you can use the SY99's sequencer to record and play back up to ten songs, each of which can consist of up to 16 tracks. Tracks 1 through 15 each can contain an independent musical part extending the entire length of the song. Track 16 is a special Pattern track which consists of pattern numbers and repeat marks which specify how the patterns created in Pattern mode (page 233) will be played back along with the other tracks.

All data from the sequencer will be transmitted to the internal tone generator and also transmitted from MIDI OUT. This allows you to play external synthesizers or tone generators from the SY99's sequencer.

Song mode (sequencer) and Multi mode (tone generator)

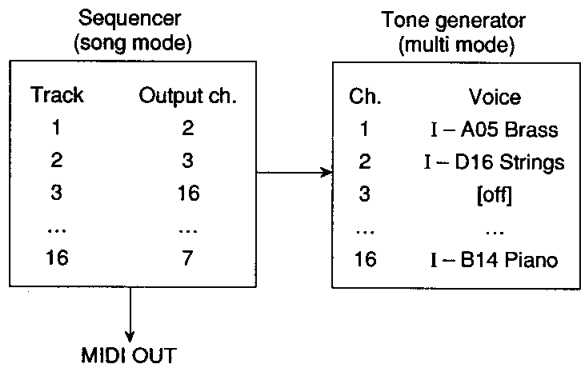
The greatest musical complexity is possible when the sequencer is in Song mode, transmitting 16 channels of musical data, and the tone generator is in Multi mode, functioning as 16 indepenent synthesizers.

By default, sequencer tracks 1–16 are set to transmit on the corresponding channels 1–16. However, you can change this using the *Transmit channel* function described on page 230.

A Multi consists of a voice selection and other settings for each of 16 channels. If you want to use a sequencer track to play only an external tone generator via MIDI OUT, you must select an "off" voice for the corresponding channel of the multi.

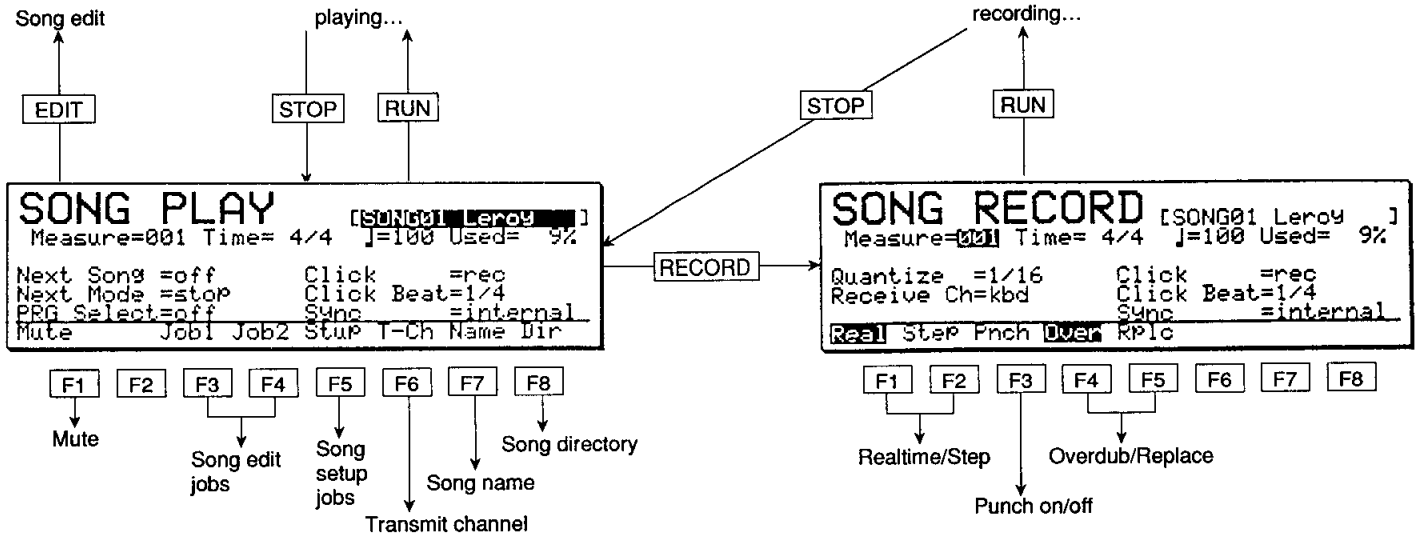
The following diagram shows an example of how the sequencer in Song mode can control the tone generator in Multi mode. Sequencer track 1 is transmitting on channel 2, and will play the "Strings" voice which has been selected for channel 2 of the multi. Sequencer track 2 is transmitting on channel 3, but since channel 3 of the multi is set to the "off" voice, track 2 will not play the multi.

Regardless of the settings of the Multi, the data of all sequencer tracks is always transmitted from MIDI OUT, and can be used to play external tone generators.

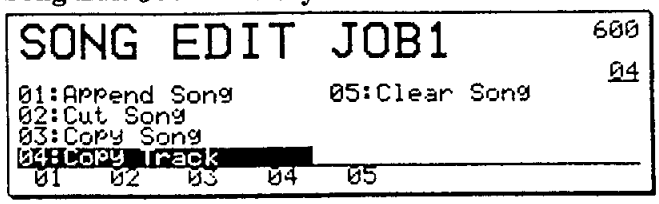


Note: The SY99 sequencer will also record MIDI data received from MIDI IN, in addition to the data from its own keyboard and controllers. However, system exclusive messages longer than 32 bytes cannot be recorded.

How song mode is organized

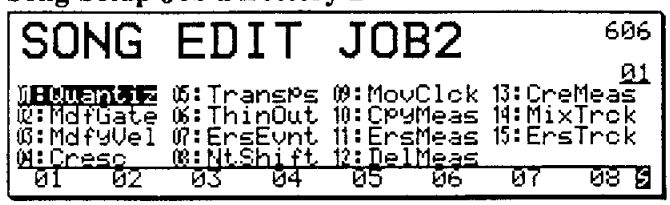


Song Edit Job Directory 1



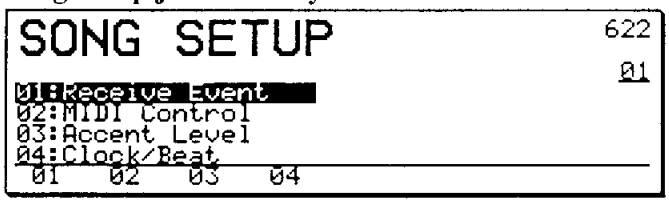
01:Append Song
02:Cut Song
03:Copy Song
04:Copy Track
05:Clear Song

Song Setup Job Directory 2

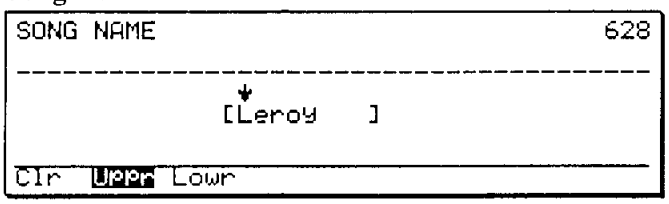


01:Quantiz	Quantize
02:MdfGate	Modify gate time
03:MdfyVel	Modify velocity
04:Cresc	Crescendo
05:Transps	Transpose
06:ThinOut	Thin out
07:ErsEvnt	Erase event
08:NtShift	Note shift
09:MovClck	Move clock
10:CpyMeas	Copy measure
11:ErsMeas	Erase measure
12:DelMeas	Delete measure
13:CreMeas	Create measure
14:MixTrck	Mix track
15:ErsTrck	Erase track

Song Setup job directory



Song Name



01:Receive Event
02:MIDI Control
03:Accent Level
04:Clock/Beat

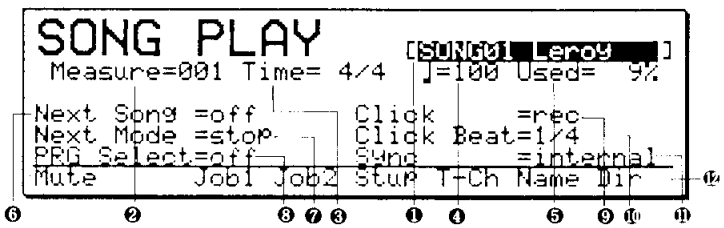
Song play

Summary: This is where you will playback the song. You can also make settings for the metronome and synchronization.

Procedure:

From: any mode

Press: SONG to enter song play mode. The SONG LED will light red.



❶ Song (1...10): This shows the number of the currently selected song. The name assigned to the song is displayed after the song number.

❷ Measure (001...999): This determines the measure from which the song will begin play back. You can modify this by moving the cursor here and specifying the measure, or by using the sequencer location buttons (|◁, ◁◁, LOCATE, or ▷▷).

❸ Time (1/4...32/16): This displays the time signature you specified in song record mode. This cannot be modified in song play mode.

❹ ♩ (30...250): This determines the tempo in quarter notes per minute.

❺ Used (0...100%): This displays the amount of used sequencer memory.

❻ Next Song (1...10, Off): This determines the number of the song which is to be selected when the current song is done playing. If a next song is selected, the SY99 will automatically set itself up for the new song when the current song is finished. Also, the Mute function will be turned off and all tracks used in the new song will be turned on at this time. A setting of "Off" for Next Song means that the SY99 will remain set up for the currently selected song when it is finished playing.

The Next Song item only determines whether the SY99 will set up for another song; whether the next song will play automatically is determined by the Next Mode setting, below.

❼ Next Mode (Stop, Play): This determines whether the song selected using the Next Song item will play automatically when the current song is finished playing. Set this item to "Play" to chain play one or more songs.

❽ PRG Select (on, off): This determines whether a program change message will be executed each time the current song is selected. When this item is turned on, the currently selected voice or multi will be registered for automatic selection whenever the current song is selected, whether as a next song, by MIDI song select, or manually. (The SY99 will automatically change to Voice or Multi mode, as appropriate, when this selection is made.) When this item is set to "off," the selection of the song will not affect the tone generator setting.

❾ Click (off, rec, rec/play, always): This determines when the click (metronome) will sound.

off: The metronome will not sound.

rec: The metronome will sound only during recording.

rec/play: The metronome will sound during recording or playback.

always: The metronome will sound constantly.

❿ Click Beat (1/4, 1/6, 1/8, 1/12, 1/16, 1/24): This determines the beat on which the click will sound.

⓫ Sync (internal, MIDI): This determines the timing source which will control the sequencer. Normally you will leave this set to internal so that the SY99's own clock will determine the tempo.

If you are using an external MIDI sequencer and want the SY99's sequencer to play in synchronization with it, set this to MIDI so that MIDI clock messages received at MIDI IN will determine the tempo.

⓬ Pressing F1 (Mute) will mute all tracks so that you will hear no sound even during playback. Notes which are already sounding when you press F1 will continue sounding for their original duration. Press F1 once again to un-mute the tracks.

Press F3 (Job1) to move to Song Edit Job Directory 1. Refer to the following section, *Song edit jobs 1*.

Press F4 (Job2) to move to Song Edit Job Directory 2. Refer to the following section, *Song edit jobs 2*.

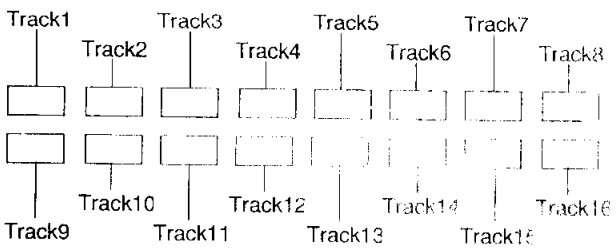
Press F5 (Stup) to move to the Song Setup job directory. (Song setup jobs are used to make settings common to all songs.) Refer to the following section, *Song setup edit jobs*.

Press F6 (T-Ch) to view or change the transmit channel settings for tracks 1 through 16. Refer to the following section, *Transmit channel*.

Press F7 (Name) to change the name of the currently selected song. Refer to the following section, *Song name*.

Press F8 (Dir) to view a directory of the songs contained in the SY99's memory. Refer to the following section, *Song directory*.

Select tracks for playback: Use the sixteen memory select buttons to select the tracks for playback. Each track LED will light green to indicate a track which contains data. Pressing a button will alternately turn the track on (the LED is lit) or muted (the LED is blinking). You can also press F1 (Mute) to mute all the tracks.



Start and stop playback: Press RUN and the song will begin playback from the point specified by the measure setting. To stop playback press STOP.

During playback: During playback you can move the cursor to modify the tempo, click, click beat, Next Song, Next Mode, and PGM Select settings.

Locate: Any time while in song play mode (even during playback), you can hold SHIFT and press LOCATE to mark the current measure. While the sequencer is stopped, you can press LOCATE to instantly move to this measure.

In addition to LOCATE, the following keys can be used while the sequencer is stopped to move backwards and forwards in the song.

|◁ Move to the beginning of the song

◁◁ Move backward one measure (continue pressing to move rapidly)

LOCATE Move to a previously set location

▷▷ Move forward one measure (continue pressing to move rapidly)

Song edit: Any time in song play mode while the sequencer is not playing back, you can press EDIT to edit the song. For details refer to *Song Edit Mode*.

Simultaneous note capacity: The SY99 sequencer can playback up to 32 notes at once. During playback, any new notes which would exceed this number will be ignored.

Timing priority: Since track 16 (the pattern track) will often be used to play rhythm parts, highest priority is given to playing it on time. Timing priority is then given to tracks 1, 2, ... 15.

Cursor position: When recording begins, the cursor will automatically move to the tempo setting, allowing you to adjust the tempo even while you record.

When recording is stopped, the cursor will automatically move to Song No.

Chain songs: Songs that are chained using the Next Song and Next Mode parameters are played back-to-back with no pause in between. A program change message placed at the head of a song using the PGM Select setting can therefore cause the sound from the preceding song in the chain to cut off abruptly. To avoid this problem, you can place an empty measure or two at the beginning of the "next song", to let the notes from the previous song die off before the program change is executed. It is not necessary to introduce such a time lag if the PGM Select setting is turned off.

Song record

Summary: This is where you make settings in preparation for recording a song. You can specify the mode and type of recording, set the time signature, and make other settings as in the Song Play display.

Procedure:

From: song play display press RECORD. The RECORD LED will light.

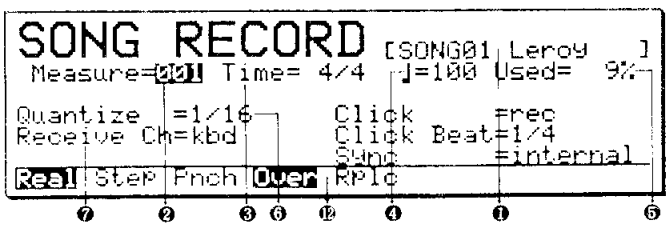
Specify: the recording mode and make recording settings.

To start: recording press RUN.

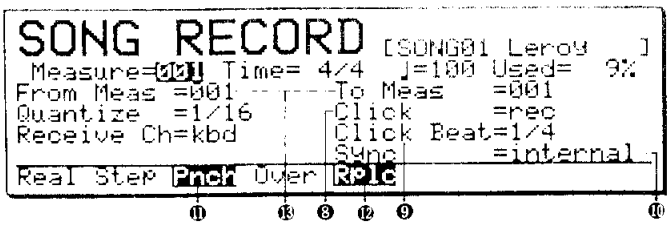
To stop: recording press STOP.

The song record display will differ according to whether or not punch-in recording has been selected.

If Realtime or Step recording has been selected



If Punch-in recording has been selected



❶ The number and name of the currently selected song are displayed here.

❷ Measure (001...999): This determines the measure from which the song will begin playback. You can modify this by moving the cursor here and specifying the measure, or by using the sequencer location buttons (|◁, ◁◁, LOCATE, or ▷▷|).

❸ Time (01 08/4, 01 16/08, 01–32/16): This determines the time signature of measures that will be recorded. (A song may contain measures of differing time signatures.)

❹ ♩ (30...250): This determines the tempo in quarter notes per minute.

❺ Used (0...100%): This displays the amount of sequencer memory already used. Since recording and editing operations require some memory for processing, it may not always be possible to continue recording until this displays 100%.

❻ Quantize (off, 1/32, 1/24, 1/16, 1/12, 1/8, 1/4, 1/2): This determines the timing accuracy to which the notes you play will be corrected. When quantization is turned off the notes you play will be recorded at the exact timing they occur. When a quantization of 1/32...1/2 is selected, all notes you play will be moved to the nearest timing at the specified interval.

❼ Receive Channel (1–16, omni, kbd): This determines the channel that will be recorded by the sequencer.

1–16: The sequencer will record only the data received on the specified channel from MIDI IN.

omni: The sequencer will record all data of any channel from MIDI IN.

kbd: The sequencer will record the notes played on the SY99 keyboard, regardless of the Kbd Transmit channel setting.

❽ Click (off, rec, rec/play, always): This determines when the click (metronome) will sound.

off: The metronome will not sound.

rec: The metronome will sound only during recording.

rec/play: The metronome will sound during recording or playback.

always: The metronome will sound constantly.

❾ Click Beat (1/4, 1/6, 1/8, 1/12, 1/16, 1/24): This determines the beat on which the click will sound.

❿ Sync (internal, MIDI): This determines the timing source which will control the sequencer. Normally you will leave this set to internal so that the SY99's own clock will determine the tempo.

If you are using an external MIDI sequencer and want the SY99's sequencer to play in synchronization with it, set this to MIDI so that MIDI clock messages received at MIDI IN will determine the tempo.

⓫ Recording mode (Real, Step, Pnch): Press F1,F2 or F3 to select the recording mode.

Realtime recording (press F1): Notes will be recorded at the exact time you play them.

Step recording (press F2): Notes will be recorded one by one with the specified time value, regardless of the actual timing with which you play.

Punch-in recording (press F3): The same as realtime recording except that recording will take place only over the measures specified by ⓭ From Meas and To Meas.

⓬ Overdub/Replace (Over, Rplc): This determines how newly recorded data will be added to the track.

Overdub recording: If you select overdub recording by pressing F4, notes you record will be added to the data already in the track. The track will then contain both the old and new data. If step recording has been selected in ⓫, overdub recording will automatically be selected. In punch record mode, overdub recording can not be selected.

Replace recording: If you select replace recording by pressing F5, notes you record will replace the data previously in the track. The track will contain only the new data, and the old data will be lost. If step recording has been selected in ⓫, replace recording cannot be selected.

⓭ From Meas (001...999), To Meas (001...999): If F3 (Pnch) has been pressed to select punch-in recording, you will be able to specify the range of measures over which recording will take place.

Recording procedure:

1. If necessary, specify the measure at which recording will begin, and modify the settings for time, tempo, quantize, receive channel, click, click beat, and sync.
2. Specify the recording mode; realtime (F1), step (F2), or punch-in (F3).
3. If you specified punch-in recording in step 2, set the beginning (From Meas) and end (To Meas) of the recorded area.
4. Specify overdub (F4) or replace (F5).
5. Press a memory select button 1–15 to select the track on which to record. The LED of the selected track will light red. The LEDs of tracks which already contain data are lit green.
6. Press RUN and recording will begin. The recording display will depend on the recording mode selected in step 2. For details see the following sections; *Realtime Recording*, *Punch-in Recording*, and *Step Recording*.
7. When you are finished recording press STOP and you will return to the song play display.

Song edit: Any time while in song record mode (except while recording) you can press EDIT to edit the song. For details refer to *Song Edit Mode*.

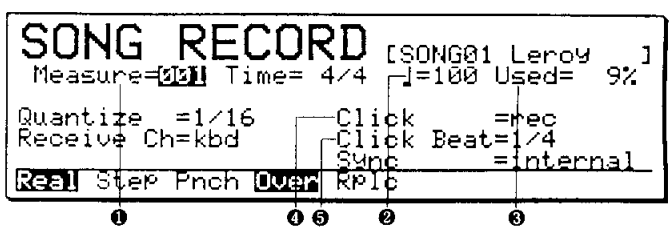
SONG RECORD

Realtime recording

Summary: In realtime recording the notes you play will be recorded in the exact timing with which you play them

Procedure:

From: song record display
Press: F1 (Real) to select realtime recording
To begin: recording press RUN. The RUN LED will blink to the tempo.
To stop: recording and return to the song play display press STOP.



❶ Measure (001...999): As you record this will advance to show the number of the measure currently being recorded.

❷ ♩(30...250): While recording you can move the cursor here to modify the tempo.

❸ Used (0...100%): As you record this will increase to show the amount of sequencer memory that has been used.

❹ Click (off, rec, rec/play, always): While recording you can move the cursor here and specify when the click (metronome) will sound.

off: The metronome will not sound.

rec: The metronome will sound only during recording.

rec/play: The metronome will sound during recording or playback.

always: The metronome will sound constantly.

❺ Click Beat (1/4, 1/6, 1/8, 1/12, 1/16, 1/24): While recording you can move the cursor here and specify the beat on which the click will sound. While recording or playback, the RUN LED will blink green on each beat and blink red on the first beat of each measure.

Remarks: While recording you can modify the settings for tempo, click, and click beat. To modify the other parameters you must return to the song record display.

SONG RECORD

Punch-in recording

Summary: In punch-in recording the notes you play will be recorded in the exact timing at which you play them, but only over the measures you specify.

Procedure:

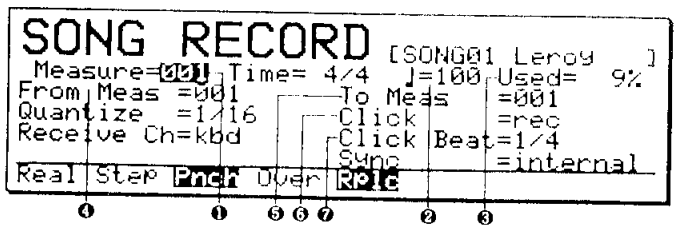
From: song record display

Press: F3 (Pnch) to select punch-in recording

Specify: the measures over which recording will take place.

To begin: recording select the track to be recorded and press RUN. The RUN LED will blink to the tempo.

To stop: recording and return to the song play display press STOP.



❶ Measure (001...999): As you record this will advance to show the number of the measure currently being recorded.

❷ ♩(30...250): While recording you can move the cursor here to modify the tempo.

❸ Used (0...100%): As you record this will increase to show the amount of sequencer memory that has been used.

❹ From Measure (001...999): When the beginning of this measure is reached, recording will begin. The notes you play will replace the previous data in the track.

❺ To Measure (001...999): When the end of this measure is reached recording will end, but the song will continue playing back.

❻ Click (off, rec, rec/play, always): While recording you can move the cursor here and specify when the click (metronome) will sound.

off: The metronome will not sound.

rec: The metronome will sound only during recording.

rec/play: The metronome will sound during recording or playback.

always: The metronome will sound constantly.

❼ Click Beat (1/4, 1/6, 1/8, 1/12, 1/16, 1/24): While recording you can move the cursor here and specify the beat on which the click will sound.

Remarks: While recording you can modify the settings for tempo, click, and click beat. To modify the other parameters you must return to the song record display.

It is a good idea to set the location to a few measures before the punch-in point specified by From Measure. This will give you a chance to get the feel of the section you are going to re-record.

When the punch-out point specified by To Measure is reached, playback will continue.

SONG RECORD

Step recording

Summary: In song step record mode, notes will be recorded one by one with the specified time value, regardless of the actual timing at which you play. This makes it possible to input very complex passages which would be difficult to play in realtime.

Procedure:

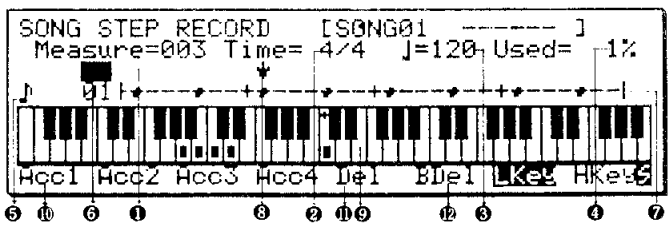
From: song record display

Press: F2 (Step) to select step recording.

To begin: recording specify the track to be recorded and press RUN. The RUN LED will light green.

Record: data as explained in the *Recording Procedure* below.

To stop: recording and return to the song play display press STOP.



❶ Measure (001...999): To move to another measure, place the cursor here and modify the data.

❷ Time (01-08/4, 01-16/08, 01-32/16): The time signature is only displayed, and cannot be modified.

❸ ♩: The tempo is only displayed, and has no effect in step recording.

❹ Used (0...100%): This displays the amount of sequencer memory already used.

❺ This area indicates the currently selected note value. At any time in step recording you can use the numeric keypad to enter note values. You can also move the cursor to this area and modify the note values. If possible, the note values in this area will be displayed as graphic symbols for a whole note, quarter note, etc. Otherwise the note value will displayed as a number of clocks (1/384th notes).

❻ When the cursor is located in this area you can move backwards and forwards through the data in time. If the current measure is longer than four quarter notes (e.g., a time signature of 10/8), a number will be displayed here to indicate the section of the measure now being displayed.

❼ The measure bar represents one measure, and vertical divisions represent one beat. A dot will be displayed on the bar to indicate a 32nd note area which contains data.

❽ As you move backward or forward through the data in time, an arrow pointing downward will move in 32nd note steps to indicate the current position in the measure.

❾ If the currently selected 32nd note area contains data, the notes in that area will be displayed on the keyboard diagram.

❿ To select an accent value, press F1-F4. Subsequently entered notes will be given the selected accent value. With the initial settings, Acc1=24, Acc2=56, Acc3=88, and Acc4=120. To change the accent value assigned to F1–F4 refer to *Song setup job 4. Accent level.*

⓫ To delete all data in the 32nd note area where the cursor is located, press F5 (Del). The cursor location will not change.

⓬ This function, F6 (BDel) depends on the current note length. If the currently selected note length is 1/4 then data at the location 1/4 note previous to the current position will be deleted. The cursor will move back 1/4 note.

Note duration: To specify how long the note will be held in relation to its note value hold SHIFT and press F1-F3. To record normal notes which sound for 80% of their note values press F1 (Norm). To record staccato notes which sound for 50% of their note values press F2 (Stac). To record slurred notes which sound for 99% of their note value press F3 (Slur).

Numeric keypad:

- Note value (numeric keys 1–8): Use the numeric keys 1–8 to specify the note value to be recorded. Pressing each key will select the note value printed above it, from a whole note (key 1) to a 16th note triplet (key 8). This also determines the step time by which the cursor will automatically advance after each note has been entered.

- Dot (numeric key 9): To dot the current note value press numeric key 9. The current note value will be extended by 50%.
- Tie (numeric key "–"): To extend the duration of the previously entered note, press TIE. The duration of the note will be extended by the current note value, and the cursor will advance accordingly.
- Rest (numeric key 0): To advance one step without entering data press REST.

Recording procedure:

- Enter notes: Each time you press and release a key it will be recorded, and the position will move ahead one step as specified by the step time. The note will not be entered until all keys have been released. This allows you to enter more than one note at the same location by pressing more than one note before releasing the first.
- Scroll through the data: When the cursor is located at ❻ you can also use the cursor keys ◁▷ to move back and forth in the track and enter notes wherever you like. When you come to note data, it will be displayed on the keyboard diagram below and sounded on the synthesizer.
- To stop recording: When you are finished recording the song press STOP. You will return to the song play display, where you can press RUN and hear the song you just recorded.

Song edit

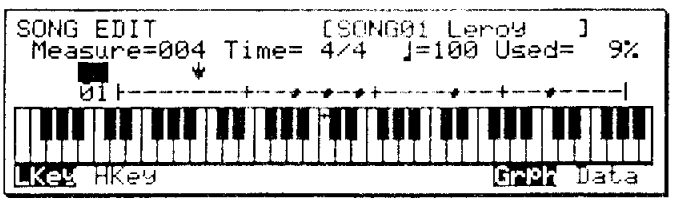
Summary: In song edit mode you can edit individual events that have been recorded in tracks 1–15.

Procedure:

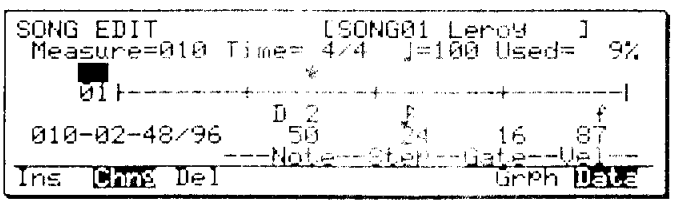
From: song mode when the SONG LED is lit red
Press: EDIT
Select: the track to edit
Edit: the data as explained in the following sections.
To exit: song edit mode and return to song play mode press EXIT.

The song edit display will differ according to whether graphic or data editing has been selected, and whether tracks 1–15 or track 16 has been selected.

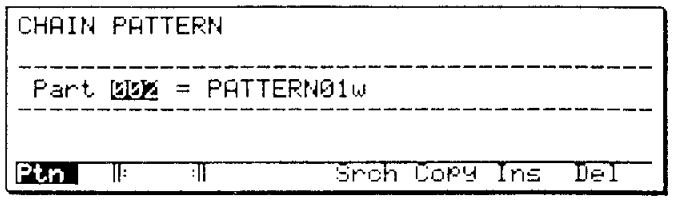
If graphic editing has been selected (tracks 1–15)



If data editing has been selected (tracks 1–15)



If track 16 has been selected for editing



Select the track to edit: Press a memory select button 1–16 to select the track to edit. Tracks 1–15 contain sequence data and track 16 contains pattern data.

Song graphic editing (tracks 1–15): To select graphic editing when a track 1–15 is selected, press F7 (Grph). A horizontal line will be displayed with dots indicating the position of note data in the measure. A keyboard diagram below will indicate the notes at the currently selected 32nd note area. For details refer to the following section *Song edit (graphic mode)*.

Song data editing (tracks 1–15): To select data editing when a track 1–15 is selected, press F8 (Data). The display will show the type and numerical values for each event. Data editing is divided into two modes; insert and change. For details refer to the following sections *Song edit (data insert)* and *Song edit (data change)*.

Chain pattern editing (track 16): When track 16 is selected, the display will show the pattern number assigned to each part. For details refer to the following section *Chain pattern*.

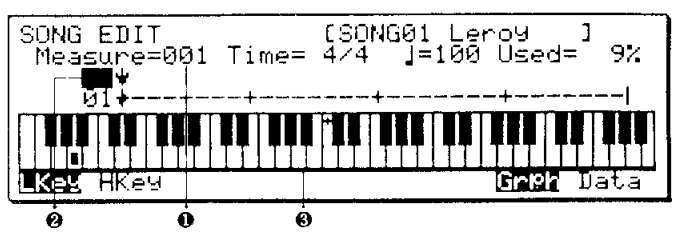
SONG EDIT

Song edit (graph)

Summary: In song editing graph mode, the notes in the selected track 1–15 will be graphically displayed on a keyboard diagram. Data can only be viewed, not edited in graph mode.

Procedure:

From: song mode when the SONG LED is lit red
Press: EDIT
Select: a track 1–15
Press: F7 (Grap).
View: the data as explained below.
To exit: song edit mode and return to song play mode press EXIT.



❶ Measure (001...999): This indicates the measure that is displayed. You can move the cursor here and select another measure, or use the sequencer location keys |◁, ◁◁, LOCATE, or ▷▷|.

❷ You can use the dial, -1 +1, or the slider to move within the step area in 32nd note increments by placing the cursor here. As you come to note data, it will be displayed on the keyboard diagram below and sounded by the synthesizer.

❸ If the currently selected 32nd note step contains note data, the notes will be displayed on this keyboard diagram.

❹ The keyboard diagram in ❸ above may be displayed in either of two ranges. Press F1 (LKey) to view the keyboard from E0 to B5. Press F2 (HKey) to view the keyboard from C1 to G6.

Select the track to view: While in song edit graph mode you can press a memory select button 1–15 to select the track to view. If you select track 16 the display will be as explained in the following section, *Chain pattern*.

Remarks: Graph edit mode only displays the data in the track. To edit data you must use either data change mode or data insert mode.

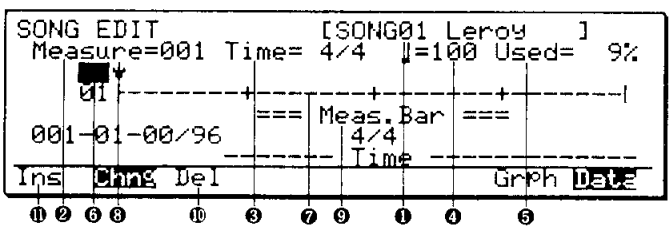
SONG EDIT

Song edit (data change)

Summary: In song editing data change mode, all data in the selected track 1–15 will be displayed numerically. You can change the values of existing data, or delete the currently displayed data.

Procedure:

From: song mode when the SONG LED is lit red
Press: EDIT
Select: a track 1–15
Press: F8 (Data) and then press F2 (Chng).
Select: the data you wish to edit
Specify: the data parameters and location.
To change: the data press ENTER
To exit: song edit mode and return to song play mode press EXIT.



❶ Song Name: This displays the name of the song.

❷ Measure (001...999): To move to another measure in the track, place the cursor here and modify the data.

❸ Time (01–08/4, 01–16/08, 01–32/16): This displays the time signature of the current measure in the track.

❹ ♩: Tempo is only displayed, and has no effect in song edit mode.

❺ Used (0...100%): This displays the amount of sequencer memory already used.

❻ When the cursor is located in this area you can use -1 +1 or the dial to move backward and forward through the data in time. If the current measure is longer than four quarter notes (e.g., a time signature of 10/8), a number will be displayed here to indicate the section of the measure now being displayed.

❼ The horizontal line represents one measure, and vertical divisions represent one beat. A dot will be displayed on the bar to indicate a 32nd note area which contains data.

❽ As you move backward or forward through the data in time, an arrow pointing downward will move in 32nd note steps to indicate the current position in the measure.

❾ This area numerically shows the data at the cursor location. Move the cursor to the data you wish to modify, modify the data, and press ENTER.

❿ To delete the currently displayed data press F3 (Del).

⓫ To move to Insert mode press F1 (Ins).

Move through the data: As mentioned above, when the cursor is located at ❻ you can use -1 +1 or the dial to move backwards and forwards through the data. You can also move through the data *regardless* of the location of the cursor by holding SHIFT and using -1 +1 or the dial.

Change the location of the data: In addition to the data values for each type of data, you can also modify the location (measure, beat, clock) to move the data in time.

Change the data values: The following section *Song edit (data insert)* explains the values which can be modified for each type of data. After modifying the data values and/or location, be sure to press ENTER if you wish to finalize the change.

Top/end of Track: To indicate the beginning or end of the track, the display will show "Top of Track" or "End of Track". This data cannot be changed.

Measure marks: When a measure mark ("Meas.Bar") is displayed, you can move the cursor to the time signature and modify it. If you modify the time signature of a measure, the location of all subsequent measure marks will be affected.

This will not affect the musical data in the tracks. However it will determine how the metronome is sounded when playing back or recording. It may also be useful in the following situation.

Most song edit jobs (pages 214 to 227) require you to specify the area to be affected in measures. If you want to use a song edit job on an area which is not bounded by the existing measure marks, you can edit a measure mark to a suitable time signature (such as 1/16) so that the measure marks now delimit the area where you want to use the song edit job.

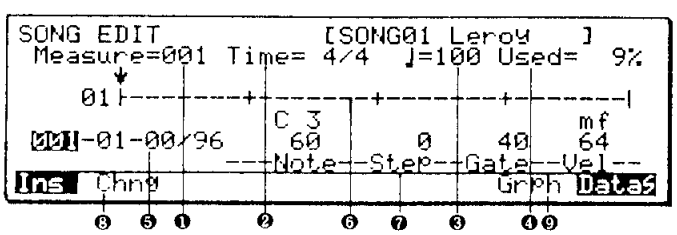
SONG EDIT

Song edit (data insert)

Summary: In song editing data insert mode, you can insert any type of data into any location in the selected track 1–15.

Procedure:

From: song mode (when the SONG LED is lit red)
Press: EDIT
Select: a track 1–15
Press: F8 (Data) and then press F1 (Ins).
Specify: the type, parameters, and location of the data you wish to insert.
To insert: the data press ENTER. It is not necessary to press ENTER if you enter data via the numeric keys.
To exit: song edit mode and return to song play mode press EXIT.



❶ Measure (001...999): To move to another measure in the track, place the cursor here and modify the data.
❷ Time (01–08/4, 01–16/08, 01–32/16): This displays the time signature of the measure in the track being edited.
❸ ♩: Tempo is only displayed, and has no effect in step record mode.
❹ Used (0...100%): This displays the amount of sequencer memory already used.
❺ When the cursor is located in this area you can move backwards and forwards through the data in time (except in the Insert mode). If the current measure is longer than four quarter notes (e.g., a time signature of 10/8), a number will be displayed here to indicate the section of the measure now being displayed.
❻ The measure bar represents one measure, and vertical divisions represent one beat. A dot will be displayed on the bar to indicate a 32nd note area which contains data.

❼ This area numerically shows the data that will be inserted at the cursor location. To specify the type of data to be inserted, hold SHIFT and press F1–F6 to enter one of the types of data explained below. Move the cursor and modify the parameters as desired, and press ENTER to insert the data at the current location.

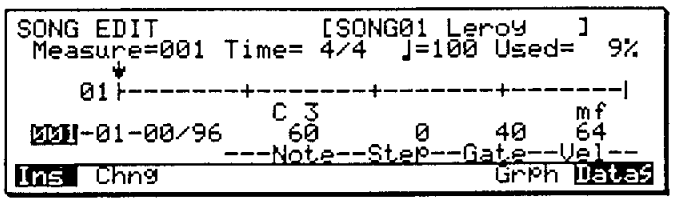
❽ To move to Change mode press F2 (Chng).

❾ To move to Graph mode press F7 (Grph).

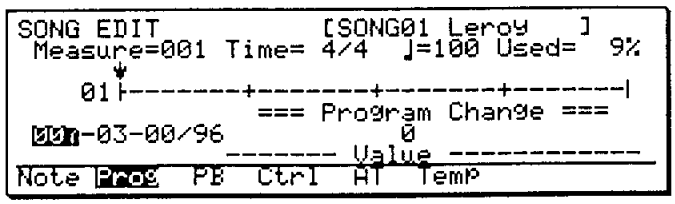
Note: The following display will appear, and you can move the cursor to specify the following data; location ("001-01-00/96", etc.), note number (Note 0...127), gate time (Gate 1...8188) in multiples of 4, and note-on velocity (Velocity 1...127).

Gate time is displayed as the number of clocks (1/96th of a beat) that the note will be held, but can be specified only in multiples of 4.

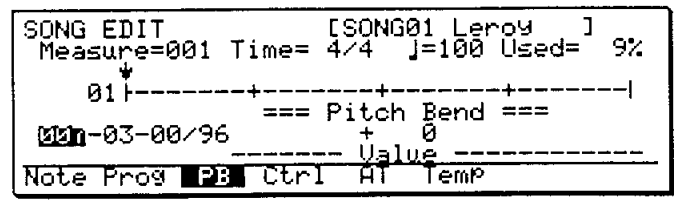
Step time (Step 0...9999) is displayed to indicate the time until the next event, but cannot be edited.



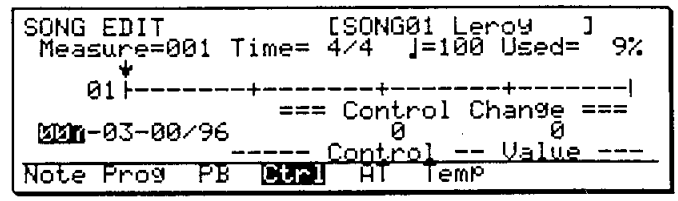
Program change: To enter program change data hold SHIFT and press F2 (Prog). The following display will appear, and you can move the cursor to specify the the program change number (Value 0...127). A program change of 0 will select the first program; A01 in the case of the SY99. The setting for *MIDI Utility 1.Setting* (JUMP #807) will determine how program changes are received. For details, see page 258.



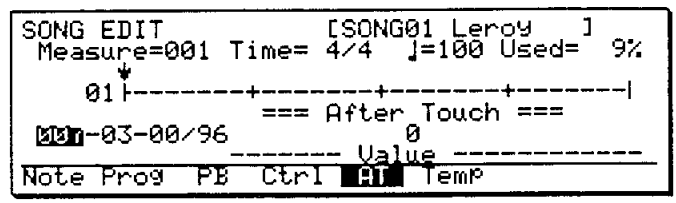
Pitch bend: To enter pitch bend data hold SHIFT and press F3 (PB). The following display will appear, and you can move the cursor to specify the pitch bend data (Value –8192...8191).



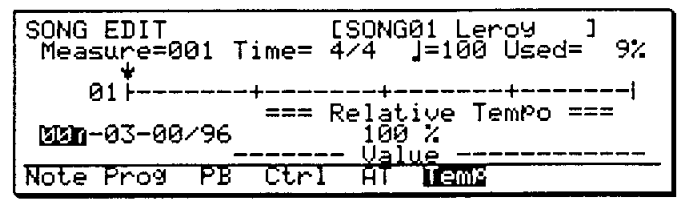
Control change: To enter control change data hold SHIFT and press F4 (Ctrl). The following display will appear, and you can move the cursor to specify the control change number (Control 0...127) and control change data (Value 0...127). Control change number 123 cannot be selected.



After touch: To enter after touch data hold SHIFT and press F5 (AT). The following display will appear, and you can move the cursor to specify the aftertouch data (Value 0...127).



Relative tempo: To enter relative tempo data hold SHIFT and press F6 (Temp). The following display will appear, and you can move the cursor to specify the relative tempo change data (Value 10%...200%).



When playback reaches relative tempo data, the playback tempo will change by the specified percentage. Relative tempo data will have an effect only if the SY99 sequencer is synchronized to its own internal clock. Refer to *Song Setup job 2.MIDI Control.*

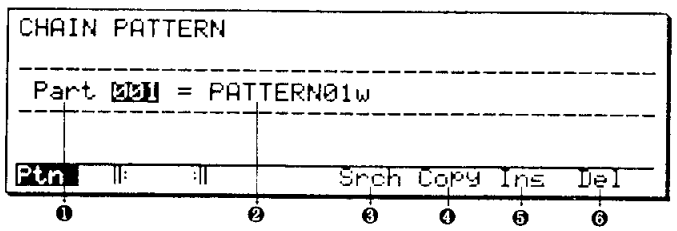
SONG EDIT

Chain pattern

Summary: Track 16 of the sequencer contains pattern numbers and repeat data. Chain pattern allows you to arrange the pattern and repeat data in this track.

