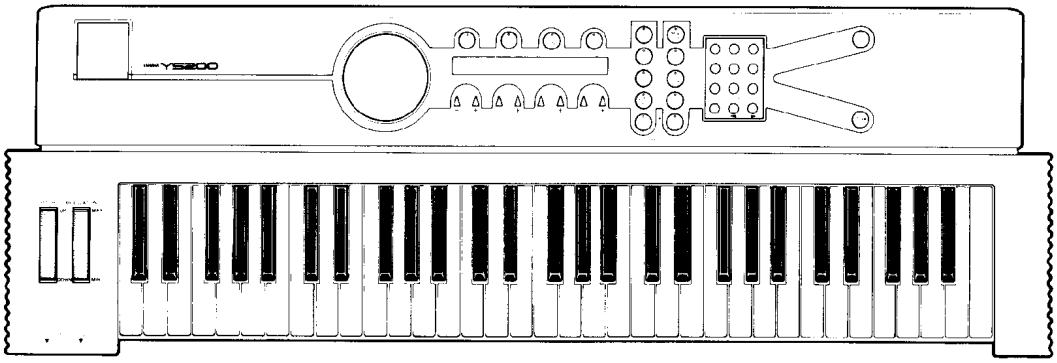
YAMAHA

YS200

DIGITAL SYNTHESIZER

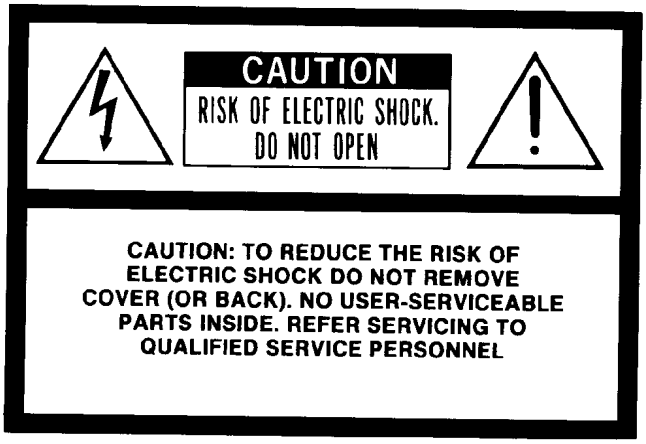
OPERATING MANUAL



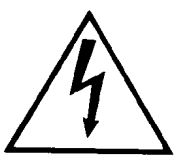
SUPPLEMENTAL MARKING INFORMATION

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

Yamaha Digital Musical Instrument Products will have either a label similar to the graphic shown below or a molded/stamped facsimile of the graphic on its enclosure. The explanation of these graphics appears on this page. Please observe all cautions indicated.



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



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

HOW TO USE THIS MANUAL

Welcome to the YS200 Digital Synthesizer! This incredibly versatile instrument is certain to open up for you a whole new world of musical expression.

What can the YS200 do for you?

The answer: plenty! The YS200 gives you up to 300 different synthesizer sounds at your finger tips, and a wide variety of controls and functions to get the maximum expressive capability from each of the sounds, and an eight track MIDI recorder that allows you to record your own songs.

Although the YS200 is a sophisticated musical instrument, you'll find it remarkably easy to use. The controls are laid out and labeled in a logical, easy-to-understand fashion and the large display gives you all pertinent information and even guides you through certain operations.

This manual is a complete introduction to the YS200, but you won't need to read it from cover to cover. Here's what we suggest you do to get a firm understanding of the YS200 and its functions:

- Read the **PRECAUTIONS** section. You should know beforehand how to treat your new YS200 with care.
- Follow the steps in **STARTING OUT**. This will get you operating the YS200 for the very first time, so look this over briefly before going to any other section — and then have fun exploring!
- The next section, **OPERATION BASICS**, takes you step-by-step through the basic features and functions of the YS200. Whether you've used similar functions on other synthesizers before or not, please don't skip this! The hands-on experience you gain here will be valuable later.
- If you're a newcomer to the world of synthesizers and digital music, it might be worth your while to skip over to the **GLOSSARY** in the **APPENDICES** section. In a brief and easy-to-understand way, the **GLOSSARY** explains some of the words and phrases used throughout the manual that might be unfamiliar to you.
- The **SYNTHESIZER REFERENCE** and **SEQUENCER REFERENCE** section cover all the functions of the YS200 in depth. Everything you need to know is here; so after going through the first three sections of this manual and you feel confident as you operate and play the YS200, explore the **REFERENCE** sections at your own pace, trying out whatever features interest you. (Later you can refer to this material whenever you need to check something or jog your memory.)
- The **APPENDICES** cover various topics that should, like the **REFERENCE** section, prove useful in the future as you use the YS200. No need to jump in and read them right away, but you'll find plenty of help in them (should you ever need it).

Refer to the FRONT/REAR PANEL diagram on pages 4 — 5 as you read this manual.

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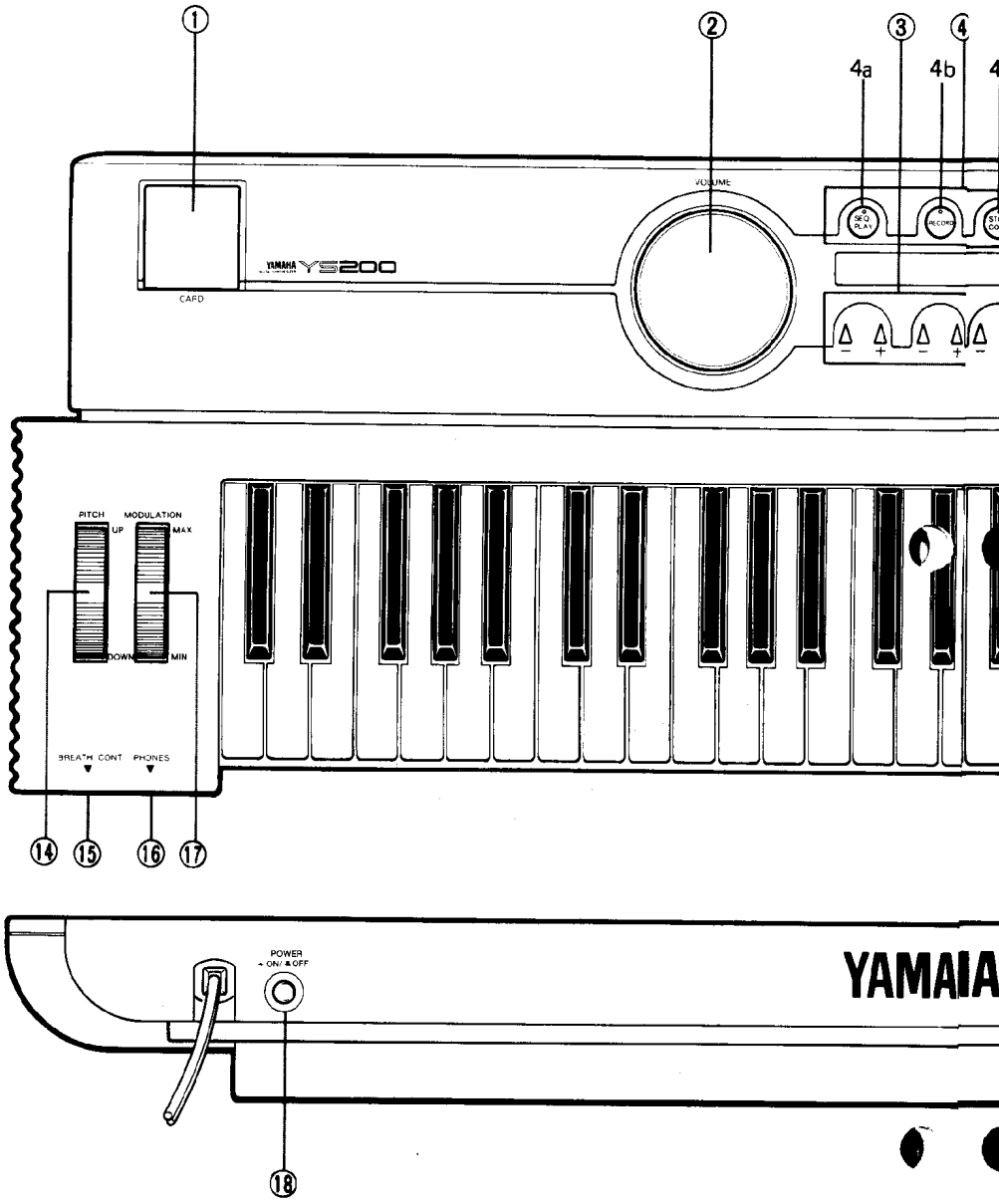
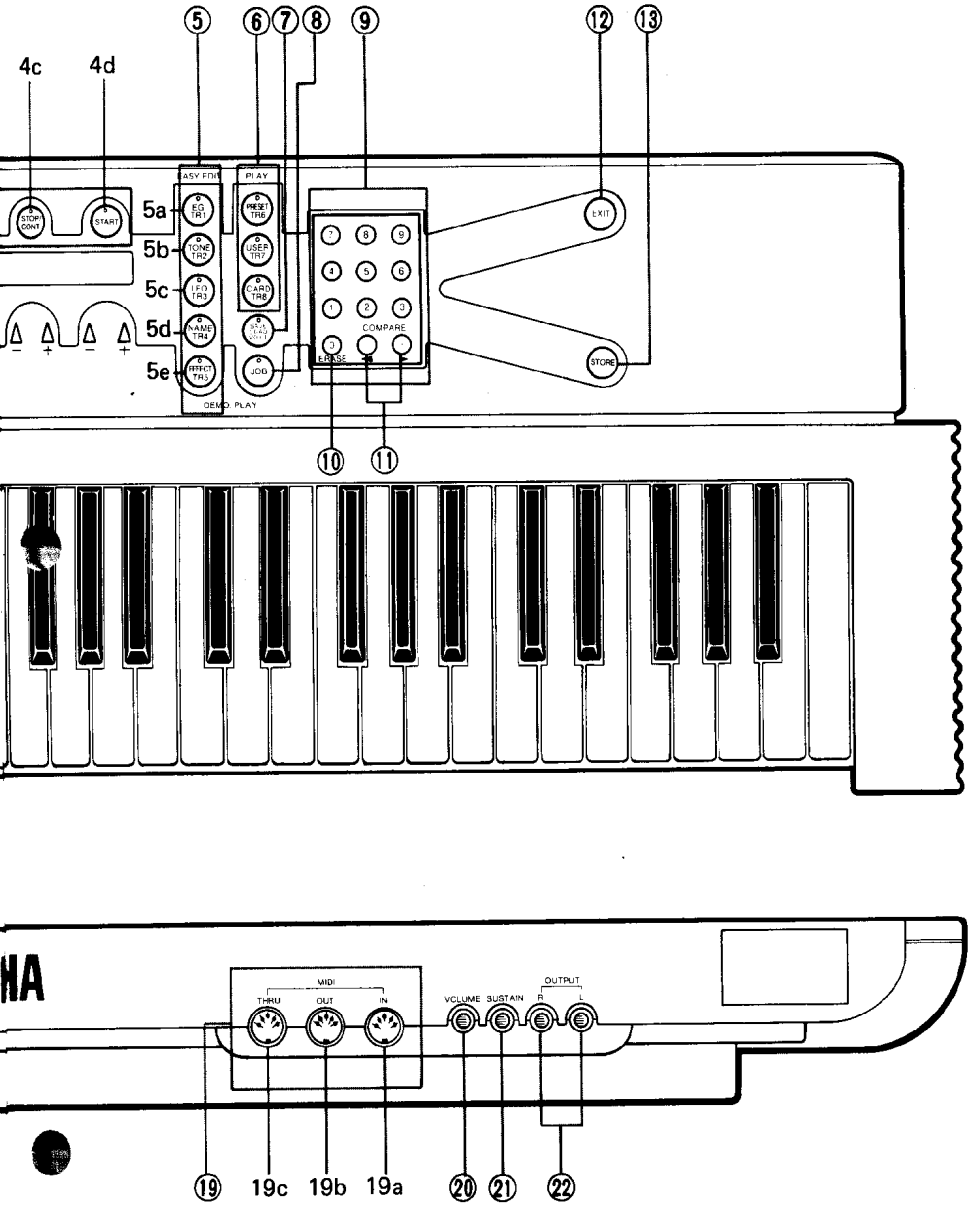
FRONT/REAR PANEL



FRONT PANEL

1. CARD Slot
2. VOLUME Control
3. +/−SELECTOR Buttons (for data entry and function/parameter selection)
4. Sequencer Mode Buttons
   - 4a SEQ/PLAY
   - 4b RECORD
   - 4c STOP/CONT
   - 4d START
5. EASY EDIT Mode Buttons
   - 5a EG/TR1
   - 5b TONE/TR2
   - 5c LFO/TR3
   - 5d NAME/TR4
   - 5e EFFECT/TR5
6. PLAY Mode Buttons
   - 6a PRESET/TR6
   - 6b USER/TR7
   - 6c CARD/TR8
7. SAVE, LOAD, VOICE Button
8. JOB Button
9. Numeric Keypad
10. ERASE Key (also serves as "0" in the numeric keypad)
11. Cursor Left and Cursor Right Keys
    (also serve as − and + data entry keys, and, when pressed together, as COMPARE keys)
12. EXIT Button
13. STORE Button



14 Pitch Bend Wheel
15 Breath Controller Jack (for optional BC1 or BC2 Breath Controller)
16 Headphone Jack
17 Modulation Wheel

REAR PANEL

18 Power Switch
19 MIDI Terminals
- 19a. MIDI IN
- 19b. MIDI OUT
- 19c. MIDI THRU

20 Volume Pedal Terminal (for optional FC-7 Foot Controller)
21 Sustain Switch Terminal (for optional FC-4, FC-5 Footswitch)
22 Outputs
- L (serves as either mono out, or, if Output R is connected, the left stereo channel)
- R (right stereo channel output)

PRECAUTIONS

- The voltage requirement for your YS200 has been set specifically for the main supply voltage used in your area. If you have any doubts about voltage suitability, please consult your local Yamaha dealer. If you intend to use your YS200 in an area with a different voltage, be sure to use the appropriate voltage convertor.

- Avoid placing your YS200 in direct sunlight or close to a source of heat. Also, avoid locations where the instrument is likely to be subjected to vibration, excessive dust, cold or moisture. All of these conditions could have a detrimental effect on both the mechanisms and the circuitry incorporated into the YS200.

- Do not use abrasive cleaners, waxes, solvents, or chemical dust cloths to clean the exterior or keys of your YS200 as these may dull the keys or damage the finish. Use a slightly damp cloth and a neutral cleanser. Never use aerosol sprays near the YS200 as they can get into the circuitry and prevent accurate transmission of data.

- Your YS200 contains no user serviceable parts. Opening it or tampering with it can lead to electrical shock as well as damage, and will void the product warranty. Refer all servicing to qualified Yamaha personnel.

- All computer circuitry, including that of the YS200, is sensitive to power surges or voltage spikes, such as those caused by lightning. For this reason, the YS200 should be turned off and unplugged from the wall socket in the event of an electrical storm.

- Computer circuitry is sensitive to electromagnetic radiation, such as is generated by television sets. The YS200's digital operation also generates high frequency pulses that may adversely affect radio or TV reception in the vicinity of the instrument. Use your YS200 at a suitable distance from such equipment to avoid malfunctions in the YS200 or any other connected equipment.

- Avoid applying excessive force to the controls. Also avoid dropping the instrument or otherwise subjecting it to impact. While the internal circuitry is of reliable integrated circuit design, the YS200 should be treated with care.

- When unplugging cords (MIDI, audio, power, etc.) from the YS200, never unplug by pulling on the cords; this can result in damage to the YS200 or the cords.

- After studying this manual thoroughly, keep it in a safe place for future reference.

STARTING OUT

This chapter of the manual will guide you step by step as you use the YS200 for the very first time. Whether you've played an electronic keyboard before or not, we recommend that you take the time to read through this section so that you can follow these steps each time you set up and play your YS200.

Before following any of the steps in this section, please read through the PRECAUTIONS chapter to ensure trouble-free operation and that the YS200 will be in its optimum playing condition.

SETTING UP

To set up your YS200 for playing, first place the instrument at a suitable playing height on a table or keyboard stand, and connect the AC power cord and audio cables as follows:

1) Plug the AC power cord into an AC outlet.

2) The best way to hear your YS200 is to connect the stereo OUTPUTS L and R to a high-quality stereo keyboard amplifier. If you are using a monaural amplifier, connect only OUTPUT L. For headphone listening, a pair of stereo headphones can be connected to the front panel PHONES jack. Headphones, however, should be connected AFTER turning the YS200's power on.

TURNING ON THE POWER

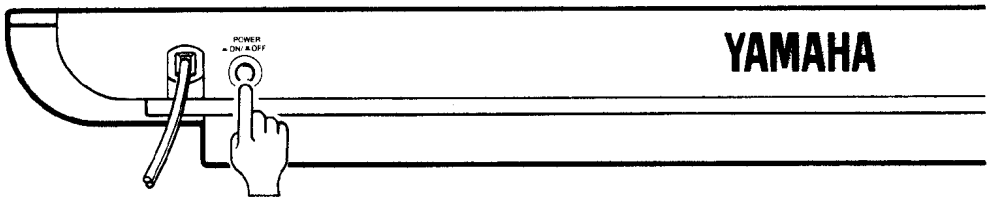
Yes, this operation step is so simple that we might as well not mention it. However, there are some simple steps you should follow when turning on the YS200's power switch (located to the far right, on the rear panel next to the power cord):

1) If you intend to connect the YS200 to an amplifier, make that connection first.

2) Turn on your YS200.

3) Turn on the connected amplifier.

Performing the steps in the above order ensures that the connected audio equipment will not be harmed by any sudden sounds from the YS200.



Note:

Inserting or removing a RAM memory card while the power is turned on may result in partial damage or complete deletion of voice data stored in the card. For this reason, insert or remove your RAM memory card from the CARD slot while the power is turned off.

PLAYING THE YS200

If you've followed all the above steps properly, you can begin playing your YS200.

When you first turn on the power to your new YS200, Preset voice #00, Elegant, will be automatically selected and the following display will appear:

```
PLAY) PRESET VOICE     Tuning Note shift
  No.00   Elegant        +00      +00
```

Note:

Whenever you turn on the power, the YS200 will, after a short 2- or 3-second warm-up, be set to the voice (or sound program) that was last selected, before the instrument was last turned off.

Adjust the volume using the rotary volume control. After playing this sound for a while, go on to the next section and explore some of the other sounds of the YS200.

SELECTING PRESET VOICES

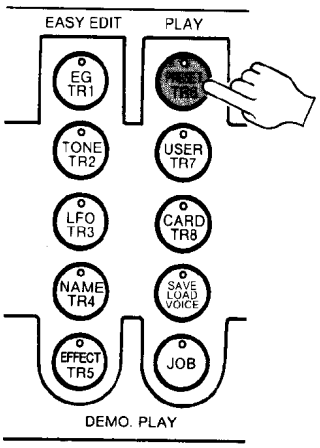
VOICE LIST

00	Elegant	25	FloatChime	50	Guitar 1	75	Sax 1
01	SoftBrass	26	Daybreak	51	Guitar 2	76	Sax 2
02	WideString	27	Tinqule	52	E. Guitar 1	77	Oboe 1
03	Cosmic	28	SandBell	53	Harp 1	78	Clarinet
04	LargePipes	29	Suspense	54	Koto	79	Flute
05	SynString 1	30	Fog	55	Marimba	80	Recorder
06	FolkGuitar	31	HuskyVoice	56	Violin 1	81	Harmonica 1
07	Piano 1	32	Swirlies	57	Cello 1	82	Whistle
08	E.Piano 1	33	HuskyChoir	58	CelloEns.	83	Castanet
09	DistGuitar	34	PluckBrass	59	UpriteBass	84	Triangle
10	SoftString	35	AngelChoir	60	E.Bass 1	85	BellTree
11	SynString 2	36	FluteVoice	61	E.Bass 2	86	Referee
12	RichString	37	SmallPipes	62	SynBass 1	87	SteelDrum 1
13	SynBrass 1	38	E.Organ 1	63	SynBass 2	88	SteelDrum 2
14	SynBrass 2	39	E.Organ 2	64	SynBass 3	89	Ricochet
15	SynBrass 3	40	Piano 2	65	SynBass 4	90	Zap!
16	BrethBrass	41	E.Piano 2	66	SynBass 5	91	Shwhap!
17	SoftEns.	42	WireBrass	67	NasalLead	92	PoundWood
18	WarmEns.	43	EasyClav	68	SolidLead	93	OilDrum
19	OrchesEns.	44	FunkyClav	69	ClariLead	94	SynSnare
20	Sunbeam	45	Harpsichrd	70	Trumpet 1	95	DragonHit
21	Shimmer 1	46	Vibe	71	TightBrass	96	DuneHit
22	SoftCloud	47	Celeste	72	Trombone 1	97	Warp
23	Bamarimba	48	TubeBell	73	Horn 1	98	IceAge
24	Sandarimba	49	MusicBox	74	Horn 2	99	Encore

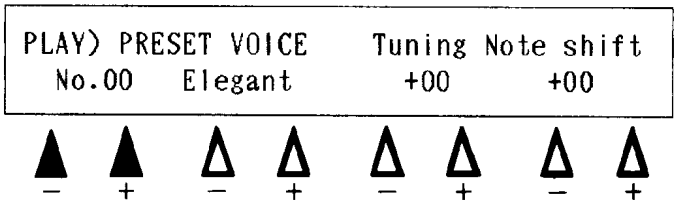
The YS200 has 100 different voices that are stored in its internal Preset memory, and we're sure that you'll want to begin exploring those voices as soon as you turn the YS200 on.

To select a Preset voice:

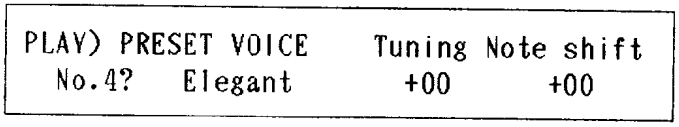
1) Press the **PRESET** button.

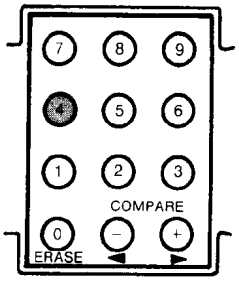


2) Use the first pair of +/− **SELECTOR** keys (under the far left side of the display) to step up or down to the desired voice. (The − **SELECTOR** key decreases the Preset voice number by one, while the + **SELECTOR** key increases it by one.) Holding down either **SELECTOR** key causes the Preset voice numbers to advance rapidly in either direction.



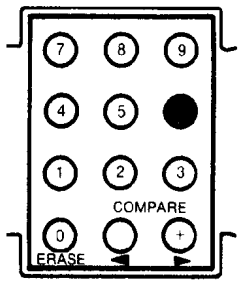
- You can also use the numeric keypad to select a Preset voice. Press the first digit of the Preset voice you wish to select. (As an example, let's select Preset voice #46, Vibe.) The display shown below will appear:





- The question mark after the number 4 indicates that you must press one more number on the numeric keypad to finally select the desired voice. So, press 6 to select voice #46.

```
PLAY) PRESET VOICE     Tuning Note shift
  No.46   Vibe           +00      +00
```



That's all there is to it.

Now let's move on to the next section and make some changes in the sounds of some of the voices.

OPERATION BASICS

This chapter of the manual will guide you through the YS200's basic operations. Here you will learn how to edit Preset voices, name and store the voices you create, select and edit effect settings for your voices, and use some of the card operations of the instrument. You will also learn how to use the sequencer portion of the YS200, both by playing specially prepared demonstration songs, and by recording your own song.

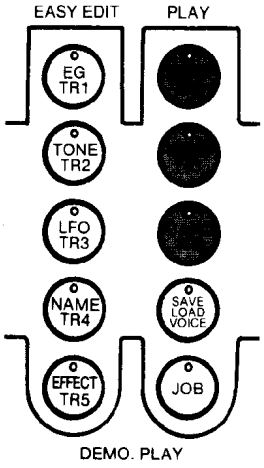
ABOUT THE CONTROLS

Let's begin this chapter by introducing you to some of the controls you will be using.

THE PLAY BUTTONS

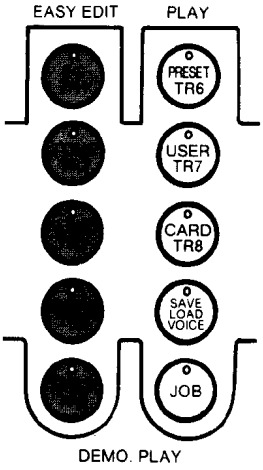
The **PLAY** buttons, labeled in purple, are used to select voices from the three different memory locations: PRESET, USER, and CARD. USER and PRESET are internal memory storage locations and can be selected at any time. CARD can only be used when a RAM or ROM card is inserted in the CARD slot. Each button has an LED which lights up in red when the button is pressed.

Try pressing each of the buttons in turn and notice what happens, both on each button's LED and the display.



THE EASY EDIT BUTTONS

There are five buttons in the **EASY EDIT** button column: **EG, TONE, LFO, NAME,** and **EFFECT.** The name "EASY EDIT" is appropriate since these buttons allow you to easily alter the character of a voice to your liking. As with the **PLAY** buttons, each has an LED which lights up in red when the button is pressed. Press each of these buttons in turn, as you did with the **PLAY** buttons above, and notice what happens.

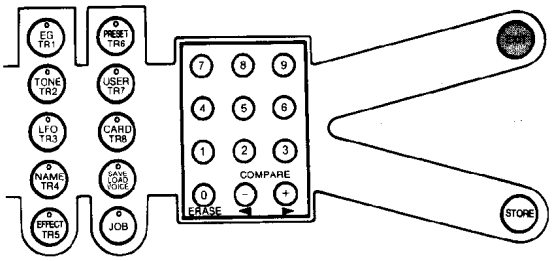


THE EXIT KEY

Pressing the **EXIT** button allows you to return to the last selected voice, regardless of the operation you are doing. You may, for example, be recording a song using the sequencer and suddenly decide to edit a voice you wish to use; a press of the **EXIT** button will return you to the voice you last selected, whether it is a Card, User,

or Preset voice.

Note:
Pressing the **EXIT** button is the ONLY way (except for turning the power switch off and on again) to go from Sequencer operation to Synthesizer operation.



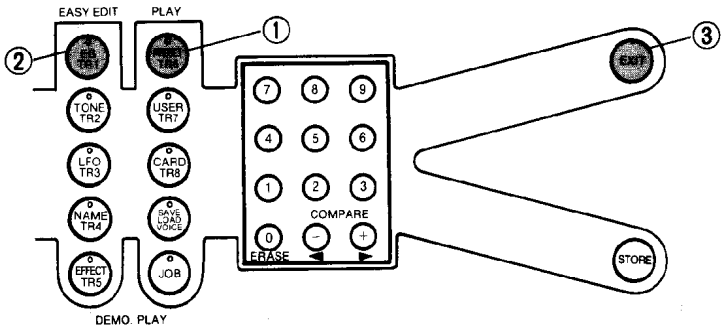
When you are using any of the **EASY EDIT** buttons to change the sound of a voice, the **EXIT** button also allows you to cancel those changes and return to the voice's original sound.

Watch how the display changes as you try the following steps:

1) Press the **PRESET** button.

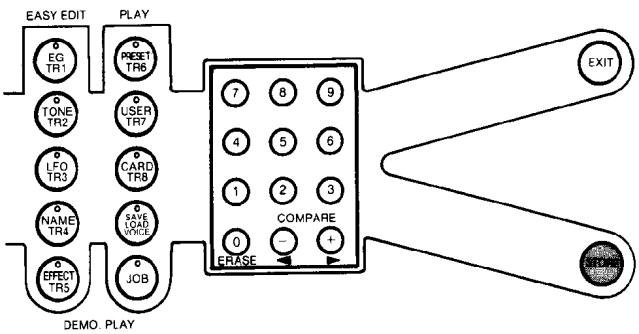
2) Press the **EG** button.

3) Press the **EXIT** button. The display will be the same as you saw in step #1.



THE STORE BUTTON

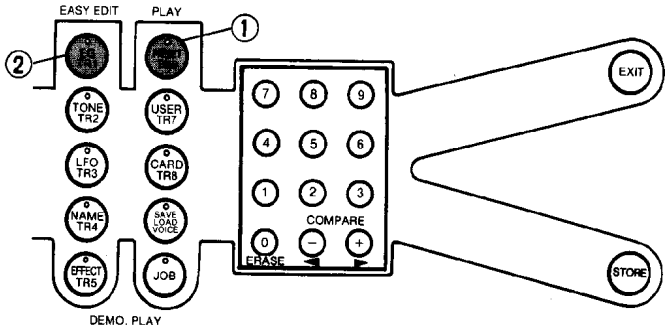
This button allows you to store a voice to either the internal user memory or a RAM card. Pressing the STORE button while in any operation will let you store the currently selected voice to a chosen memory location.



Now that you know something about some of the controls, let's actually begin using them!

CHANGING THE SOUND OF A PRESET VOICE

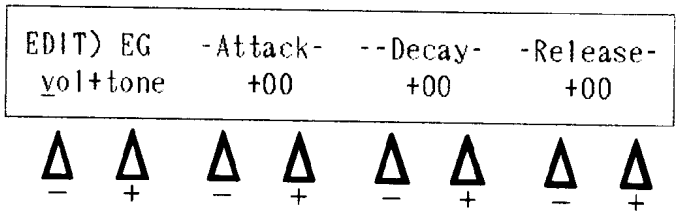
Changing the sound of a voice — a process we'll call "editing" — is very simple. First, make sure that a Preset voice has been selected by pressing the **PRESET** button. Then, press the appropriate **EASY EDIT** buttons and change the values shown in the display.



