YAMAHA

Loopfactory

AN200

DESKTOP CONTROL SYNTHESIZER / Analog Physical Modeling
BOITIER CONTROLEUR DE SYNTHESE

English

Deutsch

Français

Owner's Manual
Bedienungsanleitung
Mode d'emploi

SPECIAL MESSAGE SECTION

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

WARNING: Do not place this product in a position where anyone could walk on, trip over ,or roll anything over power or connecting cords of any kind. The use of an extension cord is not recommended! IF you must use an extension cord, the minimum wire size for a 25' cord (or less) is 18 AWG. NOTE: The smaller the AWG number ,the larger the current handling capacity. For longer extension cords, consult a local electrician.

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

SPECIFICATIONS SUBJECT TO CHANGE:

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

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

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

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, and are therefore the owners responsibility. Please study this manual carefully and consult your dealer before requesting service.

ENVIRONMENTAL ISSUES:

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

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

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

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

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

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

NAME PLATE LOCATION:

The name plate is located on the bottom of the product. The model number, serial number, power requirements, etc., are located on this plate. You should record the model number, serial number, and the date of purchase in the spaces provided below and retain this manual as a permanent record of your purchase.

Model ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Serial No. ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

Purchase Date ⎯⎯⎯⎯⎯⎯⎯⎯⎯⎯

PLEASE KEEP THIS MANUAL

92-BP (bottom)

PRECAUTIONS

PLEASE READ CAREFULLY BEFORE PROCEEDING

* Please keep these precautions in a safe place for future reference.

⚠ *WARNING*

Always follow the basic precautions listed below to avoid the possibility of serious injury or even death from electrical shock, short-circuiting, damages, fire or other hazards. These precautions include, but are not limited to, the following:

- Do not open the instrument or attempt to disassemble the internal parts or modify them in any way. The instrument contains no user-serviceable parts. If it should appear to be malfunctioning, discontinue use immediately and have it inspected by qualified Yamaha service personnel.

- Do not expose the instrument to rain, use it near water or in damp or wet conditions, or place containers on it containing liquids which might spill into any openings.

- If the AC adaptor cord or plug becomes frayed or damaged, or if there is a sudden loss of sound during use of the instrument, or if any unusual smells or smoke should appear to be caused by it, immediately turn off the

power switch, disconnect the adaptor plug from the outlet, and have the instrument inspected by qualified Yamaha service personnel.

- Use the specified adaptor (PA-3B or an equivalent recommended by Yamaha) only. Using the wrong adaptor can result in damage to the instrument or overheating.

- Before cleaning the instrument, always remove the electric plug from the outlet. Never insert or remove an electric plug with wet hands.

- Check the electric plug periodically and remove any dirt or dust which may have accumulated on it.

⚠ *CAUTION*

Always follow the basic precautions listed below to avoid the possibility of physical injury to you or others, or damage to the instrument or other property. These precautions include, but are not limited to, the following:

- Do not place the AC adaptor cord near heat sources such as heaters or radiators, and do not excessively bend or otherwise damage the cord, place heavy objects on it, or place it in a position where anyone could walk on, trip over, or roll anything over it.

- When removing the electric plug from the instrument or an outlet, always hold the plug itself and not the cord.

- Do not connect the instrument to an electrical outlet using a multiple-connector. Doing so can result in lower sound quality, or possibly cause overheating in the outlet.

- Unplug the AC power adaptor when not using the instrument, or during electrical storms.

- Before connecting the instrument to other electronic components, turn off the power for all components. Before turning the power on or off for all components, set all volume levels to minimum. Also, be sure to set the volumes of all components at their minimum levels and gradually raise the volume controls while playing the instrument to set the desired listening level.

- Do not expose the instrument to excessive dust or vibrations, or extreme cold or heat (such as in direct sunlight, near a heater, or in a car during the day) to prevent the possibility of panel disfiguration or damage to the internal components.

- Do not use the instrument near other electrical products such as televisions, radios, or speakers, since this might cause interference which can affect proper operation of the other products.

- Do not place the instrument in an unstable position where it might accidentally fall over.

- Before moving the instrument, remove all connected adaptor and other cables.

- When cleaning the instrument, use a soft, dry cloth. Do not use paint thinners, solvents, cleaning fluids, or chemical-impregnated wiping cloths. Also, do not place vinyl, plastic or rubber objects on the instrument, since this might discolor the panel or keyboard.

- Do not rest your weight on, or place heavy objects on the instrument, and do not use excessive force on the buttons, switches or connectors.

- Do not operate the instrument for a long period of time at a high or uncomfortable volume level, since this can cause permanent hearing loss. If you experience any hearing loss or ringing in the ears, consult a physician.

■ REPLACING THE BACKUP BATTERY

- This instrument contains a non rechargeable internal backup battery which permits internal data to remain stored even when the power is off. When the backup battery needs replacing, the message "Err1" appears in the display. When this happens, immediately back up your data (using an external device such as the floppy disk-based Yamaha MIDI Data Filer MDF3), then have qualified Yamaha service personnel replace the backup battery.

- Do not attempt to replace the backup battery yourself, in order to prevent the possible serious hazards. Always have qualified Yamaha service personnel replace the backup battery.

- Never place the backup battery in a location that a child can reach, since a child might accidentally swallow the battery. If this should happen, consult a physician immediately.

■ SAVING USER DATA

- Save all data to an external device such as the Yamaha MIDI Data Filer MDF3, in order to help prevent the loss of important data due to a malfunction or user operating error.

Yamaha cannot be held responsible for damage caused by improper use or modifications to the instrument, or data that is lost or destroyed.

Always turn the power off when the instrument is not in use.

Congratulations and thank you for purchasing the Yamaha AN200 Desktop Control Synthesizer!

The AN200 is a combination tone generator and sequencer that puts an enormous amount of sonic power and real-time performance control in an exceptionally compact and easy-to-use "desktop" package. As one of the Loopfactory group of instruments, it's an amazingly high-quality and versatile tool for loop-based music production. Use it on your gigs, as part of your DJ setup — or as your secret weapon in your studio arsenal.

With eighteen knobs and umpteen switches, many of them "dedicated" — meaning that a control does specifically and ONLY what its name indicates — the AN200 is a synthesizer control freak's dream.

Powering the incredibly rich and huge analog-like Voices of the AN200 is the Analog Physical Modeling synthesis system. It not only features the same familiar oscillator, filter and other sound-shaping controls found on traditional analog synthesizers — it gives you the full spectrum of warm, fat, and punchy sounds that made those legendary instruments famous.

Play the exceptionally high-quality analog-style Voices of the AN200 with full 5-note polyphony — from the built-in keyboard or from a MIDI device. Use the built-in 16-step sequencer to create your own synth and rhythm sequences. And power up the full-featured AN200 Editor on your computer — to tap into ALL the amazing sonic power the AN200 has to offer.

There's a lot of important, helpful information in these pages. So read through this manual carefully — and get the most out of your sophisticated new AN200.

● **Packing List**
The following items have been included with your AN200. Check to see that you have everything listed here.
- Owner's Manual
- CD-ROM
- AC Power Adaptor*
    * Power supply recommendation may vary from country to country. Please check with your nearest Yamaha dealer for further details.

Contents

Appendix

How to Use This Manual

How to USE a manual? Sounds a bit obvious, we admit. ("Open it and read it.") But here goes:

1   Go straight to the Quick Start Guide.

This tells you simply and in no uncertain terms how to set up your new AN200 and get sound out of it.

2   Work through the 92 Tips.

These are practical, no-nonsense applications that get you actually USING the machine.

If this is your first tone generator or synthesizer, fire up the AN200, open up the manual to Tip 1, and go from there. Think of it as a game — the more tips you complete, the better you know the machine, and the sooner you can reach your goal of becoming a true synth wizard. Pay particularly close attention to the Power Hints scattered throughout — they're great for further exploration.

If you have years of experience with analog synthesizers, and know all about cutoff frequency, reso-nance, pulse waves, amplitude modulation, LFOs, VCOs, EGs, and MIDI — and you even dream in hexa-decimal — skim through the tips anyway. There's bound to be some interesting and helpful stuff here, no matter what your level of expertise. If you need some pertinent info quickly, check the Tech Talk boxes.

3   Refer to the Appendix when necessary.

Lots of helpful, convenient information in this section, too. If something doesn't work as expected, go to **Troubleshooting** (page 115). If you want a clear, concise explanation of how the synthesizer of the AN200 works, see **Analog Physical Modeling Synthesis and the AN200** (page 116). If you're not sure where to go for help but you've got a key word in mind, check the **Contents** (page 6) or look through the **Function Index** (page 110).

Have fun!

Panel Controls

Main

Voice
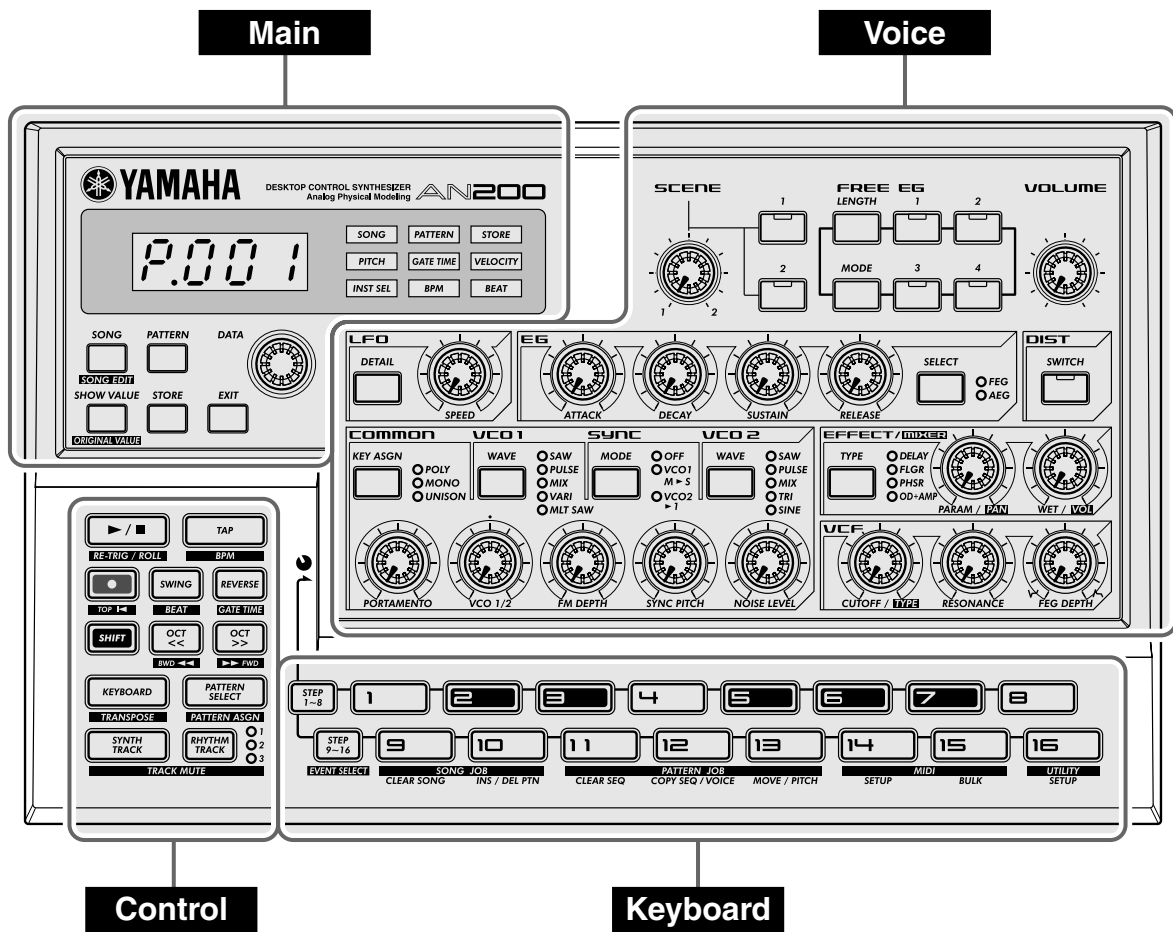
Control

Keyboard

Here's a quick way to get familiar with your AN200! The front (or top) panel of the AN200 can be roughly divided into four sections: Main, Control, Voice, and Keyboard. Look through the controls here, and check out the Tips related to each of them for more information.

NOTE The Tip references by each control are not meant to be comprehensive. They either give the first (or main) Tip in which the control appears, or the group of Tips that are most closely related.

Main

These are the fundamental controls of the AN200 — for changing modes, adjusting values, exiting from functions, and so on.

Display and indicators

Voice

These controls are for editing and changing the sound of the Voices.

Control

For the most part, these buttons are related to the Patterns — especially for controlling record and playback operations.

Keyboard

The Keyboard section has several main uses:

Quick Start Guide

Once that you've got the AN200 out of the box and checked that all included items were indeed included, it's time to set everything up and get playing.

1 Turn the VOLUME control all the way down to the minimum.

2 Connect the OUTPUT jacks (L/MONO and R) to the inputs of your recorder/mixer/amplifier.
If you're using a mono system, use only the L/MONO jack. If you're using headphones, connect them to the PHONES jack.
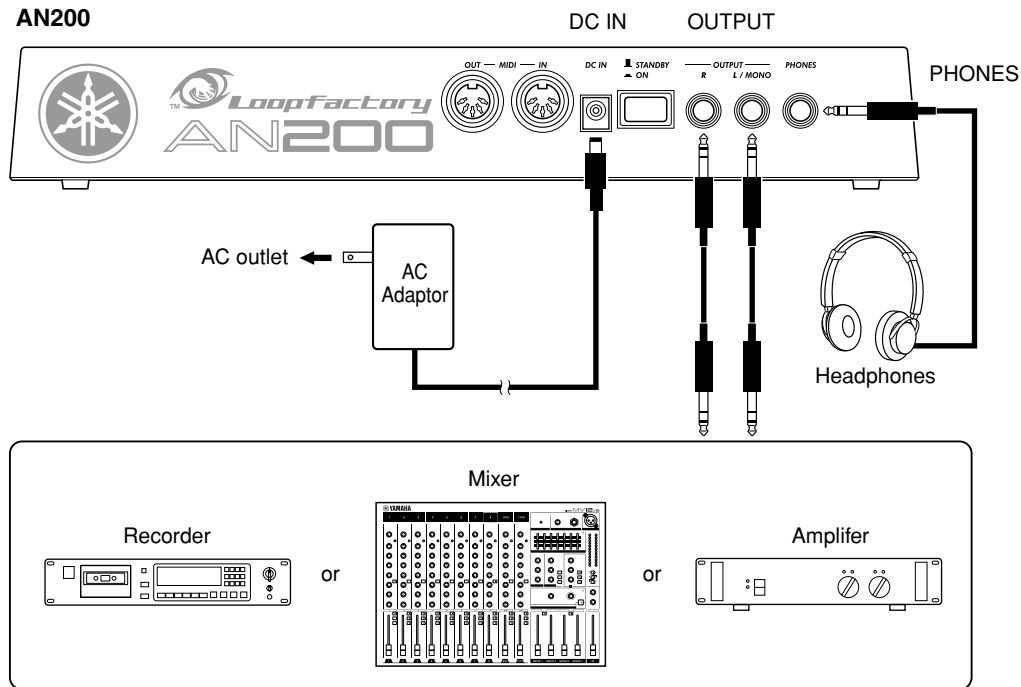
3 Plug in the included power adaptor – first, one end into the DC IN terminal, then the other into an AC outlet.

4 Turn on the power with the rear panel power switch. Then, turn on the power of your recorder/mixer/amplifier.

> **NOTE** The AN200 takes a little time to "warm up" after being turned on – roughly 20 seconds. After the startup routine is finished, your AN200 is ready to play.

5 Press the Start/Stop button on the AN200 to start a Pattern and slowly turn up the VOLUME control until the level is appropriate.
To stop the Pattern, simply press the Start/Stop button again.
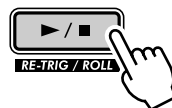
And that's all there is to it. Now go on to the Tips and start playing!

Parameter Structure

This diagram shows the structure and hierarchy of the Songs, Patterns and Voices of the AN200. As you work with the AN200 and explore its various functions and features, refer back to this diagram to see how all the pieces of the puzzle fit together.

Pattern Select Setup

| 2 | 3 | | 5 | 6 | 7 | |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |

User Pattern 128

256 Preset Patterns
128 User Patterns

Preset Pattern 1

Sequence

| Synth Track | Rhythm Track 1 | Rhythm Track 2 | Rhythm Track 3 | BPM Beat Swing |
| Step 1 ... 16 | Step 1 ... 16 | Step 1 ... 16 | Step 1 ... 16 | |

System

Gate Time
Reverse

Synth Voice	Rhythm Voice 1	Rhythm Voice 2	Rhythm Voice 3
LFO EG etc.	Cutoff Resonance	Cutoff Resonance	Cutoff Resonance
Free EG			

Pan

Wet

Vol

Effect

Type
Param

Song 10

10 User Songs

Song 1

Measure 1	Measure 2		Measure 256
Pattern No.	Pattern No.		Pattern No.
Pitch Offset Beat Swing Gate Time Reverse Track Mute	Pitch Offset Beat Swing Gate Time Reverse Track Mute	. . . .	Pitch Offset Beat Swing Gate Time Reverse Track Mute

NOTE The EQ processing is accessible only with the AN200 Editor software.

This is NOT an owner's manual!

At least not an ordinary one. But, then again, the AN200 is no ordinary instrument. It's packed with exciting, powerful, yet easy-to-use features that give you complete, hands-on sonic control — plus tons of dynamic real-time functions that can bring an extra edge to your live performances!

With all the digital power under this small hood, the AN200 is a stunning new instrument of the future. Yet it also brings you the very best of the old analog world — just look at all those knobs for twisting and tweaking your sound!

We know you don't like reading manuals. But you owe it to yourself to look through this collection of hot tips. They show you how to get the most out of your new AN200 in the shortest time possible.

It's like having an expert programmer take you by the hand and show you the ropes, sharing all the tricks and techniques you need to be a master on the instrument yourself. These tips take you from the bare-bones basics, to advanced power tips that get you pumping out fat sounds and happening tracks — in no time flat!

So jump in …

Pattern Basics

Start your synthesizer apprenticeship right here. In this section, you'll learn about playing Patterns, and how to use some of the AN200's powerful tools to change the sound as it's playing.

Tip *1* Playing a Pattern

Here's where all the fun starts — with the pre-programmed Patterns.
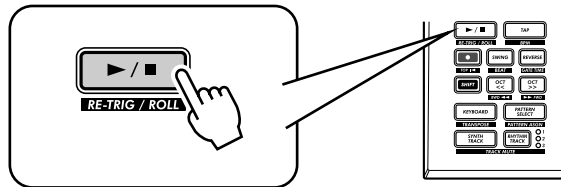
Just press the Start/Stop button, and listen to the Pattern play. The Pattern repeats (loops) until you press the button again to stop it.

● What exactly are Patterns?

The Patterns are the basic musical building blocks of the AN200 — they provide an instrument sound (also called a "Voice"), plus a looping phrase using that Voice.

These pre-recorded Patterns give you the rhythmic and melodic foundation you need for laying down tracks — in your own recording or in performance. Keep in mind that you can create your own Patterns as well. (See page 68.)

> *Tech talk*
>
> **Pattern Mode**
>
> Select the Pattern mode by pressing the [PATTERN] button. The letter "P" in the display indicates the Pattern mode.

Tip *2* Exploring other Patterns

The AN200 features a total of 256 specially pre-programmed Patterns. Try some of these out now.

Use the [DATA] knob to select a different Pattern. Notice how the Pattern number in the display changes. Then press the Start/Stop button to play the Pattern.
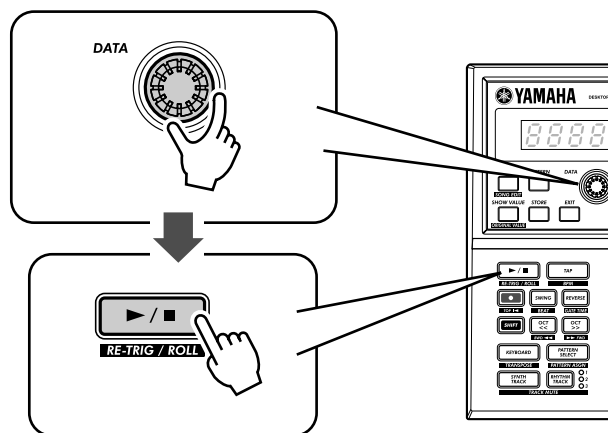
You can also change Patterns during playback! Turn the [DATA] knob while the Pattern is playing — the new Pattern starts playing immediately after the previous one is finished.

> *X-tra Details*
>
> Keep in mind that you cannot select Voices separate from the Patterns. If you want to hear a certain Voice, select the Pattern containing that Voice. You can copy that Voice to a different Pattern; see Tip 52.

Tip *3*   **Switching Patterns on the fly**

Try mixing it up now. The AN200 lets you change Patterns as easily as pressing a button...

Thanks to the Pattern Select function, you can chain together Patterns in real time from the keyboard — as you perform.

Select a Pattern, then press [PATTERN SELECT].

The button lights.
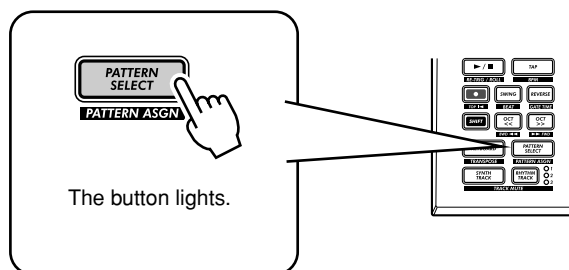
Start the Pattern. While the Pattern is playing, press one of the keyboard buttons (except 1, 4, and 8).

Avoid these keys — they won't change the Pattern.
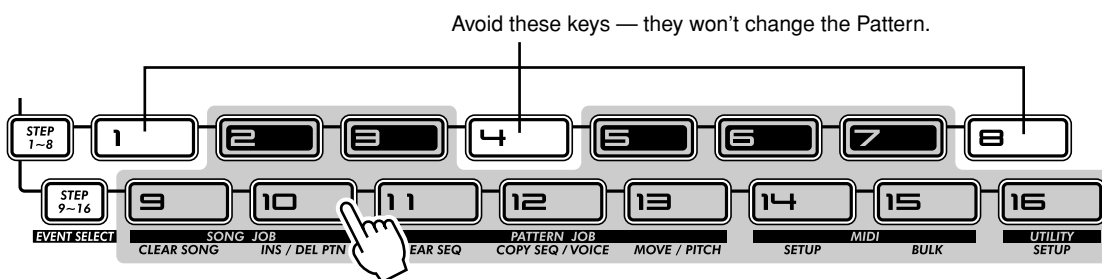
Notice how a new Pattern starts playing as soon as the previous one is finished. This is a great way to string together various Patterns in a live performance — and create your own songs on the fly. If you want, you can use the keys to select a Pattern before starting playback as well.

PoWer HintS

- **Repeats**
  Unless you want the same Pattern to repeat several times, don't press a keyboard button more than once. On the other hand, you can quickly program the Pattern sequence for an entire song if you want, without having wait for each Pattern to play back. The AN200 remembers all the buttons you press and how many times you press them, and automatically plays back the Patterns as you programmed — repeats and all.

- **Other octaves, more Patterns**
  Before starting the Pattern, use the [OCT <<]/[OCT >>] buttons to change the octave range of the keys. That'll let you select other Patterns!

- **Assign them yourself**
  The Pattern-to-key assignments have been made for you. However, you can make your own assignments, and put the Patterns you want to use close together for easy access.

Tip **4**   **Playing it backwards**

The Reverse function lets you completely turn the Pattern around, and play all the notes backwards.

Before you start the Pattern (or during playback, if you want), simply press the [REVERSE] button.
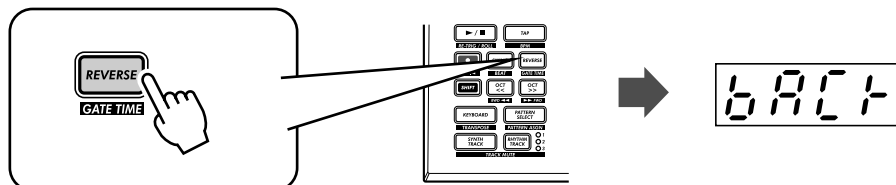
Tip **5**   **Changing the bpm**

Now, that you've got a Pattern playing, try changing its speed.   (This is also called "bpm" — beats per minute.) The AN200 gives you two ways to do this — tapping out the speed manually, or using the [DATA] knob to adjust it.

1 Tap the [TAP] button three or four times at the desired speed.
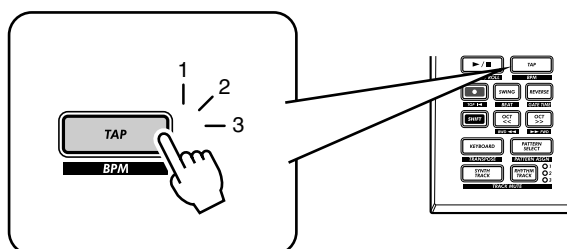
The new bpm is shown in the display. The [TAP] button and BPM lamp flash in time.

2 If you want, adjust the bpm by turning the [DATA] knob.

3 Press the Start/Stop button to start the Pattern at the new bpm.

> **HINT** You can also change the bpm while the Pattern is playing. To do this, simply start the Pattern before step #1 above.

Tech talk

BPM

Determines the speed or tempo of a Pattern.

Operation
Use [TAP] button to tap tempo; then adjust with [DATA] knob. Or hold down [SHIFT] and press [TAP/BPM]; then use [DATA] knob.
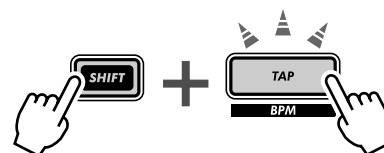
Range
20.0 — 300.0 bpm

Tip 6   Messing with the Beat

There's more than one way to mess with the rhythm. Actually, the AN200 gives you a truckload of ways you can disturb and deconstruct your beats. One of these is the (appropriately named) Beat function.

You'll be meeting up with this control again when you record your own Patterns. But let's see how you can use it now to change the feel of a Pattern while it's actually playing...

1 Select a Pattern and start it by pressing the Start/Stop button.

2 While the Pattern is running, hold down [SHIFT] and press [SWING] (BEAT).
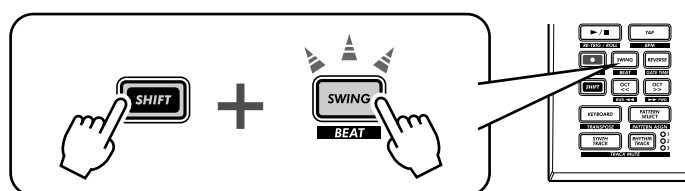
Now, you've got Beat called up and ready, so turn the [DATA] knob to change the setting.

You can tell from the lit number buttons how the Pattern is affected. When set to " *16*," all 16 step buttons are lit and all 16 steps play back normally. Change the setting to " *12*," and Steps 13 - 16 drop out. Notice how the Pattern not only slows down but "feels" different, too. Change Beat to "*8*," and you've only got Steps 1 - 8 happening. That's half of the original 16-step Pattern, and naturally, it plays back at half the speed.

Tech talk

Beat

Determines the number of steps in the selected Pattern for playback: 16, 12, or 8. To set, hold [SHIFT] and press [SWING], then use the [DATA] knob.

Range
16, 12, 8 steps

Tip 7   Double time, half time

Here's a dramatic way to instantly double the speed of a Pattern — or slow it down by one-half.
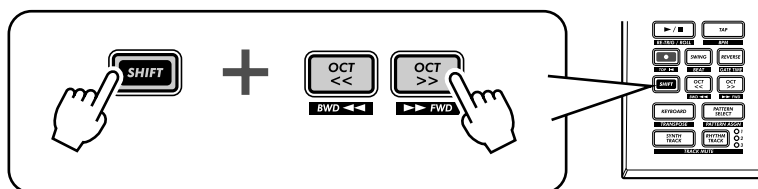
Simply hold down [SHIFT] and press the [OCT <<] button — just before the beginning of the Pattern — to slow down the bpm by one-half. The first half of the Pattern plays at the new speed, before returning to the original speed.

To double the bpm, hold down [SHIFT] and press the [OCT >>] button just before the top of the Pattern. The Pattern plays back twice at the new speed, then returns to normal.

Song Playback

*As we said before, the Patterns are the basic building blocks of the AN200.
But what can you build with them?*

Songs!

*Our team of expert programmers has created a few Songs using the various
Patterns of the AN200. Check these out and hear just how powerful and versa-
tile the AN200 can be for recording your own material.*

Tip 8   Playing a Song

Let's select a Song now and play it.

1 Press the [SONG] button.
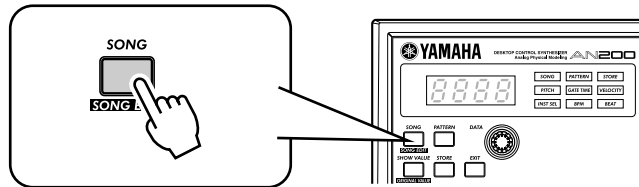
2 Select the desired Song by turning the [DATA] knob.
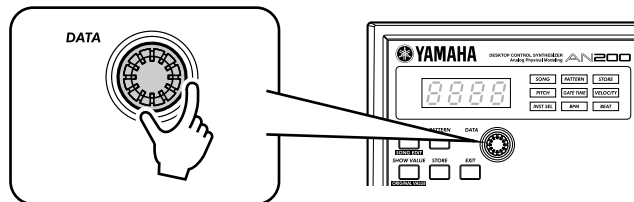
3 Press the Start/Stop button to play the Song.

For more about Songs and how to create your own, see page 81.

📖 Tech talk

Song Mode

Pressing the [SONG] button selects the Song
mode.
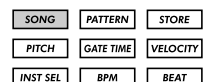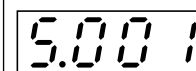
The letter "5" indicates
the Song mode.

Chapter 3

The Keyboard

Small and compact as it is, the AN200 also features a one-octave keyboard for playing and recording the sounds of the instrument.

Tip 9 Playing the keyboard

The built-in keyboard is small — just one octave — but it lets you use all the features of the AN200 without having to connect a separate keyboard. Try it out now.

1 Press [KEYBOARD].

2 Play the keyboard.
The buttons give you a full octave, from C to C. Keep in mind that buttons 1, 4, and 8 don't make any sound here — they're not part of the scale.

The button lights.

Db (C#)   Eb (D#)   Gb (F#)   Ab (G#)   Bb (A#)

C   D   E   F   G   A   B   C
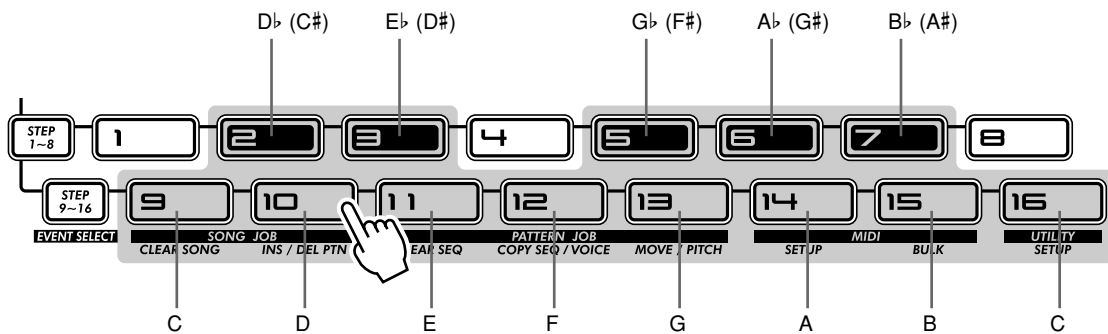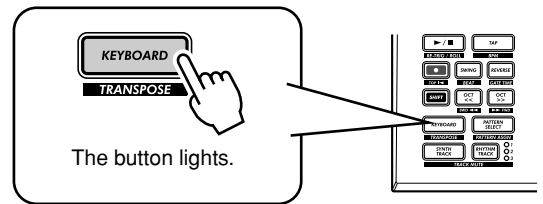
Tip 10 Changing octaves

Naturally, one octave doesn't cover a whole lot of ground. That's why we've included convenient Octave buttons, so you can shift the octave range of the keyboard up or down as needed — quickly and easily.

1 While the [KEYBOARD] button is lit, press [OCT >>].
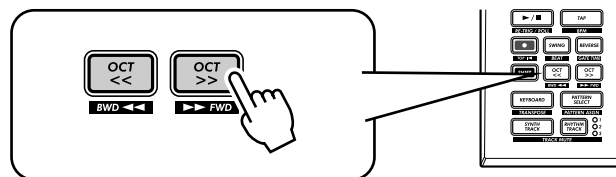
The display shows "*C 4*," indicating the octave. ("*C 3*" is normal.) Play the keyboard and listen to the sound. Try some other octave settings, pressing [OCT <<] and [OCT >>] as desired to shift the octave.

Tech talk
Octave

Determines the octave range of the built-in keyboard. Press [OCT <<] or [OCT >>] to change. ([DATA] knob can also be used after pressing one of these buttons.) Press both buttons simultaneously to restore normal range. Some notes may not sound for the maximum values.

Range
C-2 — C3 (normal) — C8

20

Tip 11   Playing the Rhythm track

The AN200 also has a special Rhythm track (actually there are three.) that let you play and record drum, percussion, bass and other sounds — giving you the power to easily create your own ultra-hip beats. Naturally, you can play all these sounds straight from the built-in keyboard...

1 With the [KEYBOARD] button lit, press [RHYTHM TRACK].

The button lights.
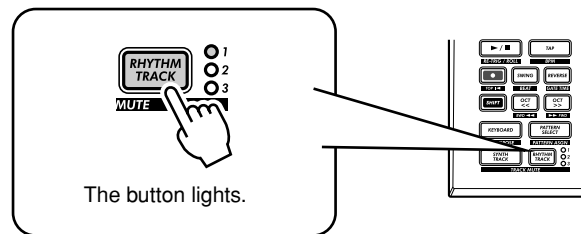
Press the button repeatedly to switch among the three Rhythm tracks: 1, 2, and 3.

2 Play the keyboard.
Remember — you can use the [OCT <<]/[OCT >>] buttons to change the range, and call up a whole different set of sounds. For more details on how to use the Rhythm tracks, see page 140.

Tip 12   Velocity

All the keys of the built-in keyboard play at a fixed volume — no matter how hard or how soft you play them. However, you can set this fixed volume yourself, and make the sound as soft or as loud as you need it.

This Velocity setting also controls how loud the sounds are, when you record your own Patterns in Real-time recording (page 70).

1 Hold down [SHIFT] and press button [16], repeatedly if necessary, until "ᴸ ᴱᴸ" appears in the display.
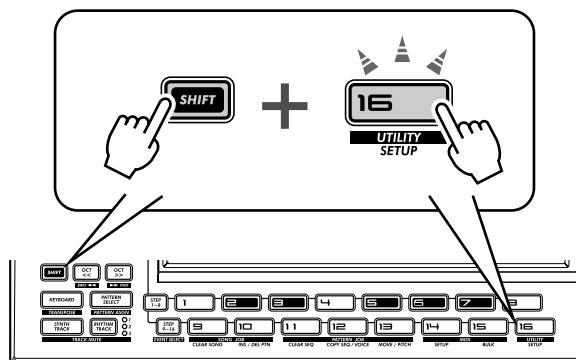
2 Use the [DATA] knob to change the value.
Make sure the [KEYBOARD] button is lit, and try out different settings.

📖 Tech talk

Velocity

Determines the default Velocity setting for the built-in keyboard of the AN200. This affects the loudness of the Synth and Rhythm track sounds, when played from the keyboard. It also affects the loudness of Real-time recorded tracks, when the built-in keyboard is used to record notes.