Procedure:

From: song mode (when the SONG LED is lit red)
Press: EDIT
Select: track 16
Specify: the pattern played by each part, and search, copy, insert, or delete parts.
To enter: the specified data for each part press ENTER.
To exit: chain pattern mode and return to song play press EXIT.



❶ Track 16 can consist of up to 999 Parts. When the cursor is located at Part, select an existing part 001–999. It is not possible to select a part which contains no data. When you press ENTER to enter the specified data for a part, this number will automatically advance to the next part.

❷ Each part in track 16 can be either a pattern number, a begin repeat mark (||:), or an end repeat mark (:||). With the cursor located here, specify the data that will occupy the selected part. To specify a pattern press F1 (Ptn) and specify the pattern number 01–99. To enter a begin repeat mark press F2 (||:). To enter an end repeat mark press F3 (:||) and specify the number of times to repeat. When you press ENTER to enter the specified data for each part, the part number will automatically advance.

❸ To search for the next occurrence of a begin repeat, end repeat, or specified pattern number, press F5 (Srch). Details are given below.

❹ To copy a specified range of parts to another range of parts, press F6 (Copy). Details are given below.

❺ To insert a new part into the track, press F7 (Ins). Details are given below.

❻ To delete a specified part from the track, press F8 (Del). Details are given below.

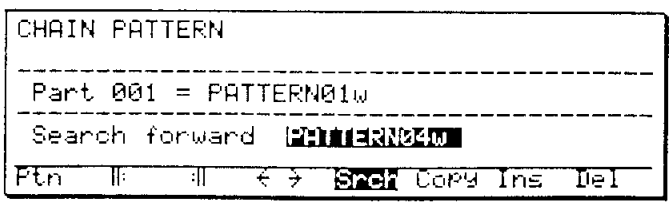
Repeat marks: The parts surrounded by repeat begin and repeat end marks will repeat for the specified number of times. For example, if track 16 consists of the following data, it will repeat pattern 01 for 200 times.

```
Part 001 = ||:
Part 002 = PATTERN01w
Part 003 = PATTERN01w
Part 004 = :|| x99
```

Repeat marks can be nested if desired. For example, the data in the diagram below will play parts as follows: [05, 12, 05, 12, 05, 12, 07] x 3.

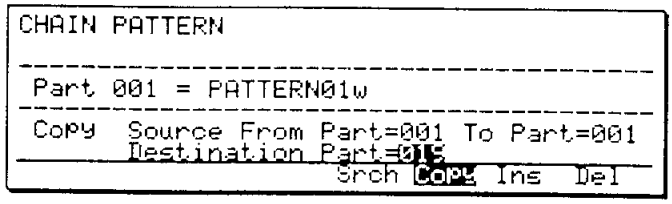
Part	001	002	003	004	005	006	007
	||:	||:	05	12	:||x2	07	:||x2

Search: To search for the next occurrence of a begin repeat, end repeat, or specified pattern number, press F5 (Srch). The lower lines of the display will change as follows.



1. Specify the data you wish to search for. To search for a specific pattern press F1 (Ptn) and specify the number 1–99 for which you are searching. To search for the next begin repeat mark press F2 (||:). To search for the next end repeat mark press F3 (:||).
2. Specify the direction in which you want to search. Each time you press F4 (←→) the display will alternate between "forward" and "backward".
3. To begin searching press ENTER. To cancel without searching press EXIT.

Copy part: To copy a specified range of parts to another range of parts, press F6 (Copy). The lower lines of the display will change as follows.



1. Specify the copy source as "From Part" and "To Part".
2. Specify the copy destination as "Destination Part".
3. To copy the specified parts press ENTER. To cancel without copying press EXIT. For example if you have specified "From Part=002", "To Part=003", and "Destination Part=005", the contents of track 16 will change as follows.

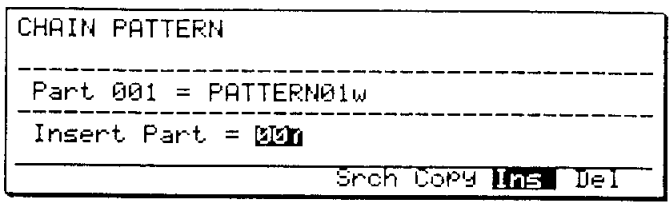
Before

Part	001	002	003	004	005	006	007	008
Pattern	05	11	12	13	02	01	01	01

After

Part	001	002	003	004	005	006	007	008
Pattern	05	11	12	13	11	12	01	01

Insert part: To insert a new part into the track, press F7 (Ins). The lower lines of the display will change as follows.



1. Specify the number of the part to be inserted.
2. To insert the specified part press ENTER. To cancel without inserting press EXIT. When a part is inserted the following parts will be moved to make room for it. For example if you have specified "Insert Part=003" the contents of track 16 will change as follows.

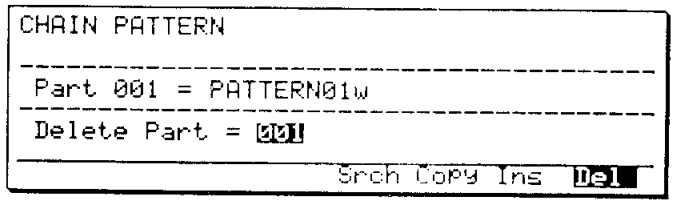
Before

Part	001	002	003	004	005	006	007	008
Pattern	05	11	12	13	02	01	01	01

After

Part	001	002	003	004	005	006	007	008
Pattern	05	11	??	12	13	02	01	01

Delete part: To delete a specified part from the track, press F8 (Del). The lower lines of the display will change as follows.



1. Specify the number of the part to be deleted.
2. To delete the specified part press ENTER. To cancel without deleting press EXIT. When a part is deleted the following parts will be moved to fill the gap. For example if you have specified "Delete Part=003" the contents of track 16 will change as follows.

Before

Part	001	002	003	004	005	006	007	008
Pattern	05	11	12	13	02	01	01	01

After

Part	001	002	003	004	005	006	007	...
Pattern	05	11	13	02	01	01	01	

Note: *The pattern data is shared by all of the songs. This can lead to problems if you use the same pattern for more than one song. Say, for example, you are using Pattern 01 in both Song 1 and Song 2. If you change the pattern while editing Song 2, you may find that these changes will not Song 1 at all.*

For this reason it is best to avoid using patterns in more than one song. If you have created a pattern for one song which you would like to use in another, it is best to use the copy pattern function to copy the pattern to another number. You may then use the copied pattern in the new song.

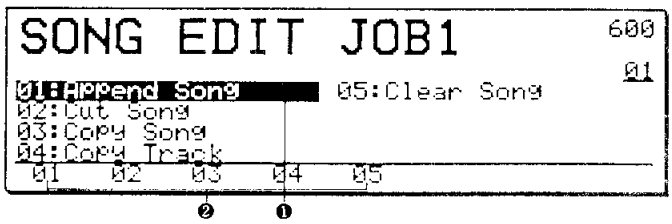
Song edit jobs 1

JUMP #600

Summary: The first song edit job directory contains operations which allow you manipulate data for entire tracks and songs.

Procedure:

From: song play mode
Press: F3 (Job1) (JUMP #600)
Select: the desired song edit job



❶ Move the cursor in this area and press ENTER to select the specified job.

❷ Pressing F1–F5 will select the corresponding job.

01: Append Song: Append one song to the end of another.
02: Cut Song: Cut a song in two.
03: Copy Song: Make a copy of a song.
04: Copy Track: Copy a track from one song to another.
05: Clear Song: Erase all data for one song or all songs.

SONG EDIT JOBS 1

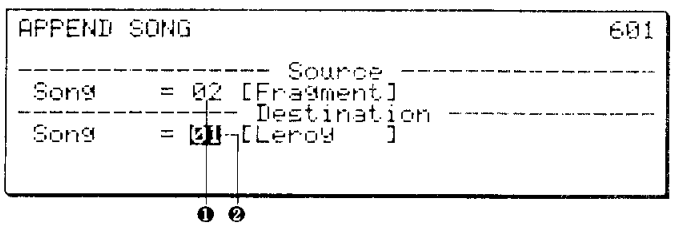
1. Append song

JUMP #601

Summary: This operation is used to append one song to the end of another.

Procedure:

From: song edit job directory 1 (JUMP #600)
Select: 01:Append Song. (JUMP #601)
Specify: the song to be appended, and the song to which it is to be appended.
To execute: press ENTER.
To quit: without executing, press EXIT.



❶ Source (1...10): Specify the song to be appended. This song will be cleared as a result of the append operation.

❷ Destination (1...10): Specify the song to which the song in (1) is to be appended.

Remarks: When the source song is appended to the destination song, the tempo, transmit channels, next song, next mode, and song name for the destination song will remain valid for the combined whole. Any repeat end marks in the destination song which do not have corresponding repeat begin marks will be removed from the destination song during the append process.

The two songs will play back-to-back, with one exception: if Track 16 of the destination song is shorter than the other tracks, Track 16 of the source song will be moved forward in time and attached directly to the end of the destination Track 16. As a result, the pattern data for the source song will begin playing before the rest of the destination song has ended. To avoid this problem, check to be sure that Track 16 of the destination song is the same length as the rest of the tracks. If it is not, you may wish to pad the track with blank patterns.

Errors: An attempt to append a song will result in an error under any of the following conditions:

- When there is not sufficient sequencer memory to perform the append operation.
- When the same song is specified as both the source and destination.
- When the combined pattern chain exceeds the maximum number of parts.

SONG EDIT JOBS 1

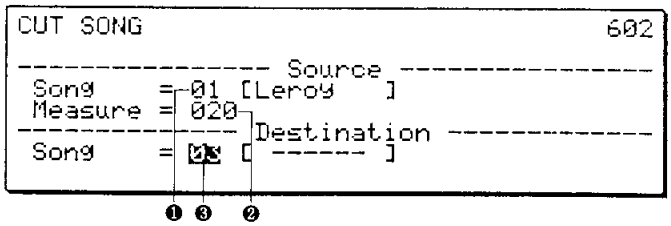
2. Cut song

JUMP #602

Summary: This operation allows you to cut a song in two, creating two shorter songs from one long song.

Procedure:

From: song edit job directory 1 (JUMP #600)
Select: 02:Cut Song (JUMP #602)
Specify: the song to be cut, the measure at which it is to be cut, and the song number to which the cut portion is to be copied.
To execute: press ENTER.
To quit: without executing, press EXIT.



❶ Source (1...10): Specify the song to be cut.
❷ Measure (1...999): Specify the measure at which the song in ❶ is to be cut. This measure and all measures following it will be cut from the source song and copied to the destination song location.
❸ Destination (1...10): Specify the song number to which the cut portion is to be moved.

Remarks: The cut song operation cuts the specified measure and all following measures from the source song and moves them to the destination song. The tempo, transmit channels, next song, next mode, and song name for the destination song will be the same as those set for the source song.

If the destination song is already occupied by song data, this data will be erased by the cut operation. Before executing the cut song operation, always check to be certain that the destination song does not contain data you wish to keep.

Errors: An attempt to cut a song will result in an error under any of the following conditions:

- When there is not sufficient sequencer memory to perform the cut operation.
- When the same song is specified as both the source and destination.
- When the song cannot be cut at the specified measure. The measure specification is subject to the following limitations: ❶ It should not be located after the end of the song data. ❷ It should not be located within a pattern; that is, the specified measure should always be the first measure of a pattern. ❸ It should not be located within a loop (i.e., between repeat marks) in the pattern chain.

SONG EDIT JOBS 1

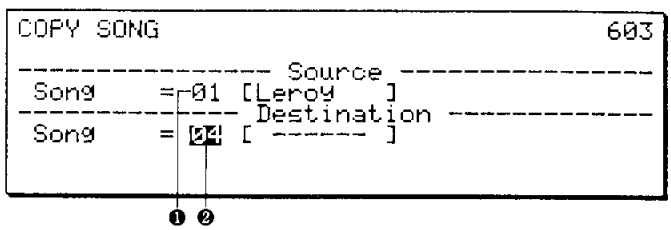
3. Copy song

JUMP #603

Summary: This operation allows you to make a copy of a song.

Procedure:

From: song edit job directory 1 (JUMP #600)
Select: 03:Copy Song (JUMP #603)
Specify: the song to be copied, and the song number to which it is to be copied.
To execute: press ENTER.
To quit: without executing, press EXIT.



❶ Source (1...10): Specify the song to be copied.
❷ Destination (1...10): Specify the song number to which the song in ❶ is to be copied.

Remarks: All song data will be copied from the source to the destination. The tempo, transmit channels, next song, next mode, and song name for the destination song will be the same as those for the source song.

If the destination song is already occupied by song data, this data will be erased by the copy operation. Before executing the copy song operation, always check to be certain that the destination song does not contain data you wish to keep.

Errors: An attempt to copy a song will result in an error under any of the following conditions:

- When there is not sufficient sequencer memory to perform the copy operation.
- When the same song is specified as both the source and destination.

SONG EDIT JOBS 1

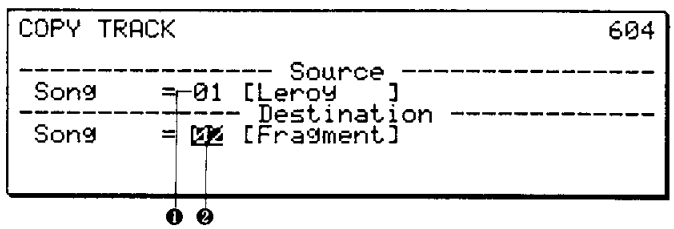
4. Copy track

JUMP #604

Summary: This operation allows you to copy a track from one song to another.

Procedure:

From: song edit job directory 1 (JUMP #600)
Select: 04:Copy Track (JUMP #604)
Specify: the song from which a track is to be copied, and the song to which it is to be copied.
Press: a track select button 1–16 to select a track to copy.
To execute: press ENTER.
To quit: without executing, press EXIT.



❶ Source (1...10): Specify the song from which the selected track is to be copied.
❷ Destination (1...10): Specify the song to which the selected track is to be copied.

Remarks: All song data for the selected track will be copied from the source to the destination. A song may become longer as a result of the copy track operation, if the track copied is longer than the destination song. However, the measure table of the destination song will not be changed as a result of the operation.

If the selected track of the destination song is already occupied by song data, this data will be erased by the copy operation. Before executing the copy track operation, always check to be certain that the selected track of the destination song does not contain data you wish to keep.

Errors: An attempt to copy a track will result in an error under any of the following conditions:

- When there is not sufficient sequencer memory to perform the copy operation.
- When the same song is specified as both the source and destination.

SONG EDIT JOBS 1

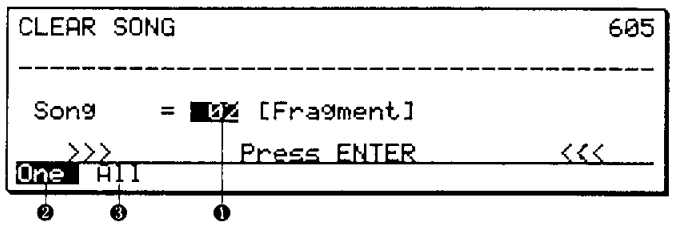
5. Clear song

JUMP #605

Summary: This operation allows you to clear one song or all songs from the SY99's sequencer memory.

Procedure:

From: song edit job directory 1 (JUMP #600)
Select: 05:Clear Song (JUMP #605)
Specify: whether to clear one song or all songs. If one song is chosen, specify the song to be cleared.
To execute: press ENTER.
To quit: without executing, press EXIT.



❶ Song (1...10): If you have pressed F1 (One), specify the song to be cleared.
❷ To clear a single song, press F1 (One) and specify the song.
❸ To clear all songs, press F2 (All).

Remarks: This operation clears all song data for the a specified song or all songs from the SY99's sequencer memory. In addition, the song's settings are initialized as follows:

- The song's measure table is initialized to 4/4.
- The tempo is set to 120.
- The transmit channels are assigned to their equivalent tracks. (Track 1 to channel 1, Track 2 to channel 2, etc.)
- The Next Song item is set to "Off."
- The Next Mode item is set to "Stop."
- The name is " ------ ".

If you clear one song or all songs, the data will be lost forever. There is no way of recalling a song that has been cleared from memory.

Song edit jobs 2

JUMP #606

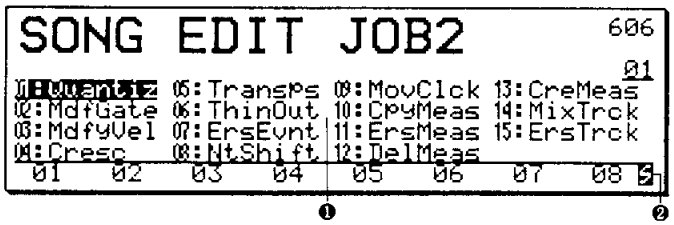
Summary: The second song edit job directory contains various operations which allow you to edit the data in specified measures of tracks 1–15 in various ways. To select the track to which the operation will apply, press a track select button 1–15. Some operations (jobs 10, 12, 13, and 15) allow you to select two or more tracks. These edit jobs can be used only on tracks 1–15. Track 16 contains Part data, not sequence data.

Procedure:

From: song play mode

Press: F4 (Job2) (JUMP #606)

Select: the desired song edit job



❶ Move the cursor in this area and press ENTER to select the specified job.

❷ Pressing F1–F8 will select the corresponding job 1–8. Holding SHIFT and pressing F1–F7 will select the corresponding job 9–15.

01: Quantiz (Quantize): Adjust the timing of each event in the specified measures of the selected track to the nearest interval of the specified value.

02: MdfGate (Modify gate time): Modify the gate times (durations) of all notes in specified measures of the selected track.

03: MdfyVel (Modify velocity): Modify the note-on velocity values for all note events in specified measures of the selected track.

04: Cresc (Crescendo): Create a gradual change in note-on velocity over the specified measures of the selected track to create an effect of crescendo or diminuendo.

05: Transps (Transpose): Transpose all notes in specified measures of the selected track by a specified interval.

06: ThinOut (Thin out): Conserve sequencer memory by deleting approximately every other occurrence of a specified type of continuous controller from specified measures of the selected track.

07: ErsEvnt (Erase event): Erase all data of a specified type from specified measures of the selected track.

08: NtShift (Note shift): Shift all notes of a specified note number in the selected track to another note number.

09: MovClck (Move clock): Move events in the specified measures of the selected track forwards or backward in time.

10: CpyMeas (Copy measure): Copy a specified range of measures in the selected track(s) to another location in the same track.

11: ErsMeas (Erase measure): Erase all data from specified measures of the track, leaving the measures empty.

12: DelMeas (Delete measure): Delete the specified measures from the selected track(s), and move the following measures up to fill the gap.

13: CreMeas (Create measure): Insert empty measures of the specified time signature into the selected track(s) over the specified range of measures.

14: MixTrck (Mix track): Combine the data of specified measures from a specified track with the data of another track.

15: ErsTrck (Erase track): Erase all data from the selected track(s).

SONG EDIT JOBS 2

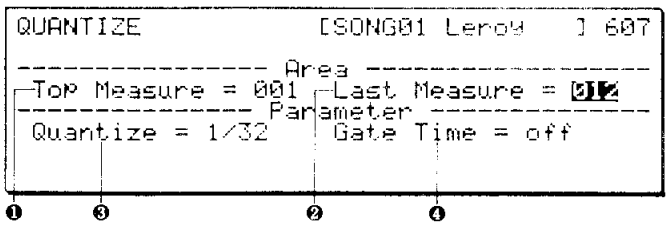
1. Quantize

JUMP #607

Summary: This operation adjusts the timing of each event in the specified measures of the track to the nearest interval of the specified value. This can be used to move inaccurately played notes precisely onto the beat

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 01:Quantz (JUMP #607)
Specify: the area of track measures you wish to quantize and set the parameters.
Press: a track select button 1–15 to select a track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



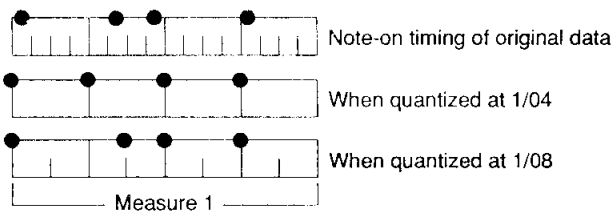
❶ Top Measure (001...999): Specify the first measure to be affected.

❷ Last Measure (001...999): Specify the last measure to be affected.

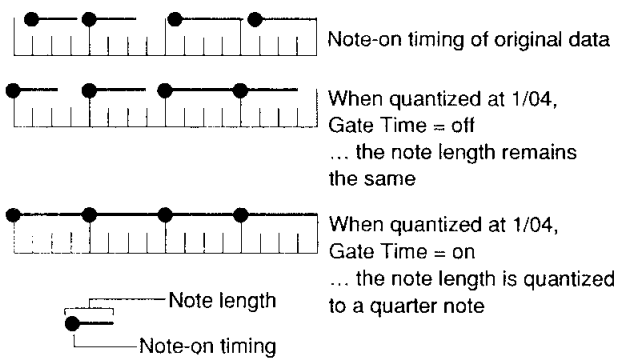
❸ Quantize (1/2, 1/4, 1/8, 1/12, 1/16, 1/24, 1/32): Specify the timing interval to which the notes will be quantized. For example if the shortest note value should be a 16th note, specify 1/16. If the music contains triplets, you should use a quantization of 1/12, or 1/24.

❹ Gate Time (on, off): Specify whether or not the gate time (duration of the note) should be quantized. If you set this "on", the gate time of each note will also be adjusted to the nearest quantize value you specify.

Quantize: The following diagram shows how a track recorded in realtime and played with inaccurate timing would change as a result of quantizing at 1/04 and at 1/08.



Gate time: The following diagram shows how the Gate Time setting will affect the quantized results.



SONG EDIT JOBS 2

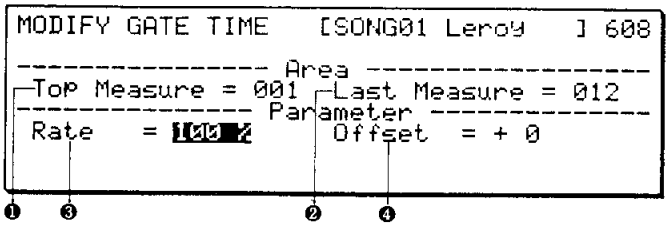
2. Modify gate time

JUMP #608

Summary: This operation modifies the gate times (durations) of all notes in specified measures of the selected track. Gate times can be modified by a ratio or by an absolute value.

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 02:MdfGate (JUMP #608)
Specify: the area of track measures for which you wish to modify gate time and set the parameters.
Press: a track select button 1–15 to select a track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Top Measure (001...999): Specify the first measure to be affected.

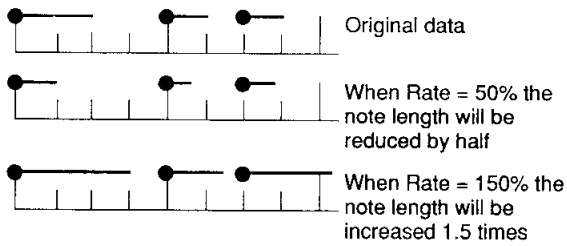
❷ Last Measure (001...999): Specify the last measure to be affected.

❸ Rate (000%...200%): All gate times will be multiplied by the specified percentage. A rate of 100% will result in no change. A rate of 200% will make all gate times twice as long. A rate of 0% will set a gate time of 1.

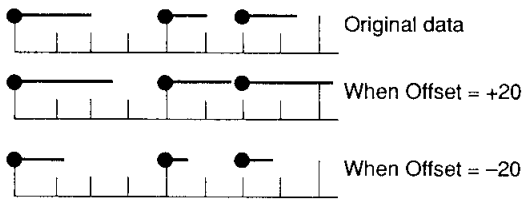
❹ Offset (–99...+99): The specified offset will be added to all gate times.

Remarks: Each note event in a track has a gate time which determines the duration of the note. The gate time is indicated in units of a 1/384th note (1/96th of a quarter note), and has a range of 0–8188. The modify gate time operation will not increase or decrease the gate time beyond these values.

Rate and Offset: These two settings can be used separately or together. First the value is multiplied by the rate, and then the offset is added. The following diagram shows how Rate settings modify the gate time by the specified percentage.



The following diagram shows how Offset settings add the specified value to the original gate time.



- If you want only to add an absolute value to each gate time, leave rate at 100% so it will have no effect.
- If you want only to multiply each gate time by the same percentage, then leave offset at 0 so it will have no effect.
- If the resulting gate time is 0, the note may be inaudible.
- The gate time is always a multiple of 4.

SONG EDIT JOBS 2

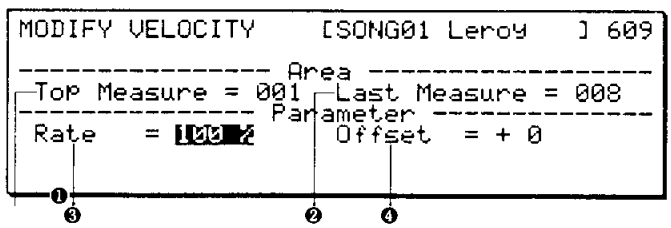
3. Modify velocity

JUMP #609

Summary: This operation modifies the note-on velocity values for all note events in specified measures of the selected track.

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 03:MdfVel (JUMP #609)
Specify: the area of track measures for which you wish to modify velocity and set the parameters.
Press: a track select button 1–15 to select a track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Top Measure (001...999): Specify the first measure to be affected.

❷ Last Measure (001...999): Specify the last measure to be affected.

❸ Rate (000%...200%): All note-on velocity values will be multiplied around the central value of 64 by the specified percentage. A rate of 100% will result in no change. A rate of 200% will move all velocity values further away from 64; i.e., *expand* the dynamic range. A rate of 0% will set all velocities to the central value of 64; i.e., *compress* the dynamic range.

❹ Offset (–99...+99): The specified offset will be added to all note-on velocity values.

Remarks: Each note event in a track has a note-on velocity which determines the force with which the note is played. The velocity has a range of 1–127. This modify velocity operation cannot increase or decrease the velocity beyond these values.

Rate and Offset: These two settings can be used separately or together. First the value is multiplied by the specified rate, and then the offset is added.

- If you want only to add an absolute value to each velocity, leave rate at 100% so it will have no effect.
- If you want only to modify each velocity around the central value of 64, then leave offset at 0 so it will have no effect.

SONG EDIT JOBS 2

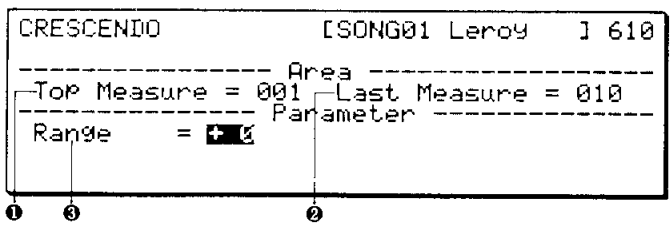
4. Crescendo

JUMP #610

Summary: This operation creates a gradual change in note-on velocity over the specified measures of the selected track to create an effect of crescendo or diminuendo.

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 04:Cresc (JUMP #610)
Specify: the area of track measures over which you wish to create a crescendo, and specify the range.
Press: a track select button 1–15 to select a track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Top Measure (001...999): Specify the first measure to be affected.

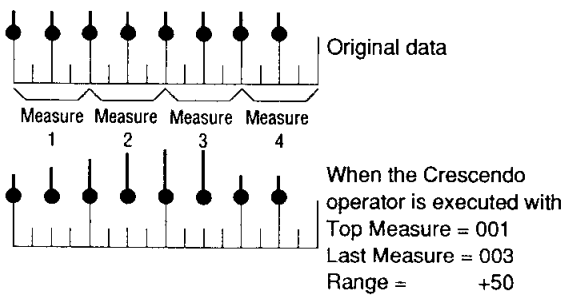
❷ Last Measure (001...999): Specify the last measure to be affected.

❸ Range (–99...+99): Starting at the beginning of the first measure you specify, note-on velocity will gradually be modified until the increase or decrease specified by the range is reached at the end of the last measure. Settings of +1...+99 will result in a crescendo. Settings of –1...–99 will result in a diminuendo.

Remarks: Each note event in a track has a note-on velocity which indicates the force with which the note is played. The velocity value of each note is limited to a range of 1–127, and the velocity values resulting from this operation will not exceed these limits.

If a voice has not been programmed with velocity sensitivity, the velocity value of the note-on message will have no effect on the sound.

Range: This specifies the final change in velocity which will be reached at the end of the crescendo or diminuendo. The following diagram shows the result of the Range setting.



SONG EDIT JOBS 2

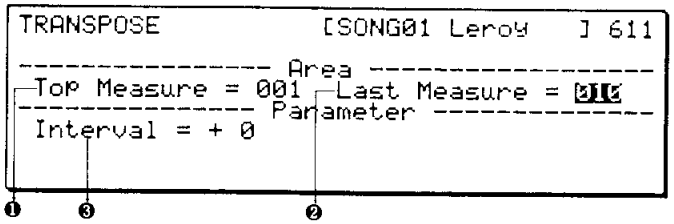
5. Transpose

JUMP #611

Summary: This operation transposes all notes in specified measures of the track by a specified interval.

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 05:Transps (JUMP #611)
Specify: the area of track measures which you wish to transpose and set the interval.
Press: a track select button 1–15 to select a track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Top Measure (001...999): Specify the first measure to be affected.
❷ Last Measure (001...999): Specify the last measure to be affected.
❸ Interval (–99...+99): The note number of all notes will be transposed by the specified interval. Settings of +1...+99 will transpose upwards, and settings of –1...–99 will transpose downwards. The note number is limited to a range of 0 (C-2) to 127 (G8), and the note numbers resulting from this operation will not exceed these limits.

SONG EDIT JOBS 2

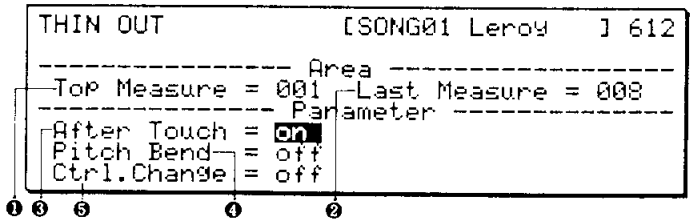
6. Thin out

JUMP #612

Summary: This operation conserves sequencer memory by deleting approximately every other occurrence of a specified type of continuous controller from specified measures of the track.

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 06:ThinOut (JUMP #612)
Specify: the area of track measures which you wish to thin out and specify the type of data to be thinned out.
Press: a track select button 1–15 to select a track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Top Measure (001...999): Specify the first measure to be affected.
❷ Last Measure (001...999): Specify the last measure to be affected.
❸ After Touch (on, off): When this is set "on", channel aftertouch data will be thinned out. (Polyphonic aftertouch is not received or recorded by the SY99.)
❹ Pitch Bend (on, off): When this is set "on", pitch bend data will be thinned out.
❺ Control Change (on, off): When this is set "on", all continuous control change data will be thinned out. Switch-type controllers such as sustain on/off will not be affected.

Remarks: You may thin out more than one type of data at once.

When you move a continuous controller slowly, many messages with closely spaced data will be transmitted. You can usually delete half of them without any audible difference. If you are running low on sequencer memory, thinning out some continuous data can help. Repeating the thin out operation several times will eventually produce rough changes in controller data, which can be an interesting effect in itself.

SONG EDIT JOBS 2

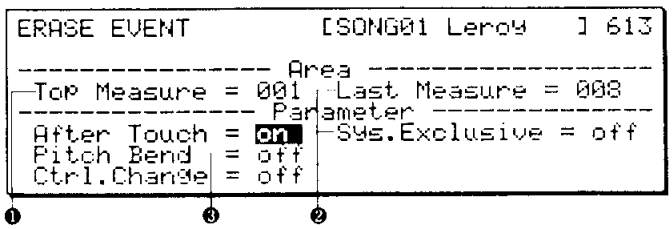
7. Erase event

JUMP #613

Summary: This operation erases all data of a specified type from specified measures of the track.

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 07:ErsEvnt (JUMP #613)
Specify: the area of track measures from which you wish to erase data, and specify the type of data to be erased.
Press: a track select button 1–15 to select a track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Top Measure (001...999): Specify the first measure to be affected.
❷ Last Measure (001...999): Specify the last measure to be affected.
❸ Parameter (Aftertouch, Pitch Bend, Control Change, System Exclusive): Set this to "on" for each type of data you wish to erase.

When you press ENTER all data of the specified types will be erased from the specified range of measures.

SONG EDIT JOBS 2

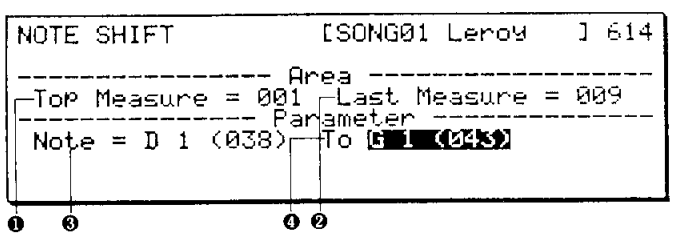
8. Note shift

JUMP #614

Summary: This operation shifts all notes of a specified note number to another note number.

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 08:NtShift (JUMP #614)
Specify: the area of track measures for which you shift notes, and specify the original and new note numbers.
Press: a track select button 1–15 to select a track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Top Measure (001...999): Specify the first measure to be affected.
❷ Last Measure (001...999): Specify the last measure to be affected.
❸ Note (C-2...G8 = 000...127): Specify the original note number.
❹ To (C-2...G8 = 000...127): Specify the new note number.

When you press ENTER all notes of the number specified by "Note" will be shifted to the note number specified by "To".

Remarks: This operation is often useful when controlling a drum machine from the SY99's sequencer. Most drum machines play specific sounds for each note. For example, shifting all D#2 notes to F#2 might change all snare hits to hi-hat hits. Consult the instrument/note table for your drum machine.

SONG EDIT JOBS 2

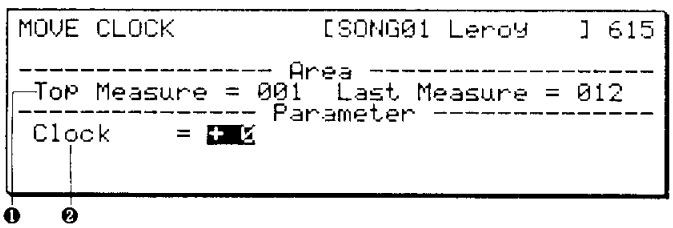
9. Move clock

JUMP #615

Summary: This operation moves the specified measures of the track forward or backward in time.

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 09:MovClck (JUMP #615)
Specify: the track which you wish to move in time and set the number of clocks by which to move it.
Press: a track select button 1–15 to select a track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Area (001...999): The measures beginning with the specified Top Measure and ending with the specified Last Measure will be moved in time.

❷ Clock (–99...+99): Specify the number of clocks (units of 1/96th of a quarter note) by which the track is to be moved. Positive settings will move the track forward in time so that it plays later. Negative settings will move the track backward in time so that it plays earlier.

Remarks: It is often effective to use clock move to compensate for voices that have a slow attack. For example strings often have a slower attack than other voices, and will appear to be lagging behind the other voices even if the note on messages are actually simultaneous. In such cases you can use this Move Clock operation to move the strings track earlier in time so that the string voices begin playing a bit before than the other voices to improve the perceived timing.

SONG EDIT JOBS 2

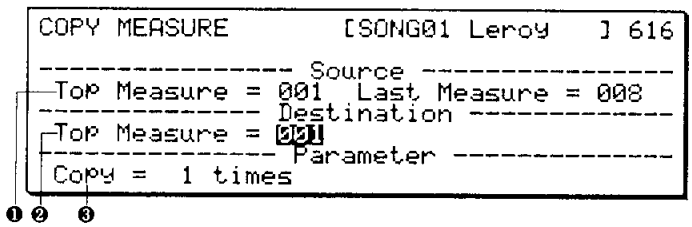
10. Copy measure

JUMP #616

Summary: This operation copies a specified range of measures in one or more tracks to another location in the same track.

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 10:CpyMeas (JUMP #616)
Specify: the area of source measures from which you wish to copy, the destination measure to which the data will be copied, and the number of times that the data will be copied.
Press: one or more track select buttons 1–15 to select the tracks.
To execute: the operation press ENTER.
To quit: without executing press EXIT.

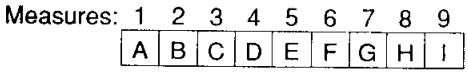


❶ Source (001...999): The measures beginning with the specified Top Measure and ending with the specified Last Measure will be copied.

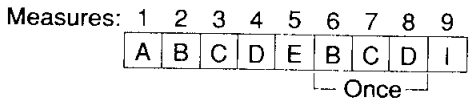
❷ Destination (001...999): The data will be copied into the same track starting at the specified Top Measure.

❸ Copy (1...99): The specified source measures will be copied as many times as specified here.

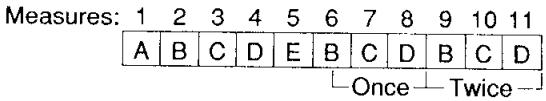
Example: For track data as shown in the following diagram,



using the Copy Measure operation with settings of "Source = 002...004", "Destination=006", and "Copy=1" would change the track data as follows.



If "Copy=2", the track data would change as follows.



SONG EDIT JOBS 2

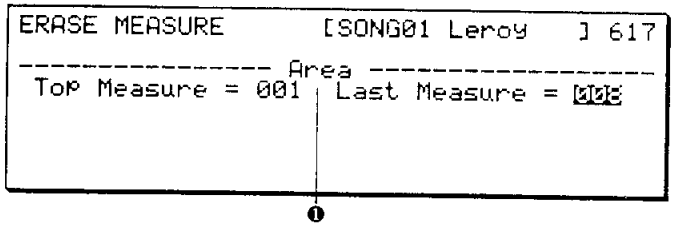
11. Erase measure

JUMP #617

Summary: This operation erases all data from specified measures of one or more selected tracks, leaving the measures empty.

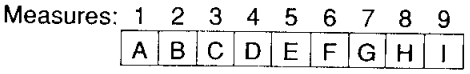
Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 11:ErsMeas (JUMP #617)
Specify: the area of track measures which you wish to erase.
Press: a track select button 1–15 to select a track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.

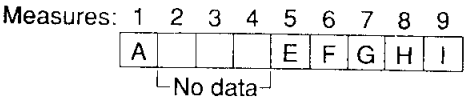


❶ Area (001...999): The measures beginning with the specified Top Measure and ending with the specified Last Measure will be erased.

Example: For track data as shown in the following diagram,



using the Erase Measure operation with settings of "Area = 002...004" would change the track data as shown in the following diagram.



SONG EDIT JOBS 2

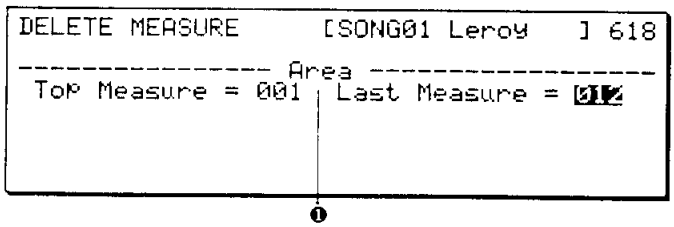
12. Delete measure

JUMP #618

Summary: This operation deletes the specified measures from one or more selected tracks, and moves the following measures up to fill the gap.

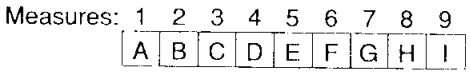
Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 12:DelMeas (JUMP #618)
Specify: the area of measures which you wish to delete.
Press: one or more track select buttons 1–15 to select the tracks.
To execute: the operation press ENTER.
To quit: without executing press EXIT.

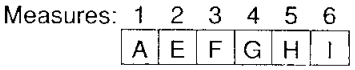


❶ Area (001...999): The measures beginning with the specified Top Measure and ending with the specified Last Measure will be deleted.

Example: For track data as shown in the following diagram,



using the Delete Measure operation with settings of "Area = 002...004" would change the track data as follows.



SONG EDIT JOBS 2

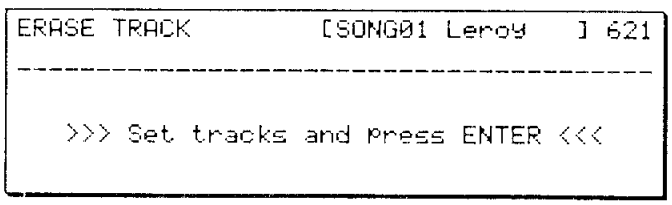
13. Create measure

JUMP #619

Summary: This operation inserts empty measures of the specified time signature into one or more selected tracks over the specified range of measures. The following measures will be pushed back to make room.

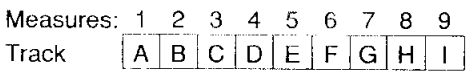
Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 13:CreMeas (JUMP #619)
Specify: the area of measures to be created and set the time signature.
Press: one or more track select buttons 1–15 to select the tracks.
To execute: the operation press ENTER.
To quit: without executing press EXIT.

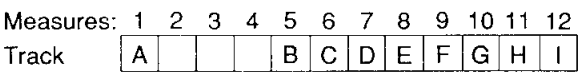


❶ Area (001...999): New measures beginning with the specified Top Measure and ending with the specified Last Measure will be created and inserted.
❷ Time (1–8/4, 1–16/8, 1–32/16): Specify the time signature of the measures you wish to create.

Example: For track data as shown in the following diagram,



using the Create Measure operation with settings of "Area = 002...004" would change the track data as follows.



SONG EDIT JOBS 2

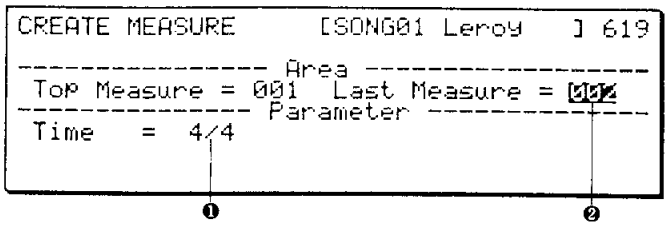
14. Mix track

JUMP #620

Summary: This operation combines the data of specified measures from a specified track with the data of another track.