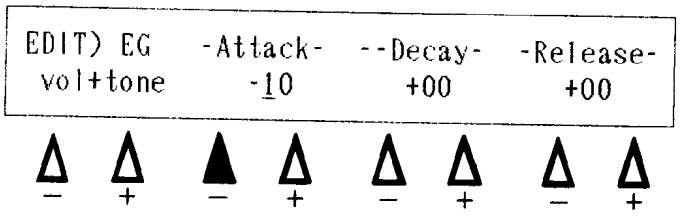
Now it's time for you to create your own voice by editing a Preset voice.

1) Press **PRESET**. Its red LED should light up. Then use the numeric keypad to select voice #71, TightBrass.

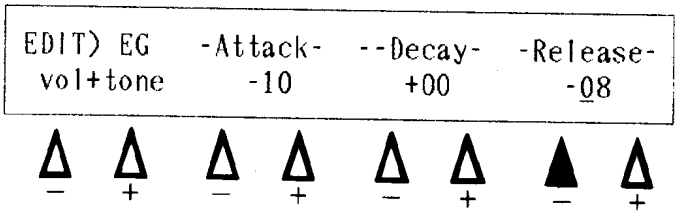
2) Press the **EG** button. The red LED at the top of the button will light to indicate that the function is active. The following display will appear:



3) By using the four pairs of **+/− SELECTOR** buttons, you can edit the various EG parameters as shown in the display. For now, let's use the pair directly under the Attack parameter. Press and hold the **− SELECTOR** button until the Attack parameter's value is −10. (You can also use the numeric keypad to enter the value directly.) Play the voice now and notice the difference in how the sound starts when you press a key.



4) You can edit the release time by using the **+/− SELECTOR** buttons directly under — you guessed it — the Release parameter. Set this value to −8 by holding down the **− SELECTOR** button and listen to the new sound you've created.



5) You can also compare your new sound with the Preset sound, listening to both in turn. Try this now. Firmly and simultaneously, press down the + and − keys on the numeric keypad (also labeled as the COMPARE keys). Notice that the LEDs of the bottom four **EASY EDIT** buttons flash in red. Play the sound. Do you recognize it? It's the one you started with, the sound before you began editing. To return to the sound you created in step #4 above, press the COMPARE keys together again. The LEDs will stop flashing and you can hear your new sound once again.

Note:

You may find that some parameter value displays are accompanied by an exclamation mark ("!") when edited beyond a certain value. This means that the actual parameter indicated does not change when adjusted to this value or beyond. Though the number (value) can be changed, the sound cannot.

CHANGING THE EFFECT SETTINGS OF A VOICE

The **EFFECT** section of the **EASY EDIT** Modes is one of the most dramatic. With the right effect, applied in the right amount, your voices can sound more dynamic and professional.

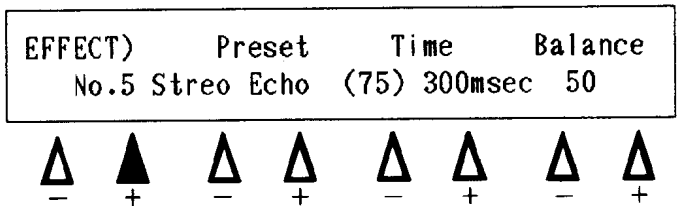
You'll learn more about effects and how to edit them to your liking in the SYNTHESIZER REFERENCE chapter of this manual. For the moment though, let's select a voice and use a few different effects on it so that you can see just how powerful this function can be.

1) From the Preset voice memory, select voice #79, Flute.

2) Press **EFFECT**.

Play the voice. You'll notice that it sounds as if it was being played in a spacious concert hall.

3) Using the first (leftmost) pair of **+/− SELECTOR** buttons, change the effect setting to # 5, Streo (Stereo) Echo and play the keyboard. The resulting sound is spacious again, but this time with definite echoes that seem to rebound across the stereo image. This effect is suitable for rapidly played staccato passages as well as slowly played single line melodies.



4) Change the effect setting once more, this time to # 7, Dist. (Distortion) + Echo. The definite echoes heard in the last effect are in this one as well, but there is a harder edge to the sound — the result of distortion — which makes the flute voice sound more like a saxophone, especially when played in the lower octaves.

You can see that the **EFFECT** Mode is musically useful and adds tremendous depth to the already impressive sounds of the YS200. Take some time and explore the other effect settings with other preset voices.

CHANGING THE LFO SETTINGS OF A VOICE

The initials LFO stand for Low Frequency Oscillator. Don't let the terminology intimidate you; this is just a fancy name for the method in which effects like vibrato and tremolo are created for synthesizer voices.

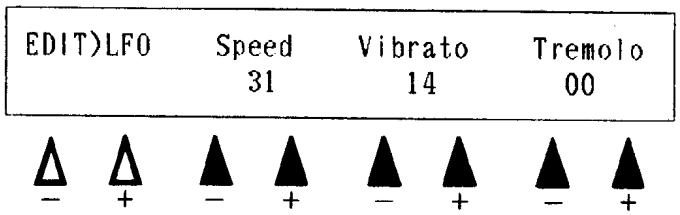
Vibrato and tremolo are age-old musical techniques used for both acoustic instruments and voice (the human kind!). A violinist, for example, rapidly moves his hand back and forth while holding a note in order to slightly waver the pitch. This is called vibrato, and in small amounts it gives the instrumental tone greater depth and an-

imation. Tremolo is a similar effect, except that the volume of the sound varies, not the pitch. The LFO makes it possible to imitate these acoustic effects, or to create even wilder, more obviously electronic sounds.

- By now, you're undoubtedly using the YS200's functions with ease, so we'll just briefly introduce you to the parameters of the LFO and let you go exploring on your own!

1) Select a Preset voice and press LFO.

2) Change the three parameters one by one and listen to the effect created.



- **SPEED** (0 — 99)
  This controls how fast the LFO varies the pitch or volume.
- **VIBRATO** (0 — 99)
  This controls how deep the pitch variation will be.
- **TREMOLO** (0 — 99)
  This controls how deep the volume variation will be.

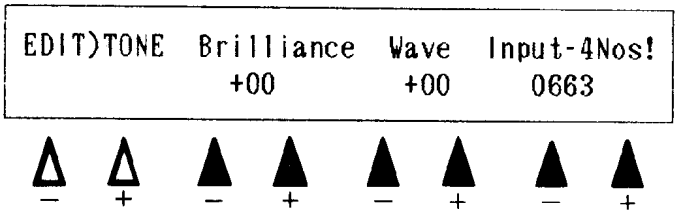
CHANGING THE TONE SETTINGS OF A VOICE

There are three Tone parameters: Brilliance, Wave, and Input-4Nos!. Simply put, these affect the quality and pitch of the sound, but you can get a better idea of what they do by listening to a sound as you adjust them. Try this:

1) Select a suitable voice from the Preset memory.

2) Press **TONE**.

3) Use the **+/– SELECTOR** buttons directly below Brilliance, Wave, and Input-4Nos! to change the sound of the Preset voice.

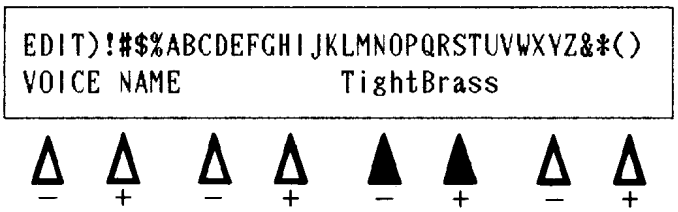


- Take the time to play around with these and the parameters you worked with before. You may discover and create some sounds that you'd like to keep. In fact, perhaps you already have — so, when you're ready, go on to the next two sections.

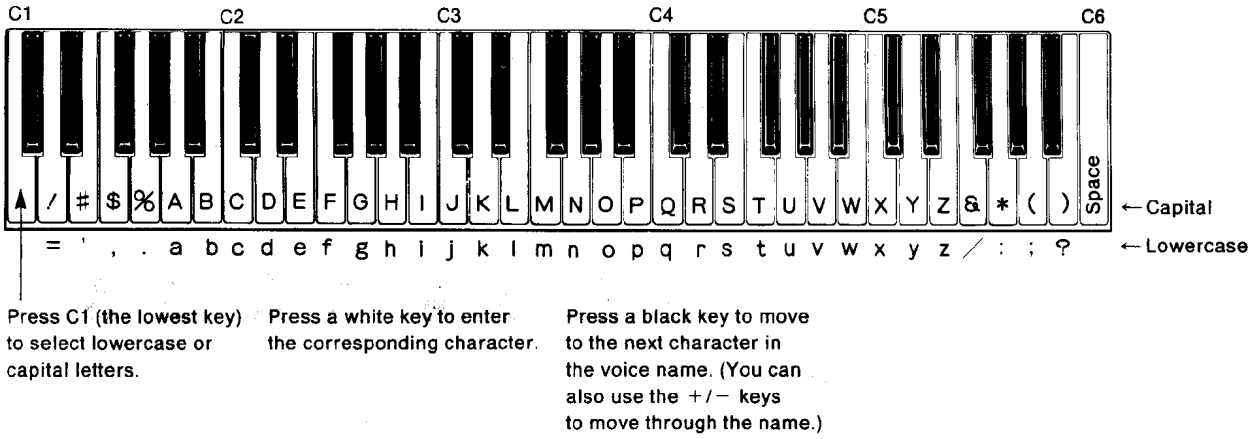
NAMING AN EDITED VOICE

Once you have edited a Preset voice to your liking, you'll probably want to give that newly edited voice a name and save it so that you can select it and play it again at any future time.

Press **NAME** of the **EASY EDIT** buttons. Its red LED will light up and the following display (or one very similar to it) will appear:



- You'll see that the name of the original sound will be shown on the display. The white keys of the keyboard function as a kind of typewriter when the NAME Edit Mode is selected. Numbers can be typed in by using the numeric keypad. Move the cursor on the display by using either the black keys or the third pair of **+/− SELECTOR** buttons (directly below the name).



For example, to enter the voice name "SLOW ORGAN" you would press: E4, E3, A3, B4, C6, A3, D4, G2, A1, G3 (alternating with a black key after each character).

Note:

Since voice names can have a maximum of 10 characters, exercise a little creativity and judgement when naming voices. Try to be as descriptive as possible — it's much easier to remember how "Glass Bell" and "Bell Mute" sound than "Bell 1" and "Bell 2."

STORING AN EDITED VOICE

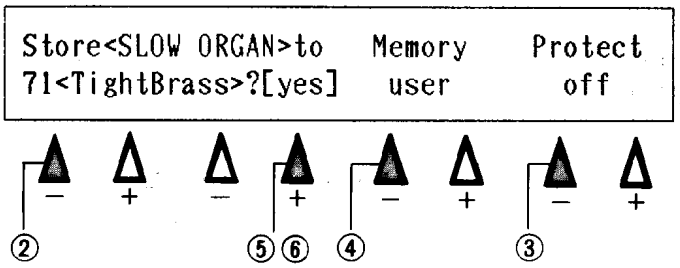
Once you've edited a voice to your satisfaction, you should store that voice to a memory location so that you can retrieve it whenever you need it. The YS200 has space in its internal User memory for 100 user-programmed voices and optional RAM cards are also available for storing 100 voices.

Let's store a voice you just created and named in the operations above to User memory.

1) Press **STORE**.

Note:

Voices CANNOT be erased from Preset memory. Nor can newly edited voices be stored to a Preset memory location. To keep a newly edited Preset voice, you must store the edited voice to a User or Card memory location.



2) Select the destination number to which the voice will be stored by using the first (leftmost) **+/− SELECTOR** button pair. Any destination number will do; however, for this example, hold the **− SELECTOR** button down until No. 00 shows in the display.

3) Press the rightmost − **SELECTOR** button (directly below the "Protect" parameter) to cancel the memory protect function. When set to ON voices cannot be stored.

4) Press the − **SELECTOR** button directly below the "Memory" parameter to select User memory.

5) Now that you've set the memory type and destination number AND disabled the memory protect function, press the + **SELECTOR** button directly below [yes].

6) Press it once again after the "Sure?" prompt on the display to finally store the voice.

Note:

The **STORE** button should be used immediately after editing a voice, if you want to keep that voice. Pressing some of the other buttons (**EXIT** in particular) may cause you to lose your edits.

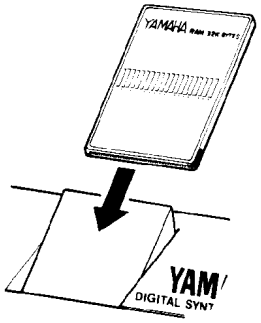
Keep on experimenting with the **EASY EDIT** features. Use them with different Preset voices before you go to the next section, and when you come upon some combinations that you like, store them to User memory, as you did above.

CARD OPERATIONS

In addition to the User and Preset voices, voices from memory cards are also available. Specially designed cards (ROM cards) can optionally be purchased, each with 100 voices created by expert programmers. If you have such a ROM card for the YS200, here's how to use it and listen to some of its voices. (Also optionally available is the MCD32 RAM card for storing your own original voice data.)

SELECTING CARD VOICES

First, insert the ROM card into the CARD slot on the left side of the front panel. Gently slide it in face up until it is securely seated in the slot. Next, press **CARD**. Now you're ready to select and play the Card voices. Select them in exactly the same way you selected Preset voices (as described above in the STARTING OUT chapter).

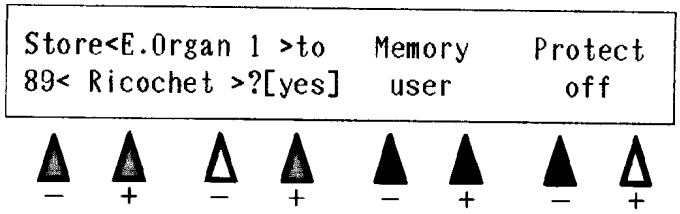


STORING CARD VOICES TO USER MEMORY

Let's take one of the Card voices now and store it to the internal User memory.

1) Select the Card voice you wish to store.

2) Press **STORE**.



3) Use the +/− **SELECTOR** buttons below "Memory" and "Protect" to switch the memory type to "user" and turn the memory protect to "off." The display should appear as above when you've finished.

4) Select the User memory number to which you want to store the card voice with the leftmost +/− **SELECTOR** buttons or the numeric keypad — just as you do when you select voices normally.

5) Now, simply press the + **SELECTOR** button below [yes] to execute the store operation.

SAVING VOICES TO MEMORY CARDS

You can also store voices to Card memory. However, the ROM card that you used to select voices from in the above operations cannot be used to store voices. For this you need a special kind of card — a memory card. You can find out more about memory cards in the SYNTHESIZER REFERENCE chapter. Memory cards allow you to store sequencer songs as well as voices, a feature you'll find out more about in the SYNTHESIZER REFERENCE chapter.

Note:

Inserting or removing a RAM memory card while the power is turned on may result in partial damage or complete deletion of voice data stored in the card. For this reason, insert or remove your RAM memory card from the CARD slot while the power is turned off.

If you have a memory card, follow these steps:

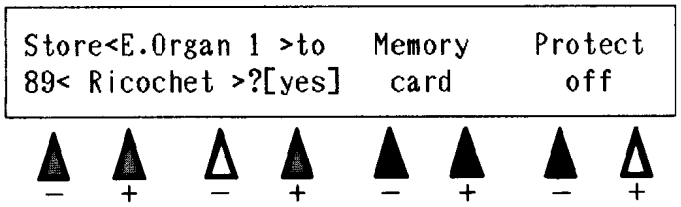
1) Insert the memory card in the CARD slot (before turning the power ON).

2) Select the voice you want to store — either User or Preset are fine.

3) Set the memory protect switch on the card to OFF.

4) Press **STORE**.

5) Take the same steps as you did above in STORING CARD VOICES TO USER MEMORY (steps #3 and #4), but change the display so that it appears as below:



6) Finally, select [yes] to execute the operation.

The **SAVE, LOAD** button can also be used to carry out similar card operations. However, it is far more powerful — and potentially more destructive — than the **STORE** button. More powerful, because you can copy a whole card's contents into User memory at one time. More destructive, because in doing so, you erase whatever voices were in User memory originally.

Use the **STORE** button for the time being; it's safer and, initially, you probably won't need to throw 100-voice groups back and forth between Card and User memory. When you DO need to, though, you can find out more about the **SAVE, LOAD** button in the SYNTHESIZER REFERENCE chapter.

Note:

Before you can store or save data to a new memory card, it must be formatted. See Format, page 25.

You've completed this chapter now and should be able to operate nearly all of the functions of the YS200 with complete ease and confidence.

Go exploring again at your leisure — find sounds you like, change them around with the various editing features, and use them in songs of your own creation. If you're uncertain about how to do something, come back to this chapter to jog your memory. Or better yet, go to the SYNTHESIZER REFERENCE chapter. There you'll discover even more interesting and exciting ways to use the YS200.

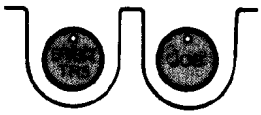
DEMONSTRATION SONG PLAY

The YS200 also is capable of playing specially prepared demonstration songs. Five such songs have been loaded into the internal memory and more can be played from current and soon-to- be-released ROM Voice Data cards. Each card has several demo songs that utilize the voices of the card.

The demo songs in both internal and Card memory should amply illustrate the powerful multi-voice capabilities of the YS200.

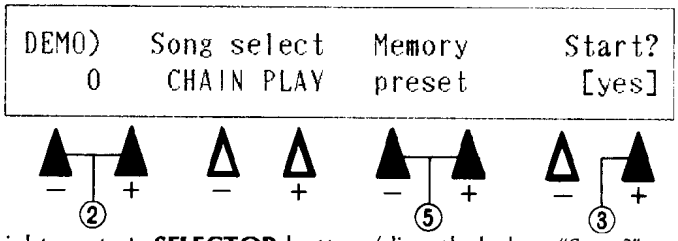
To play a demo song, simply:

1) Press the **EFFECT** and **JOB** buttons simultaneously.



DEMO. PLAY

2) Select the song with the leftmost pair of **+/− SELECTOR** buttons. The first selection ("CHAIN PLAY") automatically plays through the five demo songs in order. The other selections allow you to play each of the five demo songs individually.



3) Press the rightmost **+ SELECTOR** button (directly below "Start?" on the display) to play the selected demo song.

4) To stop playback before the song is over, press **EXIT**.

5) To play demo songs from Card memory, insert the ROM card and use the third pair of **+/− SELECTOR** buttons to select Card memory. Then, select and play the songs as you did in the above operation steps.

Note:

The keyboard cannot be used to play voices when the demo songs are being played.

Note:

These demo songs are in no way related to the YS200 sequencer. Demo song data cannot be loaded or edited as sequence data.

THE SEQUENCER SECTION

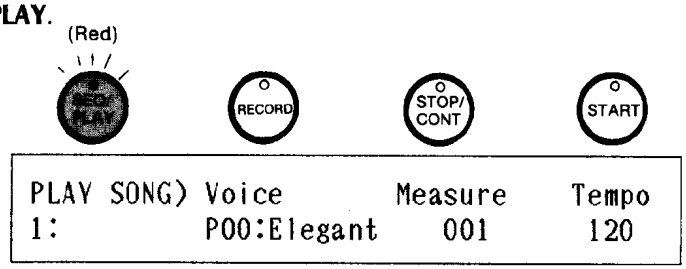
Among the comprehensive features of the YS200, one of the most impressive is the sequencer. In effect, it is like having a small recording studio right inside your synthesizer. With it you can record and play songs, using up to eight different voices of the YS200, and even use it to play voices on other connected instruments.

To get a basic idea of what the sequencer is capable of, take some time to explore the following section.

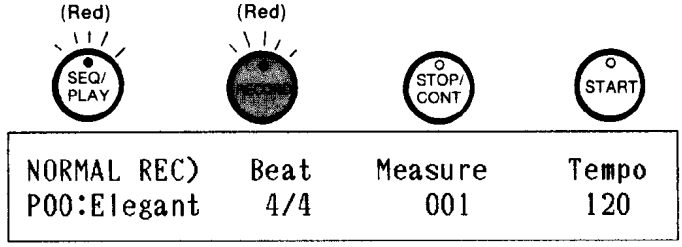
RECORDING YOUR SONG

To complete your guided tour of the YS200, try recording a song of your own on the sequencer. Here's how you can do it:

1) Press **SEQ/PLAY**.



2) Press **RECORD**.



3) Select the track to which you wish to record by pressing the appropriate track button. For now, select track #1 by pressing the **EG/TR1** button. The LED of the **EG/TR1** button will light up in red.

4) Press **START**. The LED of the **START** button will light up in red. A metronome click will begin and, after a 2-measure lead-in, recording will start.

5) To stop recording, press **STOP/CONT**. The **RECORD** and **START** button's LEDs will turn off.

- You may also want to set the tempo to an appropriate speed for your song. Do this while the sequencer is running so that you can "feel" your way to the right tempo. First press **RECORD**, then **START** to start the sequencer. Then, use the +/− **SELECTOR** buttons below Tempo to speed it up or slow it down. Press **STOP/CONT** and you're ready to record again, this time at the new tempo.

PLAYING YOUR SONG

To play back the song you just recorded:

1) Press **SEQ/PLAY**.

2) A green LED on the track button of the track to which you recorded will be lit. In this case, the LED of the **TR1** button should be lit in green, indicating that track #1 will play. If the LED is not lit, press the button once.

3) Press **START** to begin playback.

4) Press **STOP/CONT** whenever you want to stop the song.

You've completed this chapter now and should be able to operate nearly all of the functions of the YS200 with complete ease and confidence.

Go exploring again at your leisure — find sounds you like, change them around with the various editing features, and use them in songs of your own creation. If you're uncertain about how to do something, come back to this chapter to jog your memory. Or better yet, go to the next chapter, SYNTHESIZER REFERENCE. There you'll discover even more interesting and exciting ways to use the YS200.

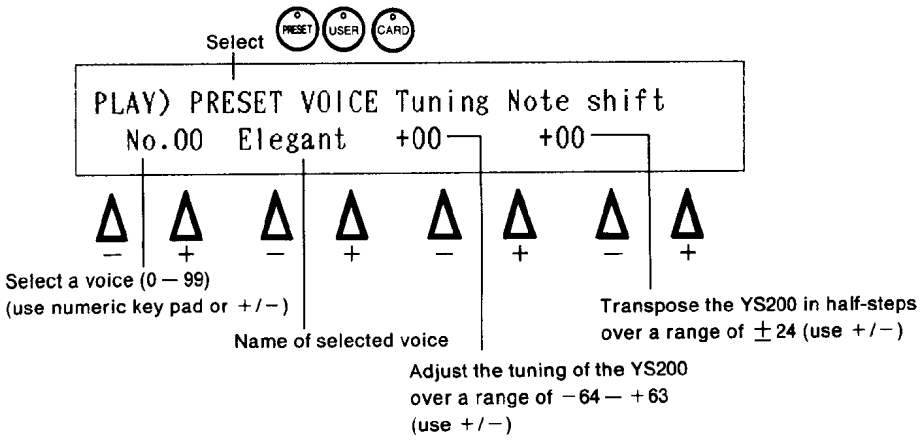
SYNTHESIZER REFERENCE

This chapter of the manual is a comprehensive guide to all of the synthesizer functions of the YS200. We urge you to go through it casually at first; if some function or job strikes your interest, read about it and try to use it on your YS200. You'll also find this section handy when you need to refresh your memory about a function or operation.

This chapter covers all Synthesizer operations. The next chapter covers all Sequencer operations. The Synthesizer Reference chapter describes functions in the order of the corresponding front panel buttons. The Sequencer Reference chapter generally describes functions in their logical order of use.

PLAY MODE BUTTONS

Use the PLAY buttons (PRESET, CARD, USER) and the numeric key pad (or +/−) to select voices.



EASY EDIT MODE BUTTONS

EG

■ ***Functions:*** Adjust envelope generator settings (Attack, Decay, and Release times) for both Volume and Tone

ABOUT EG:

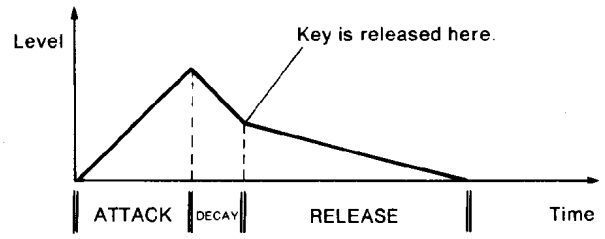
EG stands for envelope generator. Not that the words themselves are important to remember, but you should know what an envelope generator does.

Every sound that you hear, from the clanging of a bell to the screeching tires of a car coming to a sudden halt, has a direct relation to time. The volume of a sound takes a certain length of time to reach its loudest point — in the case of a bell, almost instantly — and it takes a certain length of time to die away.

Also, if you listen closely to the sound of a bell, you'll notice that the initial metallic clanging sound is gradually replaced by a softer, more mellow ringing tone. In other words, the tone of the bell also changes over time.

For a synthesizer to imitate the sounds of the real world and, in fact, for it to create sounds of any interest, it must be able to control these variations in volume and tone over time.

The YS200 does this with its EG's Attack, Decay, and Release parameters. Their effect can be easily understood from this diagram:



The envelope generator controls how the sound changes in both volume and tone over time. Both volume and tone can be controlled together by the same EG setting, or independent EG settings can be made for each.

In FM synthesis terminology, the volume EG affects the carrier operator(s) and the tone EG affects the modulator operator(s).

- To set a separate EG for volume:
  Press one of the +/− **SELECTOR** buttons until "volume" is displayed.
- To set a separate EG for tone:
  Press one of the +/− **SELECTOR** buttons until "tone" is displayed.
- To set a common EG for volume and tone:
  Press one of the +/− **SELECTOR** buttons until "vol + tone" is displayed.

■ *Parameter ranges:*

ATTACK: ±10
DECAY: ±10
RELEASE: ±10

(Positive values DECREASE the time, or make the sound change faster; negative values INCREASE the time, or make the sound change more slowly.)

TONE

■ ***Functions:*** Set harmonic content and brilliance of tone; determine the waveforms of the voice.

The Brilliance parameter controls how bright or mellow the tone is. Positive values make the tone brighter; negative values make it more mellow. In FM synthesis terminology, Brilliance controls the output level of the modulator operator(s).

The Wave parameter affects the frequency (position) of the harmonics or overtones — i.e. it changes the fundamental character of the sound. Positive settings will produce higher overtones, and negative settings will produce lower overtones. Notice that changing this parameter can result in metallic or gritty sounds for some settings. In FM synthesis terminology, Wave controls the coarse frequency setting of the modulator operator(s).

The Input-4Nos! parameter lets you change the waveforms that the voice uses for its sound generation. Each voice has four sound sources, and each can be given one of eight different waveforms. Because some waveforms are brighter than others, this parameter also helps determine the overall brightness and tone quality of the sound. In FM synthesis terminology, the Input-4Nos! parameter determines the waveform for each operator.

Use the numeric keypad (0~7) to select one of the eight waveforms for each individual sound source (operator), and use the rightmost +/− **SELECTOR** buttons to advance all sound sources' waveforms by one.
Each sound source (operator) is represented by a single digit in the four-digit display, and each can only be changed from 0 to 7.

■ ***Parameter ranges:***

BRILLIANCE: ± 10
WAVE: ± 10
Input-4Nos!: 0 — 7 (for each operator indicated in the four-digit display)

LFO

■ ***Functions:*** Adjust speed, depth and sensitivity of vibrato and tremolo effect.

The low frequency oscillator is used to modulate (cause periodic variations in) the pitch and/or volume of the sound. LFO-controlled pitch modulation is called Vibrato, and volume or amplitude modulation is called Tremolo.

- The speed of the modulation can be set.
- The Vibrato parameter adjusts both pitch modulation depth and sensitivity simultaneously.
- The Tremolo parameter adjusts both depth and sensitivity of amplitude modulation.

Note:

Two independent LFOs are available for voices when using the Multi Mode functions. Thus, when using 3 or more voices at the same time, the LFO applied to one voice could affect one or more of the other voices. See **LFO** in the MULTI MODE FUNCTIONS section of this chapter for more information.

■ ***Parameter ranges:***

SPEED: 0 — 99
VIBRATO: 0 — 99
TREMOLO: 0 — 99

NAME

■ ***Function:*** Assign names to voices.

Voice names can be up to ten characters in length. The available characters include letters of the alphabet, numbers, and 16 additional special characters and punctuation marks.

To enter a voice name:

Use the third pair of **+ / − SELECTOR** buttons (directly under the current voice name) to position the cursor. To enter a completely new name, put the cursor at the beginning of the current name. The black keys may also be used to advance the cursor.

- Numbers are entered from the numeric keypad while letters and characters are entered one by one from the keyboard as explained in "NAMING AN EDITED VOICE", page 15.

EFFECT

■ ***Functions:*** Assign effect presets to voices; edit parameters of effect presets.

Ten effect presets are available:

No. 0 Reverb — Hall
No. 1 Reverb — Room
No. 2 Reverb — Plate
No. 3 Delay
No. 4 Delay — Left/Right
No. 5 Stereo Echo
No. 6 Distortion + Reverb
No. 7 Distortion + Echo
No. 8 Gate Reverb
No. 9 Reverse Gate

- The Reverb presets recreate the reflections of the sound as it would be heard in various environments and thus make the sound seem more natural and lifelike.
- The Delay preset adds a single repeat. The Delay — Left/Right adds a single repeat, first to the left, then to the right.
- The Stereo Echo preset adds gradually decaying repeats (left and right together).
- The Distortion presets add a hard-edged, gritty sound.
- The Gate preset creates a reverb that is cut off (i.e. "gated") before it can decay naturally. The Reverse Gate preset creates a reverb that grows louder with time (the opposite of natural reverb) before it is cut off.

Each preset has two parameters: Time (or, in the case of the two Gate reverb presets, Room Size) and Balance. The Time parameters in the Reverb presets basically determine the perceived size of the room by adjusting the length of reverberation. Time parameters in Delay and Echo presets determine the length of time between the original sound and the delayed repeats. The Room Size parameters in the Gate presets determine the amount of reverberant "wash" in the sound. Balance parameters in all presets allow adjusting of the relative level of the effect compared to the voice. A Balance setting of 0 turns the effect off.