Velocity is set in the Utility parameters. Hold down [SHIFT] and press button [16], repeatedly if necessary, until "ᴸ ᴱᴸ" appears in the display. Use the [DATA] knob to change the value.

Range
1 — 127

Scene Basics

Scene is one of the most powerful and exciting features of the AN200. It lets you "morph" between two completely different sounds — in real time, as the Pattern is playing.

Tip 13   Switching Scenes

Here we'll switch between Scenes, for instant sound changes.
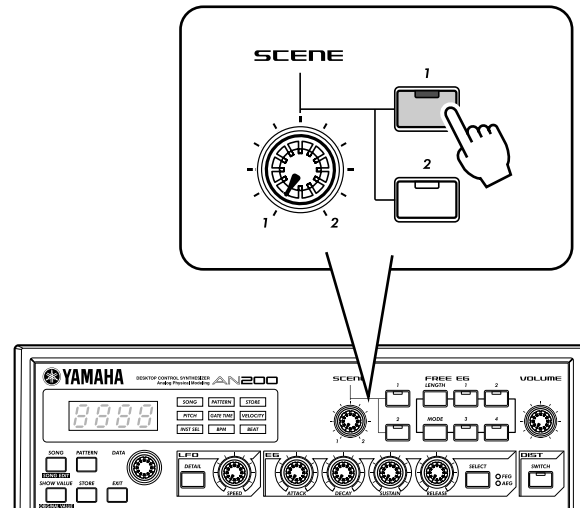
Select a Pattern and start it up. While it's playing, press the SCENE [2] button. Hear how the sound changes? Press SCENE [1] to go back to the first sound. Try to do this on the beat, alternating between the two in rhythm.

Tip 14   Morphing

Let's try something more subtle now! While playing back a Pattern, turn the [SCENE] knob slowly, back and forth.

Notice how the sound gradually "morphs" between 1 and 2 — in real time as you work the knob! Do this in sync with the rhythm and create your own shifting textures!

For more details on Scene, see page 59.
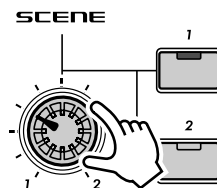
Effects

The effects of the AN200 are more than just icing on the cake — they're powerful tools you can use to completely transform the sound, and put your tracks over the top.

Tip 15 What is an Effect?

The Effects are the last element in the sound chain — they are the last bit of processing done to the sound before you hear it.

These real-time Effects — Delay, Flanger, Phaser, Overdrive/Amp — let you mangle the sound in wild and exciting ways. Although it's not in the Effect section, there's also a Distortion effect that lets you add anything from a warm grunge to a full-on metallic assault.

The Effect controls are exceptionally simple and easy to use. Pressing the [TYPE] button changes the Effect type, while the [PARAM] and [WET] knobs let you adjust the sound and depth of the Effect.

Changes the Effect type (Delay, Flanger, Phaser, Overdrive/Amp).

Changes the depth or degree of the Effect. When set to the minimum (all the way left), the Effect sound cannot be heard.

Changes the sound of the Effect. (Each effect lets you control a different key parameter.)

DELAY → FLGR → PHSR → OD+AMP

dLY1 → FLG1 → PHS1 → AMP1
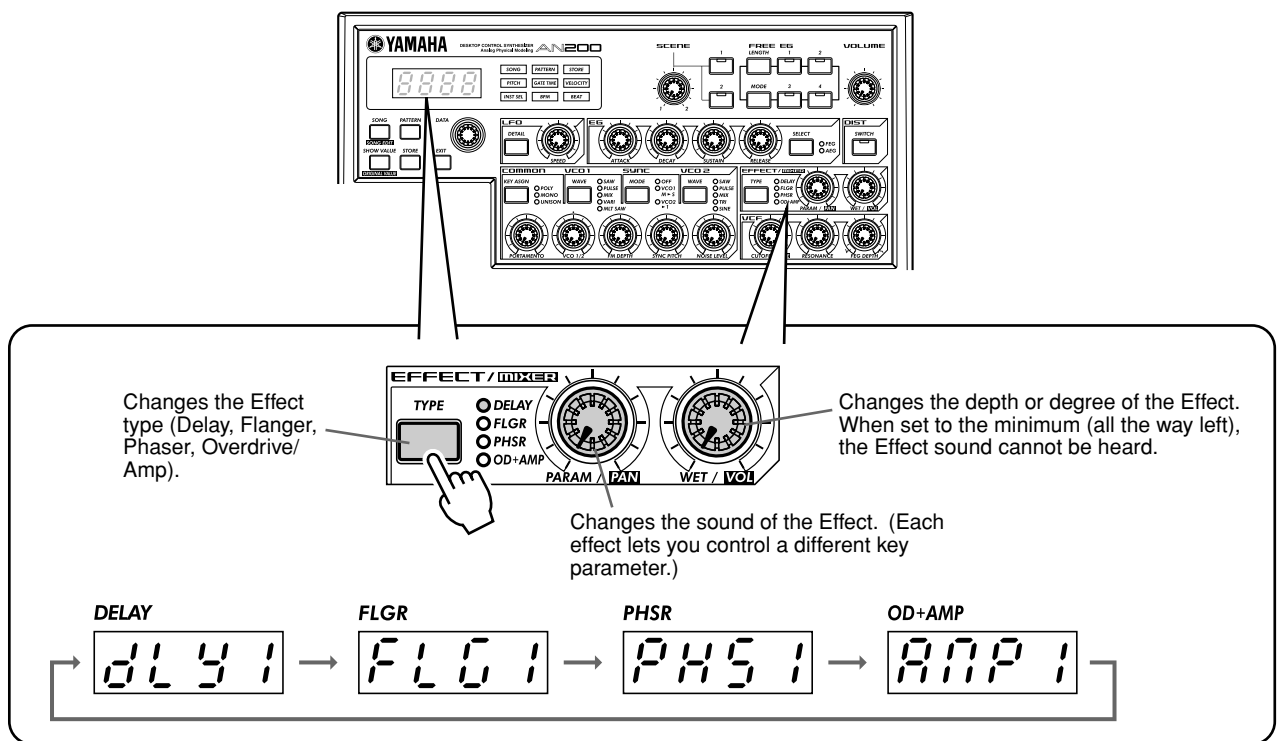
Tech talk
[WET] knob

Range
0 — 127 (Same for all Effect types.)

Tip *16* **Playing with the Effects**

Let's take a look at each of the Effects, and try applying them to the sound.

Before you begin, set the [WET] knob up to about 2:00 or 3:00.

Generally, you should keep the knob at this position. This ensures that you can properly hear the Effect. (Tweak it later as needed to adjust the Effect balance.)
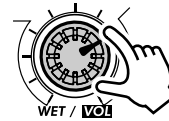
Now, try out each Effect, and use the same procedure:

1 **Select the Effect type.**
Press the [TYPE] button, then use the [DATA] knob. Thirteen different types are available.
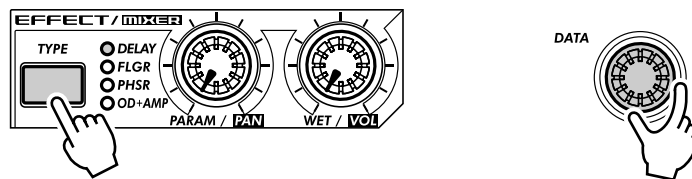
2 **Adjust the Effect depth.**
Use the [PARAM] knob.
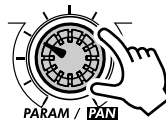
● Delay
(Delay 1 — 3)
Delay is a popular effect that repeats the sound in rhythm. Play a Pattern and select Delay 1 (*dL Y 1*). Try setting the [PARAM] knob to around 3:00. Hear how the Delay sound pulses with the original sound to create a different, more complex yet "spacier" feel. Try the other Delay types, too.

The key to using Delay effectively (no pun intended) is to keep it in sync with the Pattern. This is a little tricky and may take some practice. Slowly work the [PARAM] knob and listen carefully for changes in the rhythm. Keep in mind, there are no "wrong" or "right" settings here — use your ears to come up with settings that feel good.

● Reverb
Reverb (*r ᴜ r b*) is a "hidden" type in the Delay category and it lets you apply an ambient wash of reflections to the sound. Used subtly, it can make your tracks warmer and more natural sounding — as if they were being played in a concert hall. More extreme settings can drench the sound in reverb and produce spacy, other-worldly effects.

Try this out on one of the Patterns. Select the Pattern and play it, then tweak the [PARAM] and [WET] knobs, trying different settings, and hearing how they change the sound. Lower settings result in a shorter reverb time as well as an overall brighter sound. Higher settings produce a longer reverb time and dampen the high frequencies as well for a softer, more muffled sound.

Keep in mind that Reverb — like all the Effects — is applied to all tracks, Synth and Rhythm 1 - 3.

● **Flanger**
(Flanger 1, 2)
This modulation-based Effect produces a "swishing" or "tunneling" sound. Play a Pattern and select Flanger 1 (*FLG 1*).

Take the [PARAM] knob from minimum to maximum, and notice how the sound grows from a subtle sweeping, metallic sound — like a jet airplane taking off — to a virtually pitch-less sonic meltdown.

● **Chorus**
Chorus is another modulation effect ("hidden" in the Flanger category) that adds a subtle warmth and depth to the sound — although you can go for some extreme effects, too.

Try Chorus (*CHor*) out on a Pattern. Play around with the [PARAM] knob, trying different settings — and listen for the changes.

Start out with [PARAM] set to 7:00 (minimum). This is no Chorus modulation at all. Now, bring it up slowly to 8:00, then around 9:00. Hear the modulation working? Doesn't the sound seem more animated? Even fatter?

Try higher settings, as well — going to 12:00, then slowly up to 3:00 and beyond. Notice how the pitch wavers in strange ways — and hear how the sound even brightens up for the highest values.

● **Phaser**
(Phaser 1 - 3)
Another modulation Effect, Phaser is similar to Flanger, but much more subtle. It's perfect for adding some warm animation and movement to the sound.

Play a Pattern and select (*PHS 1*). Set the [PARAM] knob to the minimum (0) and gradually turn it up — and listen to how the modulation enhances the sound. Go on to the other Phaser types as well, for more sonic variations.

● **Overdrive/Amp**
(Amp 1 - 3)
This Effect simulates the overdriven sound of a guitar amp, and lets you apply varying degrees of distortion to the sound. Start a Pattern and try Amp 1 (*AMP 1*), and tweak the [PARAM] knob. Notice how minimum values produce a warm, edgy "bite," while maximum values deliver a full, heavy metal onslaught.

Try all three Overdrive/Amp types — the differences may not be dramatic, but they give you a variety of warm and crunch-laden distortion effects to work with. Some of the Patterns sound especially good with a little grunge...

Tech talk
Effect

Effect Type
Allows you to select one of thirteen Effect types for processing the sound of the tracks (Synth and Rhythm 1 - 3). Press the [TYPE] button, then use the [DATA] knob.

Settings
Delay 1 - 3, Reverb, Flanger 1 and 2, Chorus, Phaser 1 - 3, Overdrive/Amp 1 - 3

Parameter (PARAM)
In general, this allows you to control the depth of the Effect. (The actual parameter differs depending on the selected Effect type.) Use the [PARAM] knob to adjust.

Range
0 — 127

Wet
Allows you to control the volume of the Effect — in other words, the wet/dry balance. Use the [WET] knob to adjust.

Range
0 — 127

Tip *17*   **Distortion**

The last tip introduced you to a distortion effect, the Overdrive/Amp types. Here's yet another way to dirty up the sound — Distortion.

Although not strictly part of the Effect section, Distortion is a strong effect in its own right. Compared to the warm Overdrive/Amp Effect types, it has more edge and bite. When applied to many of the AN200's Voices, it is capable of creating very convincing guitar-like distortion effects.

1 **Press the DIST [SWITCH] button. (The lamp turns on.)**

2 **Adjust the balance with the [DATA] knob.**
This lets you mix the "dry" no-Distortion sound with the "wet" Distortion-only sound. Try different settings and hear how they change the sound. Notice how a fully wet "*U63*" results in a very brittle, edgy sound.

Tech talk

Distortion

Allows you to apply a distortion effect to the Synth track. (Note that this does not affect any of the Rhythm tracks.) Press the DIST [SWITCH] button to turn Distortion on, then use the [DATA] knob to adjust the dry/wet balance. A value of "*d63*" has only the original, unprocessed sound, while a value of "*U63*" has only the Distortion-processed sound.

Range
d63 (dry) — *d:U* (dry = wet) — *U63* (wet)

Filter (VCF)

The VCF or Filter section is one of the most powerful and dynamic on the entire instrument. Used in the right way, the VCF controls are capable of transforming sterile, boring sounds into something really dynamic and exciting. Try out the following Tips and see what we mean...
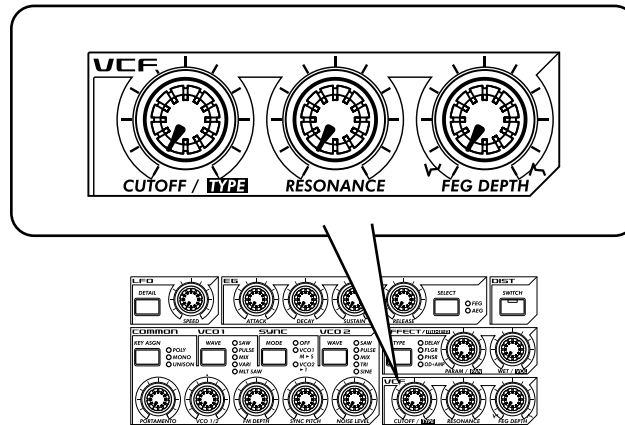
Tip **18** **Cutoff and Resonance**

For your Filter explorations, here's the best place to start.

These two Filter controls work interdependently — changing one of them affects the sound of the other.

Turn [CUTOFF] to the left and the sound becomes darker or "muffled." Turn it to the right and the sound becomes brighter. Turn [RESONANCE] to the right and the Filter peak becomes sharper and more pronounced. Turn it to the left and hear how the Filter flattens out.

Darker   Brighter   Flatter   More pronounced

CUTOFF / TYPE   RESONANCE
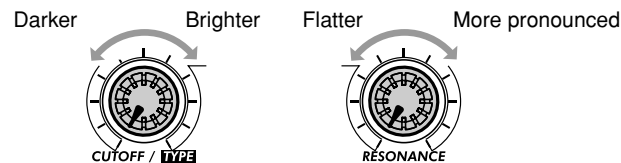
Also keep in mind that the overall effect of Cutoff and Resonance is controlled by FEG Depth (Tip 20 below). If FEG Depth is set too high or too low, you may hear little or no change in the sound — no matter how furiously you twist the [CUTOFF] and [RESONANCE] knobs.

Tech talk

Cutoff

Determines the frequency at which the Filter effect starts. The higher the value, the higher the frequency.

Volume   Cutoff frequency

Frequency (pitch)
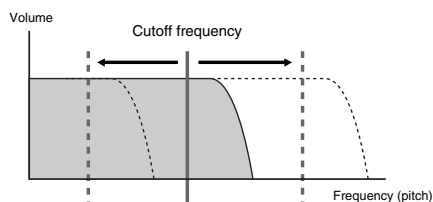
Range
0 — 127

Tech talk

Resonance

Determines the emphasis of the resonant peak of the Filter (at the Cutoff frequency).

Volume   Resonance

Frequency (pitch)
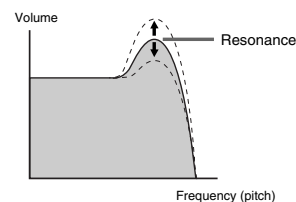
Range
Synth track : -12 — 102
Rhythm track 1-3 : -64 — 63

Tip *19* **Wild, wild filter sweeps – VCF Types**

The enormous power and versatility of the Filter section continues with the VCF Types. These hidden varia-
tions put some really heavy-duty sonic fireworks at your fingertips — just what you need to blow the crowd
away.

Try these settings out for size...

**1 Call up a Pattern and press the Start/Stop button. Start out by setting
both [RESONANCE] and [FEG DEPTH] to around 1:00.**
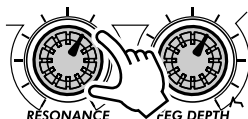
2 Simultaneously hold down [SHIFT] and turn the [CUTOFF] knob.
Keep your eyes on the display as you do this — the setting will change! For starters, select " *l2db* " —
which should be around 11:00.

In this shifted condition, the [CUTOFF] knob becomes the VCF Type selector. (That's why "TYPE" is
printed in black below the knob.)

**3 Now, take your finger from the [SHIFT] button, and the knob reverts to its
original identity as the Cutoff control.**
Turn it very slowly — especially between 8:00 and 1:00 — as you listen to the gradual changes in the
sound.

4 Not wild enough for you? Let's move onto another type then...
Hold down [SHIFT] again and turn the [CUTOFF] knob to around 12:00, so that " *bPF* " is called up in the
display.

Is that any wilder? Still too tame? Let go of [SHIFT] and try tweaking the [CUTOFF] knob between 8:00
and 2:00.

**5 Let's try one more. Hold [SHIFT] and set the [CUTOFF] knob to around
2:00, so that the " *HPF* " type is selected.**

Things can get kind of crazy here, too. Tweak the [CUTOFF] knob some more — especially between
12:00 and 3:00 — and hear what kind of madness you can generate.

PoWer HintS

Don't forget the [RESONANCE] and [FEG DEPTH] knobs! Work with them too as you tweak the
[CUTOFF] knob. There's a lot of sonic variation to be had in just these three controls.

Tech talk VCF Type

Determines the filter type used for the VCF section. The filter passes only a specified range of frequencies while cutting off the rest. There are several completely different types, as well as a variety of filter slopes (see below).

Settings
24db (Low Pass Filter 24dB/octave), *18db* (LPF 18dB/octave), *12db* (LPF 12dB/octave), *bPF* (Band Pass Filter), *HPF* (High Pass Filter), *bEF* (Band Eliminate Filter)

24db, 18db, 12db
The Low Pass Filter passes only those frequencies below the specified cutoff point. Cutoff curves of 24dB/octave, 18dB/octave and 12dB/octave can be selected.
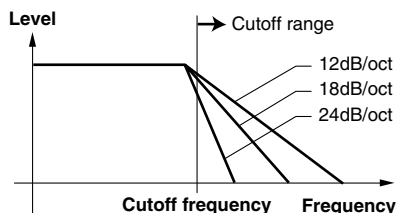
BPF
The Band Pass Filter passes only those frequencies in the specified range, with a cutoff curve of 12dB/octave.
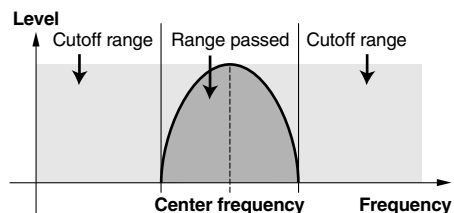
HPF
The High Pass Filter passes only those frequencies above the specified cutoff point, with a cutoff curve of 12dB/octave.
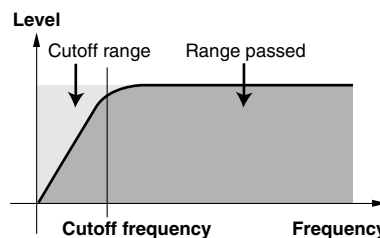
BEF
The Band Eliminate Filter passes only those frequencies outside the specified frequency range. The Resonance setting (see page 27) determines the eliminate range.
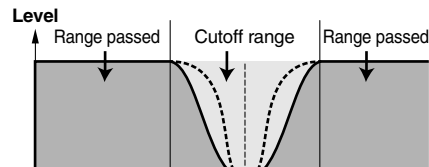
Tip *20* FEG Depth

Technically, the FEG Depth controls how the Filter works over time. This is even shown on the panel for you:
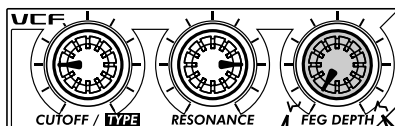
Indicates a "dip" in the filter, just at the start of each note.
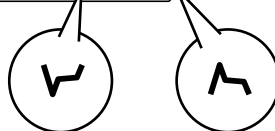
Indicates a filter "peak," just at the start of the note.

With the the [CUTOFF] and [RESONANCE] knobs set respectively to 9:00 and 3:00 (see above), slowly turn the [FEG DEPTH] knob.

Depending on the Pattern selected, negative settings (setting the knob left of 12:00) may result in little or no sound. But once you turn the knob past the halfway point (12:00), you'll start to hear the filter "opening up." Turn the knob slowly for gradual filter sweep effects. Also try working the knob in time with the rhythm for dynamic "wah" effects.

Tech talk

FEG Depth

Determines the degree or depth of the filter effect over time. Positive values result in a normal EG; negative values use a "reverse" EG — producing a filter sweep effect that dips and comes back up, rather than one that peaks and goes down.

Range
-128 — 127

Nuts and Bolts

Let's take a break from the fun and games for a moment. Check out the following functions and familiarize yourself with them — they're very useful, convenient tools you'll need as you work with the AN200.

Tip *21* Show Value

Sometimes you'll want to see what value a knob or button has been set to. Remember that when you call up different Patterns, the knobs won't correspond to the settings, so just looking at the knobs won't help. And if you turn the knob or press the button, you're likely to change the setting. What's a poor knob twister to do?

Use the Show Value function. This convenient tool lets you see virtually any of the Voice-related settings — without disturbing or changing them.

1 While you're editing the Voice of a Pattern, press the [SHOW VALUE] button.
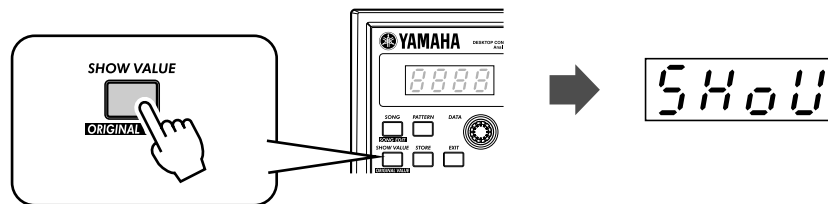
2 Simply turn the knob of the parameter whose value you'd like to see.
For example, to see the Portamento Time value that's been set for the Voice, turn the [PORTAMENTO] knob.
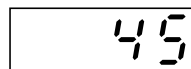
Display flashes and indicates the currently set value for the parameter (in this case, Portamento).

Naturally, Show Value can be used with all Voice-related buttons as well. For example, to see the current setting of the VCO 1 Wave, press the VCO 1 [WAVE] button.
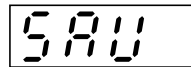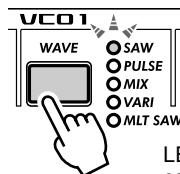
LED next to button flashes to indicate current setting.

For buttons that have multiple parameters (such as LFO [DETAIL] or FREE EG [MODE]), press the button repeatedly to call up the desired parameter.

3 Press the [EXIT] button to return to normal operation.

All of the indicated controls can be used with the Show Value function. (Original Value, too. — See Tip 22 below.)

PoWer HintS

• **Trade Secrets**
  Use Show Value to pick the brains of our programmers. Do you have a favorite Voice and would like to find out its settings? Just call up Show Value and take a peek behind the curtain.

Tip 22 Original Value

If you tweak and turn the knobs on a Voice for any length of time, you're going to come up with a Voice that's VERY different from the one you started out with. And at some point in the editing process, you might wish you could take a peek at the original settings — without erasing your new ones, of course — just to see how far you've strayed.

This is where the Original Value function can help. Similar to Show Value (in Tip 21 above), Original Value lets you view any of the originally programmed Voice-related settings — simply by turning a knob or pressing a button.

1 While you're editing the Voice of a Pattern, hold down [SHIFT] and press the [ORIGINAL VALUE] button.
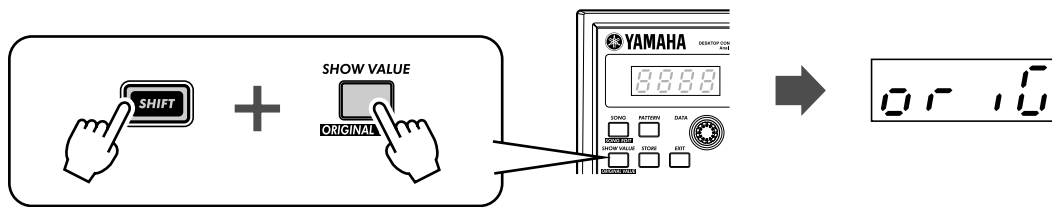
2 Turn the knob or press the button of the parameter whose value or setting you'd like to see.
For example, to see the original Cutoff value that's been set for the Voice, turn the [CUTOFF] knob.
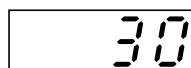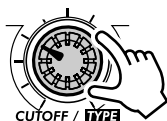
Display flashes and indicates the originally set value for the parameter (in this case, Cutoff).

Original Value can be used with all the same knobs and buttons as Show Value. For details, see Tip 21 above.

3 Press the [EXIT] button to return to normal operation.

● **What's the difference between Original Value and Show Value?**
  • **Show Value —** Lets you view the CURRENT settings of the Voice.
  • **Original Value —** Lets you view the ORIGINAL PRESET PROGRAMMED settings of the Voice.

If you haven't done any editing to a Voice, both of these will display the same values — those of the currently selected Pattern.

PoWer HintS

• **Closer to home**
  While you're editing a Voice, you may find yourself way off course — somewhere in outer space! You can use Original Value to retrace some of your steps and come back closer to Earth. For example, call up Original Value and check one of the settings — say, FEG DEPTH — then press [EXIT] and adjust the [FEG DEPTH] knob to bring the value closer to the original. Keep doing this with other parameters as well, until you get the sound you want.

• **Current and original values**
  Want to easily see how far your edited values are from the original? Just switch between Show Value and Original Value. To alternate between the two functions, simply press the appropriate button(s): [SHOW VALUE] for Show, [SHIFT] and [ORIGINAL VALUE] for Original. No need to exit beforehand — just toggle between the two, turning the knob each time you switch to check the settings.

Tech talK
Original Value

Allows you to check the originally programmed value or setting of a Voice-related parameter, without changing the value or setting. Hold [SHIFT] and press the [ORIGINAL VALUE] button, then turn the appropriate knob or press the appropriate button. The original value/setting is displayed. While Original Value is active, the Voice cannot be played and the Pattern controls cannot be used. Press the [EXIT] button to return to normal operation.

Tip 23 Panic! (or "Uh-oh...What do I do now?")

As you've undoubtedly discovered by now, the AN200 is a wonderfully deep and extraordinarily versatile synthesizer. Sonically, it can take you places you've never dreamed of.

Unfortunately, that can be part of the problem. While you're tweaking a Voice, you may end up drifting in a synthesized never-never land, or come across nothing but silence or muffled noises, or — maybe worst of all — meet up face to face with a monster sound that can't be tamed.

Until you know exactly how the controls work and how they affect the sound, you'll ocassionally find the AN200 to be an unpredictable, sometimes uncontrollable beast. Before you unplug it and try to stuff it back in its box, try these common-sense workarounds and solutions.

● **Select a different Pattern.**
Or select the same Pattern again. Yes, this will automatically erase any edits you've made. But at least you can come back to square one and start over.

● **Press the [EXIT] button.**
This won't always work as you expect. Keep in mind, [EXIT] is mainly used to leave a function or operation. Use it when you find yourself inadvertently doing something you don't really want to do — such as deleting a Pattern from a Song (page 88) or clearing a sequence (page 68). Also use it to get out of situations where there is no sound or many buttons just don't seem to work — such as in Show Value (page 31) or Original Value (page 32).

● **Turn off the power.**
When all else fails... Actually, we don't recommend doing this, especially if you've got speakers connected. But it IS a quick and sure way to reset everything.

● **Do a Factory Reset operation. (See Tip 24.)**
Use this only if you suspect something is actually wrong with the AN200. (For the most part, many of the confusing things about the instrument may just be things that you don't quite understand yet.) Remember, this will COMPLETELY ERASE any original work you've done or saved — so be careful!

● **Check the Troubleshooting section (page 115).**
We mean it. The next time you find yourself scratching your head (or tearing your hair out), save yourself a whole lot of grief and read through this section. It'll make you feel better.

Tip *24* **Factory Reset**

If the AN200 freezes in an operation, crashes, or otherwise behaves erratically, the Factory Reset operation can usually be counted on to bring things back to normal.

Factory Reset is also used to restore all the factory-programmed Pattern and Song data. For example, if you've created your own Pattern and Song data (and saved it, of course) but want to use the original Patterns and Songs of the AN200, just perform a Factory Reset.

⚠ *CAUTION*

This operation automatically erases any and all of your original Patterns and Songs. If possible, make sure to save any important data (page 108) before using Factory Reset.

1 Turn the power off.

2 Simultaneously hold down the [SHOW VALUE], [PATTERN] and [EXIT] buttons, and turn on the power again.
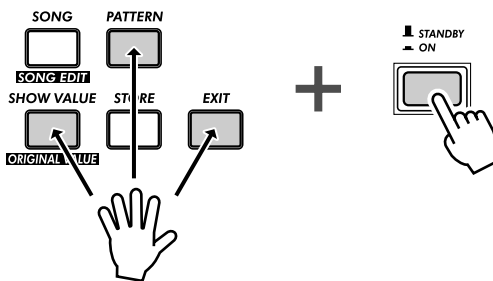
Pattern Playback

We're going to pick up where we left off in Chapter 1, and give you some more Pattern Tips. These are simple things you can do to change the sound, pitch, rhythmic feel, and other aspects of the Patterns — even the Patterns themselves — in real time.

Tip 25 Adjusting the Gate Time

Try this simple, fast and cool tool — and change the feel of your tracks.

Select and start a Pattern. Any Pattern will do.

While the Pattern is playing, simultaneously hold down [SHIFT] and press [GATE TIME] ([REVERSE]).
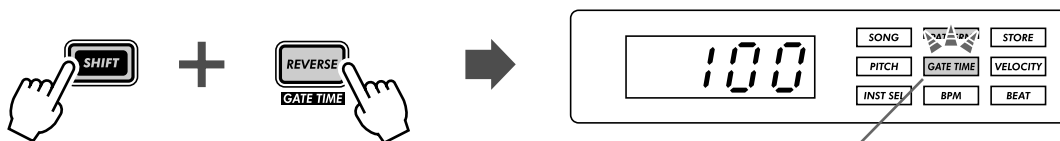
The lamp flashes to indicate Gate Time is active.

Turn the [DATA] knob to change the Gate Time. Notice how the length of the notes changes as you work the knob.

When you're done, don't forget to press [EXIT] (or [SHIFT] + [GATE TIME]) to leave the function.

Tech talk

Gate Time

Determines the length of each note. The higher the value, the longer the gate time. Shorter values produce a clipped sound, longer ones produce a sustained sound.

Range
1 — 100 (normal) — 200

Tip 26 Transposing the key

The Transpose function lets you change the pitch or key of the Pattern as it plays back. With this, you can change chords on the fly, and create your own chord progressions — instantly, as you perform.

Let's try it out. Select a Pattern and start it up. Now, hold down [SHIFT] and press [KEYBOARD].
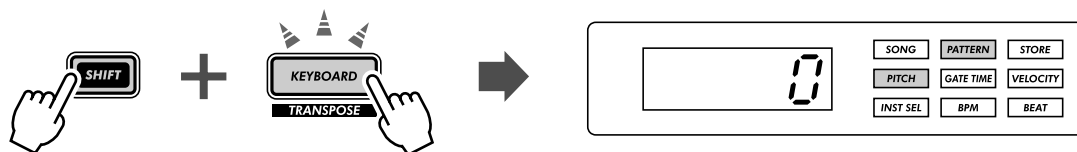
The button flashes.

As the Pattern plays, try pressing various keys. For example, press [12] — and hear how the key changes. Press [9], and you're back to the original pitch. (Remember that buttons 1, 4, and 8 don't have any effect here.)

The trick to using this effectively is hitting the pitch changes right on the beat. To get the hang of it, try this simple example — counting "one, two, three, four" with the Pattern — and stay in time with the rhythm.

one   two   three   four   ONE   two   three   four   ONE   two   three   four   ONE   two   three   four

[12]   [13]   [9]
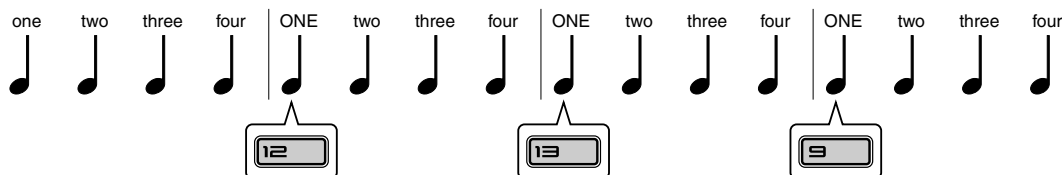
Try changing pitch on other beats in the Pattern as well — for example, not just on the "one," but hitting the "one" and "three" both. Or on all four beats, for some unusual, "busy" changes. And did you know that you can use the [OCT <<]/[OCT >>] buttons, too? This next example may take a little practice...

one   two   THREE   four   ONE   two   three   four   ONE   two   THREE   four   ONE   two   three   four

[OCT <<]   [12]   [13]   [OCT >>]   [9]
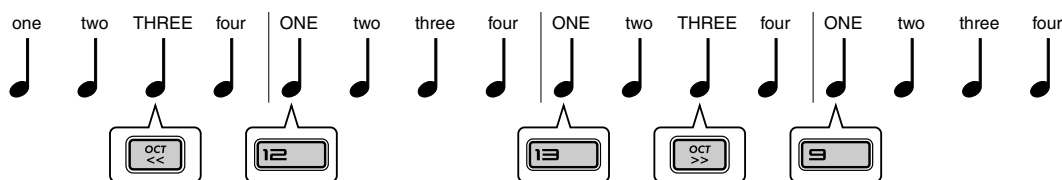
Notice that the octave doesn't actually change until you hit the number button on the keyboard.

Experiment with other Patterns as well. And when you're done, don't forget to press the [EXIT] button to leave the function.

Tech talk

Transpose

Determines the key of Pattern playback. To enable, hold down [SHIFT] and press [KEYBOARD], then press appropriate buttons on keyboard. Use [OCT <<]/[OCT >>] to change octave. The number of semitones that the pitch has been transposed is indicated in the display.

Range
-24 — 24

Tip *27* **Swing**

Here's an instant way to change the rhythmic feel of a Pattern. Play it straight, or give it some swing.

Call up a Pattern and start it up. While it's playing, press the [SWING] button and turn the [DATA] knob.

Try a setting of about 65 - 70 and notice how the Pattern takes on a "bouncy" feel. Experiment with different settings and different Patterns. Judicious use of Swing can make the Patterns sound less mechanical — and give your tracks a more "human," natural feel.

X-tra Details

- The Swing effect differs depending on the selected Pattern. For certain Patterns with few notes (such as only quarter notes), Swing may have little to no effect.
- When the Beat parameter (page 18) is set to " *12*," Swing has no effect on the Pattern.

Tech talK

Swing

Determines the amount of swing or triplet feel in Pattern playback. (Does not change the actual recorded data.) While a Pattern is playing, press the [SWING] button and turn the [DATA] knob to change the value.

Range
50 (straight) — 83 (maximum swing)

Tip *28* **Muting tracks**

The Patterns of the AN200 contain and play back up to four separate tracks — the Synth track and three Rhythm tracks. The convenient Track Mute feature lets you selectively mute these tracks — even during playback.

Track Mute actually has two main applications: one in recording, the other in live performance. When recording several tracks to a Pattern (page 70), it's often useful to hear only one or two of your previously recorded tracks — and Track Mute is ideal for this.