Procedure:

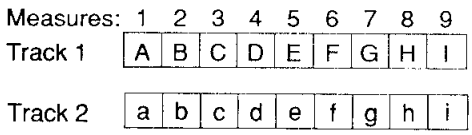
From: song edit job directory 2 (JUMP #606)
Select: 14:MixTrck (JUMP #620)
Specify: the source track and the measures which you wish to mix into the destination track, and specify the destination track.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



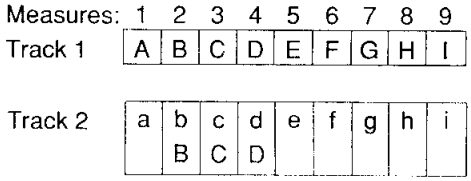
❶ Source (Track 01...15, Measures 001...999): Specify the source track and area of measures.

❷ Destination (Track 01...15): Specify the destination track into which the measures specified by ❶ will be mixed.

Example: For track data as shown in the following diagram,



using the Mix Track operation with settings of "Source Track = 01", "Source Measures = 002...004", and "Destination Track = 02" would change the data as follows.



SONG EDIT JOBS 2

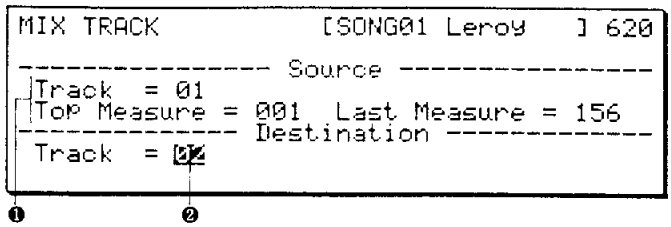
15. Erase track

JUMP #621

Summary: This operation erases all data from the specified track(s).

Procedure:

From: song edit job directory 2 (JUMP #606)
Select: 15:ErsTrck (JUMP #621)
Press: one or more track select buttons 1–16 to select the tracks.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



There are no parameters to set for this operation. Use the memory select 1–16 buttons to specify the track(s) to be erased. The LEDs of selected track will light red. When you press ENTER the data will be erased from the selected tracks.

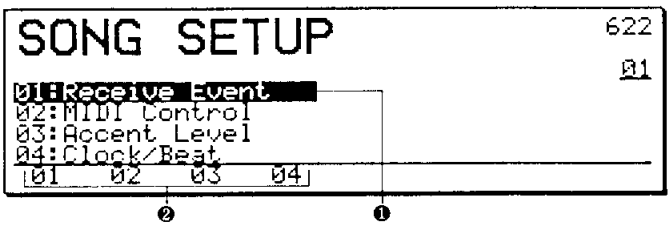
Song setup jobs

JUMP #622

Summary: Song setup parameters affect the overall functioning of the sequencer.

Procedure:

From: song play mode or song record mode
Press: F5 (Stup) (JUMP #622)
Select: the desired song setup job.



❶ Move the cursor in this area and press ENTER to select the specified job.

❷ Pressing F1–F4 will select the corresponding job 1–4.

01: Receive Event: To conserve sequencer memory, you can specify that unwanted types of data not be recorded.

02: MIDI Control: Specify whether the SY99's sequencer will be controlled by its own timing source or by an external sequencer.

03: Accent Level: Specify the accent level for each of the four function keys F1–F4 used to specify the accent of a note in song step record mode.

04: Clock/Beat: Set the number of clocks per beat that will be displayed in editing.

SONG SETUP JOBS

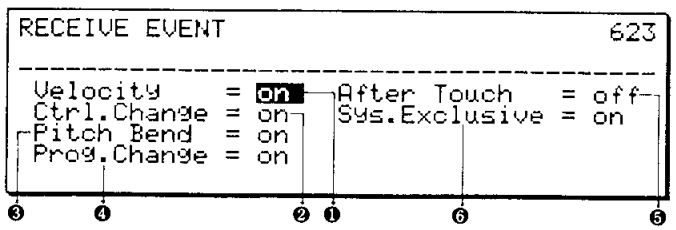
1. Receive event

JUMP #623

Summary: You can specify that unwanted types of data not be recorded, so as to conserve sequencer memory.

Procedure:

From: song setup job directory (JUMP #622)
Select: 01:Receive Event (JUMP #623)
Specify: reception on/off for each type of data.
To exit: to the song setup job directory press EXIT.



❶ Velocity (on, off): Specify whether the velocity value of note-on messages will be recorded by the sequencer. When this is set "off", all notes will be recorded with a velocity of 64 regardless of their original velocity.

❷ Control Change (on, off): Specify whether or not control change messages will be recorded by the sequencer.

❸ Pitch Bend (on, off): Specify whether or not pitch bend messages will be recorded by the sequencer.

❹ Program Change (on, off): Specify whether or not program change messages will be recorded by the sequencer.

❺ After Touch (on, off): Specify whether or not after touch messages will be recorded by the sequencer.

❻ System Exclusive (on, off): Specify whether or not system exclusive messages will be recorded by the sequencer. The SY99 sequencer can not record system exclusive messages which are longer than 32 bytes.

Remarks: In order to conserve sequencer memory, turn off reception for types of data that do not affect the voices you are using. For example if the voices have not been programmed with aftertouch sensitivity, turn aftertouch reception off so that the sequencer memory does not fill up with unnecessary data.

SONG SETUP JOBS

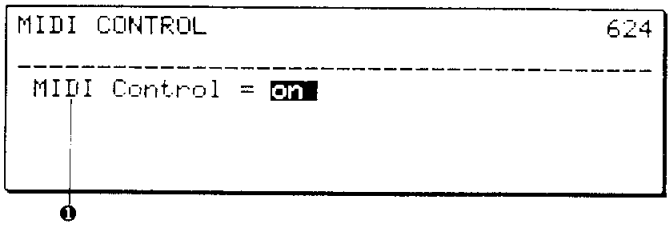
2. MIDI control

JUMP #624

Summary: Specify whether the SY99's sequencer will be controlled by its own timing source or by an external sequencer.

Procedure:

From: song setup job directory (JUMP #622)
Select: 02:MIDI Control (JUMP #624)
Specify: MIDI Control on or off.
To exit: to the song setup job directory press EXIT.



❶ MIDI Control (on, off): Normally you will leave this set "off" so that the SY99 sequencer will be controlled by its own timing clock and the front panel sequencer control buttons.

If you want to use an external sequencer connected to the SY99's MIDI IN to control the SY99 sequencer, set this "on" so that the SY99 sequencer will be controlled by MIDI start, continue, stop, song position pointer, and song select messages, and the tempo will be determined by MIDI clock messages.

Remarks: When MIDI control is on, the SY99 sequencer will not run unless MIDI clock messages are being received.

SONG SETUP JOBS

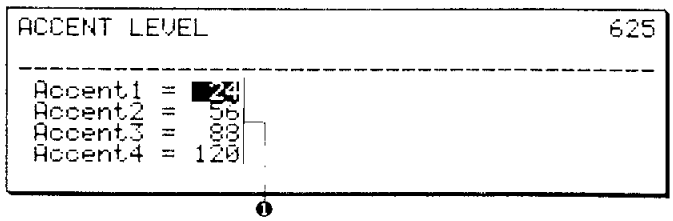
3. Accent level

JUMP #625

Summary: Specify the accent level for each of the four function keys F1–F4 used to specify the accent of a note in song step record mode.

Procedure:

From: song setup job directory (JUMP #622)
Select: 03:Accent Level (JUMP #625)
Specify: each of the four accent levels.
To exit: to the song setup job directory press EXIT.



❶ Accent 1 – Accent 4 (1...127): These determine the accent levels that will be selected when a function key F1–F4 (Acc1–Acc4) is pressed while in song step record mode.

SONG SETUP JOBS

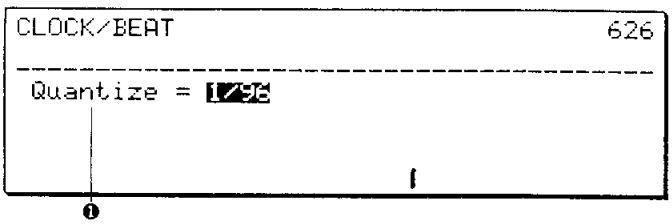
4. Clock/Beat

JUMP #626

Summary: Set the number of clocks per beat that will be displayed in editing.

Procedure:

From: song setup job directory (JUMP #622)
Select: 04:Clock/Beat (JUMP #626)



❶ Quantize (1/6, 1/8, 1/12, 1/16, 1/24, 1/32, 1/48, 1/64, 1/96): Specify the time value of one displayed beat.

This sets the number of clocks per beat that will be displayed in editing. This has no effect on the time signature, but is simply a convenience for editing.

Transmit channel

JUMP #627

Summary: Specify the MIDI channel on which each track of the sequencer will transmit its data.

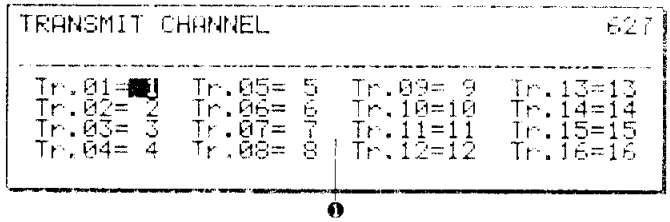
Procedure:

From: song play mode

Press: F6 (T-ch) (JUMP #627)

Specify: the MIDI transmission channel for each track.

To exit: to song play mode, press EXIT.



❶ Tracks 1–16 (1..16): Specify the channel 1–16 on which each track will transmit data from MIDI OUT.

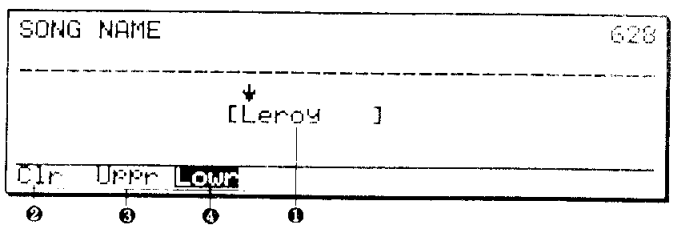
Song name

JUMP #628

Summary: Each song in the SY99's sequencer memory can be given an eight-character name, which will be displayed in song play or song record mode.

Procedure:

From: song play or song record mode
Press: F7 (Name) (JUMP #628)
Specify: the song name.
To exit: to song play mode, press EXIT.



❶ Enter an eight-character name for the sequencer song.
❷ To clear the currently entered name press F1 (Clr).
❸ To switch to upper-case characters press F2 (Uppr).
❹ To switch to lower-case characters press F3 (Lowr).

Remarks: Methods of entering character data are explained in How to enter character data, page 30.

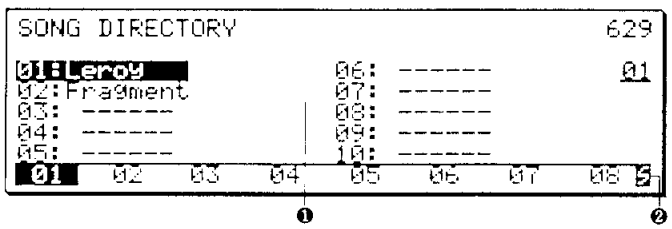
Song directory

JUMP #629

This function allows you select songs while viewing a directory of the songs currently held in the SY99's sequencer memory.

Procedure:

From: song play mode
Select: F8 (Dir) (JUMP #629)
Specify: one of the displayed songs
To exit: to song play mode, press EXIT.



❶ The names of the songs will be displayed in this area. You can select a song by inputting a number from one to ten, by pressing the corresponding function keys (F1–F8, or SHIFT + F1, F2), or by moving the cursor to the desired song and pressing ENTER. (If the cursor is moved using INC, DEC, the data entry slider or the data entry wheel, it is not necessary to press ENTER.)

❷ Pressing F1–F8 will select the corresponding song 1–8. Holding SHIFT and pressing F1 or F2 will select song 9 or 10, respectively.

PATTERN MODE

Pattern mode allows you to record and play back patterns of 1 to 32 measures. These patterns can be edited in various ways, and a different pattern can be placed in each Part of track 16 (the pattern track) to play frequently repeating phrases or rhythm patterns.

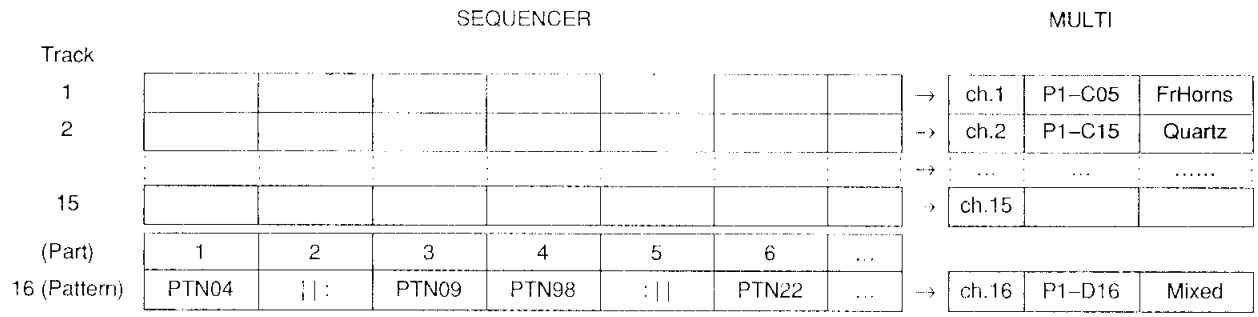
Contents of this section **page**

In pattern mode you can record and play back patterns of 1 to 32 measures. Editing functions in song mode allow you to place these patterns in track 16 (the pattern track). Since the same pattern can be placed in more than one part of track 16, you can save time and sequencer memory by creating a pattern for each frequently appearing motif and assigning it to the appropriate location every time you want it to playback.

Patterns are often used to play a drum-type voice from track 16 of the sequencer, as shown in the following diagram.

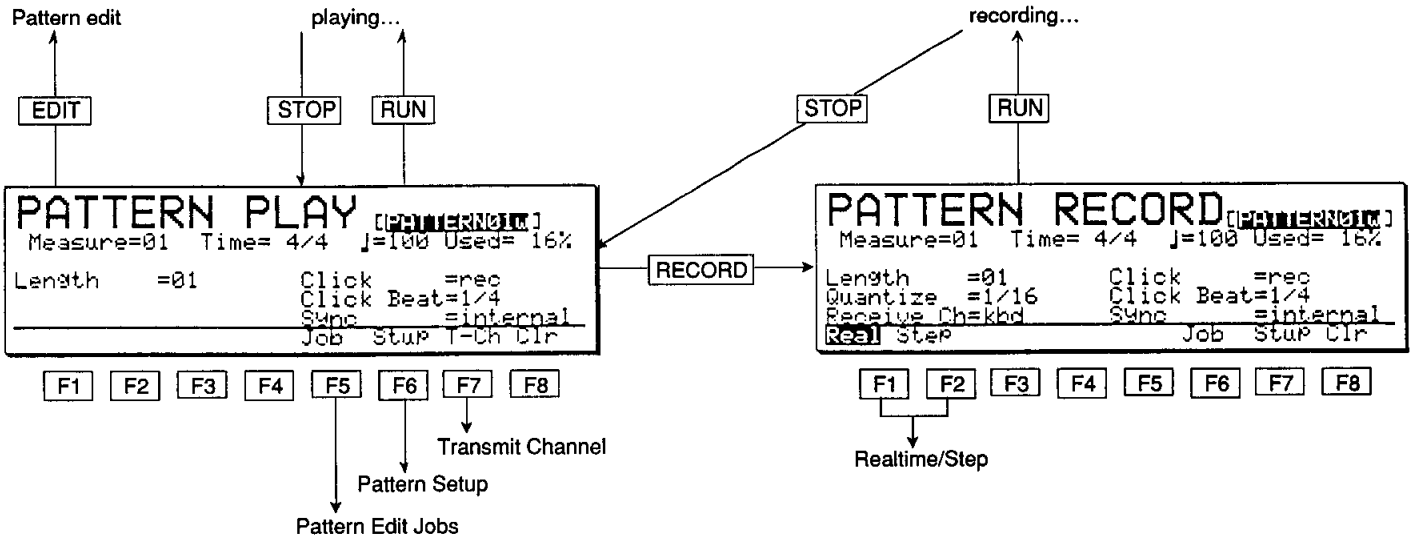
Since the transmission channel of each sequencer track can be modified, make sure that track 16 is transmitting its data on a channel that will be received by the voice in the multi which you want the patterns to be played by.

Pattern data may be recorded when the SY99 is in Voice mode. However, this data will not be played when the SY99 is in Voice mode unless the voice receive channel is set to the pattern track's transmit channel (usually channel 16) or "omn" (which means the voice will play data received on all channels). Refer to the explanation of the voice receive channel setting on page 258.

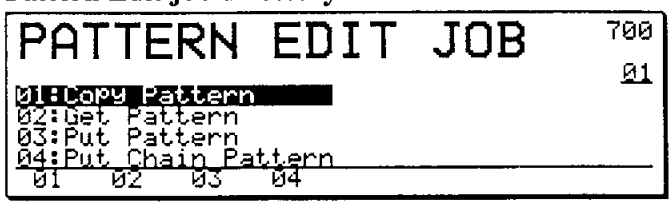


For details of how to place parts in track 16, refer to *Song edit, Chain pattern*, page 212.

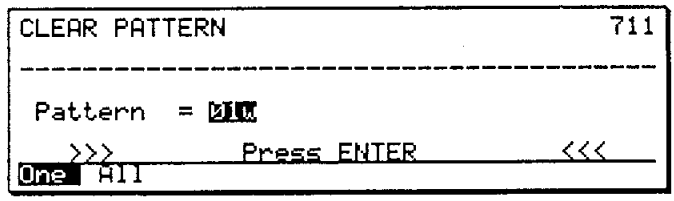
How pattern mode is organized



Pattern Edit job directory

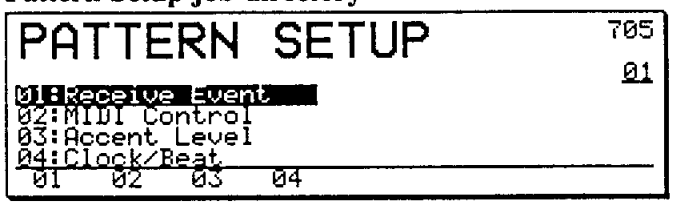


Clear Pattern



01:Copy Pattern
02:Get Pattern
03:Put Pattern
04:Put Chain Pattern

Pattern Setup job directory



01:Receive Event
02:MIDI Control
03:Accent Level
04:Clock/Beat

Pattern play

Summary: In pattern play mode you can select and playback any pattern 01–99. You can also make settings for the click (metronome) and synchronization.

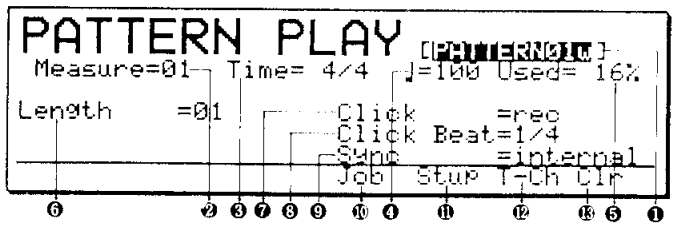
Procedure:

Press: PATTERN to enter pattern play mode. The PATTERN LED will light red.

Select: the pattern to playback.

To start: playback press RUN.

To stop: playback press STOP.



❶ Pattern (01...99): This selects the pattern to playback.

❷ Measure (001...032): This determines the measure from which the pattern will begin playback. Move the cursor here and specify the measure, or use the sequencer location buttons (|◁, ◁◁, LOCATE, or ▷▷).

❸ Time (1/4...32/16): This displays the time signature for this pattern as you specified in pattern record mode. This cannot be modified in pattern play mode.

❹ ♩ (30...250): This determines the tempo in quarter notes per minute.

❺ Used (0...100%): This displays the amount of used sequencer memory.

❻ Length (1...32): This displays the length of the pattern.

❼ Click (off, rec, rec/play, always): This determines when the click (metronome) will sound.

off: The metronome will not sound.

rec: The metronome will sound only during recording.

rec/play: The metronome will sound during recording or playback.

always: The metronome will sound constantly.

❽ Click Beat (1/4, 1/6, 1/8, 1/12, 1/16, 1/24): This determines the beat on which the click will sound.

❾ Sync (internal, MIDI): This determines the timing source which will control the sequencer. Normally you will leave this set to internal so that the SY99's own clock will determine the tempo.

If you are using an external MIDI sequencer and want the SY99's sequencer to play in synchronization with it, set this to MIDI so that MIDI clock messages received at MIDI IN will determine the tempo.

❿ Press F5 (Job) to move to the Pattern Edit job directory. Refer to the following section, *Pattern edit jobs.*

⓫ Press F6 (Stup) to move to the Pattern Setup job directory. Refer to the following section, *Song setup edit jobs.*

⓬ Press F7 (T-Ch) to view or change the transmit channel settings for tracks 1 through 16. Refer to the following section, *Transmit channel.*

⓭ Press F8 (Clr) to clear a selected pattern or all patterns. Refer to the following section, *Clear pattern.*

Start and stop playback: Press RUN and the pattern will begin playback from the point specified by the measure setting. Press STOP and playback will stop.

During playback: During playback you can select another pattern, and modify the tempo, click, and click beat settings.

Patterns which contain no data cannot be selected. When you change the pattern number during playback, the currently playing pattern will finish before the newly selected pattern begins.

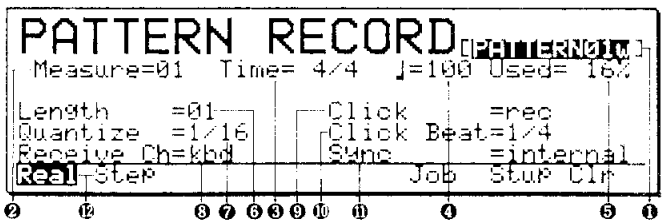
Pattern edit: Any time while in pattern play mode you can press EDIT to edit the pattern. For details refer to *Pattern edit*, page 241.

Pattern record

Summary: In pattern record mode you can make settings in preparation to recording a pattern. You can specify either realtime or step recording, set the time signature and length of the pattern, and make other settings for click and sync as in the Pattern Play display.

Procedure:

From: pattern play display
Press: RECORD and the RECORD LED will light.
Select: the recording mode.
To begin: recording press RUN.
To end: recording press STOP.



❶ PATTERN (01...99): Select the pattern you wish to record.

❷ Measure (01...32): This determines the measure from which the pattern will begin playback. You can modify this by moving the cursor here and specifying the measure, or by using the sequencer location buttons (|◁, ◁◁, LOCATE, or ▷▷|).

❸ Time (01-08/4, 01-16/08, 01-32/16): This determines the time signature of the pattern to be recorded. It can be modified only for patterns which have not yet been recorded.

❹ ♩ (30...250): This determines the tempo in quarter notes per minute.

❺ Used (0...100%): This displays the amount of unused sequencer memory.

❻ Length (1...32): This indicates the length of the pattern. It can be modified only if the pattern has not yet been recorded.

❼ Quantize (off, 1/32, 1/24, 1/16, 1/12, 1/8, 1/4, 1/2): This determines the timing accuracy to which the notes you play will be corrected. When quantization is turned off the notes you play will be recorded at the exact timing they occur. When a quantization of 1/32...1/2 is selected, all notes you play will be moved to the nearest timing at the specified interval.

❽ Receive Channel (1-16, omni, kbd): This determines the source of data that will be recorded by the sequencer. Normally you will set this to "kbd" so that data from the SY99's keyboard will be recorded.

If you want to record data from an external MIDI device on a specific channel, set this to 1-16 so that data received at MIDI IN on the specified channel will be recorded.

If you want to record data from an external MIDI device on all channels then set this to "omni" so that all data received at MIDI IN will be recorded.

❾ Click (off, rec, rec/play, always): This determines when the click (metronome) will sound.

off: The metronome will not sound.

rec: The metronome will sound only during recording.

rec/play: The metronome will sound during recording or playback.

always: The metronome will sound constantly.

❿ Click Beat (1/4, 1/6, 1/8, 1/12, 1/16, 1/24): This determines the beat on which the click will sound.

⓫ Sync (internal, MIDI): This determines the timing source which will control the sequencer. Normally you will leave this set to internal so that the SY99's own clock will determine the tempo.

If you are using an external MIDI sequencer and want the SY99's sequencer to play in synchronization with it, set this to MIDI so that MIDI clock messages received at MIDI IN will determine the tempo.

⓬ Recording mode (Real, Step): Press F1 or F2 to select the recording mode.

Realtime recording (press F1): Notes will be recorded at the exact time you play them.

Step recording (press F2): Notes will be recorded one by one with the specified time value, regardless of the actual timing at which you play.

Pattern recording procedure:

1. Select the pattern to record.
2. If the selected pattern has not yet been recorded, specify the time signature and length.
3. Make setting for tempo, quantize, receive channel, click, click beat, and sync.
4. Specify the recording mode; realtime (F1) or step (F2).
5. Press RUN and pattern recording will begin. The recording display will depend on the recording mode selected in step 2. For details see the following sections; *Pattern realtime record* or *pattern step record*.
6. When you are finished recording press STOP and you will return to the pattern play display.

Pattern edit: Any time while in pattern record mode you can press EDIT to edit the pattern. For details refer to *Pattern edit mode*.

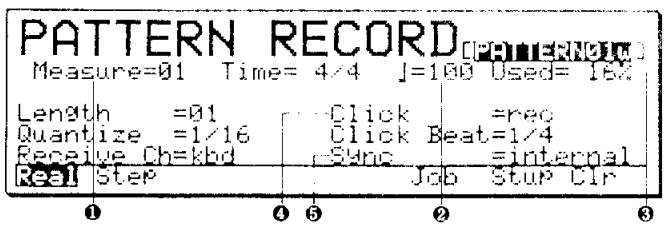
PATTERN RECORD

Pattern realtime record

Summary: In realtime recording the notes you play will be recorded in the exact timing at which you play them. Newly recorded notes will be added to the previous data in the pattern.

Procedure:

From: pattern record display
Press: F1 (Real) to select realtime recording.
To begin: recording press RUN. The RUN LED will blink at tempo.
To stop: recording and return to the song play display press STOP.



❶ Measure (01...32): As you record this will advance to show the currently recorded measure number of the pattern.

❷ ♩ (30...250): While recording you can move the cursor here to modify the tempo.

❸ Used (0...100%): As you record this will increase to show the amount of sequencer memory that has been used.

❹ Click (off, rec, rec/play, always): While recording you can move the cursor here and specify when the click (metronome) will sound.

off: The metronome will not sound.
rec: The metronome will sound only during recording.
rec/play: The metronome will sound during recording or playback.
always: The metronome will sound constantly.

❺ Click Beat (1/4, 1/6, 1/8, 1/12, 1/16, 1/24): While recording you can move the cursor here and specify the beat on which the click will sound.

Remarks: While recording you can modify the settings for tempo, click, and click beat. To modify the other parameters you must return to the pattern record display.

Unlike song realtime recording, pattern realtime recording gives you no choice of overdub or replace recording modes. Pattern recording is always in overdub mode, meaning that newly recorded notes will be added to the previous data in the pattern.

In realtime pattern recording the pattern will continue to repeat from beginning to end until you press STOP. This allows you to build up complex rhythmic parts one note at a time.

To delete: During realtime recording, you can delete any given note from the pattern by pressing SHIFT while holding down the key of the unwanted note.

Allow the pattern to run through the section you wish to erase.

Important: Pattern data may be recorded when the SY99 is in Voice mode. However, this data will not be played when the SY99 is in Voice mode unless the voice receive channel is set to the pattern track's transmit channel (usually channel 16) or "omn" (which means the voice will play data received on all channels). Refer to the explanation of the voice receive channel setting on page 258.

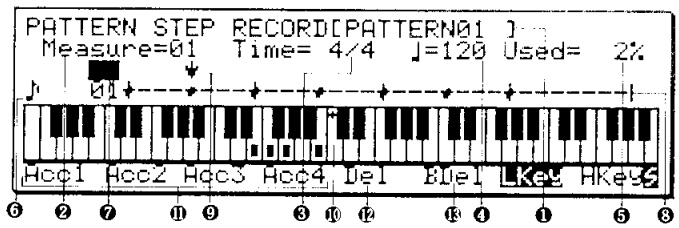
PATTERN RECORD

Pattern step record

Summary: In step recording the notes you play will be recorded at intervals of the specified step, regardless of the actual exact timing with which you play them. Newly recorded notes will be added to the previous data in the pattern.

Procedure:

From: the pattern record display
Press: F2 (Step) to select step recording.
To begin: recording press RUN. The RUN LED will light green.
To stop: recording and return to the song play display press STOP.



❶ Pattern (01..99): Select the pattern to record.

❷ Measure (01...32): To move to another measure in the pattern, place the cursor here and modify the data.

❸ Time (01–08/4, 01–16/08, 01–32/16): The time signature is only displayed and cannot be modified.

❹ ♩: The tempo is only displayed and cannot be modified.

❺ Used (0...100%): This displays the amount of sequencer memory already used.

❻ This area indicates the currently selected note value. At any time in step recording you can use the numeric keypad to enter note values. You can also move the cursor to this area and modify the note values. If possible, the note values in this area will be displayed as graphic symbols for a whole note, quarter note, etc. Otherwise the note value will displayed as a number of clocks (1/384th notes).

❼ When the cursor is located in this area you can move backwards and forwards through the data in time. If the current measure is longer than four quarter notes (e.g., a time signature of 10/8), a number will be displayed here to indicate the section of the measure now being displayed.

❽ This bar represents one measure, and vertical divisions represent one beat. A dot will be displayed on the bar to indicate a 32nd note area which contains data.

❾ As you move backward or forward through the data in time, an arrow pointing downward will move in 32nd note steps to indicate the current position in the measure.

❿ If the currently selected 32nd note area contains data, the notes in that area will be displayed on the keyboard diagram.

⓫ To select an accent value, press F1–F4. Subsequently entered notes will be given the selected accent value. To change the accent value assigned to F1–F4 refer to *Pattern setup job 4, accent level.*

⓬ To delete all data in the 32nd note area where the cursor is located, press F5 (Del). The cursor location will not change.

⓭ To delete all data in the 32nd note area before the cursor, press F6 (BDel). The cursor will move back one 32nd note.

Note duration: To specify how long the note will be held in relation to its note value hold SHIFT and press F1–F3. To record normal notes which sound for 80% of their note values press F1 (Norm). To record staccato notes which sound for 50% of their note values press F2 (Stac). To record slurred notes which sound for 99% of their note value press F3 (Slur).

Numeric keypad:

- Note value (numeric keys 1–8): Use the numeric keys 1–8 to specify the note value to be recorded. Pressing each key will select the note value printed above it, from a whole note (key 1) to a 8th note triplet (key 8). This also determines the step time by which the cursor will automatically advance after each note has been entered.
- Dot (numeric key 9): To dot the current note value press numeric key 9. The current note value will be extended by 50%.

- Tie (numeric key " "): To extend the duration of the previously entered note, press TIE. The duration of the note will be extended by the current note value, and the cursor will advance accordingly.
- Rest (numeric key 0): To advance one step without entering data press REST.

Recording procedure:

- Entering notes: Each time you press and release a key it will be recorded, and the position will move ahead one step as specified by the step time. The note will not be entered until all keys have been released. This allows you to enter more than one note at the same location by pressing more than one note before releasing the first.
- Move through the data: When the cursor is located at ❼ you can also use the cursor keys ◁▷ to move back and forth in the pattern, and enter notes wherever you like. When you come to note data, it will be displayed on the keyboard diagram below and sounded on the synthesizer.
- To stop recording: When you are finished recording the pattern press STOP. You will return to the pattern play display, where you can press RUN and hear the pattern you just recorded.

Pattern edit

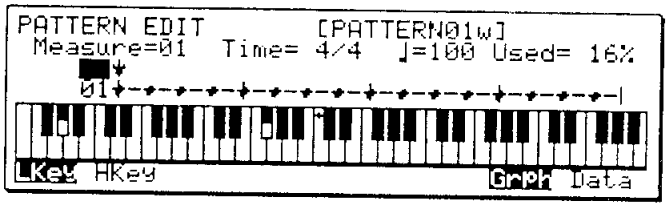
Summary: This is where you edit individual events that have been recorded in a pattern.

Procedure:

From: pattern play or pattern record mode
Press: EDIT.
To exit: edit mode and return to pattern play mode press EXIT.

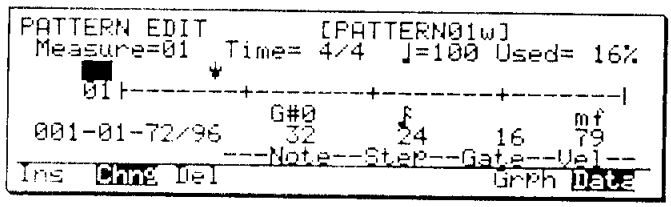
The pattern edit display will differ according to whether graph or data editing has been selected.

Pattern graph editing: To select graphic editing press F7 (Grph). The display will show a horizontal bar to indicate the position in the measure, and a keyboard diagram to indicate the notes that have been recorded at each step.



Pattern graph editing is exactly the same as song graph editing, except that the pattern number is displayed instead of the song name, and that the maximum measure number is 32 instead of 999. For details, please refer to *Song edit (graph)* on page 208.

Pattern data editing: To select data editing press F8 (Data). The display will show the type and numerical values for each event. Data editing is divided into two modes; graph mode and data mode. In data mode you can either Change or Insert data. When you enter data mode, change will automatically selected.



Pattern data editing is exactly the same as song data editing, except that the pattern number is displayed instead of the song name, and that the maximum measure number is 32 instead of 999. For details, please refer to *Song edit (data insert)* on page 210 or *Song edit (data change)* on page 209.

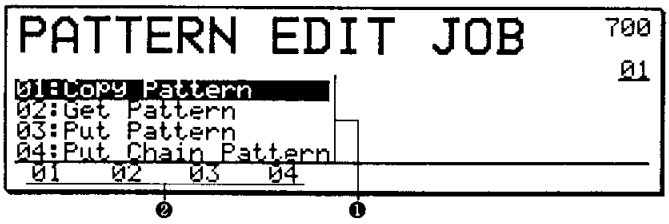
Pattern edit jobs

JUMP #700

Summary: Pattern edit jobs allow you to copy a pattern to another pattern, copy data from a track into a pattern, copy data from a pattern into a track, or copy the pattern data of all parts into a track.

Procedure:

From: the pattern play or pattern record display
Press: F5 (Job).



❶ Move the cursor in this area and press ENTER to select the specified job.

❷ Pressing F1–F4 will select the corresponding job 1–4.

01: Copy Pattern: Copy a pattern to another pattern.
02: Get Pattern: Copy data from specified measures of a track into a pattern.
03: Put Pattern: Copy data from a pattern into specified measures of a track.
04: Put Chain Pattern: Copy the pattern data of all parts into a specified track 1–15.

PATTERN EDIT JOBS

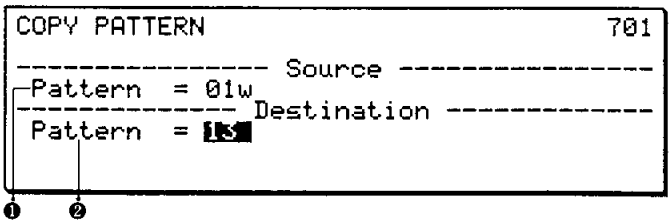
1. Copy pattern

JUMP #701

Summary: This operation copies a pattern to another pattern. This is useful when you want to create a new pattern that is similar to an already existing pattern.

Procedure:

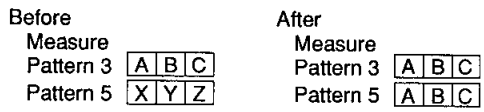
From: the pattern edit job directory (JUMP #700)
Select: 01:Copy Pattern (JUMP #701)
Specify: the Source pattern and the Destination pattern.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Source pattern (01...99): Specify the pattern you wish to copy.

❷ Destination pattern (01...99): Specify the pattern into which you wish to copy the source pattern. The previous data in the destination pattern will be lost.

Example: For settings of Source = pattern 3, Destination = pattern 5, the result would be as follows.



PATTERN EDIT JOBS

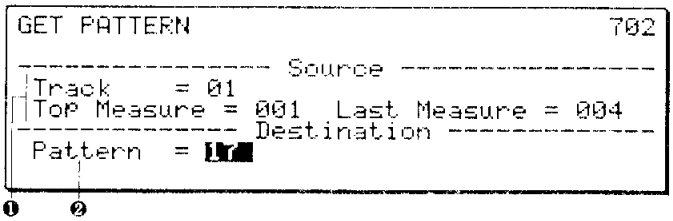
2. Get pattern

JUMP #702

Summary: Copy data from specified measures of a track 1–15 into a pattern.

Procedure:

From: the pattern edit job directory (JUMP #700)
Select: 02:Get Pattern. (JUMP #702)
Specify: the source track and the measures from which to copy the data, and specify the destination pattern into which to copy the data.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Source (Track 01...15, Top Measure 001...32, Last Measure 001...32): Specify the track and measures from which to copy the data. Since the maximum length of a pattern is 32 measures, the last measure can be no more than 32 measures after than the top measure. Also, it is not possible to select measures which contain differing time signatures.

❷ Destination (Pattern 01...99): Specify the pattern into which the data will be copied.

The previous data in the destination pattern will be lost.

Example: For settings of "Source = track 2 measures 2–3, Destination = pattern 5", the result would be as follows.

Before
Measure 1 2 3 4 5 6 7 8 9 ...
Track 2 [A][B][C][D][E][F][G][H][I]...
Pattern 5

After
Measure 1 2 3 4 5 6 7 8 9 ...
Track 2 [A][B][C][D][E][F][G][H][I]...
Pattern 5 [B][C]

PATTERN EDIT JOBS

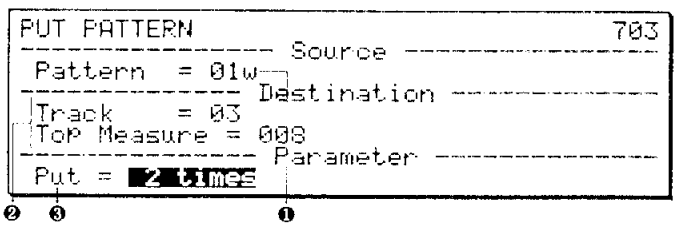
3. Put pattern

JUMP #703

Summary: Copy data from a pattern into specified measures of a track.

Procedure:

From: the pattern edit job directory (JUMP #700)
Select: 03:Put Pattern. (JUMP #703)
Specify: the source pattern, and specify the destination track and measure at which to copy the data from the pattern.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Source (Pattern 01...99): Specify the pattern from which the data will be copied.

❷ Destination (Track 01...15, Top Measure 001...32): Specify the track and measures to which the data will be copied.

❸ Put (1...99): Specify the number of times that the data will be copied from the pattern.

Example: For settings of "Source = pattern 5, Destination = track 2, measure 4, Put Time = 2" the result would be as follows.

Before
Measure 1 2 3 4 5 6 7 8 9 ...
Track 2 [Z][Z][Z][Z][Z][Z][Z][Z][Z]...
Pattern 5 [A][B]

After
Measure 1 2 3 4 5 6 7 8 9 ...
Track 2 [Z][Z][Z][A][B][A][B][Z][Z]...
Pattern 5 [A][B]

PATTERN EDIT JOBS

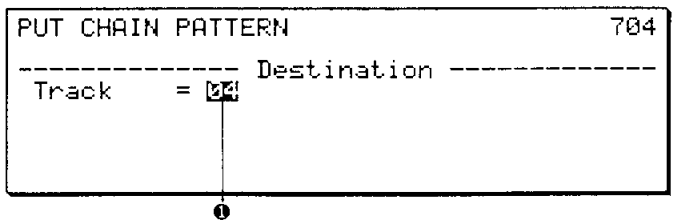
4. Put chain pattern

JUMP #704

Summary: Copy the data of all patterns used by track 16 (the pattern track) into a specified track 1–15.

Procedure:

From: the pattern edit job directory (JUMP #700)
Select: 04:Put Chain Pattern (JUMP #704)
Specify: the destination track
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Destination (Track 01...15): Specify the track to which the data will be copied. The previous data in the destination track will be lost.

Remarks: If the amount of data is large, some time may be required for the data to be copied. Since this operation copies the actual data of each pattern as many times as it is used in a pattern, the resulting destination track will occupy more memory than the original pattern data.

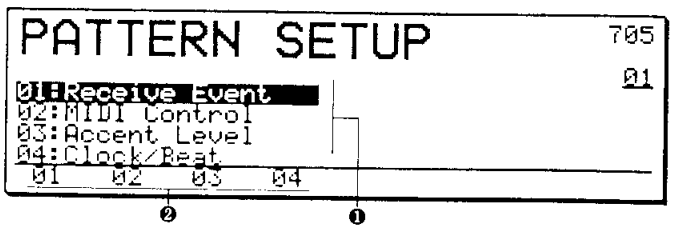
Pattern setup jobs

JUMP #705

Summary: Setup parameters affect the overall functioning of the sequencer.

Procedure:

From: the pattern play or pattern record display
Press: F6 (Stup) (JUMP #705)
Select: the desired pattern setup job



❶ Move the cursor in this area and press ENTER to select the specified job.

❷ Pressing F1–F4 will select the corresponding job 1–4.

01: Receive Event: To conserve sequencer memory, you can specify that unwanted types of data not be recorded.

02: MIDI Control: Specify whether the SY99's sequencer will be controlled by its own timing source or by an external sequencer.

03: Accent Level: Specify the accent level for each of the four function keys F1–F4 used to specify the accent of a note in song step record mode.

04: Clock/Beat: Set the number of clocks per beat that will be displayed in editing.

Note: *These setup parameters can also be set from Song Play mode. The result is exactly the same whether you set them from Pattern or from Song mode. For details, refer to the Song setup jobs.*

Transmit channel

JUMP #710

Summary: Specify the MIDI channel on which each track of the sequencer will transmit its data.