Note:

Effect and Pan cannot be used at the same time. If an effect setting is adjusted for a voice while that voice or any other in the Multi Mode arrangement has a pan setting, the following message will briefly appear and the pan setting(s) will be ignored.

```
EFFECT)     Preset     Time     Balance
*ATTENTION* Pan data was ignored!
```

■ *Parameter ranges:*

TIME (Reverb Presets #0, 1, 2, 6):	0.3 — 10.0 sec
TIME (Delay Presets #3, 4, 5, 7):	0.1 — 300 msec
ROOM SIZE (Gate Presets #8, 9):	0.5 — 3.2 sec
BALANCE:	0 — 99

SAVE, LOAD AND STORE OPERATIONS

SAVE, LOAD MODE

■ ***Functions:*** Save YS200 voices or sequencer data to RAM memory card; load voices or sequencer data to the YS200 from ROM or RAM memory cards; format RAM memory cards for storage of either voice/system or sequencer data.

■ *FORMAT*

Before you can save YS200 voice (or sequence) data to a RAM memory card, it must be formatted to accept YS200 voice (or sequence) data. The upper right of the LCD will show the format.

```
To Card?  Frome Card? Format  <YS S/V>?
   [yes]      [yes] for voice     [yes]
```

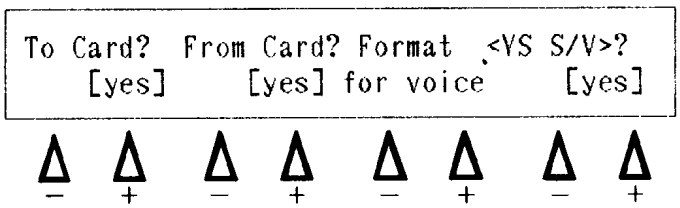
Formatting a RAM memory card is done by:

1) Inserting the appropriate RAM memory card in the CARD slot on the front panel. Make certain that the RAM memory protect switch on the card is set to OFF.
2) Formatting the RAM memory card for either voice/system or sequencer data storage. Use the third pair of +/− **SELECTOR** buttons to select the format type, then press the rightmost + **SELECTOR** button to select [yes].
3) Executing the operation. The display will show "sure?" to confirm the Format operation. Select [no] to cancel and [yes] to execute.

Note:

Formatting a RAM card will automatically and irretrievably ERASE ALL DATA on the card. Make absolutely certain that no important data is on the RAM card you intend to format. If possible, use only blank RAM memory cards for the storage of new data.

■ *SAVE, LOAD*



When saving or loading data, you will be asked "Sure?". Press the + button again to confirm the operation.

Note

Loading data from a card into the YS200 will ERASE ALL PREVIOUS DATA OF THAT TYPE (voice or sequence) in the YS200. If possible, save your important data to a blank RAM memory card before loading any new data.
In the same way, saving data from the YS200 to a RAM memory card will ERASE ALL PREVIOUS DATA in the RAM memory card.

Loading voice or sequencer data from RAM or ROM card to the YS200 is done by:

1) Inserting the appropriate RAM or ROM card in the CARD slot on the front panel.
2) Selecting the type of data to be loaded: voice/system or sequencer data. Use the third pair of +/− **SELECTOR** buttons to select the data type, then press the rightmost + **SELECTOR** button to load the data.
3) Executing the operation. The display will show "sure?" to confirm the Load operation. Select [no] to cancel and [yes] to execute.

Note:

Loading voice/system or sequencer data to the YS200 will automatically and irretrievably ERASE ALL PREVIOUS DATA of that memory type. If possible, save your important data to a blank RAM memory card before loading any new data.

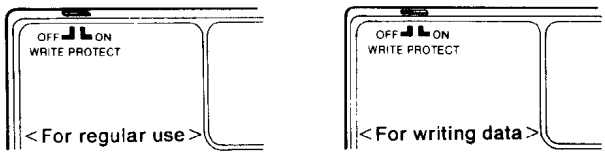
ABOUT THE RAM MEMORY CARD (MCD 32)

Data cannot be stored to the RAM memory card unless the Write Protect Switch on the card is set to OFF. The card is also equipped with a cell battery that must be replaced periodically.

1) Write Protect Switch (WRITE PROTECT)

   Use a sharp-pointed tool such as a screwdriver to switch the Write Protect Switch to ON or OFF. Set the switch to ON for regular use in order to protect the data.

Switch it to OFF when writing data.



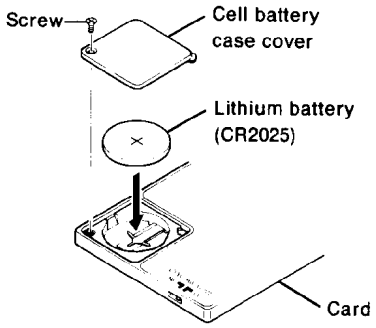
2) Replacement of Cell Batteries

Memorization of data requires a lithium battery. For regular use, a lithium battery lasts about five years. The RAM Memory Card is shipped with the lithium battery already installed. If the battery runs down, replace it with a new one, following the procedure below. Use a CR2025 lithium battery.

Note:

When the battery is replaced, all the data memorized in the RAM card will be erased. Load the necessary data to the YS200's internal memory before replacing the battery.

1) Remove the screw and the cell battery case cover with a small Phillips screwdriver.
2) Remove the old cell battery and insert the new one (CR2025) with the + side facing upward.
3) Install the cover and fasten it with the screw.



STORE

■ ***Functions:*** Store single voices to User or Card memory; select memory type for storage; set memory protect; select destination number.

The **STORE** button allows you to quickly store a single voice to User or Card memory. With the sole exception of the Sequencer Mode, pressing the **STORE** button allows you to exit from any mode and operation to store the currently selected voice.

Voices from any PLAY Mode location — Card, User, or Preset — may be stored to any Card or User location. This means that you can also move voices from one location to another.

Memory protect is set to ON at the factory. Here's how to store a voice:

1) Select the memory type: User or Card.
2) Turn memory protect OFF, (when storing to User memory) or turn Write Protect OFF (when storing to Card memory).
3) Select the voice number destination to which the currently selected voice will be stored.
4) Select [yes] to store and "Sure?" to finally execute the operation.

Note:

Storing a voice to User or Card memory will automatically and irretrievably ERASE THE VOICE AT THE DESTINATION NUMBER. Make certain that the voice at the destination number is no longer needed or has been stored to another location.

JOB MODE FUNCTIONS

JOB MODE

The JOB Mode lets you delve deeper into the editing and control features of the YS200. Within the JOB Mode are several sub-modes that allow you to:

- Edit additional voice parameters
- Edit real time performance control parameters
- Send voice and system data out to other MIDI devices
- Select MIDI transmission and reception channels
- Select the Play Mode to be used: Split or Multi
- Set a maximum of eight different voices to be used simultaneously, each with its own MIDI reception channel, key assignment, and volume, pan, LFO and detune settings

With the exception of the Sequencer Mode, the Synthesizer Job Mode can be selected from within any mode or operation.

1) Press **JOB**.

2) Press the **+/− SELECTOR** button directly below the name of the sub-mode you wish to use.

VOICE EDIT (Edit)

■ ***Functions:*** Adjust the Feedback, Transpose and Touch Sensitivity settings of a voice; determine its Poly/Mono setting.

These are parameters which, in addition to the **EASY EDIT** parameters, let you create and shape the voices of the YS200.

- The Feedback parameter determines the basic tone qualities of a voice; a low value makes the sound soft and mellow, while higher values generally brighten the sound and give it a metallic edge. In FM synthesis terminology, this parameter allows you to adjust the amount that the modulator operator feedbacks on itself.
- Transpose is used to raise or lower the pitch of the YS200, in semitone steps, to any key.
- Touch Sensitivity determines the degree to which the volume and tone of the voice respond to your playing of the keyboard. The greater the value, the more sensitive the voice will be to your keyboard touch.
- "Poly/Mono" is normally set to "Poly". In PLAY mode, the voice will be able to play up to 8 simultaneous notes. In MULTI mode, the voice will be able to play as many simultaneous notes as specified by the max Notes setting.
  "Mono" mode is a bit unusual. Only one note can be sounding at a time, but if you press a key before releasing the previously pressed key, the sound will change in pitch, but will not "re-attack". I.e., mono mode lets you play "smoothly". (If you then release the second key while the first key is still pressed, the sound will return to the first pitch.)

■ ***Parameter ranges:***

FEEDBACK: 0 — 7
TRANSPOSE: C1 — C5
TOUCH SENS.: 0 — 7
POLY/MONO: Poly, Mono

CONTROL (Cntrl)

■ ***Functions:*** Set pitch bend range; determine assignment of modulation wheel and breath control.

If the preset Control settings for the voice have not been changed, the lower line of the LCD will show "-----" for each controller. You may select the following options for each controller.

PB Range:	Pitch bend range of 0 — 12 semitones (in either direction).
MW effect:	Select the effect that the MODULATION wheel (located to the left of the keyboard) will have. Select from vibrato, tremolo or wowwow.
Breath cnt:	Select the effect that a separately sold BC1 or BC2 Breath Control will have when plugged into the BREATH CONT jack. Select from vibrato, tone or volume.
After tch:	Select the effect that pressing down on the keyboard after a note is played will have. Select from vibrato, tone, tremolo or wowwow.

MIDI BULK OUT (Bulk)

■ ***Functions:*** Send currently edited voice (from edit buffer), 100 user voices, or system setup memory via MIDI OUT. System setup memory includes the following data; tuning, memory protect on/off, MIDI receive channel, MIDI transmit channel, settings for each instrument.

- To execute, press the **+ SELECTOR** button directly below the [yes] display of the type of data you wish to send.

Note:

When transmitting 100 user voices to a 32-voice synthesizer (such as the DX11), only voice numbers 75 to 99 will be sent to the receiving synthesizer.

MIDI CHANNEL (MIDI)

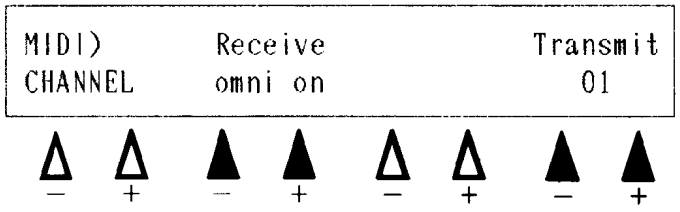
■ ***Functions:*** Set the MIDI reception and transmission channels.

To receive play data (from external MIDI devices such as other sequencers and synthesizers) and send data, the proper MIDI channel settings must be made.

- For normal MIDI operation, the channels of the YS200 and the MIDI device that is either sending or receiving must match.
- Omni On allows the YS200 to receive MIDI data over all channels.
- The Off value disables MIDI reception and transmission in the respective parameters.

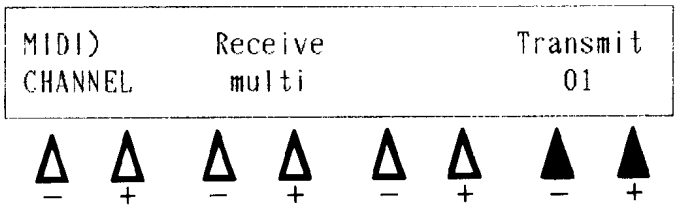
There are two different ways of selecting the MIDI Channel job, and the function as well as the display changes slightly depending on which way is selected.

The first way is directly from the Play Mode or after normal voice selection. (You can also select the MIDI Channel job directly by first pressing the **EXIT** button.)



The MIDI Receive and Transmit channels can then be set as described in this section.

The second way is within the Multi Mode. If you return to the Synthesizer jobs directly from the Multi Mode (without pressing any of the **PLAY MODE** buttons or the **EXIT** button) and select MIDI Channel, the following display will appear:



The "multi" in the display indicates that the Receive channel must be set for each voice in the Multi Mode's MIDI Receive Channel job. Receive channel settings CANNOT be made here.

Note:

If you have made changes in the MIDI Transmit and Receive channels, you may discover that some voices will not sound when you play the keyboard. Here is a short explanation of why that happens and how to avoid it:

Each voice can have its own MIDI Receive channel (set in Multi Mode's MIDI Receive Channel job). If that channel setting matches the MIDI Transmit channel (set in Synthesizer Job Mode's MIDI Channel), the voice will sound. Assigning different MIDI Receive channels to different voices is ONLY for controlling the YS200 from other MIDI instruments and devices; when playing voices from the YS200's keyboard in the Multi Mode, set all Receive channels **AND** the Transmit channel to the same value.

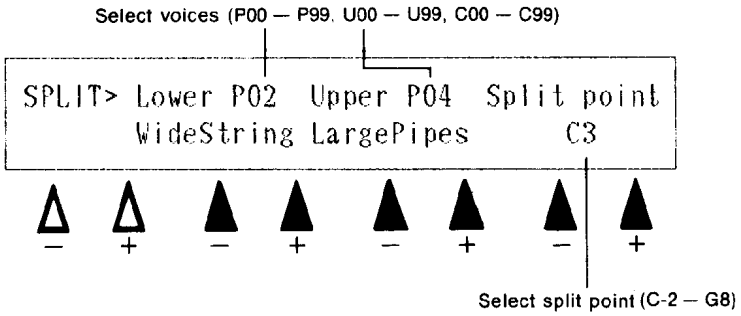
■ ***Parameter ranges:***

RECEIVE CHANNEL: Multi, 1 — 16, Omni On, Off
TRANSMIT CHANNEL: Off, 1 — 16

SPLIT MODE (Split)

■ ***Functions:*** Set two voices to be played from separate parts of the keyboard and determine the split point that will separate them.

- Split Mode allows two different voices to be assigned to separate sections of the keyboard. Select the voices for the lower and upper parts of the keyboard with the PLAY Mode buttons, to select the memory type from which the voice is to be selected, and with the corresponding **+/– SELECTOR** buttons. The split point can be set by using the fourth pair of **+/– SELECTOR** buttons or by pressing the desired note on the keyboard.



Note:

You can edit voice data directly from the Split Mode by pressing the appropriate **EASY EDIT** button; however, only the low voice of the split can be selected automatically in this way.
To edit the high voice you must return to PLAY mode and select the voice.

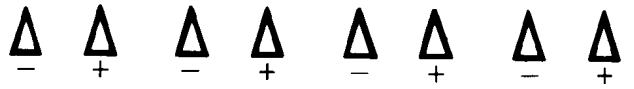
Note:

In the Split Mode the original effect settings for the two voices are ignored. If you want to have an effect on the voices, you must select a "global" effect — an effect setting that will be applied to both voices equally. To do this, press **EFFECT** while in the Split job and make the desired setting. Returning to Play Mode restores the original effect settings for the voices.

MULTI MODE FUNCTIONS

The Multi Mode is a powerful function in which you can play up to eight different voices at the same time and set each to be controlled independently over separate MIDI channels. Each voice can also be given its own key assignment, and volume, pan and detune settings.
When you select the Multi Mode job, you will get the following display.

```
MULTI MODE JOB SELECT >  Select one!
 Max/R.ch/Voice/Volm/Pan/Detun/Nlim/LFO
```



Press one of the −/+ selector buttons to choose a Multi Mode setting to adjust.

MULTI MODE DISPLAY EXAMPLES

For example, the following screens show a setup with a mono bass voice assigned to the lowest octave, a five-note polyphonic piano to the next two octaves, and two different strings voices (each monophonic) together occupying the highest range, and slightly detuned to create a richer sound. The Piano Voice is assigned to be controlled by LFOb, allowing you to create a tremolo effect. (This will depend on the LFO settings for the Piano voice.) The two Strings voices are using vibrato.

```
MAX NOTES> MIDI R.ch=01 , P60 E.Bass 1
  1    5    1    1    0    0    0    0
```

The 8 notes of polyphonic capability of the YS200 must be divided among the instruments used in Multi Mode. (In the following LCDs, notice that a "----" is displayed for instruments whose "Max Note" setting is 0. You will not be able to change settings for these instruments.)

```
RECEIVE CH> Max Notes=1 , P
  01   01   01   01  ---- ---- ---- ----
```

Each instrument can be set to receive a different MIDI channel. This means that a MIDI sequencer connected to the YS200 MIDI IN terminal can independently play specified voices if desired. The keyboard of the YS200 has a "Transmit Channel" setting, and in Multi Mode will play ONLY the instruments whose Receive channel matches the Transmit channel of the keyboard. To play the voices in the above LCD, the YS200 keyboard needs to be set to Transmit channel 1. See MIDI Channel in Job Mode functions.

```
VOICE NO.>Max Notes=1,R.ch=01,E.Bass 1
 P60  P07  P10  P02  ---  ---  ---  ---
```

Select a voice (0 - 99) for each instrument.

```
VOLUME>MaxNotes=1,R.ch=01 P.60 E.Bass 1
  99   99   99   99   --   --   --   --
```

Adjust the volume balance of the instruments.

```
PAN>   MaxNotes=1,R.ch,P60 E.Bass 1
 <▯>  <▮>  <▯>  <▮>  ------------
```

Each instrument can be panned to L, L+R or R in the audio output for a spacious effect when listening in stereo.

```
DETUNE>MaxNotes=1,R.ch=01,P60 E.Bass 1
  +0   +0   -1   +1   --   --   --   --
```

By detuning two voices that are to be played in unison (the two string voices in the above example), you can create a feeling of richness.

```
H B1   B3   C6   G6   ---- ---- ---- ----
L C1   C2   C4   C4   ---- ---- ---- ----
```

Each instrument can be limited to a specified area of the keyboard, to make complex keyboard splits.

```
LFO>    MaxNotes=1,R.ch=01,P60 E.Bass 1
 off  LFOb vib  vib  ---- ---- ---- ----
```

Each instrument can use its own vibrato generator, or share one of the two LFOs (LFOa and LFOb) for tremolo effects.

MAXIMUM NOTES (Max)

■ ***Function:*** Set the maximum number of notes each voice can sound.

■ ***Parameter ranges:***

MAXIMUM NOTES: 0 — 8

MIDI RECEIVE CHANNEL (R ch)

■ ***Function:*** Set the MIDI receive channel for each voice.

■ ***Parameter ranges:***

RECEIVE CHANNEL: 1 — 16, omni

VOICE NUMBER (Voice)

■ ***Function:*** Select the voice number (and the memory type from which it is selected) for each of the Multi Mode voice slots.

- Use the +/− **SELECTOR** buttons below each voice slot parameter and select the memory type (U = User, C = Card, P = Preset). Use the numeric key pad or the −/+ keys to select a voice number.

■ ***Parameter ranges:***

VOICE NUMBER: 00 — 99

VOLUME (Volm)

■ ***Function:*** Set the volume for each voice.

■ ***Parameter ranges:***

VOLUME: 0 — 99

PAN

■ ***Function:*** Determine the pan setting for each voice.

- Use the +/− **SELECTOR SEQ/PLAY** buttons below each voice slot parameter to select the pan setting (◄ □ > = Left, < ■ > = Center, < □ ► = Right).

Note:

Effect and Pan cannot be used at the same time. If a pan setting of left or right is adjusted for a voice while that voice or any other in the Multi Mode arrangement has an effect setting, the following message will briefly appear and the effect setting(s) will be ignored.

```
PAN)   MaxNotes=1,R.ch=01,P00 Elegant
*ATTENTION* Effect data was ignored!
```

■ ***Parameter ranges:***

PAN: ◄□> = Left, <■> = Center, <□► = Right

DETUNE (Detun)

■ ***Function:*** Set the degree of detuning for each voice.

Each voice can be detuned up or down relative to the originally set central pitch. Setting different detuning values to different voices lends an overall richness to the sound.

■ ***Parameter ranges:***

DETUNE: −7 — +7

NOTE LIMIT (Nlim)

■ ***Function:*** Set the lowest and highest notes at which each voice will sound.

Note Limit allows you to assign up to eight different voices to sections of the keyboard, in any fashion you desire. This Multi Mode job, in conjunction with Maximum Notes and Voice Number, is most important in creating multi-voice keyboard setups.

For example, a bass voice and a piano voice could be assigned to opposite sides of the keyboard. Note Limit would be used to determine where on the keyboard those sounds could be played. Once the bass voice is selected (in Voice Number), the low note limit could be set to C1 and the high note limit to G2. The piano voice would then be assigned to the range above that (G#2 to C6), allowing you to play independent voices with your left and right hands.

Both the currently set high note limit and low note limit values are shown in two rows on the display, but only the lower row of values can be edited. Use the numeric keypad to reverse the position of the rows on the display: pressing any number from 0 to 4 puts the low note limit row at the bottom of the display for editing; pressing numbers 5 to 9 puts the high note limit at the bottom for editing. The note values for each voice can then be set by first selecting the voice with the appropriate **+/− SELECTOR** button, and by entering the value from either the numeric keypad or the keyboard.

■ ***Parameter ranges:***

LOW NOTE (L): C-2 — G8
HIGH NOTE (H): C-2 — G8

LFO

■ ***Function:*** Set the two independent LFOs and vibrato control for each voice.

The YS200 is equipped with two independent LFOs that can be used simultaneously with any voice. However, since eight voices can be simultaneously sounded, no more than two different LFO settings (tremolo, tone, volume and wowwow) can be used at the same time. The only exception to this rule is vibrato, which is separate from the LFO (though is still considered as an LFO-type effect) and can be applied

to any voice in addition to the two independent LFO settings.

Select the voice to be changed by pressing the appropriate +/− **SELECTOR** button and set the LFO value with the +/− keys on the numeric keypad. "LFOa" corresponds to the LFO setting made for the the leftmost voice in the display and "LFOb" is the next different LFO setting. For example, if a strings voice with an LFO setting of tremolo occupied the first, or leftmost, position in the display, "LFOa" would be set to tremolo, and all other voices given an "LFOa" value would have the same tremolo setting. The actual LFO values (Speed, Vibrato and Tremolo) are set in the LFO of the Easy Edit mode. Please refer to that section for more information.

■ ***Parameter values:***

off, LFOa, LFOb, vib

Note:

You can edit voice data directly from the Multi Mode by pressing the appropriate **EASY EDIT** button; however, only the leftmost voice in the display can be selected automatically in this way. To edit other voices, you must return to PLAY mode and select the voice.

Note:

In the Multi Mode, all voices must share the same effect (reverb, delay, distortion, etc.). Initially, this 'global' effect for the Multi Mode will be No. 0 Rev.Hall. To change this, press EFFECT and make the desired setting. It will apply to all the voices. When you return to Play Mode, each voice will regain its original effect settings.

Note:

When editing voices directly from the Multi Mode, it is possible to edit a voice and yet not be able to hear it. This happens when the edited voice (the leftmost voice on the display) has a MIDI Receive channel that is different from the MIDI Transmit channel. To hear only the voice you are editing, you can:

1) Set the MIDI Receive channel (in the Multi Mode's MIDI Receive Channel job) to the same value as the MIDI Transmit channel (in the Synthesizer Job Mode's MIDI Channel).

2) Set the MIDI Receive channel (in the Multi Mode's MIDI Receive Channel job) of all other voices to a different value than that set above in step #1.

3) Press the desired **EASY EDIT** button and begin editing.

OR (if the above three steps appear too troublesome),

Select the voice manually (as described in the OPERATION BASICS chapter) and edit it as you usually do.

MULTI MODE OPERATION — A SETUP EXAMPLE

The Multi Mode has some very powerful features, but it also contains some of the more complicated functions of the YS200. This section is meant to serve as a quick introduction to the operation of some of the Multi Mode jobs and give you a clearer grasp of how to use them for your own applications.

In this setup example, we'll create a keyboard arrangement in which three separate instrument sounds — piano, brass and solo violin — can be played.

The three voices used will be Preset voices #07 Piano 1, #56 Violin 1, and #75 Sax 1.

Before we assign these sounds to sections of the keyboard, we should find out what LFO settings these voices have and which are most important. Since the voice occupying the leftmost position in the Multi Mode displays determines the setting for

"LFOa" (refer back to the description in the Multi Mode's LFO job), the voice whose LFO setting we feel is most important to keep should be assigned to the leftmost spot. (Remember that a voice's original LFO setting may be overridden or ignored if another voice precedes it in the display.) Our example is quite easy, since #56 Violin 1 is the only voice in which an LFO parameter is set to greater than 0 (in this case, tremolo = 15).

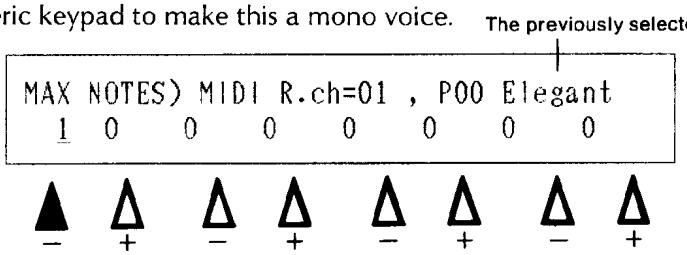
Now, let's set up the Multi parameters.

1) Press **JOB** and select **Multi**.

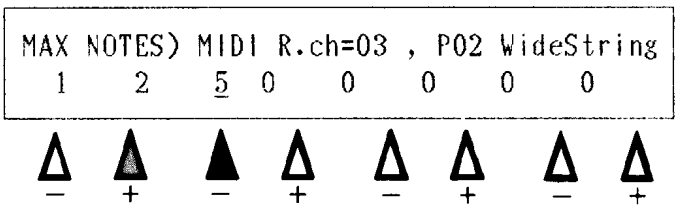
2) Select **Max** (since we must determine the maximum number of notes for each voice before doing anything else).

3) Press the leftmost – **SELECTOR** button.

4) Since the leftmost position will be occupied by the solo violin voice, enter "1" from the numeric keypad to make this a mono voice.

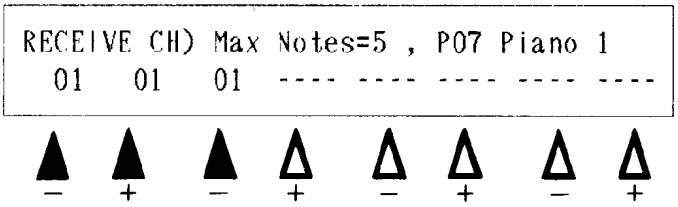


5) Now, set the maximum notes for the other two voices: 2 for voice #75 (the brass sound) and 5 for #07 (the piano sound).



6) Press **JOB** again and select **R.ch** (Receive Channel) this time.

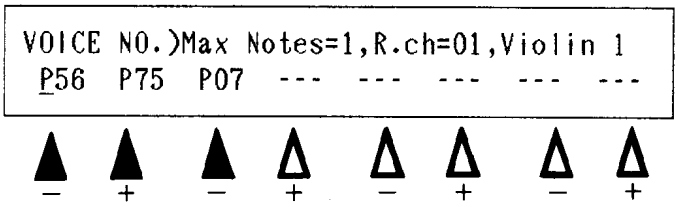
7) Set all Receive Channel values for the three voices to "01." The display should appear as shown below:



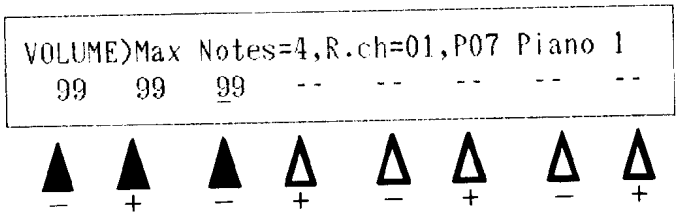
8) Select the voice numbers for each voice position. Press **JOB** again, then select **Voice**.

9) Press **PRESET** (since we must select the memory type in which the voice is located).

10) Enter "56" on the numeric keypad. Then enter Preset voice #75 and #07 in the same way. The display should appear as shown below:



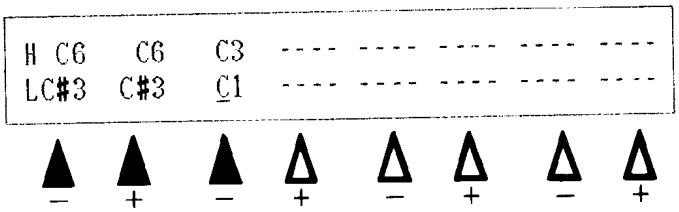
11) Press **JOB**, then select "Volm", and set the volumes of the voices to an appropriate balance.



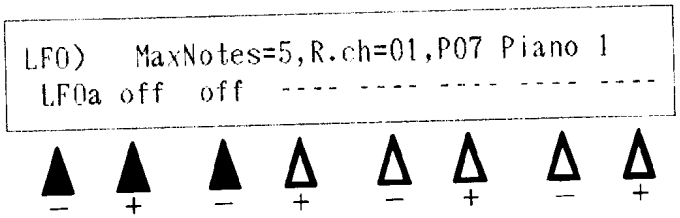
12) Next, set the note limits for each voice. This will determine the part of the keyboard at which each voice can be played. Press **JOB** again, then select **Nlim**.

13) Now you can determine the note limits for each voice — the range of the keyboard over which they will sound. Note limit settings can be changed only for the lower line of the display. To switch the Low and High limit displays, press any numeric key 0 — 4 to set the Low key limit, and any numeric key 5 — 9 to set the High key limit. The first keyboard note you press after selecting a △ button will set the new note limit for that instrument. Or, you can use the −/+ buttons located below the numeric key pad to change the note limit setting.

14) Set the first two voices to the same low note and high note limit values (C#3 and C6) and set the third to low and high limits of C1 and C3. In this way, the lower two octaves will be used to play the piano voice and the top three octaves will be used for the brass and violin. The display should appear as follows.



15) Finally, select the LFO settings for each voice. Press **JOB**, then select **LFO**. Use the **+/− SELECTOR** buttons under the voice positions to select the desired voice, then use the + and − keys on the numeric keypad to set the value. The solo violin voice, since it has the only LFO setting, should be set to "LFOa." The other two voices may be set to "off."