However, where Track Mute REALLY shines is in live performance. Pro DJs and dance music artists can whip the crowd into a frenzy by dropping parts out and bringing parts in. For example, bringing everything down to the drums is a great dynamic trick that keeps the dancers grooving. From there, you can gradually build things up, adding track by track until you have the whole mix cooking. Or bring everything in all at once, and watch the crowd explode.

1 Call up and start one of the Patterns.

2 Let's start by muting the Synth track. While holding down [SHIFT], press [1] on the keyboard.
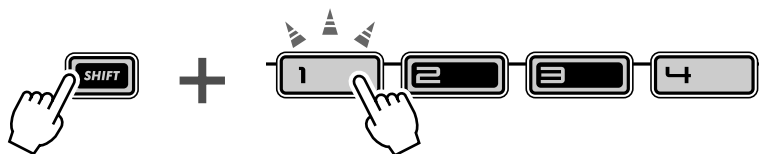
Notice how buttons [1], [2], [3], and [4] light while you hold down [SHIFT] — this means all four tracks are on. Button [1] corresponds to the Synth track; when you press this, the Synth track cuts out. To bring the Synth track back in, simply hold down [SHIFT] and press [1] again.

3 Now, do the same with Rhythm tracks 1, 2, and 3 — which are assigned to buttons [2], [3], and [4], respectively.
While the Pattern is playing, try muting and unmuting the tracks in time with the rhythm. The lighted buttons let you see at a glance which tracks are active — a great help when doing this live.

> ### *Tech talk*
> **Track Mute**
>
> Allows selective muting of the four tracks: Synth and Rhythm 1 - 3. Two methods are available:
>
> **Method 1**
> Holding down [SHIFT] and pressing number buttons [1], [2], [3], and [4].
>
> **Method 2**
> Holding down [SHIFT] and pressing [SYNTH TRACK] or [RHYTHM TRACK].
>
> In Method 2, [RHYTHM TRACK] is an eight-way toggle switch. Each button press (as you hold down [SHIFT]) steps through all Track Mute settings.
>
> For both methods, the LED next to the track number lights to indicate that the track is on.

Tip *29* Muting notes during playback

Here's a Tip that's useful both in live performance AND in creating Patterns. It's called Step Mute and it lets you modify an existing Pattern by taking out specific notes — while the Pattern is playing.

Step Mute is another great way to change the rhythmic feel and melodic content of a Pattern — without permanently changing the original data. Let's try it out...

1 Select a Pattern and start it up.

2 Make sure the Synth track is on (press [SYNTH TRACK] if necessary), then press one of the keyboard buttons.

The button lamp turns off, indicating the note is muted.
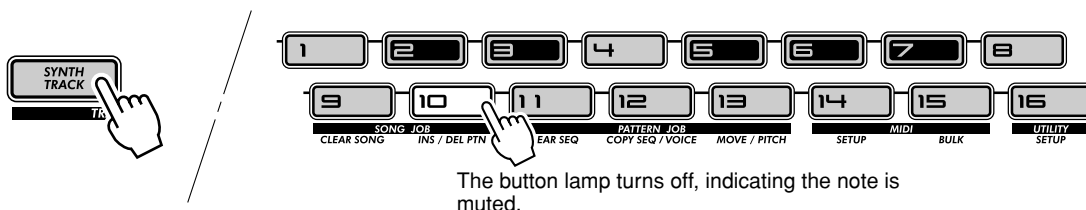
Hear how the selected note drops out? You can press the same button again to put the note back in. Try pressing some other buttons and listen to how their presence or absence affects the feel of the Pattern.

3 Do the same with the Rhythm Tracks as well.
Press [RHYTHM TRACK] repeatedly to select the desired Rhythm Track: 1, 2, or 3. Then, press the keyboard buttons — just as you did in Step 2 above.

- **Adding and subtracting beats**
  Did you notice that you can add sounds, too? This is especially effective in the Rhythm tracks.
  If the selected Rhythm track has some unlit buttons — meaning there are spaces in the track
  — try pressing some of those buttons to add more drum/percussion hits to the track. Or try
  taking some of the lit buttons' sounds out, and hear what kind of rhythm you come up with.

- **Save your edits**
  If you like the new Pattern you've created, store it. (See page 79.) All Step Mute settings are
  saved along with the stored Pattern; yet the original data is not changed.

Tech talK

Step Mute

Allows you to mute and unmute specific
steps in a Pattern during playback. Select
and start a Pattern, then select the track you
wish to control: Synth or Rhythm 1, 2, or 3.
Then, press the desired buttons to mute/
unmute the steps.

Tip **30 Mixer controls – Pan and Volume**

Try these bread-and-butter controls out, and change the mix of the Patterns. Pan and Volume only affect the
Synth track — the Rhythm tracks remain unchanged.

1 Select a Pattern and start it.

2 Let's try changing the Pan position first.
Hold down the [SHIFT] button, and turn the [PARAM] (PAN) knob.

Tech talK

Pan

Determines the position of the Synth track
sound in the stereo image. Hold down
[SHIFT], and turn the [PARAM] (PAN) knob
to adjust.

> **Range**
> $L63$ (full left) — $Cntr$ (center) —
> $r63$ (full right)
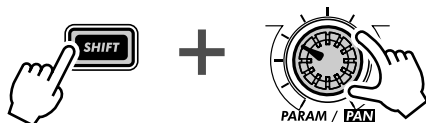
Notice how the Synth track sound moves from left to right and back again
as you turn the knob? (We assume you're listening to this with stereo
headphones or on a stereo speaker system...)

3 Now, work with the Volume.
Hold down the [SHIFT] button, and turn the [WET] (VOL) knob.

Tech talK

Volume

Determines the volume of the Synth track.
Hold down [SHIFT], and turn the [WET]
(VOL) knob to adjust.

> **Range**
> 0 — 127
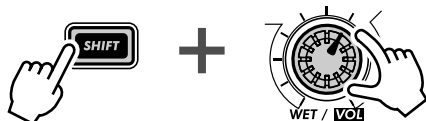
Hear how the Synth sound fades in and out as you tweak the knob?

Remember, this only affects the Synth track — unlike the master [VOLUME]
knob, which controls the overall sound of the AN200.

Tip *31* Assigning Patterns to the keyboard buttons

Remember in Tip 3 how you selected Patterns on the fly, as they were playing? Here's where you can set which Patterns are triggered by which keyboard buttons. Any Pattern — even the User Patterns — can go to any button. Plus, you can use a key range of three octaves, from C2 to B4 — that's 36 different Pattern Select locations.

1 Hold down [SHIFT] and press [PATTERN SELECT].

2 Use the [OCT <<]/[OCT >>] buttons to select the desired octave range.

The button flashes. All keyboard buttons turn off.

3 Press the desired keyboard button. (Remember, [1], [4], and [8] can't be used.)
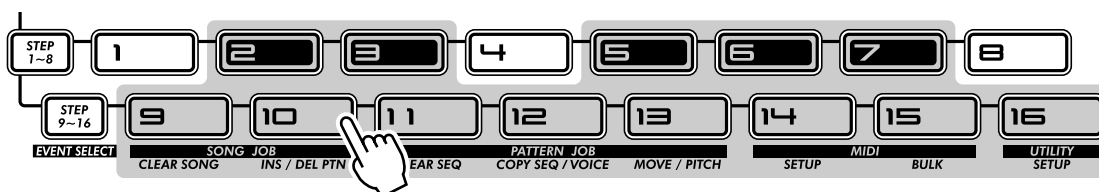
4 Select the Pattern with the [DATA] knob. Your original User Patterns are fair game as well.

5 Repeat Steps 2 - 4 as often as you want, until you've made all the desired Pattern-to-key assignments.
Once you're finished, press [EXIT] (or [SHIFT] and [PATTERN SELECT] again) to leave the function.

Now, try using Pattern Select to play the newly assigned Patterns. (Need a refresher course? See Tip 3 again.)

● **Storing Pattern Select assignments**
There's no need to store! All your Pattern Select Assign settings are stored automatically as you make them.

Tech talK
Pattern Select Assign

Determines the Pattern-to-key assignment for Pattern Select. Hold down [SHIFT] and press [PATTERN SELECT]. Select octave range, then press desired keyboard button and use [DATA] knob to select Pattern. Pattern assignments are stored automatically.

LFO Modulation

Here's another crucial cornerstone in synthesizer sound — the LFO. Although LFO modulation can be used to make the sound warmer and more natural, its strong forte is in creating wild and extreme special effects. Explore the following Tips and you'll soon build up a huge arsenal of powerful tools for mangling the sound in awesome ways.

Tip *32* **Modulating the volume**

Get to know your LFO.

This Tip takes you through the basics in setting up and using the LFO. It also introduces you to one of the more popular LFO applications — modulating volume. Used with some of the other sound shaping controls on the AN200, this is responsible for the machine gun effects, helicopter-like sounds and a slew of other industrial noises you hear in a lot of techno, electronica and dance music today.

1 Call up a Pattern.

2 Press [DETAIL], several times if necessary, until "*RПd***" (Amplitude Modulation Depth) appears briefly in the display.**

3 Use the [DATA] knob to set the value to "*63***."**
This is the Amplitude Modulation Depth setting — "amplitude" meaning "volume." Setting Amplitude Modulation Depth to 63 puts the LFO in maximum control over the volume of the sound.

4 Press [KEYBOARD] to use the keyboard, and hold down one of the keys.
Hear how the the sound wavers in and out, in a tremolo effect?

5 As the note sounds, tweak the LFO [SPEED] knob — and hear how the modulation alternately speeds up and slows down.
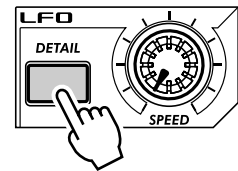
Tech talk
Amplitude Modulation Depth

Determines the amplitude (volume) depth for the LFO. A value of "*63*" results in no volume change. To set, press [DETAIL] repeatedly (until "*RПd*" appears), and use [DATA] knob to set value. (Pressing [DETAIL] repeatedly steps through the other LFO Detail parameters; see page 42.)

Range
-64 (maximum negative) — 0 (no change) — 63 (maximum positive)

Tech talk
Speed

Determines the speed of the LFO modulation.
Range
Stop (no modulation), 1 — 255

Tip *33* Modulating the Filter

Now, let's apply the LFO to the Filter — and create some interesting wah-wah effects.

1 Press [DETAIL] until "*Fⁿᵈ*" (Filter Modulation Depth) appears briefly in the display.

2 Use the [DATA] knob to set the value to around "*-34*."
This is the Filter Modulation Depth setting. Setting Filter Depth to -34 gives the LFO some control over the timbre or tonal quality of the sound.

3 Press [KEYBOARD] to use the keyboard, and hold down one of the keys.
Can you hear the wah-wah sound? Try tweaking the [DATA] knob in the range of -64 to -24 and listen to the changes in Filter modulation. Also try tweaking the sound at the positive end of the spectrum (16 to 46) as well, and listen for the difference.

X-tra Details

If you've come to this Tip directly from Tip 32 above, you're hearing the LFO applied to both Amplitude and Filter. To hear the Filter effect all alone by itself, set Amplitude back to normal (*0*).

Tech talk
Filter Modulation Depth

Determines the Filter modulation depth for the LFO. A value of "*0*" results in no Filter change. Values toward -64 produce a negative Filter depth; values toward 63 produce a positive depth. To set, press [DETAIL] repeatedly (until "*Fⁿᵈ*" appears), and use [DATA] knob.

Range
-64 (maximum negative) — 0 (no change) — 63 (maximum positive)

For more fun:
Try tweaking the VCF controls. Naturally, if the LFO is being applied to the Filter, any changes you make to the Filter section will affect the LFO-modulated sound as well.

Tip *34* Modulating the pitch

Try using the LFO to warp the pitch — and discover some more awesome modulation effects.

1 Press [DETAIL] until "*Pⁿᵈ1*" (Pitch Modulation Depth 1) appears briefly in the display.

2 Use the [DATA] knob to set the value to around "*0*."
This is Pitch Modulation Depth 1 (for VCO 1). Start out with this minimum value.

3 Press [KEYBOARD] to use the keyboard, and hold down one of the keys.
As the sound sustains, slowly turn the knob counter-clockwise, and bring the value down toward "*-127*." Notice how the pitch becomes less and less distinct the further you get from "*0*." (This is true for positive values as well.) For some Voices, the pitch may stay distinct but change radically — over an octave or more!

Try experimenting with different LFO Speed settings, and also try holding down more than one note.

X-tra Details

If you've come to this Tip directly from the other LFO Tips above, you may want to hear the Pitch modulation by itself. To do this, set both Amplitude and Filter back to normal (*0*).

PoWer HintS

• **Double up**
  Once you start working with VCO 2 (in Tip 57), experiment with the two independent Pitch Modulation Depth settings (PMD1 and PMD2) for even more interesting textures and pitch changes.

Tech talk
Pitch Modulation Depth 1, 2

Determines the two Pitch Modulation Depth settings for the LFO. Setting 1 ("*PMd 1*") affects VCO 1, while setting 2 ("*PMd2*") affects VCO 2. A value of "*0*" results in no Pitch change. To set, press [DETAIL] (until "*PMd 1*" or "*PMd2*" appears), and use [DATA] knob.

  Range
  -127 (maximum negative) —
  0 (no change) — 127 (maximum positive)

Tip *35* Changing the LFO wave

The LFO uses one of 21 different waveforms to modulate the sound. The particular wave you select has a huge effect on the final sound. Try out some of these and see what kind of chaos you can create.

1 Press [DETAIL] until "*UAuE*" (Wave) appears briefly in the display.

2 Use the [DATA] knob to set the Wave to "*trGL*" (Triangle).
   This selects the Triangle wave. Try some of the other Wave settings and hear how they change the sound.
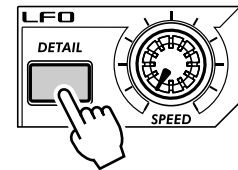
PoWer HintS

• **Sample and hold**
  Use the Sample-and-hold waves ("*S-H*" 1 - 4) mainly for Pitch modulation effects. Unlike the other Wave settings, these generate random fluctuations. They're less suited to modulating the Amplitude or Filter, since the random differences may be less apparent. Especially with Amplitude, they may result in unwanted dropouts in the sound. However, they can be very effective with Pitch, particularly in creating "electronic" sounds and sci-fi effects.

Tech talk Wave

Determines the LFO waveform.

Settings
● **Sine (5 ınE), 2, 3, 4, 5**
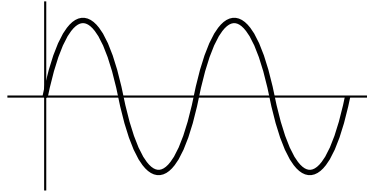
Sine

Sine 2
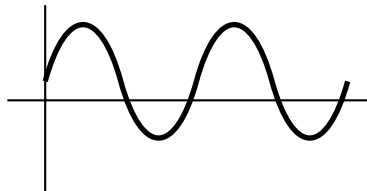
Sine 3
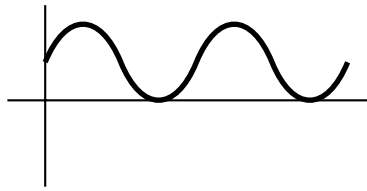
Sine 4
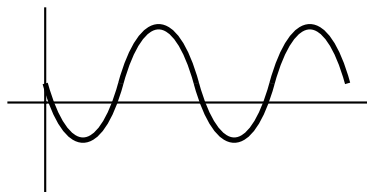
Sine 5
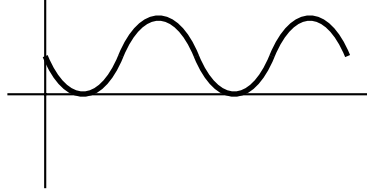
● **Triangle (ᵗ ⌐ GL), 2, 3, 4, 5**
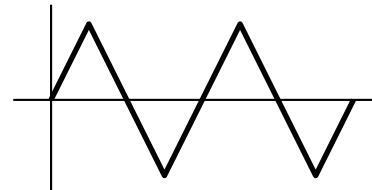
Triangle

Triangle 2
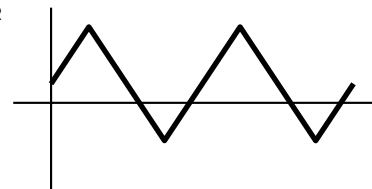
Triangle 3
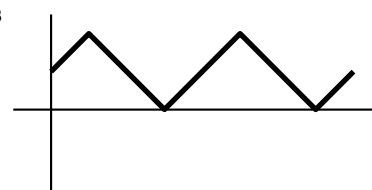
Triangle 4
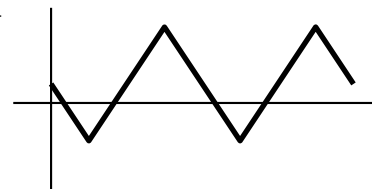
Triangle 5

● Square (*Squr*), 2, 3

Square

Square 2

Square 3

● Saw 1 (*SAU 1*), 2, 3, 4

Saw 1

Saw 2

Saw 3
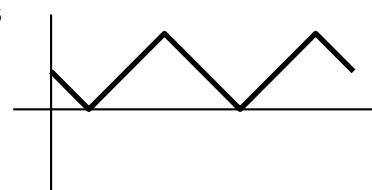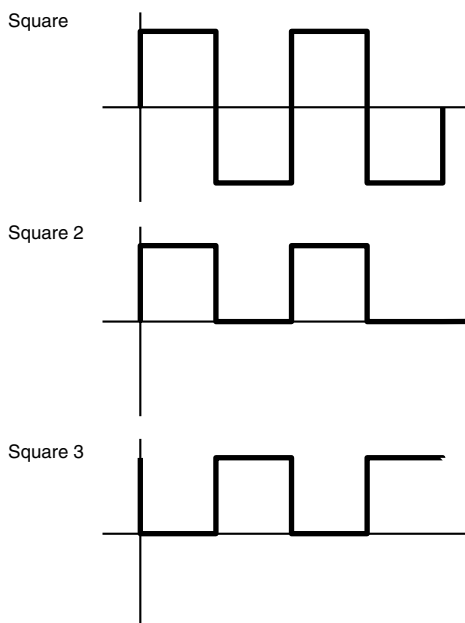
Saw 4
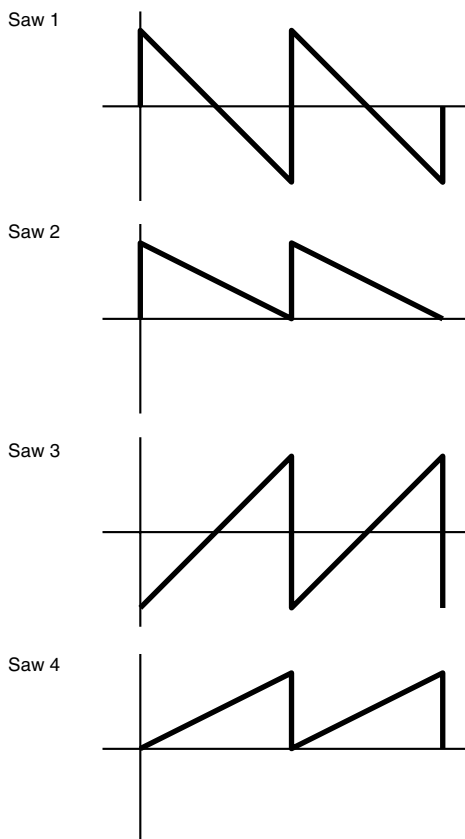
● Sample-and-hold 1 (*S-H 1*), 2, 3, 4

S-H 1

S-H 2

S-H 3

S-H 4
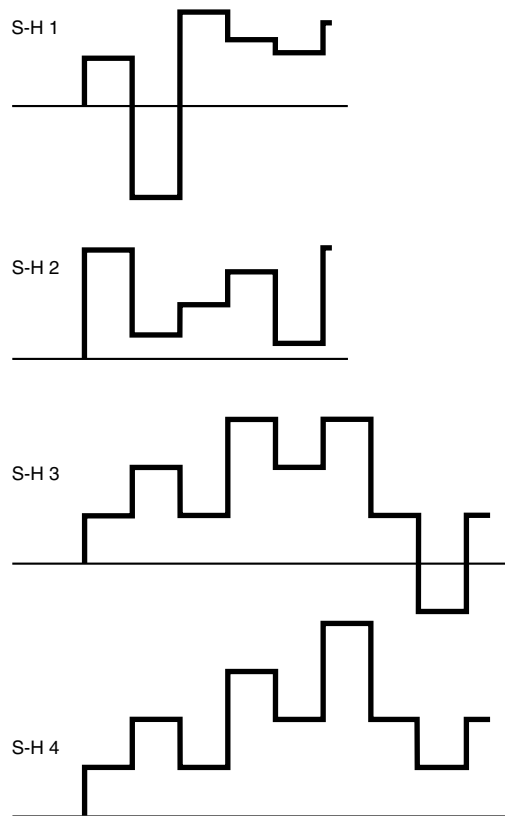
EG Basics

Shape the volume, shape the tone. Use the EG (Envelope Generator) section to control how your sound moves, grows and evolves.

Tip 36 Shaping the sound with EG

One of the most important aspects in analog synthesizer sound is how that sound is controlled over time. The AN200 gives you some very powerful and flexible ways to do this. One of them is the EG section.

EG stands for Envelope Generator — "envelope" here being the control that shapes the sound as it evolves over time. The EG effectively tells the synthesizer when to bring the volume up or down.

Like most analog synthesizers, the AN200 has four EG controls: Attack, Decay, Sustain, and Release. The AN200 also lets you use the EG to control the filter — to shape the tone in time.

Let's take a look at how these work — and hear them in action.

1 Call up a Pattern, and press [KEYBOARD] to enable the keyboard buttons.
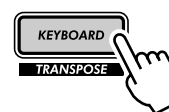
2 Press the [SELECT] button in the EG section so that the AEG lamp lights.

Indicates AEG is selected.
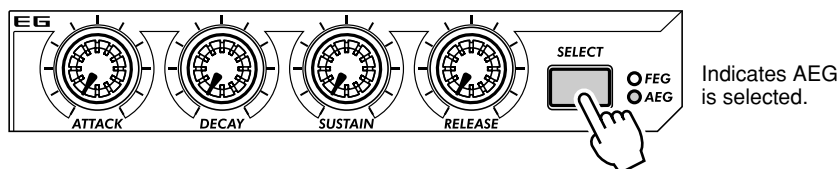
Doing this lets you control only the AEG (Amplitude EG), which affects the volume.

3 As you play the buttons, turn the [ATTACK] knob. Try setting it to around 12:00 and tap the buttons repeatedly.
Notice how the attack of the sound is a little slow? Now, set the knob to its minimum (7:00), and hear how the attack is instantaneous. Next, try setting the knob to around 2:00 and hear how the sound very slowly grows louder as you hold the key.

4 Let's try the [SUSTAIN] knob now.
Keep in mind that Sustain is the ONLY level control in the bunch — the rest of the knobs control time or rate.

Start with [SUSTAIN] set to around 9:00 (a value of 15 - 20). Then play and hold down a note. Do the same with successively higher settings as well — 12:00 (*64*), 2:00 (*95*), and 5:00 (*127*).

Hear how the sustain or "held" sound of the Voice gets louder with each setting above? For the 5:00 setting, the volume reaches maximum and stays there as long as you hold the note.

5 Next, play with the [DECAY] knob and hear how that affects the sound.
Make sure to reset [SUSTAIN] to around 10:00 or 11:00 — if Sustain is too high, Decay won't work!

Experiment with the [DECAY] knob. Depending on the Voice and the other EG settings, a short Decay value (knob around 9:00) may result in a weak, percussive sound. Try adjusting the knob around 11:00 or 12:00 and then slowly move upwards from that as you repeatedly play the key.

6 Now, on to the [RELEASE] knob.
Start by resetting [ATTACK] to 7:00, [DECAY] to 11:00, and [SUSTAIN] to 1:00. Then experiment with different [RELEASE] knob settings, such as 1:00, 3:00 and 5:00.

Notice that the sound sustains — longer and longer for each setting — after you release the note.

Before you go on to Step 7 below, bring [RELEASE] back to around 1:00, and leave the other knobs unchanged.

7 To make things more interesting, press [SELECT] to turn on the FEG controls, and use the EG knobs to play around with the filter. (We'll do more exploring with the filter in the next tip, too.)

Indicates FEG
is selected.
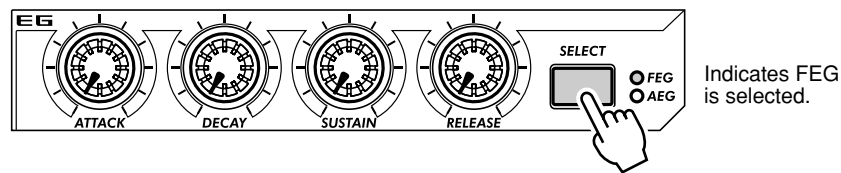
Play around with the four EG knobs and hear what kinds of sonic mayhem you can create.

Work with the VCF section controls (page 27), too — they have a huge effect on the overall sound and behavior of the EG. We'll warn you, though — the results can be complex and unpredicatable. But we guarantee you'll discover a whole truckload of sounds you never thought possible.

● What is an EG? What does it do?
To explain by example, let's take a look at an acoustic instrument — the piano. The piano doesn't actually have any EGs inside, but the basic principle is the same.

When you hit a key on the piano, the sound starts sharply (Attack), but goes down soon (Decay) to a softer level (Sustain) as the note is held, and quickly dies out to complete silence (Release) when you lift your finger from the key.
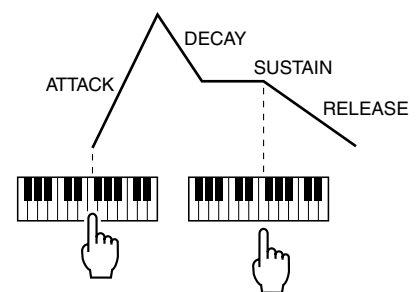
PoWer HintS

- **Tweak them together**
  When you start out tweaking the EG, you may want to set [SELECT] to both FEG and AEG. This eliminates a lot of confusion about which EG is doing what. For example, if you have separate settings and the FEG opens up long after the AEG has already shut down, you'll probably not hear much of the sound. Similarly, if the AEG takes its sweet time to unfold — by which time the FEG has already come and gone — the sound may never come through.

- **Tweak them separately**
  Adjusting both FEG and AEG together (see hint above) is convenient and easy — but it also results in relatively boring, static Voices. To make really interesting, organic sounds with shifting textures, the trick is to adjust the Filter and Amplitude EGs separately, yet make sure that they coincide with each other often enough to keep the sound from dropping out entirely. There are no diagrams to help you with this — you'll have to use your ears!

Tech talK
EG Select — FEG and AEG

Determines the EG settings for the filter (*FEG*) and amplitude or volume (*AEG*). Press [SELECT] to enable FEG, AEG or both (*ALL*), then use the EG controls (see below) to change the EG settings.

Settings
FEG
AEG
ALL (both FEG and AEG)

Tech talK
EG Controls

Attack
Determines the time it takes for the sound to reach full volume when a note is played.

Decay
Determines the time it takes for the sound volume to reach the Sustain level. This is similar to the natural decay heard in acoustic instruments.

Sustain
Determines the level of the sound for when a note is held. If this is at or near minimum, the sound will die out as the note is held. If this is at or near maximum, Decay will have no effect and the sound will remain at maximum level as long as the note is held.

Release
Determines the time it takes for the sound to reach minimum volume (or silence) after a note is released. If Sustain is set too low, this may have little to no effect on the sound.

Range
0 — 127 (for each knob)

Tip 37 Using EG to control the Filter (FEG)

In Tip 36 above, we introduced you to the EG and showed you how it works with volume (Amplitude). Now, let's take a look at what the EG can do with the Filter.

These specific FEG setting examples will get you started, and give you a definite feel for how to use EG to change the tonal quality of the sound. In the process, you'll learn more about how the Filter works, too — and how you can get it to work for you.

Try out these settings, experiment with them, go wild, go mad! There's so much you can do with these controls, so many sonic possibilities — this barely scratches the surface.

1 Select a Pattern, then select FEG.
Press the [SELECT] button repeatedly until FEG is lit.

Indicates FEG is selected.
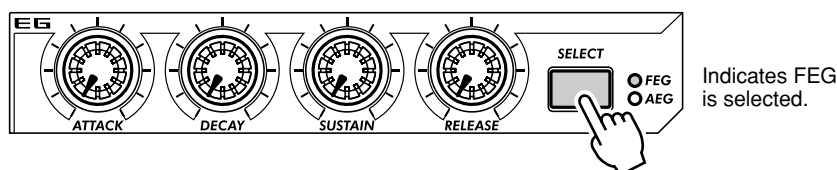
2 Start by setting a slow Attack on the Filter.
Set [ATTACK] to around 12:00 (value of 65).

3 Play around with the [CUTOFF] knob as you play the keys.
Tweak the knob slowly in the range of 10:00 - 5:00 (30 - 127) as you play single notes in succession. Listen to how the sound changes. Finally, set the knob to around 8:00 or 9:00 (1 - 15).

4 Now, experiment with the [SUSTAIN] knob.
Try tweaking this to different settings as you play the keys. Make sure you hold the key or keys down — the sound will change as you hold. Before you go on to the next steps, set this to around 11:00 (50).

5 Before we try out the [RELEASE] knob with the Filter, we'll need to stretch out the volume a bit.
Press [SELECT] to call up AEG, then set the AEG's [RELEASE] to about 2:00 (90 - 95).

6 Now, go back to the FEG (press [SELECT]), and work with the FEG's [RELEASE] knob.
Play a series of single notes, and tweak the knob between 11:00 and 4:00 (45 and 120).

Notice how the FEG Release setting determines how much of the sound is heard after key is released. If the Filter Release is too short, little or none of the sound will come through.

Finally, set this to around 12:00 or 1:00 (65 - 80).

7 Just for good measure, play around with the [DECAY] knob a bit.
As with the other controls, tweak this to various settings as you play the keys. Finally, set this to around 1:00 or 2:00 (*80 - 90*).

8 You're on your own now!
With the above settings as a starting point, go back to each of the EG knobs and play around with them some more. Take a crack at using other controls as well — and hear how they change the sound. And while you're at it, go on to Tip 38 below — for further FEG explorations.

Tip **38 More about FEG Depth**

In Tip 37, you learned about the FEG Depth control. Let's take a closer look (and listen) to it in this Tip — and the next.

1 If possible, continue with the sound you've created in Tip 37 above.
Select a Pattern, and tweak the controls to the basic settings shown below.
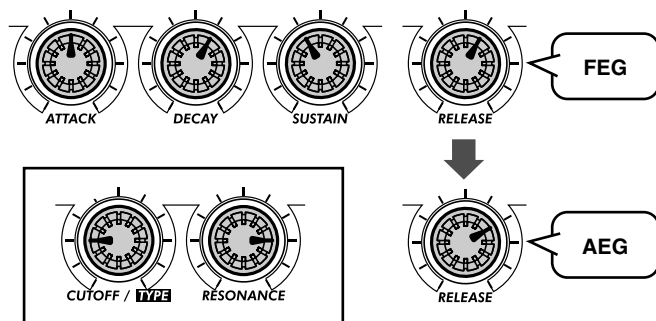
2 Now, play around with the [FEG DEPTH] knob.
First, set it to around 12:00 and slowly turn it clockwise while you play the keys. Listen for the sound changes — some of them will probably be quite subtle.

Tweak the knob the other way, and hear how the sound drops out for the negative values (7:00 - 12:00). Don't worry about this — we'll see in Tip 39 below how to effectively use the negative settings.

Finally, set the knob to about 2:00 (*50*). Experiment with the [RESONANCE] knob, too. Try out a variety of settings — especially around 1:00 - 4:00 — and hear how they alter the tone.

Tip *39* **Going negative – with FEG Depth**

As we promised in the last Tip, here's a sound-creating pointer that takes advantage of the negative values of FEG Depth. Try these settings out — and hear what it's like on the "minus" side of the sound.

1 First, get everything set up with the following settings:

> EG [SELECT]...........to "*RLL*" (both FEG and AEG)
> [ATTACK] ....to around 2:00 (*90 - 100*)
> [DECAY]..................to around 1:00 (*80*)
> [SUSTAIN] ....to around 3:00 - 4:00 (*100 - 120*)
> [RELEASE]..............to around 1:00 - 2:00 (*80 - 90*)
> [CUTOFF] ....to around 2:00 (*100*)
> [RESONANCE] ....to around 2:00 (*70*)

2 Finally, set the [FEG DEPTH] knob to 7:00 (*- 128*) – the maximum negative value.

3 Now, play several single notes, slightly apart, and listen for the very slow attack and the long sustain. Hear how the filter slowly sweeps and grows with the sound?

A negative FEG Depth setting reverses the FEG operation — producing a filter sweep effect that dips down instead of peaks. This means the sound gets softer and more muffled, until the end — when the filter sweeps back up again.

💡 PoWer HintS

Try these, too
- Experiment with higher Cutoff and Resonance settings than the ones shown above.
- Adjust the FM Depth, Sync Pitch, and Noise Level settings — to give the Filter some richer harmonics to work with, and make the sound more interesting.
- For even greater degrees of weirdness, try some long Portamento settings, too (for example, around *90 - 110*).

Advanced Sound Shaping Controls

By this point, you're well on your way to becoming a master synthesizer programmer. You've learned about the Patterns, the Scenes, Effects, the Filter, LFO, EG, and so on — but your education's not over yet. The AN200 has actually got quite few more sonic tricks up its sleeve. Let's try some of them out now...

Tip *40* **Portamento – the famous gliding pitch effect.**

You've heard the sound before. Although singers and instrumentalists use it to bend up or down to a central pitch, Portamento is one of the defining features of analog synthesizers and electronic music.

Portamento packs enormous power. On the one hand, it lets you add subtle sliding "grace notes." On the other, it can completely subvert the pitch and give you atonal glides. Ultimately, the effect is dependent on what notes you play and how far apart you space them. Try it out and see what madness you can come up with.

1 Call up a Pattern, and set the [PORTAMENTO] knob to about 10:00 (around *25* **in the display).**

2 Enable the keyboard with [KEYBOARD], then play notes [9] and [16] alternately.
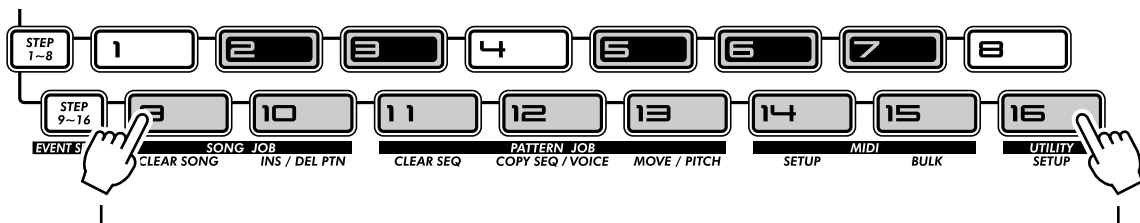
3 Try other settings, too, and hear how the Portamento effect changes.
Bring Portamento up to about 12:00 (*64*), then 2:00 (*95*), and finally the maximum of 5:00 (*127*).

Experiment. Try the effect out on some of your other favorite Voices. Also try tweaking Portamento while the Pattern is playing — and listen to the resulting sonic mayhem.

> **Tech talk**
> **Portamento**
> Determines the Portamento time, or how long it takes to glide the pitch from one note to the next. Higher values result in a longer pitch glide time.
> **Range**
> 0 — 127

Tip *41* **Metallic sounds and more – with FM Depth**

Like the vintage synthesizers of the past, the AN200 is absolutely loaded with modulation options — giving you the power to mangle the sound in wild and unique ways. Yet it also gives you some intriguing digital twists — like FM Depth.