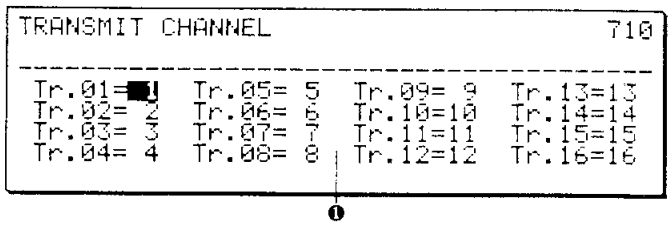
Procedure:

From: pattern play mode

Press: F7 (T-ch) (JUMP #710)

Specify: the MIDI transmission channel for each track.

To exit: to pattern play mode, press EXIT.



❶ Tracks 1–16 (1..16): Specify the channel 1–16 on which each track will transmit data from MIDI OUT.

Note: *The transmit channel assignments can also be changed from song play mode. The result is exactly whether you select this function from Pattern or from Song mode.*

The transmit channel used to transmit pattern data can be changed by changing the setting for Track 16.

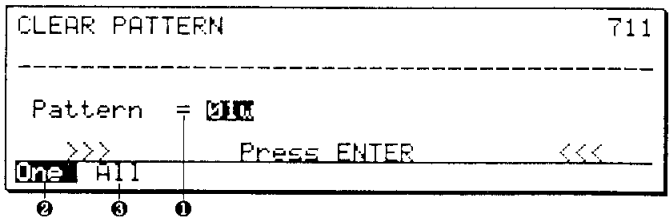
Clear pattern

JUMP #711

Summary: All data can be cleared from any specified pattern or from all patterns 01–99.

Procedure:

From: pattern play mode
Press: F8 (Clr) (JUMP #711)
Specify: whether to clear a single pattern or all patterns.
To execute: the operation press ENTER.
To quit: without executing press EXIT.



❶ Pattern (01...99): If you have pressed F1 (One), specify the pattern to be cleared.
❷ To clear a single pattern press F1 (One) and specify the pattern.
❸ To clear all patterns press F2 (All).

Remarks: If you clear one pattern or all patterns, the data will be lost forever. There is no way of recalling a pattern that has been cleared from memory.

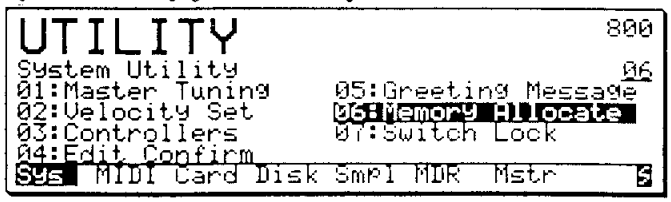
UTILITY MODE

In utility mode you can make settings that affect the SY99's overall system, make settings for MIDI transmission and reception, transmit bulk data via MIDI, save or load SY99 data on card or disk, load and store sample data, store MIDI bulk data from another device, or use the SY99 as a MIDI master controller.

Contents of this section **page**

In Utility mode you can make settings that affect the SY99's overall system, make settings for MIDI transmission and reception, transfer data to and from a card, transfer data to and from a disk, load and store sample data, store MIDI bulk data received from another device, and use the SY99 as a MIDI master controller. The functions of the utility mode are divided into seven job directories. When you press UTILITY the last-selected of these directories will appear. Select a job directory by pressing F1–F7.

System Utility job directory



01:Master Tuning: The overall tuning of the SY99 can be adjusted both in half steps and 1-cent (approximately) steps.

02:Velocity Set: The SY99 keyboard and internal tone generator can be set to respond to your playing velocity in various ways.

03:Controllers: The MODULATION 2 wheel and an optional footswitch connected to the FOOT SWITCH jack will transmit data using the MIDI control number you specify. Also, the controller hold function can be set to prevent the resetting of modulation and other parameters affected by controllers.

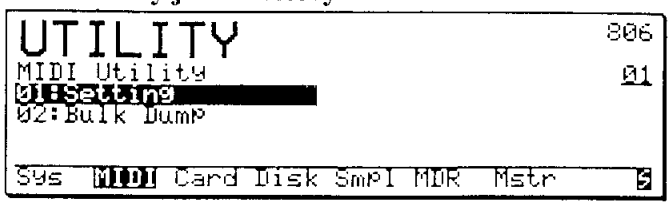
04:Edit Confirm: The "Are you sure?" message that appears when you store, recall, or initialize data can be turned on/off.

05:Greeting Message: Edit the two-line message that is briefly displayed when the SY99 power is turned on.

06:Memory Allocate: Specify how much of the MDR/sample RAM will be used by the MDR.

07:Switch Lock: Lock the switches on the SY99 front panel.

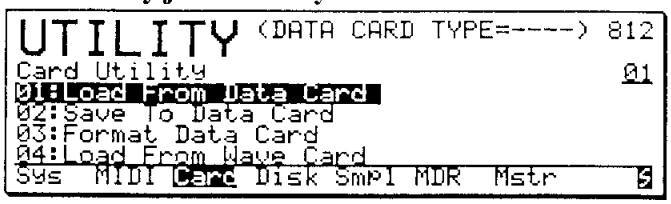
MIDI Utility job directory



01:Setting: The SY99 will receive and transmit MIDI data as determined by the MIDI channels and settings specified here.

02:Bulk Dump: Various types of SY99 data can be transmitted via MIDI to another SY99 or other device.

Card Utility job directory



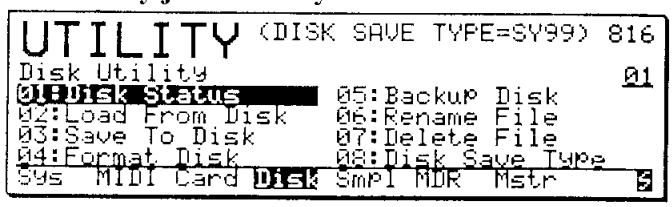
01:Load From Data Card: Synthesizer data can be loaded from a DATA card (RAM card or ROM card).

02:Save To Data Card: Synthesizer data can be saved to a RAM DATA card.

03:Format Data Card: Before you use a new MCD64 RAM card, you must use this operation to format it.

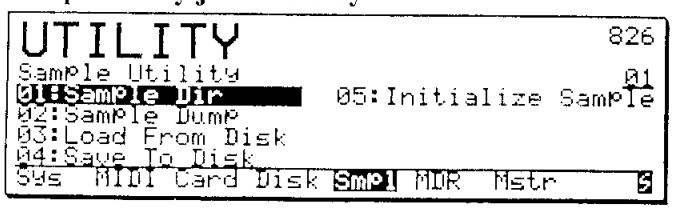
04:Load From Wave Card: Waveform data can be loaded from a WAVEFORM card.

Disk Utility job directory



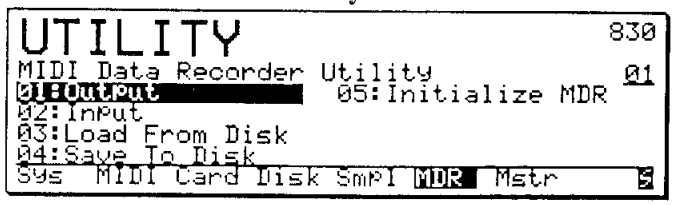
01:Disk Status: This allows you to check the number of disk files of each type and the remaining free area on the disk.
02:Load From Disk: Synthesizer, sequencer, or card data can be loaded from disk.
03:Save To Disk: Synthesizer, sequencer, or card data can be saved to disk.
04:Format Disk: Before a newly purchased disk can be used it must be formatted.
05:Backup Disk: Use this operation to make backup disks for important data.
06:Rename File: An already existing disk file can be given a different name.
07:Delete File: An unwanted file can be deleted from disk.
08:Disk Save Type: This setting allows you to write disk files in SY77 "All Data", or "Synthesizer All" "Sequencer All" format.

Sample Utility job directory



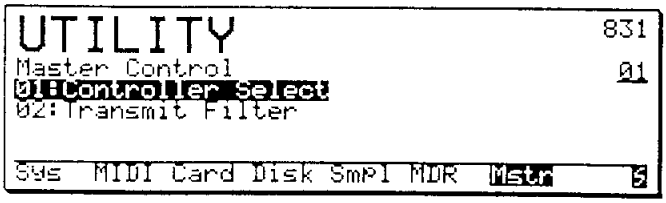
01:Sample Dir: This allows the display, copying, and deleting of sample data.
02:Sample Dump: Output samples and waveforms from the SY99 by MIDI sample dump; also, output sample dump requests.
03:Load From Disk: Load sample data from disk.
04:Save To Disk: Save sample data to disk.
05:Initialize Sample: Initialize the SY99's sample memory.

MIDI Data Recorder utility



01:Output: This operation transmits MIDI bulk data from SY99 MDR memory to an external device.
02:Input: This operation receives MIDI bulk data from an external device into SY99 MDR memory.
03:Load From Disk: This operation loads a file of MIDI bulk data from disk into the SY99 MDR memory.
04:Save To Disk: This operation saves MIDI bulk data from SY99 MDR memory to a disk file.
05:Initialize MDR: This operation initializes the SY99 MDR memory.

Master Control



01:Controller Select: Select one MIDI master control setups, and edit setup parameters.
02:Transmit Filter: Specify which types of data will be transmitted on which channels when the SY99 is in master control mode.

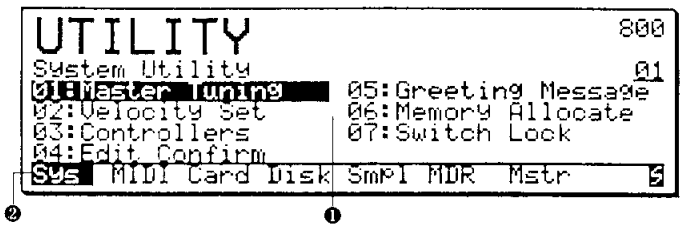
System utility

JUMP #800

Summary: System utility settings affect the entire SY99 system.

Procedure:

From: MIDI utility (JUMP #806)
Card utility (JUMP #812)
Disk utility (JUMP #816)
Sample utility (JUMP #826)
MDR utility (JUMP #830)
Master control (JUMP #831)
Press: F1 (Sys) (JUMP #800)
Select: the desired system utility job and press ENTER.



❶ Move the cursor in this area to select one of the following jobs and then press ENTER.

01: Master Tuning: The overall tuning of the SY99 can be adjusted both in half steps and 1-cent (approximately) steps.

02: Velocity Set: The SY99 keyboard and internal tone generator can be set to respond to your playing velocity in various ways

03: Controllers: The MODULATION 2 wheel and an optional footswitch connected to the FOOT SWITCH jack will transmit data using the MIDI control number you specify. Also, the controller hold function can be set to prevent the resetting of modulation and other parameters affected by controllers.

04: Edit Confirm: The "Are you sure?" message that appears when you store, recall, or initialize data can be turned on/off.

05: Greeting Message: The two-line message that is briefly displayed when the SY99 power is turned on can be edited.

06: Memory Allocate: Specify how much of the MDR/sample RAM will be used by the MDR.

07: Switch Lock: Lock the switches on the SY99 front panel.

❷ To move to a different utility mode press F2–F7. To select a job from the currently displayed job directory, hold SHIFT and press a function key.

SYSTEM UTILITY

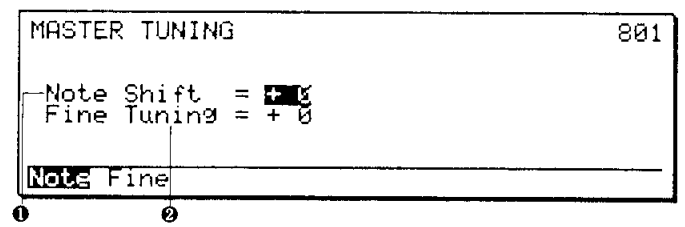
1. Master tuning

JUMP #801

Summary: The overall tuning of the SY99 can be adjusted both in half steps and fine tuning.

Procedure:

From: system utility job directory (JUMP #800)
Select: 01:Master Tuning (JUMP #801)
Specify: the overall tuning in half steps and fine steps



❶ Note Shift (–64...+63): This adjusts the pitch of the of the entire SY99 in half steps.

❷ Fine Tuning (–64...+63): This adjusts the pitch of the entire SY99 in steps of 1.171875 cents.

Remarks: To adjust the pitch of only specific voices, refer to *Voice Common job 2. Element Detune* and *3. Note Shift* (page 97).

This setting affects only the SY99's internal tone generator. It has no effect on the note numbers transmitted from MIDI OUT.

Certain voices using AWM waveforms may fail to sound properly if the note shift value is raised too high. Should this happen, try lowering the note shift value an octave. (The same phenomenon can occur when a voice is played at high pitch. This may be due to the element detune and note shift settings mentioned above.)

SYSTEM UTILITY

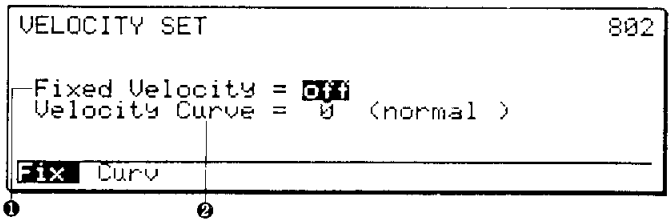
2. Velocity set

JUMP #802

Summary: The SY99 keyboard can be set to respond to your playing velocity in various ways.

Procedure:

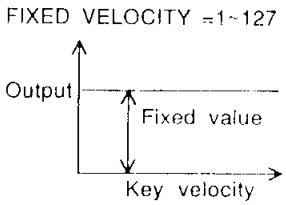
From: system utility job directory (JUMP #800)
Select: 02:Velocity Set (JUMP #802)
Specify: the fixed velocity value and the velocity curve

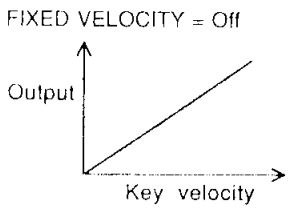


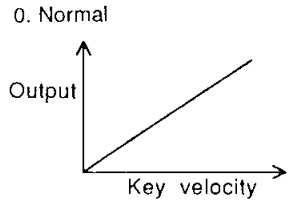
❶ Fixed Velocity (off, 1...127): When this is set "off", the SY99 tone generator will respond to your playing velocity according to the velocity curve specified in ❷. When this is set to a value 0...127, all notes will be given the same specified velocity value regardless of your playing velocity.

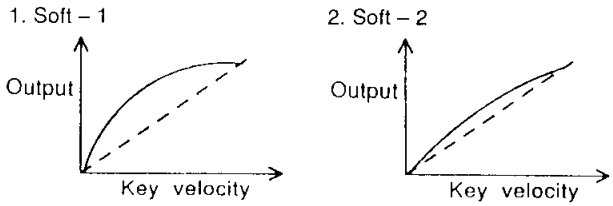
❷ Velocity Curve (0...7): This determines the way in which the SY99 tone generator will respond to your playing velocity as shown in the following diagrams.

Velocity curves 6 (cross-1) and 7 (cross-2) allow you to crossfade between two voices using key velocity. Set one voice to positive key velocity sensitivity and the other to negative key velocity sensitivity. Refer to *AFM element data 5. AFM sensitivity* (JUMP #243) and *AWM element data 4. AWM sensitivity* (JUMP #260).

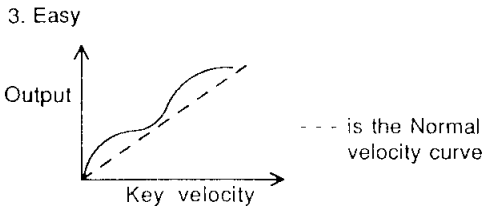


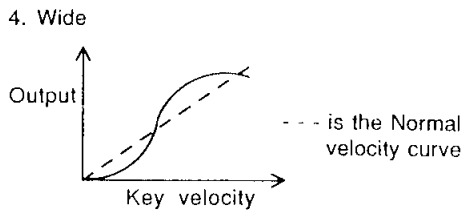


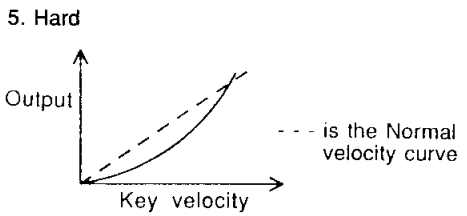


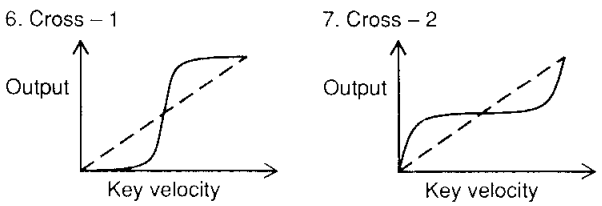


- - - is the Normal velocity curve









- - - is the Normal velocity curve

Remarks: When playing the sound of an instrument such as organ or harpsichord that normally does not respond to key velocity, it may be effective to use a fixed velocity value. A similar result could be achieved by setting all velocity sensitivity parameters of the voice to 0. In fact this is preferable since it will leave all other voices at their normal velocity settings.

The velocity curve setting affects only the SY99's internal tone generator, and will be effective for notes received from MIDI IN as well as notes played on the SY99 keyboard. This setting has no effect on the note messages transmitted from MIDI OUT.

SYSTEM UTILITY

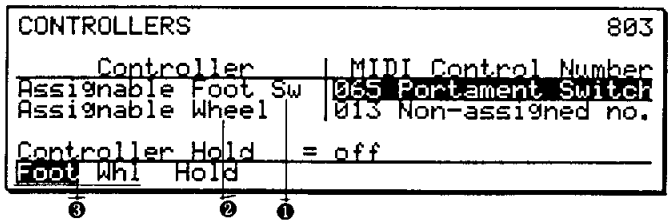
3. Controllers

JUMP #803

Summary: The MODULATION 2 wheel and an optional footswitch connected to the FOOT SWITCH jack will transmit data using the MIDI control number you specify. Also, the controller hold function can be set to prevent the resetting of modulation and other parameters affected by controllers.

Procedure:

From: system utility job directory (JUMP #800)
Select: 03:Controllers (JUMP #803)
Specify: the MIDI control number for each assignable controller



❶ Assignable Foot Switch (1...120): An optional foot switch connected to the rear panel FOOT SWITCH jack will transmit control messages of the type you specify here.

❷ Assignable Wheel (1...120): The MODULATION 2 wheel located at the left of the SY99 keyboard will transmit control messages of the type you specify here.

❸ Press F1 (Foot) or F2 (Whl) to move the cursor to ❶ or ❷.

Remarks: The settings in *Voice Common job 12. Controllers* (JUMP #226, #227, #228) determine the type of control message by which each parameter will be controlled. If you want to use an assignable controller to control the SY99's voices, make sure that the MIDI control number you assign matches the MIDI control number selected for the parameter you want to control.

If you want to assign the MODULATION 2 wheel or the FOOT SWITCH to control external MIDI equipment and not affect the SY99's tone generator, use a MIDI control number that is not used in *Voice Common job 12. Controllers* (JUMP #226, #227, #228). Refer to the MIDI implementation chart in the manuals for your other devices to learn how each device reacts to incoming MIDI control data. The official MIDI standard defines the use of the following control change messages.

Control change numbers 000 and 032 are used by the Bank Select message, and cannot be selected.

Continuous type		On/off type	
001	Modulation wheel	064	Sustain
002	Breath controller	065	Portamento
004	Foot controller	066	Sostenuto
005	Portamento time	067	Soft pedal
006	Data entry	069	Hold 2
007	Main volume	091	Ex effect depth
008	Balance control	092	Tremolo depth
010	Panpot	093	Chorus depth
011	Expression	094	Celeste depth
		095	Phaser depth

Normally, modulation and other parameters affected by the movement of controllers (except for main volume) are reset when a program change is executed. You can prevent the resetting of these parameters by setting the controller hold function to "on". When this setting is made, all parameter values are maintained regardless of their controller assignments. For example, if pitch modulation is applied to one voice using MODULATION 1, the same amount of pitch modulation will be applied to the next voice that is selected so long as pitch modulation is enabled for that voice. (Note that pitch modulation need not be assigned to MODULATION 1 – or any other controller, for that matter – for the controller hold function to take effect.)

Main volume, modulation, and all other parameters affected by the movement of controllers will be reset when the SY99's mode is changed from Multi to Voice mode (or vice versa), or by the execution of a program change in Multi mode, even if the controller hold function is turned on.

SYSTEM UTILITY

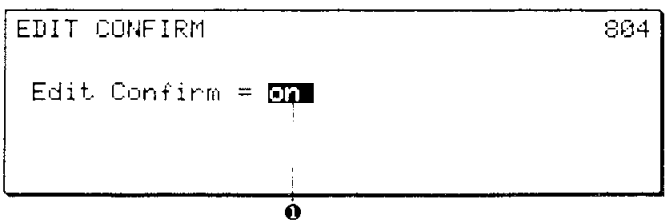
4. Edit confirm

JUMP #804

Summary: The "Are you sure?" message that appears when you store, recall, or initialize data can be turned on/off.

Procedure:

From: system utility job directory (JUMP #800)
Select: 04:Edit Confirm (JUMP #804)
Specify: whether or not the confirm message will appear



❶ Edit Confirm (on, off): When this is on you will be asked "Are you sure?" whenever an operation that erases or replaces data is about to be performed. When this is off the operation will be executed without asking for confirmation.

Remarks: Until you are familiar with the SY99 we recommend that you leave this on.

SYSTEM UTILITY

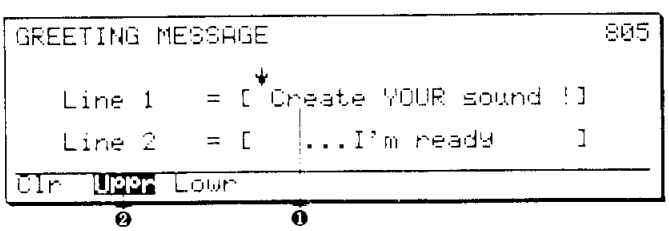
5. Greeting message

JUMP #805

Summary: Edit the two-line message that is briefly displayed when the SY99 power is turned on.

Procedure:

From: system utility job directory (JUMP #800)
Select: 05:Greeting Message (JUMP #805)
Specify: the greeting message



❶ Enter the two-line x 20 character greeting message.

❷ To clear the currently entered message press F1 (Clr). (If you clear the greeting message, the greeting message box will not appear when the SY99's power is turned on.) To switch to upper-case characters press F2 (Uppr). To switch to lower-case characters press F3 (Lowr).

Remarks: Methods of entering character data are explained in *How to enter data* of *Introducing the SY99*.

SYSTEM UTILITY

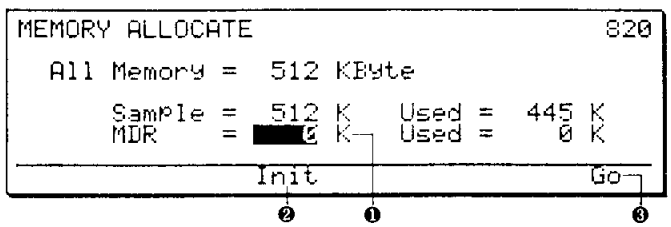
6. Memory allocate

JUMP #820

Summary: Specify how the SY99's 512 Kbytes of internal MDR/sample RAM will be allocated for use by MDR data, and how much will be used for sample data.

Procedure:

From:	system utility job directory	(JUMP #800)
Select:	06:Memory Allocate	(JUMP #820)
Specify:	how much memory to allocate to MDR data and sample data.	
To execute:	memory allocation press F8 (Go)	
To quit:	without executing press EXIT	



❶ With the cursor located at the MDR memory value, adjust the allocation for that type of memory in 4-Kbyte steps. (The minimum value which can be allocated to MDR memory Kbytes is 8 Kbytes.) The Sample memory value is automatically adjusted so that the total will always be 512 Kbytes.

❷ By pressing F4 (Init) you can clear the memory and assign all 512 Kbytes to sample memory.

❸ After you make settings in ❶, you must press F8 (Go) for the settings to take effect. If you increase the sample memory allocation and press F8 (Go), the existing sample data will be preserved. The same will be true if you decrease sample memory, but leave enough memory to hold the samples currently contained by the SY99. However, if you attempt to decrease the sample memory area to a value insufficient to hold the samples currently contained by the SY99, an error message will appear informing you that the change cannot be executed as desired. In such a case, you will have to initialize the sample RAM area before attempting to decrease its volume.

MDR Memory: The MDR function lets you use the SY99's disk to save and load bulk data from other devices. Refer to *MIDI Data Recorder Utility*, page 279.

Sample Memory: Sample data can be received at any time via MIDI from another device. Sample data can also be loaded from disk as explained in *Sample Utility, 3.Load from disk*, page 277. These samples can be assigned to a waveform, and used in the same way as preset and card AWM waveforms. Refer to *AWM element data, 2.0 Waveform edit*, page 160.

Expansion RAM: The size of the MDR/sample memory area can be expanded to a maximum of 3 Mbytes using optional expansion memory boards, model SYEMB05. However, even when the SY99's MDR/sample memory has been increased in this manner, the amount of this area which can be allocated to MDR use is limited to a maximum of 512 Kbytes.

For details regarding memory expansion, refer to *Expansion memory boards* in the appendix (page 325).

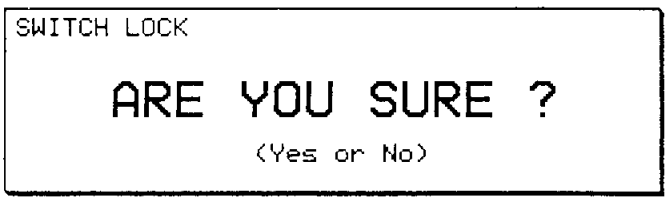
SYSTEM UTILITY

7. Switch lock

Summary: Lock the front panel switches of the SY99 to keep them from being operated unintentionally.

Procedure:

From: system utility job directory (JUMP #800)
Select: 07:Switch Lock
To lock: the front panel switches press YES
To quit: without locking press NO or EXIT
To unlock: the front panel switches press SHIFT+EXIT



This function locks the front panel switches on the SY99. This may be convenient when you wish to place books or sheet music on the SY99 front panel, and do not want memories to be changed accidentally. To unlock the front panel switches, simultaneously press the SHIFT and EXIT buttons or turn off the power once, and you will return to the System Utility job directory.

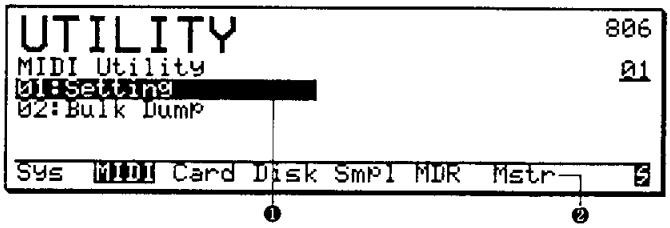
MIDI utility

JUMP #806

Summary: MIDI utility settings determine how MIDI data is transmitted and received.

Procedure:

From: System utility (JUMP #800)
Card utility (JUMP #812)
Disk utility (JUMP #816)
Sample utility (JUMP #826)
MDR utility (JUMP #830)
Master control (JUMP #831)
Press: F2 (MIDI) (JUMP #806)
Select: the desired MIDI utility job and press ENTER.



❶ Move the cursor in this area to select one of the following jobs and then press ENTER.
01: Setting: The SY99 will receive and transmit MIDI data as determined by the MIDI channels and settings specified here.
02: Bulk Dump: Various types of SY99 data can be transmitted via MIDI to another SY99 or other device.

❷ To move to a different utility mode press F1 or F3–F7. To select a job from the currently displayed job directory, hold SHIFT and press a function key.

MIDI UTILITY

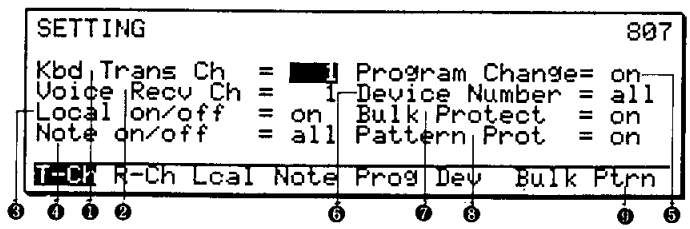
1. Setting

JUMP #807

Summary: The SY99 will receive and transmit MIDI data as determined by the MIDI channels and settings specified here.

Procedure:

From: MIDI utility job directory (JUMP #806)
Select: 01:Setting (JUMP #807)
Specify: MIDI transmit and receive channels and settings



❶ Keyboard Transmit Channel (1...16): This determines the channel on which data will be transmitted from MIDI OUT when you play the keyboard or move the various controllers. In multi mode, this also determines which of the sixteen voices will be played by the keyboard.

❷ Voice Receive Channel (1...16, omni): This determines the channel on which the SY99 can be played when in voice play mode. When "omni" is selected the SY99 will respond to any channel. In multi play mode, bank select messages and effect control messages will be received on this channel.

❸ Local on/off (off, on): This determines whether or not the SY99 keyboard will play the SY99 tone generator. Usually you will leave this on so that the SY99 keyboard will play the SY99 tone generator.

When set off, the SY99 tone generator will produce sound only in response to messages from MIDI IN, but messages will be transmitted from MIDI OUT when you play the keyboard or move the various controllers.

Data from the SY99's internal sequencer will always be sent to the tone generator regardless of the Local on/off setting.

❹ Note on/off (all, odd, even): When set to "all", the SY99 tone generator will produce sound in response to all notes received at MIDI IN. When set to "odd" or "even", the SY99 tone generator will respond only to odd or even notes. This affects only the notes received at MIDI IN, and will have no effect on the notes played by the SY99 keyboard.

❺ Program Change (off, on): This determines what the SY99 does when a program change message is received at MIDI IN, and how program change messages are transmitted from MIDI OUT. Usually you will leave this set at "on". For details, see the following explanations for *Program Change = off* and *Program Change = on.*

The SY99 will also receive and transmit MIDI bank select messages (see the chart below).

❻ Device Number (off, 1...16, all): This determines the channel on which the SY99 will receive or transmit MIDI system exclusive messages such as parameter changes and bulk data. When "off" is selected, system exclusive messages will not be transmitted or received. When "all" is selected, system exclusive messages will be transmitted on channel 1, and received on any channel.

❼ Bulk Protect (off, on): The SY99 is able to receive system exclusive bulk data at any time, and the newly received data will replace the data in memory. By setting bulk protect on you can prevent unexpected bulk data from overwriting important data.

❽ Pattern Protect (off, on): Song data in the K-Seq format in MIDI consists of both song data and pattern data. If the pattern protect item is set to "off" the SY99 will receive both the song data and the pattern data. By setting the pattern protect to "on," you can instruct the SY99 to selectively admit song data but exclude pattern data. This is useful when you wish to receive in songs without overwriting the pattern data currently contained in the SY99's sequencer memory.

❾ Pressing F1–F8 will move the cursor to the corresponding item in the display.

Local: If you are using the SY99 by itself, you should usually leave local on. However local off can be useful in the following situations.

Some commercially available MIDI processing devices are able to receive a stream of MIDI note and controller data and process it to create parallel harmony or other musical effects. If you have this type of MIDI processing unit, it may be interesting to turn the SY99 local parameter off and make MIDI connections so that the note and controller data transmitted from the SY99's MIDI OUT is processed by the MIDI processing parameter unit and then transmitted back to the SY99's MIDI IN.

If you use an external sequencer with the SY99, you will probably record from the SY99's MIDI OUT to the sequencer, and playback from the sequencer's MIDI OUT to the SY99's MIDI IN. If the external sequencer is able to echo back (retransmit) the data being recorded, you can turn local off for the SY99 so that it produces sound only in response to data from the external sequencer.

Note on/off: This setting can be used to increase the number of simultaneous notes. Each SY99 is able to produce up to 16 notes of AFM sound and 16 notes of AWM sound at once. By sending the same MIDI data to two SY99s and setting one to note "odd" and the other to note "even", you can double the number of simultaneous notes that can be produced.

Program Change = off: Incoming bank select and program change messages will be ignored. Program change messages will not be transmitted.

Program Change = on: Incoming bank select and program change messages will be executed as indicated in the chart below.

	Voice/ Multi Number	Bank Select	Program Change
Voice (Internal)	1–64	1	1–64
(Card)	1–64	2	1–64
(Preset1)	1–64	3	1–64
(Preset2)	1–64	6	1–64
Multi (Internal)	1–16	17	65–80
(Card)	1–16	18	65–80
(Preset)	1–16	19	65–80
Voice in Multi (Internal)	1–64	33	1–64
(Card)	1–64	34	1–64
(Preset1)	1–64	35	1–64
(Preset2)	1–64	38	1–64

MIDI UTILITY

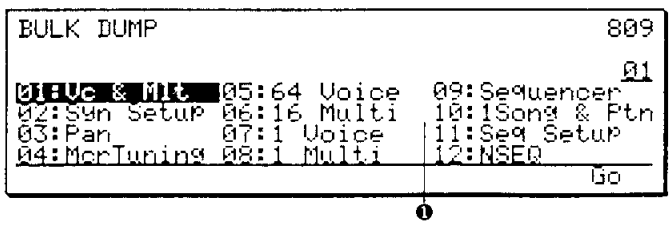
2. Bulk dump

JUMP #809

Summary: Various types of SY99 data can be transmitted via MIDI to another SY99 or other device.

Procedure:

From: MIDI utility job directory (JUMP #806)
Select: 02:Bulk Dump (JUMP #809)
Specify: the type of data to be transmitted
To execute: data transmission press F8 (Go).
To quit: without executing press EXIT.



❶ Move the cursor in the area to select the type of data you wish to transmit. Then press F8 (Go).

01: Vc & Mlt: All internal voice, multi, data
02: Syn Setup: System setup data for the synthesizer section
03: Pan: All internal pan data
04: McrTuning: All internal micro tuning data
05: 64 Voice: All internal voices
06: 16 Multi: All internal multis
07: 1 Voice: A single specified voice
08: 1 Multi: A single specified multi
09: Sequencer: Data for one song, plus pattern data and sequencer setup data
10: 1Song & Pat: Data for one song, plus pattern data
11: Seq Setup: Sequencer setup data
12: NSEQ: Data for one song in N-Seq format

Go: When you press F8 (Go) transmission will begin and the bottom line of the LCD will display "Now transmitting !" When transmission ends the bottom line will display "Completed !"

System setup data: The system setup data transmitted by bulk dump 02:Syn Setup consists of all System utility, MIDI utility, and master control settings.

1 Voice: If you select 07:1 Voice and press F8 (Dir) a directory of the sixteen voices in the currently selected bank will appear. Select a bank A–D, and select a voice 1–16. Then press F8 (Go) and the data of the selected voice will be transmitted. Only internal voices can be dumped.

1 Multi: If you select 08:1 Multi and press F8 (Dir) a directory of the sixteen multis in the currently selected memory will appear. Select a multi 1–16. Then press F8 (Go) and the data of the selected multi will be transmitted. Only internal multis can be dumped.

Sequencer data: If you select 09:Sequencer, 10:1Song & Pat, or 12:NSEQ and then press F8 (Dir), a directory of the songs in the sequencer memory will appear. Select a song and press F8 (Go) to transmit the data for the song (plus pattern and setup data, depending on the dump type selected) as a MIDI sequencer data dump. All pattern data will be transmitted no matter which song is selected.

The selection of a song is the same as described for the song directory on page 232, except that direct selection using the function keys is not possible.

Remarks: For the data to be received by another SY99, the device number settings of the two units must match.

Data transmitted by 07:1 Voice or 08:1 Multi will be received into the editing buffer of the receiving device. If you select another memory before storing it into a memory, the newly received data will be lost.

Receiving system setup data by bulk dump: The SY99 is capable of receiving all system setup data which can be transmitted as a bulk dump. However, the MDR/sample RAM memory allocation setting will not be changed as the result of an incoming bulk dump.

Receiving song data by bulk dump: When data for a single song is received by bulk dump (whether in K-Seq or N-Seq format), that song is automatically assigned to the song number of the currently selected song. Any sequence data for the current song will be deleted by the incoming data. Moreover, Next Song, Next Mode, and PGM Select settings cannot be received as part of a song data bulk dump; these items will retain the values set for the previous current song, if any.

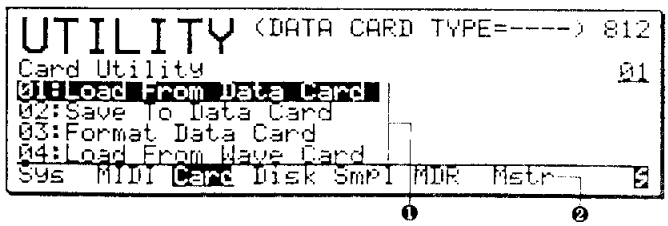
Card utility

JUMP #812

Summary: Card utility jobs allow you to transfer data to and from a card, and to format a card to accept SY99 data.

Procedure:

From: System utility (JUMP #800)
MIDI utility (JUMP #806)
Disk utility (JUMP #816)
Sample utility (JUMP #826)
MDR utility (JUMP #830)
Master control (JUMP #831)
Press: F3 (Card) (JUMP #812)
Select: the desired card utility job and press ENTER.



❶ Move the cursor in this area to select one of the following jobs and then press ENTER.
01: Load From Data Card: Synthesizer data can be loaded from a DATA card (RAM card or ROM card).
02: Save To Data Card: Synthesizer data can be saved to a RAM DATA card.
03: Format Data Card: Before you use a new MCD64 RAM card, you must use this operation to format it.
04: Load From Wave Card: Waveform data can be loaded from a WAVEFORM card.

❷ To move to a different utility mode press F1–F2 or F4–F7. To select a job from the currently displayed job directory, hold SHIFT and press a function key.

CARD UTILITY

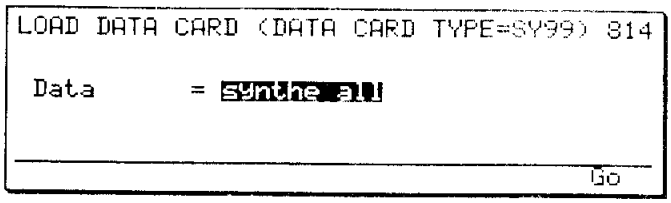
1. Load from data card

JUMP #814

Summary: Synthesizer data can be loaded from a RAM or ROM card.

Procedure:

From: card utility job directory (JUMP #812)
Select: 01:Load From Data Card (JUMP #814)
Specify: the type of data to be loaded.
To execute: the load operation press F8 (Go).
To quit: without executing press EXIT.



Data Type (synth all, multi&voice (pan, mct), synth setup): You can load all or part of the data from card. When "synth all" is selected all the data will be loaded. When "multi&voice (pan, mct)" is selected multi, voice, pan, and micro-tuning data will be loaded. When "synth setup" is selected the system setup data will be loaded. Master Controller Select data is not loaded.

If the card was formatted for the SY77, "synth all" will be the only choice.

This function loads the specified type of synthesizer data from a RAM or ROM card inserted in the DATA card slot. After selecting the data type to load, press F8 (Go) to load the data from card. The display will ask "Are you sure?" so if you are sure you want to load the data press YES.

If the card inserted in the DATA slot is formatted for a different type of device the LCD will show "ERROR: Illegal Format!" Press EXIT to exit from the error message.

System setup data: The system setup data loaded when "synth all" or "synth setup" data is selected consists of all System utility, MIDI utility, and master control settings. The MDR/sample memory allocation ratio or master controller select will be changed as a result of either of these load operations.

CARD UTILITY

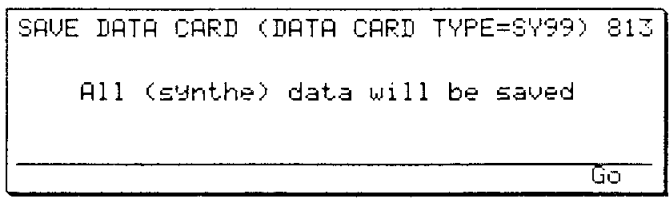
2. Save to data card

JUMP #813

Summary: Synthesizer data can be saved to a RAM card.

Procedure:

From: card utility job directory (JUMP #812)
Select: 02:Save To Data Card (JUMP #813)
To execute: the operation press F8 (Go).
To quit: without executing press EXIT.



This job saves all synthesizer data to a RAM card inserted in the DATA card slot. Before a newly purchased RAM card can be used by the SY99 it must be formatted using the *4. Format data card* function explained later in this section.

Press F8 (Go) to save the synthesizer data to card. The display will ask "Are you sure?" so if you are sure you want to save the data press YES.

If the card inserted in the DATA card slot has not been formatted for the SY99 or the SY77, the LCD will show "ERROR: Illegal Format !" Press EXIT to exit from the error message.

This function saves the following data to RAM card.

- System setup data (System utility, MIDI utility, and master control settings)
- Pan data
- Micro tuning data
- Internal voices 1–64
- Internal multis 1–16

CARD UTILITY

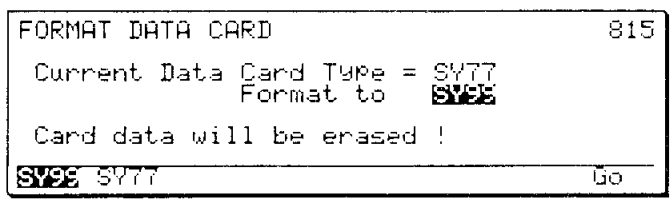
3. Format data card

JUMP #815

Summary: Before you use a new RAM card, you must format it so that the card can be used by the SY99 or the SY77.

Procedure:

From: card utility job directory (JUMP #812)
Select: 03:Format data card (JUMP #815)
To execute: the operation press F8 (Go).
To quit: without executing press EXIT.



This function prepares an MCD64 RAM card (sold separately) for use by the SY99 or the SY77.

Insert the card into the data card slot. Press F1 (SY99) or F2 (SY77) to indicate which synthesizer the card is to be used by. (If "SY77" is selected the card will be formatted for use by either the SY77 or the SY99. If "SY99" is selected, however, the card may not be used by the SY77.) Then press F8 (Go) to format the data card. The display will ask "Are you sure?" so if you are sure you want to format the card press YES.

If the card is faulty or is a type that cannot be used by the SY99 the LCD will show an error message. Press EXIT to exit from the error message.