Now, play the voices from the keyboard... and then go on to create and experiment with your own Multi Mode settings.

SEQUENCER REFERENCE

WHAT IS A SEQUENCER?

If you have worked through the simple example on page 20 or listened to the demo songs, you probably have an idea of the possibilities of the YS200's sequencer. Here we will give a more detailed explaination.

The sequencer built into the YS200 is much like a multi-track tape recorder, with the important difference that instead of recording sound, it records a sequence of events; each note you play, each voice number you select, each press of the sustain pedal is stored in memory as data. In other words, instead of recording the **sound**, you are recording the **performance**.

When you play back a sequence, this data makes the YS200's tone generating circuits produce sound.

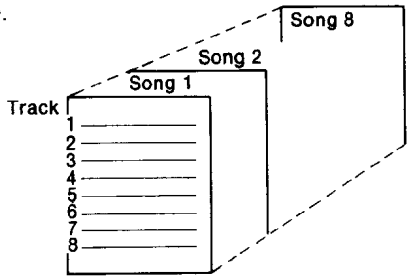
Sequence recording (as opposed to sound recording) has many advantages. For example, you can change sounds during playback. ("Maybe that Clarinet solo would be better played by an Oboe," etc.) The tempo can be changed without affecting the pitch, meaning that you can record a difficult passage at a slow tempo and play it back faster. To record especially complex parts, you can even enter notes one by one (this is called Step Recording). If you make a mistake, you can use Step Recording to re-record just that single wrong note.

TRACKS, VOICES AND SONGS

Most musical compositions are played by two or more instruments, each playing their own part. The YS200's sequencer has 8 **tracks**. Each track is an independent part (up to 999 measures long) and controls a different instrument. A track can contain voice changes, meaning that (for example) the same track could play a Sax voice, then a Trumpet, then a Horn.

The YS200 can sound up to eight different voices at once, so by using a sequencer track for each voice, it is possible to create very complex songs. (See note.)

Data for these 8 tracks can be given a name and tempo, and stored as a **Song**. The YS200 can remember 8 different songs you create. Your songs can also be stored on a data cartridge.



SEQUENCER FUNCTIONS

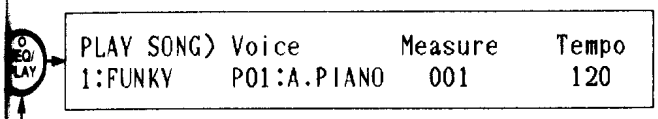
Before we explain the operational details of the YS200 sequencer, here's an overview of how it is organized and what it can do. (The Sequence Functions reference card included with this manual has a similar chart for your convenient reference.)

Important:

- To enter the Sequencer mode, press SEQ/PLAY. The LED will light (red), indicating that the sequencer is now active, and that **all buttons will now perform the functions printed in green**. For example, the Easy Edit button marked EC (with TR1 printed in green) will turn track 1 on and off. When explaining the Sequencer mode, we will be using these names for the buttons.
- To return to Synthesizer mode, press EXIT.

The two main Sequencer mode functions are to **play** a song and to **record** tracks to make a song.

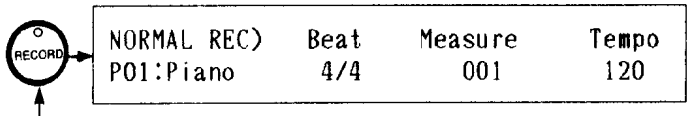
PLAY A SONG



Press SEQ/PLAY to enter Sequence mode ("Play" mode). Details on page 40.

Select a song. You can change the voice and tempo, and begin playing from any measure.

RECORD A SONG



Press RECORD to enter "Record" mode. (Normal, Punch or Step recording is selected in JOB, below.) Details on page 40.

You can change the voice, beat (time signature), and tempo of the song, and begin recording from any measure.

There are two other functions in Sequencer mode; Job (various editing and control functions) and Voice (select the voices used in the song).

JOB SELECT

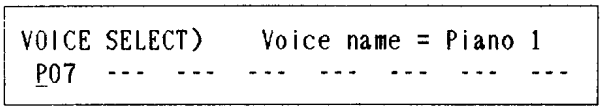
Press JOB, then press one of the −/+ selector to select a job. Details on page 50.

Song: Set song name and tempo, store or clear a song
Qntz: "Tighten up" timing of a track
Cnd: Select sync and specify recording conditions
Edit: Erase or Copy tracks, Delete or Insert measures
Mix: Combine two tracks into one track
Card: Save/Load data to card or MIDI
Rec: Set record mode and receive channel
Efct: Select an effect (Reverb, etc.)

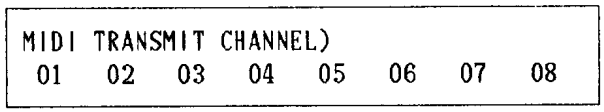
VOICE SELECT

Repeatedly press VOICE to access "Voice Select", "Max Notes", or "MIDI Transmit Channel". Details on page 57.

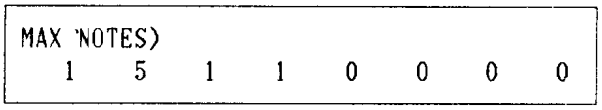
Select the voice (sound) played by each track.



Each sequencer track can transmit data from MIDI OUT to control other synthesizers.

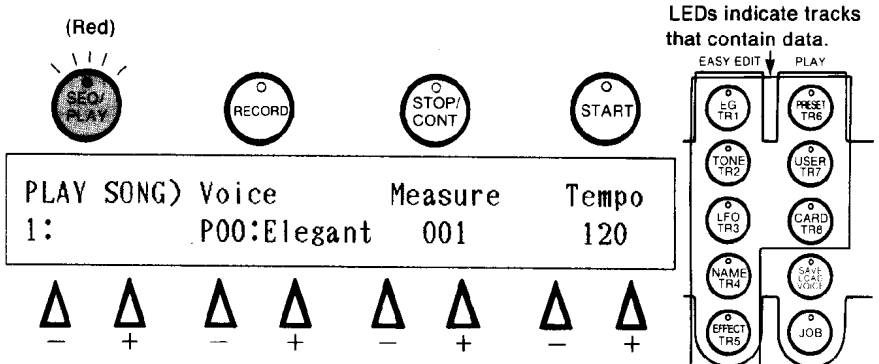


The 8-note sound producing capability of the YS200 must be distributed among the 8 instruments.



PLAY

This is where you play back a song. When you press SEQ/PLAY, the LED will light (red) indicating that you are in Sequencer mode. The display will be as follows. Use the −/+ buttons below the LCD to select Song, Voice, Measure and Tempo.



PLAY SONG: Select a song (1 — 8) to playback. If the song has a name it will be displayed.

Voice: Initially, the voice used in the first track will be displayed. You can play this voice from the keyboard, or select a different voice (00 — 99) if desired. (See note below.)

Measure: Select the measure from which to begin playback. (You will not be able to select a measure beyond the actual end of the song.)

Tempo: Initially, this will be the Tempo you set when you Stored the song (see Store, page 50) but you can set a new Tempo of 60 — 180 quarter notes per minute.

Before starting playback, you can press a Track Select button to mute the track so that it will not be heard. (Blinking green = muted.) Pressing a Track Select button will reset the selected Measure to 001.

To begin playback from measure 1 press START. To playback from the location specified in "Measure" press STOP/CONTINUE. While playing, the SEQ/PLAY LED will blink to indicate the tempo of the song. To stop playback, press STOP/CONTINUE.

- Playing the YS200 keyboard will sound the voice indicated in "Voice", but remember that the voice will be limited by the Max Notes setting for that track.
- Before starting playback, you can press a track select button to mute/unmute a track.
- In addition to using the −/+ keys to step through the Voices, you can use the numeric key pad to directly select a Voice (00 — 99). To select Preset, Cartridge or User voices, press VOICE and then PRESET, USER, or CARTRIDGE. See the detailed explanation of VOICE, page 56.

RECORD

This is where you record tracks. A song contains 1 — 8 tracks, and each track is recorded separately. The YS200 sequencer gives you three ways to record;

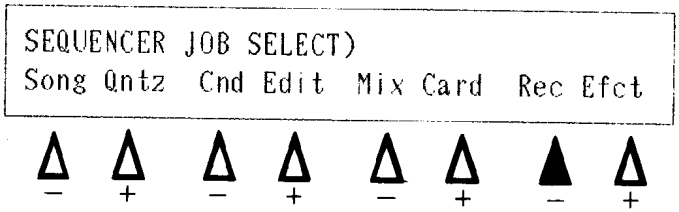
Normal Recording: Your keyboard playing will be recorded just as you hear it.

Punch Recording: The same as Normal recording except that recording takes place only during the measures you specify. For example you can re-record over a mistake and keep the rest of a track.

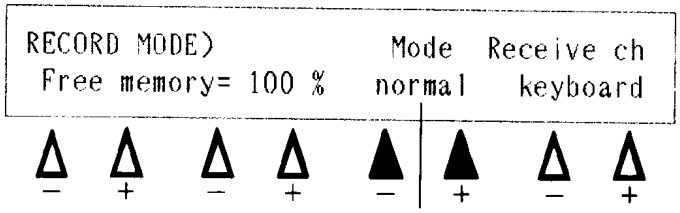
Step Recording: Enter individual notes one by one from the keyboard. This allows you to create very complex passages that would be difficult to actually play.

Initially, "Normal" recording mode is selected. If you need to change the recording mode, press JOB to get the following display.

Initially, "Normal" recording mode is selected. If you need to change the recording mode, press JOB to get the following display.



Next press the △ button that selects "Rec" to get the following display.



Use the **−/+** keys for "Mode" to select "normal", "step" or "punch". (This is explained in detail in the Job section, page 50.)

Finally, press RECORD (the LED lights red) to enter Record mode. (If the LED lights green and the LCD shows "PART TYPE", press RECORD again to make it light red.) Each recording mode (Normal, Punch and Step) will be explained separately in the following sections.

While playback is stopped, you can press a track select button (TR1 — TR8) to see (and change) the voice used in each track 1 — 8. If the track is playing an instrument that is set to Max Notes = 0, the display will show "---".

Note:

The YS200 sequencer has a capacity of about 10,000 notes. If you run out of memory while recording, the LCD will show "Memory Full", and the data in the track being recorded will be lost. It is a good idea to check the "Free Memory" display (Record Mode job) before recording.

MULTI-TRACK RECORDING PROCEDURE

If you have ever used a multi-track tape recorder, operating the YS200 sequencer will be a familiar experience. The basic idea of multi-track recording is to record a part, then record another part while listening to the first part. For example, you might first record a Piano part on track 1.

Track 1 ▭▭▭▭▭▭▭▭▭▭ Piano (recording)
Track 2
Track 3

Next you would record the Bass part on track 2 while listening to the Piano (track 1).

Track 1 ▭▭▭▭▭▭▭▭▭▭ Piano
Track 2 ▭▭▭▭▭▭▭▭▭▭ Bass (recording)
Track 3

Finally you would record a Sax part on track 3 while listening to the Piano and Bass (tracks 1 and 2).

Track 1 ▭▭▭▭▭▭▭▭▭▭ Piano
Track 2 ▭▭▭▭▭▭▭▭▭▭ Bass
Track 3 ▭▭▭▭▭▭▭▭▭▭ Sax (recording)

In this way, you can sound like an entire ensemble all by yourself!

Important:

Before you begin recording, you should set the YS200 synthesizer to a combination of instruments (an "ensemble") appropriate to the song you will record, as explained in the next section, Part Type.

PART TYPE

The YS200 sequencer has 8 tracks, and the YS200 synthesizer can produce up to 8 parts simultaneously. However, since a maximum of only 8 simultaneous notes can be sounding at once, these 8 available notes must be distributed among the 8 voices. Thus, if you need to play chords of 2 or more notes with a single voice, one or more of the other voices need to be set to Max Notes = 0. (This has already been explained in the Synthesizer section. See Multi Mode, Max Notes on page 33.)

There are two ways to set up a combination of parts, i.e., an "ensemble".

1. Use a preset Part Type (see the following section).
2. Use the Sequencer mode VOICE function.

However, setting the keyboard range for each part can be done only in Synthesizer mode, Multi Mode. You may have to go back to Multi Mode to change keyboard "splits" if necessary.

Here is a typical five-part "ensemble" of Harp, Violin, Cello, Flute and Oboe, each part played by a different track of the sequencer. Notice that the total number of simultaneous notes for all voices equals 8.

Track			
Track 1	1	Harp	3
Track 2	2	Violin	2
Track 3	3	Cello	1
Track 4	4	Flute	1
Track 5	5	Oboe	1
Track 6	6	—	0
Track 7	7	—	0
Track 8	8	—	0

Total simultaneous notes for all voices is = 8 (max)

Sequencer tracks 1 — 5 will play the corresponding instrument. In the above example only five tracks are needed, and tracks 6 — 8 will not play a YS200 instrument. (However these tracks can be used to play an **external** synthesizer via MIDI. See MIDI Transmit Channel, page 58.)

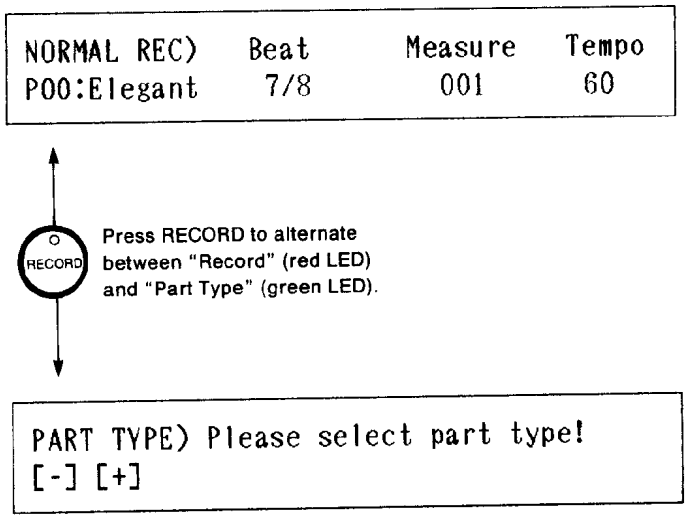
Each sequencer track can record up to 8 simultaneous notes. However, when recording a track, you should remember not to exceed the simultaneous note capacity for each instrument. For example, track 1 should contain chords of no more than 3 simultaneous notes. If track 1 contained chords of 4 or more notes, notes over the limit would make the previously played notes cut off unnaturally. Keep in mind that instruments like Cello and Oboe are usually played monophonically (one note at a time), and make the best of your 8 simultaneous notes.

PRESET PART TYPES

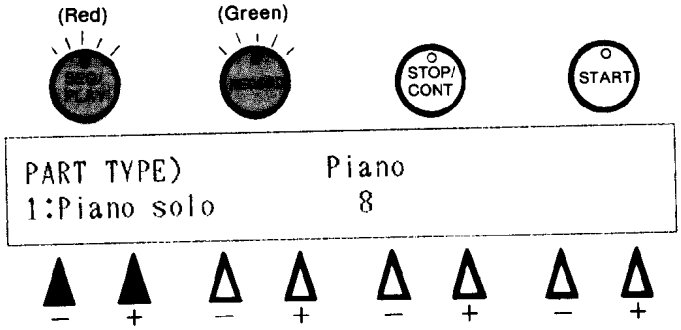
Seven different Part Types ("ensembles") are preset for your convenience.

For example by selecting preset Part Type "2:Pops", you instantly have available a four-member band of Bass, Piano, Strings and Vibe, with the Piano able to produce up to 5 notes simultaneously. This saves you the trouble of making settings in Sequencer Voice mode, page 57.

If you do **not** select one of the preset Part Types, the Synthesizer Multi Mode settings you made for Voice Select and Max Notes will be used. This allows you to use your very own ensemble combination.



To select a Part Type, press −/+ to see the 7 choices below.



Select a part type

1: Piano solo	Piano (8)
2: Pops	Bass (1), Piano (5), Strings (1), Vibe (1)
3: Fusion	Bass (1), Piano (5), Brass (1), Flute (1)
4: Rock	Bass (1), Brass (5), Guitar (2)
5: Jazz	Bass (1), Piano (5), Flute (1), Vibe (1)
6: Latin	SteelDr (1), EP (4), Brass (1), Marimba (1), Perc (1)
7: Classic	Harp (3), Violin (2), Cello (1), Flute (1), Oboe (1)

After selecting one of these preset Part Types, you can modify the settings by pressing VOICE and changing the settings for Voice Select, Max Notes and MIDI Transmit Channel (see Voice, page 57).

Note:

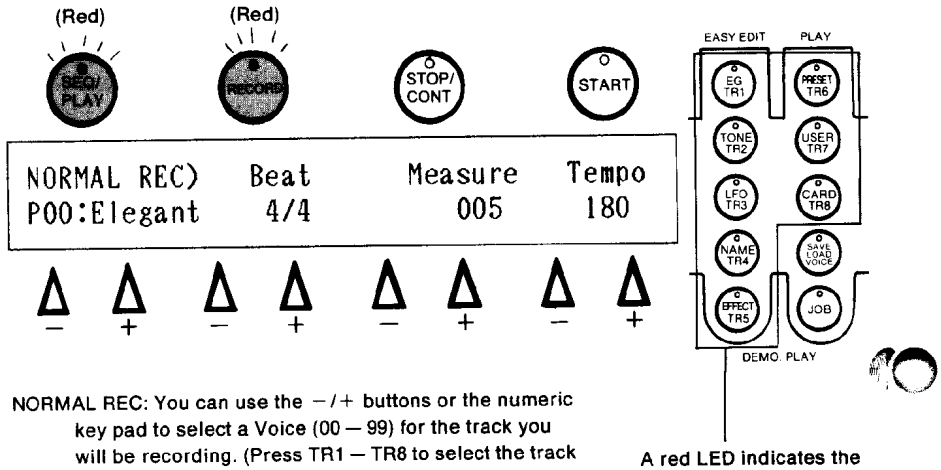
Remember that selecting one of these preset Part Types will replace the Sequencer Voice Mode settings you made for Voice Select and Max Notes. If you want to use the present instrument setup for your recording, **do not select a preset Part Type**.

When you return to Synthesizer mode, your previous Multi Mode settings will be restored.

NORMAL RECORDING

In Normal recording, notes are recorded in the exact timing that you play them. Voice changes and movements of the Pitch and Modulation wheels, etc. (see below) will also be recorded, letting you record an expressive performance.

When you press RECORD, the LED will light (red) and you will get the following display. (If the LED lights green and the LCD shows "PART TYPE", press RECORD again to make it light red. Part Type is explained on page 42.)



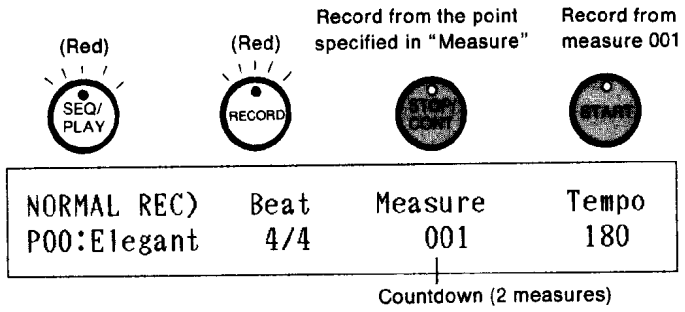
NORMAL REC: You can use the −/+ buttons or the numeric key pad to select a Voice (00 — 99) for the track you will be recording. (Press TR1 — TR8 to select the track to record.)

Beat: You can set a time signature (1/4 — 4/4, 1/8 — 8/8) for the song **only if all tracks are empty**. Once a track has been recorded, the time signature of the song cannot be changed. (All tracks share the same time signature for the entire song.)

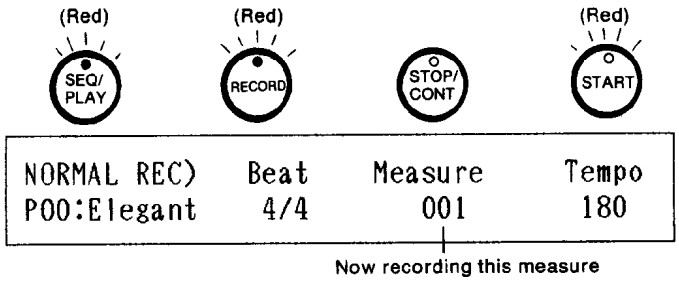
Measure: You can select a measure from which to begin recording when you press STOP/CONTINUE. (You can select any measure 1 — 999 even if existing tracks in the song are not actually that long.)

After you have selected a preset Part Type or manually set the instrument assignments in the Synthesizer Multi Mode (see page 32) or Sequencer Voice Mode (page 57), you are ready to record. For example to record on track 1, press the track switch TR1 (the LED lights red). You can record only one track at a time.

To begin recording from measure 1, press START. To begin recording from the location you specified in "Measure", press STOP/CONTINUE. There will be a two-measure countdown to give you the tempo. (If you play a note or move a controller before the countdown reaches "1", the note or controller data will be recorded at the very beginning of the track.)



When the countdown reaches "1", recording will begin, and the measure currently being recorded will be displayed. While recording, the SEQ/PLAY LED will blink (red), to indicate the tempo.



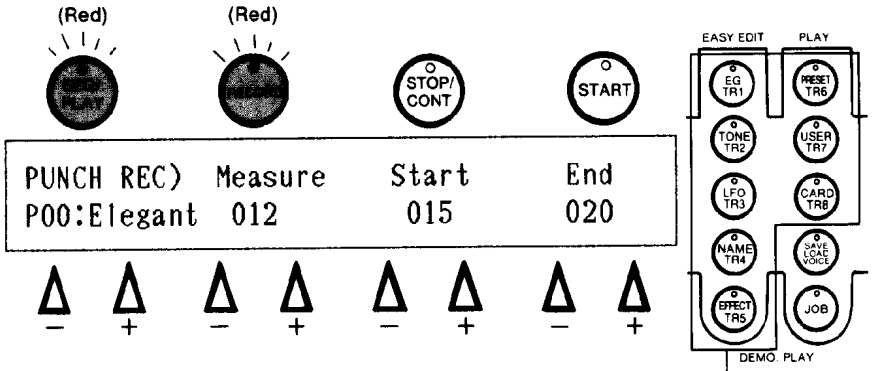
When you have finished recording or want to quit, press STOP/CONT. Recording will end and you will return to PLAY mode. (You can also stop recording by pressing EXIT, but you will then go back to Synthesizer mode.) To record another track, press RECORD, select another track (TR1 — TR8), and record again.

- If you have already recorded other tracks, you will probably want to listen to them while recording the new track. Tracks indicated by a green LED will playback as you record. In PLAY mode you can use the track select buttons TR1 — TR8 to switch a track between Play (green LED) and Mute (blinking green LED). In RECORD mode the track select buttons are used only to select a track for recording.
- In Normal recording if you record on a track that already contains data, the new recording will be **added** to the original data. This means that if you make a mistake, you will have to get rid of it by recording over it using Punch record (which will **erase** the original data), or by using the "Erase" job (page 52).
- Normal recording (and Punch recording) will record control data such as movements of the Pitch and Modulation wheels at the left of the keyboard, and also your blowing into a Breath Controller (Yamaha BC1 or BC2, sold separately) connected to the BREATH CONT jack. The effect of the Modulation wheel and Breath Controller is determined by the "Cntrl" setting (page 29) in Synthesizer mode JOB. Voice changes (00 — 99) you make while recording are also memorized. (Use the left-most −/+ buttons or the numeric key pad.) However you cannot select a different **type** of voice (preset, user, card) while recording.
- Depending on the settings in the "Condition" job (page 51), Aftertouch and Velocity data can also be recorded. However, remember that the more controller data you record, the faster memory will be used up. (If **only** note data is recorded, the sequencer has a capacity of about 10,000 notes.)

PUNCH RECORDING

Punch In recording is the same as Normal recording with the difference that **only the measures you specify will be recorded**. This is very useful if you have made a mistake in just one section, but want to keep the rest of a track.

When you press RECORD, the LED will light (red) and you will get the following display. (If the LED lights green and the LCD shows "PART TYPE", press RECORD again to make it light red. Part Type is explained on page 42.)



PUNCH REC: You can use the −/+ buttons or the numeric key pad to select a Voice (00 — 99) for the track you will be recording. (Press TR1 — TR8 to select the track to record.)

Measure: You can select a measure from which to begin **playback** when you press STOP/CONTINUE. (This measure must be less than or equal to the "Start" measure.)

Start: Specify the measure to begin recording.

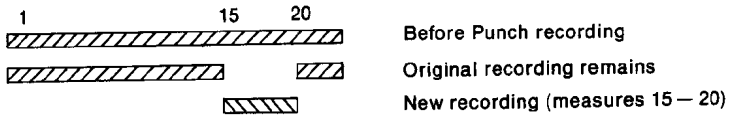
End: Specify the measure to end recording.

A red LED indicates the track being recorded. (Press to select 1 — 8.)

Punch In recording is used mainly when you want to re-record a certain part of a track. Press a track select button to select a track (1 — 8). Then set the start and end of the area to be re-recorded. When you press START, playback will begin from measure 1. (Or press STOP/CONTINUE to begin playback from the point specified in "Measure".) You can play along with the other tracks, but nothing will be recorded until you reach the "Start" point.

When you reach the "Start" point, recording will begin, and you playing will be recorded exactly as in Normal recording (page 44). When you reach the end of the measure specified in "End", recording will stop (but playback will continue).

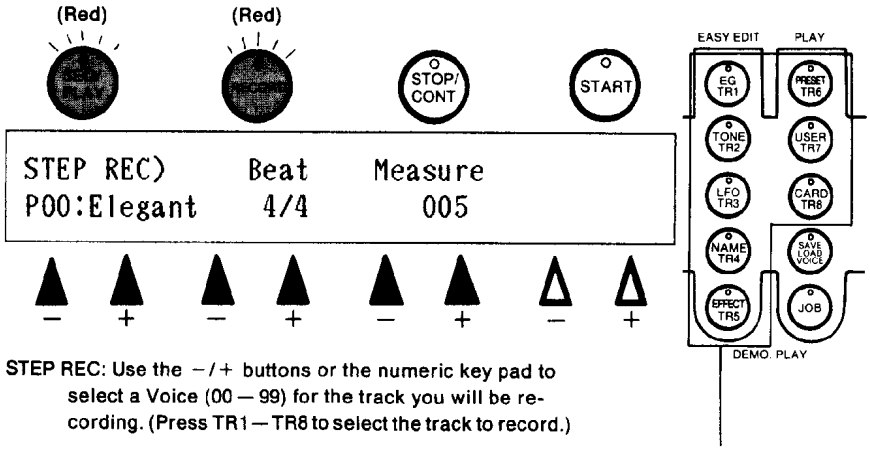
For example if you press START from the LCD shown above, the track would change as shown in the following diagram. Measures 15 — 20 would be replaced by your new recording.



- If you want to quit before the "End" point is reached, press STOP/CONT. Recording will end and you will return to PLAY mode. (You can also stop recording by pressing EXIT, but you will then go back to Synthesizer mode.)
- The original data in the measures between "Start" and "End" **will be erased**. This means that if you don't play anything during Punch recording, this section of the track will be empty.
- Especially when the Punch Recording area is toward the end of a long song, it is convenient to set the "Measure" to a point a few measures before the "Start" and press STOP/CONTINUE to begin playback from "Measure". This way you do not have to wait for a long playback to get to the part you need to re-record.

STEP RECORDING

In Step recording, you can enter individual notes one by one from the keyboard. This allows you to create very complex passages that would be difficult to play by hand. As in Normal recording, if the track you are recording already contains data, the newly recorded data will be **added** to the previous data. For example, you can record a passage using Normal or Punch recording, and than use Step record to add additional notes, insert voice changes, or erase a note or program change.
When you press RECORD, the LED will light (red) and you will get the following display. (If the LED lights green and the LCD shows "PART TYPE", press RECORD again to make it light red. The Part Type function is explained on page 42.)



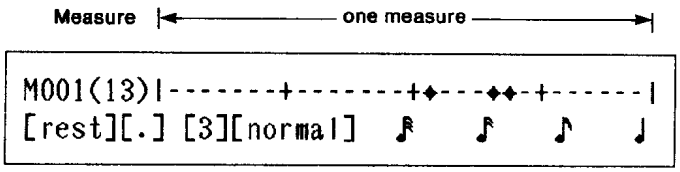
STEP REC: Use the −/+ buttons or the numeric key pad to select a Voice (00 — 99) for the track you will be recording. (Press TR1 — TR8 to select the track to record.)

Beat: You can set a time signature (1/4 — 4/4, 1-8 — 8/8) for the song **only if all tracks are empty**. Once a track has been recorded, the time signature of the song cannot be changed. (All tracks share the same time signature for the entire song.)

Measure: You can select a measure from which to begin step recording when you press STOP/CONTINUE. (You can select any measure 1 — 999 regardless of whether or not such a measure is beyond the actual end of the song.)

A red LED indicates the track being recorded. (Press to select 1 — 8.)

As in Normal recording, press START to begin recording from measure 1, or press STOP/CONTINUE to begin recording from the location you specified in "Measure". In Step recording the LCD will graphically show one measure at a time (each division represents a 32nd note), and will look something like the following.

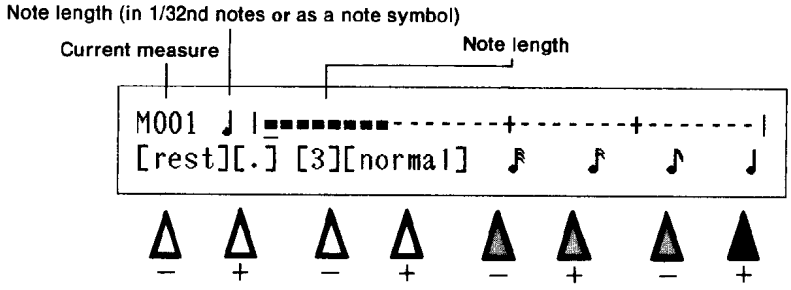


Notes are indicated by a diamond-shaped mark. In the above LCD you can see that the third beat of measure 4 contains three notes. (For details, see below.)
When you have finished recording, press STOP/CONT. Recording will end and you will return to PLAY mode. (You can also stop recording by pressing EXIT, but you will then go back to Synthesizer mode.)