Depending on the other Voice settings, FM Depth can be very subtle, adding harmonics or changing the pitch — almost imperceptibly at times. It can also create harsh, metallic, non-pitched sounds — perfect when you want to add some industrial edge or noise percussion to your tracks.

1 To start out, select a Pattern.
   Try to select a Pattern with a soft, warm Voice that lets you hear some of the more subtle qualities of FM Depth.

2 Turn the [VCO 1/2] knob all the way left.
   This lets you hear only VCO 1 — important because FM Depth only modulates VCO 1.

3 Set the [FM DEPTH] knob to 12:00 (around *0*).
   This is center or zero for FM Depth — turn the knob in either direction from this point to change the sound.

   Turn it very slowly as you play the keyboard and hear how the Voice changes.

   Try this out with a variety of Voices. Depending on the other Voice settings, FM Depth changes can be very subtle — or extreme and harsh.

PoWer HintS

• **Fine tuning**
  Since the sound and pitch can radically shift with even the slightest knob tweak, you may want to use the [DATA] knob instead. This lets you control FM Depth much more slowly. Make sure you turn [FM DEPTH] first, so that FM Depth is called up for the [DATA] knob.

• **In sync — and out**
  Experiment with various Sync Mode (page 58) and Sync Pitch settings, too. These work together with FM Depth in modulating VCO 1, and can dramatically alter the character of the sound.

Tech talK
FM Depth

Determines the amount of modulation created by the FM function. The further the value is from midpoint (*64*), the greater the modulation depth. Some settings can result in a metallic sound with no discernable pitch; some settings completely change the pitch.

Range
-64 — 63

Tip 42 Balancing the waves – VCO 1 and 2

One of the easiest knobs on the AN200 to understand, VCO 1/2 is a simple balance control. It lets you adjust the relative volume of the two oscillators, VCO 1 and VCO 2. However, the simplicity is deceiving — there's a whole lot of power here, too.

Along with the VCO 1 and VCO 2 Wave controls (see Tip 56), this is where you lay the very foundation of the sound — upon which everything else on the AN200 is built.

1 Select and play a Pattern.

2 Turn the [VCO 1/2] knob all the way left and play the keyboard.
Now, you're hearing only VCO 1.
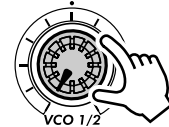
3 Next, turn [VCO 1/2] all the way in the other direction – so that only VCO 2 sounds this time.
Play around with this knob as you hold down a note, and listen to how the two waves blend together.

Notice that the knob features a convenient center detent, letting you easily feel your way back to zero — which is a 50-50 mix of the two VCOs.

PoWer HintS

• **Soloing VCO 1**
Crafting an original Voice from scratch? Soloing VCO 1 (7:00 position) is one of the best ways to start. Listening only to VCO 1 makes it easier to set the VCO 1 Wave (page 56). It's essential for FM Depth (page 53) as well, since that function affects only VCO 1. Plus, if you've set the Sync Mode (page 58) to "VCO1 M>S" or "VCO2 > 1," soloing VCO 1 lets you clearly hear the modulation that's happening.

Tech talK
VCO 1/2 Balance

This determines the volume balance of the two oscillators, VCO 1 and VCO 2.

Range
-64 (VCO 1 only) — 0 (equal balance) — 63 (VCO 2 only)

Tip *43* **Noise Level**

Here's another nifty little knob. This one's great for throwing some grunge and bite into the basic wave — letting you dirty up the Voice with some noise.

Why add noise? Why not use the Distortion effect? And what good is "dirt" in the sound, anyway? (We could hear those questions coming...)

Well, besides the obvious Lo-fi and Industrial music applications — such as making noise percussion — noise is great for adding harmonic content all along the frequency spectrum. And that harmonic content added at the beginning of the signal flow makes the sound more interesting when you work with the filter (VCF) section later on. Much more interesting, in fact.

Use it judiciously, however — too much noise can mask the basic pitch and character of the sound.

Try selecting a Pattern with a relatively "pure" and soft Voice. Then, work the [NOISE LEVEL] knob to hear how different degrees of noise affect the sound.
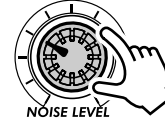
NOISE LEVEL

📖 *Tech talK*

Noise Level

Determines the level of the noise signal added to the VCOs.

Range
0 — 127

Tip *44* **Making waves – VCO 1 and VCO 2**

Here's where the sound begins. All of the awesome, amazing sonic stuff on the AN200 starts with the waves — generated by VCOs 1 and 2.

The AN200 gives you a wide variety of waveforms — not to mention enormous flexibility in combining, modulating, and processing them.

The subject of waves can be fairly complicated, and you undoubtedly don't want to read about it. As always, use your ears! Give a listen to the various waves here and experiment with them. Try them out with the processing sections — especially VCF — and hear how they sound. That's the best and only way to start creating your own Voices.

■ **VCO 1 ●●●**

1 Select a Pattern.

2 Solo VCO 1 by turning the [VCO 1/2] knob all the way left.

VCO 1/2

3 Set Sync Mode to OFF by pressing [MODE].

4 Press the VCO 1 [WAVE] button repeatedly to select different waves.
Better yet, press [WAVE] and turn the [DATA] knob. That lets you access ALL of the waveforms — including the "hidden" waves.

The actual waves that are available differ depending on the Sync Mode setting. After trying the waves that are available when Sync Mode is set to "*OFF*," select one of the other two modes, then try out the new group of waves. (See Tech Talk below and the Wave List on page 56 for details.)

■ **VCO 2** •••

1 Make sure the same Pattern you selected above is still called up.

2 Solo VCO 2 by turning the [VCO 1/2] knob all the way right.

VCO 1/2
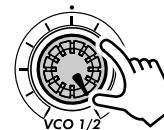
3 Press the VCO 2 [WAVE] button and use the [DATA] knob to select the waves.

X-tra Details

Unlike with VCO 1, there is only one "hidden" wave in the VCO 2 section (Saw 2), and the available waves are the same, no matter what the Sync Mode setting is.

X-tra Details

In vintage analog synthesizers, the basic waves were generated by "oscillators." The AN200 does it a bit differently — yet the sound is exactly the same. That's why we've kept the name "VCO": Voltage Controlled Oscillator.

Tech talK VCO 1, VCO 2 Wave

Determines the waveform for the VCO 1 or VCO 2 oscillator. Press the [WAVE] button (in VCO 1 or VCO 2) repeatedly; use [DATA] knob to select "hidden" waves (indicated by asterisks below).

VCO 1 Wave
  Settings
  (Available waves depend on Sync Mode setting; page 58. Asterisks (*) indicate "hidden" waves, selectable by [DATA] knob.)

  When Sync Mode is off:
      Saw (SAU)
    * *Saw 2 (SAU2)*
      Pulse (PuLS)
      Mix (ΠιΞ)
      Multi Saw (ΠSAU)

  When SYNC is on ("VCO 1 M>S" or "VCO 2 > 1"):
      Saw (SAU)
      Pulse (PuLS)
      Inner1 (ιnr1)
    * *Inner2 (ιnr2)*
    * *Inner3 (ιnr3)*
      Square (SΘu)
    * *Noise (nιSE)*

VCO 2 Wave
  Settings
  (Asterisks (*) indicate "hidden" waves, selectable by [DATA] knob.)
      Saw (SAU)
    * *Saw 2 (SAU2)*
      Pulse (PuLS)
      Mix (ΠιΞ)
      Triangle (tr ι)
      Sine (Sιn∈)

Tip *45* **Fat, phatter and phattest!**

How phat do you want to get?

The Key Assign settings let you switch the AN200 between Poly and Mono operation. And, with Unison, they bring back the humongously phat sounds of vintage synthesizers — letting you beef up the Voices the old analog way.

1 Call up a Pattern and press [KEYBOARD].
Try to select a Pattern that has a fairly big and fat Voice. Let's see where we can take it.

2 Right now, POLY should be lit. If not, press [KEY ASGN] until it is lit, and "*PoLY*" is shown in the display.
With the Poly setting, you can play and hold full chords — up to five notes at the same time.
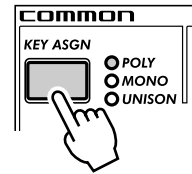
3 Press [KEY ASGN] again to call up Legato (*LGto*).
Legato is one of the Mono settings, meaning you can't play chords here — just one-note lines. But that's just fine, because Legato is ideal for leads and solos as well as bass lines.

Play some notes and listen for the effect. Try holding down one note with your left hand while you quickly play and release others with your right.

Notice how the notes trade off with each other? This is great for rapid trills — yet it keeps the EG consistent throughout, as long as you hold the first note down. Try playing melodies in a smooth, legato style, too — not releasing one note until you've pressed the next.

4 Use the [DATA] knob to call up the "hidden" Mono (*Mono*) setting.
Play some notes. Try playing them smoothly in legato like you did above. Notice how each note has a sharp attack, no matter how smoothly you try to play?

Mono is similar to Legato in that you can play only one note at a time. However, the EG is retriggered, or started from the top, for each new note you play — whether you play in legato or not.

5 Let's give the sound some serious attitude now! Call up the Unison (*unSn*) setting, with [KEY ASGN] or the [DATA] knob.
Unison is the same as Legato, except for one very important difference — it's incredibly phat. Unison takes maximum advantage of the AN200's polyphony by ganging four of the "notes" together in one huge, fat monophonic layer.

Tech talk

Key Assign

Determines how the Voices respond to the keyboard (or MIDI), and how they use the available five-note polyphony. To set, press [KEY ASGN] and use the [DATA] knob.

Settings

Poly (*PoLY*)
Plays Voices with full five-note polyphony.

Legato (*LGto*)
Plays Voices monophonically, maximum one note at a time. Successively played notes do not retrigger the PEG, FEG, or AEG — resulting in a smoother note-to-note sound.

Mono (*Mono*)
Plays Voices monophonically, maximum one note at a time. PEG, FEG, and AEG are retriggered for each new note played.

Unison (*unSn*)
Plays four polyphonic notes in unison, or a one-note layer. In other words, the response to the keyboard is monophonic, but the number of notes actually sounding is polyphonic.

Tip 46 Sync Mode and Sync Pitch

Here are two more important additions to your arsenal of sound-shaping power tools. Try them out and hear how they change the pitch and brighten the sound.

1 Call up a Pattern and start it up.

2 Set the [VCO 1/2] knob all the way left, so that you hear only VCO 1.

3 Press the [SYNC MODE] button to select VCO M>S (*LΠ-5*).

4 Work the [SYNC PITCH] knob, especially between 11:00 and 4:00.
Notice how the basic pitch and the harmonics shift radically as you tweak the knob.

5 Change the SYNC MODE setting to VCO 2>1 and play with SYNC PITCH again.

PoWer HintS

- **Other waves**
  Try selecting different waveform for VCO 1, then with Sync Mode set to one of the "on" settings, tweak Sync Pitch. The Noise wave in particular is a good candidate for creating unique non-pitched effects in which the harmonics are shifted.

- **Bring in the highs**
  When using Sync Mode and Sync Pitch to craft a Voice, make sure to adjust the VCF controls to appropriate settings, so that you can hear all of the high harmonics being generated. Remember, you can always back off on the knobs later if the sound is too "edgy."

Tech talK
Sync Mode

The AN200 tone generator has two oscillator sections: VCO 1 (which actually contains two oscillators), and VCO 2 (which has one). Sync Mode determines how the oscillators are synchronized — one being a controlling "master," the other a "slave." The master oscillator determines the overall pitch of the sound, and the slave oscillator controls the tone by adding harmonics.

When set to "OFF," there is no synchronization. When set to "VCO 1 M>S," the two VCO 1 oscillators are separated inside of the VCO1 and synchronized, with one designated as the controlling "master" and the other the "slave." When this is set to "VCO 2>1," the VCO 1 oscillators are synchronized to VCO 2, with the VCO 2 designated as the "master."

To set, press [SYNC MODE].

> **Settings**
> OFF
> *Results in no synchronization.*
>
> VCO 1 M>S (VCO 1 master into slave)
> *The two VCO 1 oscillators are separated inside of the VCO1 and synchronized, one controlling the other. This allows you to use Sync Pitch (below) to control the master/slave sound, yet still have another oscillator (VCO 2) remaining.*
>
> VCO 2 > 1 (VCO 2 into VCO 1)
> *The two VCO 1 oscillators are synchronized to VCO 2, with the VCO 2 designated as the "master."*

Tech talK
Sync Pitch

Determines the pitch of the "slave" oscillator in semitones, available only when Sync Mode (above) is set to on. This lets you create a difference in pitch between master and slave oscillators and control the resulting harmonic interval. At the "*0*" setting, the pitch is the same as the master oscillator. Higher values increase the interval for a more clangorous sound. To properly hear the effect, make sure the VCO 1 level is set high enough (see page 54).

> **Range**
> -64 — 63

47 Creating your own original Scenes – and saving them

Tip

The exciting and powerful Scene feature lets you create and use two different Voices within a single Pattern. Most importantly, it lets you instantly switch between them or gradually "morph" from one to the other — all in real time.

You tried out some preset Scenes in Tip 23, and heard just how effective, dynamic, and ultimately hip the function can be. Now, it's time for you to create a Scene or two of your own.

1 Press SCENE button [1]. This is the Scene you'll be working on first.

SCENE

Only button [1] is lit.

2 Work the controls and get the sound you want for Scene 1. Any and all of the Synth knobs can be used.
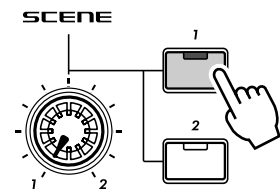
X-tra Details

- Only the Voice-related panel knobs can be used for recording to the Scenes; button switch settings (such as LFO Detail and Key Assign) are ignored.
- Octave cannot be changed for the Scenes. In other words, both Scenes will always be kept at the same octave setting.
- Remember that you'll need to store your first Scene before you can create the second Scene. Switching or morphing to a new scene automatically and irrevocably erases any changes you've made.

3 While holding down [STORE], press SCENE button [1].
Scene 1 has just been stored. Now let's go on to Scene 2.

X-tra Details

Make sure keep holding [STORE] until you've pressed SCENE button [1] or [2]. Otherwise, the AN200 will switch to the Store Pattern operation (page 79).

STORE ╋ 1

SCn 1
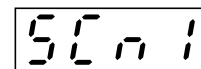
Indicates new settings have been stored to Scene 1.

4 Do the same operation for Scene 2 – repeating Steps 1 - 3 above with SCENE button [2] this time.

Tech talk

Scene Recording

Allows you to program two different synth sounds as Scenes, and use the SCENE controls to switch or crossfade between them.

Press SCENE [1] to select Scene 1, and change the sound as desired. Store Scene 1 by holding down [STORE] and pressing SCENE [1]. Repeat the operation for Scene 2, using SCENE [2]. When finished, store the Pattern (page 79).

Free EG

Here's another ultra-cool power tool for the control freak in you. The AN200 is packed with an endless supply of sonic mayhem and wild, shifting synthesizer textures, but you can keep it all under control — with Free EG.
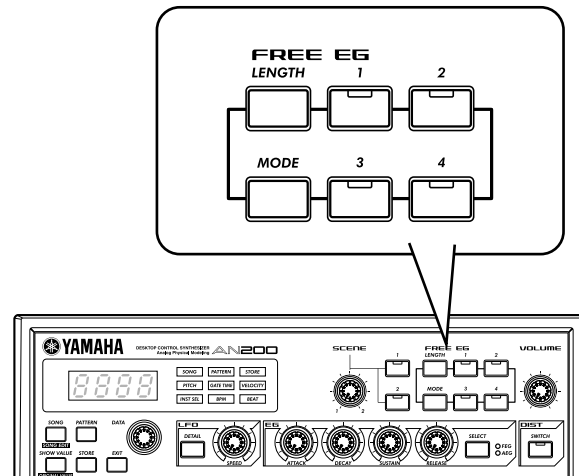
Tip 48 Free EG

The AN200 has so many real-time control features, it's hard to get a grip on them all. Feel you need an extra pair of hands? Or maybe an extra two? No problem. Just use the amazing Free EG feature. The AN200 is packed with a lot of powerful recording functions — but none are quite as impressive as this.

Free EG gives you up to four tracks for recording your knob moves — letting you incorporate real-time sound changes and knob moves as a part of the Pattern. So every time you play the Pattern, your knob changes play right along with it — just as you recorded them.

We call this "Free EG" because it allows you to create unique, complex, continuous parameter changes that would be impossible to achieve with conventional EGs.

1 Call up the desired Pattern, and press the red Record button.

> X-tra Details
>
> You may want to set the Length (Tip 63 below) in this step. Do it BEFORE pressing the Record button, however; Length cannot be set during Free EG recording.
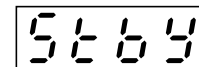
Indicates recording is in standby.

2 Select the Free EG track you want to record.
Press the appropriate FREE EG button, [1] - [4]. The button lights to indicate the track is ready for recording.

Normally, [1] will be lit — so if you want to record to Track 1, you don't have to do anything here. If any track buttons you DON'T want to record to are lit, press them to turn them off.

Remember, you can record to more than one track simultaneously by pressing the appropriate buttons. (See Power Hints below.)

3 Start the Pattern, and make your moves.
Press the Start/Stop button.

The metronome clicks to lead you into the recording, so you can start your knob moves right with the start of the Pattern.

Remember the rule: One knob, one track. Once you record a certain knob, no other knob can be recorded to the track (unless you start the whole Free EG recording again). Any tweaking of other knobs is ignored.

> **X-tra Details**
>
> The display number indicates the current measure number. If you've set Length (see Tip 63 below) to "2," the Pattern loops two times for recording, and the display changes accordingly.

4 To stop recording, press the Start/Stop button.
If you want to re-record the track or record moves to other tracks, go back to Step 2 above and start all over again.

5 To hear your Free EG recording, make sure that the appropriate track buttons are on, then press the Start/Stop button to play the Pattern.
Remember to save your newly edited Pattern! (See Tip 60.) All your Free EG track recordings will be saved right along with it.

PoWer HintS

- **Recording to more than one track at a time**
  Press the appropriate Free EG Track buttons. During recording, the AN200 automatically assigns each knob you move to the next available track. For example, let's say you're recording to Tracks 1 and 2. You move the CUTOFF knob first, and that's recorded to Track 1. Then, while tweaking Cutoff, you move [FEG DEPTH] — which records to Track 2.

- **Take your time and let the Pattern loop!**
  In a variation of the above hint, you can set all the tracks to record, then tweak each one separately as the Pattern loops. Each of your moves is properly recorded to a separate track, and you can hear the effect of your last knob tweak as you record the next.

- **Use the four tracks to your advantage**
  Record your tweaking of one certain knob to all four tracks, then choose the best "take" from the four. Just make sure to turn off each button after you record to it — so it doesn't play back and disturb your recording of the next button. Listen to each track in turn by turning the appropriate button on.

- **Change the way your Free EG tracks play back**
  The Type parameter (see Tech Talk below) gives you four different ways to loop the Free EG tracks. Try these out when playing your Pattern and hear the interesting things they do to your tracks.

Tech talK
Free EG — Type and Trigger

Type
Determines the type of loop for Free EG playback. Press the [MODE] button repeatedly until "tYPE" appears, then use the [DATA] knob to change the setting.

Settings
oFF
  No loop.

FUd (Forward)
  Free EG sequence loops from start to end.

FUdH (Forward Half)
  Free EG sequence loops from the middle to the end.

ALt (Alternate)
  Free EG sequence loops from start to end, then end to start.

ALtH (Alternate Half)
  Free EG sequence loops from middle to end, then end to middle.

Trigger ("trig")
Determines how playback of the Free EG tracks is triggered. Normally, this should be set to Free ("FrEE"), so that the tracks play back when the Pattern is started. Setting this to MIDI ("ñidi") lets you start Free EG playback from a connected MIDI keyboard or sequencer.

Press the [MODE] button repeatedly until "trig" appears, then use the DATA knob to change the setting.

Settings
FrEE (Free)
  Triggers playback of the Free EG tracks from a random start point, when a Note On message is received from a connected MIDI device, or when a key on the AN200 is played, or when the Pattern is started.

ñidi (MIDI in Notes)
  Triggers playback of the Free EG tracks from the start, when a Note On message is received from a connected MIDI device, or when a key on the AN200 is played.

ALL (All Notes)
  Triggers playback of the Free EG tracks from the start, when a Note On message is received from a connected MIDI device, or when a key on the AN200 is played, or at the first recorded note of the Pattern (which may or may not be the start of the Pattern).

Strt (Sequencer Start)
  Triggers playback of the Free EG tracks from the start, only when the Pattern is started.

Tip *49* **Changing the Length of your Free EG tracks**

The flexible little Length feature works both ways — both in recording and playback. It lets you set how long (in measures) your Free EG moves are recorded for, and it lets you separately set how long it takes for them to play back.

Set Length before recording any Free EG tracks. Specifically, set it BEFORE you press the red Record button (but after you've selected the Pattern) in Step 1 of Tip 48 above.

Press the [LENGTH] button repeatedly to step through the settings. (Or press [LENGTH] and use the [DATA] knob.) The number in the display indicates the Length in measures.

If you want to record your knob moves over two measures (two repeats of the Pattern), set this to "*2*." If you want your tweaking to stretch over eight measures, set it to "*8*."

Once your tracks have been recorded, you can set Length again just before playback. This controls how long all four tracks take to play.

PoWer HintS

• **Take your time**
  Want to make some really slow changes? How about a gradual filter sweep that builds to a climax over several measures? Set a low Length for recording (for example, "*0.5*"), then before you play back the Pattern, set a high Length, such as "*8*."

• **Make it snappy**
  For really fast changes, just do the opposite of the above. Set a high Length for recording and a low Length for playback. Keep in mind that each track can be recorded with a separate Length.

Tech talk
Free EG Length

Determines the time of the Free EG — for both recording and playback. Each track can be set independently for recording; however, the playback setting affects all tracks together. Since Free EG is based in measures, changing the playback bpm (tempo) automatically changes the actual time of the Free EG as well. To set, press [LENGTH] repeatedly.

Settings
0.5, 1, 1.5, 2, 3, 4, 6, 8 (measures)

Pattern Power Tips

It's time to put your AN200 know-how and experience to work — and delve into these Pattern Power Tips.

The first couple of Tips introduce you to some important tools for working with the Patterns, such as copying and erasing data. They're basic nuts-and-bolts stuff, but don't ignore them. You'll need them for the fun things to follow — like creating your own original Patterns!

Tip 50 Hit the top of the Pattern!

Here's an effect that's long been a staple in dance and techno music. The Top function lets you instantly retrigger the entire Pattern from the top — so you can produce all those cool stutter effects and create awesome dynamic hits and accents.

Select and start a Pattern. Then, while the Pattern is playing, hold down [SHIFT] and hit the red Record ([TOP]) button.

SHIFT **+** TOP

Keep holding [SHIFT] while you hit (press and release) the Record button.

Play the button in time with the rhythm, on every beat — like this:

ONE   two   three   four
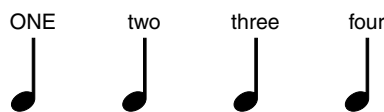
Watch your timing and keep the beat! Of course, you can get different effects by playing the button way ahead or way behind the beat, if you want. (We'll show you some fancy rhythmic tricks with this in later Tips, too!)

Still, it's best to hit the button right on the downbeats ("one," "two," "three," and "four"), and stay in the groove. When you've got it right, you'll feel it.

Tech talk

Top

Instantly returns to beginning (top) of Pattern during playback. Ideal for creating "stutter" effects, partial measures, hits, and accents.

While Pattern is playing, hold down [SHIFT] and press red Record (TOP) button. Release button and repeat for each time you want Pattern to start from the top.

Tip *51* **Shake, Retrigger, and Roll!**

In Tip 50, you saw how to use the Top function to play your own stutter hits. Here's a nifty variation on that function — it's called Retrigger & Roll.

Retrigger & Roll does just as its name suggests. It retriggers notes of the Synth track, and repeats them — like a drum roll.

Select a Pattern and start it up. As the Pattern's running, hold down [SHIFT] and simultaneously press and hold the Start/Stop button.

Hear the "roll"? And did you notice how the Rhythm tracks keep chugging along, while the Synth track spins its wheels?

Try this function at various points in the Pattern — the top, the end, the middle — and listen to what happens. Just keep holding down [SHIFT], and press/hold the Start/Stop button at different points in playback.

Keep in mind, Retrigger & Roll differs from Top in three important ways:
   1) It only affects the Synth track.
   2) It grabs and hits only a few notes — depending where in the Pattern you
      press the button.
   3) It automatically repeats the hits for you while you hold the button down.

You'll find that Retrigger & Roll is a slick way to break the rhythm up a bit, without losing the flow. It's also great for throwing hip, "what-was-THAT?" glitches and stutters into your tracks.

Retrigger & Roll has three different settings. To change the setting:
   1) Keep the Roll going (simultaneously hold down [SHIFT] and Start/Stop
      button).
   2) Grab the DATA knob. Make sure you keep holding [SHIFT] and Start/
      Stop — and turn the knob to change the setting.
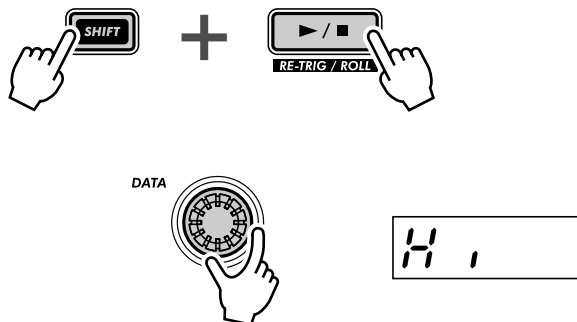
While the Pattern is cycling, hear how the different settings affect the sound. And try changing the settings in time with the Pattern as well. There are a lot of cool rhythmic tricks you can create — just by hitting different settings on the beat.

📖 *Tech talK*
Retrigger & Roll

During Pattern playback, this stops the Synth track at the point of execution and loops one, two, or four notes (depending on the Roll type below). The Rhythm tracks are not affected. While a Pattern is playing, simultaneously hold [SHIFT] and press/hold the Start/Stop button.

Roll Types
Determines how many notes are used for Retrigger & Roll — one, two, or four. The more notes used, the slower the roll effect.

While the Pattern is playing and while holding down both [SHIFT] and the Start/Stop button, use the DATA knob to change the setting.

   Settings
   L o (Lo)
      One note or step (corresponds to 16th notes).

   N id (Mid)
      Two notes (corresponds to two 16th notes, or half of a beat). However, when Beat (page 18) is set to " l2 ," this becomes three notes.

   H i (Hi)
      Four notes (corresponds to a full beat in a measure).

Roll Types (in Utility)
The default Roll setting can also be changed from the Utility parameters. Hold down [SHIFT] and press button [16], repeatedly if necessary, until "*roLL*" appears in the display. Use the [DATA] knob to change the setting. (Settings are same as above.)

Tip 52 **Selecting a Voice (Copy Voice)**

One important step you can take in creating a Pattern is to select the Voice you'll be using for it.

Keep in mind that each Pattern includes a Voice, and that strictly speaking, Voices CANNOT be selected separate from their Patterns. However, this function lets you select a Voice that you like from one Pattern, and copy it to another Pattern.

1 First, select the source Pattern — the one that has the Voice you like.

2 Simultaneously hold down [SHIFT] and press [12] (COPY SEQ/VOICE).
You may have to press the button more than once to call up the "*CPYc*" display.

3 Next, select the destination Pattern.
This is the Pattern you'll be copying the Voice to. Use the DATA knob.

4 Copy the Voice.
The [12] button should be flashing. Press it once again (the button stops flashing and stays lit). At the "*YIIn*" ("Yes or no?") prompt, press it a third time to actually copy the Voice to the selected Pattern number, or press [EXIT] to cancel.
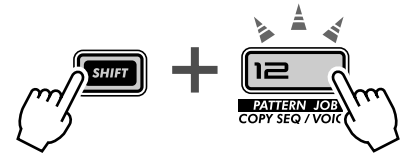
📖 **Tech talk**
Copy Voice

Allows you to copy a Voice from one Pattern to another. Select the source Pattern, then use [SHIFT] and [12] to call up "*CPYc*" (Copy Voice). Select the destination Pattern, and press [12] twice to execute.

Tip 53 **Starting a Pattern on a different note**

Here's an interesting way to change the character of a Pattern — without actually changing any of the notes! The Move Note function simply lets you start playback from any individual step in the Pattern.

For example, in a 16-step Pattern, selecting a value of "*- 4*" moves the Pattern "back" four steps — making Step 5 the starting point of the Pattern.

1 While the Pattern is stopped, simultaneously hold down [SHIFT] and press [13] (MOVE/PITCH).
You may have to press the button more than once to call up the "*NocE*" (Move Note) display.

2 If you want, select the particular track (Synth or Rhythm) you want to move.
Each track can be set independently — just hold down [SHIFT] and press the appropriate number button [1], [2], [3], or [4].

3 Release [SHIFT] and press [13] once again (the button stops flashing and stays lit).
At the "*YIIn*" ("Yes or no?") prompt, press it a third time to actually change the value, or press [EXIT] to cancel.

4 Start the Pattern to hear the changes you've made.

🔍 X-tra Details

• Keep in mind that any changes you make to the Pattern with this function are cumulative. For example, if you change the setting by -4, then make a second setting of -3, the actual value (compared to the original Pattern) will be -7.

• This CANNOT be used while the Pattern is playing back.
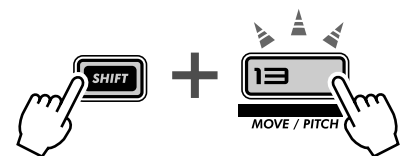
📖 **Tech talk**
Move Step

Determines the starting step of the Pattern, shifting the Pattern back or forward by the specified number of steps. All steps of the Pattern play as normal; only the starting point changes. Use [SHIFT] and [13] to call up "*NocE*" (Move Step). If desired, select the track to be moved; hold down [SHIFT] and press the appropriate number button [1], [2], [3], or [4]. (Skipping this step automatically selects all tracks.) Use the DATA knob to change the value and press [13] twice to execute.

Range
-15 — 0 — 15 (steps)

Tip *54* **Transposing the pitch of a Pattern**

Try this cool editing tool on your tracks. The Transpose Pattern function lets you change the overall key (pitch) of a Pattern — including the Rhythm tracks. Shift the pitch way up, or bring it way down — there's a lot of range here to work with.

1 While the Pattern is stopped, simultaneously hold down [SHIFT] and press [13] (MOVE/PITCH).
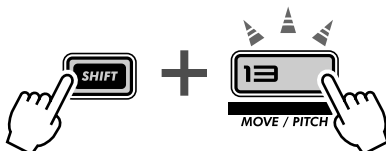
You may have to press the button more than once to call up the "*PtCH*" (Transpose Pattern) display.

2 If you want, select the particular track (Synth or Rhythm) you want to transpose.
Each track can be set independently — just hold down [SHIFT] and press the appropriate number button [1], [2], [3], or [4].

3 Set the pitch change of the tracks by using the [DATA] knob.
The pitch change value is in semitones. (There are 12 semitones in an octave.) For example, if the original Pattern is in the key of C, a setting of "*5*" would change the key to F.

Keep in mind that this changes the pitch of the Rhythm tracks as well as the Synth track.

4 Transpose the Pattern.
Press [13] (the button stops flashing and stays lit). At the "*YIIn*" ("Yes or no?") prompt, press it again to actually change the value, or press [EXIT] to cancel.

5 Start the Pattern to hear the changes you've made.

X-tra Details

- Keep in mind that any changes you make to the Pattern with this function are cumulative. For example, if you change the setting by -4, then make a second setting of -3, the actual value (compared to the original Pattern) will be -7.
- This CANNOT be used while the Pattern is playing back.

Tech talk
Transpose Pattern

Determines the overall key of the Pattern, shifting all notes in all tracks of the Pattern up or down in pitch by the specified number of semitones. Use [SHIFT] and [13] to call up "*PtCH*" (Transpose Pattern). If desired, select the track to be transposed; hold down [SHIFT] and press the appropriate number button [1], [2], [3], or [4]. (Skipping this step automatically selects all tracks.) Use the DATA knob to change the value and press [13] twice to execute.

Range
-24 — 0 — 24 (semitones)

Tip *55* **Copying a Pattern (Sequence)**

Earlier in this section, in Tip 52, you learned how to copy a Voice from one Pattern to another. Here you'll learn how to copy a Sequence (the Pattern's notes) from one Pattern to another.

1 First, select the source Pattern — the one that has the Sequence you like.

```
X-tra Details
```

The word "Sequence" is used here to describe the recorded notes or steps of a Pattern. ("Pattern" actually is a blanket term that refers not only to the recorded notes, but the Voice, the Scenes, and the Free EG settings as well.)

2 Simultaneously hold down [SHIFT] and press [12] (COPY SEQ/VOICE).

SHIFT + 12

PATTERN JOB
COPY SEQ / VOIC
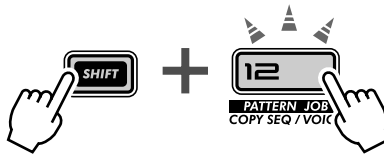
You may have to press the button more than once to call up the "*CPYS*" (Copy Sequence) display.

3 Next, select the destination Pattern.
This is the Pattern you'll be copying the Sequence to. Use the DATA knob.

4 Copy the Sequence.
The [12] button should be flashing. Press it once again (the button stops flashing and stays lit). At the "*YIln*" ("Yes or no?") prompt, press it a third time to actually copy the Sequence to the selected Pattern number, or press [EXIT] to cancel.

Tech talk

Copy Sequence

Allows you to copy a Sequence from one Pattern to another. Select the source Pattern, then use [SHIFT] and [12] to call up "*CPYS*" (Copy Sequence). Select the destination Pattern, and press [12] twice to execute.

Pattern Recording

By this point, you've built up a lot of experience twisting and tweaking the Voices, and playing around with the Patterns. Now it's time to strike out on your own — and create some Patterns yourself. Let's get started...

Tip *56* Erasing a Pattern – and starting from scratch

The first thing you'll need to do when you make your own Pattern is to make room for it on the AN200. To do that, you'll have to erase or clear one of the factory preset Patterns.

Don't worry, you won't be permanently erasing this Pattern. All this operation does is give you a blank slate on which to create your own Pattern. You can restore the original Pattern by simply re-selecting it (with the [DATA] knob), or by turning the AN200 off and back on again.

1 Select the Pattern to be cleared.

2 Simultaneously hold down [SHIFT] and press [11] (CLEAR SEQ).
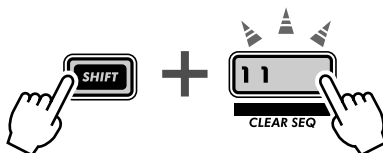
The button flashes, and "*Clr*" (Clear) briefly appears in the display.

X-tra Details

We've labeled this function "CLEAR SEQ" (Clear Sequence) on the panel to distinguish it from the DEL PTN (Delete Pattern) function, at button [10].
  Clear Sequence — Deletes the note data from a Pattern.
  Delete Pattern — Deletes the Pattern number from a Song (see Tip 89).

3 Release [SHIFT] and press [11] once again.
The button stops flashing and stays lit; the display prompts you by asking "Yes or no?" ("*Yno*"). Press it a third time to actually clear the Pattern, or press [EXIT] to cancel.

PoWer HintS

• **Tweak an existing Pattern**
  Naturally, if there's a preset Pattern you like and simply needs a bit of tweaking to fit your specifications, you don't need to completely clear the Pattern — just edit it, using the tools described in Tip 59, Step Recording.

Tech talK
Clear Sequence (Pattern)

Allows you to clear the note data of a Pattern. Select the Pattern, then use [SHIFT] and [11] to call up "*Clr*" (Clear). Press [12] twice to execute.