CARD UTILITY

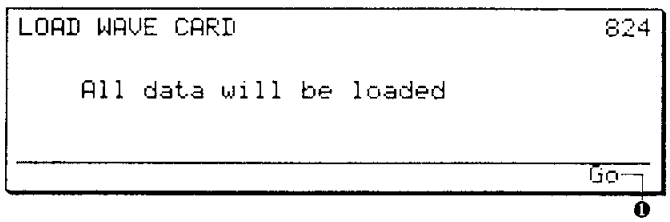
4. Load from wave card

JUMP #824

Summary: This operation loads the entire contents of the currently inserted WAVEFORM card into the sample memory, allowing you to simultaneously use AWM voices that use data from two different WAVEFORM cards.

Procedure:

From: card utility job directory (JUMP #812)
Select: 04:Load From Wave Card (JUMP #824)
To execute: the operation press F8 (Go)
To quit: without executing press EXIT



❶ To load all waveform data from the currently inserted WAVEFORM card, press F8 (Go). To quit without loading press EXIT.

Remarks: If all the voices you are playing use the same AWM WAVEFORM card (or preset waveforms), there is no need to use this operation.

This operation will be useful only when you wish to use waveforms from more than one waveform card at the same time. Once you have loaded the contents of a waveform card, you can then insert the other card into the WAVEFORM slot, and have the waveform data of both cards available simultaneously.

Waveform and sample data loaded using this operation will be placed in consecutive sequence in available MDR/sample RAM memory. Data from two cards may be loaded at once, as long as there is sufficient memory available to load all of the waveform and sample data from the second card in sequence after the data from the first card.

If sufficient memory is not available, an error message will be displayed to inform you of this fact. You may wish to try using the initialize waveform (page 161), sample delete (page 275), initialize sample (page 278), or memory allocate (page 256) operations to free enough memory to load the data.

Keep in mind, however, that any memory area freed by deleting samples or initializing waveforms must allow the loaded data to fit into the memory in consecutive order. Thus, for example, it will be of little merit to delete only the first of a series of samples.

The data contained in optional waveform cards is copy protected so that it cannot be illegally transferred to disk or to another device via MIDI sample dump. The same applies to some sample data disks. Copy-protected samples are indicated on the SY99 sample directory display by a key symbol, like the one shown here, before the sample name.

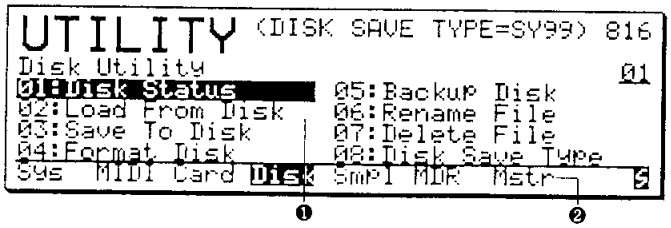
Disk utility

JUMP #816

Summary: Disk utility operations allow you to transfer data to and from a disk, and to format a disk to accept SY99 data.

Procedure:

From: System utility (JUMP #800)
MIDI utility (JUMP #806)
Card utility (JUMP #812)
Sample utility (JUMP #826)
MDR utility (JUMP #830)
Master control (JUMP #831)
Press: F4 (Disk) (JUMP #816)
Select: the desired disk utility job and press ENTER



❶ Move the cursor in this area to select one of the following jobs and then press ENTER.

01: Disk Status: This allows you to check the number of disk files of each type and the remaining free area on the disk.

02: Load From Disk: Synthesizer, sequencer, or card data can be loaded from disk.

03: Save To Disk: Synthesizer, sequencer, or card data can be saved to disk.

04: Format Disk: Before a newly purchased disk can be used it must be formatted.

05: Backup Disk: Use this operation to make backup disks for important data.

06: Rename File: An already existing disk file can be given a different name.

07: Delete File: An unwanted file can be deleted from disk.

08: Disk Save Type: This setting allows you to write "All Data", "Sequencer All", or "Synthesizer All" files in SY77 format. Songs saved as "1 Song" or "Song ESEQ" files will be saved in a format common to both the SY99 and SY77, regardless of this setting.

❷ To move to a different utility mode press F1–F3 or F5–F7. To select a job from the currently displayed job directory, hold SHIFT and press a function key F1–F8.

Important: Before using a newly purchased disk or a disk that has been used by other devices, you must format the disk using the 04:Format Disk operation.

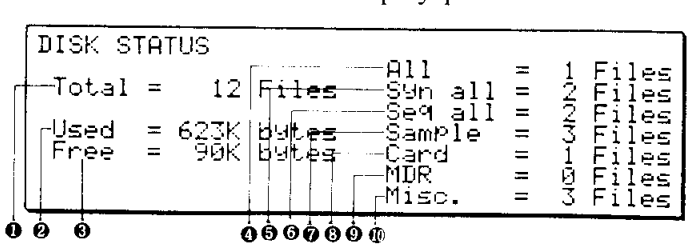
DISK UTILITY

1. Disk status

Summary: You can check the number of disk files and the remaining free area on the disk.

Procedure:

From: disk utility job directory (JUMP #816)
When: the disk you want to check is inserted
Select: 01:Disk Status
To exit: the disk status display press EXIT.



❶ Total: The total number of files on the disk
❷ Used: The amount of disk space occupied by files
❸ Free: The amount of unused disk space
❹ All: The number of files saved as "All Data"
❺ Syn all: The number of files saved as "Synthesizer All"
❻ Seq all: The number of files saved as "Sequencer All"
❼ Sample: The number of files saved using the Sample utility save to disk function. See *Sample utility 4.Save to disk*, page 277.
❽ Card: The number of files saved as "Card"

❾ MDR: The number of files saved by the MDR function (see *MIDI data recorder utility*, page 279)

❿ Misc.: The number of all other types of files

Remarks: When this job is selected the currently inserted disk will be checked immediately, so be sure to insert the disk before you select the job. There are no settings to make in this job.

DISK UTILITY

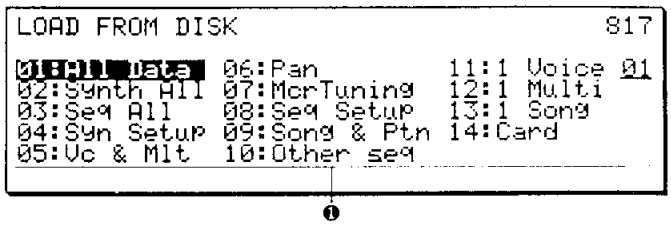
2. Load from disk

JUMP #817

Summary: Synthesizer, sequencer, or card data can be loaded from disk.

Procedure:

From: disk utility job directory (JUMP #816)
Select: 02:Load From Disk (JUMP #817)
Specify: the type of data to be loaded.
Press: ENTER
Select: the file from which to load the data.
To execute: the loading operation press F8 (Go).
To quit: without loading press EXIT.



❶ Move the cursor in this area to select the type of data you wish to load from disk.

01: All Data: All data of the SY99
02: Synth All: 64 voices, 64 multis, 32 pan, 2 micro tuning, and system setup
03: Seq All: K-Seq data and setup data of the sequencer section
04: Syn Setup: Synthesizer system setup data from a disk file that was saved as "All Data"
05: Vc & Mlt: 64 voices, 64 multis, from a disk file that was saved as "All Data"
06: Pan: 32 pan data from a disk file that was saved as "All Data"
07: McrTuning: 2 micro tuning data from a disk file that was saved as "All Data"
08: Seq Setup: Setup data from a disk file that was saved as "All Data"
09: Song & Ptn: 1 song and pattern sequencer data from a disk file that was saved as "All Data"
10: Other Seq: Sequencer data in K-Seq, E-Seq, N-Seq, or standard MIDI file format
11: 1 Voice: A single selected voice from a disk file that was saved as "All Data"
12: 1 Multi: A single selected multi from a disk file that was saved as "All Data"
13: 1 Song: A song that was saved as "1 Song"
14: Card: Data that was saved as "Card"

Types of load operations: The data that can be loaded by each operation depends on the type of save operation that was used (refer to the following section *3.Save to disk*):

Data that was saved using this operation:	an be loaded using this operation:
01:All Data	01:All Data, 04:Syn Setup 05:Vc & Mlt, 06:Pan 07:McrTuning, 08:Seq Setup 09:Song & Ptn, 11:1 Voice 12:1 Multi
02:Synthesizer All	2:Synth All
03:Sequencer All	3:Seq All
04:1 Song	13:1 Song
05:Song ESEQ	10:Other Sequence
06:MIDI File	10:Other Sequence
07:Card	14:Card

The load operation procedure may vary slightly depending on the type of load operation selected. Details are given below.

Load from disk (types 1–8 and 14): As the chart above shows, load operation types 1 and 4–9 can only be used to load data saved as "All Data." Load operations type 2 and 3 are used to load data saved as "Synthesizer All" and "Sequencer All", respectively. Load operation type 14 is used to load data saved from a data card.

1. After selecting the desired load operation, press ENTER to select the disk file from which to load the data.

The names of all disk files of the selected type will be displayed. An elongated dash is displayed after file numbers that contain no data. Move the cursor to select a file, or use the numeric keys to directly specify a file number.

2. Although a disk can contain as many as 99 files, the LCD can show only ten filenames at once. To view the rest of the filenames, press F1 or F2 to scroll the filename display up or down.
3. After selecting a file press F8 (Go). The display will ask "Are you sure ?" If you are sure that you want to load the data, press YES. The data will be loaded from disk file into the SY99.

Load from disk (type 9): Load operation type 9 can be used to load a single song saved as part of an "All Data" file. The procedure for loading this data differs from that described above in that you must select the song to be loaded, and the destination to which it is to be loaded.

1. Select the file from which data is to be loaded. Then press F8 (Dir) to view a directory of the songs contained in the selected file.
2. Move the cursor to select the desired song.
3. To select the destination into which the selected song will be loaded, press F4 (Dst) and move the cursor to the desired song number. Note that if you select a song location already occupied by data, that data will be overwritten by the load operation.
4. If you change your mind about the source song you have selected for loading, press F3 (Src) to return to the source song directory.
5. When you have selected the destination song, press F8 (Go). The SY99 will ask you if you want to "LOAD With Pattern Data ?" Press YES to load pattern data as well as song data, or NO to load song data only. The selected data will be loaded from disk into internal memory.

Load from disk (types 10 and 13): Like load operation type 9, load operation types 10 and 13 are used to load data files containing a single song. Load operation 10 is used to load data saved using the E-Seq, N-Seq, and Standard MIDI File formats, whereas load operation type 13 is used to load K-Seq data saved using the "1 Song" procedure described in *3.Save to disk*, below. The procedure for loading these types of data is similar to that described above for load operation type 9.

1. When load operation type 10 or 13 is selected, the display will show the complete names of all of the files on the disk, whether or not they were created by the SY99. Each filename includes a three-character extension. The first letter of this extension shows the format of the data. Refer to *Disk filename extensions* in the Appendix, page 322.
2. The display can show the names of only ten files at one time. Use F1 and F2 to scroll the display up or down, and move the cursor to select the desired file.
3. To select the destination into which the selected song will be loaded, press F4 (Dst) and move the cursor to the desired song number. Note that if you select a song location already occupied by data, that data will be overwritten by the load operation.
4. If you change your mind about the source song you have selected for loading, press F3 (Src) to return to the source song directory.
5. When you have selected the destination song, press F8 (Go). If you have selected load operation type 10 (1 song), the SY99 will ask you if you want to "LOAD With Pattern Data?" In this case, press YES to load pattern data as well as song data, or NO to load song data only. The selected data will be loaded from disk into internal memory.

   If you select and attempt to load a file which does not contain sequencer data readable by the SY99, an error message will be displayed. When loading E-Seq or N-Seq data, any data specific to the device which created the file will be ignored. For example, when loading N-Seq data saved by the QX5FD, macro data will be ignored.

   Please refer to *About the Standard MIDI File Format* (page 323) for a detailed discussion of the standard MIDI file format.

Load from disk (types 11 and 12): Load operation types 11 and 12 may be used to load a single voice or multi from a file saved as "All Data." The procedure differs from that described above for load operation types 1–8 and 14 in that you must select the voice or multi to be loaded, as well as the load destination.

1. Select a load operation type and the file from which data is to be loaded. Then press F8 (Dir) to view a list of the voices or multis contained in the selected "All Data" file.
2. The display can show the names of only ten voices or multis at one time. Use F1 and F2 to scroll the display up or down, and move the cursor to select the desired voice or multi.
3. To select the destination into which the selected voice or multi will be loaded, press F4 (Dst), followed by the bank A–D (if loading a voice) and the memory select buttons 1–16 to specify the load destination. Note that voices saved from banks A–C can only be loaded into banks A–C.
4. If you change your mind about the source voice or multi you have selected for loading, press F3 (Src) to return to the source directory.
5. When you have selected the source and destination voice or multi, press F8 (Go) and the selected data will be loaded from disk into internal memory.

System setup data: The system setup data loaded using load operation types 1, 2, and 4 consists of all System utility, MIDI utility, and master control settings. The MDR/sample memory allocation ratio will be changed as a result of load operation type 1; however, this ratio and master control select data will not be changed as a result of load operation types 2 or 4.

Remarks: Some "All Data" files are very large and will not fit on a single disk. If data is loaded from such a file, the SY99 may pause during the operation and ask you to "Please insert No. 2 disk, OK?" At this time you should insert the next disk, or press NO to quit the load operation.

When sequencer data is loaded from an "All Data" or "Sequencer All" file which was saved using the SY77 format, the song data from that file will be loaded to the SY99 as Song 1. Any other songs currently held in the SY99's memory will be cleared as a result of the load operation. For details, refer to the following section, *8.Disk save type*.

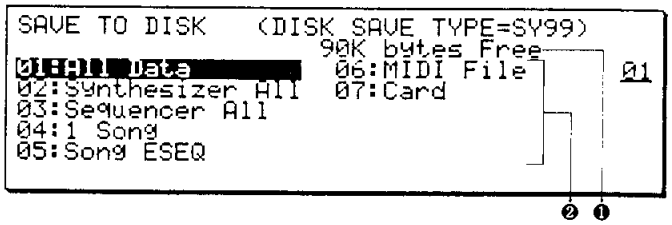
DISK UTILITY

3. Save to disk

Summary: Synthesizer, sequencer, and card data can be saved to disk.

Procedure:

From: disk utility job directory (JUMP #816)
Select: 03:Save To Disk and press ENTER
Specify: the type of data to be saved.
Press: ENTER
Specify: the file into which the data will be saved
To execute: the operation press F8 (Go).
To quit: without executing press EXIT.



❶ This shows the amount of free area remaining on the disk inserted in the disk drive.

❷ Move the cursor in this area to select the type of data you wish to save to disk and then press ENTER.

01: All Data: All data of the SY99

02: Synthesizer All: All data of the synthesizer section (including system setup data)

03: Sequencer All: All data of the sequencer section

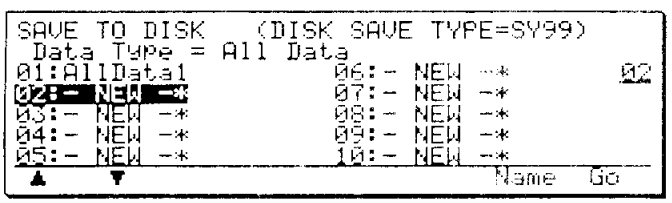
04: 1 Song: Sequencer song data in K-Seq format (SY99 sequence data format without the setup data)

05: Song ESEQ: Sequencer song data in E-Seq format (Yamaha QX3, electones, player pianos, etc.)

06: MIDI File: Sequencer song data in standard MIDI file format 0.

07: Card: The entire contents of a card inserted in the DATA slot

Save to disk (types 1–3): If you have selected save operation type 1, 2, or 3 to save all sequencer and/or song data, a display like the following will appear when you press ENTER:



1. Move the cursor or use the numeric keys to select a file number under which the data will be saved. (Up to 99 files may be saved on a single disk.) Unused file numbers are indicated by an asterisk. If you save the data without assigning a name, the asterisk will disappear. If necessary, press F1 or F2 to scroll the filename display up or down and find an open file number.
2. If you wish to name the file, press F7 (Name) to enter the job described in the following section *3.1 Save to disk filename*. Since the SY99 recognizes disk files by filename extensions (one character denoting the type and two digits denoting the number) which it assigns automatically when saving files, it is possible to assign the same name to two or more files. However, it is a good idea to give each file a distinctive name as a reminder of the contents.
3. To save the data to the selected file, press F8 (Go).
4. If the selected file number is already occupied by data, the SY99 will ask you if you wish to overwrite the file. If you do not wish to keep the data in the file, press YES and the old file will be overwritten. If the old data is important, press NO and select a different file number.

Save to disk (types 4–6): Save operation types 4–6 are used to save data for a single song. Type 4 is used to save data in the K-seq format; type 5 is used to save data in the E-Seq format; and type 6 is used to save data in standard MIDI file format 0. The procedure for these save operations is different from that described above in that you must specify the song to be saved.

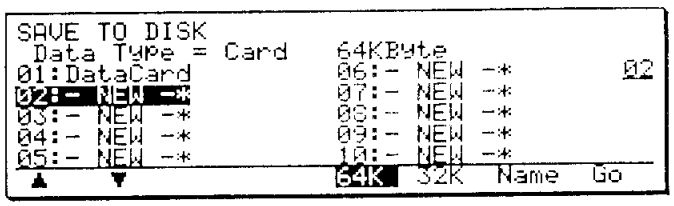
1. Move the cursor or use the numeric keys to select a song to save.
2. Press F4 (Dst) to display the names of the files contained on the disk. Move the cursor or use the numeric keys to select a file number under which the data will be saved. If necessary, press F1 or F2 to scroll the display up or down and find an open file number.

   Please refer to *About the Standard MIDI File Format* (page 323) for a detailed discussion of the standard MIDI file format.
3. If you change your mind about the source song you have selected for saving, press F3 (Src) to return to the source song directory.
4. The name assigned to the song in the SY99's memory will be saved as the file's name unless you change it. To change the name, press F7 (Name) to enter the job described in the following section *3.1 Save to disk filename*.
5. To save the data to the selected file, press F8 (Go).
6. If the selected file number is already occupied by data, the SY99 will ask you if you wish to overwrite the file. If you do not wish to keep the data in the file, press YES and the old file will be overwritten. If the old data is important, press NO and select a different file number.

   Please refer to *About the Standard MIDI File Format* in the Appendix (page 323) for a detailed discussion of the standard MIDI file format.

Save to disk (type 7): This operation allows you to save the entire contents of a data card inserted in the DATA slot onto an SY99 disk, regardless of whether or not the SY99 itself is able to use the data from that card. For example, you can use this operation to save the contents of MCD64/32 data cards which contain data for the Yamaha V50, SY55/TG55, or RX8.

The procedure for saving data from a card is different from that described for save operation types 1–3 above in that you must specify whether the card to be saved is 32 or 64 Kbytes. If you have selected save operation type 7, a display like the following will appear when you press ENTER:



1. Press F5 (64k) or F6 (32k) to specify the type of card you are saving from. For an MCD64 card, press F5 (64k). For an MCD32 card, press F6 (32k).
2. Move the cursor or use the numeric keys to select a file number under which the card data will be saved.
3. If you wish to name the file, press F7 (Name) to enter the job described in the following section *3.1 Save to disk filename*.
4. To save the data to the selected file, press F8 (Go).
5. If the selected file number is already occupied by data, the SY99 will ask you if you wish to overwrite the file. If you do not wish to keep the data in the file, press YES and the old file will be overwritten. If the old data is important, press NO and select a different file number.

System setup data: The system setup data saved using save operation types 1 and 2 consists of all System utility, MIDI utility, and master control settings.

Remarks: Some "All Data" files are very large and will not fit on a single disk. When you save data to such a file, the SY99 will display the number of disks required to save the file. If two disks are required, for example, the message "You need 2 pc. disks, OK?" will appear. Press YES to continue. If the disk you have inserted is unformatted or contains any data files, the SY99 will ask "Format before saving? or Change disk." Press YES to format the disk while saving, or NO after replacing the disk, if using empty disks which are already formatted. (Remember that formatting a disk will destroy any data it contains!)

The SY99 will pause during the save operation and ask you to "Please insert No. 2 disk, OK?" At this time you should insert the next disk, or press NO to quit the save operation.

When sequencer data is saved to an "All Data" or "Sequencer All" file using the SY77 format, only the song data for the currently selected song only will be saved. Any other songs currently held in the SY99's memory will not be saved by the save operation. For details, refer to the following section, *8.Disk save type*.

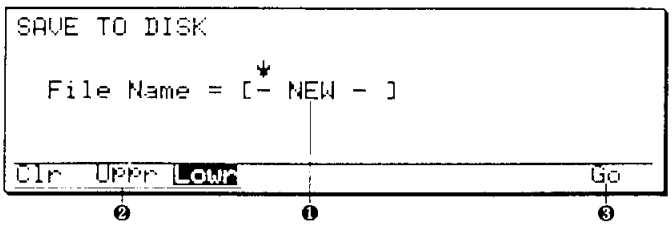
DISK UTILITY

3.1 Save to disk filename

Summary: Each file on disk can be given an eight-character name as a reminder of the contents.

Procedure:

From: the *Save to disk* filename directory in *3. Save to disk*
Press: F7 (Name)
Specify: an 8-character filename.
To execute: the Save To Disk operation press F8 (Go).
To quit: without executing press EXIT.



❶ Enter an eight-character name for the file.
❷ To clear the currently entered name press F1 (Clr). To switch to upper-case characters press F2 (Uppr). To switch to lower-case characters press F3 (Lowr).
❸ After entering a name for the disk file press F8 (Go). The bottom line of the display will ask "Are you sure ?" If you are sure that you want to save the data then press YES and the data will be saved to the specified disk file.

Remarks: Methods of entering character data are explained in *How to enter character data,* page 30.

Note that the actual disk save operation can be executed either from this *3.1 Save to disk* filename job or from the *3. Save to disk* filename directory.

DISK UTILITY

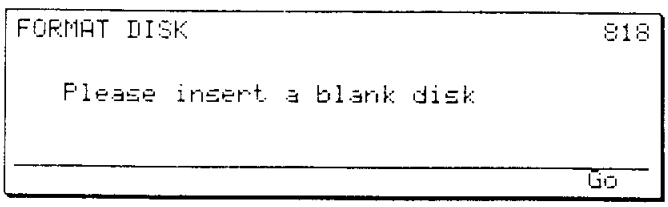
4. Format disk

JUMP #818

Summary: Before a disk can be used it must be formatted to accept SY99 data.

Procedure:

From: disk utility job directory (JUMP #816)
Select: 04:Format Disk (JUMP #818)
To execute: the formatting operation press F8 (Go).
To quit: without executing press EXIT.



Newly purchased disks must be formatted by the SY99 before they can be used to store data. *Formatting a disk will erase all the data on the disk.* Be careful not to accidentally format a disk which contains valuable data.

The display will ask you to "Please insert a blank disk". Make sure that the write protect slider of the disk is in the write enabled position with the slider covering the hole, insert the disk into the disk drive, and press F8 (Go). You will be asked "Are you sure?" If you are sure you want to format the disk press YES and formatting will begin.

While the disk is being formatted the display will show "xx% Formatted". When the number reaches 100% the display will show "Completed !" until a switch is pressed.

Note: *The SY99 uses exactly the same disk format as the SY77. Disks formatted by the SY77 can be used by the SY99, and vice versa.*

The formatting of disks is entirely unrelated to the disk save type setting described on page 274. The former refers to the physical formatting of disks so that they can be used by the synthesizer's disk drive, whereas the latter refers to the data format used when saving sequencer data to a disk.

DISK UTILITY

5. Backup disk

JUMP #819

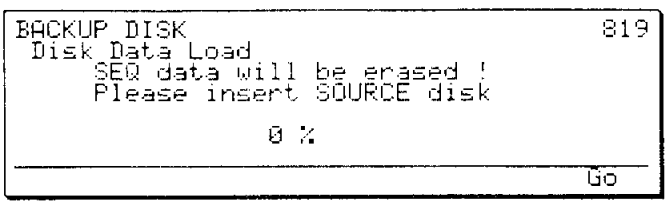
Summary: Use this operation to make backup disks for important data.

Procedure:

From: disk utility job directory (JUMP #816)
Select: 05:Back Up Disk (JUMP #819)
To execute: the backup operation press F8 (Go).
To quit: without executing press EXIT.

Floppy disks are generally quite reliable, but it is always a good idea to make backup copies of important data.

Important: When this *5. Backup disk* operation is used, all data in the SY99 sequencer memory will be lost.



1. Insert the source disk (the original data) into the disk drive and press F8 (Go). The display will show "Now Loading" and the data will be loaded into the SY99's memory. The "xx% Loaded" display indicates the percentage of the backup data that has been loaded.
2. When the SY99 has loaded as much data as possible, the display will ask you to "Please insert DUPLICATE into drive."
3. Make sure that the backup disk is correctly formatted for the SY99 and that its write protect slider is in the write enabled position (covering the hole). Insert the backup disk into the disk drive and press F8 (Go).
4. The display will show "Now Saving" and the data will be saved onto the backup disk. The "xx% Saved" display indicates the percentage of the data that has been saved.
5. Repeat steps 1–4 until 100% of the source data has been loaded and saved. When the backup process is complete the display will show "Completed !".

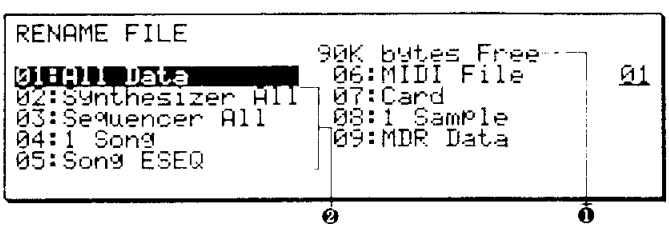
DISK UTILITY

6. Rename file

Summary: An already existing disk file can be given a different name.

Procedure:

From: disk utility job directory (JUMP #816)
Select: 06:Rename File
Specify: the type of file you wish to rename.
Press: ENTER
Specify: the file you wish to rename.
Press: ENTER
Specify: the new filename.
To execute: the rename operation press F8 (Go).
To quit: without executing press EXIT.



❶ This shows the amount of remaining free memory for the currently inserted disk.

❷ Move the cursor in this area to select the type of file you wish to rename.

01: All Data: All data of the SY99
02: Synthesizer All: All data of the synthesizer section
03: Sequencer All: All data of the sequencer section
04: 1 song: Sequencer song data in K-Seq format (SY99 sequence data format without the setup data)
05: Song ESEQ: Sequencer song data in E-Seq format (Yamaha QX3, electones, player pianos, etc.)
06: MIDI File: Sequencer song data in standard MIDI file format 0
07: Card: Data saved from a data card

08: 1 Sample: Sample data in SY99 or TX16W format
09: MDR: Data saved data using the *MDR Save to Disk* operation

1. After selecting the type of file you wish to rename, press ENTER and the names of all files of the selected type will be displayed.
2. Move the cursor or use the numeric keys to select the file 1–99 you wish to rename. If necessary press F1 (△) or F2 (▽) to scroll the list of filenames.
3. After selecting the file you wish to rename press F8 (Name).
4. Enter an eight-character name for the file. To clear the currently entered name press F1 (Clr). To switch to upper-case characters press F2 (Uppr). To switch to lower-case characters press F3 (Lowr).
5. After entering a new name for the disk file press F8 (Go). The bottom line of the display will ask "Are you sure ?" If you are sure that you want to rename the file then press YES and the disk file will be renamed.

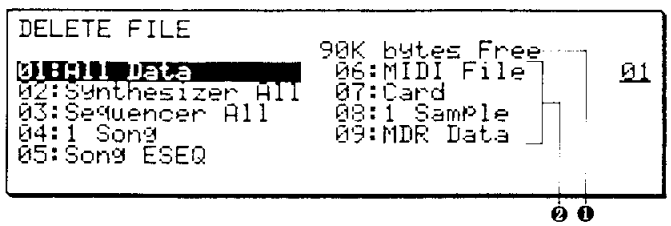
DISK UTILITY

7. Delete file

Summary: You can delete an unwanted file from disk.

Procedure:

From: disk utility job directory (JUMP #816)
Select: 07:Delete File
Specify: the type of file you wish to delete.
Press: ENTER
Specify: the file you wish to delete.
To execute: the delete file operation press F8 (Go).
To quit: without executing press EXIT.



❶ This shows the amount of remaining free memory for the currently inserted disk.
❷ Move the cursor in this area to select the type of file you wish to delete.
01: All Data: All data of the SY99
02: Synthesizer All: All data of the synthesizer section
03: Sequencer All: All data of the sequencer section
04: 1 song: Sequencer song data in K-Seq format (SY99 sequence data format without the setup data)
05: Song ESEQ: Sequencer song data in E-Seq format (Yamaha QX3, electones, player pianos, etc.)
06: MIDI File: Sequencer song data in standard MIDI file format 0
07: Card: Data saved from a data card
08: 1 Sample: Sample data in SY99 or TX16W format
08: MDR: Data saved data using the MDR *MDR Save To Disk* operation

1. After selecting the type of file you wish to delete, press ENTER and the names of all files of the selected type will be displayed.
2. Move the cursor or use the numeric keys to select the file 1–99 you wish to delete. If necessary press F1 (△) or F2 (▽) to scroll the list of filenames.
3. After selecting the file you wish to delete press F8 (Go). The bottom line of the display will ask "Are you sure ?" If you are sure that you want to delete the file then press YES and the disk file will be deleted.

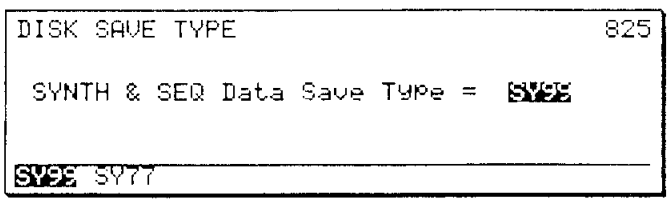
DISK UTILITY

8. Disk type

Summary: This setting determines whether disk save operations for data types "All data", "Synthesizer all" and "Sequencer All" will be performed in SY99 format or in SY77 format.

Procedure:

From: disk utility mob directory (JUMP #816)
Select: 08:Disk Save Type
Press: F1 (SY99) or F2 (SY77) to select the disk format
To exit: the disk type selection press EXIT



You will need to make this setting only when you wish to save "All Data", "Synthesizer All" and "Sequencer All" data to a disk which will be later loaded by an SY77.

Although most types of disk file are compatible between the SY99 and the SY77, "01:All Data", "02:Synthesizer All" and "03:Sequencer All" formats are not compatible. The SY99 "All Data" contains synthesizer, sequencer, waveform, sample and MDR data, but the SY77 "All Data" contains only synthesizer and sequencer data. The SY99 "Synthesizer All" is in a different format than the SY77 "Synthesizer All".

Once the data has been loaded into SY99 memory, it can be saved to disk in either format.

When the power is turned on, this will always be set to "SY99" format.

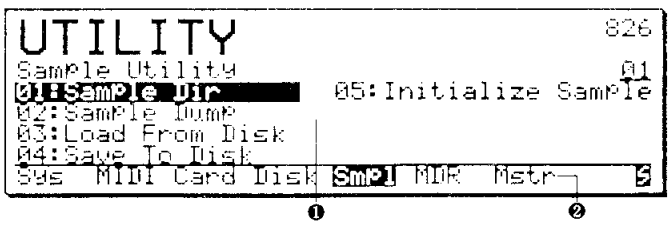
Sample utility

JUMP #826

Summary: Send and receive MIDI sample dumps, save sample data to disks, load samples from disks, and organize samples within the SY99's sample memory area.

Procedure:

From:	System utility	(JUMP #800)
	MIDI utility	(JUMP #806)
	Card utility	(JUMP #812)
	Disk utility	(JUMP #816)
	MDR utility	(JUMP #830)
	Master control	(JUMP #831)
Press:	F5 (Smpl)	(JUMP #826)
Select:	the desired sample utility job and press ENTER.	



❶ Move the cursor in this area to select one of the following jobs and then press ENTER.

01: Sample Dir: This allows the display, copying, and deleting of sample data.

02: Sample Dump: Output samples and waveforms from the SY99 by MIDI sample dump; also, output sample dump requests.

03: Load From Disk: Load sample data from disk.

04: Save To Disk: Save sample data to disk.

05: Initialize Sample: Initialize the SY99's sample memory.

❷ To move to a different utility mode press F1–F4 or F6–F7. To select a job from the currently displayed job directory, hold SHIFT and press a function key.

Edit sample: Sample data which has been loaded to the SY99 can be edited as described in *AWM element data 2.0 Waveform edit*, page 160. However, samples loaded from waveform cards and copy-protected disks cannot be saved to disk or output via MIDI sample dump.

Important: It is possible for data in internal memory to be lost as a result of inappropriate operation or other reasons. We recommend that you keep backups of important voice, multi, system, sequencer, sample, MDR data on a floppy disk or memory card (MCD64). It is also possible for the data in a floppy disk or memory card to be lost as a result of static electricity, magnetic fields, or other causes. For very important data it is always a good idea to make double backups.

SAMPLE UTILITY

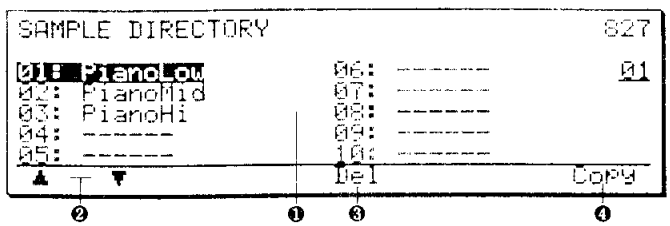
1. Sample directory

JUMP #827

Summary: Copy and delete samples while viewing a directory of the samples currently contained in the SY99's sample memory.

Procedure:

From:	sample utility job directory	(JUMP #826)
Select:	01:Sample Dir	(JUMP #827)
Specify:	a sample.	
To delete:	a sample, press F5 (Del).	
To copy:	a sample, press F8 (Copy).	
To exit:	to the sample utility job directory, press EXIT.	



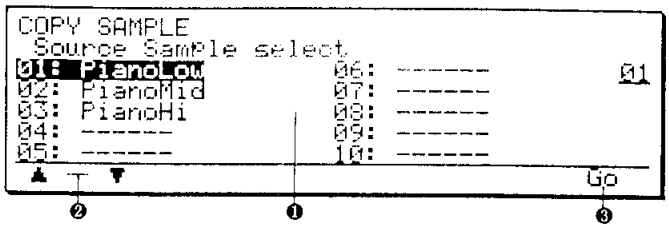
❶ The names of the samples contained in the SY99's sample memory will be displayed in this area. Move the cursor to select a sample.

❷ The display can only show ten samples at one time. Press F1 or F2 to scroll the display up or down and view other samples.

❸ Press F5 (Del) to delete a selected sample from memory. This does not delete the corresponding file management data. Use the Initialize Sample function (page 278) to delete all data.

❹ Press F8 (Copy) to copy a sample within the sample memory. Refer to the following explanation of the *Copy Sample* function.

Copy Sample: To copy a sample, move the cursor to an empty space in the sample directory display and press F8 (Copy). A display like the one following will appear:



❶ Move the cursor within this area to select a sample to copy.

❷ The display can only show ten samples at one time. Press F1 or F2 to scroll the display up or down and view other samples.

❸ Press F8 (Go) to copy the selected sample.

SAMPLE UTILITY

2. Sample dump

JUMP #828

Summary: This function allows you to dump waveform and sample data, and to request sample dumps.

Procedure:

From: sample utility job (JUMP #826) directory

When: the SY99 is connected to another MIDI device capable of sending and receiving sample dumps

Select: 02:Sample Dump (JUMP #828)

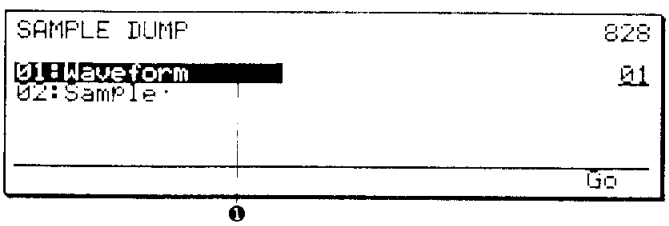
Specify: the type of dump to perform.

To dump waveform data:
press F8 (Go).

To dump sample data:
specify a sample and press F8 (Go).

To request a sample dump:
specify a destination and press F6 (Rqst).

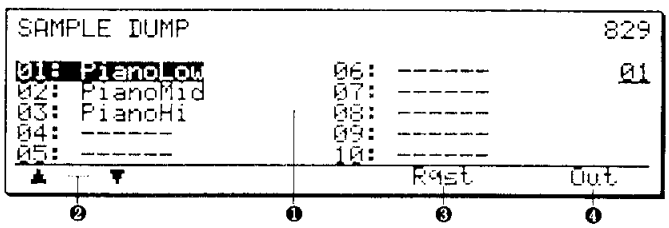
To exit: without executing, press EXIT.



❶ Two types of dump operations are listed here. Move the cursor to select the desired operation and then press ENTER.
01: Waveform: This allows you to dump all internal waveform data.
02: Sample: This job allows you to dump a specified sample, or to send a sample dump request.

❷ If *01:Waveform* is selected, press F8 (Go) to dump the waveform data. If *02:Sample* is selected, the label for F8 will change to "Dir". Refer to the following explanation of the *Sample dump* function.

Sample dump/request: If *02:Sample* is selected, the label for F8 will change to "Dir". Press F8 (Dir) to display a directory of samples contained in the SY99's sample memory.



❶ Move the cursor within this area to select a sample to dump. (If performing a sample dump request, select an empty space to serve as the destination of the incoming sample.)

❷ The display can only show ten samples at one time. Press F1 or F2 to scroll the display up or down and view other samples.

❸ Press F6 (Rqst) to send a sample dump request.

❹ Press F8 (Go) to dump the selected sample.

Remarks: The SY99 will display the message "MIDI Transmitting !" and show the number of remaining sample packets to be transmitted at the bottom of the LCD while the sample dump is in progress.

Data originally loaded from waveform cards or copy-protected disks cannot be output from the SY99 via MIDI sample dump.

Some TX16W samples may produce noise when loaded to the SY99 via sample dump. Try transferring these samples via floppy disk.

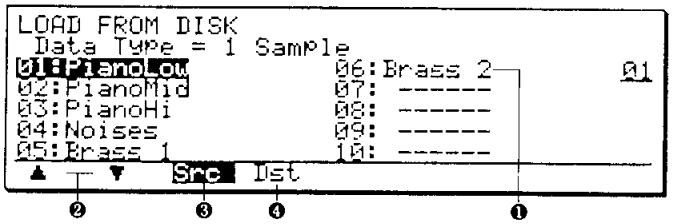
SAMPLE UTILITY

3. Load from disk

Summary: You can load sample data from a floppy disk.

Procedure:

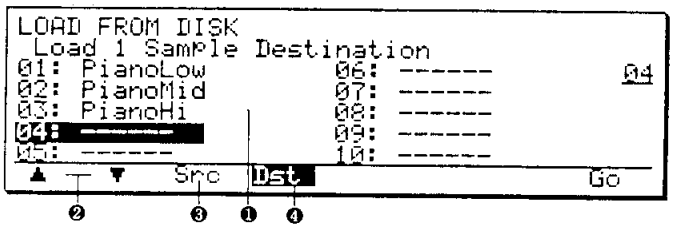
From: sample utility job directory (JUMP #826)
When: a disk containing sample data is inserted in the SY99 disk slot
Select: 03:Load from Disk
Specify: the sample to load, and the load destination.
To execute: press F8 (Go).
To exit: without executing, press EXIT.



❶ When this operation is selected, the display will show a directory of all sample files on the disk. Move the cursor within this area to select a sample to load.

❷ The display can only show ten sample files at one time. Press F1 or F2 to scroll the display up or down and view other samples.

❸ To select the destination into which the selected sample will be loaded, press F4 (Dst). The following display will appear:



❶ Move the cursor within this area to select a destination sample number. Note that if the selected sample number is already occupied by data, this data will be overwritten by the load operation.

❷ The display can only show ten sample numbers at one time. If necessary, press F1 or F2 to scroll the display up or down and find an open sample number.

❸ If you change your mind about the sample you have selected for loading, press F3 (Src) to return to the source sample directory.

❹ Press F8 (Go) to load the selected sample.

Remarks: The number of samples which can be loaded to the SY99's sample memory depends on the amount of sample memory available and on the size of the samples loaded. The size of the sample memory area can be expanded up to 3 Mbytes, as described in *Expansion memory boards* in the appendix (page 325).

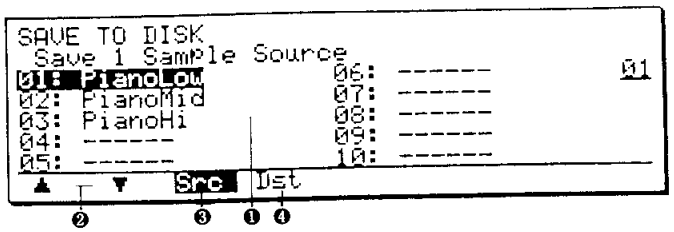
SAMPLE UTILITY

4. Save to disk

Summary: With this operation, you can save sample data to a floppy disk.

Procedure:

From: sample utility job directory (JUMP #826)
When: a disk is inserted in the SY99 disk slot
Select: 04:Save to Disk
Specify: the sample to save, and the file into which the data will be saved.
To execute: press F8 (Go).
To exit: without executing, press EXIT.

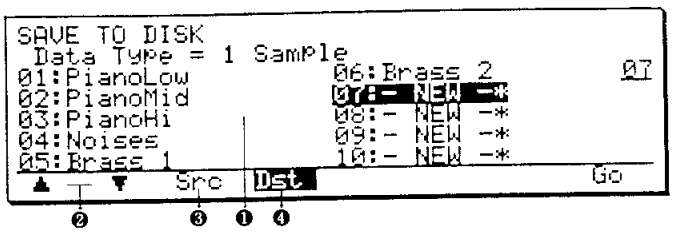


❷ ❸ ❶ ❹

❶ When this operation is selected, the display will show a directory of all samples contained in the SY99's sample memory. Move the cursor within this area to select a sample to save.

❷ The display can only show the names of ten samples at one time. Press F1 or F2 to scroll the display up or down and view other samples.