RECORDING NOTES

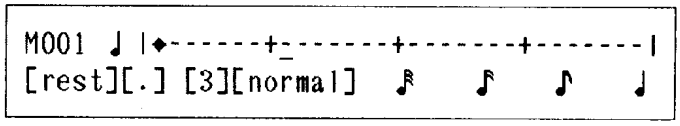
Each time you press and release a note on the YS200 keyboard, it will be recorded at the current position, and the position will advance. If you press more than one note before releasing the previous note, the notes will be recorded at the same position — i.e., a chord.

In Step Record, the length of each note is determined not by how long you press the key, but by the note length you select; 1/32, 1/16, 1/8 or 1/4 note. Press one of the four right △ buttons to select a note length. The selected note length will be displayed as a note symbol to the right of the Measure. The LCD will show a bar indicating the note length (in steps of a 1/32nd note), beginning from the current position in the measure. For example if you press the △ button to select a quarter note (the right-most △ button), the LCD will look as follows.



Selecting an additional note length will **add** to the note length. For example if you pressed △ again to select another quarter note, the result would be a half note. You can also use the ◁ ▷ buttons below the numeric key pad to adjust the length of the selected note, to make the note shorter or longer in steps of a 32nd note.

From the above LCD, if you press and release a note of the YS200 keyboard, a quarter note will be entered, and the cursor position will advance. The LCD will look as follows.

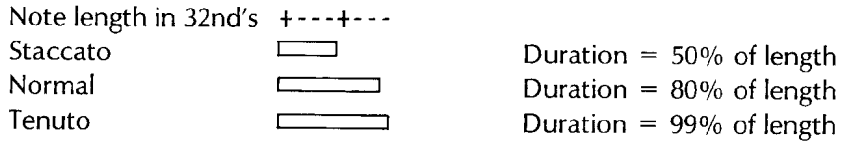


Notice that a diamond mark indicates the note you recorded. You may now press the YS200 keyboard to record another note of the same length, or select a new note length.

In this way, continue pressing and releasing the keyboard to record notes.

- Use the ◁ ▷ keys (below the numeric key pad) to make fine adjustments in note length. If you continue pressing ◁, the note length bar will become shorter, and finally disappear. **Now you can use the ◁ ▷ keys to move to a different position.** (For example to record a note at an earlier location.)
- When you press the third △ from left to select [3], the LCD will show "***3***, and note lengths will be reduced to 2/3 of their normal value, letting you enter triplets. For example if you have selected a note length of 1/4 (eight 32nd notes), selecting [3] will make the note length equal six 32nd notes. (If the resulting note value does not divide evenly into 32, the next highest note value will be used.) Pressing the same △ button again will return to the "[3]" display, and note lengths will be their normal value.
- Selecting [.] (the second △ from left) will increase all further note lengths by 50% to produce "dotted" notes. Press the △ again to return to normal note lengths.

- Selecting a note duration (normal, stacatto or tenuto) affects the time the note is **held**. (The note length bar in the LCD will not change.) The following diagram shows a quarter note (8 x 1/32) with different note durations.



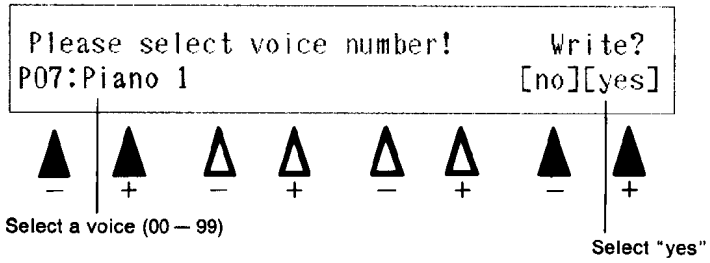
- Pressing △ to select "rest" will advance the position one note length **without entering a note**; i.e., a rest.

INSERTING A VOICE CHANGE

As part of the song data, the beginning of each track contains a voice number which will be selected for the track whenever you begin playing the song. (This is the voice number you selected in VOICE, Voice Select, page 57.)

However, you can insert other voice changes at any point in a track. For example, you might want the Piano part to change to an Electric Piano for the chorus, and then change to an Organ for the ending.

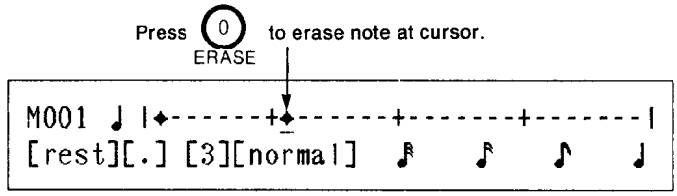
To insert a voice change at the current location, press VOICE. You cannot change voice memory **types** in the middle of a track. The following LCD will appear.



Use the −/+ buttons or the numeric key pad to select a voice (00-99). When you have selected the voice you want, select "yes" and the voice change will be inserted into the track. (A "p" mark will indicate the location of the program change.) If you change your mind and decide not to insert a voice change, select "no" to go back to recording notes.

ERASING A NOTE OR VOICE CHANGE

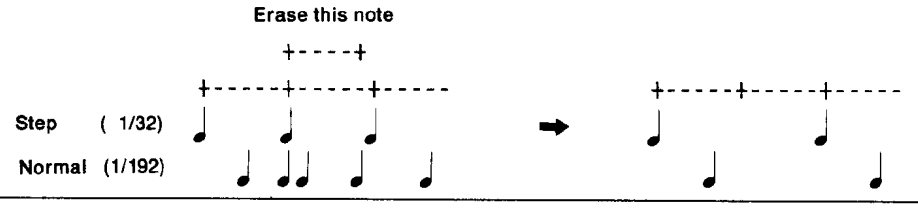
When the note length bar is not displayed, you can use the ◁ ▷ keys to move the cursor forwards or backwards. With the cursor positioned on the Note or Program Change you wish to erase, press ERASE (the "0" key of the numeric key pad). All notes and program changes within the specified 32th note length will be erased. (Other data such as controller data recorded in Normal or Punch recording modes will remain.)



If desired, you can now record a different Note or Program Change to replace the data you just erased.

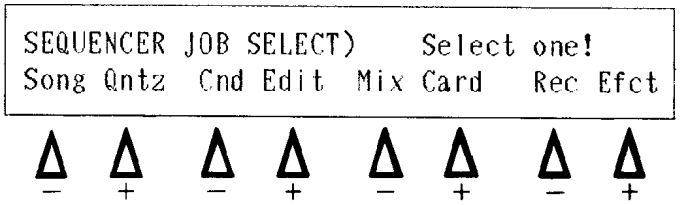
Note:

The timing precision in Step record mode is one 32nd note. Erasing data (a note or voice change) actually erases **all** data in the specified 32nd note region. Although Normal or Punch record modes have six times greater timing precision (one 192nd note), these "in-between" notes will be displayed and edited as though they were a single note at 32nd note intervals.
The following diagram illustrates this. The same track contains notes recorded in Step record (1/32 precision) **and** notes recorded in Normal record (1/192 precision). Notice how the track data changes when you erase a note.



SEQUENCER JOB

The Sequencer Job mode provides some useful editing and control features. When you press JOB, the LED will light (red) and you will get the following display. (You cannot enter Job mode while playing back or recording.) Use the −/+ buttons below the LCD to select one of 8 jobs.



Song (Song): Set a name and tempo for the song. Store (or clear) a song.

Qntz (Quantize): "Tighten up" the timing of a song.

Cnd (Condition): Specify various recording conditions.

Edit (Edit): Erase or Copy tracks, Delete or Insert measures.

Mix (Mixdown): Combine the data of two tracks into a single track.

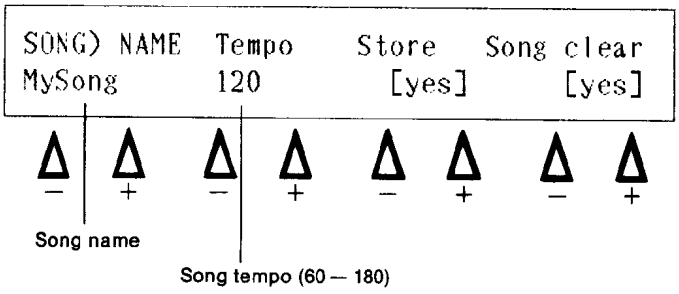
Card (Card): Save/load sequence data in card memory. Also transmit/receive sequence data via MIDI.

Rec (Record mode): Set the record mode and reception channel. Display the amount of free memory.

Efct (Effect): Select the type of effect (Reverb, Delay, etc.), and make settings.

SONG

Song lets you name and store song data to the currently selected song memory. You can also clear the recorder memory. Press JOB, then press the button selecting "Song" to get the following display.



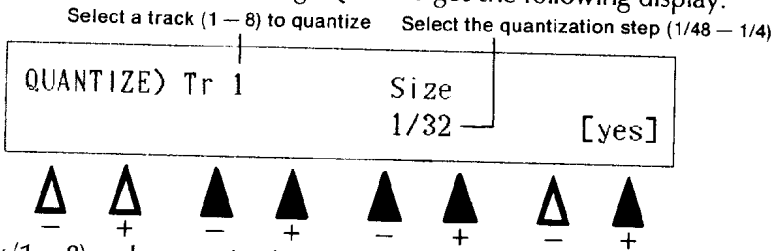
You can enter an 8-character name for your song as explained in Synthesizer mode Easy Edit, NAME (page 15), and also specify a tempo to be selected whenever this song is loaded into memory. When you press the button selecting "Store", the data in recorder memory will be stored in the currently selected song memory (Track 1 — 8). Each Song memory contains the following data;

- 8-character song name.
- Song tempo
- Time signature
- 8 tracks of data, each with a Voice Number, Voice Bank (preset, user or card) and Max Notes setting.
- Effect Number, Effect Time and Effect Balance.

You can also **erase** the currently selected song by pressing the △ button to select "Song clear". The song name will be set to all blanks, and all track data will be erased. Other settings (tempo, time signature, voice numbers, max notes, etc.) will not be affected. This function is useful when you want to redo the entire song.

QUANTIZE

Quantize lets you adjust the timing of all notes in a track to a specified interval. Press JOB, then press the △ button selecting "Qntz" to get the following display.



Select a track (1 — 8) and a quantization "size" or "step" of 1/48, 1/32, 1/24, 1/16, 1/12, 1/8, 1/6 or 1/4 note. When you press the △ button selecting "yes", you will be asked "Sure?". If you are sure you want to Quantize the track, select "yes" again. All notes in the track will be moved to the nearest interval of the "Size" you specify.

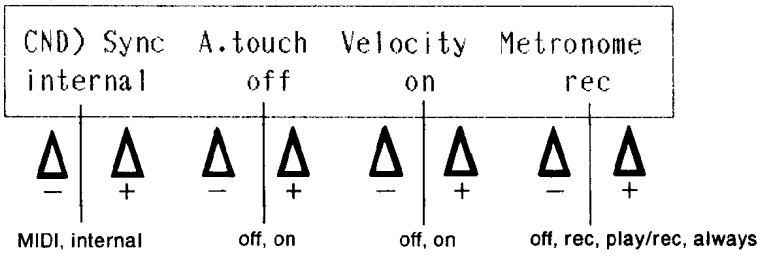
Quantization is often useful for "tightening up" tracks you recorded in Normal or Punch recording. The following diagram shows the effect of quantizing (the rulers in the diagram are divided into units of the quantization "Size").

As shown in the above example, it is possible that notes which were originally played separately may be moved together, causing them to be played as chords.
Be sure to specify a "Size" that is appropriate to the intended musical result. For example if the shortest note value should be a triplet over a quarter note, you would specify a "Size" of 1/12, since 3 × 1/4 = 1/12.

Quantization cannot be undone, and sometimes the results may not be to your liking. Before you Quantize a track, it may be a good idea to copy it to an unused track (use the Edit/Copy job, page 53). If you need to, you can copy the original data back to the first track and re-do the quantization using a different size.

CONDITION

Condition lets you specify how the sequencer will record data. Press JOB, then press the button selecting "Cnd" to get the following display.



Sync: Normally you will leave this set to "internal", so that the internal clock of the YS200 controls the tempo of the built-in sequencer and the tempo of all devices connected to the YS200 MIDI OUT. However if an external sequencer (or rhythm machine) is connected to the YS200's MIDI IN, and you want the YS200 sequencer to play or record in synchronization with the external sequencer, you should set this to "MIDI".

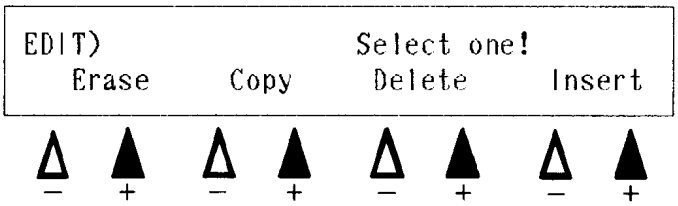
A.touch: When this is "on", Aftertouch data will be recorded whenever you press down on the keyboard. Aftertouch can be used for very expressive effects while playing, but it produces alot of data, which will quickly fill up sequencer memory. If you don't need to record Aftertouch, conserve sequencer memory by setting this to "off".
The effect that Aftertouch will have on each voice is determined by the settings in the "Edit" job of the Synthesizer mode.

Velocity: When this is "on", the force (velocity) with which you play each note will be recorded. This will make your recording more expressive, but if you don't need to record Velocity, you can save a bit of sequencer memory by setting this to "off". (Notes without velocity occupy 25% less data space.)

Metronome: This lets you select when the metronome will be heard. You can choose from "off" (always off), "rec" (on during recording), "play/rec" (on during recording and playback) or "always" (on at all times while you are in Sequencer mode). In most cases, you will need to hear the metronome only when recording.

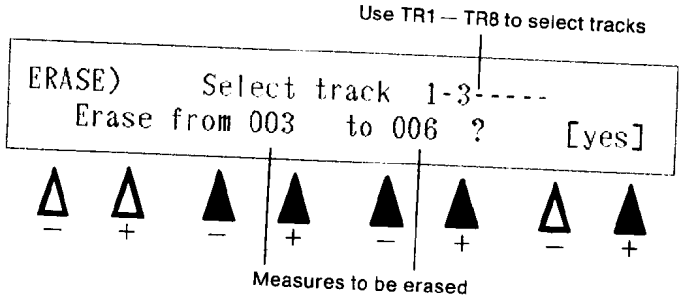
EDIT

Edit gives you four ways to modify the data in a track. Press JOB, then press the △ button selecting "Edit" to get the following display.



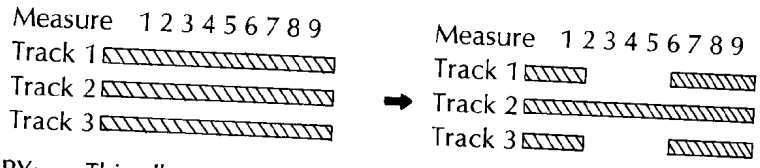
Press a △ button to select the operation you need. After making the desired settings, execute the operation by pressing the button to select "yes". You will be asked "Sure?", so if you are sure you want to execute, select "yes" again.

ERASE: This will erase specified measures of specified tracks. The empty measures will remain in the track.

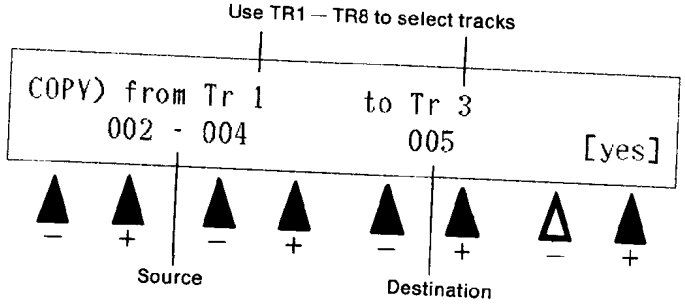


Press a track select button (TR1 — TR8) to select (or un-select) a track.
Use the −/+ buttons below the LCD to set the beginning and end of the area to be erased. When you press △ to select "yes", all data will be erased from the specified measures of the specified tracks.

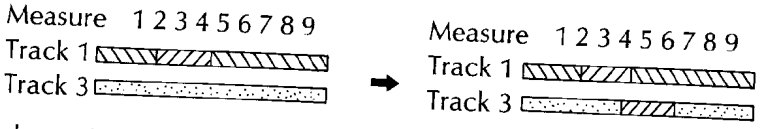
For example if you selected "yes" in the above LCD, tracks 1 — 3 would change as follows.



COPY: This allows you to copy specified measures of a track to another track.

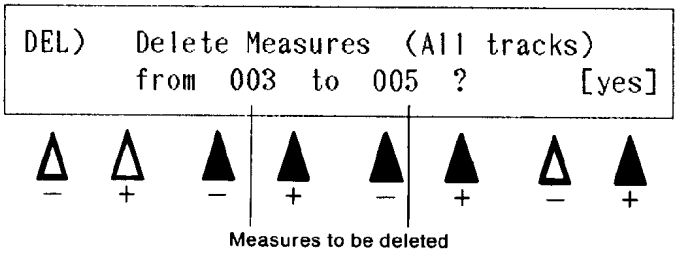


Press two track select buttons (TR1 — TR8) to select a source and destination track. (First press selects the source, second press selects the destination.) Use the −/+ buttons below the LCD to set the beginning and end of the area to be copied, and the destination to which to copy the measures. When you press ^ to select "yes", the specified source measures will be copied to the destination, **replacing the original data starting at the destination measure.**
For example if you selected "yes" in the above LCD, the tracks would change as follows.

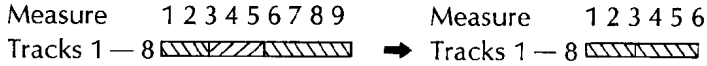


The data originally in measures 4 — 6 of track 3 would be lost.
Of course the source and destination tracks can be the same if desired, letting you copy measures to another point in the same track. You might use this function to copy a rhythm pattern or melodic motif that repeats throughout the song.

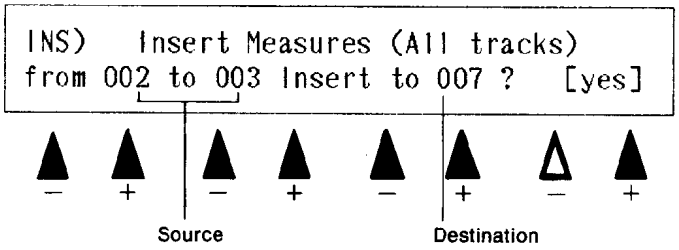
DELETE: This allows you to delete specified measures **from all tracks**. I.e., the entire song (all tracks) will become shorter.



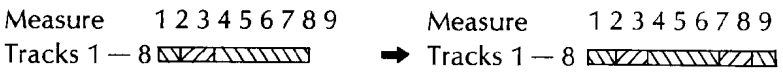
Use the −/+ buttons below the LCD to set the beginning and end of the area to be deleted. When you press △ to select "yes", the specified measures will be deleted. For example if you selected "yes" in the above LCD, all tracks would change as follows.



INSERT: This allows you to insert (copy) specified measures **into all tracks**. I.e., the entire song (all tracks) will become longer.



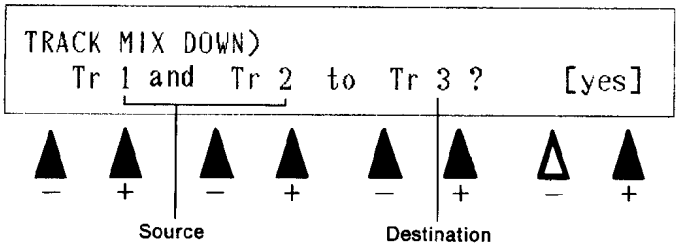
Use the −/+ buttons below the LCD to set the beginning and end of the area to be inserted (copy source), and the destination to which to copy the measures. When you press the selector button to select "yes", the specified source measures (of all tracks) will be copied to the destination. Measures beyond the destination will be pushed back, making all tracks longer by the same amount.
For example if you selected "yes" in the above LCD; all tracks would change as follows.



This function might be used to copy an entire chorus (all tracks) to another point in the song, saving the trouble of re-recording it.

TRACK MIX DOWN

Track Mix Down lets you combine the data of two tracks into a single track. Press JOB, then press the button selecting "Mix" to get the following display.



Use the −/+ buttons below the LCD to set the source tracks and the destination track. When you press △ to select "yes", the two source tracks will be mixed and added to the data in the destination track. The source tracks will retain their original data. For example if you selected "yes" in the above LCD, tracks 1, 2 and 3 would change as follows.

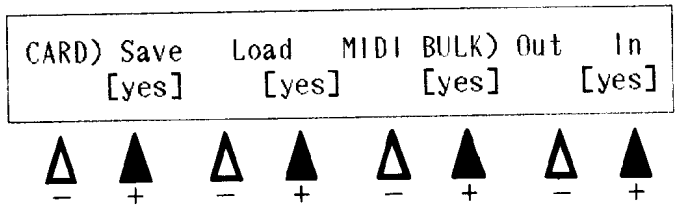
Use this function when you decide that two existing tracks should be played as one part. Each track can play only one voice, as specified in the initial voice number for the track. Even if in the above example, tracks 1 and 2 were playing brass and string parts, all notes in the resulting track 3 would simply play whatever voice was assigned to instrument 3 (see Sequencer VOICE mode, page 57).

Note:

While recording, a chord of up to 8 simultaneous notes can be recorded in each track. However you can exceed this limit by mixing tracks. This can be useful when playing external synthesizers via MIDI, but remember that the YS200 synthesizer itself has a capacity of 8 simultaneous notes.

CARD

Card is where you save/load song data to a RAM memory card or to/from an external MIDI device. Press JOB, then press the button selecting "Card" to get the following display.



This job gives you 4 operations to save/load song data. Press the corresponding △ button below the LCD to execute the operation.

CARD Save: When you select [yes], data for all songs will be saved from YS200 internal memory to the RAM memory card. (The RAM card must be properly formatted to accept sequence data. If it is not, press EXIT to leave the sequencer mode, then press SAVE/LOAD to access the "Format" function. For details, see the SAVE, LOAD MODE instructions in the SAVE, LOAD AND STORE OPERATIONS section of this manual.)

CARD Load: When you select [yes], data for all songs will be loaded from the card into the YS200 internal memory.

MIDI BULK Out: When you select [yes], data for the currently selected song will be transmitted from MIDI OUT as "bulk" data in the N-SEQ format. (Do not confuse this data with **playback** data. The whole song is sent as one package of data.) This bulk data can be received by another sequencer (another YS200, a QX5FD etc.) for later playback. The operation manual of your other sequencer will tell you whether it can receive N-SEQ bulk sequence data.

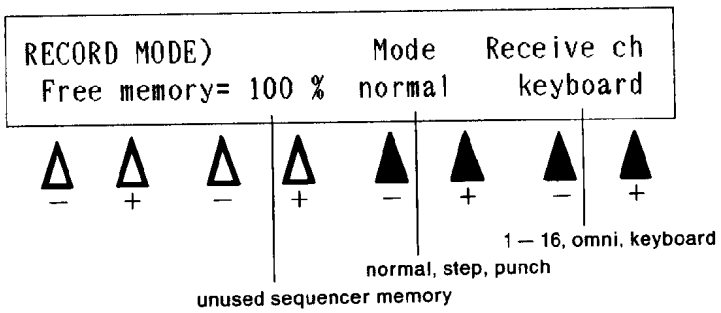
MIDI BULK In: When you select [yes], the currently selected song will be cleared, and the YS200 will display "waiting", and wait for song bulk data (as explained above) to arrive. When the data begins to arrive, the display will change to "Receiving", and when finished, will show "Completed". (Due to minor data format differences between sequences, the YS200 will sometimes adjust the measure divisions of the incoming sequence data.)

Note:

Data transmitted in MIDI BULK Out has a "channel number" corresponding to the channel you set in Synthesizer mode Transmit Channel. The device receiving this bulk data must be set to a matching receive channel, or the data will not be received. In the QX5FD, this is called the "device number".

RECORD MODE

Record Mode lets you select how to record; Normal, Punch or Step. Press JOB, then press the button selecting "Rec" to get the following display.



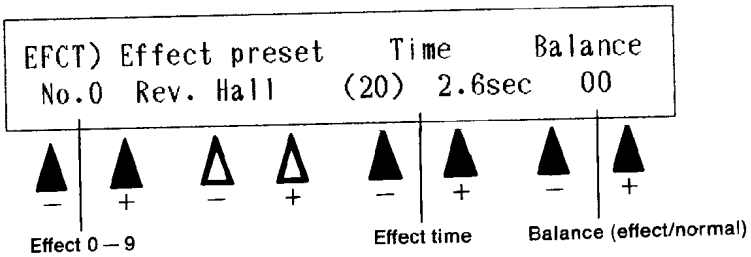
Free memory: This indicates the amount of unused sequencer memory. If nothing has been recorded, 100% will be free.

Mode: Here you can select one of the three ways to record music; normal, step or punch. These recording modes are explained at the beginning of the RECORD section.

Receive Channel: **If you have no equipment connected to the YS200 MIDI IN, you will never need to use this function**. The YS200 sequencer can record notes played on the keyboard **or** notes from an external MIDI instrument (keyboard, wind controller, etc.). If you want to record from MIDI, select a channel 1 — 16 to be received, or "omni" to receive all channels. The operation manual for your MIDI instrument will explain how to set its transmit channel.

EFFECT

Effect lets you choose one of the ten effects (Reverb, etc.) to use in your song. Press JOB, then press the △ button selecting "Efct" to get the following display.



This is exactly the same function as explained in the Synthesizer mode, Effect. It is included here in Sequence JOB so that you can make settings without having to exit Sequence mode.

VOICE

After selecting a preset Part Type you may wish to make minor changes in your "ensemble". Remember that selecting another preset Part Type (or selecting another Song) will replace the Voice Select and Max Notes settings you have made here in Voice mode. (Settings for MIDI Transmit Channel will remain.)
Each press of the VOICE button will step through the following three displays, allowing you to make settings for "Voice Select", "Max Notes", and "MIDI Transmit Channel". The fourth time you press VOICE you will return to "Play Song" mode.

VOICE SELECT
MAX NOTES
MIDI TRANSMIT CHANNEL

(back to PLAY SONG mode)

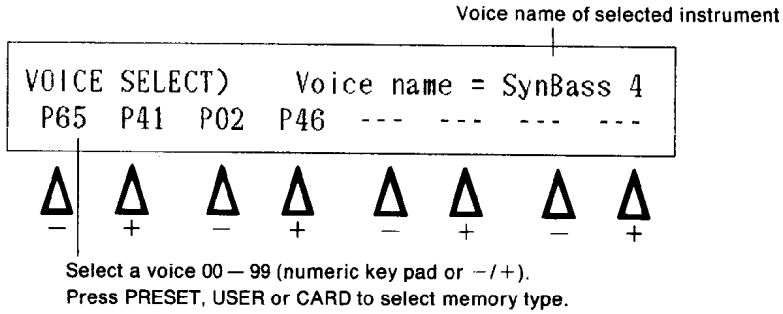
Important:

It is possible to leave Voice mode and return to Play Song mode by pressing SONG. In this case, however, the song currently in song memory will be recalled, along with the initial voice numbers for each track in the song.
This means that any changes you have made in Voice mode will be forgotten.
If you want to keep the changes you made in Voice mode, you must return to Play Song mode by pressing VOICE a fourth time. This will enter Play Song mode **without** loading a song from memory.
While still in Voice mode, you can press STORE to store your Voice Select and Max Notes settings.
If you have done so, it does not matter how you return to Play Song mode — your settings will be kept.

The examples below show what the LCD would look like if you had just selected preset Part Type "2:Pops".

VOICE SELECT

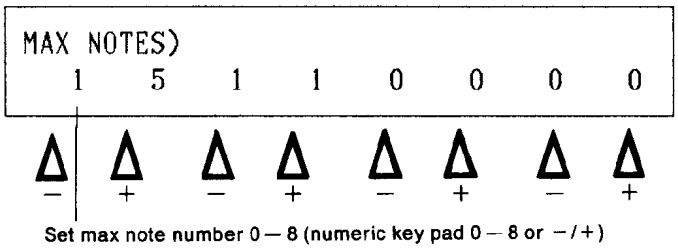
Select the voice initially used by each instrument.



Press a △ button to select an instrument (the selected instrument will be indicated by the underline cursor). The voice name of the selected instrument will be shown in the upper line of the LCD. Use the numeric key pad (or the −/+ keys below the numeric key pad) to select a voice (00 — 99). You can also press PRESET, USER or CARD to select the memory type.
The voice numbers you set here will be selected for each track whenever playback begins. A track can contain voice changes (00 — 99) in the middle of a song, but only within the memory **type** selected here. In other words, if a PRESET voice is used to start the song, voice changes in the track will change only to other PRESET voices.
As shown in instruments 5 — 8 in the above example, a dash " — " instead of a voice number indicates that the instrument's Max Notes setting is 0. (However you will be able to change the voice number, and view the voice name in the upper line of the LCD.)

MAX NOTES

The 8-note sound producing capability of the YS200 must be distributed among the 8 instruments.

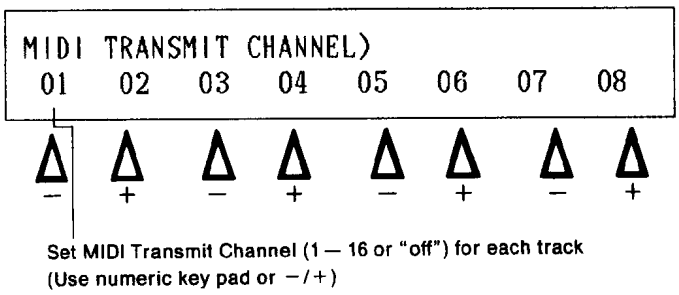


Press a △ button to select an instrument (the selected instrument will be indicated by the underline cursor), and use the numeric key pad 0 — 8 (or the −/+ keys below the numeric key pad) to set a Max Notes number 0 — 8 for each instrument. Instruments with settings of 0 are indicated by a dash " — ". These instruments will not sound.