Tip *57* **Setting the Metronome lead-in**

When you record your parts in real time, you'll need a rhythmic guide — a metronome click — to lead you into the recording, and keep you in time. Here, you can set the length of the Metronome lead-in — in other words, how long the Metronome clicks before Real-time recording actually starts.

1 Simultaneously hold down [SHIFT] and press [16] (UTILITY SETUP).
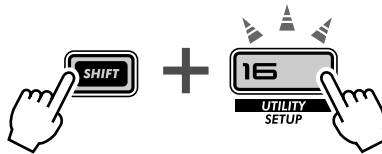
You may have to press the button more than once to call up the "*Πtro*" display.

2 Use the DATA knob to change the setting.

For a one-measure lead-in before recording starts, set this to "*on 1*." For a two-measure lead-in, set this to "*on2*."

You can also turn the Metronome off here, by setting this to "*oFF*" — in which case, recording starts immediately (without a lead-in), as soon as you press the Start/Stop button.

When done, press [EXIT] to return to normal operation.

📖 *Tech talk*

Metronome

Determines the length of the Metronome lead-in for Real-time recording. To turn the Metronome (and the lead-in) off, set this to "*oFF*." Set this to "*on 1*" for a one-measure lead-in, and "*on2*" for two measures.

Metronome is set in the Utility parameters. Hold down [SHIFT] and press button [16], repeatedly if necessary, until "*Πtro*" appears in the display. Use the [DATA] knob to change the setting.

Settings
oFF
 No lead-in metronome click.

on 1
 A one-measure lead-in before recording.
on2
 A two-measure lead-in before recording.

Tip **58** **Recording a Pattern in real time**

Up until this point, you've been working with the preset Patterns of the AN200. Now, here's your chance to create some Pattern magic yourself — by recording your own original Patterns.

We'll give you the basic procedure to get you started. You supply the creative ideas and talent. And the AN200 will provide the sonic horsepower you need to produce some truly hip and happening tracks.

1 Select a blank Pattern — a clean slate for recording your own notes. (Have you cleared a Pattern for this yet? If not, go back to Tip 56 and do it now.)

2 Make the Beat setting for the new Pattern: 16, 12, or 8.
Hold down [SHIFT] and press [SWING] (BEAT). Then, turn the DATA knob to change the setting.
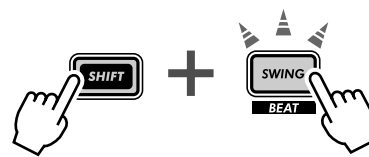
You should make this setting BEFORE recording, since it determines the number of steps you'll have available in the Pattern.

A setting of " *16* " gives you sixteen steps or spaces you can record notes to; a setting of "*8*" is obviously half that — eight steps. The " *12* " setting gives you twelve steps, of course, but also lets you create a triplet feel — count: "ONE, two, three, TWO, two, three," etc.

3 Select the track for recording — Synth or one of the three Rhythm tracks. Press [SYNTH TRACK] for Synth, or [RHYTHM TRACK] (repeatedly) for Rhythm tracks 1, 2, or 3.
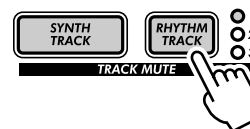
4 Set a comfortable bpm for recording.
Hold [SHIFT] and press the [TAP] button, then use the [DATA] knob.

Keep in mind, you can always change the bpm later. Right now, it's important to set the bpm so that it's fast enough to capture the feel you're after, yet slow enough to let you easily enter the notes. (Make sure to press [EXIT] when you're done.)
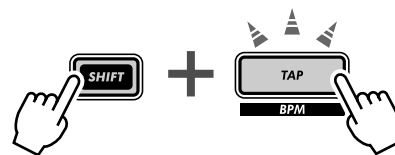
5 Press [KEYBOARD] to enable the AN200's keyboard.
Did you know you can use a MIDI keyboard to record the notes? If you've got one, see Tip 86 for info on setting it up.
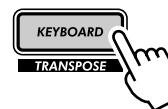
6 Enable recording — press the red Record button.

7 Start recording.

Now, let's get down to business. Press the Start/Stop button. While listening to the metronome, play the keys on the keyboard.
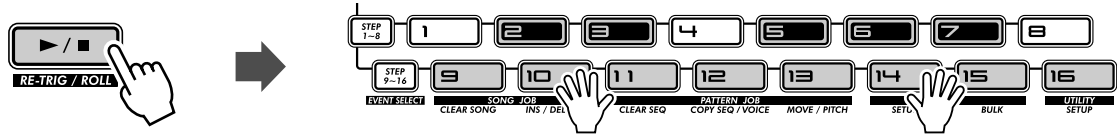
The AN200 has a nifty "Loop Recording" feature that immediately and automatically plays each note you record as the Pattern repeats (loops). This lets you hear the Pattern as you're recording — making it much easier to "feel" your way to a great recording.

What's more, the AN200 automatically corrects the timing of the notes you play. This may not always give you the results you expect — but it will ensure that ALL your notes play back in perfect sync with the rhythm.

8 Delete your mistakes or unwanted notes.

We know, you probably didn't make any any mistakes. But just in case you want to know, here's how you can patch up your tracks.

While the Pattern is still recording, simultaneously hold down [SHIFT] and press one of the Step buttons. (Again, avoid Step buttons [1], [4], and [8] — they won't have any effect.) Listen closely to the playback and press the appropriate Step button at the right time — right as the note plays. You can erase more than one note by continuing to hold down [SHIFT] and the Step button — for as long as you want to erase. Since it may be difficult to precisely erase the offending notes, try slowing down the bpm (page 17) during recording.

9 Stop recording.

Press the Start/Stop button.

10 Finally, save your precious work to the AN200's internal memory — with the Store function.

(Actually, you'll have to see page 79 for info on storing Patterns — we're running out of space here... Besides, the Store function deserves it's own Tip.)

PoWer HintS

• **Lay down the drums**
Generally, it's a good idea to record your Rhythm track first. In fact, you may want to record just a very simple drum pattern to start with, and build up from there. You can later embellish that basic track, or even erase it and come up with an entirely new drum part — once your other tracks start to take shape.

• **Loop Recording**
Take advantage of the Loop Recording feature and play just one note or sound at a time. For example, when building a Rhythm track, start out with just a kick drum sound (select octave C2 with [OCT <<], and press [9]) — and play it on the "one" and "three" beats. With the kick looping, play button [3] for a snare drum. Then, go back to octave C3 and use buttons [14] and [7] to add a rapid-fire hi-hat pattern.

Get the idea? Keep building your tracks part by part in this way until you've got just what you want.

• **MIDI keys**
Have you bought yourself a MIDI keyboard yet? One that's at least five octaves long, has touch sensitive keys, and features Pitch Bend and Modulation wheels? If you haven't, you're missing out on a very easy and powerful way to record! Just hook one up (see Tip 86) — and lay down your best keyboard licks.

Tech talK
Real-time Recording

Allows you to record the notes to a Pattern in real time, as opposed to entering them one-by-one (in Step recording; see page 72).

Select a blank Pattern and set the Beat (below). Select a track with [SYNTH TRACK] and [RHYTHM TRACK], and press [KEY-BOARD]. Press red Record button to enable recording, then press Start/Stop button to start, and play the keyboard.

Tech talK
Beat

Determines the number of steps for the Pattern. Hold down [SHIFT] and press [SWING], and use the DATA knob to change.

Settings
16, 12, 8 steps

Tip 59 Step Recording

In Tip 58, you learned how to record a Pattern in real time, by playing the notes on the keyboard as the Pattern was looping. Now, you'll learn a completely different method — Step recording.

Real-time recording is like using a tape recorder — whatever you play is recorded as you play it. Step recording, on the other hand, allows you to enter each note individually — like writing down the notes on a sheet of music paper.

With Step recording, you not only enter the note itself (Pitch), but its length (Gate Time) and its loudness (Velocity) as well.

Step recording is ideal for precision — making the placement, rhythmic value, and velocity of each note exact and consistent. This is great for recording individual drum parts in a rhythm pattern, or single notes in a syncopated synth bass part. Step also gives you precise control in recording fast or complex passages that would be difficult or impossible to record in real time.

Last but not least, use Step Recording to edit Patterns. This is a great way to customize existing Patterns and tweak them to fit your needs — or twist them into completely new tracks.

There's a lot to be learned here, so take a deep breath — and dive in!

■ **Setting Up**••
The first three steps below show you how to set up a Pattern for Step Recording.

1 Select a Pattern and clear it.
Call up a Pattern that has the Voice you want to use for your new, original Pattern. Clear the Pattern by holding down [SHIFT] and pressing [11], then pressing only [11] twice again.

Remember that the Pattern isn't really erased — you can get it back by simply turning the AN200 off and back on again.
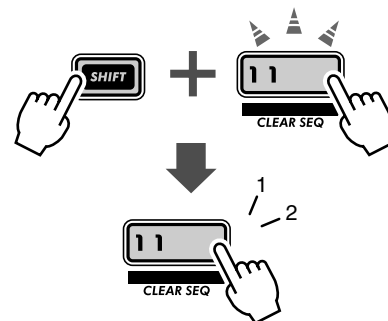
2 Make the Beat setting for the new Pattern: 16, 12, or 8.
Hold down [SHIFT] and press [SWING] (BEAT). Then, turn the DATA knob to change the setting.

You should make this setting BEFORE recording, since it determines the number of steps you'll have available in the Pattern.

3 Here, you'll be recording the Synth part, so select the Synth track.
Press [SYNTH TRACK] (the button lights).
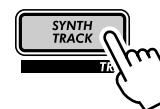
By the way, you can also step-record the Rhythm tracks — but we'll show you how to do that a little later on.

■ **Entering the Notes** ••
In this section, you'll be entering the notes (pitches) for each of the sixteen steps. We're going to show you a quick way to do this. The results here may not be very musical — but they'll get you started fast and point you in the right direction.

4 Turn all the Steps on.
In this condition, all the buttons are probably off. (Remember? You cleared the Pattern...) Go down the line, and press each button so that they are all lit.

Why do this? Generally, when you're recording the Synth track, it'll be easier to create a Pattern if all Steps 1 - 16 are on. This will create a busy Pattern, but you can always take out notes later.

5 While holding down [SHIFT], press [STEP 1-8].
Do this repeatedly, if necessary, to select Pitch entry.

This operation actually accomplishes two things:
    1) It selects Steps 1 - 8 for recording.
    2) It selects the event type (in this case, Pitch).

Also, notice the flashing [1] button. This indicates that Step 1 is ready for recording.

6 Now, with the PITCH indicator selected, use the knobs above the buttons to set the Pitch for each Step, 1 - 8.
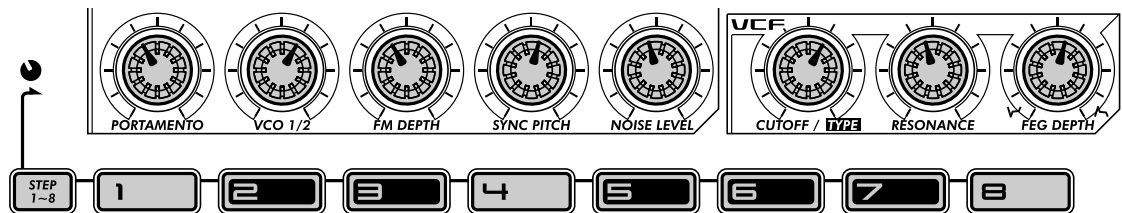
Each knob corresponds to the Step directly below it. For example, the PORTAMENTO knob controls entry for Step 1, the VCO 1/2 knob for Step 2, and so on.

Set the knobs (roughly) to the positions indicated above. No, you don't have to be exact. In fact, you can set these any way you want. We just figured that twiddling them around 11:00 to 1:00 is easy to do. You won't wind up with an earthshakingly memorable melody, but it should at least give you a listenable set of pitches to work with.

Notice that when you tweak a knob, the corresponding Step button flashes.

7 Now, let's work with Steps 9 - 16.
Press button [9].

We just showed you the fast way to select Steps 9 - 16 for editing:
    1) Edit Steps 1 - 8 first, then
    2) Press button [9] to edit the same parameter for Steps 9 -16.

An alternate way is to hold [SHIFT] and press [STEP 9-16], repeatedly if necessary (like you did in instruction Step 5 above).

Enter the notes for these Steps in the same way as you did with Steps 1 - 8 above, but use the setting guide below:
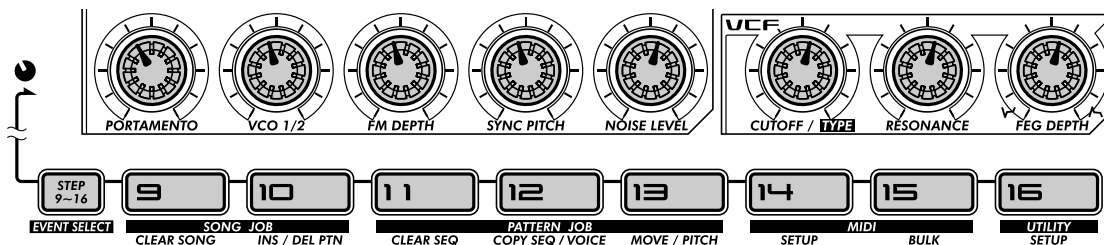
Again, this is ONLY a guide — make your own settings, if you want.

8 Finally, press the Start/Stop button — and hear your new masterpiece.

■ Gate Time •••

In the next few steps, let's work with Gate Time and lengthen some of the notes.

9 Hold down [SHIFT] and press [STEP 1-8], until the GATE TIME indicator is lit.

10 Set the knobs as shown.

Set knobs [1] and [5] to around 12:00. (The display value should be around *200*.)
Set knobs [2], [3], [4], [6], [7], and [8] to around 9:00. (The display value should be around *70 - 75*.)
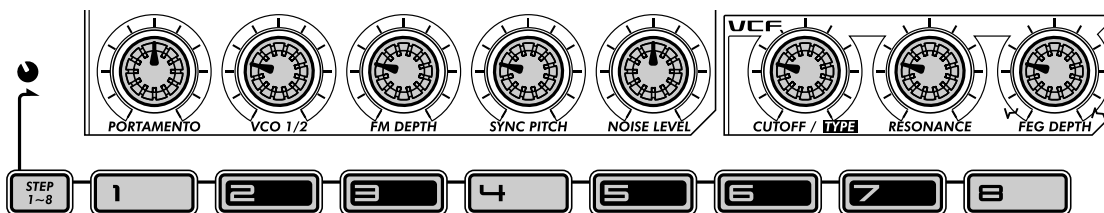
11 Do the same again for Steps 9 - 16.

Press any one of the bottom row buttons (this automatically selects Steps 9 - 16 for editing the same parameter, Gate Time), then set the knobs to roughly the same positions as shown above.

12 Press the Start/Stop button to hear your stunning new arrangement.

■ Velocity•••

No matter what unnatural, machine-like melody you've programmed above, you can make it sound much better by putting in a few choice accents — with Velocity.

13 Hold down [SHIFT] and press [STEP 1-8], until VELOCITY is selected.

14 Maybe you've noticed that you can change any and all of the events while the Pattern is running. If you HAVEN'T noticed this, press the Start/Stop button to play the Pattern, and make the changes below.

15 Set the knobs as shown.

Set knobs [1] and [5] to around 2:00. (The display value should be around 90 - 100.)
Set knobs [2], [3], [4], [6], [7], and [8] to around 11:00. (The display value should be around 40 - 50.)
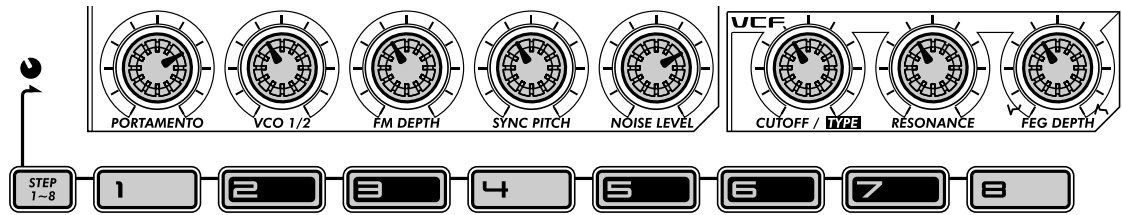
Or, make your own settings. After all, you've mastered the process now. Plus, since you can hear what you're doing — AS you're doing it — you can come up with some amazing ideas of your own.

■ Step Mute •••

We've covered this function before (in Tip 29), but let's check it out again. It's a handy editing tool that helps you create great sounding tracks.

16 Is the Pattern still going? If not press the Start/Stop button again.

17 Press some of the Step buttons to mute certain Steps. Try out the examples below, then experiment with your own settings.

Press buttons [5], [7], [11], and [13]. Listen to the sound of the Pattern as these Steps drop out.

Now, turn them all back on and mute these: [6], [7], [12], [14], and [16].

You've got your basic Synth track — now, continue crafting and adding to the Pattern by working on the Rhythm tracks below.

⍨ PoWer HintS

• **Fine tuning**
Here's a smart and easy way to work! Use the "Step" knobs (above each Step button) to select the Step and make a rough, 'round about' setting, then use the DATA knob to tweak and fine-tune the setting.

• **Swing**
Don't forget to use Swing. It might not be right for all of your Patterns, but it doesn't hurt to try it out. A little Swing may be just what the doctor ordered... Remember, the Swing setting affects all tracks equally. (See page 37.)

• **Other tools**
Feel like hearing a different Voice? Call up the Copy Voice function (page 65), and dial in a new Voice for your Pattern. Pattern Move (page 65) and Pattern Pitch (page 66) are also useful tools you can apply to your tracks.

• **Copy Pattern**
If you've crafted a really hip Pattern, and you'd like to make a few more variations — use the Copy Sequence operation (page 67). Once you have some copies of the Pattern, you can tweak them and change them around, until you've got a whole palette of similar beats and riffs to work with — for live performance (page 95), or for Song recording (page 82).

• **Mix your methods**
Real-time and Step recording are two separate methods — but they can also be used together. Not at the same time, of course, but in tandem. For example, you could record a basic beat to Rhythm Track 1 with Step, then use Real-time to improvise a bass line on the Synth Track. Or you could combine both methods on a single track — recording a basic part with Real-time, then using Step to edit it. Which method you use and how you use it depends partly on the type of music you wish to create and partly on your own personal preference.

Rhythm Tracks

The AN200 is filled to the brim with an enormous variety of drum, percussion, and special effects sounds. Put these to good use with the Step Recording features — and create your own awesome beats and smokin' rhythms.

■ The Basics — Rhythm Track 1 •••••••••••••••••••••••••••••••••••

In the next few steps, we'll walk you through the basics — and give you a quick way to edit. Get these steps down, and you'll be whizzing through the tracks in no time.

18 Turn on the Steps you want to record.

Press the buttons shown to turn them on.

19 Select the Instrument Select parameter.

While holding down [SHIFT], press [STEP 1-8]. Do this repeatedly, if necessary, to call up Instrument Select. (The "INST SEL" indicator lights.)

Instrument Select is only available for the Rhythm tracks. As you may recall from Tip 11, the Rhythm tracks contain a huge variety of bass, drum, percussion and other sounds — each assigned to a different key. Instrument Select is the place you go to choose these sounds for Step recording.

Notice that a cryptic name appears in the display. This indicates the selected sound. For example, the display below indicates that Snare Drum #14 is called up.

$$Sd\ 14$$

For a complete list of the sounds and their display abbreviations, see page 140.

20 Enter a bass drum sound for all the steps.

Press button [1], then hold down [SHIFT] and turn the [PORTAMENTO] knob to select "*bd05*." All steps 1 - 16 are instantly and automatically set to the same value.

Remember, you can use the [DATA] knob instead for finer control. Just press the appropriate number button, then tweak the [DATA] knob to dial up the desired sound.

Press the Start/Stop button to hear the new track — a bass drum pulse that will be the foundation of this new rhythm.

PoWer HintS In the Fast Lane — Working Smart

Once you get to know your way around the controls, you can Step Record your tracks fairly quickly. The trick is in getting the system down to a routine. So, here's the routine!

1) Select the desired track.
Press [SYNTH TRACK] or [RHYTHM TRACK].
2) Turn on the desired Steps.
Press the appropriate Step buttons, so that they light.
3) Call up the desired parameter.
Hold [SHIFT] and press [STEP 1-8] to call up Instrument Select, Pitch, Gate Time, or Velocity.
4) Press the desired number button and change the value.
Use the knob directly above it, or use the [DATA] knob.

While editing you may want to turn other Steps on or off. To do this quickly and return to editing:
1) Press [EXIT] (to leave the current parameter).
2) Turn the desired Steps on or off.
3) Press [STEP 1-8] or [STEP 9-16] (to return to current parameter).

And remember — at any point in the operation, you can:
• **Select a different track.**
Press [SYNTH TRACK] or [RHYTHM TRACK].
• **Play the Pattern to hear your edits.**
Press the Start/Stop button.
• **Mute or un-mute individual tracks.**
Hold [SHIFT] and press [1], [2], [3], or [4].

■ **Overdubbing the Hi-hat — Rhythm Track 2** •
Now, let's flesh out the rhythm a bit with some hi-hat parts — and add a turntable scratch at the end.

21 Using the "In the Fast Lane" box above as a guide, go on to Rhythm Track 2, and make the settings as described here.
Turn the indicated buttons on and set them to the instruments shown.

```
 HHo2    HHC2    HHC2    HHo2    HHC2
   ↑       ↑       ↑       ↑       ↑
┌─┐ ┌──┐ ┌──┐ ┌─┐ ┌──┐ ┌──┐ ┌──┐ ┌─┐
│1│ │2▮│ │3▮│ │4│ │5▮│ │6▮│ │7▮│ │8│
└─┘ └──┘ └──┘ └─┘ └──┘ └──┘ └──┘ └─┘
 ┌─┐ ┌──┐ ┌──┐ ┌──┐ ┌──┐ ┌──┐ ┌──┐ ┌──┐
 │9│ │10│ │11│ │12│ │13│ │14│ │15│ │16│
 └─┘ └──┘ └──┘ └──┘ └──┘ └──┘ └──┘ └──┘
       ↓                         ↓
      HHC2                      SCr4
```

| HINT | While you're programming the instruments, let the Pattern play. Hearing the sounds as you enter them is a great help in constructing hip tracks. |

■ **Snare and Ethnic Spice — Rhythm Track 3** •
For the final mix, we'll record a snare backbeat — and throw in some Indian tabla and other percussion for good measure.

22 Have you got the hang of the things by now? Use "In the Fast Lane" above as a cheat sheet if necessary, and program Rhythm Track 3 as shown.

```
 tbL2    tbL3    Sd14    udu1
   ↑       ↑       ↑       ↑
┌─┐ ┌──┐ ┌──┐ ┌─┐ ┌──┐ ┌──┐ ┌──┐ ┌─┐
│1│ │2▮│ │3▮│ │4│ │5▮│ │6▮│ │7▮│ │8│
└─┘ └──┘ └──┘ └─┘ └──┘ └──┘ └──┘ └─┘
 ┌─┐ ┌──┐ ┌──┐ ┌──┐ ┌──┐ ┌──┐ ┌──┐ ┌──┐
 │9│ │10│ │11│ │12│ │13│ │14│ │15│ │16│
 └─┘ └──┘ └──┘ └──┘ └──┘ └──┘ └──┘ └──┘
            ↙      ↙      ↙      ↓      ↓
          toNS   Sd02   udu2   udu3   tNbr
```
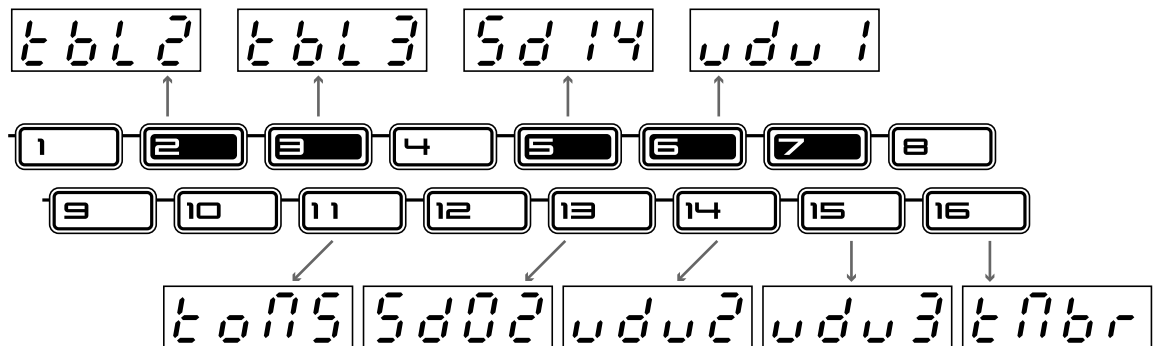
■ **Fine Tuning Your Tracks — Pitch, Gate Time, and Velocity** • • • • • • • • • • • • • •
Before you run off, remember that the Rhythm Tracks can be edited some more with the Pitch, Gate Time,
and Velocity parameters.

23 We won't tell you exactly what to do – you can explore these on your own. However, here are some guidelines and paths to follow:

● **Pitch**
Yes, the drum and percussion sounds can be pitch-changed. So can all the scratches and sound
effects. Everything's fair game and nothing's safe. This is your chance to go wild with the rhythm!

● **Gate Time**
Experiment with the length of each note — clipping some here, extending some there. Typical uses
include stretching out the sound of a cymbal, so you hear the full decay, or cutting off the sustain of a
tom sound, for a short, sharp chop.

● **Velocity**
Accentuate the positive. Bring out certain important instruments in the mix by boosting their veloci-
ties. Similarly, turn the velocity down for instruments that seem too loud.

24 Last and certainly not least – save your work.
Now that you have the slamming basic track for your new Grammy-winning, Platinum-selling Techno/
Dance hit — you'd better save it. (For information on saving, see Tip 60.)

And that's it! Unless of course you want to go back and re-edit everything to your own exacting specifi-
cations. After all, you're the boss.

PoWer HintS Rhythm Tracks

• **Start with the beat**
When you record a Pattern, it's best to start out with the Rhythm tracks. In fact, you might
want to record just a temporary rhythm "scratch track" (for example, bass drum and snare) to
Rhythm Track 1, and build the rest of the Pattern on top of that — erasing or modifying the
scratch track later.

Of course, it's all up to you! Depending on what style of music you record and your own per-
sonal preferences, you may want to start with the Synth track instead.

• **Play with Gate Time**
Remember Gate Time can also be a "global" effect. Playing back the rhythm you've just pro-
grammed, mute the Synth track and experiment with different Gate Time settings. (Hold
[SHIFT] and press [REVERSE]; use [DATA] knob to change.) Try settings of 30, 50, and 200
on all three Rhythm tracks — and hear what happens!

• **Swing**
For an instant hip-hop approach, try changing the Swing! While the Pattern is playing, press
[SWING] and use the [DATA] knob to set the value to 65 or 70.

Tech talk
Step Recording

Allows you to enter the notes to a Pattern in
one-by-one, as opposed to recording them in
real time (in Real-time Recording; see page
70).

1. Clear a Pattern and set the Beat (hold
   [SHIFT] and press [SWING]).
2. Select a track with [SYNTH TRACK] and
   [RHYTHM TRACK].
3. Turn all desired Steps on by pressing each
   Step button.
4. Simultaneously hold [SHIFT] and press
   [STEP 1-8] to select Steps 1 - 8 for editing;
   press repeatedly to toggle through event
   types. (Use [STEP 9-16] in the same way
   to select and edit Steps 9 - 16. Or simply
   press button [9] after editing Steps 1 - 8.)
5. With event type selected, use knobs above
   the Step buttons (and the DATA knob) to
   adjust value.
6. Turn steps on/off by pressing [EXIT] (to
   leave editing), then pressing appropriate
   Step button.
7. Press Start/Stop button to play back. (Can
   be done at any point in procedure.)

Tech talK **Event Parameters — Synth and Rhythm Tracks**

Pitch
Determines the pitch of the selected note. For the Synth track, this is expressed as note names; for the Rhythm tracks, it is expressed as number of semitone steps. (The small "o" in the note name display designates accidentals. For example, "G^o" corresponds to G#.)

Range
C-2 — G8 (-64 — 24 for Rhythm tracks)

Gate Time
Determines the length of the selected note. The higher the value, the longer the note length. For sounds that have a short decay, higher values may have little to no effect.

Range
1 — 1600

Velocity
Determines the volume of the selected note. Use this parameter especially to create accents in the Pattern.

Range
0 — 127

Instrument Select
Determines the instrument sound for the selected note. This parameter is available only for the Rhythm tracks.

Range
(Refer to list on page 140.)

Tip 60 Storing your new Pattern

Now that you've created a new Pattern, you'll want to save it for future recall. The Store function lets you do this quickly and easily. And remember, any and all changes you've made to the accompanying Voice — including your knob and button settings, Free EG moves, and Effect edits — are stored with the Pattern, too.

The AN200 gives you 128 User memory spaces for saving your original Patterns.

⚠ **CAUTION**
Once you've created a Pattern (or Voice) you want to save, DO NOT select another Pattern until you've stored it. Selecting another Pattern (or Song) automatically wipes clean any changes or edits you've made!

■ **Turn Memory Protect Off** •
Before you store, make sure the Memory Protect function is off. If it is on, you won't be able to store your Pattern.

1 Simultaneously hold down [SHIFT] and press [16] (UTILITY SETUP).
You may have to press the button more than once to call up the "$Prot$" (Memory Protect) display below.
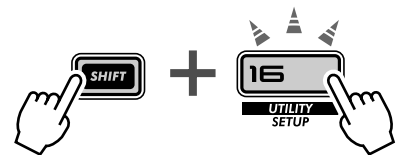
2 If Memory Protect is set to on, use the DATA knob to change it to off ("oFF").
Unless you've changed the setting yourself, Memory Protect will probably be off.

■ **Store the Pattern** •
Storing your original Pattern is as easy as 1-2-3.

1 First, make sure your new Pattern is selected and that Memory Protect is off. Then, press [STORE]. ("*P.Str*" briefly appears to indicate the Store operation.)

2 Select the desired User Pattern number (1 - 128) with the DATA knob.

3 Press [STORE] again to actually store the Pattern, or press [EXIT] to cancel.

■ **Selecting User Patterns** •
Now that your Pattern is properly saved to memory, you can call it up any time you want. Select it the same way you select the preset Patterns — pressing [PATTERN] and using the DATA knob. The User Patterns come after preset Pattern 256.

For a quick way to select User Patterns, hold down [SHIFT] and press the [PATTERN] button. This toggles between the Preset Patterns and the User Patterns.

PoWer HintS

• **Save your Patterns in bulk**
  If you have a sequencer or MIDI data filer, you can use the AN200's Bulk Send function (page 108) to save your valuable Pattern and Voice data in multiple "banks" of 128 Patterns. Load each bank of 128 back to the AN200 when you need it — or share your banks with your AN200-equipped friends and bandmates. Keep in mind too that you can use Bulk Send with the computer-based AN200 Editor (page 106) to further edit your Voices.

• **Make it a habit**
  Did we mention that you should save? Save, save, and keep saving! Even if you're still working on a Pattern or Voice and don't consider it finished, save it anyway.

  Why? Doing this gives you an archive of the changes you've made along the way — in case you want to call one of them up again. You can always delete those archive Patterns later (page 68) if you need extra memory space. Or, if you're a "pack rat," you can use Bulk Send (see hint above) to save every single thing you've ever created.

Tech talK
Memory Protect

Determines whether you can store Patterns to memory or not. Set this to ON when you want to avoid inadvertently erasing or replacing any previously stored User Patterns. Hold down [SHIFT] and press [16] until "*Prot*" (Protect) appears briefly in the display. Use the DATA knob to change the setting.

Settings
Off ("*oFF*"), On ("*on*")

Tech talK
Store Pattern

Allows you to save Pattern and Voice data to one of 128 User memory locations.

With the new Pattern still active and Memory Protect off, press [STORE]. Select the desired User number with the DATA knob, and press [STORE] again to execute, or press [EXIT] to cancel.

Song Recording

You've got a humongous selection of Patterns at your disposal. It's time now to put them together and make some Songs.

Tip **61** **Erasing a Song – and starting from scratch**

The first thing you'll need to do when you create your own Song is to make room for it on the AN200. To do that, you'll have to erase or clear one of the existing Songs.

1 **Make sure the Song mode is selected.**
Press the [SONG] button.

Indicates Song mode is active.

2 **Select the Song to be cleared.**
Make sure that it's a Song you don't mind getting rid of. Actually, this doesn't really erase the Song right away. The Song data still stays in memory — until you save your new Song to that number.

3 **Simultaneously hold down [SHIFT] and press [9] (CLEAR SONG).**

4 **Clear the Song.**
Release [SHIFT] and press [9] once again (the button stops flashing and stays lit). At the "*Y!!n*" ("Yes or no?") prompt, press it a third time to actually clear the Song, or press [EXIT] to cancel.
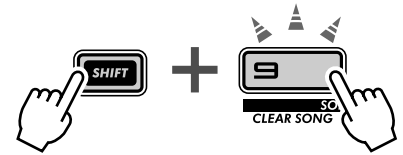
PoWer HintS

• **Don't erase… Edit a Song!**
Remember, you don't need to put a Song together from scratch. If there's a preset Song you like and simply needs a little customizing to make it your own, just call it up and edit it instead. Take Patterns out, put new Patterns in, and perform a variety of transformations on the Pattern data — the info starts on page 84.

Tech talK
Clear Song

Allows you to clear Pattern assignments and other edits of a Song. (Remember, this does NOT affect the actual data of any Patterns.) Select the Song, then use [SHIFT] and [9] to call up "*CLr*" (Clear). Press [9] twice to execute.

Tip **62** **Creating a Song**

Finally, we come to the culminating feature of the AN200. This is the place where you bring together all the Voices, Scenes, Free EG moves and Patterns you've made — and use them to create your own original Songs.

1 Call up the Song mode and clear a Song.
Give yourself a blank slate for putting together your own Song. (Have you tried clearing a Song yet? If not, go back to Tip 61 and do it now.)

2 Call up the Song Edit mode.
You'll need to enter the Song Edit mode to do any Song recording or edit-ing. To do this, simultaneously hold down [SHIFT] and press the [SONG] button.

The PATTERN indicator should flash. If PATTERN is NOT flashing, press [PATTERN SELECT] to get it flashing and enable Pattern number entry.

3 Select the measure to which you want to record.
Simultaneously hold down [SHIFT] and use the [OCT <<]/[OCT >>] ([BWD]/[FWD]) buttons to move for-ward or backward in the Song, measure-by-measure.

Also, try this alternate method below — and move more quickly and easily through the measures.
  1) Hold down [SHIFT] and press either of the [BWD]/[FWD] buttons.
  2) Then, release the buttons, and use the [DATA] knob.

In this condition, turning the [DATA] knob steps through the measures. For even speedier selection, hold down [SHIFT] while turning the [DATA] knob — and jump through the Song ten measures at a click.

4 Press the Start/Stop button.
Doing this loops the currently selected Pattern at the currently selected measure. This allows you to hear your Song edits in the steps below — in real time.

If you want, you can stop playback by pressing the Start/Stop button before going on to Step 5 below. Or keep it going and continue editing while the Pattern loops.

5 Select the Pattern number to be assigned (to the measure selected above).
Use the DATA knob. Any of the Patterns can be selected — Preset or User. Remember that you can eas-ily switch between the Preset Patterns and the User Patterns by holding down [SHIFT] and pressing the [PATTERN] button. (See page 80.)

> X-tra Details
>
> You may also want to record an initial BPM setting at the first measure of your Song. This determines the basic tempo for the entire Song. For more information, see Tip 63.)

6 Keep assigning Patterns in this way, repeating Steps 3 - 5 above, until you've created a new Song.

In most cases, you'll want to repeat a Pattern over several measures, rather than having a different Pattern every measure. To do this, first set the Pattern you want to repeat. Then, in the following measures, turn the DATA knob counter-clockwise until "- - - -" appears in the display.