❸ To select the destination file into which the selected sample data will be saved, press F4 (Dst). The following display will appear:



❷ ❸ ❶ ❹

❶ Move the cursor within this area to select a destination file number. Note that if the selected file number is already occupied by data, this data will be overwritten by the save operation.

❷ The display can only show ten file numbers at one time. If necessary, press F1 or F2 to scroll the display up or down and find an open file number.

❸ If you change your mind about the sample you have selected for saving, press F3 (Src) to return to the source sample directory.

❹ Press F8 (Go) to save the selected sample data.

Remarks: Data originally loaded from waveform cards or copy-protected disks cannot be saved to disk.

The size of a sample file depends on the amount on the amount of data a sample contains. Some large files of sample data may not fit on a single disk. When you save data to such a file, the SY99 will display the amount of disk space required to save the entire file and ask whether it should format the disk as it saves the data. Press YES to format the disk while saving, NO if using disks which are already formatted. (Remember that formatting a disk will destroy any data it contains!) The SY99 will pause during the save operation and ask you to "Please insert No. 2 disk, OK?". At this time you should insert the next disk, or press EXIT to quit the save operation.

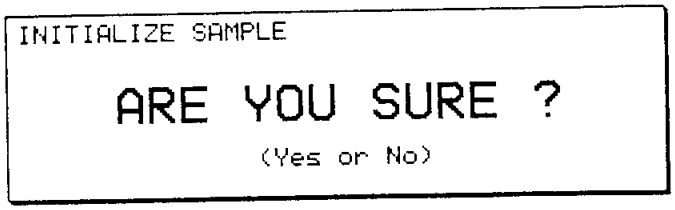
SAMPLE UTILITY

5. Initialize sample

Summary: This operation clears all data from the SY99's internal sample memory.

Procedure:

From: sample utility job directory (JUMP #826)
Select: 05:Initialize Sample
To execute: the initialize operation press YES
To quit: without initializing press NO



Press YES if you are sure you want to initialize the internal sample memory. All sample data and waveform assignments will cleared from the SY99's sample memory. Note that data cleared in this way is permanently deleted and cannot be recalled!

To clear a single sample from memory, use the delete operation described in *1.Sample directory* above, page 275. To initialize a single waveform, use the *Initialize waveform* function described on page 161.

Sample memory initialization will not affect the data stored in memory allocated to the MIDI data recorder.

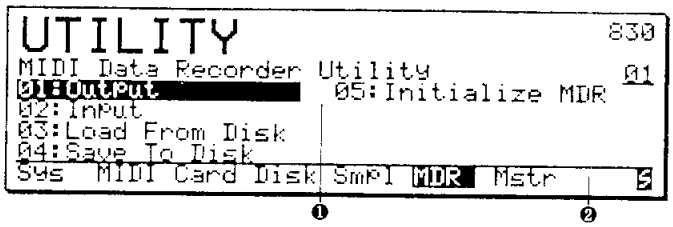
MIDI data recorder utility

JUMP #830

Summary: MIDI data recorder utility jobs allow you to use the SY99 disk drive to save and load data from other devices.

Procedure:

From: System utility (JUMP #800)
MIDI utility (JUMP #806)
Card utility (JUMP #812)
Disk utility (JUMP #816)
Sample utility (JUMP #826)
Master control (JUMP #831)
Press: F6 (MDR) (JUMP #830)
Select: the desired MIDI data recorder job and press ENTER



❶ Move the cursor in this area to select one of the following jobs and then press ENTER.

01: Output: This operation transmits MIDI bulk data from SY99 MDR memory to an external device.

02: Input: This operation receives MIDI bulk data from an external device into SY99 MDR memory.

03: Load From Disk: This operation loads a file of MIDI bulk data from disk into the SY99 MDR memory.

04: Save To Disk: This operation saves MIDI bulk data from SY99 MDR memory to a disk file.

05: Initialize MDR: This operation initializes the SY99 MDR memory.

❷ To move to a different utility mode, press F1–F5 or F7. To select a job from the currently displayed job directory, hold SHIFT and press a function key.

MDR procedure: The SY99's MDR function provides a convenient way of storing data for devices which do not have their own disk drive or card slot, but are able to tranmsit their data as a MIDI bulk message. Use the following procedure to save data for such devices.

1. Use *02:Input MDR* to receive the data from the external device into the SY99's MDR memory.
2. Use *04:Save To Disk* to save the data from SY99 MDR memory onto an SY99 disk.

When you wish to load the data back into the external device use the following procedure.

3. Use *03:Load From Disk* to load the data from SY99 disk into SY99 MDR memory.
4. Use *01:Output MDR* to transmit the data from SY99 MDR memory to the external device.

For details, refer to the explanations in each of the following sections.

Important: Before using a newly purchased disk or a disk that has been used by other devices, you must format the disk using the *Disk utility 4.Format Disk* operation (page 271).

It is possible for data in internal memory to be lost as a result of inappropriate operation or other reasons. We recommend that you keep backups of important voice, multi, system, sequencer, sample, MDR data on a floppy disk or memory card (MCD64). It is also possible for the data in a floppy disk or memory card to be lost as a result of static electricity, magnetic fields, or other causes. For very important data it is always a good idea to make double backups.

Note: The appendix contains a tutorial on using the SY99's MIDI data recorder functions. Refer to page 312.

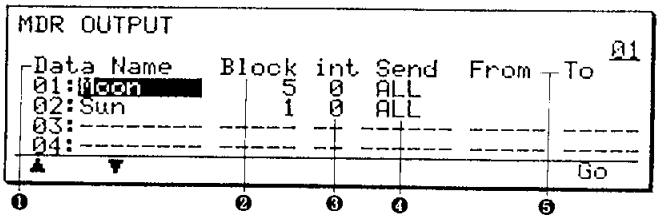
MIDI DATA RECORDER

1. Output

Summary: This operation transmits MIDI bulk data from SY99 MDR memory to an external device.

Procedure:

From: MIDI data recorder utility job directory (JUMP #830)
Select: 01:Output
Select: the MDR data you wish to transmit
To transmit: the data press F8 (Go)
To quit: without transmitting press EXIT



❶ Data Name (1–99): This displays the number and name of each set of bulk data. A name can be assigned to each set in *MDR utility 2.MDR input* (page 281).

❷ Block (1–32767): This displays the number of F0–F7 blocks in each set of MIDI bulk data.

❸ Int (0...10): This specifies the interval inserted between blocks of data. If you enter a value of 0, an interval of 100 ms (milliseconds) will be inserted between each F0–F7 block of data, or after each 4096 bytes of data, should a single block exceed this length. You may enter a number from 1 to 10 to specify the number of 100 ms intervals inserted between each F0–F7 block of data, or after each 1024 bytes of data, should a single block exceed this length. (Thus, if you enter a 3, a 300 ms interval will be inserted between each block of data, and after each kilobyte of data in blocks longer than one kilobyte.) Some devices are not able to receive large amounts of incoming data in a short time. If necessary, increase this interval time. The default is an interval time of zero.

❹ SndType (ALL, Select): You may specify all blocks or selected blocks of the set of data to be transmitted. If "ALL" is selected all F0–F7 blocks in the set of MIDI bulk data will be transmitted. If "Select" is selected, you can specify which F0–F7 blocks of the data will be transmitted (see ❺ below).

❺ From, To: If Snd Type ❸ has been set to "Select", you can specify which F0–F7 blocks of the data will be transmitted. Many devices dump the contents of their internal memory as a separate F0–F7 block (a separate bulk message) for each type of data, and are also able to receive individual blocks. Refer to the system exclusive documentation for your device to learn how it transmits and receives bulk data.

Output procedure: Before you transmit MDR data to an external device, make sure that the receiving device is ready to receive the data. If the device has a "bulk protect" setting, turn it off. Also make sure that the MIDI OUT of the SY99 is connected to the MIDI IN of the receiving device.

1. Move the cursor in ❶ to select the set of data (1–99) you wish to transmit. If necessary, press F1 (△) or F2 (▽) to scroll the display up or down.
2. If necessary, increase the interval time in ❸. In most cases the default value of 1 will be sufficient.
3. If desired, specify in ❹ and ❺ which F0–F7 blocks of the selected set of data will be transmitted.
4. To transmit the data press F8 (Go). While the data is being transmitted, the bottom line of the display will show "MDR Transmitting!", and show the number of blocks that have been transmitted.
5. When transmission is complete, press any key to exit the display.

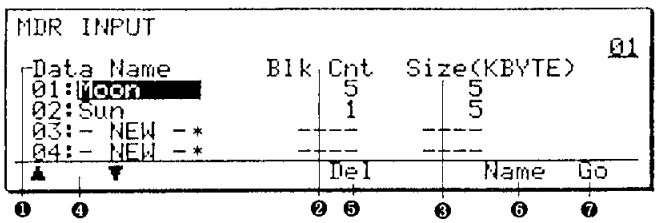
MIDI DATA RECORDER

2. Input

Summary: This operation receives MIDI bulk data from an external device into SY99 MDR memory.

Procedure:

From: MIDI data recorder utility job directory (JUMP #830)
Select: 02:Input
Specify: the MDR data memory into which the MIDI bulk data will be received
To begin: reception press F8 (Go)
To quit: without receiving press EXIT
To end: reception press EXIT



❶ Data Name (1–99): The MDR memory can accommodate up to 99 sets of bulk data, and each set can contain one or more F0–F7 blocks or messages. The number and name of each bulk data set are displayed here. To assign a name to a set of bulk data, press F6 (Name) as explained below.

❷ Blk Cnt (1–32767): For data which already exists in MDR memory, this displays the number of F0–F7 blocks in each set of data.

❸ Size: For data which already exists in MDR memory, this displays the total size of the set of data in kilobytes.

❹ Press F1 (△) or F2 (▽) to scroll the display up or down.

❺ By pressing F5 (Del) you can delete the selected set of data from MDR memory.

❻ By pressing F7 (Name) you can name an unused memory or rename a previously used memory.

❼ When you press F8 (Go), the SY99 will begin recording the incoming MIDI bulk data until you press EXIT.

1. Move the cursor in ❶ to select an empty data location (marked "– NEW –*") into which the incoming MIDI bulk data will be received. If necessary, press F1 (△) or F2 (▽) to scroll the display up or down.

   It is not possible to receive MDR data into a location which already contains data. If you wish to delete or overwrite old MDR data, press F4 (Del) to delete the data.
2. If desired, you can assign a name to the data by pressing F6 (Name). A display will appear, allowing you to input an MDR name. You may execute MDR input from the naming screen.
3. Whether or not you have assigned a name to the data, press F8 (Go) to begin recording MDR data. The bottom line of the display will show "MDR Recording!".
4. Refer to the operating manual for your MIDI device, and make it transmit the desired type of MIDI bulk data. As the SY99 receives data, the number of blocks that have been received will be displayed in the bottom line. You may transmit any number of MIDI bulk messages (F0–F7 blocks) from any number of devices, and they will all be received into the currently selected set of bulk data.
5. When the external device has finished transmitting the data, press EXIT. The bottom line of the SY99 display will show "Completed!".

   If the SY99 did not receive any MIDI bulk data, the bottom line of the display will show "Recording Canceled!". Make sure that the external device is actually transmitting bulk data, check MIDI connections, and try again.

Remarks: MIDI bulk data that has been received into the SY99 MDR memory is preserved even when the power is turned off. However as a precaution against accidents, we suggest that you use the following *3.Save to disk* operation to save the MDR memory to a disk file.

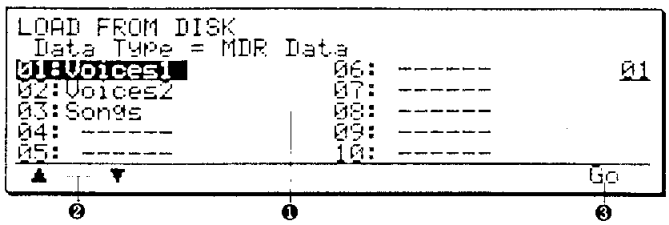
MIDI DATA RECORDER

3. Load from disk

Summary: This operation loads a disk file containing up to 99 sets of bulk data into the SY99 MDR memory.

Procedure:

From: MIDI data recorder utility job directory (JUMP #830)
Select: 03:Load From Disk
Select: the MDR file number to load
To load: the MDR file into MDR memory press F8 (Go)
To quit: without loading press EXIT



❶ File Name (1–99): This displays the number and name of each MDR file on the disk.

❷ Press F1 (△) or F2 (▽) to scroll the display up or down.

❸ When you press F8 (Go), the selected MDR file will be loaded into the SY99 MDR memory.

Loading procedure: This operation will load only files that were saved by the *4.Save to disk* operation. The file that is loaded contains up to 99 sets of MDR data, with each set containing one or more F0–F7 blocks of bulk data. All sets of data that were previously in MDR memory will be overwritten by the newly loaded file. It is not possible to load individual sets of data from an MDR file.

1. Move the cursor in ❶ to select a disk file 1–99. If necessary, press F1 (△) F2 (▽) to scroll the display up or down.
2. Press F8 (Go) to load the selected MDR file into MDR memory.

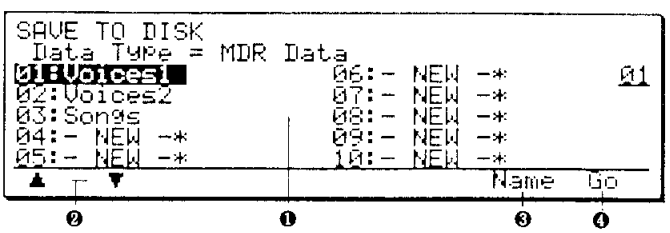
MIDI DATA RECORDER

4. Save to disk

Summary: This operation saves all 99 sets of data from SY99 MDR memory to a disk file.

Procedure:

From: MIDI data recorder utility job directory (JUMP #830)
Select: 04:Save To Disk
Select: the file number into which the MDR data will be saved
Specify: a name for the file if desired
To save: the MDR data to a file press F8 (Go)
To quit: without saving press EXIT



❶ File Name (0–99): This displays the number of each MDR file on the disk, and the name which was assigned to the file data by pressing F6 (Name) as explained below.

❷ Press F1 (△) or F2 (▽) to scroll the display up or down.

❸ By pressing F6 (Name) you can assign a name to the selected file.

❹ When you press F8 (Go), all data from the SY99 MDR memory will be saved in the specified file.

Saving procedure: Before this operation can be used, the MDR memory must contain data received by the *2.Input* operation explained on page 281. This operation will save all 99 sets of data from MDR memory to a file. It is not possible to save individual sets of MDR data to a file.

1. Move the cursor in ❶ to select a disk file 1–99. If necessary, press F1 (△) or F2 (▽) to scroll the display up or down.
2. If you wish to specify a name for the file, refer to the section *Save to disk filename* on page 271.
3. Press F8 (Go) to save the MDR data to the file.

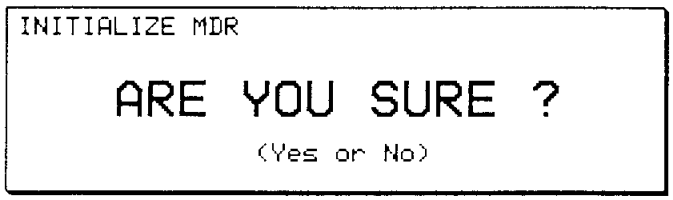
MIDI DATA RECORDER

5. Initialize MDR

Summary: This operation clears all data from the SY99's internal MIDI data recorder.

Procedure:

From: MIDI data recorder utility job directory (JUMP #830)
Select: 05:Initialize MDR
To execute: the initialize operation press YES
To quit: without initializing press NO



Press YES if you are sure you want to initialize the internal MDR memory. All data will cleared from the SY99's MDR memory. Note that data cleared in this way is permanently deleted and cannot be recalled!

MDR initialization will not affect the data stored in memory allocated as sample memory area.

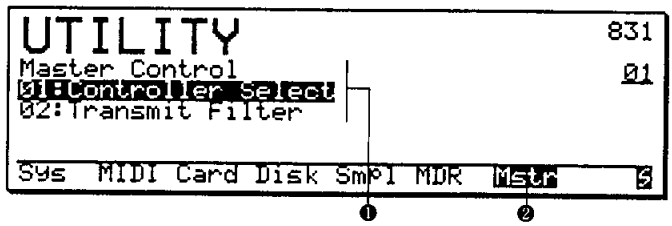
Master control utility

JUMP #831

Summary: Master control utility jobs allow you to select master control setups, edit setup parameters, and specify the channels on which each type of data is transmitted.

Procedure:

From: System utility (JUMP #800)
MIDI utility (JUMP #806)
Card utility (JUMP #812)
Disk utility (JUMP #816)
Sample utility (JUMP #826)
MDR utility (JUMP #830)
Press: F7 (Mstr) (JUMP #831)
Select: the desired master control utility job and press ENTER.



❶ Move the cursor in this area to select one of the following jobs and then press ENTER.
01: Controller Select: Select one or more MIDI master control setups, and edit setup parameters.
02: Transmit Filter: Specify which types of data will be transmitted on which channels when the SY99 is in master control mode.

❷ To move to a different utility mode press F1–F6. To select a job from the currently displayed job directory, hold SHIFT and press a function key.

MASTER CONTROL

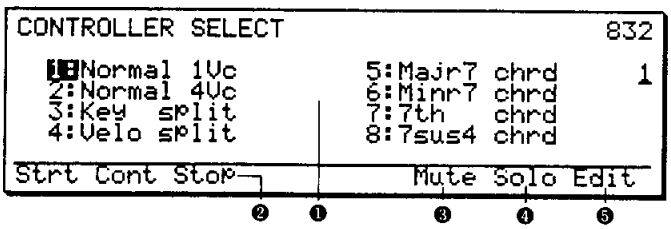
1. Controller select

JUMP #832

Summary: This job allows you to select master control setups and edit setup parameters.

Procedure:

From: master control utility directory (JUMP #831)
Select: 1:Controller Select
Specify: a master control setup to activate, deactivate, or edit.
To activate: an inactive setup, press ENTER.
To deactivate: an active setup, press ENTER.
To edit: a control setup, press F8 (Edit).



❶ This area displays the names assigned to the eight master control setups. Move the cursor to a setup number and press ENTER to activate or deactivate the selected setup. Refer to the explanation of the *Activation* function, below.

❷ Press F1 (Strt), F2 (Cont), or F3 (Stop) to transmit a start, continue, or stop message to an external sequencer or rhythm machine via MIDI OUT.

❸ Press F6 (Mute) to switch Mute mode on or off. Refer to the explanation of *Mute mode*, below.

❹ Press F7 (Solo) to switch Solo mode on or off. Refer to the explanation of *Solo mode*, below.

❺ Press F8 (Edit) to edit the selected master control setup. Refer to the explanation of the *Controller edit* function, below.

Activation: The name of an active control setup will be displayed in reverse characters, and the program select LEDs will light to indicate the MIDI channels on which the setup is transmitting. You can deactivate the setup by selecting it again, or by selecting a different setup.

A control setup consists of four zones, each of which has its own transmit channel, velocity and aftertouch curves, transposition, and note and velocity limits. A variety of initial messages (bank select, program change, Main volume, and a set of MDR data) can also be specified for transmission by each of the four zones whenever that control setup is activated.

The master control functions of the SY99 will remain active only while the controller select or controller edit display is showing.

It is also possible to activate a control setup by inputting the number of that setup using the numerical keypad. Inputting a "0" from the numerical keypad will deactivate the control setup.

For details of the settings for each control setup, refer to the explanation of the *Controller edit* function, below.

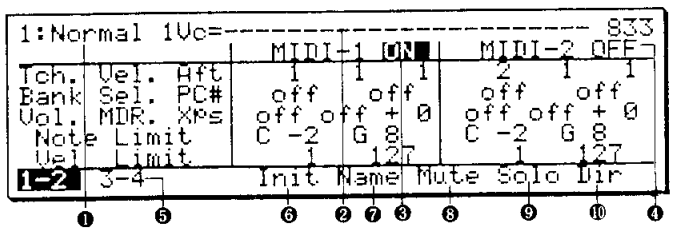
Mute mode: While Mute mode is on, you can press the program select buttons 1–16 to temporarily mute one or more channels being used by the active control setup. The LEDs corresponding to muted channels will blink. Press the program select button once again to un-mute a muted channel.

Solo mode: While Solo mode is on, the LEDs for all channels will blink. You can press a program select button 1–16 to solo a desired channel. The LED for that button will light steadily, and only the corresponding channel will transmit data.

Note: *It is of course possible to use both the master control feature and the SY99's sequencer at the same time in Song or Pattern play mode. However, it is not possible to use the master control functions while recording using the SY99's sequencer.*

If you press RECORD while a control setup is activated, the control setup will be deactivated while the sequencer is recording. When you press STOP to stop recording, the control setup will reactivate automatically.

Controller edit: When F8 (Edit) is pressed, a display similar to the following will appear:



❶ This area displays the number and name of the selected master control setup.

❷ Here you can specify the SY99 voice or multi that will be played by the SY99 keyboard when this control setup is selected.

❸ Each zone of the control setup can be turned on or off. If a zone is turned off, it will not transmit data.

❹ Specify how each of the four zones will transmit data. For details, refer to the explanation of *Control setup data*, below.

❺ To edit zones 1 and 2 press F1 (1–2). To edit zones 3 and 4 press F2 (3–4).

❻ To initialize all settings of the control setup, press F4 (Init). When a setup is initialized, the values for the factory preset "Normal 1Vc" are loaded to the setup. (Refer to the explanation of *Control setup factory presets*, below.)

❼ To edit the name press F5 (Name). Methods of entering character data are explained in *How to enter character data,* page 30.

❽ Press F6 (Mute) to switch Mute mode on or off. Refer to the explanation of *Mute mode*, above.

❾ Press F7 (Solo) to switch Solo mode on or off. Refer to the explanation of *Solo mode*, above.

❿ Press F8 (Dir) to display a directory of SY99 voices and multis.

Keyboard: When the cursor is moved to the Note Limit items within a zone, the label "Kbd" will appear for F3. Press F3 (Kbd) to input data using the keyboard.

Control setup data: Each of the four zones of a control setup contains the following data items:

ON/OFF: Zones that are turned off will not transmit data.

Transmit channel (1...16): The data for the zone will be transmitted on this MIDI channel.

Velocity curve (1...4): This determines how the note-on velocity of notes played will relate to the note-on velocity of the notes transmitted by this zone. (Refer to *System utility 2.Velocity set,* page 253.)

Aftertouch curve (1...4): This determines how pressure on the keyboard will be transmitted as channel aftertouch messages by this zone.

Bank Select (off, 1–16384): A bank select message of this number will be transmitted by this zone when the control setup is selected.

Program Change (off, 1–128): A program change message of this number will be transmitted by this zone when the control setup is selected.

Volume (off, 0...127): A volume message (control change 7) will be transmitted by this zone when the control setup is selected.

MDR data set (off, 1...99): The specified set of bulk data will be transmitted when the control setup is selected. (Refer to *MIDI data recorder utility*, page 279.) If there is a large amount of bulk data in the selected MDR data set, there may be a noticeable delay while this data is transmitted before the keyboard will respond to your playing.

Transpose (–64...+64): The notes transmitted by the zone will be transposed by this amount.

Note Limit (C-2...G8): The zone will transmit only notes whose note number is inside this range within.

Velocity Limit (1...127): The zone will transmit only notes that have a note-on velocity within this range.

Control setup factory presets: The following eight control setups were programmed to your SY99 when it left the factory:

Setup Name	Description
Normal 1Vc	Normal MIDI output. These settings are loaded by the initialize operation.
Normal 4Vc	Simultaneous four-channel MIDI output.
Key split	Two-channel output for each of the upper and lower halves of the keyboard; keyboard split at center.
Velo split	Two-channel output split at velocity median value.
Majr7 chrd	Transposes output to major seventh chord structure.
Minr7 chrd	Transposes output to minor seventh chord structure.
7th chrd	Transposes output to seventh chord structure.
7sus4 chrd	Transposes output to seventh sus4 chord structure.

We recommend saving these settings to a disk or data card, as they will be lost once they are edited.

Control setup chart: You can copy the chart on the next page to keep records of your own settings.

Summary: Edit the settings of the selected controller to specify how it will transmit data on each of its four zones.

Master control setup	Internal voice/multi:			
	MIDI-1	MIDI-2	MIDI-3	MIDI-4
	off/on	off/on	off/on	off/on
Transmit channel (1...16)	(1...16)			
Velocity curve (1...4)	(1...4)			
Aftertouch curve (1...4)	(1...4)			
Bank select number	(off, 1...16384)			
Program change number	(off, 1...128)			
Volume	(off, 0...127)			
MDR data set	(off, 1...99)			
Transpose	(–64...+64)			
Note limit	(C-2...G8)			
Velocity limit	(1...127)			

MASTER CONTROL

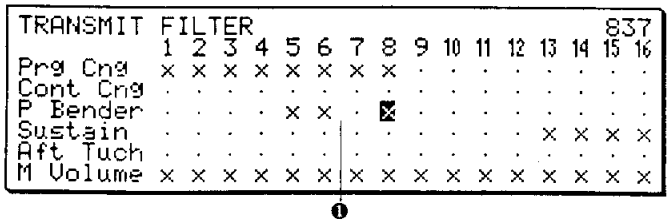
2. Transmit filter

JUMP #837

Summary: Specify whether each type of MIDI data on each channel will be transmitted or not when in master control mode.

Procedure:

From: master control utility directory (JUMP #831)
Select: 2:Transmit Filter (JUMP #837)
Specify: whether or not each type of message will be transmitted on each channel



❶ Move the cursor in this area and specify whether or not Program Change, Control Change, Pitch Bender, Sustain, Aftertouch, or Main Volume messages will be transmitted from each channel by the master controllers. An "x" symbol indicates that the data will not be transmitted.

The filter settings in this display are common to all eight master controllers, and are effective only when in master controller mode.

APPENDIX

APPENDIX

This section contains various supplementary information that may be useful to advanced users or programmers.

Contents of this section **page**

Explanation of the preset and internal voices

Preset 1

A01 AP¦Rocks: Bright rock piano, good for powerful chordal and solo playing. MW1 = chorus mix level; MW2 = filter cutoff; DE = wet/dry mix of reverb.

A02 AP¦CrsRock: Chorused rock piano, good for ballads. MW1 = pan LFO and detune amount; MW2 = filter cutoff; DE = reverb mix level.

A03 AP¦Concert: Warm concert grand piano, good for performances in classical and jazz styles. MW1 = pan LFO and reverb time; MW2 = filter cutoff; DE = reverb mix level.

A04 AP¦StgLayr: Grand piano and String section layer, useful in ballads, etc. MW2 = filter cutoff.

A05 EP¦76Stage: Electric piano reminiscent of the classic stage piano. MW1 = vibrato and tremolo; MW2 = EG bias control of brightness, phasing freq. and depth.

A06 EP:Classic: Electric piano in the style of the original DX7 E. piano. MW1 = chorus PM depth; DE = tremolo.

A07 EP:NiteHwk: Contemporary digital EP. MW1 = vibrato; DE = reverb mix level.

A08 EP:Belrose: Traditional EP with bright digital bell overtones. MW1 = vibrato; MW2 = chorus freq. and depth.

A09 -EP¦BellRng: Contemporary digital EP with handbells instead of the usual tines. MW1 = vibrato; MW2 = filter cutoff.

A10 EP:DXism: Solid EP for strong comping that won't interfere with other instruments. MW1 = pan LFO and chorus PM depth; MW2 = filter cutoff; DE = reverb time.

A11 EP¦GrnDual: Classic "FM style" EP layered with a grand piano. MW1 = vibrato; MW2 = chorus mix level.

A12 EP¦VoxLayr: Contemporary digital EP layered with breathy vocal pad. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry output mix of EFF1.

A13 KY¦Smokey: Tight, full-bodied digital keyboard voice, useful in many musical styles. MW1 = chorus mod freq. and depth; MW2 = filter cutoff and pan LFO.

A14 KY¦CrsClav: Wet, full-bodied digital keyboard voice, with a percussive character similar to a clav. MW1 = vibrato; MW2 = filter cutoff and pan LFO.

A15 KY¦Clavint: Bright, traditional clav sound. MW1 = vibrato; MW2 = filter cutoff; DE = chorus PM depth, wet/dry output mix of EFF2.

A16 KY¦ResoClv: Very resonant clav, useful for comping and soloing. MW1 = vibrato and pan LFO; MW2 = filter cutoff; DE = mod. depth of stereo phase.

B01 SP:Alaska: Evocative CS80-type of synth pad with portamento. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry output mix of EFF2.

B02 SP¦SawPad: Analog sawtooth pad, useful for sustained pads and lines. MW1 = vibrato; MW2 = filter cutoff.

B03 SP¦Square: Analog square wave pad, useful for sustained and moving pads and lines. MW1 = vibrato; MW2 = filter cutoff.

B04 SP¦Elegant: Digital synth pad with bright, airy overtones. MW1 = vibrato; MW2 = filter cutoff and EFF2 level.

B05 SP:DigiPad: Warm pad with percussive, resonant attack. MW1 = vibrato and pan LFO; MW2 = filter cutoff; DE = mod freq. and depth of symphonic effect.

B06 SP¦Lashed: Warm, full-bodied pad with slower attack and filter sweep. MW1 = vibrato; MW2 = filter cutoff.

B07 SP¦Sweeper: Evocative pad with very slow attack, featuring a resonant filter sweep. MW2 = filter cutoff; DE = reverb time; AFT = vibrato.

B08 SP¦Flash: Contemporary pad and musical effect with dramatic harmonic and filter motion. MW1 = vibrato; MW2 = filter cutoff.

B09 SP¦HrpsiPd: Digital pad with a harpsichord-like attack. Also useful for comping parts. MW1 = vibrato; MW2 = filter cutoff.

B10 SP.Skylane: Atmospheric pad with looping EGs and resonant filtering. MW1 = vibrato; MW2 = filter cutoff; DE = mod. depth of symphonic effect.

B11 SP¦Arpeggi: Bright digital pad with vector-like harmonic development, for use in sustained parts. MW1 = vibrato; MW2 = filter cutoff.

B12 SP¦Vecktar: Another digital pad featuring vector-like harmonic development, useful for sustained parts and comping. MW1 = chorus PM depth; MW2 = filter cutoff; DE = EFF2 mix.

B13 SP:Crystal: Very bright and detailed pad. MW1 = vibrato; MW2 = filter cutoff.

B14 SP¦Twinks: Evolving "breathy" pad with bell-like percussive attack. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level; VEL = EQ high gain.

B15 SP:Polydor: Full-bodied, slowly evolving pad, with metallic attack. MW1 = vibrato; MW2 = filter cutoff; DE = delay mix level.

B16 SP¦WarmJet: Luscious, warm analog type string pad with breathy overtones. MW1 = vibrato; MW2 = filter cutoff.

C01 BR¦TrmpSec: Bright trumpet section. MW1 = vibrato and tremolo; MW2 = filter cutoff; DE = symphonic mix level.

C02 BR:BigBand: A full big band, with trumpets, saxes, and trombones. MW2 = filter cutoff; DE = chorus mix level; AFT = vibrato.

C03 BR¦JazzTmp: Solo trumpet useful in jazz and classical styles. MW1 = vibrato and tremolo; MW2 = filter cutoff; DE = flange mix level.

C04 BR.MuteTmp: An expressive muted trumpet for solo playing. MW1 = vibrato; MW2 = filter cutoff and Aural Exciter mix level.

C05 BR¦FrHorns: A section of french horns. DE = output EFF1 wet/dry mix; AFT = vibrato and filter cutoff.

C06 BR¦DrkHorn: An expressive solo french horn. MW1 = vibrato; MW2 = filter cutoff; DE = delay mix level.

C07 BR¦Azen 16: Analog style brass section, octave down. MW1 = vibrato; MW2 = filter cutoff; DE = EFF2 mix.

C08 BR:DaBurbs: Wet, resonant analog type brass section. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level; VEL = EQ high gain.

C09 BR:Splatz: Velocity-sensitive synth brass section, with increasing brightness and "flare" at higher velocities. MW1 = vibrato; MW2 = filter cutoff; DE = EFF1 wet/dry output mix.

C10 BR:Pumped: Sawtooth brass, with heavy effects. MW1 = vibrato; MW2 = filter cutoff.

C11 BR¦StrLayr: Warm brass and string ensemble layer. MW1 = vibrato; MW2 = filter cutoff and pan LFO; DE = chorus mod freq. and chorus PM depth.

C12 ST:Octaves: Large string section, in octaves. MW1 = vibrato; MW2 = filter cutoff.

C13 ST:ChorAna: Analog style string section with chorusing. MW1 = vibrato; MW2 = filter cutoff and pan bias.

C14 ST¦Rosin: Large, transparent acoustic string section, very responsive to velocity. MW1 = vibrato; MW2 = pan bias; DE = chorus PM depth.

C15 ST¦Quartz: Intimate small section, such as a quartet. MW1 = vibrato and pan LFO; MW2 = filter cutoff.

C16 ST:Pizza: Pizzicato string section. MW1 = vibrato; MW2 = filter cutoff, tremolo, and pan LFO.

D01 ST*Concert: Full symphonic string section, very responsive to velocity. MW1 = vibrato; MW2 = filter cutoff.

D02 ST*Chestra: Full orchestra with brass and string sections. MW1 = vibrato; MW2 = filter cutoff.

D03 BR*Spitz: Large synth-brass section. MW1 = reverb time; MW2 = filter cutoff; DE = EFF2 mix; AFT = vibrato.

D04 ME*BigNeck: Orchestral unison hit, works best when played in octaves. MW1 = vibrato; MW2 = filter cutoff.

D05 PC¦Snapper: Very percussive comping synth voice MW1 = vibrato; MW2 = filter cutoff; DE = chorus PM depth.

D06 PC¦Marimba: Vary the positions of MW1 and MW2 to play this marimba with different types of mallets. MW1 = pan LFO and Aural Exciter enhance level; MW2 = filter cutoff; DE = EFF2 mix.

D07 PC.Vibes: Vary the position of MW2 to play the vibes with different types of mallets. MW1 = tremolo, pan LFO, and chorus AM depth; MW2 = filter cutoff; DE = EFF2 mix.

D08 PC¦MusicBx: Light, delicate sound reminiscent of a child's music box. MW1 = vibrato; MW2 = filter cutoff.

D09 PC¦Tahiti: Steel drums from the South Pacific. MW1 = vibrato; MW2 = filter cutoff.

D10 PC: Cloche: Hand bells from the South of France. MW1 = vibrato; MW2 = filter cutoff and left channel initial delay time.

D11 PC¦Balan: Balinese gamelan. MW1 = vibrato; MW2 = filter cutoff.

D12 PC:Berim: Berimbau and tabla from Bombay. MW1 = vibrato and tremolo; MW2 = filter cutoff.

D13 SE¦Slither: Evolving, vector-like special effect, with shifting harmonics and looping EGs. MW1 = vibrato; DE = EFF 2 wet/dry mix.

D14 DR Kits: Several drum kits. A basic kit follows the Yamaha RX-type note assignments. Below this kit are larger ambient and processed kicks (multi-keyed), snares and toms. Above the basic kit are multi-keyed cymbals and electronic drum sounds. At the top of the keyboard are multi-keyed snare drums. All kicks and snares are arranged in fifths for ease of playing.

D15 DR Perc: A full complement of Latin, African and Indian percussion. Most are multi-keyed for easy playing of intricate rhythms.

D16 DR mixed: A mixture of the above two drum voices. The drum kits follow the note assignments in D14 as closely as possible. Percussion voices reside above the electronic drums.

Preset 2

A01 SC¦Heretic: Hauntingly beautiful sound with handbell attack. MW1 = vibrato; MW2 = pan LFO, chorus mod freq., and chorus PM depth.

A02 SC¦AeroPno: Grand piano with airy synth layer. MW1 = vibrato; MW2 = filter cutoff; DE = mod. FB gain, VEL = reverb time.

A03 SC:Juptier: Lush, detailed digital synth. MW1 = vibrato and tremolo; MW2 = filter cutoff; VEL = EQ high gain.

A04 SC.RezWhap: Resonant, bright analog-type sound. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

A05 SC:Plectar: Bright, wet, digital "plucked" sound. MW1 = vibrato; MW2 = filter cutoff, pan LFO, and tremolo; DE = flange mod. depth and mod. FB gain.

A06 SC:Quatar: Another plucked sound, fuller but still very digital in character. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level; VEL = EQ high gain.

A07 SC¦Plastiq: Strong comping sound with percussive, "plastic" attack. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

A08 SC¦Tanjeln: Resonant synth with strong ethnic flavor. MW1 = vibrato; MW2 = filter cutoff.

A09 SC:Gizmo: Resonant synth with vocal qualities. MW1 = vibrato; MW2 = filter cutoff.

A10 SC:Healing: Warm comping voice with percussive attack. MW1 = vibrato and pan LFO; MW2 = flange modulation freq. and depth.

A11 SC:Angelic: Breathy vocal sound with a digital flavor to the attack. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level; VEL = EQ high gain.

A12 CH¦Glasine: Light, pristine choir voice with bell-like percussive attack via velocity. MW1 = vibrato; MW2 = filter cutoff; DE = chorus modulation freq.

A13 CH:Itopian: Synthetic choir, excellent for pads. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry mix for output 2.

A14 CH.Vespers: Male "Ooh" choir with a hint of digital breathiness. MW1 = vibrato and tremolo; MW2 = filter cutoff; DE = wet/dry mix for ouput 1.

A15 CH:Nebula: Large mixed choir with synth processing. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

A16 CH¦Witches: Dark and breathy choral voice. MW1 = vibrato; MW2 = filter cutoff.

B01 PL¦Steel6: Acoustic steel-string guitar. AFT = vibrato; MW2 = filter cutoff; DE = wet/dry mix for Output 1; VEL = EQ high gain.

B02 PL¦JazzGtr: Acoustic guitar, ideal for expressive solo jazz playing. MW1 = phasing modulation depth; AFT = vibrato.

B03 PL¦Nylon6: Acoustic nylon-string guitar. AFT = vibrato.

B04 PL¦12Strng: Acoustic 12-string guitar. MW2 = filter cutoff; AFT = vibrato; DE = wet/dry mix for Output 1.

B05 PL:Eko12St: Electric/acoustic 12-string guitar with echo. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

B06 PL:Echoes6: Electric 6-string guitar with echo. Useful with arpeggiated and chordal playing. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry mix for Output 1.

B07 PL:Caster: Electric 6-string guitar with echo. Add distortion with MW2. Useful for comping and melodic/solo playing. MW1 = vibrato; MW2 = filter cutoff and pan LFO; DE = distortion level.

B08 PL:SloLead: Distorted electric guitar with harmonics via velocity. MW1 = vibrato; MW2 = filter cutoff, pan LFO, and delay mix level.

B09 PL¦RockAT: Distorted electric guitar with feedback harmonics via aftertouch. Good for solo/lead playing and rhythm comping. MW1 = vibrato; MW2 = filter cutoff; DE = flange mix level.

B10 SL:SawLead: Classic analog-type sawtooth lead synth voice, with distortion for extra "bite." MW1 = vibrato; MW2 = pan LFO; DE = distortion level.

B11 SL.EchoSaw: Analog sawtooth lead synth voice with mono key response. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry mix for Output 1.

B12 SL:Duke: Percussive and expressive lead synth voice, with rich stereo delays. MW1 = vibrato.

B13 SL¦Sync: Lead synth voice with "oscillator sync" sound. MW1 = vibrato, pan LFO; MW2 = filter cutoff; DE = flange modulation Feedback gain.

B14 SL:Square: Classic analog-type square wave lead synth voice with mono key response. MW1 = vibrato; MW2 = filter cutoff; DE = flange mix level.

B15 SL.PulseWM: Pulse width modulation in an AFM lead synth voice! MW1 = vibrato; MW2 = filter cutoff; DE = effect 2 mix.

B16 SL:Lyle: High, breathy melodic synth voice. MW1 = vibrato; DE = ER/reverb balance.

C01 BA¦Picked: Solid, picked electric bass with well-defined "edge." Add chorus effect with MW2. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

C02 BA¦Slapped: Bright, robust slapped electric bass. Add chorus effect with MW2. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

C03 BA¦Fingers: Electric bass, played with the fingertips. Add chorus effect with MW2. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

C04 BA.Fretles: Expressive AWM fretless bass, with good definition on upper range. AFT = vibrato MW1 = effect 1 level.

C05 BA.Classic: Expressive AFM fretless bass, in the tradition of the classic DX7 fretless bass. MW1 = vibrato; MW2 = filter cutoff; AFT = "growl"; DE = chorus mix level.

C06 BA¦Upright: Acoustic upright bass, with good clarity and definition. MW1 = vibrato; MW2 = filter cutoff; VEL = mid EQ frequency.

C07 BA:DXSlap: Bright electric bass, "slaps" with velocity. MW1 = vibrato; MW2 = filter cutoff and pan LFO; DE = chorus mix level.

C08 BA.Anabass: Punchy analog synth-bass. MW1 = vibrato; MW2 = filter cutoff; DE = flange modulation feedback gain.

C09 BA¦ResoSyn: Solid and highly resonant synth-bass. MW1 = vibrato and pan LFO; MW2 = filter cutoff.

C10 BA:FatSyn: Analog style, multi-oscillator synth-bass with mono key response. Wide timbral range via; MW2. MW1 = vibrato; MW2 = filter cutoff; DE = symphonic mix level; VEL = EQ high gain.

C11 BA¦Mogue: Recreation of the classic synth-bass, with a quick, percussive attack. MW1 = vibrato; MW2 = filter cutoff; DE = reverb mix level.

C12 OR¦BJazzy: Full drawbar organ with many live performance features. Well suited to jazz and rock styles. MW1 = vibrato, pan LFO, and rotary speaker speed control; MW2 = filter cutoff and reverb mix level.

C13 OR¦BookerB: Another drawbar organ, with strong upper harmonics, presence, and lots of "air." MW1 = rotary speaker speed control; MW2 = filter cutoff; AFT = vibrato and tremolo; DE = ER/reverb balance.

C14 OR¦Deep: Overdriven drawbar organ, with a strong midrange. MW1 = pan LFO and rotary speaker speed control; MW2 = filter cutoff.

C15 OR¦Purple: The Classic Distorted Rock Organ, with real time control of distortion. MW1 = pan LFO and rotary speaker speed control; MW2 = filter cutoff; DE = distortion level.