Remember that Max Notes for all instruments must total 8 or less. For example in the LCD shown above, if you want to use instrument 6 (currently set to Max Notes = 0), you must first **decrease** the Max Notes setting of another instrument.

MIDI TRANSMIT CHANNEL

In addition to controlling the eight synthesizer voices inside the YS200, the eight tracks of the sequencer will transmit data from the MIDI OUT terminal to control other synthesizers. If you have another synthesizer (DX11, etc.) or tone generator (TX81Z, etc.) connected to the YS200's MIDI OUT, the YS200 sequencer will play this external device **in addition to** playing the YS200's own sounds.



Press a △ button to select an instrument (the selected instrument will be indicated by the underline cursor), and use the numeric key pad (or the −/+ keys below the numeric key pad) to set a MIDI Transmit Channel (1 — 16 or "off") for each instrument. Entering "0" will set the Transmit Channel to "off". When "off" is selected, that sequencer track will not transmit MIDI data. (Of course it will still play the YS200's internal instrument.)

Note:

These MIDI Transmit Channel settings are meaningful only when other devices are connected to the YS200's MIDI OUT terminal.

APPENDICES

FM SYNTHESIS

This section explains how the YS200 produces sounds using a method called FM Synthesis. It is not absolutely necessary that you read this section to be able to use the YS200, but understanding the "inner workings" of FM synthesis will help you use the Easy Edit functions to modify sounds to your liking.

INTERESTING SOUNDS AND BORING SOUNDS

The buzzing and beeping sounds used in early electronic music were very easy for a computer to make, but boring for humans to listen to. These boring sounds had a very simple "waveform" (sound wave). Sounds of real instruments (sax, piano, voice, etc.) are more interesting to listen to, but have a much more complex waveform. The following diagram shows a simple sound wave and a complex sound wave. (Of course these waveforms are not visible to the eye — they are just graphs of the sound wave that reaches our ear.)

Simple Sound Wave
(boring, "electronic-sounding")

Complex Sound Wave
(interesting, "natural-sounding")

The **FM Synthesis** used in the YS200 synthesizer is an easy, yet powerful way to create the complex sounds that make real instruments sound so good.

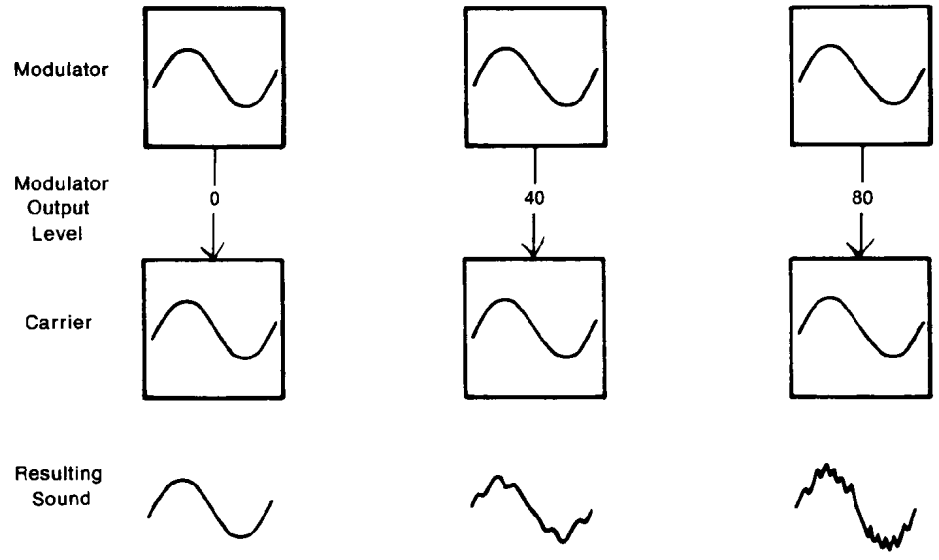
CARRIER AND MODULATOR

FM synthesis is very simple, but very versatile. It uses two simple sound waves, and **frequency modulates** one wave with the other. ("FM" stands for Frequency Modulation, just like in FM radio.)

Frequency Modulation is just another name for Vibrato, or continuous change in pitch. Musical vibrato (the type found in the YS200 Easy Edit LFO parameter) is relatively slow — usually no faster than ten cycles of pitch change every second. However the frequency modulation or "vibrato" in FM synthesis is so fast, that it results not in a changing pitch, but in a **more complex sound**.

You can probably guess that the greater the modulation, the more complex the resulting sound will be. (The harder you step on a cat's tail, the louder it complains!) The following diagram shows the effect of three different amounts of modulation. (The YS200 Easy Edit TONE Brilliance parameter determines the amount of modulation.)

To help you understand what is happening, the two sound waves in the diagram are labeled **Modulator** (the wave that modulates) and **Carrier** (the wave that is being modulated, or "carries" the modulation).



From left to right, the diagrams show the effect of increasing modulation to produce an increasingly complex sound. If the Modulator output is increased even more, the resulting sound will become more and more complex, until it finally becomes just noise — a rasping or buzzing sound. On the other hand, if we change the output level of the Carrier (the sound wave **being** modulated), only the **volume** of the resulting sound will be affected. We can summarize this in the following two rules; 1. **The modulator output level determines the tone**, and 2. **the carrier output level determines the volume**.

Another way to change the resulting sound is to change the frequency (pitch) of the Modulator (this is what the YS200 Easy Edit TONE Wave parameter does). The frequency of the Modulator determines the **intervals** at which overtones (the individual pitches or harmonics that combine to make a single "tone") are produced, and affects the basic character of the resulting sound. In general, positive settings of the Wave parameter will make more widely-spaced overtones (higher overtones), resulting in a more sparkling sound.

Some settings of the TONE Wave parameter can produce metallic or gritty sounds. In most instrumental sounds, overtones are at regular multiples of the fundamental pitch. However if the Modulator frequency is an irregular multiple of the Carrier frequency, the overtones will be at irregular multiples of the fundamental pitch (the first harmonic), resulting in a dissonant sound.

SOUNDS THAT CHANGE IN TIME

Most sounds in the real world change (in both volume and tone) as time goes by. For example, a piano note begins loud and bright-sounding, and decays to a quieter volume and a softer tone. An organ note stays at the same volume and tone as long as a key is pressed. In technical terms, this "shape in time" is called the **Envelope**.

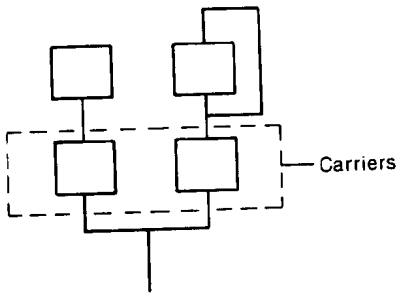
The component inside a synthesizer that produces this change is called the **Envelope Generator** (EG for short). Each Modulator and Carrier in the YS200 has its own EG. Since the Modulator output level determines the tone, the EG of the Modulator will determines the change in **tone** over time. Since the Carrier output level determines the volume, the EG of the Carrier determines the change in **volume** over time.

The Easy Edit EG parameters let you independently adjust the envelopes for "volume" (the EG of the Carrier), or "tone" (the EG of the Modulator), or "both" (the EG of both Carrier and Modulator).

FOUR OPERATORS

Whether it is being used as a Modulator or Carrier, each sound source in Yamaha FM synthesizers is called an **operator**. Each operator in the YS200 has its own output level, frequency and EG.

For simple FM synthesis only two operators are necessary, but the YS200 has **four**, providing a wide variety of possibilities. These four operators can be connected in eight different ways. Each combination of the four operators is known as an **algorithm**, and every YS200 sound uses one of these algorithms. For example, the algorithm shown below connects the four operators to make **two** independent Modulator/Carrier pairs, for even more complex, interesting sounds.



Other algorithms use one Modulator to modulate three Carriers, or three Modulators all modulating a single Carrier. Obviously, the role of each of the four operators will be different depending on whether it is used as a Carrier or Modulator. (However, the YS200 Easy Edit functions do not allow you to see or change the algorithm of the four operators.)

Each operator is able to produce one of eight different sound waves; the simple sound wave shown in the first diagram, or a more complex sound wave. The Easy Edit TONE Input-4Nos! parameter lets you specify a sound wave 0 — 7 for each operator. Of course, if a complex Carrier is modulated, or if the Modulator itself is complex, the result will be an even more complex sound wave. This allows the TONE Input-4Nos! parameter to produce major changes in tone quality.

FEEDBACK

FM synthesis requires a Modulator and a Carrier, but it is possible for a single operator to **modulate itself**! This is called Feedback. In each combination of operators, one of the operators is able to modulate itself. (In the above diagram in "Four Operators", this is indicated by the line connecting the upper right operator with itself.)

The Synthesizer Job VOICE EDIT Feedback parameter allows you to adjust this Feedback level from 0 — 7. Increasing the Feedback has the same type of effect as increasing Modulator output level — a more complex, brighter sound.

MIDI AND MIDI APPLICATIONS

The Musical Instrument Digital Interface (MIDI), first brought out in 1982, has proved to be one of the most important developments in electronic music. By applying the power of MIDI to your YS200, you can carry out an unlimited number of previously impossible performance operations, including the following:

- Play several synthesizers at one time from one YS200.
- Control performance functions such as pitch bend and modulation on other synthesizers as expressively as if they were being played directly.
- Change voices on other synthesizers and tone generators from your YS200, for impressive and effortless sound changes in real time.
- Set effects devices such as digital delay and digital reverberation units to change their effects programs along with voice program changes, to complement and add to the effects section of the YS200.
- Control digital drum machines with the sequencer of the YS200 for perfectly synchronized performance.
- Use the sequencer of the YS200 to play back sounds on other synthesizers and tone generators (as well as samplers and rhythm machines) for a complete multi-instrumental MIDI performance.
- Use a Tape Sync signal recorded onto one channel of a multitrack tape deck, to perfectly synchronize MIDI sequencers and drum machines with a vocal or acoustic performance recorded on tape. In this way, the seemingly opposed worlds of traditional acoustic music and state-of-the-art digital music can be blended and merged, providing enormous creative potential.

As you can see, MIDI is a very powerful musical tool. However, you won't need a course in computer science to use your YS200 effectively with other MIDI instruments. All you need to know is what MIDI devices can do, and how you can control them with your YS200. After that, MIDI does all the work for you.

In every MIDI setup there is a master and a slave. The master can be a keyboard or sequencer — or both, like the YS200 — and the slave (a sound-generating instrument) is played by it.

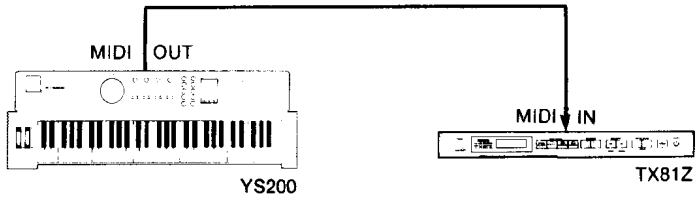
In essence, MIDI is extremely simple: it simply reduces all musical data to numbers, which can easily be sent from one instrument to another (hence the term "Digital Interface"). In practice, MIDI is unbelievably versatile, which is as it should be, for it is designed to fulfill the demands of professional musicians. Indeed, new uses of MIDI are being discovered at an extraordinary rate, both by MIDI engineers, and by musicians like yourself, experimenting and refining the art of digital music on stages and in studios around the world.

To illustrate some of the possibilities of MIDI and perhaps to trigger some ideas of your own, here are a few applications of the YS200.

Note:

You should know how the MIDI messages transmitted by the YS200 affect the sound of the slave (i.e., your MIDI synthesizer or tone generator) and how you can program your MIDI instrument to respond to these messages. For that information, please refer to the sections on the MIDI Synthesizer Job and the MIDI TRANSMIT CHANNEL Sequencer Job in the SYNTHESIZER REFERENCE chapter. The basic procedure is to match the MIDI Transmit and Receive channels on the respective instruments. Also be sure to consult the owner's manuals of the particular MIDI instruments you are using.

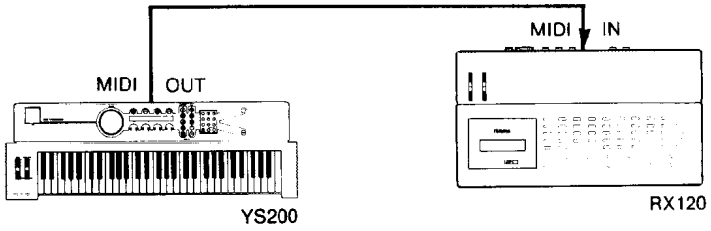
1. YS200 PLUS TX81Z MULTI-TIMBRAL FM TONE GENERATOR.



In this basic yet versatile arrangement, the YS200 is used to control the Yamaha TX81Z FM Tone Generator, which, like the YS200, can create up to eight superb FM voices simultaneously. The eight voices of both instruments could be set to play from different sections of the keyboard for a full, powerful sound.

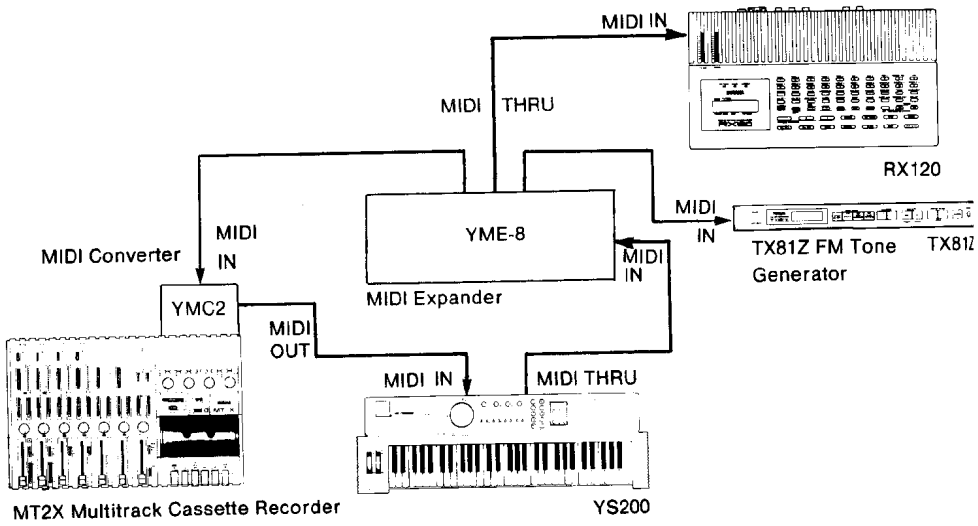
Programming each voice to occupy a separate register of the YS200's keyboard also allows you to experiment with various split and layer combinations. For example, program a bass sound for C1 to C2, piano and cello sounds layered together in the C#2 to C4 range, 4 different string sounds between C#4 and F5, and a clarinet sound at the top. Depending on which register you play in, you can get four distinct sounds. Voices can also be set to overlap, for added tonal interest.

2. YS200 PLUS RX120 DIGITAL RHYTHM PROGRAMMER



In another simple setup, the YS200 is used to play the authentic drum and percussion sounds of the RX120 Digital Rhythm Programmer. Each of the RX120's sounds can be played from a different key. This feature also makes it possible, with the use of the YS200's sequencer, to program a rhythm track of actual drum sounds to play along with the other instrument sounds on songs you have created. Rhythm patterns on the RX120 can also be played in perfect synchronization with sequencer songs on the YS200; simply set the Sync parameter of the Sequencer Cnd (condition) Job to "MIDI," and you're ready to go.

3. YS200 AS A CONTROL CENTER FOR THE COMPLETE MIDI STUDIO



The comprehensive sequencing and sound generating capabilities of the YS200 are taken to the limit as it functions as the control center for this full-blown MIDI studio system. This advanced MIDI system provides an example of the awesome power of digital music. It utilizes the following Yamaha digital equipment:

- TX81Z FM Tone Generator. The TX81Z is capable of playing up to eight different voices at the same time, perfectly complementing the similar capability of the YS200. It could be used here to double, and thus "fatten up," musical passages recorded on the YS200.
- The RX120 Digital Rhythm Programmer allows you to add realistic drum and percussion sounds to your MIDI music performance. Up to 20 different "songs" (percussion parts programmed in as many as 500 rhythm patterns to make up a complete song) can be recorded, using any of the RX's 38 realistic sampled sounds. Start and stop of playback can be controlled automatically from the YS200, and of course the RX120 will play in perfect synchronization with the music data recorded in the YS200.
- YME-8 MIDI Expander. With two MIDI IN and eight MIDI THRU terminals, this device allows you to control up to four different MIDI instruments simultaneously. In this case, the YME-8 is needed in order to send recorded MIDI data from the YS200's sequencer to both the RX120 and the TX81Z.
- MT2X Multitrack Cassette Recorder (with YMC2 MIDI Converter). This pair rounds out our studio system by giving you the chance to combine three tracks of tape recorded music with the eight tracks of music recorded on the YS200, plus the rhythm track played by the RX120. For example, your eight track synthesizer composition (with voices played on both the YS200 and the TX81Z) can be accompanied by the actual drum sounds of the RX120, plus guitar, piano, and vocals recorded on the MT2X. And everything plays back in perfect syncronization.

In this system, the YMC2 converts the MIDI timing signals from the YS200's sequencer into signals which can be recorded on track 4 of the tape. When recording these MIDI timing signals, set the Sync parameter of the Sequencer Cnd (condition) to "internal". On playback, reset the YS200's Sync parameter to "MIDI." These signals ensure that the tape recorded music will always stay in time with the recorded sequencer tracks.

The three tape recorder tracks can also be used to record sounds from the YS200 and the TX81Z. With a little planning, some clever programming to take advantage of the eight-voice capability of the two synthesizers, and careful mixing of the two instruments onto each MT2X track, your song can be played back with a phenomenal total of 64 synthesizer voices!

GLOSSARY

If the YS200 happens to be the very first synthesizer you've ever owned or played, chances are that a few of the words in this manual are unfamiliar to you.

Let's say you're reading through a few pages of the manual, and the words "parameter," "polyphonic," and "pitch bend" shoot by in rapid succession. If your heart catches in fear or your brain suddenly shuts down at this point, then this section of the manual is for you!

The GLOSSARY will take you on a short guided tour of some of the YS200's main functions and, at the same time, explain briefly and simply some synthesizer jargon.

Be sure to also take a look at the FM SYNTHESIS and MIDI AND MIDI APPLICATIONS sections for more information and ideas.

USING THE SOUNDS OF THE YS200

To play a synthesizer such as the YS200, the first thing you need are sounds. The YS200 is capable of making a wealth of sounds and sound effects, and we call each of these sounds **voices**. Expert sound engineers have designed hundreds of voices for the YS200, and you can choose any one of them at any time because they are kept permanently (or temporarily, in some cases) in voice memory.

There are two main groups of voice memory:

Internal memory keeps voices within the synthesizer itself. Voices in internal memory can be selected any time you play the YS200.

External memory keeps voices on devices outside the synthesizer. An example of external memory is the voice card, which allows you to, for example, play the same voices on your friend's YS200 that you play on your own.

The internal memory of the YS200 has two types: **Preset** and **User**.

Preset memory cannot be erased or changed; it is permanent.

User memory CAN be erased or changed. You can keep the voices that you create yourself in user memory.

External memory for the YS200 is in the form of cards and also comes in two types: **ROM** cards and **RAM** cards.

ROM cards, just like Preset memory, are permanent and cannot be erased or changed.

RAM cards (MCD32 memory card, sold separately) are like User memory because you can change and erase voices on them.

SAVE, STORE, and LOAD

Save, Store, and **Load** are memory operations. You use these when you want to move voices between different memory types.

The **Save** operation (**SAVE, LOAD** button) is used to move a group of voices (100 voices per group) from internal memory to external memory. For example, when you have filled up the User memory with 100 of your own original voices and need more space, you can save those 100 voices to RAM card instantly by using the Save operation.

The **Store** operation (**STORE** button) is used to move only one voice between memory locations. Unlike Save above, you can move the voice within memory types as well as between them. You use this operation mainly to keep voices to User or Card memory just after editing them. You could also use this operation to change the order of User or Card voices.

The **Load** operation (**SAVE, LOAD** button) is the opposite of Save. It is used to move a group of voices (100 voices per group) from external memory to internal memory.

Use this when you want to put a new group of voices in the User memory.

PLAYING THE YS200

The YS200 is loaded with performance features that help you get the most out of its expressive synthesizer voices. These are called **real-time controllers** because they can be used to control the sound while you are playing. (See the CONTROL Job in the REFERENCE chapter for more about controllers.)

To the left of the keyboard are two of the main controllers, the **pitch bend wheel** and the **modulation wheel**.

The pitch bend wheel allows you to raise or lower the pitch of the instrument as you play it.

The modulation wheel allows you to control the amount of **modulation** (vibrato, tremolo, or wowwow effect) on a voice in real time. (**Vibrato** creates a wavering of the pitch of a sound, **Tremolo** creates a wavering of the volume, and **Wowwow** creates a wavering of the tone or brightness. These effects, by the way, are created by the **LFO** section of the YS200. You can learn more about the LFO in the CHANGING THE LFO SETTINGS OF A VOICE section of the OPERATION BASICS chapter.)

Here are some other performance controllers you can use:

Breath Control — With the use of an optional BC1 breath controller, you can control the volume or the amount of LFO modulation by blowing into the mouthpiece.

Key Velocity — With this feature, the volume of the YS200 changes depending on how hard or soft you play the keyboard, just as an acoustic piano does. This is also known as **Touch Sensitivity**.

Sustain Pedal — Holding the sustain pedal down as you play and release notes causes the notes to remain sounding as if you didn't release them.

After Touch — By pressing down on the keyboard after you play a note, you can make changes in the tone of the sound or in the amount of LFO modulation. The harder you press, the greater the change.

Each voice of the YS200 can sound up to eight notes at a time. The eight simultaneous notes of the YS200 can be played either **polyphonically** or **monophonically**. Polyphonic (or **Poly**) play means that if you hold four notes with your left hand and four with your right, all eight notes will be heard. This is usual when playing piano or organ sounds. Monophonic (or **Mono**) play means that only one note will sound at a time. In other words, only the last played note will sound. This can be more realistic when playing sounds that are naturally monophonic, such as wind or brass instruments, since only one note will be heard at a time.

EDITING VOICES

Do you remember what we told you about User and Preset memory? That you CAN'T change Preset memory voices, and that you CAN change User memory voices? Well, that's not true. Not technically, that is.

The fact is, any voice — Preset or User — can be changed, but not within its memory location. To change the sound of a voice, you have to bring it to a special memory location in the YS200 by selecting the voice, change it there, and then store it to User memory or RAM card. (Remember, you can't keep a new voice in preset memory or ROM; the voices kept there are permanent.)

When you do this, you are **editing** a voice. Making edits in a voice can involve anything from changing its name to changing its LFO setting.

When you edit a voice, you can only change one thing at a time. For example, if

you edit the LFO setting, there are actually three parts of LFO you can change: Speed, Vibrato, and Tremolo. Each of these is called a **parameter**. A parameter is the a part or aspect of a voice that can be edited, and each voice has at least a dozen parameters.

And when you edit a parameter — the Speed parameter, for instance — you're changing the number that indicates the speed or, in other words, you're editing the **value** of the parameter.

VOICE AND SEQUENCER EDITING MODES AND PARAMETERS

All of the editing functions of the YS200 are covered in clear explanations in both the OPERATION BASICS and REFERENCE chapters, so please refer to those sections for information on specific modes and parameters.

ERROR MESSAGES

The YS200 will display one of the following messages to indicate an unexpected event or an aborted operation. Make changes as suggested here and repeat the operation.

- All error messages appear on the bottom row of the display.

VOICE LOADING AND SAVING MESSAGES

```
*ERROR* Verify NG!-----Please try again!
```

This appears if a mistake was made during saving or loading. Removing a card while in the saving or loading process will result in this message. Try to save or load again.

```
*ERROR* Protect!---Reset memory protect!
```

This appears when internal memory protect or write protect switch of RAM is on when executing a saving or loading operation. This message will also result when MIDI data (including voice data) is received while internal memory protect is on. When memory protect (or write protect) is on, data cannot be saved or received. Set the memory protect (or write protect) to off and attempt the operation again.

- See CARD OPERATIONS in the OPERATION BASICS section and SAVE, LOAD AND STORE OPERATIONS in the REFERENCE section for more information.

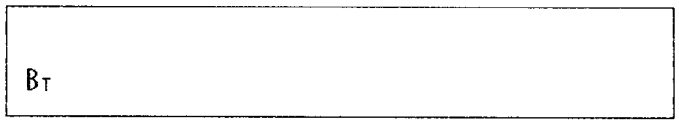
```
*ERROR* Format!------Please format card!
```

This message will appear when trying to save from or load to an unformatted card. This will also result when a card formatted to a system other than the YS200 is used. Re-format the card for the YS200.

- See CARD OPERATIONS in the OPERATION BASICS section and SAVE, LOAD AND STORE OPERATIONS in the REFERENCE section for more information.

```
*ERROR* Not ready!---Please insert card!
```

This message will appear if a card has not been inserted properly when card voices are selected or when save, load or store operations are attempted. Insert the card securely into the slot.



This message will appear if User voices or Card voices are selected when battery power is low.

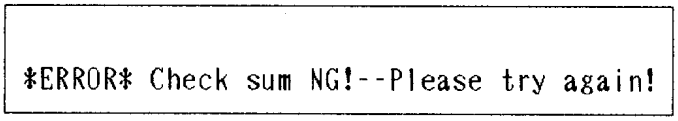
When User voices are selected, this message indicates that the battery inside the YS200 is getting low. When Card voices are selected, this message indicates that the battery inside the RAM memory card is getting low.

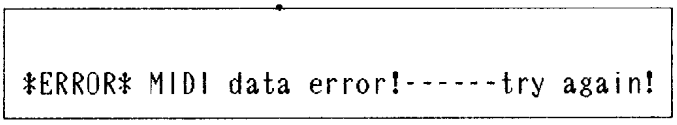
If the battery is not replaced soon after this message appears, voice data will be irretrievably lost. Replace the battery as soon as possible.

- For internal battery replacement: bring your YS200 to the store where you purchased it or to your nearest Yamaha service center. Do not try to replace the battery yourself.
- For RAM memory card battery replacement: purchase the appropriate battery and replace it yourself. See the owner's manual of the RAM memory card or the SAVE, LOAD AND STORE OPERATIONS part of the REFERENCE section of this manual.

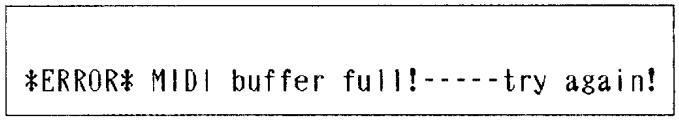
When the battery is replaced, all the data memorized in the card will be erased. Transfer the data to the YS200's internal memory or another card before replacing the battery.

MIDI RECEPTION AND TRANSMISSION MESSAGES

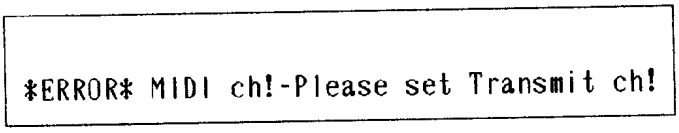




This will appear when MIDI data has not been received during a transfer operation. Try the operation again.

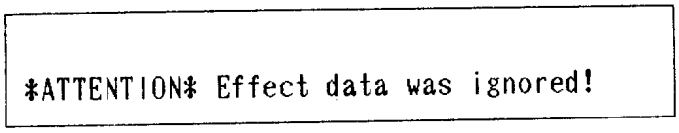


This will appear when MIDI data has been received more quickly than can be handled. Try the operation again.

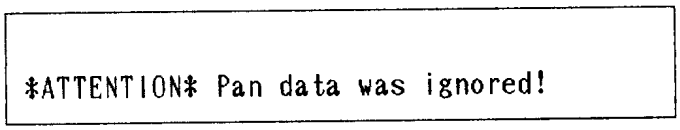


This will appear when voice data is transmitted when the MIDI transmit channel is off. Set the MIDI transmit channel to a value other than OFF. (See MIDI CHANNEL in the REFERENCE section.)

MULTI MODE MESSAGES



This message will appear if an effect setting is adjusted for a voice while that voice or any other in the Multi Mode arrangement has a pan setting. The pan setting(s) will be ignored in the Multi Mode when effects are used. (See EFFECT MODE in the REFERENCE section.)