This setting selects no new Pattern, and keeps the previous Pattern playing through the measures assigned this way.

By the way, if you're creating a Song from scratch, you may not need to enter "- - - -" at all. Just skip over the measures that you want to stay the same — the AN200 automatically repeats the last Pattern, until the next new entry.

7 To end the Song, record the "End" mark.

Select the measure FOLLOWING the final measure in the Song, then turn the DATA knob counter-clockwise until "*End*" appears in the display.

For example, if you recorded the "End" mark to measure 33, the Song plays up through measure 32, then stops.

8 Press [EXIT] (or the [SONG] button) to leave Song editing.

9 Play back your new Song by pressing the Start/Stop button.

However, you'll have to use the [BWD]/[FWD] buttons ([SHIFT] + [OCT <<]/[OCT >>] buttons) to select the starting measure. Make sure to return to the beginning measure — if you want to hear the Song all the way through.

10 Last and most important — don't forget to store your new Song.

Go on to Tip 67 right now and save your latest masterwork.

PoWer HintS

• **Recording other data**
In addition to Pattern numbers, a variety of other data types can be recorded to the measures of a Song — such as BPM, Gate Time, Swing, and Reverse. (See page 85.) These let you change various playback characteristics of the Patterns to suit your Song — without actually having to change the Pattern data itself!

Tech talK
Song Edit Mode

Call up this mode for recording and editing Songs. Hold down [SHIFT] and press [SONG]. (The "*5*" in the display indicates the Song mode.)

Tech talK
Measure Select

Determines the measure for recording, editing, and playback. Hold down [SHIFT] and use the [OCT <<]/[OCT >>] buttons.

Tip *63* Setting the BPM (tempo) for your new Song

In addition to the Patterns, a variety of other settings can be programmed into your Song. One of these is BPM. It lets you set the playback speed or tempo — for each and every measure, if you want.

Normally, you'll use this at the start of the Song (see Tip 62, Steps 3 - 5) to make sure the entire Song plays back at the proper tempo. However, it can also be used to change tempo in middle of the a Song as well.

Work through these steps, and master the procedure. You'll be using the same method in Tip 64 to program other settings, too.

1 Enter the Song Edit mode.
   Hold down [SHIFT] and press the [SONG] button.

2 Select the desired measure.
   Hold down [SHIFT] and use the [OCT <<]/[OCT >>] buttons.

3 Play back the Pattern.
   Press the Start/Stop button to loop the Pattern at the selected measure.

4 Call up the BPM setting.
   Hold down [SHIFT] and press [BPM] ([TAP]).

5 Set the desired BPM value with the DATA knob.

6 Repeat Steps 2 - 5 above as often as you want, for as many measures as needed.
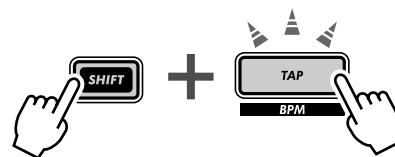
In most cases, you'll want to keep the same BPM setting over several measures, or even over the entire Song. To do this, enter the " - - - - " setting for as many measures as needed. Or, if you're programming the Song from scratch, just skip over the measures that you want to stay the same — the AN200 automatically maintains the last setting, until the next new entry.

PoWer HintS

• **Fine tempo changes**
  The BPM value has an extremely fine resolution of 1/10 beats per minute — for precise control over the tempo. Use this to set up very gradual speed changes.

• **Speed up, slow down**
  If your Song fits the conventional verse/chorus structure, you might want to play around with changing the BPM at the beginning of each section. For example, some artists make their choruses slightly faster than the verses, to generate more excitement each time the chorus comes. Other songs might benefit from the completely opposite approach — slowing down the chorus to make it sound more dramatic.

  Whichever approach you take, make sure to keep the changes consistent from section to section, and keep them small — you want your listeners to FEEL the changes, not consciously HEAR them.

Tech talK
Song Edit — BPM (Tempo)

Determines the speed of Pattern playback (in beats per minute, or bpm), for the selected measure. First, select the measure by holding down [SHIFT] and using the [OCT <<]/ [OCT >>] buttons. Then, hold down [SHIFT] and press [BPM] ([TAP]), and use the DATA knob to set the value.

   Range
   20.0 — 300.0 bpm
   A setting of " - - - - " maintains the previous measure's value (no change).

Tip *64* More Song editing features

In Tips 62 and 63 above, you learned how to enter Pattern numbers and BPM values to the measures of your Song. But that's not all you can do. In this Tip, we'll show you how to use the rest of the powerful Song editing features in your tunes.

By the way, we'll keep these instructions to the bare-bones minimum. Read about these cool tools, then try using them in your own Songs and see what you come up with.

Remember, the basic method is the same for all:

1) Enter the Song Edit mode.
   (In the Song mode, hold down [SHIFT] and press the [SONG] button.)
2) Select the desired measure.
   (Hold down [SHIFT] and use the [OCT <<]/[OCT >>] buttons.)
3) Play back the Pattern.
   (Press the Start/Stop button.)
4) Select the event type you want to edit.
   (See instructions for each event below.)
5) Set the value.
   (Use the DATA knob. In the case of Track Mute below, follow the relevant instructions.)

Naturally, repeat Steps 2 - 5 as often as needed. Press [EXIT] when you're done editing. And don't forget to store your new creation. (See page 89.)

Pattern
(Described in Tip 62 above.)

   To select:
   Press the [PATTERN SELECT] button.

Pitch Offset
Just as with the similar Pattern control (Transpose; on page 36), this lets you change the playback pitch. By making different settings throughout various measures in the Song, you can program your own chord progressions, and have the Patterns change key.

   To select:
   Hold down [SHIFT] and press the [KEYBOARD] button.
   Both the [KEYBOARD] button and the PITCH lamp flash, indicating Pitch Offset is selected.

BPM
(Described in Tip 63 above.)

   To select:
   Hold down [SHIFT] and press the [TAP] button.

Beat
This lets you change the total number of steps in the Pattern at the selected measure. (For details, see Tip 6.) One use of this would be to create a half-bar Pattern. For example, if you've entered a 16-step Pattern at the measure, setting this to "*8*" would effectively cut the Pattern in half. If you're only aiming for a brief change, remember to reset the Beat in the next measure or so!

   To select:
   Hold down [SHIFT] and press the [BEAT] ([SWING]) button.
   Both the [SWING] button and the BEAT lamp flash, indicating Beat is selected.

Swing

This lets you introduce a swing feel to the Pattern at the selected measure. (See Tip 27 for more information.)

To select:
Press the [SWING] button.

The [SWING] button lights, indicating Swing is selected.

Gate Time

This lets you control the length of the notes for the Pattern at the selected measure. (See Tip 25 for more information.) You could use this to create tracks in which the notes grow progressively longer as the Pattern cycles — by programming successively higher Gate Time values in the measures. Or have the notes become more and more clipped (staccato) — by making Gate Time lower and lower in successive measures.

To select:
Hold down [SHIFT] and press the [GATE TIME] ([REVERSE]) button.

Both the [REVERSE] button and the GATE TIME lamp flash, indicating Gate Time is selected.

Reverse

By setting this to Reverse (" $bRCt$ "), you can have the Pattern at the selected measure play backwards. (See Tip 25 for more information.) Alternate between forward and reverse Patterns for special effects. Or program three forward, one reverse — for an interesting four-bar phrase.

To select:
Press the [REVERSE] button.

The [REVERSE] button lights, indicating Reverse is selected.

Track Mute

Add some texture to your Song with this function. By recording Track Mute events you can have tracks drop in and out of your arrangements, for exciting dynamic changes.

To select and edit:
Hold down [SHIFT] and press either the [SYNTH TRACK] or [RHYTHM TRACK] button. Then, press the appropriate Step button: [1] for the Synth track, and [2], [3], and [4] for the Rhythm tracks. The status for each track is shown in the display.

$$\boxed{\mathit{0 \_ 00}}$$

Indicates Synth track is on.   Indicates Rhythm track 1 is muted.
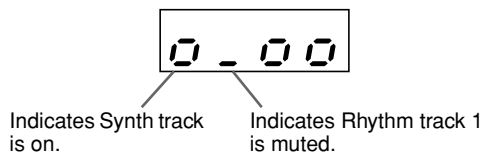
PoWer HintS

• **Easier way**
  Keep in mind — there is an alternate way to select the various event types. You may find it easier to remember — AND easier to use! Simply hold down [SHIFT] and press [SONG] repeatedly. This toggles through all of the event settings in order: Pattern Select, Pitch Offset, BPM (Tempo), Beat, Swing, Gate Time, Reverse, and Track Mute.

Tech talK
Song Edit — Event Select

This lets you select the particular event to be recorded or edited in a Song. Eight event types are available: Pattern Select, Pitch Offset, BPM (page 84), Beat, Swing, Gate Time, Reverse, and Track Mute. To select, make sure Song Edit mode is active ([SHIFT] + [SONG]), then press the appropriate button (using [SHIFT] if necessary). Alternately, hold down [SHIFT] and press [SONG] repeatedly to toggle through all eight event types.

Pattern Select
Press [PATTERN SELECT].

> **Range**
> P.001 — P.256 (Preset Patterns)
> U.001 — U.128 (User Patterns)

Pitch Offset
Hold [SHIFT] and press [KEYBOARD].

> **Range**
> -24 — 0 (no change) — 24 semitones

BPM
Hold [SHIFT] and press [TAP].

> **Range**
> 20.0 — 300.0 bpm

Beat
Hold [SHIFT] and press [SWING].

> **Range**
> 16, 12, 8 steps

Swing
Press [SWING].

> **Range**
> 50 — 83

Gate Time
Hold [SHIFT] and press [REVERSE].

> **Range**
> 1 — 200

Reverse
Press [REVERSE].

> **Settings**
> Forward (For)
> Reverse ($bRCt$)

Track Mute
Hold [SHIFT] and press the [SYNTH TRACK] button or the [RHYTHM TRACK] button. Then, press [1], [2], [3], or [4] (for Synth track and Rhythm tracks 1 - 3). The mute on/off status for each track is shown in the display.

Tip *65* **Adding Patterns to your Song – Insert Pattern**

Naturally, you can add Patterns to your existing Songs — by using the Insert Pattern function. This puts a new Pattern in the Song at the measure you specify.

It doesn't matter whether you're in the Song mode or the Song Edit mode — you can insert a Pattern from either.

1 First, select the measure you want to insert the Pattern to, by holding [SHIFT] and using the [OCT <<]/[OCT >>] buttons.

2 Call up the Insert Pattern function.
Hold down [SHIFT] and press [10] (INS/DEL PTN). You may have to press the button more than once to call up the " *ın5* " (Insert Pattern) display.
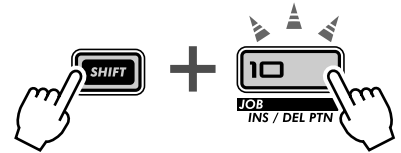
3 Next, select the Pattern you want to add to your Song. Use the DATA knob.

4 Insert the selected Pattern.
The [10] button should be flashing. Press it once again (the button stops flashing and stays lit). At the " *YIIn* " ("Yes or no?") prompt, press it a third time to actually insert the Pattern to the selected measure, or press [EXIT] to cancel.

Take a look at the illustration below and see what happens when you insert a Pattern.
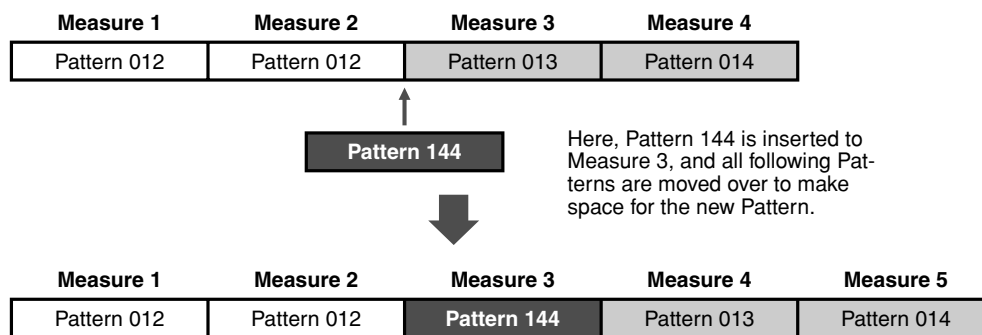
Measure 1	**Measure 2**	**Measure 3**	**Measure 4**
Pattern 012	Pattern 012	Pattern 013	Pattern 014

Pattern 144

Here, Pattern 144 is inserted to Measure 3, and all following Patterns are moved over to make space for the new Pattern.

Measure 1	**Measure 2**	**Measure 3**	**Measure 4**	**Measure 5**
Pattern 012	Pattern 012	**Pattern 144**	Pattern 013	Pattern 014

Don't forget to store your newly edited Song, or you'll lose any edits you've made once you turn the power off or select another Song or Pattern.

PoWer HintS

• **Replacing a Pattern**
If you want to replace a Pattern — in other words, erasing one and putting a new one in its place — you'll need to use Delete Pattern (page 88) to delete the Pattern first. Then, use Insert Pattern to put the new one in.

Tech talK
Insert Pattern

Allows you insert a Pattern to any measure within an existing Song. All subsequent Patterns/measures are displaced.

With Song (or Song Edit) mode active, hold [SHIFT] and use [OCT <<]/[OCT >>] buttons to select desired measure. Hold [SHIFT] and press [10] to call up " *ın5* " (Insert), select the desired Pattern number with the DATA knob, and press [10] twice to execute.

Tip **66** **Taking Patterns out of your Song – Delete Pattern**

If you've made a mistake in creating your Song, you can always clear it (page 81) and start over. Or you can use Delete Pattern to erase the offending entry, and keep the other Patterns intact.

Delete Pattern lets you take Patterns out of specific measures in your existing Songs. Keep in mind, however, it makes your Song shorter by one measure AND it doesn't leave an empty space — any Patterns that follow the deleted one move back to fill the vacated measure.

Delete Pattern can be used in either the Song mode or the Song Edit mode.

1 First, select the measure that contains the Pattern you want to delete.
Hold [SHIFT] and use the [OCT <<]/[OCT >>] buttons.

2 Call up the Delete Pattern function.
Hold down [SHIFT] and press [10] (INS/DEL PTN). You may have to press the button more than once to call up the "dEL" (Delete Pattern) display.
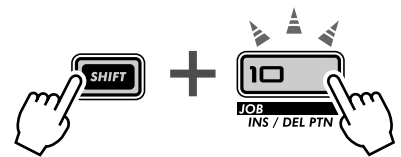
3 Delete the Pattern.
The [10] button should be flashing. Press it once again (the button stops flashing and stays lit). At the "$YlIn$" ("Yes or no?") prompt, press it a third time to actually delete the Pattern from the selected measure, or press [EXIT] to cancel.

Here's an example of what happens when you use Pattern Delete. In the illustration below, we'll delete Pattern 013 at Measure 3.
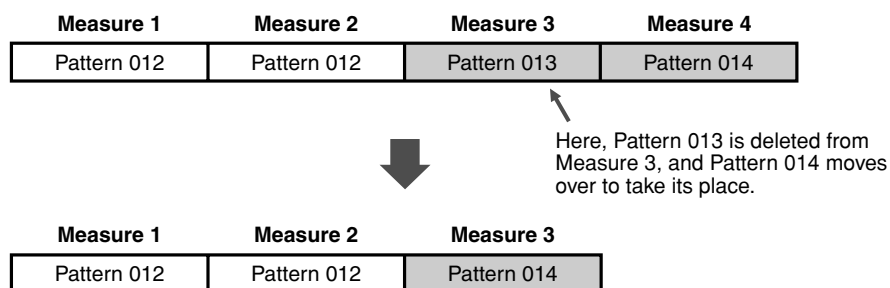
Measure 1	Measure 2	Measure 3	Measure 4
Pattern 012	Pattern 012	Pattern 013	Pattern 014

Here, Pattern 013 is deleted from Measure 3, and Pattern 014 moves over to take its place.

Measure 1	Measure 2	Measure 3
Pattern 012	Pattern 012	Pattern 014

Don't forget to store your newly edited Song, or you'll lose any edits you've made once you turn the power off or select another Song or Pattern.

Tech talK

Delete Pattern

Allows you delete a Pattern from any measure within an existing Song. All subsequent Patterns/measures move back to fill the vacant measure.

With Song (or Song Edit) mode active, hold [SHIFT] and use [OCT <<]/[OCT >>] buttons to select desired measure. Hold [SHIFT] and press [10] to call up "dEL" (Delete), and press [10] twice to execute.

Tip *67* **Storing your new Song**

Now that you've created and arranged a new Song, you'll want to save it for future recall. The AN200 gives you a total of 10 memory spaces for saving your original Songs.

⚠ *CAUTION*

Once you've created a Song you want to save, DO NOT select another Song and DO NOT leave the Song mode until you've stored it. Selecting another Song (or Pattern) automatically wipes clean any changes or edits you've made!

Delete Pattern can be used in either the Song mode or the Song Edit mode.

1 Make sure Memory Protect is turned off.
Hold down [SHIFT] and press [16] until the "*Prot*" (Protect) display is shown. Then, set Memory Protect to OFF with the DATA knob.

Press the [EXIT] button to leave Memory Protect.

2 With your new Song still up and waiting, press [STORE].
"*S.Str*" briefly appears to indicate Store operation.

STORE

3 Select the desired Song number (01 - 10) with the DATA knob.

4 Press [STORE] again to actually store the Pattern, or press [EXIT] to cancel.

PoWer HintS

• **Keep on saving**
Save ALL of your Songs — memory is cheap! If you have a sequencer or MIDI data filer, you can use the AN200's Bulk Send function (page 108) to save your valuable Song data in multiple "banks" of 10 Songs to disk — and build up a whole library of tunes.

However, make sure to save any relevant Pattern data with the Songs and load them together. If you don't do this, your Songs and Patterns may not match each other!

• **Song backup**
You may want to use Store to save different versions of your Song — even as you're working on it. This gives you an archive of the changes you've made along the way — in case you want to call one of them up again. You can erase the unneeded versions later if you want.

Tech talK

Store Song

Allows you to save Song data to one of 10 Song memory locations.

With the new Song still active and Memory Protect off, press [STORE]. Select the desired Song number with the DATA knob, and press [STORE] again to execute, or press [EXIT] to cancel.

Speed Tips for Power Users

Work smarter, not harder!

In this section, we'll show you some nifty ways to put your editing in high gear — so you can get MORE out of your AN200 in LESS time.

68 Using [SHIFT] with the [DATA] knob – for leaps and bounds!

Tip

The [DATA] knob is really useful for narrowing in on a value and fine-tuning the parameter settings. However, if you're in a hurry and want to quickly jump through the available values, it can be cumbersome.

Not when you use the [SHIFT] button, however. To speed up the [DATA] knob, hold down [SHIFT] while you turn it.

Use this operation especially:

- **For selecting Patterns**
  This speed operation lets you jump 10 Patterns for every click of the [DATA] knob.
- **For setting the BPM**
  Holding [SHIFT] lets you go 10 times faster through the BPM values (1 bpm/click).
- **For Instrument Select (in Step Recording, Rhythm Track)**
  Jump among the instrument selections, then take your finger off [SHIFT] and narrow your selection down.

Actually, this [SHIFT]-[DATA] knob shortcut is useful for just about ANY value-changing operation. Use it for the synth-related knobs, and use it to jump around on playback controls, such as Gate Time and Transpose.

Tip **69** **Using [SHIFT] to "hold" a setting**

Editing on the AN200 is quick and easy — you press a button or turn a knob, and the setting/value changes. However, convenient as it is, there are times when you want to select a parameter without changing it.

Here's an example. Let's say you've selected the "hidden" Reverb Effect in your editing session, and you go on to edit something else. Wanting to come back to edit Reverb again, you press the EFFECT [TYPE] button. Whoops... You've just changed the Effect Type to Flanger!

To get around this, use [SHIFT]. Hold down [SHIFT], then press EFFECT [TYPE]. Doing this calls up the current Effect Type — without changing it.

Use this operation with ALL of the Voice "button" settings — such as LFO Detail, EG Select, Key Assign, and so on.

Tip **70** **Gang-editing a group of Steps**

No, we're not advocating the use of violence here... This convenient Step Recording shortcut lets you change the setting for up to 16 Steps — instantly and all at the same time.

1 In Step Recording, select the desired parameter for editing: Pitch, Gate Time, or Velocity. (Or Instrument Select, if you're working on a Rhythm track.)

2 Select the Step row you want to start the group from.
For example, if you want to group Steps 5 -16 for editing, select row 1 - 8 (by pressing any button in this row). If you want to group-edit Steps 11 - 16, select row 9 - 16.

3 Hold down [SHIFT] and turn the knob corresponding to the first step in the group.
If you've selected the top row (1 - 8) in Step #2 above, this will instantly and automatically set all Steps 5 - 16 to the same value. If you've selected the bottom row (9 - 16), turning the NOISE LEVEL knob will set Steps 13 - 16 to the same value.
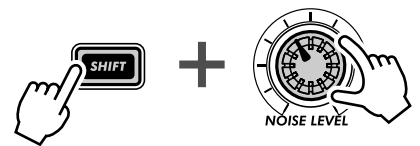
Typical uses of this include:
• Setting all Steps to the same instrument (in the Rhythm tracks).
• Setting all Steps to the same Velocity or Gate Time, then slightly tweaking individual Steps for variation.
• For when several Steps have the same value — you can set all Steps at once, then go back and change only the Steps you want to have different values.

Real World Tips

This chapter is a grab bag full of various practical tips that solidify your programming chops and put you on the way to truly mastering the instrument. You've seen all these features before. Now, try them out in these real-world examples — and explore some new, uncharted sound-shaping paths on your own.

Tip 71 Adjusting the Gate Time with the [DATA] knob

Gate Time is a simple, yet effective way to change both the sound and feel of a Pattern. Try this tip in real time, as the Pattern is playing — for dramatic, dynamic shifts.

1 Select and play a Pattern.

2 Call up Gate Time.
Hold [SHIFT] and press [GATE TIME] ([REVERSE]).

3 Tweak the [DATA] knob slowly to the left.
Very gradually, start turning Gate Time down — from 100, down to 40, 20, then even 10 or 1.

Hear what this does to all the tracks? Hear how everything — including the drums — is clipped, creating a tight, muted sound and producing a drop in dynamics.

4 Now, as quickly as you can, bring Gate Time back up to 60, 80 or 100 — or more.
Hold [SHIFT] while you turn the [DATA] knob — that lets you jump through the values, and instantaneously bring the dynamics back up. Try to do it right before the first beat of a measure — and kick everything back in on the "one."

Tip 72 Adjusting the pitch with the [DATA] knob

Let's do some more work with the [DATA] knob. This time we'll play around with the pitch — using the Transpose function.

1 Select and play a Pattern.

2 Call up Transpose.
Hold [SHIFT] and press [TRANSPOSE] ([KEYBOARD]).
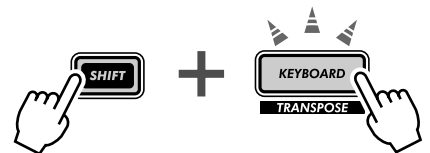
3 While the Pattern is playing, use the [DATA] knob to bring the pitch up and down.
For wild pitch changes, hold down [SHIFT] while you work the knob. Try alternating on beat between two widely different values (for example, "*-20*" and "*30*"). Try also whipping the pitch way up in 60s range, then bringing down to the 40s. Try random pitch changes, too, as the Pattern cycles. Lots of fun stuff here!

Tip **73** **Changing the pitch with the keyboard**

As you saw in Tip 26, you can use the keyboard of the AN200 to change pitch and even create chord progressions on the fly. But you can get really wild and crazy with this feature, too — and come up with some truly mad techno mayhem.

1 Select and play a Pattern.

2 Call up Transpose.
Hold [SHIFT] and press [TRANSPOSE] ([KEYBOARD]).

3 Now, "play" the pitch changes from the keyboard.
Try out these specific exercises and see where they take you!

• Starting with button [9] (low C on the keyboard), go up chromatically — pressing each successive key in turn. Try it in rhythm, pressing a different key every other beat, like this:
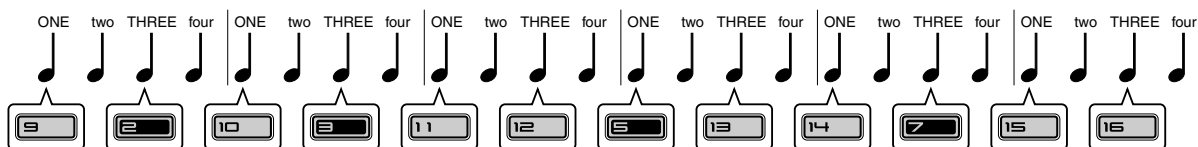
Count "ONE-two-THREE-four," hitting the buttons on "ONE" and "THREE."

• Use the [OCT <<]/[OCT >>] buttons, too! Try selecting different octaves on the fly, and pressing various keys.

• Can you play a two-finger trill? (A trill is two notes played alternately — very quickly.) If you can't do it with one hand, try two. For example, alternate between buttons [10] and [12] (D and F), like this:
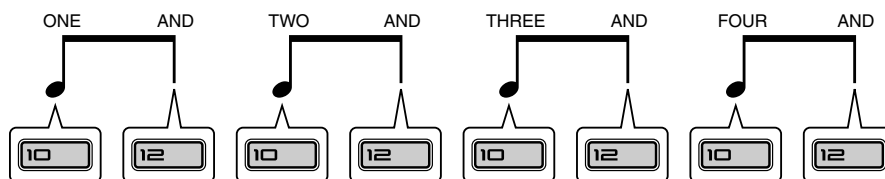
Here, you play two keys on every beat — count "ONE-AND-TWO-AND-THREE-AND-FOUR-AND," and hit each count!

Tip *74* **Stutter fill-in 1**

Remember in Tip 50 how you hit the top of a Pattern? In this Tip, and the two that follow, let's try some specific "stutter" rhythm examples.

Select and play a Pattern. Then, hold down [SHIFT] and hit the [TOP] (Record) button in the following rhythm.

ONE	TWO	THREE	FOUR	ONE

Start !   Hit it here...   ... and here !

SHIFT + **TOP** ◀

Use your left hand to hold down [SHIFT], while your right hand
hits [TOP]. This gives you greater control over the rhythm!

Tip *75* **Stutter fill-in 2**

Select and play a Pattern. Then, hold down [SHIFT] and hit the [TOP] (Record) button in the following rhythm. Use both hands. This one's a bit tricky...

SHIFT + **TOP** ◀

Count as shown, and hit each
count indicated by the arrows.

ONE	TWO	THREE	FOUR

ONE	AND	TWO	AND	THREE	AND	FOUR	AND

ONE

Tip **76 Stutter fill-in 3**

Select and play a Pattern. Then, hold down [SHIFT] and hit the [TOP] (Record) button in the following rhythm. Use both hands on this one too. This could take a little practice before you nail it...
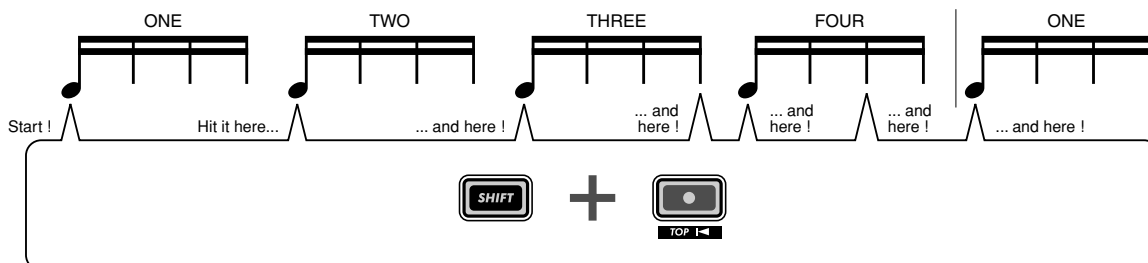
Tip **77 Assigning Patterns for your gig**

When you perform live, you need to think quick and move fast. So keep things simple — and use this tip to help you streamline your onstage work.

You saw in Tips 3 and 31 how you can use the Pattern Select feature to instantly switch Patterns as you perform. If you've got a lot of Patterns to trigger during a performance, it makes sense to lay them out in the order you'll use them. That's what Pattern Assign is for.

First, make a list of the Patterns you'll need, in the order you'll use them. Then, go down the list and assign the appropriate Pattern to each number button. (Remember how? Hold down [SHIFT] and press [PATTERN ASSIGN], then press a number button and use the [DATA] knob to select the Pattern.)

Tip **78 Chord progressions with Pattern Assign**

If you work with chord progressions, you can create copies of a Pattern select setup to different pitches, and play those Patterns from the keys.

Use the Copy Sequence function (page 67) to copy a Pattern several times. Then, edit each Pattern copy as needed with the Pitch function (page 66). Finally, use Pattern Assign (page 40) to assign the Patterns to the appropriate keys.

Keep things simple and logical. Assign a Pattern to the matching key. In other words, if your Pattern is in the key of C, assign it to button [9]. If the Pattern's in F, assign it to [12]. A Pattern in G would go to button [13], and so on.

Master Class 1 — Onstage

Now that you've got the hang of the instrument, it's time to start strutting your AN200 chops onstage. There are a lot of truly amazing things you can do with the AN200 — especially once you put it together with some other MIDI gear. Here are some ideas to get you started...

Tip 79 Sync the AN200 to your sequencer

The sophisticated sync features of the AN200 let you lock it in step with the rhythm of just about any other MIDI device, such as a computer, rhythm machine or external sequencer. No drift, no glitching, no slipping out of sync — the two machines stay perfectly in the same groove.

This is great for live situations. For example, you could use a computer or sequencer for your main tracks and fly in some AN200 Patterns as you perform — while everything stays in perfect sync.

In this application, the sequencer is the "master," or controlling device, and the AN200 is the "slave."

1 Set up the AN200 and the sequencer.
Connect the two as shown with a standard MIDI cable.
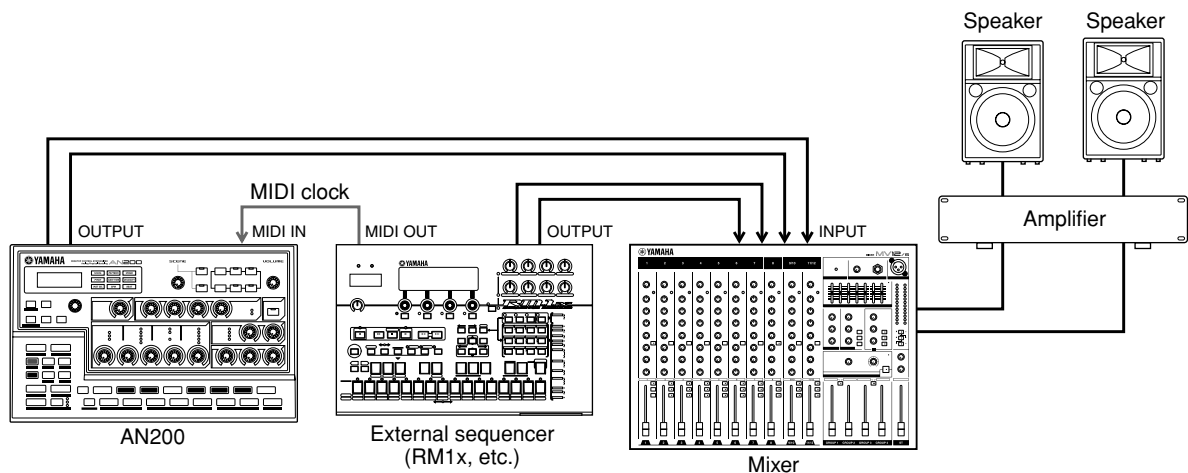
2 Call up the Clock setting on the AN200.
Hold down [SHIFT] and press button [14] (MIDI SETUP), repeatedly if necessary, until "*CLoᵏ*" appears in the display.

3 Set Clock to "External."
Turn the [DATA] knob until "*Eᵢᵗ*" is shown.

4 Start song or sequence playback on the other device.

When you start and stop playback on the connected MIDI device, the Pattern or Song on the AN200 starts and stops at the same time. Naturally, you can change the bpm on the other device, and the AN200 will instantly and automatically follow right along.

If you want, you can use the AN200 as the master device. Just make sure the Clock on the AN200 is set to "Internal" — otherwise, you won't be able to start the Patterns or Songs from the AN200, nor control the other device. For settings on the other device, refer to the relevant owner's manual. (For an example showing the AN200 as the master, see Tip 82.)

> ### 📖 Tech talK
> **Clock**
>
> Sets the AN200 to either send or receive MIDI clock messages. This determines whether the AN200 functions as the master or slave in MIDI sync applications. When using the AN200 alone or to control a connected device, set this to Internal (" int "). When controlling the AN200 from a connected device, set this to External ("ΕΞΕ"). Keep in mind, the Patterns or Songs cannot be started from the AN200 if this is set to External.
>
> Hold down [SHIFT] and press button [14] (MIDI SETUP), repeatedly if necessary, until "ΕLoᴴ" appears in the display, then use the [DATA] knob to make the desired setting.
>
> **Settings**
> int (Internal)
> *Sends MIDI clock messages, for controlling the sync of another device.*
>
> ΕΞΕ (External)
> *Receives MIDI clock messages, for syncing to another device.*

Tip 80 Changing the MIDI channels

In general, you won't need to fool with these settings. But they're here if you ever DO need them.

The four tracks of the AN200 — Synth and Rhythm 1 - 3 — are fixed to receive data over MIDI Channels 1 through 4, respectively. To match the tracks to a controlling MIDI keyboard or sequencer, you may have to change these settings. Each track also features an "off" setting, so you can disable a track's MIDI reception if you want.

Here, we'll show you how to change the MIDI Receive Channel for the Synth track. The Rhythm tracks can be changed in the same way.

1 Hold down [SHIFT] and press button [14] (MIDI SETUP), repeatedly if necessary, until "5 Ꭹ.ᴜ l" appears in the display.
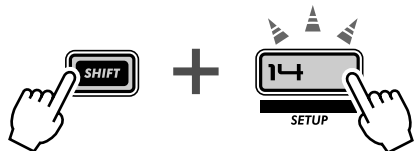
2 Change the channel with the [DATA] knob.

> ### 📖 Tech talK
> **MIDI Receive Channel — Synth Track, Rhythm Tracks 1 - 3**
>
> Determines the MIDI channel over which the appropriate track receives MIDI data. Make sure the Receive Channel of the desired track matches the Transmit Channel setting on the controlling keyboard or sequencer.
>
> Hold down [SHIFT] and press button [14], repeatedly if necessary, until the desired setting is shown:
>
> "5 Ꭹ.ᴜ l" — Synth Track (set to default of Channel 1)
> "r ιᴜ2" — Rhythm Track 1 (set to default of Channel 2)
> "r ιᴜ3" — Rhythm Track 1 (set to default of Channel 3)
> "r ιᴜᴴ" — Rhythm Track 1 (set to default of Channel 4)
>
> Use the [DATA] knob to change the value. The "- - - - " setting corresponds to "off."
>
> **Settings**
> 1 — 16, "- - - - " (off)

Tip *81* Loopfactory setup – with the SU200

As part of Yamaha's new Loopfactory series, the AN200 is not just a great analog-style synthesizer — it also excels in loop-based music production systems. In this Tip and the ones that follow, we'll take a look at some of ways you can use the powerful and versatile Loopfactory line to shake up the dance floor.

In this simple setup, the AN200 is paired with the SU200 Sampling Unit — a small phrase sampler with a special Loop Track feature that time-stretches your samples and keeps them all in sync.