C16 OR¦Bsilica: Multi-rank pipe organ. MW2 = filter cutoff and pan LFO.

D01 WN¦Tenor: Expressive solo tenor saxophone, that blossoms with velocity. MW1 = vibrato, tremolo, pan LFO; MW2 = filter cutoff; DE = reverb mix level; VEL = Aural Exciter enhance amount.

D02 WN¦SaxSect: Ensemble sax section. MW2 = filter cutoff; AFT = vibrato and tremolo; DE = chorus mix level; VEL = EQ high gain.

D03 WN¦Alto: Expressive solo alto saxophone that blossoms with velocity. MW1 = vibrato, tremolo, pan LFO; MW2 = filter cutoff; DE = reverb mix level; VEL = Aural Exciter enhance amount.

D04 WN¦Soprano: Expressive solo soprano saxophone that blossoms with velocity and aftertouch. MW1 = vibrato; AFT = tremolo and filter cutoff; DE = flange mix level.

D05 WN¦Clarine: Solo clarinet. MW1 = vibrato; AFT = tremolo; DE = flange mix level.

D06 WN¦PanPipe: Breathy, detailed pan flute. MW1 = vibrato, tremolo, and filter modulation; MW2 = filter cutoff and pan LFO; VEL = Low EQ gain.

D07 ME*Phantom: Swirling, evolving synth pad. MW1 = pan LFO and pan bias; MW2 = filter cutoff; AFT = vibrato; DE = wet/dry mix for Output 2.

D08 ME¦5thsMan: Percussive/bowed 5ths attack, followed by vector-like swirl of harmonics and evolving sustained pad. MW1 = vibrato and tremolo; MW2 = filter cutoff; LFO = flange modulation freq. and chorus modulation freq.

D09 ME*Emperor: Full orchestral blast with swirling, looping bell-like harmonics over sustained pad. MW1 = vibrato and tremolo.

D10 ME¦SloLoop: Moody, dark and evocative pad with "reverse feedback-like" harmonic squeals that swoop and dive. MW1 = vibrato; DE = wet/dry mix of Ouput 1.

D11 ME*Asia: Expressive ethnic voice, with wide range of velocity sensitivity. MW1 = vibrato and pan LFO; MW2 = filter cutoff.

D12 ME:Dreams: Vocal attack which slides down into synth strings with fifths added. MW1 = vibrato; MW2 = filter cutoff; LFO = flange modulation depth.

D13 ME:Galaxy: A soaring, vector-like swirl of evolving harmonics. Open filter with MW2 for a wider path through the galaxy. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry mix of Output 1.

D14 ME¦Isis: Digital pad w/blown-type attack, immediately followed by looping blown-bells and complex upper-harmonic spectral sweeps. MW1 = vibrato; MW2 = filter cutoff.

D15 ME¦ZoZoid: Interstellar metallic bursts circled by radio blips and other cosmic repeating noises. Sustained notes in upper two octaves of keyboard good for melody with radio-isotope accompaniment. MW1 = vibrato.

D16 ME*Thusian: Warm synth pad w/repeating bells and other percussives. Upper octaves good for playing breathy cosmic melodies with bell attacks. MW1 = vibrato; MW2 = filter cutoff.

Internal

A01 SP¦Eternal: Beautiful string pad with lingering release. MW1 = vibrato and pan LFO; MW2 = filter cutoff.

A02 SP:Dreampd: Slightly spooky choral synth pad. MW1 = vibrato and pan LFO; MW2 = filter cutoff; DE = flange effect depth.

A03 SP:Freeze: Shimmering synth pad. MW1 = vibrato; MW2 = filter cutoff and pan LFO.

A04 SP:Polygar: Pad sound with nylon attack. MW1 = vibrato; MW2 = filter cutoff and pan LFO; DE = flange effect depth.

A05 SP:DarkPad: Moody synth pad. MW1 = reverb high gain; MW2 = filter cutoff; DE = wet/dry output mix of EFF2; AFT = vibrato.

A06 SP¦Digi82: Soft digital synth pad. MW1 = vibrato; MW2 = filter cutoff; DE = EFF2 mix level.

A07 SP.Digima: Pad with bell-like attack. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry output mix of EFF2.

A08 SP.SynStr: Dramatic synth-string pad. MW1 = mod freq. and vibrato; MW2 = filter cutoff and pan LFO.

A09 SC:Magic: A cute, resonanat sound. MW1 = mod freq. and vibrato; MW2 = filter cutoff and pan LFO; DE = wet/dry output mix of EFF2.

A10 SC.DnzStb: Sharp comping synth. MW1 = vibrato; MW2 = filter cutoff; DE = chorus PM depth; VEL = EFF2 level.

A11 SC¦SlapClv: Slap and clav combined. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

A12 SC.Analogy: Oscillated comping synth. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry output mix of EFF1.

A13 SC¦Steps: Hold the key down for another sound. MW1 = vibrato; MW2 = filter cutoff, EFF2 level and mid gain LFO.

A14 SC¦DigiStb: Stabbing metallic sound. MW1 = vibrato; MW2 = filter cutoff; DE = EFF2 reverb mix level.

A15 CH¦ChorWn: Fresh choral sound. MW1 = vibrato; MW2 = freq. mod, pan LFO, and delay level; DE = wet/dry output mix of EFF2.

A16 CH:OooAh: Female oohs, male ahs. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry output mix of effects.

B01 AP¦Bright: Bright digital piano. MW2 = filter cutoff; DE = reverb mix level.

B02 EP¦BellEP: Electric piano with bell attack. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry output mix of effects.

B03 EP.HrpPhon: EP with harp and pianophone elements. MW1 = vibrato; MW2 = filter cutoff, pan LFO, and symphonic effect mix level ; DE = reverb wet/dry output mix.

B04 EP:DualDA: Hard EP with stereo attack. MW1 = vibrato and pan LFO; MW2 = filter cutoff and symphonic effect mix level ; DE = reverb mix level.

B05 OR¦Ghosty: Organ with a touch of calliope. MW1 = vibrato; MW2 = filter cutoff; DE = EFF2 mix level.

B06 KY¦Squeeze: Classic accordion. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

B07 SL.PrtaSaw: Resonant lead synth. MW1 = mod freq. and vibrato; MW2 = filter cutoff and pan LFO; DE = wet/dry output mix of EFF1.

B08 SL:OctSqu: Square lead synth in octaves. MW1 = vibrato; MW2 = filter cutoff; DE = flange mix level.

B09 ST¦StrgPad: Sedate string pad. MW1 = vibrato; MW2 = filter cutoff and pan bias.

B10 ST¦ClasStr: Elegant classical string section. MW1 = vibrato; MW2 = filter cutoff and pan bias; DE = wet/dry output mix of EFF2.

B11 ST:Tremolo: Tremulous orchestral strings. MW2 = filter cutoff and pan LFO; DE = wet/dry output mix of effects; AFT = tremolo.

B12 ST:Qk Syns: String section playing in octaves. MW2 = filter cutoff; DE = chorus mod freq.; AFT = vibrato.

B13 ST:Violin: Solo violin with subtle aftertouch control. MW2 = filter cutoff; DE = symphonic effect mix level ; AFT = vibrato.

B14 ST:Cello: Expressive cello. MW2 = filter cutoff; DE = symphonic effect mix level ; AFT = vibrato.

B15 BR¦HouseAT: Brass with aftertouch modulation. MW1 = vibrato; DE = symphonic effect mix level ; AFT = filter cutoff.

B16 BR¦SfzSwel: Brass with sforzando attack. MW1 = vibrato; MW2 = filter cutoff; DE = reverb time and wet/dry output mix of effects.

C01 BA.FrtlsBs: Mellow fretless bass with a slight delay. MW1 = vibrato; MW2 = filter cutoff; DE = echo mix level.

C02 BA¦Picky: Fat bass with hard attack. MW1 = vibrato; MW2 = filter cutoff and pan LFO; DE = wet/dry output mix of effects.

C03 BA¦Roque: Electric and synth basses get together. MW1 = vibrato; MW2 = filter cutoff; DE = flange mix level and wet/dry output mix of EFF2.

C04 BA:VelSlap: Bass with velocity-controlled slap attack. MW1 = vibrato; MW2 = filter cutoff and pan LFO; DE = chorus mix level.

C05 BA¦Stile: Wood bass sound gets harder with velocity. MW1 = vibrato; MW2 = filter cutoff and pan LFO; DE = flange mix level and wet/dry output mix of effects.

C06 BA¦Upright: Realistic wood bass sound. MW1 = vibrato; MW2 = filter cutoff; DE = reverb mix level.

C07 BA¦Serious: Fat analog bass sound. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry output mix of EFF2.

C08 BA¦DgiWild: Hard sounding bass. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

C09 PL¦Elktrik: Distorted guitar with ping-pong delay. MW1 = vibrato; MW2 = filter cutoff; DE = EFF1 mid and treble gain.

C10 PL¦MetlHed: Lead guitar, perfect for solos. MW1 = vibrato; MW2 = filter cutoff; DE = EFF1 mid and treble gain.

C11 PL¦OvDrive: Guitar with aftertouch-modulated overdrive. MW1 = vibrato; MW2 = filter cutoff; DE = flange mod freq. and wet/dry output mix of EFF2.

C12 PL:Stratus: Clean single-coil guitar sound. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry output mix of EFF1.

C13 PL¦ElMute: Fat muted guitar. MW1 = vibrato; MW2 = filter cutoff.

C14 PL¦VelMute: Guitar with aftertouch-controlled muting. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

C15 PL¦Harp: Classic harp sound. MW1 = vibrato; MW2 = filter cutoff; DE = symphonic effect mix level ; VEL = EQ high gain.

C16 PL:LAPizzi: Pretty pizzicato. MW1 = vibrato; MW2 = filter cutoff; DE = EFF2 mix level.

D01 WN¦HrdAlto: Hard-hitting alto sax. MW1 = vibrato and tremolo; MW2 = filter cutoff; DE = wet/dry output mix of reverb.

D02 WN¦HrdTenr: Velocity-sensitive tenor sax. MW1 = vibrato and tremolo; MW2 = filter cutoff; DE = wet/dry output mix of reverb.

D03 WN:BariSax: Breathy baritone sax. MW1 = vibrato and tremolo; MW2 = filter cutoff; DE = wet/dry output mix of reverb; VEL = EQ high gain.

D04 WN.AmpHarp: Slightly over-amplified blues harp. MW1 = vibrato and tremolo; MW2 = filter cutoff; DE = distortion level.

D05 SP*MoonPad: Synth pad with evolving choir. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mod freq.

D06 ME*Cosmos: Soaring synth sounds with menacing low range undertones. MW1 = vibrato; MW2 = filter cutoff and pan LFO; DE = wet/dry output mix of EFF2.

D07 ME*Aurola: Cosmic pad with VEL-sensitive digital effects. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry output mix of EFF1.

D08 ME.Galaxy: The sparkling galactic synthesizer. MW1 = wet/dry output mix of EFF2; MW2 = filter cutoff; DE = wet/dry output mix of EFF2; AFT = vibrato.

D09 ME*Catrsis: Eerie, evolving synthesizer ambience. MW1 = vibrato; MW2 = filter cutoff; DE = wet/dry output mix of EFF2.

D10 SE¦Astral: Synth pad evolving from interstellar space. MW2 = filter cutoff; DE = reverb wet/dry output mix.

D11 KY*Harpsi: Realistic harpsichord. MW2 = filter cutoff; DE = reverb mix level.

D12 BR¦Fall: Falling-off horn section. MW2 = filter cutoff; DE = symphonic effect mix level and reverb wet/dry output mix.

D13 PL*VelGtr: Velocity-sensitive eccentric guitar. MW1 = vibrato; MW2 = filter cutoff; DE = chorus mix level.

D14 KS:Anlg +2: Organ-like bass and synth lead voices, split at C3. Velocity-sensitive eccentric guitar. MW1 = vibrato; MW2 = filter cutoff; DE = delay mix level.

D15 KS:Pad/Sax: Synth pad and sax voices, split at F3. MW2 = filter cutoff and pan bias; AFT = vibrato.

D16 KS*JazComb: Bass with velocity-sensitive cymbal and piano with velocity-sensitive horn section, split at C3.

Preset multi chart

Number	Multi Name	Voice Number							
		01	02	03	04	05	06	07	08
		09	10	11	12	13	14	15	16
01	Popular Tune	P1-A11	P2-C01	P1-A04	P1-A06	P2-B06	P2-B04	P1-B04	P1-C12
		P1-C02	P2-D01	P2-A13	P2-B11	off	off	P1-D15	P1-D14
02	Funky Tune	P1-A14	P2-C07	P1-A01	P1-A09	P2-B07	P1-C02	P1-C10	P2-B13
		off	off	off	off	off	off	P1-D15	P1-D14
03	Ballade	P1-A06	P2-C05	P1-A04	P2-A10	P2-B04	P1-B14	P1-B03	P1-C14
		P2-D04	P2-D06	P2-B12	P2-A12	off	off	P1-D15	P1-D14
04	House	P2-A07	P2-C11	P1-A02	P2-A04	P1-D05	P1-B12	P1-C08	P2-B10
		off	off	off	off	off	off	P1-D15	P1-D14
05	Standard Rock	P1-A05	P2-C01	P1-A01	P2-B07	P2-B09	off	off	off
		off	off	off	off	off	off	off	P1-D16
06	American Rock	P2-C14	P2-C02	P1-A01	P1-A10	P1-A15	P1-B02	P2-B06	P2-B09
		P2-D01	off	off	off	off	off	off	P1-D16
07	Combo Jazz	P1-A03	P2-C06	P2-B02	P2-D03	off	off	off	off
		off	off	off	off	off	off	off	P1-D16
08	Horn Jazz Quintet	P2-B02	P2-C06	P1-A01	P2-D03	P2-D01	P2-D04	P1-C03	P1-C04
		off	off	off	off	off	off	P1-D15	P1-D16
09	Big Band Jazz	P1-A01	P2-C03	P2-B02	P2-C12	P2-D03	P2-D01	P2-D04	P2-D02
		P1-C03	P1-C04	P1-C01	P1-C02	off	off	P1-D15	P1-D16
10	Sound Track	P2-D09	P2-C05	P1-A04	P2-A11	P2-A03	P2-A09	P2-A02	P2-A13
		P2-D12	P2-D13	P1-B01	P1-B08	P1-B10	P1-B11	P1-B15	P1-D16
11	Orchstra	P1-D02	P1-D01	P1-C15	P1-C16	P1-C14	P2-A13	P2-A14	P2-A15
		P1-D04	P1-C01	P1-C05	P1-C07	P2-D05	P2-A11	P1-D15	P1-D14
12	Baroque	P1-C15	P1-B09	P1-D01	P1-C16	off	off	off	off
		off	off	off	off	off	off	off	off
13	Wind Unsanble	P2-D05	P2-D01	P2-D03	P2-D04	P2-D06	P2-B04	P1-C16	P2-A01
		P1-A11	P2-C04	off	off	off	off	P1-D15	P1-D14
14	Tropical	P1-D09	P2-C01	P1-A09	P2-A01	P1-D11	P1-D10	P1-D06	P1-D07
		P1-C01	P2-D06	P2-D04	P2-C13	off	off	P1-D15	P1-D14
15	Esnican	P1-D12	P2-C05	P1-A07	P2-A08	P1-D11	P1-D08	P1-D06	P2-D06
		P2-D11	P2-D14	P2-D07	P2-D15	P2-D16	P2-D08	P1-D15	P1-D14
16	Fork	P2-B01	P2-C06	P1-A03	P2-B04	P2-D05	P2-D06	off	off
		off	off	off	off	off	off	P1-D15	P1-D14

P1: Preset 1 P2: Preset 2

Preset drum voice layouts

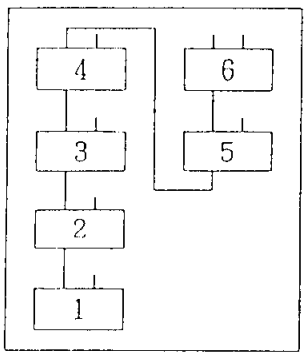
Drum Set	Preset1-D14 Dr Kits		Preset1-D15 Dr Perc		Preset1-D16 Dr Mixed	
Note Number	Wave Form Name	No.	Wave Form Name	No.	Wave Form Name	No.
E0	BD 4	89	Timpani	148	Tom 5	108
F0	BD 4	89	Timpani	148	Tom 5	108
F#0	BD 4	89	NoisePrc	128	BD 4	89
G0	BD 1	86	AnlgPerc	127	Tom 5	108
G#0	BD 1	86	NoisePrc	128	BD 1	86
A0	BD 3	88	AnlgPerc	127	BD 3	88
A#0	BD 3	88	AnlgPerc	127	SD 1	94
B0	Tom 2	105	AnlgPerc	127	Tom 2	105
C1	Tom 2	105	Cowbell2	123	Tom 2	105
C#1	SD 8	101	Cowbell2	123	SD 8	101
D1	Tom 1	104	Cowbell2	123	Tom 1	104
D#1	SD 6	99	Scratch	129	SD 6	99
E1	SD 2	95	Scratch	129	SD 2	95
F1	Tom 1	104	Scratch	129	Tom 1	104
F#1	SD 1	94	Berimbau	131	BD 1	86
G1	BD 2	87	Berimbau	131	BD 2	87
G#1	BD 1	86	Tabla Hi	143	BD 1	86
A1	BD 2	87	Tabla Hi	143	BD 2	87
A#1	SD 7	100	Tabla Hi	143	SD 7	100
B1	Tom 4	107	Tabla Hi	143	Tom 4	107
C2	Tom 4	107	Cga Lo	136	Tom 4	107
C#2	SD 3	96	Cga Lo	136	SD 3	96
D2	Tom 3	106	Cga Lo	136	Tom 3	106
D#2	SD side	103	Cga Lo	136	SD side	103
E2	SD 4	97	Cga Lo	136	SD 4	97
F2	Tom 3	106	Cga Hi	134	Tom 3	106
F#2	Claps 1	120	CgaLoSlp	137	Claps 1	120
G2	HH light	111	Cga Hi	134	HH light	111
G#2	Tambrn	124	Cga Hi	134	Tambrn	124
A2	HH mid	112	Cga Hi	134	HH mid	112
A#2	HH heavy	113	HiCgaSlp	135	HH heavy	113
B2	HH open	114	Timbale1	146	HH open	114
C3	HH foot	110	Timbale1	146	HH foot	110
C#3	Crash	117	Timbale1	146	Crash	117
D3	Crash	117	Timbale1	146	Crash	117
D#3	Ride	118	Timbale2	147	Ride	118
E3	Ride	118	Timbale1	146	Ride	118

Drum Set	Preset1-D14 Dr Kits		Preset1-D15 Dr Perc		Preset1-D16 Dr Mixed	
Note Number	Wave Form Name	No.	Wave Form Name	No.	Wave Form Name	No.
F3	Ride	118	Timbale1	146	Ride	118
F#3	Ride	118	Timbale1	146	Ride	118
G3	Choke	119	Timbale1	146	Choke	119
G#3	SD roll	142	Timbale2	147	BD 7	92
A3	BD 5	90	Bongo	132	BD 5	90
A#3	SD 4	97	SD side	103	NoisePrc	128
B3	Tom 6	109	Bongo	132	Tom 6	109
C4	Tom 6	109	Agogo	130	Tom 6	109
C#4	AnlgPerc	127	Maracas	141	AnlgPerc	127
D4	Tom 6	109	Agogo	130	Tom 6	109
D#4	AnlgPerc	127	Maracas	141	AnlgPerc	127
E4	SD 9	102	Clave	138	SD 9	102
F4	Tom 6	109	Tambrn	124	Tom 6	109
F#4	Claps 2	121	Tambrn	124	Claps 2	121
G4	BD 6	91	Shaker	125	BD 6	91
G#4	FngrSnap	126	Tambrn	124	FngrSnap	126
A4	HHclAnlg	115	Shaker	125	HHclAnlg	115
A#4	Scratch	129	FngrSnap	126	Scratch	129
B4	HHopAnlg	116	FngrSnap	126	HHopAnlg	116
C5	BD 7	92	Guiro 1	139	Cga Lo	136
C#5	NoisePrc	128	Guiro 2	140	CgaLoSlp	137
D5	Tom 5	108	Cabasa	133	Cga Hi	134
D#5	Tom 5	108	Cabasa	133	CgaHiSlp	135
E5	Tom 5	108	Whistle	149	Timbale 1	146
F5	SD 4	97	Whistle	149	Timbale 1	146
F#5	Shaker	125	Belltree	150	Timbale 2	147
G5	SD 4	97	Temple	145	Guiro 1	139
G#5	SD 4	97	Temple	145	Guiro 2	140
A5	SD 4	97	Temple	145	Cabasa	133
A#5	Shaker	125	Temple	145	Shaker	125
B5	SD 3	96	Temple	145	Whistle	149
C6	SD 3	96	Cowbell1	122	Agogo	130
C#6	SD 3	96	Cowbell1	122	Agogo	130
D6	SD 3	96	Claps 1	120	Maracas	141
D#6	Cowbell1	122	Claps 1	120	Cowbell1	122
E6	SD 1	94	Crash	117	Clave	138
F6	SD 1	94	Crash	117	Temple	145
F#6	SD 1	94	Crash	117	Belltree	150
G6	SD 1	94	Choke	119	Temple	145

AFM algorithms

One carrier

Algorithm: 01



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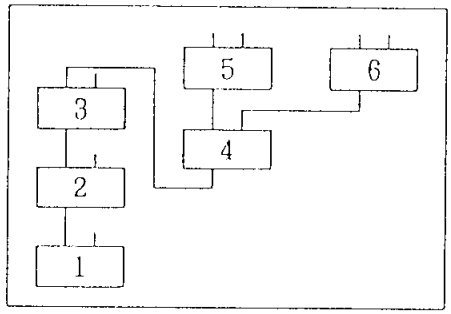

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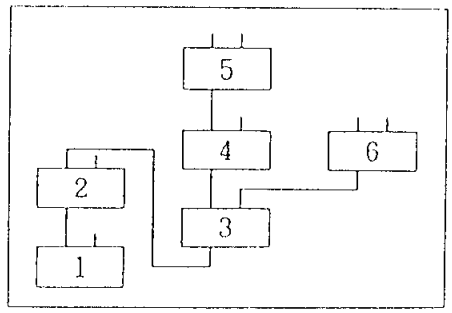

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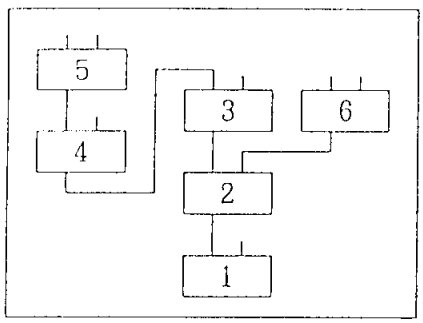

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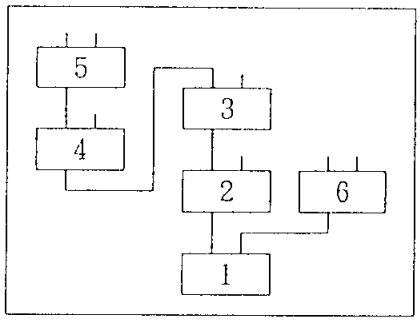

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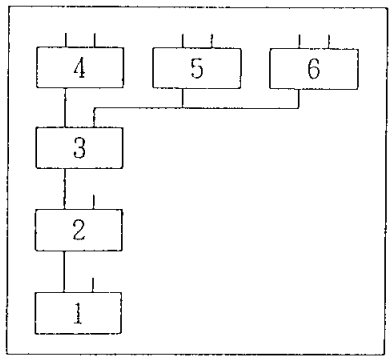

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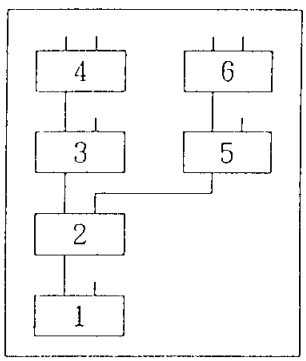

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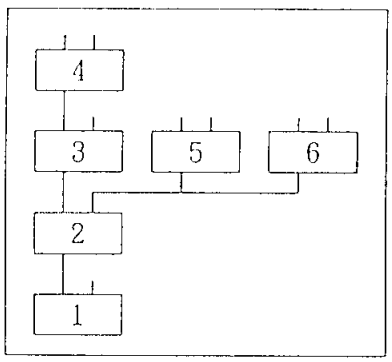

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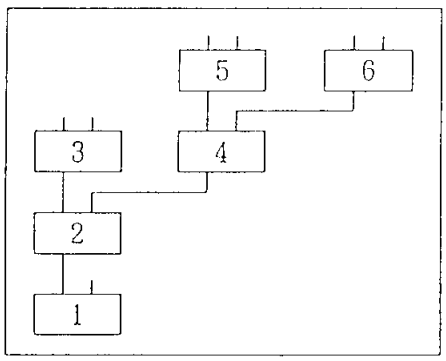
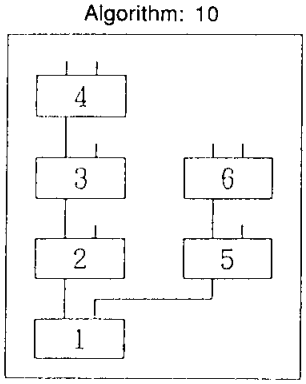


Algorithm: 10



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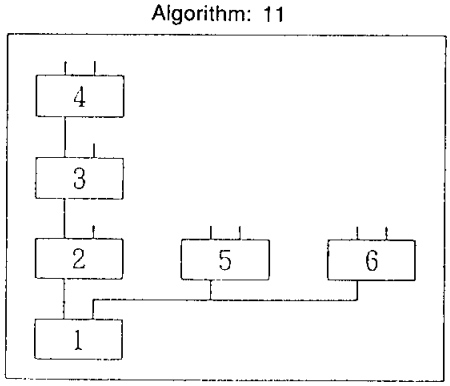

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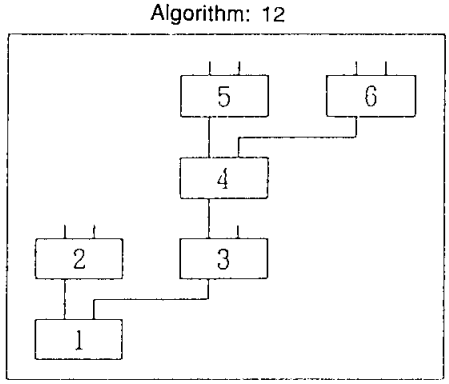

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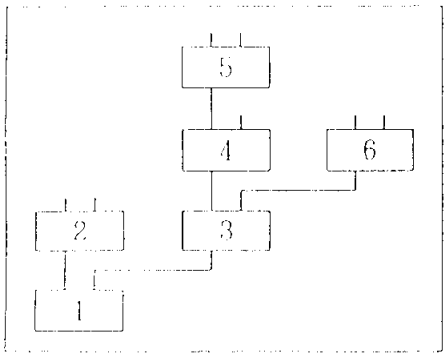

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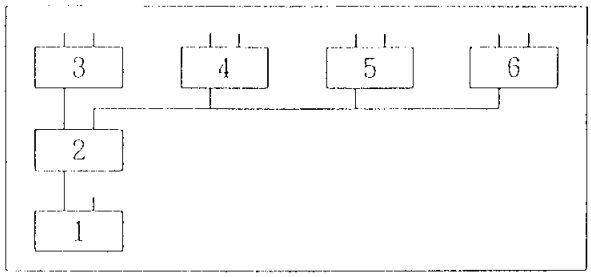

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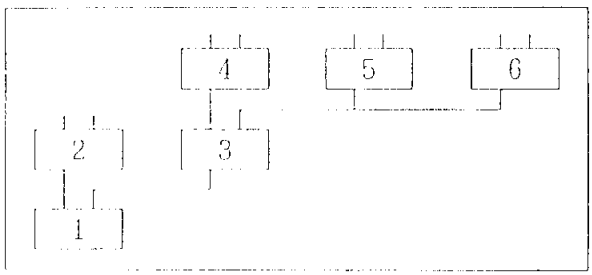

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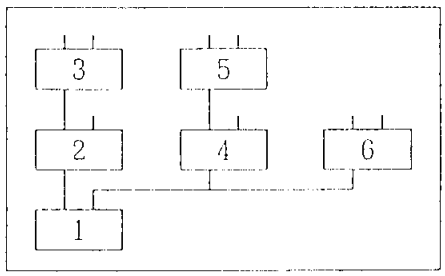

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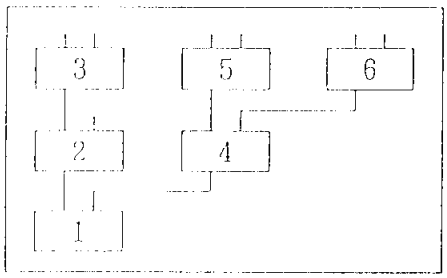

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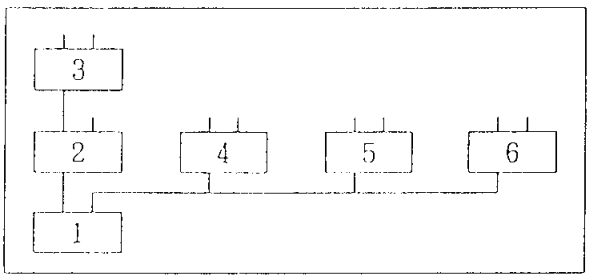

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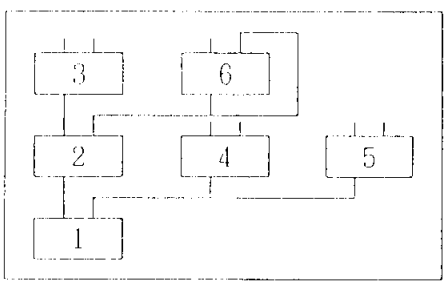

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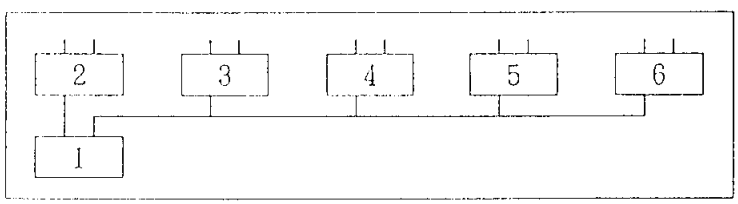
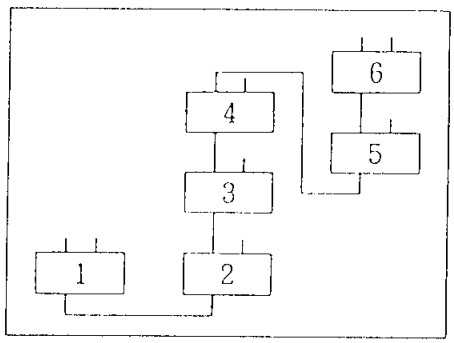


Two carriers

Algorithm: 21



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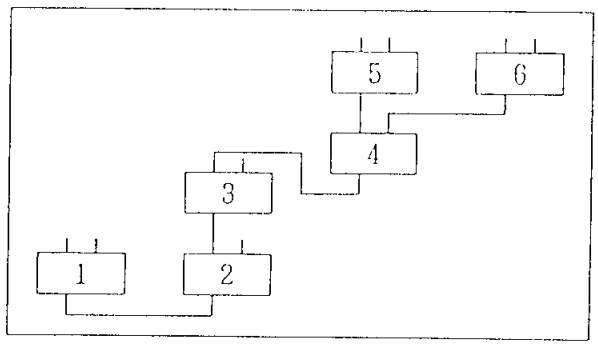

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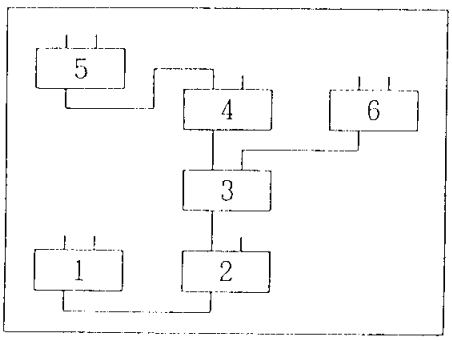

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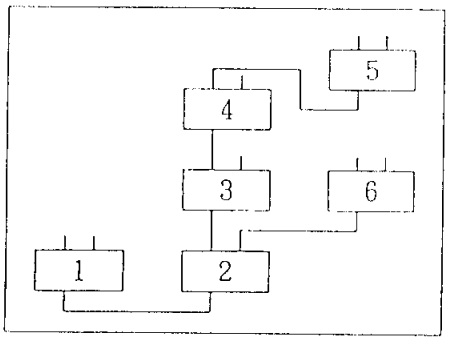

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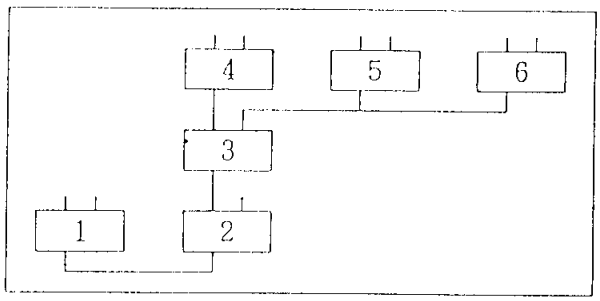

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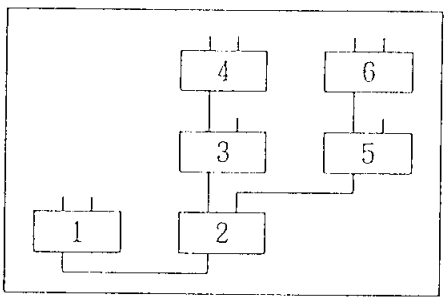

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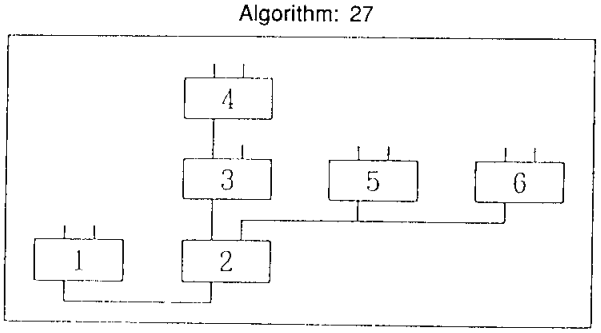

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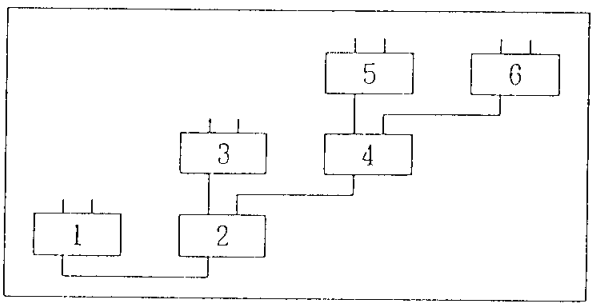
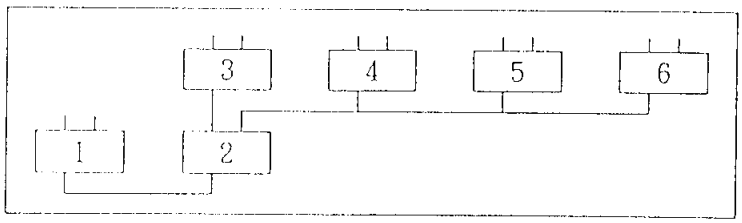
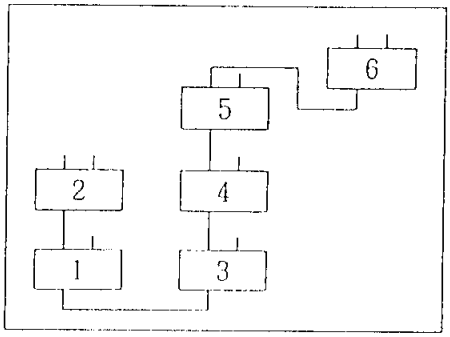


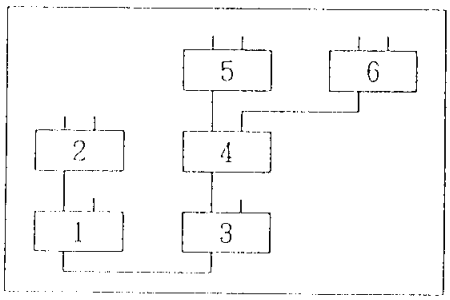
Algorithm: 29



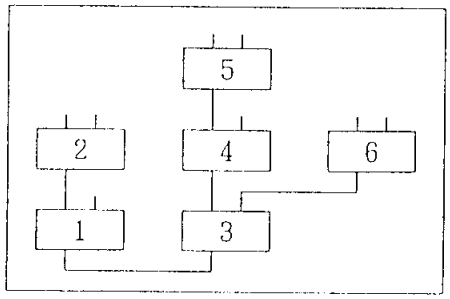
Algorithm: 30



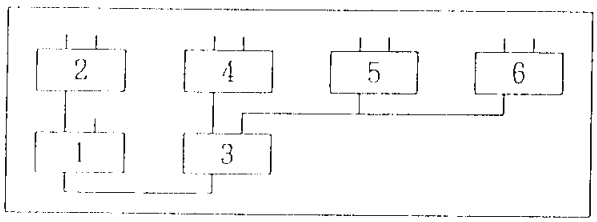
Algorithm: 31



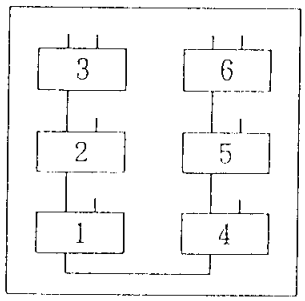
Algorithm: 32



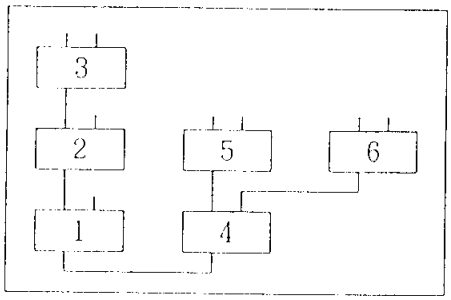
Algorithm: 33



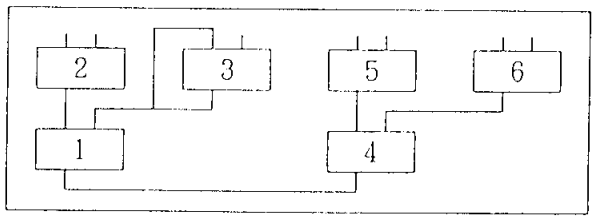
Algorithm: 34



Algorithm: 35

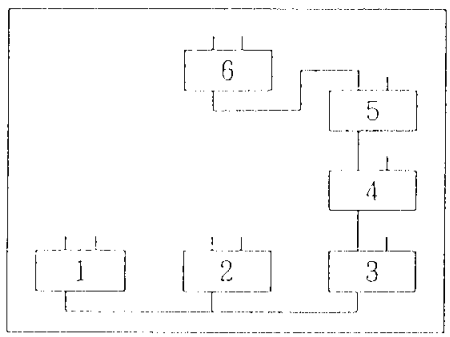


Algorithm: 36

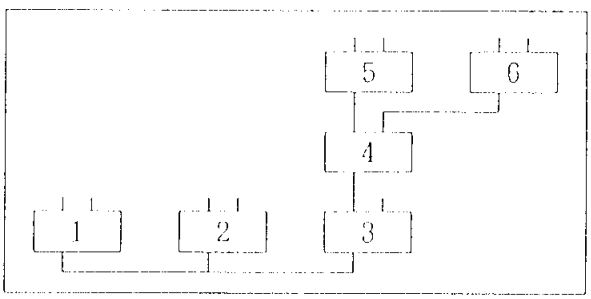


Three carriers

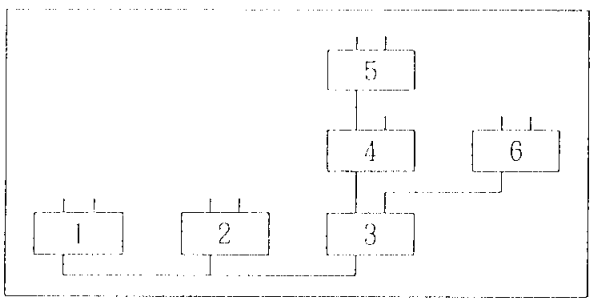
Algorithm: 37



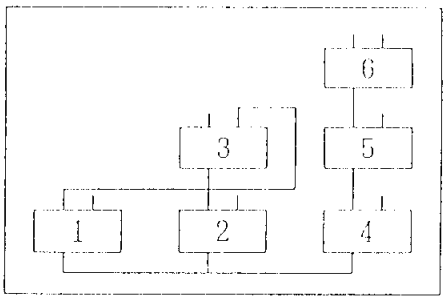
Algorithm: 38



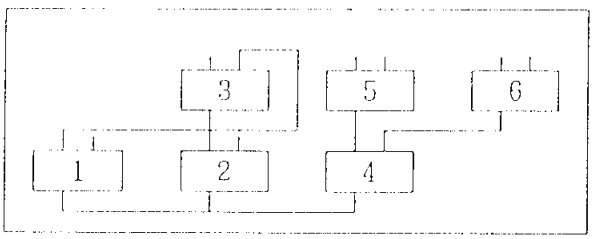
Algorithm: 39



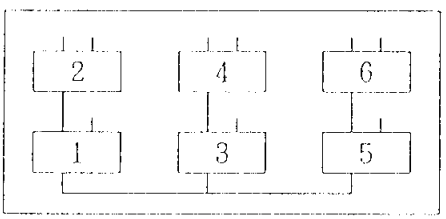
Algorithm: 40



Algorithm: 41

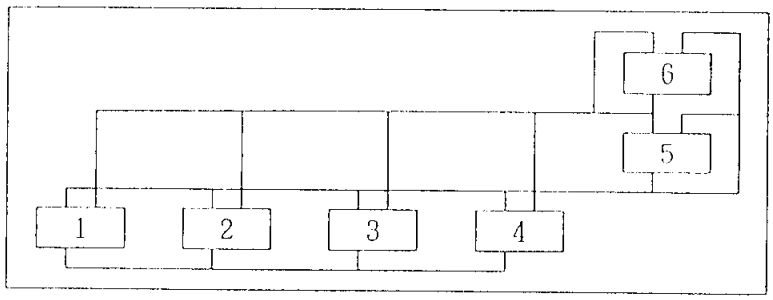


Algorithm: 42

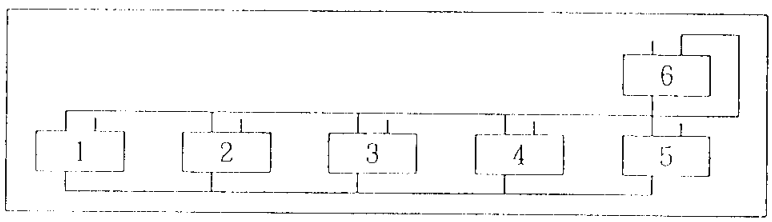


Four carriers

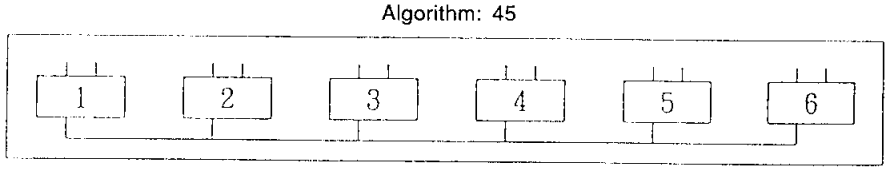
Algorithm: 43



Algorithm: 44



Algorithm: 45



How the SY99 differs from the SY77

Aside from the size of the keyboard and the addition of an expansion memory slot, the SY99 is externally similar to the SY77. However, the SY99 has been enhanced in several ways which you should be aware of if you have previous experience with the SY77, or when you wish to port SY77 voices to the SY99.