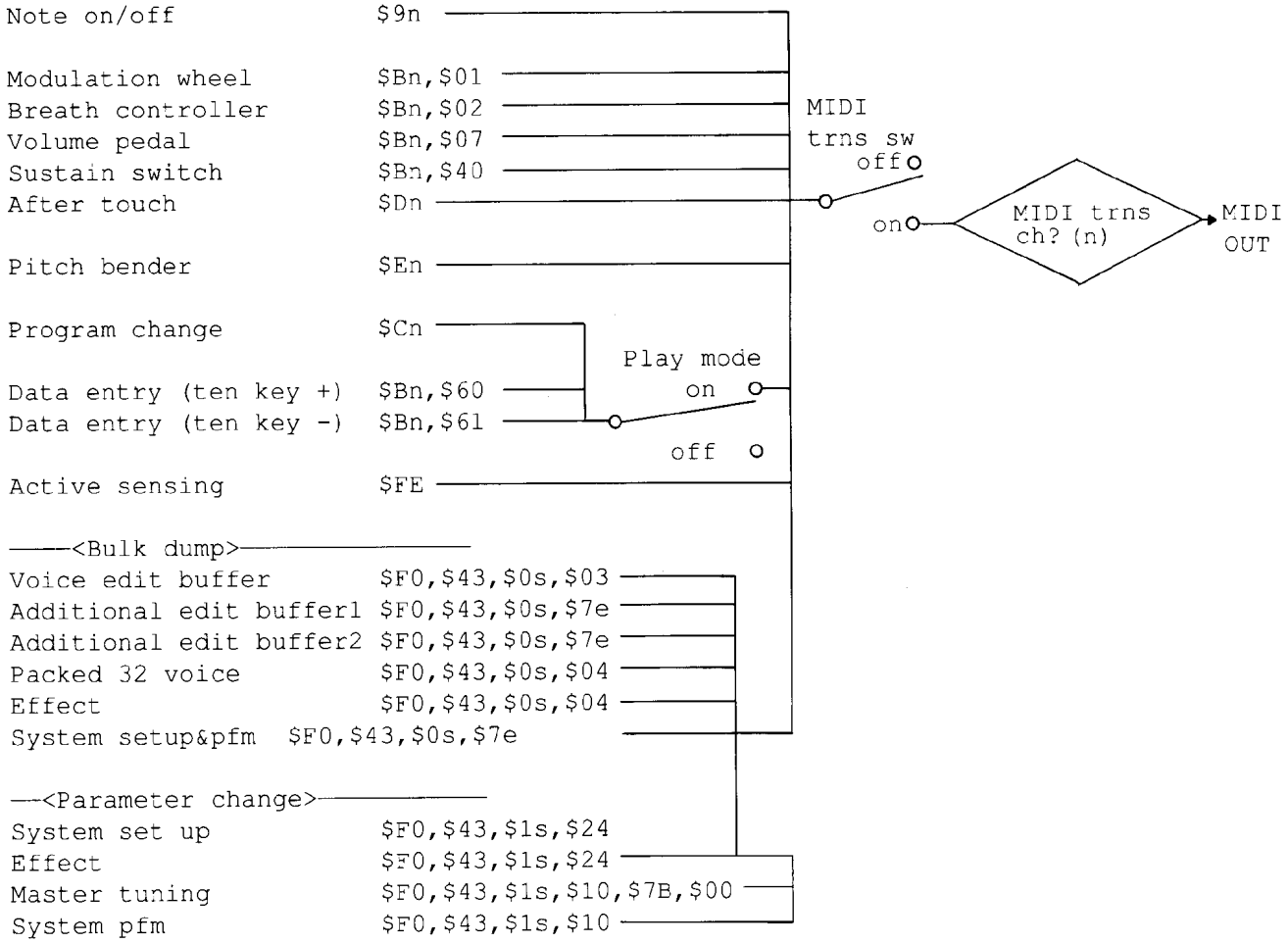
This message will appear if a pan setting of left or right is adjusted for a voice while that voice or any other in the Multi Mode arrangement has an effect setting. The effect setting(s) will be ignored in the Multi Mode when pan is used. (See PAN of the MULTI MODE FUNCTIONS in the REFERENCE section.)

SPECIFICATIONS

Keyboard:	61 velocity-sensitive keys with aftertouch
Sound Source:	FM (4-operator/8-algorithm), simultaneous 8 notes output
Internal Program RAM:	100 voice programs
Internal Program ROM:	100 voice programs
External Memory:	RAM/ROM card (32 kBytes), for programs (100 programs × 1 bank), for sequencer (to save 1 song bank to internal memory)
Display:	LCD: 40 characters × 2 lines
Controls:	Rotary Volume, Pitch Bend Wheel, Modulation Wheel
Front Panel Terminals:	Phones × 1 Breath Control × 1 (for optional BC-1 or BC-2 Breath Controller)
Rear Panel Terminals:	Output × 2 L/R Volume × 1 (for optional FC-7 Foot Controller) Sustain × 1 (for optional FC-4 Footswitch) MIDI IN × 1 MIDI OUT × 1 MIDI THRU × 1
Power Consumption:	General model 220 — 240 V 50/60 Hz, 15 W US & Canada models 120 V 50/60 Hz, 15 W
Dimensions (W × D × H):	990 × 320 × 105 mm (39″ × 12-5/8″ × 4-1/8″)
Weight:	6.9 kg (15 lb 3 oz)

1. SYNTHESIZER

(1) Transmitting Conditions



(2) Transmitting Conditions

Transmits when the transmit channel is set to a value other than OFF.

2-1 Channel Information

(1) Channel Voice Message

1)KEY ON/OFF

STATUS	1001nnnn	(9n)	n=channel number
NOTE No.	0kkkkkkk		k=36(C1)~96(C6)
VELOCITY	0vvvvvvv	(v=0)	KEY ON
CONTROL value	00000000	(v=0)	KEY OFF

2)CONTROL CHANGE

STATUS	1011nnnn	(Bn)	n=channel number
CONTROL No.	0ccccccc		
DATA	0vvvvvvv		

—— CONTROL NUMBER ———

C=1	Modulation wheel	v=0~127
C=2	Breath controller	v=0~127
C=7	Foot volume	v=0~127
C=64	Sustain switch	v=0:off,127:on
C=96	Data entry switch inc	v=127:on (play mode only)
C=97	Data entry switch dec	v=127:on (play mode only)

3)PROGRAM CHANGE (play mode only)

STATUS	1100nnnn	(Cn)	n=channel number
PROGRAM No.	0ppppppp		p=0~99

4)AFTER TOUCH

STATUS	1011nnnn	(Dn)	n=channel number
VALUE	0vvvvvvv		v=0~127

5)PITCH BENDER

STATUS	1110nnnn	(En)	n=channel number
VALUE (LSB)	0uuuuuuu		
VALUE (MSB)	0vvvvvvv		

Resolution: 7bit
Transmission of data occurs as follows:

MSB		LSB		
0000 0000	(00)	0000 0000	(00)	minimum value
0100 0000	(40)	0000 0000	(00)	middle value
0111 1111	(7F)	0111 1110	(7E)	maximum value

2-2 System Information

(1) System Common Messages

Not transmitted.

(2) System Realtime Messages

ACTIVE SENSING CLOCK

STATUS	11111110	(FE)

(3) System Exclusive Messages

1) PARAMETER CHANGE

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0001ssss	(1s)	s=Transmit channel
GROUP NUMBER	0ggggghh		g=Group number
			h=Sub group number
PARAMETER No.	0ppppppp		
DATA	0ddddddd		
|	|		
DATA	0ddddddd		
EOX	11110111	(F7)	

This is a list of the parameter group numbers and parameter numbers of the 4 types.

Type	g	h	p	Data bit number
SYSTEM SET UP	9	0	1~3,7	1
SYSTEM PFM	4	0	0~95	1
EFFECT	9	0	88~90	1
MASTER TUNING	4	0	123	2

2) BULK DUMP

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0000ssss	(0s)	s=Transmit channel
GROUP NUMBER	0fffffff		f=Format number
BYTE COUNT(MSB)	0bbbbbbb		
BYTE COUNT(LSB)	0bbbbbbb		
DATA	0ddddddd	┐	
	|	]	
	0ddddddd	┘	
CHECK SUM	0eeeeeee		
EOX	11110111	(F7)	

This is a list of the format numbers of the 2 types.

Type	f	Byte count
VOICE EDIT BUFFER	3	93
PACKED 32 VOICE	4	4096

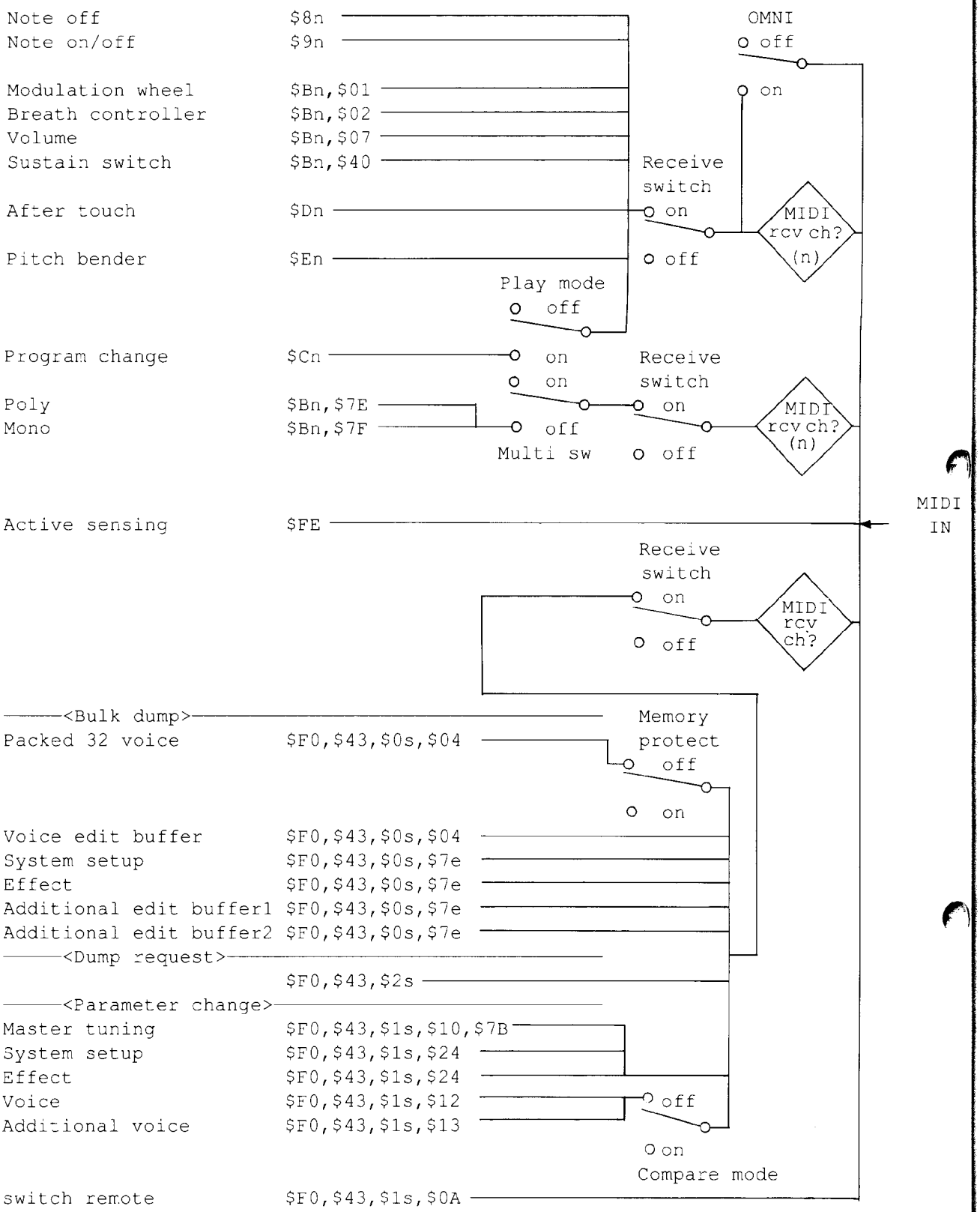
3)UNIVERSAL BULK DUMP

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0000ssss	(0s)	s=Transmit channel
GROUP NUMBER	01111110	(7E)	
BYTE COUNT(MSB)	0bbbbbbb		
BYTE COUNT(LSB)	0bbbbbbb		
CLASIFICATION-	0aaaaaaa	ASCII'L	
NAME	0aaaaaaa	ASCII'M	
	0aaaaaaa	ASCII'_	
	0aaaaaaa	ASCII'_	
DATA FORMAT-	0mmmmmmm	ASCII	
NAME			
	0mmmmmmm		
DATA	0ddddddd		
	0ddddddd		
CHECK SUM	0eeeeeee		
EOX	11110111	(F7)	

This is a list of the formats of 4 type.

Type	b	a	m
SYSTEM SETUP & PFM	100	LM_ _	8036S_
EFFECT	3	LM_ _	EFEDS_
Additional Edit Buffer1	23	LM_ _	8976AE
Additional Edit Buffer2	10	LM_ _	8023AE

(1.3) Receiving Condition



Reception Data

4-1 Channel Information

There are 8 MIDI reception channels, from INST 1 to INST 8, when MULTI is ON.

(1) Channel Voice Messages

1) KEY OFF

STATUS	1000nnnn	(8n)	n=channel number
NOTE No.	0kkkkkkk		k=0(C-2)~127(G8)
VELOCITY	0vvvvvvv		v is ignored

2) KEY ON/OFF

STATUS	1001nnnn	(9n)	n=channel number
NOTE No.	0kkkkkkk		k=0(C-2)~127(G8)
VELOCITY	0vvvvvvv	(v=0)	KEY ON
	00000000	(v=0)	KEY OFF

3) CONTROL CHANGE

STATUS	1011nnnn	(Bn)	n=channel number
CONTROL No.	0ccccccc		
CONTROL VALUE	0vvvvvvv		

CONTROL NUMBER

C=1	Modulation wheel	v=~127
C=2	Breath controller	v=~127
C=7	Volume	v=~127
C=64	Sustain switch	v=0:off,127:on

4) PROGRAM CHANGE (play mode only)

STATUS	1100nnnn	(Cn)	n=channel number
PROGRAM No.	0ppppppp		p=0~127

Selection of CARD/PRESET/USER can be done only from the front panel switches.
p=100~127 are received as 0~27.

5) AFTER TOUCH

STATUS	1101nnnn	(Dn)	n=channel number
	0vvvvvvv		v=0~127

6)PITCH BENDER

STATUS	1110nnnn	(En)	n=channel number
VALUE (LSB)	0uuuuuuu		
VALUE (MSB)	0vvvvvvv		

Only data of the MSB side are active.

Resolution: 7bit

MSB	
0000 0000 (00)	minimum value
0100 0000 (40)	middle value
0111 1111 (7F)	maximum value

(2) Channel Mode Messages

Not received when MULTI is ON.
OMNI switch is not available.

1)MONO/ALL NOTE OFF

STATUS	1011nnnn	(Bn)	n=channel number
CONTROL No.	01111111	(7E)	
CONTROL VALUE	0mmmmmmm		Only 1 is recognized and sets MONO MODE.
			Ignored when m=1

2)POLY/ALL NOTE OFF

STATUS	1011nnnn	(Bn)	n=channel number
CONTROL No.	01111110	(7F)	
CONTROL	00000000		

4-2 System Information

(1) System Common Messages

Same as transmitting.

(2) System Realtime Messages

ACTIVE SENSING CLOCK		
STATUS	11111110	(FE)

Sensing starts once this code is received. When neither status nor data are detected for longer than 300 msec., the MIDI receiving buffer will be cleared and all currently sounding voices and sustain switch data will be set to OFF. Also after touch, foot volume, modulation wheel and pitch bend data will be initialized.

(3) System Exclusive Messages

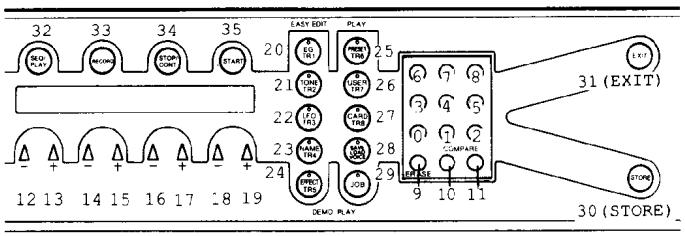
INST 1 channel receives when MULTI is ON.

1) PARAMETER CHANGE SWITCH REMOTE

STATUS	11110000	(F0)
ID No.	01000011	(43)
SUB STATUS	0001ssss	(1s)
GROUP NUMBER		(24)
PARAMETER No.	0ppppppp	p=switch number+91(91~127)
DATA	0ddddddd	d=0:off,d=127:on
EOX	11110111	(F7)

This is received regardless of the Receive sw/channel setting. Switch numbers correspond to the positions indicated on the chart below.

p=127 is power on reset.



The following messages are received when Receive channels match.

3) PARAMETER CHANGE

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0001ssss	(1s)	s=Receive channel
GROUP NUMBER	0ggggghh		g=Group number
			h=sub group number
PARAMETER No.	0ppppppp		
DATA	0ddddddd		
|	|		
DATA	0ddddddd		
EOX	11110111	(F7)	

This is a list of the parameter group numbers and parameter numbers of the 6 types.

Type	g	h	p	Data byte number
VOICE	4	2	0~93	1
ADDITIONAL VOICE	4	3	0~26	1
EFFECT	9	0	4~6	1
SYSTEM SET UP	9	0	1~3,7	1
SYSTEM PFM	4	0	0~95	1
MASTER TUNING	4	0	123	2

4) BULK DUMP
Same as transmission.

5) UNIVERSAL BULK DUMP
Same as transmission.

6) DUMP REQUEST

VOICE EDIT BUFFER		(f=3)	┐ In this condi-
PACKED 32VOICE		(f=4)	┘ tion.
SONG SEQUENCE		(f=10)	
STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0010ssss	(2s)	s=Receive channel
GROUP NUMBER	0fffffff		f=FormatNo.(3,4,10)
EOX	11110111	(F7)	

7) UNIVERSAL BULK DUMP REQUEST

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0010ssss	(2s)	s=Receive channel
GROUP NUMBER	01111110	(7E)	
CLASIFICATION-	0aaaaaaa	ASCII'L	
NAME	0aaaaaaa	ASCII'M	
	0aaaaaaa	ASCII'_	
	0aaaaaaa	ASCII'_	
DATA FORMAT-	0mmmmmmm	ASCII	
NAME	|		
	0mmmmmmm		
EOX	11110111	(F7)	

This is a list of the formats of 4 types.

Type	a	m
ACED + VCED	LM__	8976AE
ACED2 + ACED +VCED	LM__	8023AE
EFEDS + ACED2 + ACED +VCED	LM__	8036EF
EFEDS + SYSTEM SETUP	LM__	8036S_

< Attached list 1 >

Parameters indicated as %%% in the list are of common format with the DX11, but they do not function with YS100/200.

Parameter list of parameter change and bulk

*** VCED *** 93 byte voice edit parameter (1 bulk edit format)
para. cng g=4, h=2

	VCED address (para.cng)	b7	b6	b5	b4	b3	b2	b1	b0		
edit	0	0	0	0	———	AR	———			1-31	
	1	0	0	0	———	D1R	———			0-31	
	2	0	0	0	———	D2R	———			0-31	
	3	0	0	0	0	———	RR	———		1-15	
	4	0	0	0	0	———	D1L	———		0-15	
	5	0	———	———	LS	———	———	———		0-99	
	6	0	0	0	0	0	0	-RS-		0-3	OP.4
	7	0	0	0	0	0	———	EBS	———	0-7	
	8	0	0	0	0	0	0	0	AME	0-1	
	9	0	0	0	0	0	———	KVS	———	0-7	
	10	0	———	———	OUT	———	———	———		0-99	
	11	0	0	———	———	CRS	———	———		0-63	(RATIO)
		0	0	———	CRS	———	———	x	x	0-63	(FIX)
	12	0	0	0	0	0	———	DET	———	0-6	(center=3)
	13										
	.										OP.2
	.										
	26										
	.										OP.3
	.										
	39										
	.										OP.1
	.										
	52	0	0	0	0	0	———	ALG	———	0-7	
	53	0	0	0	0	0	———	FBL	———	0-7	
	54	0	———	———	LFS	———	———	———		0-99	
	55	0	———	LFD	———	———	———	———		0-99	
	56	0	———	PMD	———	———	———	———		0-99	
	57	0	———	AMD	———	———	———	———		0-99	
	58	0	0	0	0	0	0	0	SY	0-1	LFO SYNC
	59	0	0	0	0	0	0	-LFW-		0-3	
	60	0	0	0	0	0	———	PMS	———	0-7	
	61	0	0	0	0	0	0	-AMS-		0-3	
	62	0	0	———	———	TRPS	———	———		0-48	(center=24)

function		63	0	0	0	0	0	0	0 MO	: MONO	
		64	0	0	0	0	—— PBR ——			0-12	
		65	0	0	0	0	0	0	0 PM	: PORMOD	
	%%%	66	0	—— PORT ——						0-99	
		67	0	—— FC VOL ——						0-99	
	%%%	68	0	0	0	0	0	0	0 SU	0-1 sus.(F.SW)	
	%%%	69	0	0	0	0	0	0	0 PO	0-1 por.(F.SW)	
	%%%	70	0	0	0	0	0	0	0 CH	0-1 chorus set 0	
		71	0	—— MW PITCH ——						0-99	
		72	0	—— MW AMPLI ——						0-99	
		73	0	—— BC PITCH ——						0-99	
		74	0	—— BC AMPLI ——						0-99	
		75	0	—— BC P BIAS ——						0-100 (center0=50)	
		76	0	—— BC E BIAS ——						0-99	
		77	0	—— VOICE NAME 1 ——						32-127	
		78	0	—— VOICE NAME 2 ——							
		79	0	—— VOICE NAME 3 ——							
		80	0	—— VOICE NAME 4 ——							
		81	0	—— VOICE NAME 5 ——							
		82	0	—— VOICE NAME 6 ——							
		83	0	—— VOICE NAME 7 ——							
		84	0	—— VOICE NAME 8 ——							
		85	0	—— VOICE NAME 9 ——							
		86	0	—— VOICE NAME 10 ——							
	%%%	87	0	—— PR1 ——						0-99 PEG	
	%%%	88	0	—— PR2 ——						0-99	
	%%%	89	0	—— PR3 ——						0-99	
	%%%	90	0	—— PL1 ——						0-99 (center=50)	
	%%%	91	0	—— PL2 ——						0-99	
	%%%	92	0	—— PL3 ——						0-99	

*** parameter change only ***

nn (para.no)	b7	b6	b5	b4	b3	b2	b1	b0	dd (value)	comment
93	0	0	0	0	OP1	OP2	OP3	OP4	0-1	op. on(1)/off(0)

*** ACED *** 23 byte additional parameters (1 bulk edit format)
para. cng g=4, h=3

NO.	(para)	b7	b6	b5	b4	b3	b2	b1	b0	Data	note
0	0	0	0	0	0	0	0	0	FIX	0-1	OP.4
1	1	0	0	0	0	0	—— FIXRG ——			0-7	0(255Hz)-7(32KHz)
2	2	0	0	0	0	——— FINE ———				0-15	(7:F=0-3)
3	3	0	0	0	0	0	—— OSW ——			0-7	
4	4	0	0	0	0	0	0	-EGSFT-		0-3	0(off)-3(12dB)
5	5										OP.2
10	10										OP.3
15	15										OP.1
19	19									0(off)	
20	20	0	0	0	0	0	—REV—			0-7	0(off),7(first)
21	21	0	——— FC PITCH ———							0-99	
22	22	0	——— FC AMPLI ———							0-99	

*** ACED2 *** 10 byte additional parameter 2 for V2
para. cng g=4, h=3

NO.	para.	Nob	7	b6	b5	b4	b3	b2	b1	b0	Data	note
0	23		0	——— AT PITCH ———							0-99	
1	24		0	——— AT AMPLI ———							0-99	
2	25		0	——— AT P.BIAS ———							0-100	center 0 = 50
3	26		0	——— AT EG BIAS ———							0-99	
4	27		0	——— reserved ———								
5	28		0	——— reserved ———								
6	29		0	——— reserved ———								
7	30		0	——— reserved ———								
8	31		0	——— reserved ———								
9	32		0	——— reserved ———								

*** EFEDS *** 3 byte effect parameter for YS
para. cng g=9, h=0

NO.	para.	Nob	7	b6	b5	b4	b3	b2	b1	b0	Data	note
0	4		0	0	0	0	EFFECT PRESET No.				0-10	
1	5		0	0	———EFFECT TIME ———						0-40	
2	6		0	——— EFFECT BALANCE ———							0-99	

*** remote switch ***
para. cng g=9, h=0

g	h	p	switch
9	0	91	ten key 0
92			ten key 1
93			ten key 2
94			ten key 3
95			ten key 4
96			ten key 5
97			ten key 6
98			ten key 7
99			ten key 8
100			ten key 9
101			ten key -
102			ten key +
103			left -
104			left +
105			left center -
106			left center +
107			right center -
108			right center +
109			right -
110			right +
111			eg
112			tone
113			lfo
114			effect
115			name
116			card
117			user
118			preset
119			sv,ld
120			job
121			store
122			exit
123			seq/play
124			rec
125			stop/cont.
126			start
127			power on reset

<Attached list 2 >

Detail of Bulk Dump Format

★ VCED

f = 3
data size = 93 ($005D)
data format = 7bit binary
total bulk size = 93+8 = 101

f0,43,0n,03,00,5D,<VCED data>,sum,f7

★ VMEM

f = 4
data size = 128x32 = 4096 ($1000)
data format = 7bit binary
total bulk size = 4096+8 = 4104

f0,43,0n,04,20,00,<VMEM data>,sum,f7

★ ACED

f = 126 LM__8976AE
data size = 23+10 = 33 ($0021)
data format = 7bit binary
total bulk size = 33+8 = 41

f0,43,0n,7e,00,21,LM__8976AE,<ACED data>,sum,f7

★ ACED2

f = 126 LM__8023AE
data size = 10+10 = 20 ($0014)
data format = 7bit binary
total bulk size = 20+8 = 28

f0,43,0n,7e,00,14,LM__8023AE,<ACED2 data>,sum,f7

★ EFEDS

f = 126 LM__8036EF
data size = 3+10 = 13 ($000D)
data format = 7bit binary
total bulk size = 13+8 = 21

f0,43,0n,7e,00,0D,LM__8036EF,<EFEDS data>,sum,f7

★ SYSTEM SETUP + PFM

f = 126 LM__8036S_

data size = 10+100 = 110 ($006E)
data format = 7bit binary
total data size = 110+8 = 118

f0,43,0n,7e,00,62,LM__8036S_,<system data>,sum,f7

<Attached list 3 >

*** VMEM *** 128 byte (91 byte is used) voice data (memory format)

	adrress	b7	b6	b5	b4	b3	b2	b1	b0	dd (value)	comment
	0	0	0	0	———	AR	———			1-31	
	1	0	0	0	———	D1R	———			0-31	
	2	0	0	0	———	D2R	———			0-31	
	3	0	0	0	0	———	RR	———		1-15	
	4	0	0	0	0	———	D1L	———		0-15	OP.4
	5	0	———	———	———	LS	———	———	———	0-99	
	6	0	AME	———	EBS	———	———	KVS	———	0-1,0-7,0-7	
	7	0	———	———	———	OUT	———	———	———	0-99	
	8	0	0	———	———	CRS	———	———	———	0-63 (RATIO)	
		0	0	———	CRS	———		x	x	0-63 (FIX)	
	9	0	0	0	———RS———		———	DET	———	0-3,0-6	
	10										
	.										OP.2
	.										
	20										
	.										OP.3
	.										
	30										
	.										OP.1
	.										
	40	0	SY	———	FBL	———	———	ALG	———	0-1,0-7,0-7	
	41	0	———	———	———	LFS	———	———	———	0-99	
	42	0	———	———	———	LFD	———	———	———	0-99	
	43	0	———	———	———	PMD	———	———	———	0-99	
	44	0	———	———	———	AMD	———	———	———	0-99	
	45	0	———	PMS	———	———	-AMS———		-LFW———	0-7,0-3,0-3	
	46	0	0	———	———	———	TRPS	———	———	0-48	
	47	0	0	0	0	———	PBR	———		0-12	
	48	0	0	0	CH	MO	SU	PO	PM	0-1,0-1,0-1,0-1,0-1	
%%%	49	0	———	———	———	PORT	———	———	———	0-99	
	50	0	———	———	———	FC VOL	———	———	———	0-99	
	51	0	———	———	———	MW PITCH	———	———	———	0-99	
	52	0	———	———	———	MW AMPLI	———	———	———	0-99	
	53	0	———	———	———	BC PITCH	———	———	———	0-99	
	54	0	———	———	———	BC AMPLI	———	———	———	0-99	
	55	0	———	———	———	BC P BIAS	———	———	———	0-100	
	56	0	———	———	———	BC E BIAS	———	———	———	0-99	

	57	0	——— VOICE NAME 1 ———	32-127
	58	0	——— VOICE NAME 2 ———	
	59	0	——— VOICE NAME 3 ———	
	60	0	——— VOICE NAME 4 ———	
	61	0	——— VOICE NAME 5 ———	
	62	0	——— VOICE NAME 6 ———	
	63	0	——— VOICE NAME 7 ———	
	64	0	——— VOICE NAME 8 ———	
	65	0	——— VOICE NAME 9 ———	
	66	0	——— VOICE NAME 10 ———	
%%%	67	0	——— PR1 ———	0-99
%%%	68	0	——— PR2 ———	0-99
%%%	69	0	——— PR3 ———	0-99
%%%	70	0	——— PL1 ———	0-99
%%%	71	0	——— PL2 ———	0-99
%%%	72	0	——— PL3 ———	0-99

*** VMEM ***

No.	b7	b6	b5	b4	b3	b2	b1	b0	Data	note
0 . . 67	same as DX21 VMEM									
. 72	PEG PR1 . PEG PL3									
73	0	0	-EGSFT-		FIX		——FIXRG ——			OP.4
74	0	——	OSW ——		———		FINE ——			
75										OP.2
77										OP.3
79										OP.1
81	0	0	0	0	0	———REV——				FUNCTION
82	0	————		FC PITCH			————			
83	0	————		FC AMPLI			————			

*** VMEM for V2 ***

No.	b7	b6	b5	b4	b3	b2	b1	b0	Data	note
84	0	————		AT PITCH			————			
85	0	————		AT AMPLI			————			
86	0	————		AT P.BIAS			————			center=0
87	0	————		AT EG BIAS			————			
88-90	0	0	0	0	0	0	0	0		

*** VMEM for YS ***

No.	b7	b6	b5	b4	b3	b2	b1	b0	Data	note
91	0	0	0	0	EFFECT PRESET No.				0-10	
92	0	0	————		EFFECT TIME		————		0-40	
93	0	————		EFFECT BALANCE			————		0-99	
94-127	0	0	0	0	0	0	0	0		

note) AT P.BIAS

data	0,,,,,,49,50,51,,,,,,100
LCD	-50,,,,-1, 0,+1,,,,,,+50
MIDI	51,,,,,100,0,+1,,,,,,+50