Here, the AN200 is the controlling "master" and the SU200 is the "slave." (For more about masters and slaves, see Tips 79 and 82.) Make sure you set the SU200 to External Sync for this one (MIDI Clock in the Job mode). Naturally, the AN200 must be set to Internal Sync (page 96).
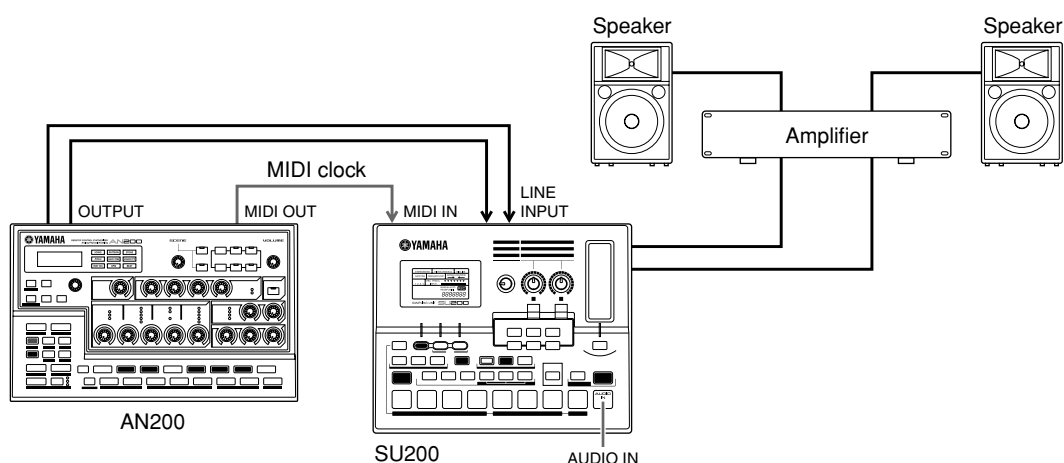
With this playback sync system, you can have the samples on the SU200 sync up perfectly to the Patterns of the AN200 — thanks to Loop Track Play. Use the the AN200 as a master "switch" for the whole system — starting the Patterns and the SU200 tracks simultaneously with the Start/Stop button. And as an added bonus, the SU200 serves double duty as an audio mixer — outputting the sound of both the AN200 and SU200.

Tip **82** **Loopfactory sync system – with the DX200**

In case you didn't know, the AN200 has a sister synthesizer — almost a twin sister, actually. The DX200 has many of the same sound-shaping controls, plus all of the Pattern and Song features that are found on the AN200.

Yet, as similar as these siblings are, their actual sound is VERY different. The DX200 is a recreation of the enormously popular DX7 synthesizer, and features a full implementation of the FM Synthesis system that powered the DX7 — not to mention a stunning array of incredibly dynamic digital FM Voices.

Side by side in a MIDI sequencing environment, these two give you the best of the analog and digital worlds, and provide an enormous amount of sonic versatility.

But even without a computer or sequencer, you can still get a lot out of these two units, especially in live performance situations — just hook them together and sync them up. With one as the "master" and the other the "slave," you can have them play their respective Patterns in perfect sync with each other. Add a DJ mixer, and you've got a compact yet powerful DJ setup for laying down some slammin' beats.

1 Connect the AN200 and the DX200 as shown.
Here, we'll use the AN200 as the "master," to control the DX200.
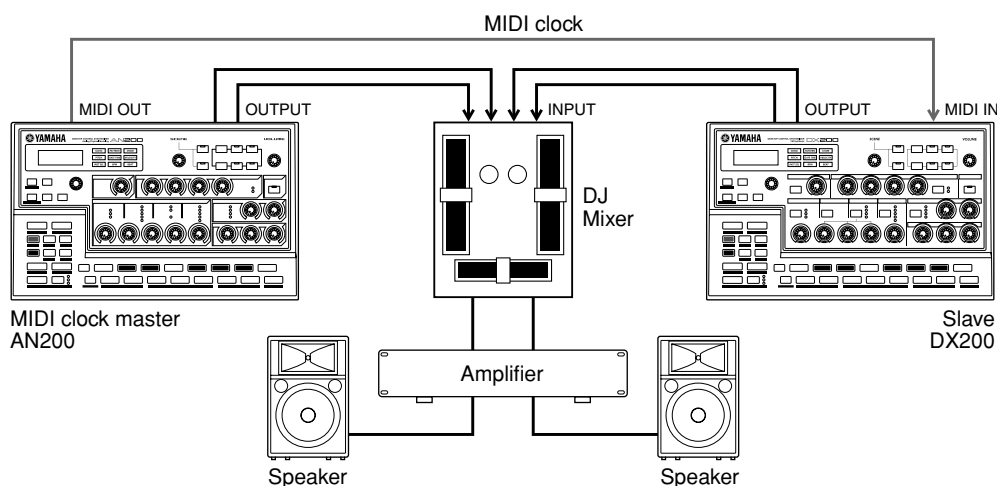
2 Set the Clock on the AN200 to Internal.
Hold down [SHIFT] and press button [14] (MIDI SETUP), repeatedly if necessary, until "$\mathcal{L} \mathcal{L} \sigma \mathcal{F}$" appears in the display. Use the [DATA] knob to select " $\iota \sigma \mathcal{E}$."

3 Set the Clock on the DX200 to External.
Move over to the DX200 now. Hold down [SHIFT] on the DX200's panel and press button [14] (MIDI SETUP), repeatedly if necessary, until "$\mathcal{L} \mathcal{L} \sigma \mathcal{F}$" appears in the display. Use the [DATA] knob to select "$\mathcal{E} \bar{z} \mathcal{E}$."

4 Select the desired Patterns on both the AN200 and the DX200.

5 Finally, press the Start/Stop button on the AN200.

If you've hooked everything up correctly and made the proper settings, both machines should go through their motions the instant you press Start/Stop on the AN200. Press it again, and they'll stop together on a dime.
Work the fader on your DJ mixer to switch between the two units as they play, to mix up your rhythms and create some truly happening tracks.

PoWer HintS

• **Syncing Songs**
  Naturally, you can also play Songs on both machines in perfect sync with each other. For best results, you should make sure that:

  * The Songs on both the AN200 and the DX200 are of the same length.
  * The Patterns on both machines work well with each other.
  * Both Songs have the same Beat settings throughout.
  * Both Songs don't deviate too much from each other in the Swing settings, either — unless you're aiming for some special, weird effects.

• **Bulk Send your music**
  To help out in the Power Hint above, try using the Bulk Send function (page 108) to transfer Songs between the AN200 and DX200. For example, program a Song on the AN200, then transfer just the Song data to the DX200. Keep in mind, this will keep your Songs in sync — however, the Patterns on the respective machines could be wildly different. If you want to keep everything consistent on both devices, Bulk Send ALL the data from one machine to the other.

Tip 83 Loopfactory sampling

Here's a nifty little variation on Tip 81 above. First, hook up the outputs of the AN200 and the SU200 to an external mixer — to pump the sounds out to the crowd. Then, use the Aux Send on the mixer to feed the AN200 sound to the sampling input on the SU200 — and sample the Patterns of the AN200.

To sample the AN200, route the mixer's Aux Send to the SU200's LINE INPUT.
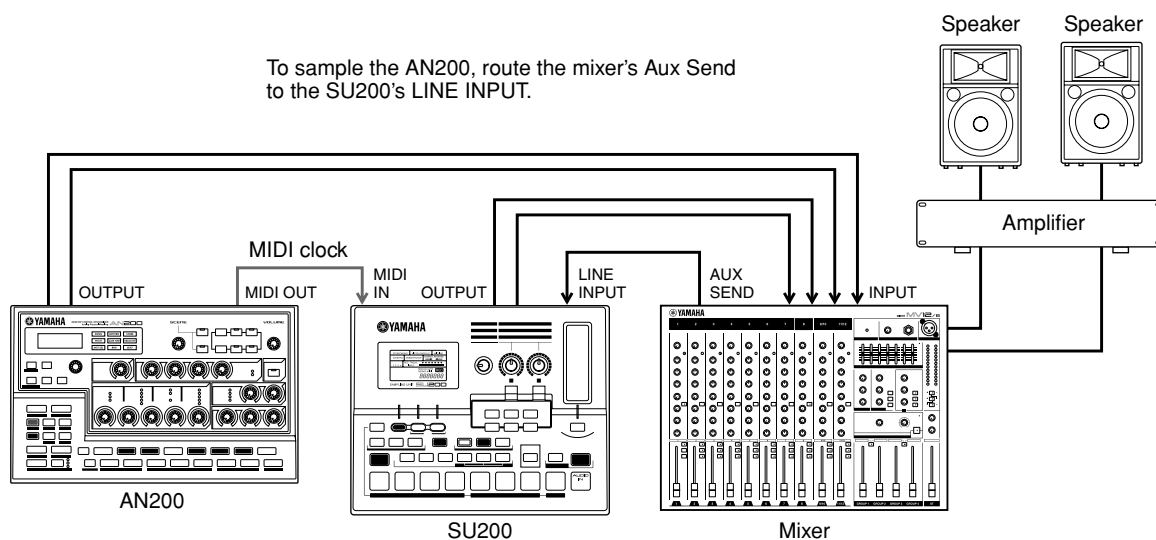
Things can get a little wild and wooly here. Naturally, this system lets you sync the SU200 to the AN200. However, the sampling function really makes this setup special. Sample some different AN200 Patterns to the SU200 and have the AN200 play one Pattern while you fly in samples of other Patterns — in perfect sync, of course. And use the real-time control features on BOTH machines to mess up your beats on the fly and create some chaos.

Be smart and do your sampling before you take the stage, so you have everything all set up. Or live dangerously, and sample your AN200 beats while you perform.

Tip *84* Full DJ system – turntable and all!

Bring the Loopfactory into your DJ setup — for the best of the analog and digital worlds. This builds on the setup in Tip 83 above by adding a turntable and/or CD player. (Make sure your turntable has line-level outputs, or that your mixer can boost phono signals.)

To sample, route the Aux Send to the SU200's LINE INPUT, and use the appropriate channel(s) on the mixer.

Speaker   Speaker

Amplifier

MIDI clock

OUTPUT   MIDI OUT   MIDI IN   OUTPUT   LINE INPUT   AUX SEND   INPUT

TAP   AN200

SU200

Mixer

LINE OUT

Turntable with line out or CD player
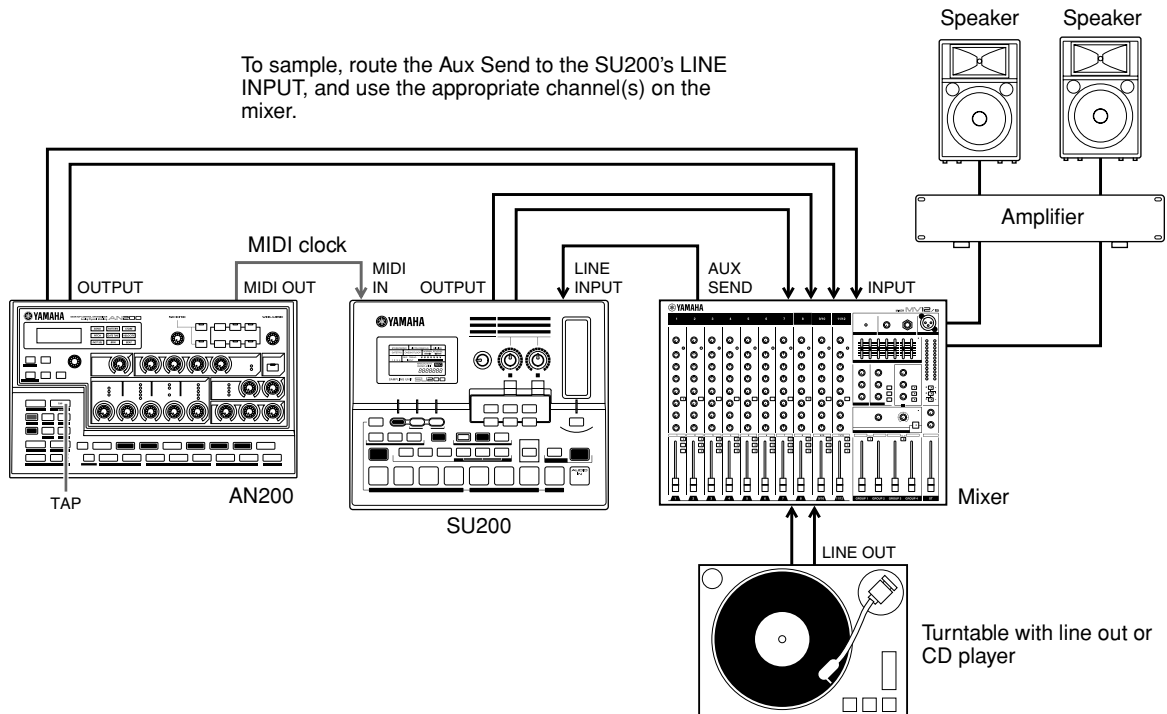
Use the Tap feature on the AN200 to sync both the AN200 and SU200 to your turntable beats. This is tricky to pull off — but if you get it in the groove, it can be pretty powerful stuff.

Do some sampling here, too. Sample your vinyl or CD beats to the SU200, and mix them in as you play. And sample the AN200, like you did in Tip 83. Have the AN200 play its Patterns while you fly in your new samples — without missing a beat.

Tip *85* Loopfactory megasetup – with MIDI Thru

Here's where you can take the Loopfactory to the max. Start the system with the RM1x Sequence Remixer, a mixer (you'll need at least eight input channels), and your AN200. Then bring the DX200 and SU200 into the fracas, and get things really smoking.

Use your sequencer data on the RM1x to play the Voices of the AN200 and DX200 (NOT the Patterns). This way you can take advantage of the special characteristics of each of these synthesizers — playing the analog sound of the AN200 in 5-note polyphony, and the FM synthesis sounds of the DX200 in 16-note polyphony. Plus, with the SU200 locked in sync, you can play the samples on that unit using the Loop Track feature — and keep everything right in the pocket.

MIDI clock   MIDI clock   MIDI clock

MIDI OUT   MIDI IN   MIDI OUT   MIDI IN   MIDI OUT   MIDI IN

MIDI center   OUTPUT
RM1x

AN200   OUTPUT   OUTPUT   DX200
MIDI Thru set to "*on*."   MIDI Thru set to "*on*."   OUTPUT   SU200

INPUT   INPUT

Amplifier

Speaker   Speaker

Mixer
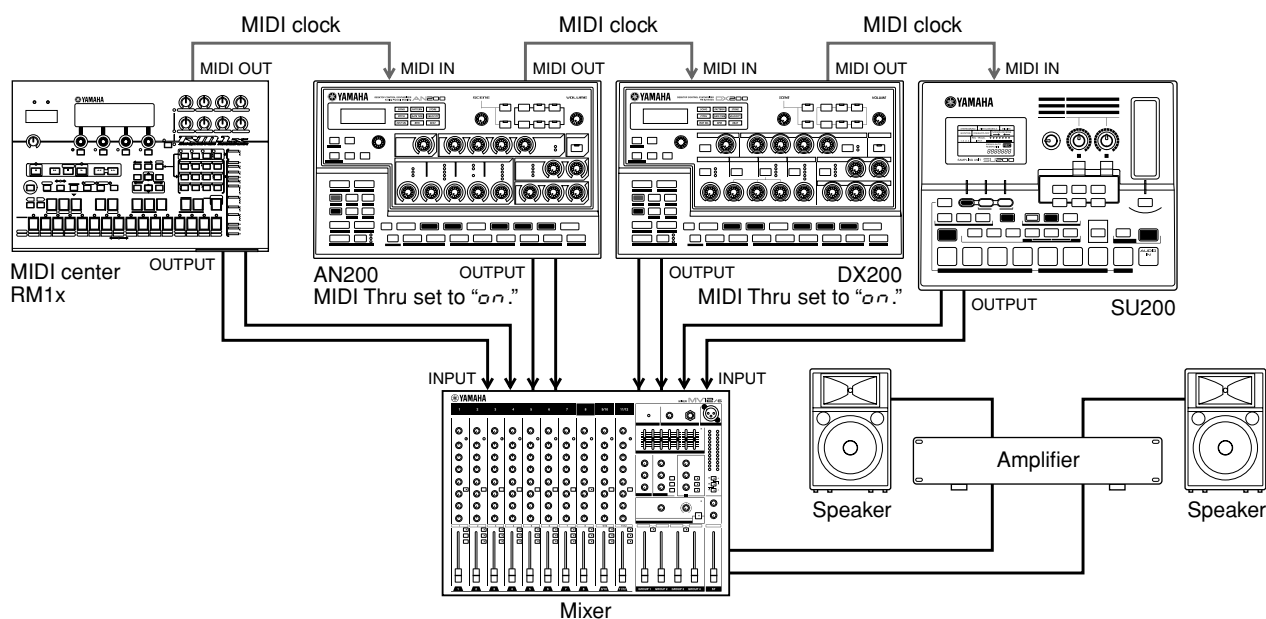
In this system, all the MIDI devices are connected in "daisy-chain" fashion. This setup trick can help when you find yourself with too many synthesizers — and not enough ways to connect them.

The key to making this work is the AN200's MIDI Thru function (see Tech Talk box below). MIDI Thru lets you change how the MIDI OUT terminal behaves, allowing you to chain together an additional tone generator or two to the AN200 — and have a connected computer or sequencer control the whole lot.

Make sure that you set MIDI Thru to "*on*" for BOTH the AN200 and the DX200. In this condition, any data sent to and received via the AN200's MIDI IN terminal, is immediately and directly relayed to the MIDI OUT terminal — allowing the DX200 and SU200 to be controlled by the RM1x.

PoWer HintS

• **Sampling madness**
For additional sonic mayhem, route the Aux Send on the mixer back to the SU200 input (as in Tips 83 and 84), and sample the Patterns of the AN200 and DX200.

• **The more, the merrier**
Naturally, if you have other synthesizers with MIDI THRU terminals, you can extend the chain and have them join in on the fun. However, be careful not to "daisy-chain" too many devices in this way — otherwise a MIDI delay may result.

• **More instruments, more parts**
If you're careful in setting the MIDI channels on all the connected devices, you can play several different, independent sounds on each device. For example, if you've connected a DX200 to the MIDI Thru (OUT) terminal, you should set the MIDI Receive Channels (page 97) on the DX200 to values different than the AN200. If the AN200 is set to receive over Channels 1, 2, 3, and 4, set the DX200 to receive over 5, 6, 7, and 8.

Tech talK

MIDI Thru

Determines whether the MIDI OUT terminal on the rear panel of the AN200 functions as a true MIDI Out, or is switched to function as MIDI Thru. When this is set to "on," any MIDI data received at MIDI IN is passed on without change to the MIDI OUT terminal. This allows you to connect other MIDI devices in"daisy-chain" fashion, and have the first device in the chain feed data to the others.

Hold down [SHIFT] and press button [14] (MIDI SETUP), repeatedly if necessary, until "*thru*" appears in the display. Use the [DATA] knob to change the setting.

Settings
On (*on*)
Enables MIDI Thru operation (for the MIDI OUT terminal).

Off (*oFF*)
Enables MIDI Out operation (for the MIDI OUT terminal).

Master Class 2 — Advanced Music Production

Take your skills up to the next level. Explore these advanced operations and applications — and get the absolute most out of your AN200 in your home studio.

Tip 86 Playing the AN200 as a synthesizer

The AN200 is an extremely powerful and versatile synthesizer, with truly vintage analog-like sound. And one of the best ways to harness that power is to hook up a MIDI keyboard. Do this, and explore the wealth of Voices and the full 5-note polyphony of the AN200.

Setting up the keyboard couldn't be easier — just plug it in, and connect the MIDI OUT on the keyboard to the MIDI IN on the AN200.

AN200

MIDI keyboard

MIDI IN   MIDI OUT
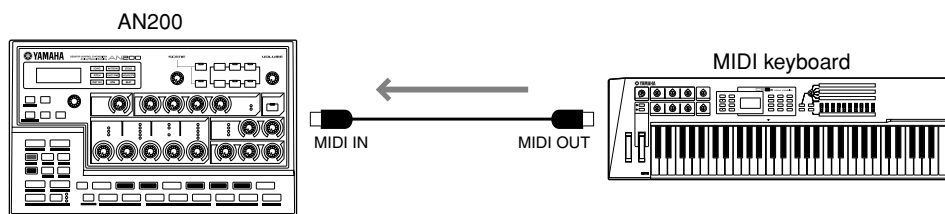
To check that everything's set up properly, play the keyboard — you should hear the synth sound of the AN200. (If you don't, see "X-tra Details" below.)

X-tra Details

- **MIDI Channels**
  More than likely, your MIDI keyboard is probably set to send data over channel 1 — which will let you play and record the Synth track.

  However, if you want to play or record any of the Rhythm tracks, you'll have to change the channel on the keyboard to match the appropriate track:

Rhythm Track 1 — MIDI channel 2
Rhythm Track 2 — MIDI channel 3
Rhythm Track 3 — MIDI channel 4

You can also change these assignments on the AN200 — see Tip 80. For instructions on changing the MIDI channel of the keyboard, refer to the owner's manual of that instrument.

PoWer HintS

- **What keyboard should I get?**
  Naturally, any MIDI keyboard will do the job for you. As long as it's got keys (preferably both black and white) and a MIDI OUT terminal, you're in business.

  However, to get the most out of your extraordinarily versatile AN200, you'll need an equally versatile MIDI keyboard. Here's what you should look for:

  * **Five-octave (61-key) keyboard** — There are some very good desk-top keyboards (such as the Yamaha CBX-K1) that have fewer keys, but you'll probably want at least five octaves to play with... so you can use both hands.

  * **Velocity sensitivity** — This feature lets you control the dynamics of the sound by how softly or strongly you play the keyboard. Plus, it also affects the FEG, so you can add some filter bite just by playing harder. If you want expressive sounding tracks, there's really no substitute for this.

* **After Touch** — Another expression control, After Touch lets you change the sound (most commonly LFO modulation; Tips 32 — 35) by pressing down hard on the keys after you play them. A really good keyboard will let you change the MIDI Control Change assignment on this, so you can control anything you want — such as Cutoff or Effect Depth (Wet). (For details on MIDI Control Change messages, refer to the MIDI Data Format section in the Appendix.)

* **Pitch Bend and Modulation wheels** — Most keyboards have these. Pitch Bend lets you bend the pitch (obviously). The Modulation wheel usually affects the LFO, but on a good keyboard this too can be changed.

* **Extra (assignable) MIDI controllers** — This is a luxury item. If you can afford it, go for it. Some keyboards (such as the Yamaha CS2x) give you an extra set of knobs or faders that you can assign to many of the AN200's controls. (For more about MIDI controllers, refer to the MIDI Data Format section in the Appendix.)

Tip 87 Recording to a sequencer

As a "desktop" synthesizer, the AN200 is absolutely perfect for computer recording applications. In fact, if you DON'T have a computer or a hardware sequencer, you're leaving a good portion of the AN200's incredible potential untapped.

You've already worked with the step sequencer on the AN200 itself for recording Patterns and Songs. However, with a separate sequencer or a computer, you can take advantage of even greater recording power and editing flexibility. Use one of the example setups below to record songs to a sequencer and play them back with the sounds of the AN200.

MIDI keyboard   MIDI OUT   MIDI IN   Computer with MIDI interface   MIDI OUT   MIDI IN   AN200

MIDI keyboard   MIDI OUT   MIDI IN   RM1x   MIDI OUT   MIDI IN   AN200
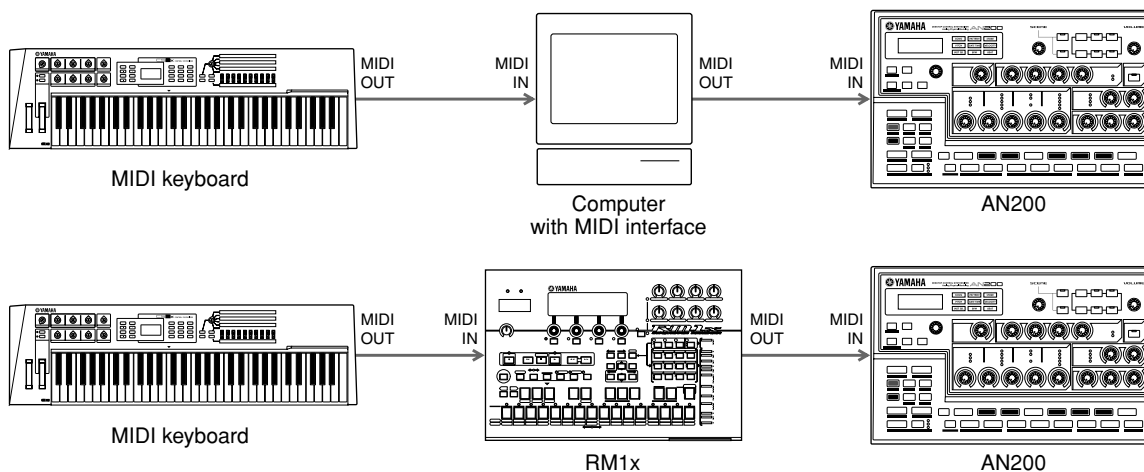
In the top example, the computer has a MIDI interface and is running sequencing software, such as XGworks lite — which you can find in the included CD-ROM. In the bottom example, the RM1x Sequence Remixer is used for recording.

A few important points:
- Make sure all MIDI connections are correct — the INs go to the OUTs, and the OUTs to the INs.
- Set the MIDI keyboard to match the receive channel of the AN200. (This may be controllable from the computer. You can also change the receive setting on the AN200; see page 97.)
- Make sure that MIDI Thru (or MIDI Echo) on the computer or sequencer is set to "on." This lets you hear the sound of the AN200 as you play the keyboard.
- Since the Synth Voices of the AN200 play on Channel 1, make sure that any recorded tracks on the sequencer are set to play via MIDI Channel 1.
- Remember that the AN200 has Rhythm tracks, and that you can use these in recording, too. Just be careful to make the correct channel settings. (The Rhythm tracks normally receive on Channels 2, 3, and 4. If you want to change these, see Tip 80.)

Other settings may be necessary as well; refer to the relevant owner's manuals.

Tip *88* Recording AN200 knob moves to a sequencer

Have you got an external sequencer or computer? And are you using the AN200 as a synthesizer (as we covered in Tip 86) to play back your sequencer tracks? If so, here's a power-user Tip for you that will give you undreamed-of control over the sound.

Here, you'll learn how to record all your knob moves and button presses to your sequencer. Which means when you play back your song, all the changes you make to the Voice automatically play back, too. It's like having an second Free EG function (page 60) — but with an unlimited amount of tracks to work with.

The following procedure is a bit complicated — in that many of the instructions depend on the settings and capabilities of your particular sequencer, and how familiar you are with them. If you find yourself in deep water, refer to the relevant owner's manual.

1 Connect the AN200 and the external sequencer as shown.
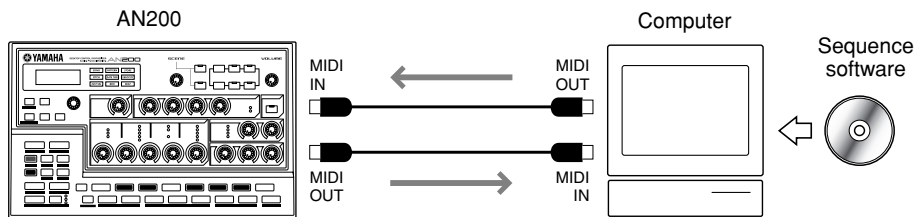
2 Set up the sequencer appropriately for receiving the control data and for playing the AN200.
Specifically, make sure that:
- All MIDI channel settings are correct. The tracks for playing the AN200 should be set to the same MIDI channel as the Synth track. By default, the Synth track is set to receive over Channel 1, though this can be changed on the AN200 (see page 97).
- The track or tracks having note data are properly set to play, and that a new track (for the knob moves) is set to record.

3 While listening to the playback, tweak the knobs of the AN200.
If everything's been set up properly, every move you make will be recorded as Control Change data. (For information on the parameters and their corresponding Control Change numbers, refer to the MIDI Data Format.)

The AN200 also lets you choose between having a full parameter set for control, or a limited one. (See Tech Talk below.)

4 Stop the song and play it back to hear your recorded changes.
Go on to record more knob moves to additional tracks on the sequencer, if you want.

X-tra Details
- Any function called "MIDI Thru" or "MIDI Echo" on the sequencer is set to "off." If the sequencer's MIDI Thru is on, you could get unwanted double data.
- If you're recording the same knob to different tracks, you may want to mute previous tracks as you go along. Also, be aware that too many knob moves and button presses could clog the data flow and result in glitches or undesirable changes in the sound.

Tech talk
Control Change In/Out

Determines whether the AN200 uses a limited set of parameters for sending and receiving Control Change data, or a full set. (For details on available parameters and their assignments, refer to the MIDI Data Format.)

Hold down [SHIFT] and press button [14] (MIDI SETUP), repeatedly if necessary, until "*CC io*" appears in the display. Use the [DATA] knob to change the setting.

Settings
norm (Normal)
Enables Control Change in/out for the limited parameter set.

ALL (All)
Enables Control Change in/out for the full parameter set.

Tip **89** **Editing the AN200 from a computer**

If you've worked through most or all of the Tips in this book, you can rightfully consider yourself a master programmer and expert user of the AN200.

Well, almost.

Actually, we hate to break it to you — but you've only scratched the surface of the enormous sound-shaping potential of the AN200...

This instrument is deep — much, much deeper than just what's available on the front panel. However, you can have all that editing power and depth right at your fingertips — with the AN200 Editor.

The AN200 Editor is special software that works on your Macintosh or PC-compatible computer. It allows you to directly edit all of the AN200 Voice settings and parameters — right from your computer. It's also extraordinarily intuitive, with a virtual front panel that gives you at-a-glance, full control over your AN200.
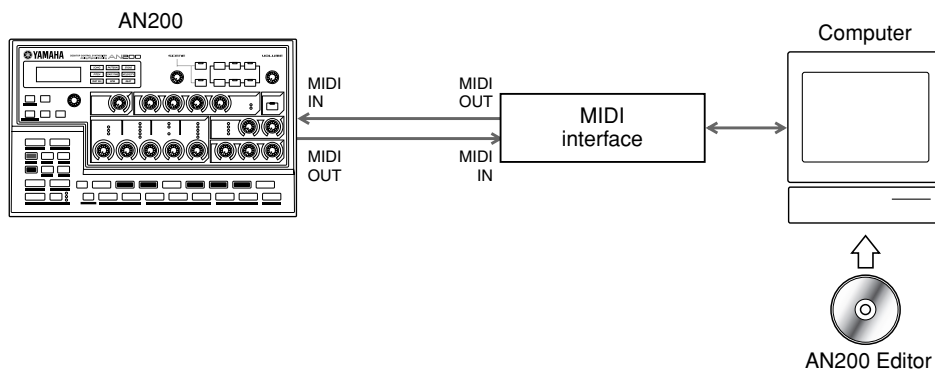
All the necessary software is contained in the included CD-ROM. For more information on installing the software to your particular computer, refer to page 112.

Tip *90* MIDI sequencer controls – Start, Continue, Stop

This function gives you detailed control over how the AN200 handles MIDI sequencer control messages — Start, Continue, and Stop.

The major use for this minor function is to keep the AN200 from starting its own Patterns (or from starting a connected sequencer). This comes in handy when using the AN200 strictly as a tone generator in a larger MIDI system.

For example, if you are using the song data on a sequencer to play the AN200's Voices, you wouldn't want the Patterns to play when you clicked PLAY. Similarly, there may be times when you want to play a Pattern on the AN200, yet want to avoid starting the sequencer at the same time.

1 With the AN200 properly connected in a MIDI system, call up the MIDI Control setting on the AN200.
Hold down [SHIFT] and press button [14] (MIDI SETUP), repeatedly if necessary, until "*NCtL*" appears in the display.

2 Use the [DATA] knob to make the desired setting: On, Out, In, or Off.

See "Tech Talk" below for details on the settings.

📖 *Tech talK*

MIDI Control

Determines whether or not the AN200 receives and/or sends sequencer control (System Real Time) messages. The Start message (FA hexadecimal) tells a MIDI device to go to the beginning of its song and start playing. Continue (FB hexadecimal) is similar to Start, except that the device will play from the current location — not necessarily the beginning. The Stop message (FC hexadecimal) tells the device to stop playing the song.

Hold down [SHIFT] and press button [14] (MIDI SETUP), repeatedly if necessary, until "*NCtL*" appears in the display, then use the [DATA] knob to make the desired setting.

Settings

on
Messages both sent and received; full control both directions.

out
Messages sent, but not received; AN200 starts and stops connected device, but cannot be remotely controlled .

in
Messages received, but not sent; AN200 can be remotely controlled, but will not affect connected device.

oFF
Messages neither sent nor received; no control either direction.

Tip 91 Saving Patterns and Songs to a MIDI data filer

Another fantastic thing about MIDI is all the data storage options it gives you. With the use of a MIDI data filer (such as the Yamaha MDF3) or MIDI sequencing software (such as the included XGworks lite), you can save all your valuable Song and User Pattern data for future recall — any time you need it. Plus, you can amass a whole library's worth of Songs and Patterns on just a few floppy disks.

The technological magic that makes this possible goes by the mundane name of "Bulk Send." In this Tip, you'll learn how to use Bulk Send to save your precious data. Then in Tip 92 below, you'll learn how to load it all back to the AN200.

1 Set up the AN200 and the recording device.
Connect the two as shown with a standard MIDI cable.

AN200

Send and save your
Song/Pattern data to
the connected device.

MIDI OUT   MIDI IN

Yamaha MDF3, or computer
with MIDI interface
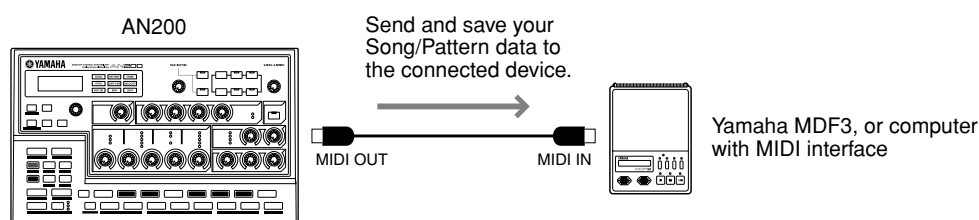
Setting up the other device for recording data may involve some additional steps; refer to the relevant owner's manual for details.

2 Call up the Bulk Send setting on the AN200.
Hold down [SHIFT] and press button [15] (MIDI BULK).

3 Select the type of data to be saved — Pattern, Song, or All.
Continue to hold [SHIFT] and press button [15] repeatedly to select the desired type. To save all three data types, select "*ALL*."

4 Go back to the connected device and start recording.
This operation too may differ depending on your particular device. On most sequencing software (such as XGworks lite), this can be as simple as clicking the Record button.

5 Execute the Bulk Send operation.
Press the flashing [15] button once to enable Bulk Send, then once more to actually start the operation. (To cancel, press [EXIT].)

Tech talk
Bulk Send

Allows you to save Pattern, Song, and/or System data of the AN200 to a MIDI data filer or sequencer.

Set up the AN200 and the recording device. Hold [SHIFT] and press button [15] (MIDI BULK), repeatedly if necessary, to select the desired data type. Start recording on the other device, then press [15] twice to send the data.

Settings

Pttn (Pattern)
Sends only User Pattern data (up to 128 Patterns) via MIDI OUT.

SonG (Song)
Sends only Song data (up to 10 Songs) via MIDI OUT.

ALL (All)
Sends all three types of data above (Pattern, Song, System) via MIDI OUT.

Tip **92 Loading back your saved Patterns and Songs**

Once you've saved your valuable data, you can bring it all back to your AN200 — with this simple operation.