Keyboard: The SY77 has a 61 note keyboard. The SY99 has a 76 note keyboard. (See also *Zoned aftertouch* below.)

Master keyboard functions: The SY99 is able to function as a powerful MIDI master keyboard. Eight editable master control setups are provided, each containing four zones that transmit on their own MIDI channel.

An output filter is provided to filter each type of outgoing message for each channel 1–16. For details, refer to *Master control utility*, page 284.

AWM (ROM preset) sample memory: The SY77 has 112 waveforms occupying 2 Mwords (4 Mbytes). The SY99 has 267 waveforms occupying 4 Mwords (8 Mbytes), which include all of the waveforms of the SY77 and many new waveforms. (See *Data compability* below.) A complete listing of the SY99 waveforms is given in *AWM element job 2.AWM waveform set*, page 157.

MDR/sample RAM: The SY99 possesses 512 Kbytes of RAM which can be allocated for use as MIDI data recorder (MDR) memory or as sample memory, in any desired proportion. The allocation procedure is described in *Utility Mode, System utility 5.Memory allocate*, page 256.

RAM allocated as MDR memory is available for receiving bulk data dumps from other MIDI devices. Once received by the SY99, this data can be saved to a floppy disk using the SY99's disk drive. The MDR function allows you to use the SY99's floppy disk capability to store data for other devices which do not have disk storage capability.

RAM allocated as sample memory is available to receive MIDI sample dumps from other devices (such as Yamaha's TX16W sampler), or sample data loaded from disk. This sample data can be assigned to waveforms and used in the same manner as the samples contained in the SY99's AWM sample ROM or waveform cards. For details, refer to *AWM element data 2.Waveform set*, on page 157.

The amount of RAM available for sample data can be increased using expansion RAM kits. Refer to the following section *Expansion RAM* in the appendix.

Effect system: The SY77 has two modulation units (4 effect types) and two reverb units (40 effect types). The SY99 has two effect units (63 effect types), each superior in quality. Cascade and dual effect types are provided, allowing each unit to function as two effect units, each with its own effect send, and effect unit parameters can be controlled in realtime. For details, see *Voice edit mode, Common data 10.Effect set*, page 104.

Zoned aftertouch: A new voice parameter has been added to the SY99 which allows you to specify how aftertouch will affect currently sounding notes; all (all notes, as on the SY77), top (only the highest note), bottom (only the lowest note), split hi (all notes at or above the specified split point), split lo (all notes below the specified split point).

The SY99 has "channel" aftertouch, which produces a single pressure value for the entire keyboard; it does not have "polyphonic" aftertouch. However, its Zoned Aftertouch capability allows you to restrict the effect of aftertouch to a specified zone or note, in this way providing much the same expressive possibilities as polyphonic aftertouch.

Aftertouch can be used to control a wide variety of parameters. For details, see *Common data 12.Controller set*, pages 127 to 130.

Filter sync: When editing a filter in voice edit mode, you can turn Filter Sync on so that parameter adjustments made to one filter will affect the other filter as well (each element has two filters). This is a convenience for editing, not a new parameter. For details, see *AFM element data, 8.AFM filter*, page 149.

Sequencer capacity: The SY77 sequencer has a capacity of approximately 16,000 notes. The SY99 sequencer has a capacity of approximately 27,000 notes.

Switch lock: The Switch Lock function allows you to lock the front panel switches so that they cannot be operated accidentally. This may be convenient when you wish to place books or sheet music on the SY99 front panel. For details, see *System utility 7.Switch lock*, page 257.

MIDI bank select message: The SY99 can transmit and respond to MIDI bank select messages to select voice memories.

Voice edit element job directories: The AWM element job directory of the SY99 starts with job 2 (job 1 has been left blank), so that AFM and AWM element jobs from *EG* to *Filter* will have the same job number (3.EG – 8.Filter). Since these jobs are similar or identical for both AFM and AWM elements, it is conceptually helpful for them to have the same job number.

Other details: There are other differences in the screen displays and function key assignments. Most of these differences are due to the addition of new features to the SY99. However, we have tried to keep the JUMP numbers for pages the same whenever possible. Since some of the jobs in Utility mode have been reordered, this means the JUMP numbers will not necessarily follow the sequence of the jobs.

Data compatibility: As mentioned above in *AWM sample memory*, the SY99 contains all the SY77 AWM waveform data, but the order has been rearranged.When SY77 (or TG77) voice data is loaded into the SY99, the waveform numbers will be converted automatically, and the SY99 waveform equivalent to the SY77 waveform will be used. However since minor adjustments have been made to some of the waveform data itself, the sound of some waveforms may not be precisely identical to the SY77 waveforms.

Since the effect systems of the SY77 and SY99 are significantly different, SY77 voices which depend heavily on effect processing will not sound the same on the SY99.

Disk compatibility: If you wish to load an SY77 disk which contains "All Data", "Synthesizer All" or "Sequencer All" data, or to save "All Data", "Synthesizer All" or "Sequencer All" data to a disk which will later be loaded by an SY77, you must make the appropriate setting for *Disk utility 8.Disk save type* (see page 274). Once the data has been loaded into the SY99 it can be saved in either format.

All other types of disk data are directly compatible.

Using RCM hybrid synthesis

The ability to use an AWM voice as an input to an operator is one of the radical innovations of the SY99. Since the architecture is so flexible it will be a long time before this capability can be fully explored. This section will suggest one possible starting point for experimentation.

1. Select the voice mode

   From: Voice edit mode
   Select: Voice mode (F1) (JUMP #200)
   Select: Voice Mode 9 (1AFM&1AWM)
   Press: F2 (Com)

2. Initialize the voice common data

   From: Voice edit (JUMP #201)
   Select: 15:Initialz (Initialize voice)
   Press: ENTER
   Press: YES at the "Are You sure?" prompt
   Press: EXIT at the "Completed" prompt

3. Initialize the AFM element

   From: Voice edit (JUMP #201)
   Press: F3 (E1) AFM Element (JUMP #230)
   Select: 15:Initialz (Initialize AFM element)
   Press: ENTER
   Press: YES at the "Are You sure?" prompt
   Press: EXIT at the "Completed" prompt

4. Initialize the AWM element

   From: Voice edit (JUMP #230)
   Press: F4 (E2) AWM element (JUMP #256)
   Select: 15:Initialz (Initialize AWM element)
   Press: ENTER
   Press: YES at the "Are You sure?" prompt
   Press: EXIT at the "Completed" prompt

5. Select an AWM wave

   Press: F4 (E2) to edit the AWM element (JUMP #256)
   Select: 2:WaveSet (AWM waveform set) (JUMP #257)
   Press: the -1 +1 buttons or use the data wheel or slider to select the wave you wish to use.

When you play the keyboard you will notice that all waves will sound with the initialized "organ type" EG, and no velocity or filtering. You will probably want to add final touches later. EG filtering and dynamic information are carried over into the FM operator. However for now we will use only a raw wave in order to explain the mechanics of RCM hybrid voicing.

Before trying to use an AWM wave in an AFM algorithm it is useful to turn off the AWM direct output. This is not necessary for final voicing since many voices use *both* the direct AWM sound and the hybrid AWM/AFM combination. However it is easier to understand the effect of the hybrid system if the direct output of the AWM element is temporarily turned off.

6. To turn off the AWM:

   From: Voice Edit (JUMP #201)
   Select: 7:OutSel (JUMP #208)
   Press: F2 (E2) to select element 2.
   Press: -1 three times to turn element output off.
   Press: EXIT to return to the voice edit job directory

7. Select Algorithm 30 (default in INIT AFM voice)

Note: *Any algorithm will work with hybrid voicing. However we will use the default algorithm 30 in this demonstration, so this step is not necessary.*

8. Set operators 1 and 2 to fixed frequency, zero frequency.

   Press: F3 to select the AFM job directory (JUMP #230)
   Select: 2:Oscltr (JUMP #235)
   Press: Operator Select button 1 to choose operator 1
   Select: Freq Mode and use -1 +1 to change "ratio" to "fixed"
   Select: Coarse and use -1 +1 to change 1.0 to 0.00

Press: Operator select button to choose OP2 and repeat the above operation.
Press: EXIT to return to the AFM job directory

9. Introduce the AWM wave into operator 2 of the FM algorithm

From: Voice Edit
Press: F3 (E1) to select the AFM element for editing (JUMP #246)
Select: 1:Algrthm (AFM algorithm) (JUMP #232)
Press: F2 (Extn) This page selects the external inputs to each operator.

Use the cursor keys to position the cursor over the "off" on the AWM line under OP2. Press YES to change the "off" to In1.

Press: EXIT to return to the AFM job directory

10. Raise the output level of operator 2.

From: AFM job directory
Select: 4:Output and press F2 (All) (JUMP #242)
Move: the cursor to OP2 and use the data slider to gradually raise the level until you hear the AWM wave.

Important note: Depending on the harmonic content of the selected wave, the sound may become distorted as you increase the output level of OP2. If it does, exit to the AFM job directory, select 1:Algrthm and press F3 (Inpt) (JUMP #233). Note that under the AWM indicator beneath OP2 there is a number 7. Lower this value to 4 and then return to 4:Output (JUMP #242) and adjust the OP2 output level again. The level set for each operator in the Algorithm Input acts as a multiplier for the value specified in Output. To avoid distorting the sound appearing at Op2, you must set the correct gain values. Of course, distortion can be an interesting effect in its own right. By adjusting the operator output and operator input, a wide range of AWM input levels can be used.

The steps outlined so far may not result in a very interesting sound, but the following points will illustrate some of the possibilities of RCM hybrid synthesis.

- The AFM operator into which the AWM waveform was introduced can be modulated by other operators, or can modulate other operators.
- The same AWM waveform can be introduced into two or more AFM operators, perhaps with each operator set to a different pitch.
- Since the AWM waveform is routed through the filter of the AWM element before being introduced into the AFM operator, its filter settings can be continuously varied, resulting in a realtime filtered waveform which can be modulated by and can modulate other operators (waveforms); i.e., *Realtime Convolution and Modulation* — RCM hybrid synthesis. ("Convolution" refers to proprietary Yamaha digital filtering technology.)

Using loaded samples to create a voice

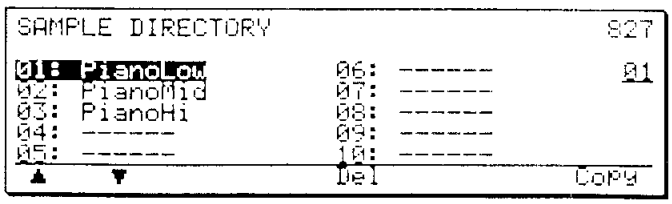
The ability to load sampled sound data for use in voices is an innovative feature which sets the SY99 apart from other digital synthesizers. This feature allows advanced programmers to make use of sound data sampled using digital samplers such as the Yamaha TX16W, in addition to the SY99's own preset waveforms and the waveforms offered as waveform cards.

To make use of this ability, you must first understand the difference between a **sample** and a **waveform**. The SY99 cannot make use of raw sample data *per se;* this data must first be assigned to a waveform before the SY99 can use it as a voice element. The assignment of samples to a waveform is thus the crucial step which allows you to make use of sample data in an SY99 voice.

A sample voice: The process of creating a voice using sampled sound data may thus be divided into three fundamental steps: (1) loading samples into memory; (2) editing the samples and assigning them to a waveform; and finally, (3) editing the voice. In this appendix we would like to focus on the second step, the assignment of samples as waveforms. The simplified example that follows outlines the basic features of this process.

1. Load the samples to be used into to sample RAM area.

   You can load samples into the sample RAM area using Sample utility job *03:Load from disk,* or via MIDI sample dump. Say, for example, you wish to create a voice using three piano samples which were sampled at different locations of the keyboard.



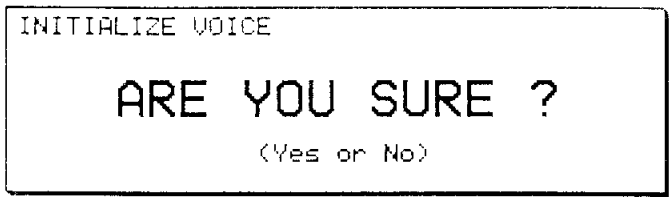
   When you have completed the load procedure, the sample directory might appear as shown above.

2. Select a voice and set the voice mode.

   The next step is to prepare the voice which will use the sample data as a waveform. Begin by choosing voice memory I-A01 and setting the voice mode to Mode 6 (1AWM poly). This step corresponds to step 1 of the procedure described in *Using RCM hybrid synthesis,* above.

3. Initialize the voice common and element data.

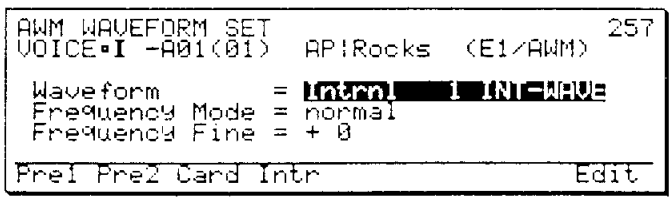
   Initialize both the voice common data and the AWM element, as outlined in steps 2 and 3 of the procedure described in *Using RCM hybrid synthesis,* above.



   You will notice that the waveform assigned to this voice is now a simple triangle wave, preset waveform 2-64.

4. Select an internal waveform.

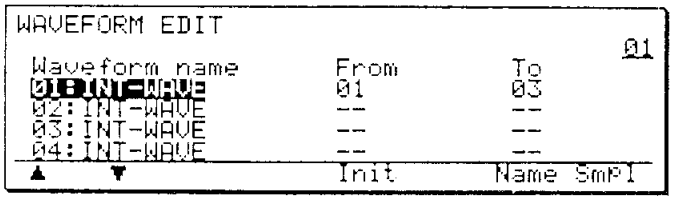
   From: Voice edit (JUMP #256)
   Select: 02:WaveSet (JUMP #257)
   Press: F4 (Intr)
   Select: Intrnl 1 INT-WAVE



   In this step, you can assign an internal waveform for the AWM element of your voice. Since you have not assigned any sample data to this waveform yet, pressing a key will produce no sound.

5. Select the samples you wish to assign to the waveform.

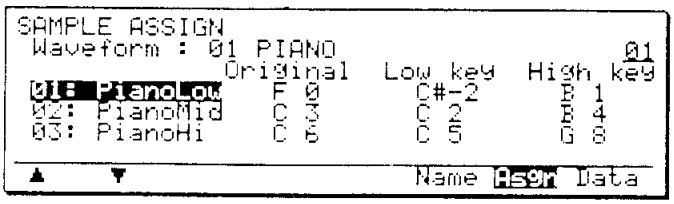
   Press: F8 (Edit)
   Select: samples 1 through 3
   You will use all three of the samples which you loaded in this waveform. Select them by entering 01 in the "From" column and a 03 in the "To" column. (All of the samples used in a waveform must have consecutive numbers.)



   You can also change the name of the waveform at this point by pressing F7 (Name).

6. Assign each sample to a range of keys.

   Press: F8 (SmpI)
   Assign: the keyboard range for each sample.
   You will want to assign a different keyboard range for each of the samples. The range you choose will depend largely on the note bias of the sample itself. For the purpose of this example, we have assigned the sample PianoLow to keys C#-2 through B1, PianoMid to C2 through B4, and PianoHi to C5 through G8.

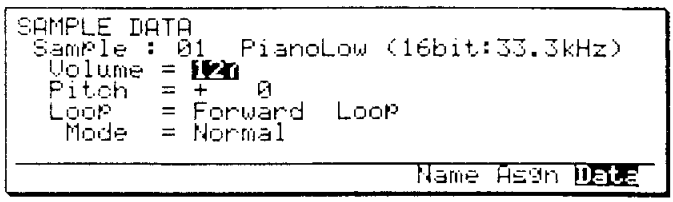


   (When overlapping ranges are assigned, the sample with the lower number is given priority.)

7. Edit the parameters for each sample.

   Move: the cursor to a sample you wish to edit.
   Press: F8 (Data)
   Edit: the volume, pitch, loop type, and loop mode for the sample.

   You may wish to change the sample's volume, fine tune its pitch, or alter its loop type and mode. (Depending on the sample, altering the loop mode can produce some interesting effects!)



   To edit a different sample, press F7 (Asgn), move the cursor to a different sample, and press F8 (Data) once again.

8. Edit the voice.

   This completes the assignment of tones to the waveform. When you are satisfied with your settings, press EXIT three or four times to return to voice edit mode. Try changing the voice's other parameters and adding effects to the sound.

Other possibilities: The preceding example illustrated the preparation of a simple, one-element voice, showing how several samples can be assigned across the keyboard. This helps to overcome the sample's note bias and account for the changes in an instrument's tone which accompany changes in pitch. You are of course not limited to only three samples; a greater number of samples will result in greater realism, and may well be worth the effort.

You can use the same method to produced split keyboards which feature the sounds of two different instruments. Moreover, as with any of the SY99's preset waveforms, combination with additional AWM or AFM elements can produce interesting and exciting sounds. By letting you select the basic waveform ingredients and then combine them with other digital elements and effects, the SY99 brings you closer to "customized sound" than ever before!

Using the master control functions

The SY99's master control utility is a flexible feature that allows you to control a number of digital instruments which are connected to the SY99 in a MIDI system. The SY99 is capable of sending control signals on four channels simultaneously, meaning that a virtually unlimited variety of system arrangements can be accommodated.

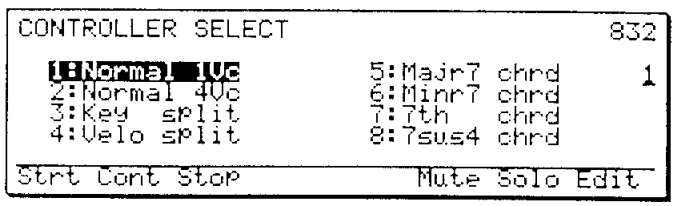
Editing control setups: The most basic use of this feature would be to change the program memory selections of MIDI devices connected to the SY99. Let's say, for example, that you have a multi-timbral tone generator which is receiving song data on channels 5 through 8. To select different program memories for each of these channels, you could use the master control function to transmit information such as the following from the SY99:

Zone:	MIDI-1	MIDI-2	MIDI-3	MIDI-4
Transmit channel:	5	6	7	8
Bank select:	off	off	off	off
Program change:	10	12	14	16

To use the master control function in this way, you must first program a master control setup with this information. The procedure for doing this is as follows:

1. Select a master control setup to edit.

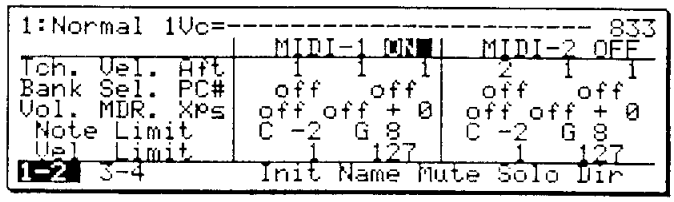
   Press: UTILITY
   Press: F7 (Mstr) (JUMP #831)
   Select: 01:Controller Select (JUMP #832)
   Move: the cursor to control setup 01.
   Press: ENTER to activate the setup.
   You must select a control setup before you can edit it. (The "Edit" label for F8 does not appear on the display otherwise.)



   Notice when you select the control setup that the LED above corresponding memory select switch lights and the name of the setup is displayed in reverse.

2. Initialize the control setup.

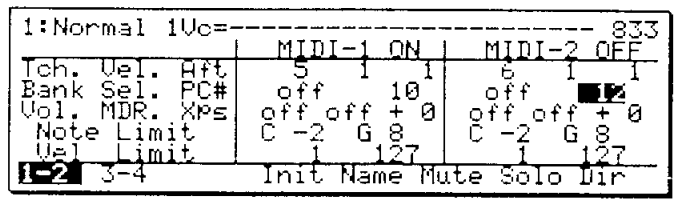
   Press: F8 (Edit) (JUMP #833)
   Press: F4 (Init)
   The controller edit display will appear when you press F8 (Edit).



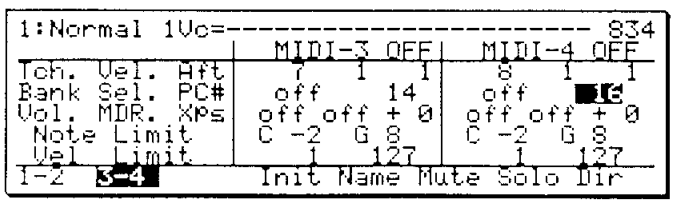
   Press F4 (Init) to initialize the controller settings.

3. Edit the control setup.

   Input the values given for zones 1 and 2 in the table above, as shown here:



   When you are done entering the values for zones 1 and 2, press F2 (3-4) to enter the values for zones 3 and 4.



4. Name and save the control setup.

Press: F5 (Name)
Change: the name of the setup.
Press: EXIT to return to the Controller Select display. (JUMP #832)
Exit: to Utility mode to save the setup.
You can save the control setup to disk as part of an "All Data" or "Synthesizer All" file.

Using control setups: The master control feature is useful because it allows you to make several changes in a MIDI system simultaneously. You will find this capability particularly convenient if you perform live, as it will allow you to effect system changes smoothly, without interrupting the flow of performance.

To activate a control setup from Voice or Multi play mode, press F6 (Mstr). Then move the cursor to the setup you wish to activate, and press ENTER. To de-activate the setup, press ENTER once again.

Of course, the SY99's keyboard responds normally to notes you play while the Controller Select display is showing, so you can use the master control functions to change your system setup even while you are performing.

Advanced applications: The most basic application of the master control function, illustrated above, involves assigning a different channel and program memory to each zone of the setup, as shown above. You can use the master control function in this manner when you wish to prepare each channel to play a different sound – for example, a string-like sound on channel 5, a brass-like sound on channel 6, and so on.

However, the master control utility includes additional features which allow for more subtle applications. For example, you can use the velocity limit parameter to limit the response of external generators depending on the velocity with which you hit the keyboard. To do so, you might edit a control setup as follows:

Zone:	MIDI-1	MIDI-2	MIDI-3	MIDI-4
Transmit channel:	5	6	7	8
Bank select:	off	off	off	off
Program change:	20	22	24	26
Velocity limit:	1-64	65-96	97-112	113-127

With a setup such as this, the tone generator receiving on channel 5 would play the voice assigned to program 20 only when you play the keys gently. If you hit the keys harder, the tone generator receiving on channel 6 will play program 22, and so on.

If each of the voices used represent different shadings of the same sound – slightly different piano sounds, for instance – then such a setup could be used to simulate the subtle tonal changes of an acoustic instrument. On the other hand, you can assign totally different voices to different velocities, to create some very unusual effects.

The note limit feature can be used in a similar manner, to assign external tone generators to the SY99's keyboard in "split keyboard" fashion. Another interesting application of the master controller function, involving use of the MIDI Data Recorder utility, is described in the following appendix. As you can see, the possibilities presented by the master control function are limitless. With a little experimentation, you will find many "tricky" ways to combine these features, maximizing the flexibility of your MIDI system.

Using the MDR functions

You will probably use the SY99's disk drive most often to save voice, multi, sequencer, and setup data from the SY99 on a floppy disk. In addition to these more obvious uses of the disk drive, however, the MIDI data recorder utility allows you to save bulk data from other MIDI devices, such as tone generators or rhythm programmers.

By making the most of the SY99's disk drive, you can use the SY99 to perform all of the functions that would normally be performed by a stand-alone sequencer or personal computer. What's more, if you combine these functions with the SY99's master control utility, the SY99 can be adapted to a wide variety of uses, serving as the core of an extended MIDI system.

Basic application: The fundamental MDR operations have been explained in the description of the MIDI Data Recorder utility (page 279). To perform any of these operations, you must first press UTILITY to enter Utility mode, then press F6 (MDR) to display the MDR utility job directory (if it is not already showing).

The basic MDR procedure consists of two steps:

1. Use job *02:Input* to input data to the SY99 from an external device via MIDI bulk dump.
2. Use job *04:Save to disk* to save the data to a floppy disk using the SY99's floppy disk drive.

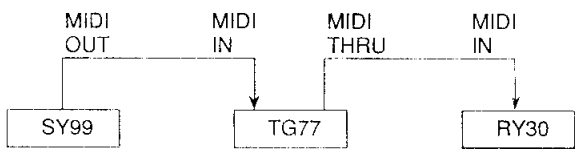
   Data will be retained in the MDR memory area even if the SY99's power is turned off; however, it is a good idea to save it to a disk in case you accidentally erase it by inputting other bulk data.

   You can return the data to the external device for use by simply reversing the above procedure:
3. Use job *03:Load from disk* to load MDR data into the SY99 from a floppy disk.
4. Use job *01:Output* to output data from the SY99 to the external device.

   These two step procedures naturally take more time than it would require to load or save the same data using data cards. The advantage of this method lies in cost, as disks tend to be less expensive than data cards. However, some people may find that a little speed is worth the added cost; in the end, it is a matter of personal taste.

Advanced applications: The MDR functions become most convenient when used in combination with the SY99's master control utility. Taken together, these two functions allow the SY99 to adapt flexibly to a variety of MIDI system configurations. Of course, it is impossible to describe all of the possibilities these functions permit. A single suggestion is presented here to get you started.

Imagine using the SY99 as the core of a MIDI system used for live performance, such as that shown below:



You have connected the SY99 to a tone generator and a rhythm programmer. The SY99 transmits sequencer data to the tone generator on several channels, while the rhythm programmer plays rhythm patterns in synch with the SY99's rhythm voice.

You are to perform ten songs using this setup; but since the songs all involve detailed drum parts, the rhythm programmer can hold enough data for only five songs at one time. It will therefore be necessary to load new data to the rhythm programmer before the sixth song. At the same time, you would like to load some new voices to the tone generator for use in the next five songs.

To effect these changes using data cards, you would have to insert cards to both the tone generator and the rhythm programmer, and then perform the necessary load operations. This could take a while; but the SY99's MDR and master control utilities allow you to perform these both of these tasks from the SY99's console, with the press of a couple buttons!

1. Prepare the data to be loaded:
   A. Input sequence data for the second set of five songs from the rhythm programmer to the SY99 and save it to disk.
   B. Input voice data from the tone generator to the SY99 and save it to disk.

2. Prepare the master control setup:
   A. Set the transmit channel for zone 1 to the rhythm programmer's receive channel, and the transmit channel for zone 2 to the tone generator's receive channel.
   B. Set the number of the MDR data set to be transmitted to each zone when the control setup is activated.
   C. Set any initial messages you may want to transmit (such as bank select/program change for the tone generator) when the control setup is selected.
   D. When you are satisfied with your settings, save the control setup to disk. It may be convenient to save the setup, together with the SY99 voice, multi, and sequencer data to be used, as part of an "All Data" file.

3. Before performance, load all data to the SY99:
   A. Load all synthesizer, sequencer, and setup data to the SY99.
   B. Load the rhythm machine and tone generator data to the SY99's MDR memory area, using the memory numbers you specified in the control setup.

4. During performance, activate the control setup before the sixth song.
   A. The MDR data specified will be transmitted to the rhythm programmer and tone generator.
   B. Bank select, program change, and other initial messages will be transmitted to the external devices as specified.

   In this way, you can change the setup of a large number of MIDI instruments in an instant, by pressing only a few switches on the SY99's panel. And if you think this function saves time when only two external devices are connected to the SY99, you can imagine how convenient it will be with an even larger system!.

   Nor is this the only possible use of these functions. With a little ingenuity and experimentation you are sure to find even more innovative uses for these flexible and handy functions.

Error messages

MIDI

MIDI buffer full !
When the SY99 attempted to receive or transmit a large amount of MIDI data, its handling capacity was exceeded.

MIDI data error !
An error occurred when receiving MIDI data.

MIDI checksum error !
An error occurred when receiving bulk data.

Data empty !
Sequence data (bulk) was received, but the message contained no data.

Bulk rejected; sample exists !
An unoccupied sample number could not be found, so the bulk sample data was not received.

Song memory full !
When receiving sequence data (bulk), the internal memory capacity was exceeded, and not all the data was received.

Device number is off !
Since the device number is off, bulk data cannot be transmitted or received.

Device number mismatch !
Since the device numbers did not match, the bulk data was not received.

Bulk canceled !
While receiving or transmitting bulk data, EXIT was pressed to abort the operation.

Data card

Data card not ready !
The data card is not correctly inserted into the slot.

Card protected !
Since the memory protect switch of the card is on, data cannot be saved to the card.

Illegal format !
The card is the wrong format.

Verify error !
The data was not correctly saved.

Illegal size !
The data card is not of the 64 Kbyte variety accepted by the SY99.

Wave card

Wave card not ready !
The wave card is not correctly inserted into the slot.

Different wave card (ID=) !
The wave card which is inserted is not the one used by the voice or multi.

ID Number mismatch !
A multi includes voices which use two or more wave cards.

Disk

Disk not ready !
The disk is not correctly inserted into the disk drive.

Illegal change !
During the backup operation, the original and back up disks were inserted in the wrong order.

Illegal disk !
The data in the disk is faulty.

Bad disk !
The disk is faulty.

File not found !
The file was not found.

Write protected !
The disk is write protected.

Disk full !
There is no more memory available on the disk.

Directory full !
The directory area on the disk is full, and new files cannot be created.

Media type error !
The disk is the wrong type.

Illegal file !
The file is not for the SY99.

Song memory full !
The sequencer memory is full.

Sample memory full !
The sample memory area is full.

MDR memory full !
The MDR memory area is full.

Sequencer and display

Please stop sequencer !
The sequencer cannot play during disk or card loading or saving, during bulk data transmission, or during master control setting.

Illegal time !
You attempted to execute the Get Pattern operation, but the time signature was incorrect.

Range is exceeded !
The parameter you specified in an edit job is beyond the valid range.

Data not found !
When you executed the Search Part operation in Chain Pattern, the specified data was not found.

Illegal input !
You attempted to enter an invalid data value in Edit Insert mode.

Internal buffer full !
More sequence data was played back than could be sounded.

Battery

Change internal battery !
The internal backup battery needs to be replaced.

Change wave BAT !
The backup battery for the internal MDR/sample RAM area or an expansion memory board (as specified in the message) needs to be replaced.

Change card battery !
The card backup battery needs to be replaced.

Other

Use bank D !
The voice must be stored in bank D.

Only C1–C6 data valid !
You are attempting to save a drum voice to bank A, B, or C. Only the data for notes C1 through C6 will be saved as a result of this operation. Save the voice to bank D if you wish to save the data for all notes E0 through G6.

Illegal mark !
You attempted to mark a display page while using the compare function.

Use bank A–C !
The voice must be stored in bank A, B, or C.

Sample

Please allocate sample memory !
You attempted to enter Sample utility mode, but no memory has been allocated for sample use. Please use the System utility memory allocate function to allocate memory for sample use.

Not enough memory for sample !
You attempted to reduce the memory area allocated for sample use beyond the minimum required by currently existing samples. Please initialize the sample memory or delete samples before attempting to reduce the amount of MDR/sample RAM allocated for sample use.

Sample data not exists !
You attempted copy or save sample data from a sample number which does not contain any data.

Sample data protected !
Copy-protected sample data may not be saved to disk or transmitted via MIDI dump.

Over internal waveform number !

You attempted to load a number of waveforms exceeding the internal memory maximum of 64.

Over sample number !

You attempted to load a number of samples exceeding the internal memory maximum of 99.

MDR

Please allocate MDR memory !

You attempted to enter Sample utility mode, but no memory has been allocated for MDR use. Please use the System utility memory allocate function to allocate memory for MDR use.

Not enough memory for MDR !

You attempted to reduce the memory area allocated for MDR use beyond the minimum required by currently existing MDR data. Please initialize the MDR memory or delete MDR data before attempting to reduce the amount of MDR/sample RAM allocated for MDR use.

MDR data already exists !

You attempted to input data to an MDR number already occupied by data. Please choose a different MDR number as the destination for incoming data.

MDR data not found !

You attempted to output data from an empty MDR number.

Disk filename extensions

The files saved to disk by the SY99 are automatically given the following filename extensions. Although filename extensions are not usually displayed by the SY99, they will be visible when you load disk data using *Disk utility 2.Load from disk* and select data type "10:Other seq", or if you read SY99 disks using a personal computer.

T01–T99	SY99 all data
J01–J99	SY99 synthesizer all data
K01–K99	SY99 sequencer all
W01–W99	SY99 sample
C01–C99	SY99 card
B01–B99	SY99 MDR
M01–M99	SY99 1 song (KSEQ)
L01–L99	SY99 ESEQ
X01–X99	SY99 Standard MIDI File (format 0)

The following filename extensions are used by Yamaha digital music products as of March 1990.

A01–A99	V50 "SEQ" file
	QX5FD song file
	SY77 NSEQ
B01–B99	DX7[II] MDR data
	V50 MDR file
	QX3 bulk file
C01–C99	DX7[II] cartridge data
	V50 CARD file
D01–D99	QX3 play chain file
E01–E99	QX3 bulk chain file
F01–F99	TX16W filter file
I01–I99	DX7[II] internal data (voice + performance + system)
	V50 SYN file
J01–J99	SY77 synthesizer all data
K01–K99	SY77 sequencer all
L01–L99	SY77 ESEQ
M01–M99	SY77 KSEQ
P01–P99	QX3 song file (play file)
R01–R99	V50 RSEQ file
S01–S99	QX3 setup file
	TX16W setup file
T01–T99	TX16W filter table
	SY77 all data
U01–U99	TX16W performance file
V01–V99	V50 ALL file
	TX16W voice file
W01–W99	TX16W wave file
SYS	TX16W system file

About the Standard MIDI File Format

The Standard MIDI File Format is a standard which has recently been implemented by a number of software and hardware makers. This standardized format allows song data to be transferred easily between different sequencers – even between sequencers made by different manufacturers.

The SY99 supports two Standard MIDI File types, known as **format 0** and **format 1**. In the former type, all sequencer data is recorded as a single track, which may include data for more than one MIDI channel. In the latter, an unlimited number of tracks may be used, each of which may contain data for more than one channel. The SY99 is capable of loading data saved in either of these formats. Data saved by the SY99 using the Standard MIDI File format will be saved as format 0.

Loading data: To load sequencer data saved in a Standard MIDI File format, select load operation type *10:Other Seq* from the *Load from disk* job directory. The file to be loaded must meet the following conditions:

- The file must be loaded from a disk formatted by the SY99, or from a 3.5 inch 2DD floppy disk in MS-DOS® or PC-DOS® format. (Refer to the paragraph titled *Acceptable disk formats*, below.)
- It must have been saved as Standard MIDI File format 0 or format 1. Files saved using standard MIDI file format 2 cannot be loaded.
- The MIDI clock must be used as the basic clock.
- The file must have a resolution of 1/96, 192, 288, 384, 480 of a quarter note.

When a format 0 file is loaded, the data for each MIDI channel is loaded to the corresponding track (channel 1 to Track 1, channel 2 to Track 2, and so on). Only data for channels 1 through 15 is loaded, however; any data for channel 16 will be ignored. Tempo change messages and similar information are all loaded to Track 1.

When a format 1 file is loaded, data for the track containing tempo change messages and other "conductor" information is loaded to the SY99 as Track 1. Data for other tracks are loaded in sequence. It will therefore be necessary to reset the channel assignments for each track when loading is complete.

All data loaded to a single track in this way will be transmitted by the SY99 on a single channel. For this reason, even if one track of a format 1 file contains data for two or more MIDI channels, all this data will be played back by the SY99 using a single channel. Since this may mean that sequencer parts may not play back as desired, we recommend that format 0 be used for the transfer of data whenever possible.

No exclusive data is loaded from Standard MIDI Files of either format type.

Saving data: Data may be saved in standard MIDI file format to any of the disk types described in *Acceptable disk formats*, below. To save sequencer data in Standard MIDI File format, select save operation type *06:MIDI File* from the *Save to disk* job directory. The data for each track is saved to the corresponding MIDI channel (Track 1 to channel 1, Track 2 to channel 2, and so on). No exclusive data is saved when this format is used.

Files saved using the Standard MIDI File format are given a file extension .X01 through .X99, which allows the SY99 to recognize the file's format. Other programs, however, may not be able to recognize the file as a Standard MIDI File unless the .MID extension is used; when transferring data saved by the SY99 to another device where it will be used by such a program, you should first rename the file using a personal computer or other means.

Acceptable disk formats: Standard MIDI Files may of course be saved to or loaded from disks formatted by the SY99. Disks formatted by a personal computer may also be used, as long as they are 2DD disks in MS-DOS® or PC-DOS® format. Disks formatted by an Apple Macintosh® may used as long as they are formatted using a SuperDrive or other disk drive device capable of formatting a disk in MS-DOS® format.

To use Standard MIDI Files saved by the SY99 on an Apple Macintosh®, use ResEdit or a similar utility to change the file type attribute to that of a MIDI file.

Expansion memory boards

Users who enjoy capitalizing on the SY99's ability to load in sample data will be happy to know that the SY99 features five expansion slots which allow the size of the MDR/sample RAM area to be expanded to a maximum of 3 Mbytes (1.5 Mwords) using optional expansion memory boards (Model SYEMB05).

Each expansion memory board adds 512 kbytes to the amount of MDR/sample memory available, and is designed to be easily installed by the user.

Please note the fact that these boards can only be used as sample memory. The amount of memory that can be allocated for use by the MIDI data recorder is limited to 512 Kbytes, and cannot be expanded using expansion boards. The following chart shows the minimum and maximum amounts of sample memory that each board makes available:

Boards	Minimum (MDR = 512 Kbytes)	Maximum (MDR = 0 Kbytes)
0	0 Kbytes	512 Kbytes
1	512 Kbytes	1 Mbyte
2	1 Mbyte	1.5 Mbytes
3	1.5 Mbyte	2 Mbytes
4	2 Mbyte	2.5 Mbytes
5	2.5 Mbyte	3 Mbytes

Complete instructions for installing and initializing expansion memory are included with the expansion boards.

Specifications

Tone generator: Realtime Convolution and Modulation (RCM)
AWM2: 16 bit linear waveform data, maximum 48 kHz sampling frequency
AFM: 6 operators, 45 algorithms, 3 feedback loops, 16 waveforms, modulation from AWM output
Filter: Time variant IIR (infinite impulse response) digital filters, 2 filters for each element (maximum of 8 filters per voice)
Maximum simultaneous notes: 16 (Voice mode), 32 (Multi mode)
Maximum simultaneous timbres: 1 (Voice mode), 16 (Multi mode)
Note assignment: Last note priority, DVA (dynamic voice allocation)

Keyboard: 76 notes, key velocity sensitivity, channel aftertouch (with zoned aftertouch)

DSP effects: 2 units, 63 effect types

Sequencer:
Tracks: 16 (15 tracks + 1 pattern track)
Songs: 10
Resolution: 1/96 of a quarter note (for internal clock), 1/24 of a quarter note (for MIDI sync)
Maximum simultaneous notes: 32
Capacity: approximately 27,000 notes
Patterns: 99
Recording: realtime/step/punch in

Memory:
Preset memory: 128 voices, 16 multis
Internal memory: 64 voices, 16 multis
Waveform memory: 4 Mwords (8 Mbytes), 267 sounds
MDR/sample memory: 512 kbytes
(expandable to 3 Mbytes)
Card slots: synthesizer data x 1, waveform data x 1
Disk: 3.5" floppy disk drive
(720 kbyte formatted)

Controllers:
Wheels: PITCH, MODULATION 1, MODULATION 2
Slider: OUTPUT 1, OUTPUT 2, DATA ENTRY
Knobs: LCD contrast, click volume
Dial: data entry dial
Panel switches; MODE x 5, EDIT/COMPARE, COPY/SAVE, EF.BYPASS, SEQUENCER x 7, SHIFT, function x 8, EXIT, PAGE ◁ ▷, JUMP/MARK, cursor △ ▽ ◁ ▷, –1/NO, +1/YES, numeric keypad 0–9, ENTER, [–], MEMORY x 4, BANK x 4, voice select x 16,

Display:
LCD: 240 x 64 pixels (with backlight)
LED: red x 11, red/green x 21

Terminals:
Audio output: OUTPUT 1 (L/MONO, R), OUTPUT 2 (L, R), PHONES
Controller: BREATH, FOOT VOLUME, FOOT CONTROLLER, SUSTAIN, FOOT SWITCH
MIDI: IN, OUT, THRU

Power requirements:
US & Canadian models: 120V
General model: 220–240V

Power consumption:
US & Canadian model: 35W
General model: 35W

Dimensions:
1254(W) x 407(D) x 120(H) mm
(4' 1-3/8" x 1' 4" x 4-3/8")

Weight: 19.6 kg (43 lbs 3 oz)

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