*** SYSTEM SETUP *** 100 byte sytem set up

para. cng g=4, h=0

No.	para	b7	b6	b5	b4	b3	b2	b1	b0	Data	note
0	123,0	0	——————TUNE——————							0-127	master tune center=64

para. cng g=9, h=0

1	1	0	0	0	———MIDBCH———					0-16	basic rcv ch 16:omni,17:off
2	2	0	0	0	0	———MIDTCH———				0-15	trans ch,16:off
3	3	0	0	0	0	0	0	0	MLOCK	0-1	mem. protect

para. cng g=4, h=0

4	0	0	0	0	0	——NUM of NOTE——				0-8	INST1
5	1	0	0	0	0	0	0	Mem type		0-2	0:preset,1:user,2:card
6	2	0	——— Voice Number ———————							0-99	
7	3	0	0	0	——— Recv. ch ———————					0-16	16(omni)
8	4	0	——————— LIMIT/L ———————							0-127	0(C-2)-127(G8)
9	5	0	——————— LIMIT/H ———————							0-127	
10	6	0	0	0	0	——— DETUNE ———				0-14	7(center)
11	7	0	0	——— NOTE SHIFT ———————						0-48	24 (center)
12	8	0	——————— VOLUME ———————							0-99	
13	9	0	0	0	0	0	0	OUT_ASGN		0-3	0(off),1(I),2(II),3(I II)
14	10	0	0	0	0	0	0	LFO SEL		0-3	0(off),1(I),2(II),3(vib)
15	11	0	0	0	0	0	0	0	0	0	reserved
16	12										INST2
.											
28	24										INST3
.											
40	36										INST4
.											
52	48										INST5
.											
64	60										INST6
.											
76	72										INST7
.											
88	84										INST8
.											
99	95										

para. cng (only)g=9, h=0

7	0	0	0	0	0	0	bulk block	0-4	midi bulk block

<Attached list 4 >

Dump Request Messages

★ VCED	f0,43,2n,03,f7
★ VMEM	f0,43,2n,04,f7
★ ACED + VCED	f0,43,2n,7e,LM__8976AE,f7
★ ACED2 + ACED + VCED	f0,43,2n,7e,LM__8023AE,f7
★ EFEDS + ACED2 + ACED + VCED	f0,43,2n,7e,LM__8036EF,f7
★ EFEDS + system setup	f0,43,2n,7e,LM__8036S_,f7

note) Ascii number	HEX
★ LM__8976AE	4c,4d,20,20,38,39,37,36,41,45
★ LM__8023AE	4c,4d,20,20,38,30,32,33,41,45
★ LM__8036EF	4c,4d,20,20,38,30,33,36,45,46
★ LM__8976S_	4c,4d,20,20,38,39,37,36,53,20

<Attached list 5 >

parameter change No. List

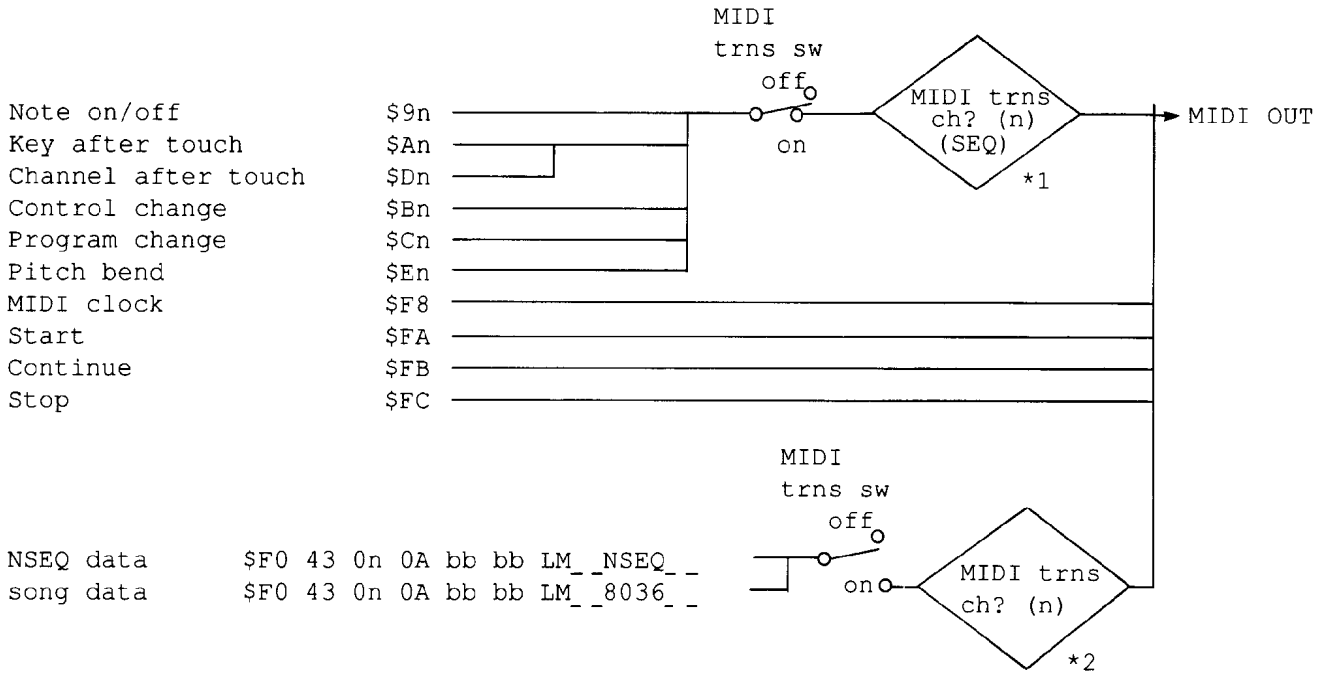
<<< $F0,$43,$1n,... >>>

VCED	$12(g=4,h=2),p=0-92,93
ACED	$13(g=4,h=3),p=0-22
ACED2(V2)	$13(g=4,h=3),p=23-33
SYS(sw remote)	$24(g=9,h=0),p=91-127
SYS(setup)	$24(g=9,h=0),p=0-7
SYS(pfm)	$10(g=4,h=0),p=0-95
MASTER TUNING	$10(g=4,h=0),p=123

2. SEQUENCER

The YS200 sequencer can also record incoming data from other MIDI devices (keyboards, wind controllers, guitars, etc.) connected to the MIDI IN terminal. Data can be recorded and played back as shown in the following diagrams. Notice that reception and transmission of some types of data will depend on Record Mode and Condition settings

(1) Transmitting Conditions



Note:

*1: MIDI transmit Channel set for each track

*2: Determined by the Synthesizer mode Transmit Channel

(2)Transmission Data

2-1 Channel Information
Data is trnasmitted only during play and overdubbing.

(1) Channel Voice Messages

(1.1)KEY ON/OFF

STATUS	1001nnnn	(9n)	n=channel number
NOTE No.	0kkkkkkk		k=1(C#-2)~111(D#7)
VELOCITY	0vvvvvvv	(v≠0)	KEY ON
VALUE	00000000	(v=0)	KEY OFF

(1.2)POLYPHONIC AFTER TOUCH

STATUS	1010nnnn	(An)	n=channel number
NOTE No.	0kkkkkkk		k=1(C#-2)~127(G8)
VALUE	0vvvvvvv		v=0~127

(1.3)CONTROL CHANGE

STATUS	1011nnnn	(Bn)	n=channel number
CONTROL No.	0ccccccc		c=0~121
CONTROL VALUE	0vvvvvvv		

(1.4)PROGRAM CHANGE

STATUS	1100nnnn	(Cn)	n=channel number
PROGRAM No.	0ppppppp		p=0~99

(1.5)AFTER TOUCH

STATUS	1101nnnn	(Dn)	n=channel number
VALUE	0vvvvvvv		v=0~127

(1.6)PITCH BENDER

STATUS	1110nnnn	(En)	n=channel number
VALUE (LSB)	0uuuuuuu		
VALUE (MSB)	0vvvvvvv		

2-2 System Information

(1) System Realtime Messages

(1.1)TIMING CLOCK

STATUS	11111000	(F8)

(1.2)START

STATUS	11111001	(F9)

(1.3)CONTINUE

STATUS	11111010	(FA)

(1.4)STOP

STATUS	11111011	(FB)

(2) System Exclusive Messages

(2.1)SEQUENCE DUMP

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0000ssss	(0s)	s=Transmit channel
GROUP NUMBER	00001010	(0A)	
BYTE COUNT(MSB)	0bbbbbbb		
BYTE COUNT(LSB)	0bbbbbbb		
CLASIFICATION-	01001100	ASCII'L	
NAME	01001101	ASCII'M	
	00100000	ASCII'_	
	00100000	ASCII'_	
DATA FORMAT-	01001110	ASCII'N	
NAME	01010011	ASCII'S	
	01000101	ASCII'E	
	01010001	ASCII'Q	
	00100000	ASCII'_	
	00100000	ASCII'_	
DATA	0ddddddd		
	⋮		
	0ddddddd		
CHECK SUM	0eeeeeee		
EOX	11110111	(F7)	

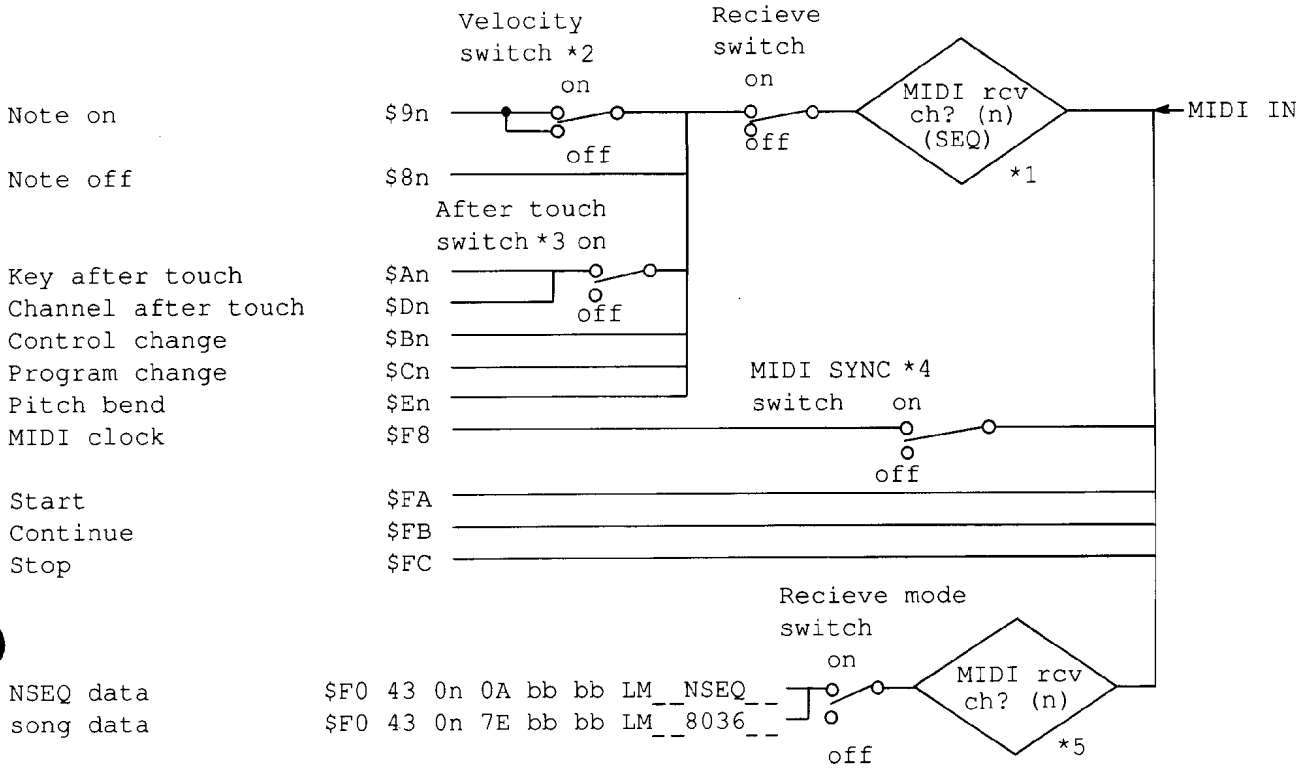
Transmitted on the transmission channel of synthesizer mode.
Transmitted when MIDI BULK "OUT" is executed in sequencer mode.

(2.2)UNIVERSAL BULK DUMP (Song data)

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0000ssss	(0s)	s=Transmit channel
GROUP NUMBER	01111110	(7E)	
BYTE COUNT(MSB)	0bbbbbbb		
BYTE COUNT(LSB)	0bbbbbbb		
CLASIFICATION-	0aaaaaaa	ASCII'L	
NAME	0aaaaaaa	ASCII'M	
	0aaaaaaa	ASCII'_	
	0aaaaaaa	ASCII'_	
DATA FORMAT-	00111000	ASCII'8	
NAME	00110000	ASCII'0	
	00110011	ASCII'3	
	00110110	ASCII'6	
	00100000	ASCII'_	
	00100000	ASCII'_	
DATA	0ddddddd		
	⋮		
	0ddddddd	38 bytes	
CHECK SUM	0eeeeeee		
EOX	11110111	(F7)	

Transmitted on the transmission channel of synthesizer mode.
Transmitted when MIDI BULK "OUT" is executed in sequencer mode.

(3) Receiving Condition



Note:

*1: Reception channel in Recording Mode
*2: Velocity on/off in Condition
*3: Aftertouch on/off in Condition
*4: Received when Sync is set to "MIDI"
*5: Determined by the Synthesizer mode Receive Channel

(4) Reception Data

4-1 Channel Information
Data is received only during recording.

(1) Channel Voice Messages

(1.1) KEY ON/OFF

STATUS	1001nnnn	(9n)	n=channel number
NOTE No.	0kkkkkkk		k=1(C#-2)~111(D#7)
VELOCITY	0vvvvvvv	(v≠0)	KEY ON
VALUE	00000000	(v=0)	KEY OFF

(1.2) POLYPHONIC AFTER TOUCH

STATUS	1010nnnn	(An)	n=channel number
NOTE No.	0kkkkkkk		k=1(C#-2)~127(G8)
VALUE	0vvvvvvv		v=0~127

(1.3) CONTROL CHANGE

STATUS	1011nnnn	(Bn)	n=channel number
CONTROL No.	0ccccccc		c=0~121
CONTROL VALUE	0vvvvvvv		

(1.4) PROGRAM CHANGE

STATUS	1100nnnn	(Cn)	n=channel number
PROGRAM No.	0ppppppp		p=0~99

(1.5) AFTER TOUCH

STATUS	1101nnnn	(Dn)	n=channel number
VALUE	0vvvvvvv		v=0~127

(1.6) PITCH BENDER

STATUS	1110nnnn	(En)	n=channel number
VALUE (LSB)	0uuuuuuu		
VALUE (MSB)	0vvvvvvv		

4-2 System Information

(1) System Realtime Messages

(1.1) TIMING CLOCK

STATUS	11111000	(F8)

(1.2) START

STATUS	11111001	(F9)

(1.3) CONTINUE

STATUS	11111010	(FA)

(1.4) STOP

STATUS	11111011	(FB)

(2) system Exclusive Messages

(2.1) SEQUENCE DUMP

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0000ssss	(0s)	s=Receive channel
GROUP NUMBER	00001010	(0A)	
BYTE COUNT(MSB)	0bbbbbbb		
BYTE COUNT(LSB)	0bbbbbbb		
CLASIFICATION-	01001100	ASCII'L	
NAME	01001101	ASCII'M	
	00100000	ASCII'_	
	00100000	ASCII'_	
DATA FORMAT-	01001110	ASCII'N	
NAME	01010011	ASCII'S	
	01000101	ASCII'E	
	01010001	ASCII'Q	
	00100000	ASCII'_	
	00100000	ASCII'_	
DATA	0ddddddd		
	0ddddddd		
CHECK SUM	0eeeeeee		
EOX	11110111	(F7)	

Received on the reception channel of synthesizer mode.
Received only when MIDI BULK "IN" is executed in sequencer mode.

(2.2) UNIVERSAL BULK DUMP (Song data)

STATUS	11110000	(F0)	
ID No.	01000011	(43)	
SUB STATUS	0000ssss	(0s)	s=Receive channel
GROUP NUMBER	01111110	(7E)	
BYTE COUNT(MSB)	0bbbbbbb		
BYTE COUNT(LSB)	0bbbbbbb		
CLASIFICATION-	0aaaaaaa	ASCII'L	
NAME	0aaaaaaa	ASCII'M	
	0aaaaaaa	ASCII'_	
	0aaaaaaa	ASCII'_	
DATA FORMAT-	00111000	ASCII'8	
NAME	00110000	ASCII'0	
	00110011	ASCII'3	
	00110110	ASCII'6	
	00100000	ASCII'_	
	00100000	ASCII'_	
DATA	0ddddddd		
	0ddddddd	38 bytes	
CHECK SUM	0eeeeeee		
EOX	11110111	(F7)	

Received on the reception channel of synthesizer mode.
Received only when MIDI BULK "IN" is executed in sequencer mode.

(5) Sequence Bulk Data

The YS200 sequencer can transmit and receive sequence memory as a MIDI Bulk Data message. This allows you to exchange sequence data with other sequencers that use the Yamaha N-SEQ data format. There are two types of YS200 sequence bulk data.

- •N-SEQ data (the sequence data itself)
- •Song data (max notes, voice bank and voice number for each track)

Since the Song Data is unique to the YS200, it will be ignored when transmitted to other N-SEQ format devices such as the QX5FD. In the MIDI BULK IN job (Sequence JOB mode), the YS200 will transmit a Dump Request message for N-SEQ data. A device connected to the YS200 MIDI IN will respond by transmitting data. The YS200 will respond to a Dump Request message in the same way.

• NSEQ DATA FORMAT

NSEQ data for one song consists of multiple tracks, each track beginning with F0h (on) (N=track number), and ending with F2h. If a track is empty, that track is not included. Between the F0h and F2h are time/event/control data bytes as follows.

hex	description
F0	top of track #1
00	
--	time/event/control data
--	
F2	end of record
--	
--	track #2 ~ #7 data
--	
F0	top of track #8
07	
--	time/event/control data
--	
F2	end of record

NSEQ time/event/control data format (binary)

short time	0ttttttt	(length in 384th notes)
long time	0ttttttt 0ttttttt	(in order of MS byte, LS byte)
short note	10dddddd 0kkkkkkk 0vvvvvvv	
long note	110ddddd 0ddddddd 0kkkkkkk 0vvvvvvv	
short note	10dddddd 1kkkkkkk	(when velocity=$40)
long note	110ddddd 0ddddddd 1kkkkkkk	(when velocity=$40)
	ddd = duration	(length in 96th notes)
	kkk = MIDI note number	
	vvv = MIDI velocity	
measure mark	11110101	(measure mark)
no operation	11111000	(does nothing)

(Except for MSB, the following are the same format as MIDI)

poly a.touch	11111010 0kkkkkkk 0vvvvvvv
control change	11111011 0ccccccc 0vvvvvvv
program change	11111100 0ppppppp
channel a.touch	11111101 0vvvvvvv
pitch bend	11111110 0vvvvvvv 0vvvvvvv

• SONG DATA FORMAT

Song data consists of max notes, voice bank, voice select, and tempo, effect, beat (time signature) and song name, in the following format.

count	hex	description	
0	00	max notes of trl	(0~7)
1	01	voice bank of trl	(0~2)
2	02	voice select of trl	(0~99)
3	03	max notes of tr2	
4	04	voice bank of tr2	
5	05	voice select of tr2	
6	06	max notes of tr3	
7	07	voice bank of tr3	
8	08	voice select of tr3	
9	09	max notes of tr4	
10	0A	voice bank of tr4	
11	0B	voice select of tr4	
12	0C	max notes of tr5	
13	0D	voice bank of tr5	
14	0E	voice select of tr5	
15	0F	max notes of tr6	
16	10	voice bank of tr6	
17	11	voice select of tr6	
18	12	max notes of tr7	
19	13	voice bank of tr7	
20	14	voice select of tr7	
21	15	max notes of tr8	
22	16	voice bank of tr8	
23	17	voice select of tr8	
24	18	effect number	(1~10)
25	19	effect time	
26	1A	effect balance	
27	1B	song name 1	(ASCII)
28	1C	song name 2	
29	1D	song name 3	
30	1E	song name 4	
31	1F	song name 5	
32	20	song name 6	
33	21	song name 7	
34	22	song name 8	
35	23	tempo	(60~180)
36	24	time signature	(0=1/4,1=2/4,2=3/4,,,10=7/8,11=8/8)
37	25	(reserved)	

total 38 ($26) bytes

YAMAHA [Digital synthesizer---synthesizer part] Date : 7/16, 1988
Model YS200 MIDI Implementation Chart Version : 1.0

Function ...		Transmitted	Recognized	Remarks
Basic Channel	Default	1 - 16	1 - 16	memorized
	Changed	1 - 16	1 - 16	
Mode	Default	3	1, 2, 3, 4	memorized
	Messages	x	POLY, MONO(M=1)	single mode only
	Altered	**********	x	
Note Number		36 - 96	0 - 127	
	True voice	**********	12 - 107	
Velocity	Note ON	o 9nH,v=1-127	o v=1-127	
	Note OFF	x 9nH,v=0	x	
After Touch	Key's	x	x	
	Ch's	o	o	
Pitch Bender		o	o 0-12 semi	7 bit resolution
Control Change	1	o	o	Modulation wheel
	2	o	o	Breath control
	7	o	o	Volume
	64	o	o	Sustain
	96	o	x	Data entry +1
	97	o	x	Data entry -1 (Play mode only)
Prog Change		o 0 - 99	o 0 - 127 *1	
	True #	**********	0 - 99	
System Exclusive		o	o	Voice parameters
System Common	Song Pos	x	x	
	Song Sel	x	x	
	Tune	x	x	
System Real Time	Clock	x	x	
	Commands	x	x	
Aux Mes- sages	Local ON/OFF	x	x	
	All Notes OFF	x	o (126,127)	single mode only
	Active Sense	o	o	
	Reset	x	x	

Notes: *1 = play mode only

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO o : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No

YAMAHA [Digital synthesizer---sequencer part] Date : 7/16, 1988
Model YS200 MIDI Implementation Chart Version : 1.0

Function ...		Transmitted	Recognized	Remarks
Basic	Default	1 - 16	1 - 16	memorized
Channel	Changed	1 - 16	1 - 16	
Mode	Default	x	x	
	Messages	x	x	
	Altered	**********	x	
Note Number		1 - 111	1 - 111	
	True voice	**********		
Velocity	Note ON	o 9nH,v=1-127	o v=1-127 *1	
	Note OFF	x 9nH,v=0	x	
After Touch	Key's	o	o *2	
	Ch's	o	o *2	
Pitch Bender		o	o	
Control Change	0 - 121	o	o	
Prog Change		o 0 - 99	o 0 - 99	
	True #	**********		
System Exclusive		o	o *3	Song data
System Common	Song Pos	x	x	
	Song Sel	x	x	
	Tune	x	x	
System Real Time	Clock	o	o *4	
	Commands	o	o	
Aux Mes- sages	Local ON/OFF	x	x	
	All Notes OFF	x	x	
	Active Sense	x	x	
	Reset	x	x	

Notes: *1 = receive if velocity switch is on. (if switch is off, velocity is fixed to 64.)
*2 = receive if after touch switch is on.
*3 = receive when bulk data receive function is set.
*4 = receive in MIDI sync mode.

Mode 1 : OMNI ON, POLY Mode 2 : OMNI ON, MONO o : Yes
Mode 3 : OMNI OFF, POLY Mode 4 : OMNI OFF, MONO x : No

IMPORTANT
SAFETY AND INSTALLATION INSTRUCTIONS

INFORMATION RELATING TO POSSIBLE PERSONAL INJURY, ELECTRIC SHOCK AND FIRE HAZARD POSSIBILITIES HAS BEEN INCLUDED IN THIS LIST.

WARNING — When using electronic products, basic precautions should always be followed, including the following:

1. Read all Safety and Installation Instructions, Supplemental Marking and Special Message Section data, and any applicable assembly instructions BEFORE using this product.
2. Check unit weight specifications BEFORE you attempt to move this product.
3. Main power supply verification. Yamaha Digital Musical Instrument products are manufactured specifically for use with the main supply voltage used in the area where they are to be sold. The main supply voltage required name plate. If any doubt exists please contact the nearest Yamaha Digital Musical Instrument retailer.
4. Some Yamaha Digital Musical Instrument products utilize external power supplies or adapters. Do NOT connect products of this type to any power supply or adapter other than the type described in the owners manual or as marked on the unit.
5. This product may be equipped with a plug having three prongs or a polarized line plug (one blade wider than the other). If you are unable to insert the plug into the outlet, contact an electrician to have the obsolete outlet replaced. Do NOT defeat the safety purpose of the plug. Yamaha products not having three prong or polarized line plugs incorporate construction methods and designs that do not require line plug polarization.
6. **WARNING** — Do NOT place objects on the power cord or place the unit in a position where any one could walk on, trip over, or roll anything over cords of any kind. An improper installation of this type can create the possibility of a fire hazard and/or personal injury.
7. Environment: Your Yamaha Digital Musical Instrument should be installed away from heat sources such as heat registers and/or other products that produce heat.
8. Ventilation: This product should be installed or positioned in a way that its placement or location does not interfere with proper ventilation.
9. Yamaha Digital Musical Instrument products are frequently incorporated into "Systems" which are assembled on carts, stands or in racks. Utilize only those carts, stands, or racks that have been designed for this purpose and observe all safety precautions supplied with the products. Pay special attention to cautions that relate to proper assembly, heavier units being mounted at the lower levels, load limits, moving instructions, maximum usable height and ventilation.
10. Yamaha Digital Musical Instrument products, either alone or in combination with amplification, headphones, or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do NOT operate at high volume levels or at a level that is uncomfortable. If you experience any discomfort, ringing in the ears, or suspect any hearing loss, you should consult an audiologist.
11. Do NOT use this product near water or in wet environments. For example, near a swimming pool, spa, in the rain, or in a wet basement.
12. Care should be taken so that objects do not fall, and liquids are not spilled into the enclosure.
13. Yamaha Digital Musical Instrument products should be serviced by a qualified service person when:
    a. The power supply/power adapter cord or plug has been damaged; or
    b. Objects have fallen, or liquid has been spilled into the products; or
    c. The unit 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.
14. When not in use, always turn your Yamaha Digital Musical Instrument equipment "OFF". The power supply cord should be unplugged from the outlet when the equipment is to be left unused for a long period of time. NOTE: In this case, some units may lose some user programmed data. Factory programmed memories will not be affected.
15. Electromagnetic Interference (RFI). Yamaha Digital Musical Instruments utilize digital (high frequency pulse) technology that may adversely affect Radio/TV reception. Please read FCC Information (Next Page) for additional information.
16. Do NOT attempt to service this product beyond that described in the user maintenance section of the owners manual. All other servicing should be referred to qualified service personnel.

PLEASE KEEP THIS MANUAL FOR FUTURE REFERENCE!

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

SPECIAL MESSAGE SECTION

ELECTROMAGNETIC INTERFERENCE (RFI): Your Yamaha Digital Musical Instrument Product has been type tested and found to comply with all applicable regulations. However, if it is installed in the immediate proximity of other electronic devices, some form of interference may occur. For additional RFI information see FCC information section located in this manual.

IMPORTANT NOTICE: This product has been tested and approved by independent safety testing laboratories 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.

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

NOTICE: Service charges incurred due to a 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. Please study this manual carefully before requesting service.

STATIC ELECTRICITY CAUTION: Some Yamaha Digital Musical Instrument products have modules that plug into the unit to perform various functions. The contents of a plug-in module can be altered/damaged by static electricity discharges. Static electricity build-ups are more likely to occur during cold winter months (or in areas with very dry climates) when the natural humidity is low. To avoid possible damage to the plug-in module, touch any metal object (a metal desk lamp, a door knob, etc.) before handling the module. If static electricity is a problem in your area, you may want to have your carpet treated with a substance that reduces static electricity build-up. See your local carpet retailer for professional advice that relates to your specific situation.

Model _____

Serial No. _____

Purchase Date _____

FCC INFORMATION

While the following statements are provided to comply with FCC Regulations in the United States, the corrective measures listed below are applicable worldwide.

This series of Yamaha professional music equipment uses frequencies that appear in the radio frequency range and if installed in the immediate proximity of some types of audio or video devices (within three meters), interference may occur. This series of Yamaha combo equipment have been type tested and found to comply with the specifications set for a class B computing device in accordance with those specifications listed in subpart J of part 15 of the FCC rules. These rules are designed to provide a reasonable measure of protection against such interference. However, this does not guarantee that interference will not occur. If your professional music equipment should be suspected of causing interference with other electronic devices, verification can be made by turning your combo equipment off and on. If the interference continues when your equipment is off, the equipment is not the source of interference. If your equipment does appear to be the source of the interference, you should try to correct the situation by using one or more of the following measures:

Relocate either the equipment or the electronic device that is being affected by the interference. Utilize power outlets for the professional music equipment and the device being affected that are on different branch (circuit breaker or fuse) circuits, or install AC line filters.

In the case of radio or TV interference, relocate the antenna or, 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 your authorized Yamaha professional products dealer for suggestions and/or corrective measures.
If you cannot locate a franchised Yamaha professional products dealer in your general area contact the professional products Service Department, Yamaha Music Corporation, 6600 Orangethorpe Ave., Buena Park, CA 90620, U.S.A.

If for any reason, you should need additional information relating to radio or TV interference, you may find a booklet prepared by the Federal Communications Commission helpful:
"How to Identify and Resolve Radio — TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402 — Stock No. 004-000-00345-4.

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

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