1 Set up the AN200 and the recording device.
Connect the two as shown with a standard MIDI cable.

AN200

Load your Song/Pattern data from the connected device.

MIDI IN   MIDI OUT

Yamaha MDF3, or computer with MIDI interface
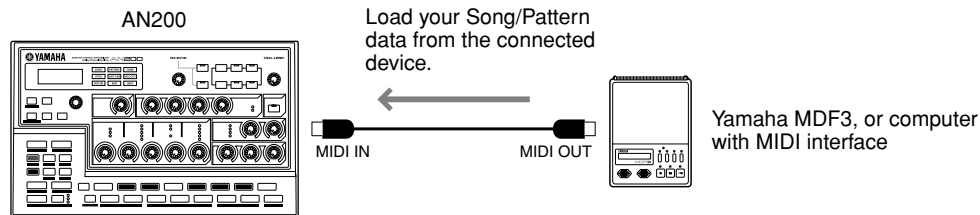
Make the proper connections and make sure the connected device has the appropriate data on disk. (Setup for Bulk Send on the other device may involve some additional steps; refer to the relevant owner's manual for details.)

2 Make sure the AN200 is set to Pattern mode.
Press the [PATTERN] button if necessary.

> ⚠ *CAUTION*
> **BEFORE you load anything to the AN200, make sure you have no important unsaved data remaining on the instrument — it will all be erased in the operation! Best thing to do is use Bulk Send to first save the existing data (as a temporary file), then go ahead and load the data.**

3 Start the Bulk Send (or other appropriate) operation on the connected device.
This operation too may differ depending on your particular device. On most sequencing software (such as XGworks lite), this can be as simple as clicking the Play button.

That's all there is to it! The AN200 automatically receives the data and loads it to the proper memory location.

PoWer HintS

• **Lifesaver for live applications**
Bulk Send is real handy for performers. If you're gigging and the AN200 is your main workhorse, you may need more than the 10 User Songs to get by. Fortunately, you can save your data in 10-Song banks (might as well save your Pattern data, too) — then load each bank as you need it, between sets.

• **Be a pack rat**
You really ought to save everything you've ever created on the AN200. Floppy disks are small and cheap, and you'll be glad you archived all your precious masterworks.

This index lets you quickly find information on the various functions and parameters of the AN200. All the references here are to Tip numbers, except for a few page references (for Tips that stretch over several pages).

About the Included CD-ROM

For Windows Me/98/95 Users

This CD-ROM contains the following;

• **Acrobat Reader 4.0**
• **XGworks lite**
• **AN200 Editor**
  XGworks lite Plug-in software
• **PLG150-AN Preset Voice Files**
  These are Preset Voice Files for the PLG150-AN. These are compatible with the AN200, so can be edited with the AN200 Editor.
  File names are "PlgAnP1.AN2" and "PlgAnP2.AN2."

> **NOTE** Some voices of the PLG150-AN may sound different when played on the AN200.

Minimum System Requirement

XGworks lite V3.0A

OS:	Windows Me/98/95
CPU:	Pentium/75MHz or faster (Pentium/166MHz or faster is recommended)
Available Memory:	16MB or more (32MB or more is recommended)
Free space in Hard Disk:	30MB or more
Display:	800 x 600, 256 colors or more

Installing Softwares

■ Acrobat Reader 4.0 • • • • • • • • • • • • • • • •
You need to install Acrobat Reader to view the PDF manuals accompanied with each application in advance.

> **NOTE** If you have installed an older version of Acrobat Reader on your PC, first you need to execute "Uninstall" before proceeding.

1 Double-click on the "Acroread" folder.
  Four different language folders will be displayed.

2 Select the language you want to use and double-click on its folder.
  "ar40***.exe" file will be displayed. ("***" indicates the selected language.)

3 Double-click on the "ar40*.exe."**
  Acrobat Reader Setup Dialog box will be displayed.

4 Execute the installation by following the directions appearing on the screen.

After completing the installation procedure, you will find the Acrobat folder on your PC (Program Files as the default).
Refer to the [Reader Guide] in the [Help] menu how to use the Acrobat Reader.

■ XGworks lite •
In addition to sequencer function, XGworks lite can be used as convenient voice editors once the Plug-in applications mentioned below are installed.

> **NOTE** PDF manual of the XGworks lite (entry version) is the same as the one for the XGworks. Please be aware that some of the windows/functions described in the manual are not available with the XGworks lite. Unavailable Windows/Functions Staff Window, Drum Window, Control section of Piano Roll Window, Printing of Staff Window, Plug-in software (Voice To score R, Auto Arranger, Guitar Arranger, SW1000XG Mixer, Auto Play, Importer) Jobs (Voice To score, XF Information Editor)

> **IMPORTANT** Although the PDF manual of the XGworks lite includes the explanations on the package contents and software installation procedure, those are obsolete. Please refer to those of this Installation Guide.

1 Double-click on the "XGworks" folder.
  "Japanese" and "International" folders will be displayed.

2 Double-click on the "International" folder.
  Various files like "Setup.exe" will be displayed.

3 Double-click on the "Setup.exe."
  XGworks lite Ver.3.0 Setup Dialog box will be displayed.

4 Execute the installation by following the directions appearing on the screen.

After the installation, select <Restart>.
After restarting the Windows, you will find the YAMAHA folder on your PC (Program Files as the default) and XGworksLite folder in the YAMAHA folder.
Refer to the "XGworks Manual" (XGworks.pdf) and online manuals how to use the application.

■ AN200 Editor •
You can use the AN200 Editor Plug-in applications of XGworks lite to edit the Patterns of the AN200.

1 Double-click on the "Plug" folder.
  Various files like "Setup.exe" will be displayed.

2 Double-click on the "Setup.exe."
  YAMAHA AN200 Editor Setup Dialog box will be displayed.

3 Execute the installation by following the directions appearing on the screen.

After completing the installation procedure, you will find the AN200 Editor Plug-in software in the "XGworksLite" folder and find that AN200 Editor Plug-in application is added to the [Plug-in] menu on the XGworks lite.
Refer to the online help/PDFmanuals how to use the application.

For Macintosh Users

This CD-ROM contains the following;

The CD-ROM includes two folders: "Internatiotal" and "Japanese."

Double-click on the "International" folder to open it. You will find a variety of applications and data files packed in the following four folders.

- **Acrobat Reader 4.0**
- **Open Music System (OMS) 2.3.8**
- **AN200 Editor**
- **PLG150-AN Preset Voice Files**
  These are Preset Voice Files for the PLG150-AN. These are compatible with the AN200, so can be edited with the AN200 Editor.
  File names are "PlgAnP1.AN2" and "PlgAnP2.AN2."

> NOTE — Some voices of the PLG150-AN may sound different when played on the AN200.

Minimum System Requirement

AN200 Editor

OS:	Mac OS8.0 to 9.04
CPU:	PowerPC604, 100MHz or faster (G3, 300MHz or faster is recommended)
Available memory:	15MB or more
Free space in Hard Disk:	8MB or more (excluding the OMS)
Display:	800 x 600, 256 colors or more

Installing Softwares

■ Acrobat Reader 4.0 ••••••••••••••••••
You need to install Acrobat Reader to view the PDF manuals accompanied with each application in advance.

1 Double-click on the "Acrobat" folder.
Three different language folders will be displayed: English, German and French.

2 Select the language you want to use and double-click on its folder.
"Reader Installer" will be displayed.
The Installer name may differ depending on the language you select.

3 Double-click on the "Reader Installer."
Acrobat Reader Setup Dialog will be displayed.

4 Execute the installation by following the directions appearing on the screen.

After the installation, you will find the "Adobe Acrobat" folder

on your computer (Hard Disk as the default).
Refer to the [Reader Guide] in the [Help] menu how to use the Acrobat Reader.

■ Open Music System (OMS) 2.3.8 •••••••••
OMS allows you to use several MIDI applications on the Mac OS at the same time.

1 Double-click on the "OMS" folder (English version only).
"Install OMS 2.3.8" will be displayed.

2 Double-click on the "Install OMS 2.3.8." OMS Setup Dialog will be displayed.

3 Execute the installation by following the directions appearing on the screen.
After the installation, select <Restart>.
After restarting the Macintosh, you will find the "Opcode"/ "OMS Applications" folder on your computer (Hard Disk as the default).

4 Copy the "OMS_2.3_Mac.pdf" in the "OMS" folder in the CD-ROM to the "OMS Applications" folder by drag & drop operation.
Refer to the "OMS_2.3_Mac.pdf" (English version only) how to use the application.

5 Copy the "OMS Setup for YAMAHA" folder in the "OMS" folder in the CD-ROM to the hard disk on your computer by drag & drop operation. In the "OMS Setup for YAMAHA" folder you will find the OMS Setup files for the AN200 Desktop Control Synthesizer, which you can use them as the template.

■ AN200 Editor ••••••••••••••••••••••••
AN200 Editor allows you to edit the AN200 Patterns on your computer.

1 Double-click on the "AN200 Editor" folder.
"Install AN200 Editor" will be displayed.

2 Double-click on the "Install AN200 Editor."
AN200 Installation Dialog will be displayed.

3 Execute the installation by following the directions appearing on the screen.

After the installation, you will find the "AN200 Editor for Macintosh" folder on your computer (Hard Disk as the default).If you use French or German MacOS, French or German manual are automatically installed.
Refer to the "AN200Editor.pdf" in the same folder how to use the application.

1.FUNCTIONS

Tone Generator Analog Physical Modeling
(2VCO(Osc.Sync, FM), Noise, RingMod., Filter(FEG), Amp(AEG),
2LFO, PEG) + AWM2

Timber	1 (AN) + 3 (AWM2) parts
Polyphony	5 (AN) + 32 (AWM2) Notes
Effector	Distortion, 3-Band EQ (only AN) + 1 Effector (Tempo Delay/Reverb, Flanger/Chorus, Phaser, Amp.Simulator)
Pattern	Preset Pattern x 256, User Pattern x 128
Scene	2 Scene/Pattern
Step Sequencer	MIDI Sync, MIDI Transmit
Others	Free EG (4 tracks)

2.CONTROLLERS

Sound Control Knob   x 16
(Cutoff/Filter Type, Resonance, FEG Depth, VCO1/2 Balance, FM
Depth, Sync Pitch, Noise Level, EG Attack, EG Decay, EG Sustain,
EG Release, Portamento Time, Effect Param/Pan, Effect Wet/Vol,
LFO Speed, Scene Control)

Master Volume Knob   x 1

Rotary Encorder   x 1

3.PANEL SWITCHES

Sound Control Sw.   x 8
(LFO Detail, Key Assign, VCO1 Wave, Sync Mode, VCO2 Wave,
Effect Type, EG Select, Dist Sw)
Scene x 2, Sequencer. Sw x 2, Mode x 2, Pattern Select x 1,
Keyboard Mode x 1, Step Select x 16, Step Group Select x 2,
Track Select x 2, Play Effect x 2, Octave x 2, Tap Tempo x 1,
Free EG Sw. x 4, Free EG Mode x 1, Free EG Length x 1, Store x 1,
Show Value x 1, Shift x 1, Exit x 1

4.DISPLAY

7SEG LED   x 4

5.CONNECTORS

OUTPUT L(MONO)/R	Phone x 2
MIDI IN/OUT	Din x 2
DC IN	
PHONES	Stereo phone

6.MAXIMUM OUTPUT LEVEL

Phones	+0.5dBm (33ohm)
Stereo Output	+9.0dBm (10kohm)

7.DIMENSIONS,WEIGHT

338.0(W) x 208.9(D) x 51.7(H) mm, 1600 g

8.ACCESSORIES

CD ROM (for Windows and Macintosh)   x 1
Owner's Manual   x 1
AC Adaptor   x 1
(Power supply recommendation may vary from country to country.
Please check with your nearest Yamaha dealer for further details.)

- Specifications and descriptions in this owner's manual are for information purposes only. Yamaha Corp. reserves the right to change or modify products or specifications at any time without prior notice. Since specifications, equipment or options may not be the same in every locale, please check with your Yamaha dealer.

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Display indication	Message	Comment
Err 1 (flashes)	Battery Low	This appears when the voltage of the internal backup battery becomes low. Have the battery replaced by your local Yamaha dealer or any Yamaha-authorized service personnel.
Err2 (flashes)	MIDI Buffer Full	This appears when too much MIDI data has been received at one time, causing the unit to stop processing data.
Err3 (flashes)	MIDI Data Error	This appears when the received MIDI data is incorrect or contains errors.
Err4 (flashes)	MIDI Checksum Error	This appears when checksum of the received System Exclusive data is incorrect.

Troubleshooting

Problem	Possible cause/Solution
No power.	Is the adaptor properly plugged into both the AN200 and the AC outlet? (Page 11)
No sound.	• Is the panel volume control set to an appropriate level? • Are other volume-related parameters set to appropriate levels? (Page 39) • Is the EG Attack Time appropriately short, for short percus-sive sounds? (Page 46) • Is the Velocity of keyboard is appropriate? (Page 21)
No sound from a particular track.	• Is the track set to a proper Volume? (Page 39) • Is the Track Mute setting appropriate? In other words, is the track unmuted? (Page 37) • Are all recorded steps on? (Step Mute, page 38) • Is Cutoff set to a proper level? (Page 27)
No sound when playing the keyboard.	Is the [KEYBOARD] button lit? If not press it to enable the keyboard. (Page 20)
No sound when playing a connected MIDI keyboard or other device.	• Have you connected the MIDI cables properly? • Are all MIDI channel settings appropriate? (Page 97)
The knobs and other Voice controls have no effect on the sound.	• Is the Synth track selected? (If one of the Rhythm tracks is selected, some knobs may affect the Rhythm sound instead.) • Is the Step Edit mode active? In other words, are either of the buttons [STEP 1-8] or [STEP 9-16] on? (If so, turning some of the knobs may unexpectedly change some of the recorded steps.) (Page 73)
The Sequence doesn't play back.	• Is Show Value active? (Page 31) Is Original Value active? (Page 32) Make sure these are off. • Have you selected any of these modes — Pattern Job, MIDI Setup, or Utility? • When syncing to another MIDI device, have you made sure that the MIDI connections and relevant settings are correct? (Page 96) • Is the MIDI clock set to "Internal"? (Page 97)
Recording (either Sequence or Free EG) doesn't work.	Is the Pattern mode active? Press [PATTERN] to make sure you're in Pattern mode.
Free EG tracks can't be recorded.	Are any of the Free EG tracks selected (on)? (Page 60)
Turning Free EG tracks on or off has no effect.	Is the Synth track selected?
The length of the notes of the Sequence sounds wrong.	Has the playback Gate Time been set to a value other than "100"? (Page 35)
The pitch of the Sequence sounds wrong.	Has the Transpose Pattern setting been changed? Call up this function to check the value, and change it if necessary. (Page 66)
When playing by the external sequencer, the Step Sequencer of the AN200 starts.	Is the MIDI control set to "Out" or "Off"? (Page 107)
When playing the AN200 by the AN200 Editor, the Step Sequencer of the AN200 does not play correctly even if pressing the [PLAY] button.	• Is the MIDI control set to "On" or "In"? (Page 107) • Is the MIDI clock set to "Internal"? (Page 97)
The bulk data cannot be received by the AN200 Editor.	Are the MIDI IN/OUT jacks of the AN200 and the MIDI OUT/IN jacks of the computer (or MIDI interface) are properly connected? (Page 106)

Analog Physical Modeling Synthesis and the AN200

At the heart of the AN200's stunning, dynamic analog-like sound is a highly sophisticated and versatile tone generating method — the Analog Physical Modeling Synthesis system.

We won't try to explain how Analog Physical Modeling works — that would take several pages. Besides, you can hear for yourself the enormous power and punch this system delivers. In this section, we'll just briefly outline the structure of the AN200, and show you what happens to the sound within the AN200 system as it's generated, processed and enhanced.

■ Oscillators, Filters and Amplifiers ••••••••••••••••••••••••••••••••

Very simply, there are three basic elements of sound: pitch, tone (or timbre) and volume (or "amplitude" in synth-speak). Within the AN200, these three elements are created or controlled by the VCO (oscillator), VCF (filter), and VCA (amplifier).

```
VCO ──► VCF ──► VCA ──►OUT
 │       │       │
 │       │       └─ The amplifier determines the volume
 │       └─ The filter controls the timbre
 └─ The oscillator creates the source pitch
    (and also the basic timbre, depending on the waveform)
```
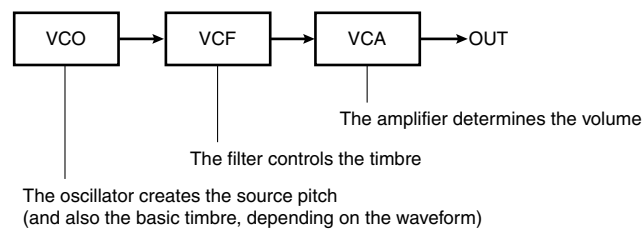
And that's basically how the AN200 creates sound. Of course, there are a few other elements in the system — as you can see here:
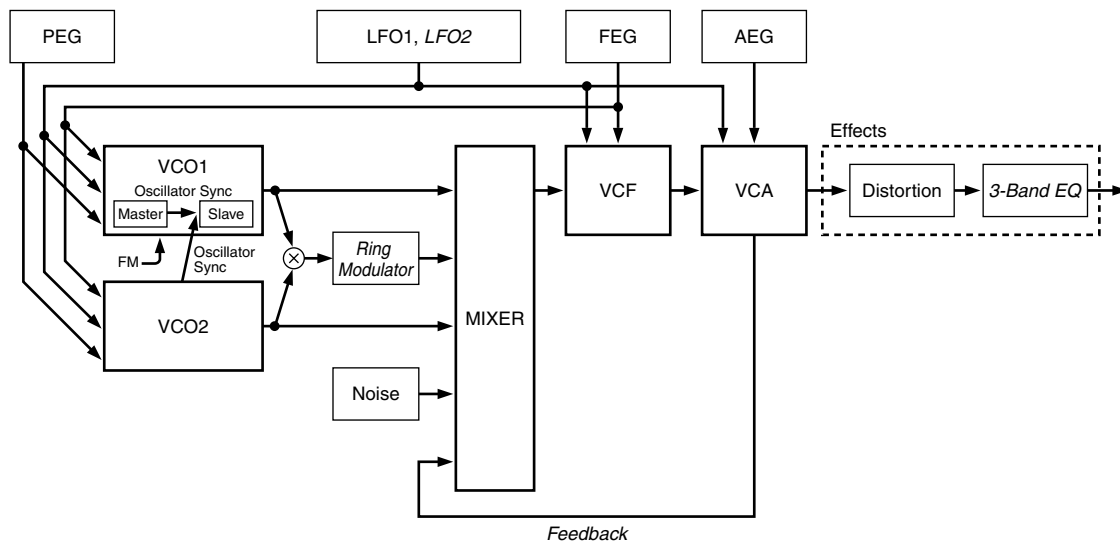
NOTE Control blocks in italics are functions that can only be changed or adjusted by using the included AN200 Editor software. They cannot be controlled from the panel of the AN200 itself.

■ VCO 1 and VCO 2 •

Here is where the sound begins. The **VCO** generates a waveform — usually relatively simple ones, such as sine, saw, and square waves. The AN200 features two independent VCOs, each with an extensive wave set, providing sound-creating capabilities that are exceptionally complex and flexible — for a dynamic, rich sound that would be impossible with just one VCO. (Also see Tips 42, 44, and 46.)

What's more, VCO 1 is actually made up of two oscillators, which can be configured as "master" and "slave." Plus, VCO 2 can be used to modulate VCO 1, for even greater sonic complexity.

The **PEG block** (Tip 36) is used to control how the pitches of the VCOs change over time. **LFOs 1 and 2** (Tips 32 - 35) are modulation waves that can be routed not only to the VCO but the VCF and VCA blocks as well — for creating a variety of special tremolo, wah, and vibrato effects.

■ VCF •

Here's where the sound is processed. The **VCF** takes the sound of the VCOs and filters out certain frequency ranges. The more complex the sound generated by the VCOs, the greater the sound-shaping potential of this section.

VCF includes a comprehensive set of different filter types (such as Low Pass, High Pass, Band Pass, and Band Eliminate), and provides controls for adjusting the Cutoff frequency of the filter, and the Resonance (or emphasis) of the frequency cutoff point. (Also see Tips 18 - 20.)

The **FEG block** (Tip 37) is used to control how the filter of the VCF changes over time. A special FEG Depth control (Tips 20, 38, and 39) also affects VCF operation.

■ VCA •

Finally, here's where the sound level is controlled. The **VCA** (controlled over time by the **AEG block**; see Tip 36) outputs the sound, before it is sent to the **Effect block** for more processing. (Also see Tips 15 - 17.)

MIDI Data Format

1. Channel messages

1.1 Note on/note off

These messages convey keyboard performance data.

Range of note numbers transmitted and received = C-2...G8
Velocity range = 1...127 (Velocity is received only for note-on)

1.2 Control changes

These messages convey control operation information for volume or pan etc.
Their functions are differentiated by the control number (Ctrl#).

1.2.1 Bank Select
This message selects the voice bank.

Control#	Parameter	Data Range
0	Bank Select MSB	0...127
32	Bank Select LSB	0...127

The Bank Select data will be processed only after a Program Change is received, and then voice bank will change at that time. If you wish to change the voice bank as well as the voice, you must transmit Bank Select and Program Change messages as a set, in the following order: Bank Select MSB, LSB, and Program Change.

1.2.2 Modulation
This message controls the depth of modulation.

Control#	Parameter	Data Range
1	Modulation	0...127

1.2.3 Portamento Time
This message controls the degree of Portamento (see 1.2.9).

Control#	Parameter	Data Range
5	Portamento Time	0...127

A value of 0 is no effect, and 127 is the longest Portamento time. No effect in Rhythm tracks.

1.2.4 Data Entry
This message sets the value of the parameter which was specified by RPN (see 1.2.17) and NRPN (see 1.2.16) (Rhythm Track only).

Control#	Parameter	Data Range
6	Data Entry MSB	0...127
38	Data Entry LSB	0...127

1.2.5 Main Volume
This message controls the volume of each part. (It is used to adjust the volume balance between parts.)

Control#	Parameter	Data Range
7	Main Volume	0...127

With a value of 0 there will be no sound, and a value of 127 will produce the maximum volume.

1.2.6 Panpot
This message controls the panning (stereo location) of each part.

Control#	Parameter	Data Range
10	Pan	0...64...127

0 is left, 64 is center, and 127 is right.

1.2.7 Expression
This message controls expression for each part. (It is used to create volume changes during a song.)

Control#	Parameter	Data Range
1l	Expression	0...127

1.2.8 Hold1
This message controls sustain pedal on/off.

Control#	Parameter	Data Range
64	Hold1	0...63, 64...127 (OFF, ON)

When this is ON, currently-sounding notes will continue to sound even if note-off messages are received.

1.2.9 Portamento
This message controls Portamento pedal on/off.

Control#	Parameter	Data Range
65	Portamento	0...63, 64...127 (OFF, ON)

When ON, Portamento produces a smooth glide connecting two notes of different pitch. The time over which the pitch changes is adjusted by Portamento Time (see 1.2.3). No effect in Rhythm tracks.

1.2.10 Harmonic Content
This message adjusts the resonance of the filter that is specified for the sound.

Control#	Parameter	Data Range	
71	Harmonic Content	0...127	Synth Track only
		0...64...127 (-64...0...+63)	Rhythm Track only

Since this is a relative change parameter in Rhythm track, it specifies an increase or decrease relative to 64. Higher values will produce a more distinctive sound.
For some sounds, the effective range may be less than the possible range of settings.

1.2.11 Release Time
This message adjusts the EG release time that was specified by the sound data.

Control#	Parameter	Data Range	
72	Release Time	0...127	Synth Track only
		0...64...127 (-64...0...+63)	Rhythm Track only

Since this is a relative change parameter in Rhythm track, it specifies an increase or decrease relative to 64. Increasing this value will lengthen the release time that follows a note-off.

1.2.12 Attack Time
This message adjusts the EG attack time that was specified by the sound data.

Control#	Parameter	Data Range	
73	Attack Time	0...127	Synth Track only
		0...64...127 (-64...0...+63)	Rhythm Track only

Since this is a relative change parameter in Rhythm track, it specifies an increase or decrease relative to 64. Increasing this value will make the attack more gradual, and decreasing this value will make the attack sharper.

1.2.13 Brightness
This message adjusts the cutoff frequency of the low pass filter specified by the sound data.

Control#	Parameter	Data Range	
74	Brightness	0...127	Synth Track only
		0...64...127 (-64...0...+63)	Rhythm Track only

Since this is a relative change parameter in Rhythm track, it specifies an increase or decrease relative to 64. Lower values will produce a more mellow sound.
For some sounds, the effective range may be less than the possible range of settings.

1.2.14 Decay Time
This message adjusts the EG decay time that was specified by sound data.

Control#	Parameter	Data Range	
75	Decay Time	0...127	Synth Track only

It determines how long it takes for the sound changes from maximum level to sustain level.

1.2.15 Effect4 Depth
This message adjusts the Send level to Effect.

Control#	Parameter	Data Range
94	Effect4 Depth	0...127

Increasing this value will more effective.

1.2.16 NRPN (Non-registered parameter number)
Use NRPN MSB and NRPN LSB to specify the parameter that you wish to modify, and then use Data Entry (see 1.2.4) to set the value for the specified parameter. (Rhythm Track only).

NRPN MSB LSB	Data Entry*1 MSB LSB	Parameter Name and Data Range
18H rrH	mm --	Drum Instrument Pitch Coarse rr : drum instrument note number mm : 00H - 40H - 7FH (-64...0...+63)

*1 See 1.2.4

1.2.17 RPN (Registered parameter number)
Use RPN MSB and RPN LSB to specify the parameter that you wish to modify.

RPN MSB LSB	Data Entry *1 MSB LSB	Parameter Name and Value Range
7FH 7FH	-- --	RPN Null This empties settings from RPN and NRPN numbers. Internal data is not affected.

*1 See 1.2.4

1.2.18 Others
If the Control Change IN/OUT = ALL, all following Control Change Number are transmitted and received.
If the Control Change IN/OUT = NORM, the following Control Change Number in ▨ are transmitted and received.

category	param	CC#		
		SYNTH	RHYTHM	
SCENE	scene	3	-	
LFO	wave	15	-	
	pmd	18	-	*
	pmd2	57	-	
	fmd	19	-	*
	amd	80	-	
	speed	16	-	*
AEG	attack	73*	-	
	decay	75*	-	
	sustain	31	-	
	release	72*	-	
FEG	attack	82	-	
	decay	83	-	
	sustain	28	-	
	release	29	-	
Common	key assign	8	-	
		9	-	
	portamento	5*	-	
VCO1	wave	50	-	*
SYNC	mode	34	-	
VCO2	wave	51	-	*

category	param	CC#	
		SYNTH	**RHYTHM**
misc	vco 1/2	68	-
	fm depth	35	-
	sync pitch	22	-
	noise level	39	-
EFFECT	type	88	-
		89	-
	param	48	-
	wet (send)	94	94
DISTORTION	switch	49	-
VCF	cutoff	74*	
			74*
	filter type	59	-
	resonance	71*	
			71*
	FEG depth	81	-
MIXER	pan	10*	10*
	volume	7*	7*

(EFFECT param row and DISTORTION switch row marked with *)

1.3 Channel mode messages

These messages specify the basic operation of a part.

1.3.1 All Sound Off
This message silences all notes being played on the corresponding channel.
However, channel messages such as Note-on and Hold-on will be maintained in their present state.

Control#	Parameter	Data Range
120	All Sound Off	0

1.3.2 Reset All Controllers
This message changes the settings of the following controllers.

Controller	Value
Pitch bend change	±0 (Center)
Channel pressure	0 (OFF)
Modulation	0 (OFF)
Expression	127 (Max.)
Hold	0 (OFF)
Portamento	0 (OFF)

The following data is not changed
Parameter values specified for program change, bank select MSB/LSB, volume, pan, effect send level 4.

Control#	Parameter	Data Range
121	Reset All Controllers	0

1.3.3 All Note Off
This message turns off all notes which are currently on for the corresponding part.
However, if Hold 1 or Sostenuto are on, notes will continue to sound until these are turned off.

Control#	Parameter	Data Range
123	All Note Off	0

1.3.4 Omni Off
Works the same as when All Note Off is received.

Control#	Parameter	Data Range
124	Omni Off	0

1.3.5 Omni On
Works the same as when All Note Off is received.

Control#	Parameter	Data Range
125	Omni On	0

1.3.6 Mono
Works the same as when All Sound Off is received, and if the value (mono number) is in the range of 0... 16, sets the corresponding channel to Mode4* (m = 1).

Control#	Parameter	Data Range
126	Mono	0 ... 16

* Mode4 is a state in which only channel messages on the specified channel will be received, and notes will be played individually (monophonically).

1.3.7 Poly
Works the same as when All Sound Off is received, and sets the corresponding channel to Mode3*.

Control#	Parameter	Data Range
127	Poly	0

* Mode3 is when channel messages will be received only on the specified channel, and notes will be sounded polyphonically.

1.4 Program change
This message is used to switch voices.
It changes the program number on the receiving channel. When the change is to include the voice bank, transmit the program change after sending the Bank Select message (see 1.2.1).

1.5 Pitch bend
This message conveys information on pitch bend operations.

1.6 Channel aftertouch
This message conveys the pressure after the key is played on the keyboard (for an entire MIDI channel). The pressure can be controlled for each part. This message will affect the notes currently playing.

2. System exclusive messages

2.1 Parameter changes
This device uses the following parameter changes.
[UNIVERSAL REALTIME MESSAGE]
   1) Master Volume

[UNIVERSAL NON REALTIME MESSAGE]
   1) Identity Request (INQUIRY MESSAGE)
   2) Identity Reply (INQUIRY MESSAGE)

[AN200 NATIVE PARAMETER CHANGE]
   1) AN200 System parameter change
   2) Current Voice Common parameter change
   3) Current Voice Additional parameter change
   4) Current Voice Element parameter change
   5) Currnet Voice Step Seq. parameter change
   6) Currnet Rhythm Step Seq. parameter change
   7) Current Effect parameter change
   8) Current Mulit Part parameter change

2.1.1 Universal realtime messages

2.1.1.1 Master Volume

```
    11110000    F0H         = Exclusive status
    01111111    7FH         = Universal Real Time
    01111111    7FH         = ID of target device
    00000100    04H         = Sub-ID #1=Device Control Message
    00000001    01H         = Sub-ID #2=Master Volume
*   0sssssss    SSH         = Volume LSB
    0ttttttt    TTH         = Volume MSB
    11110111    F7H         = End of Exclusive
      or
    11110000    F0H         = Exclusive status
    01111111    7FH         = Universal Real Time
    0xxxnnnn    XNH         = Device Number, xxx = don't care
    00000100    04H         = Sub-ID #1=Device Control Message
    00000001    01H         = Sub-ID #2=Master Volume
    0sssssss    SSH         = Volume LSB
    0ttttttt    TTH         = Volume MSB
    11110111    F7H         = End of Exclusive
```

When received, the Volume MSB is reflected in the System Parameter MASTER VOLUME.

   * The binary expression 0sssssss is expressed in hexadecimal as SSH.
   The same applies elsewhere.

2.1.2 Universal non-realtime messages

2.1.2.1 Identity Request

```
    11110000    F0H         = Exclusive status
    01111110    7EH         = Universal Non-Real Time
    0xxxnnnn    XNH         = ID of target device
    00000110    06H         = Sub-ID #1=General Information
    00000001    01H         = Sub-ID #2=Identity Request
    11110111    F7H         = End of Exclusive
```

When this message is received, the Identity Reply Message (2.1.2.2, below) is transmitted.

2.1.2.2 Identity Reply

```
    11110000    F0H         = Exclusive status
    01111110    7EH         = Universal Non-Real Time
    0xxxnnnn    XNH         = ID of target device
    00000110    06H         = Sub-ID #1=General Information
    00000010    02H         = Sub-ID #2=Identity Reply
    01000011    43H         = YAMAHA ID
    00000000    00H         = Device Family Code LSB  AN200 ID #1
    01000001    41H         = Device Family Code MSB  AN200 ID #2
    00000010    02H         = Device Number Code LSB  AN200 ID #3
    00000101    05H         = Device Number Code MSB  AN200 ID #4
    00000000    00H
    00000000    00H
    00000000    00H
    00000001    01H
    11110111    F7H         = End of Exclusive
```

When the Identity Request message (2.1.2.1, above) is received, this message is transmitted.

2.1.3 AN200 Native parameter change

This message sets parameters unique to the AN200.
Each message can set a single parameter. The message format is as follows.

```
    11110000    F0H         Exclusive status
    01000011    43H         YAMAHA ID
    0001nnnn    1NH         N:Device Number
    01011100    5CH         Model ID
    0ggggggg    GGH         Address High
    0mmmmmmm    MMH         Address Mid
    01111111    LLH         Address Low
    0vvvvvvv    VVH         Data
       :         :
    11110111    F7H         End of Exclusive
      or
    11110000    F0H         Exclusive status
    01000011    43H         YAMAHA ID
    0001nnnn    1NH         N:Device Number
    01101101    6DH         Model ID
    0ggggggg    GGH         Address High
    0mmmmmmm    MMH         Address Mid
    01111111    LLH         Address Low
```

```
0vvvvvvv    VVH         Data
   :         :
11110111    F7H         End of Exclusive
```

For parameters whose Data Size is 2 or 4, the appropriate amount of data will be transmitted as indicated by Size.

2.1.3.1 System parameter change

This message sets the System block (see Tables <2-1> and <2-2>).

2.1.3.2 Current Voice Common parameter change

This message sets the Common block of the voice is sounding currently (see Tables <1-1> and <1-2>).

2.1.3.3 Current Voice Additional parameter change

This message sets the Additional block of the voice is sounding currently (see Tables <1-1> and <1-4>).

2.1.3.4 Current Voice Element parameter change

This message sets the Element block of the voice is sounding currently (see Tables <1-1> and <1-3>).

2.1.3.5 Current Voice Scene1 parameter change

This message sets the Scene1 block of the voice is sounding currently (see Tables <1-1> and <1-5>).

2.1.3.6 Current Voice Scene2 parameter change

This message sets the Scene2 block of the voice is sounding currently (see Tables <1-1> and <1-6>).

2.1.3.7 Current Voice Step Seq parameter change

This message sets the Step Seq block of the voice(SYNTH Track) is sounding currently (see Tables <1-1> and <1-7>).

2.1.3.8 Currnet Rhythm Step Seq parameter change

This message sets the Step Seq block of the Rhythm Track (see Tables <2-1> and <2-8>).

2.1.3.9 Current Effect parameter change

This message sets the Effect block (see Tables <2-1> and <2-3>).

2.1.3.10 Current Mulit Part parameter change

This message sets the Multi Part block (see Tables <2-1> and <2-6>).

2.2 Bulk dump

This device uses only the following bulk dump receiving messages.

[AN200 NATIVE BULK DUMP]
1) System bulk dump
2) Current Voice Common bulk dump
3) Current Voice Additional bulk dump
4) Current Voice Element bulk dump
5) Current Voice Scene1 bulk dump
6) Current Voice Scene2 bulk dump
7) Currnet Voice Step Seq. bulk dump
8) Currnet Rhythm Step Seq. bulk dump
9) Current Effect bulk dump
10) Current Mulit Part bulk dump
11) User Pattern Voice 1...128
12) User Pattern Voice Additional 1...128
13) User Pattern Voice Scene1 1...128
14) User Pattern Voice Scene2 1...128
15) User Pattern Multi Part 1 ... 128
16) User Pattern Rhythm Step Seq 1 ... 128
17) User Song 1 ... 10

And the following bulk dump messages are received and changed as data of the AN200.

[AN1x BULK DUMP]
1) AN1x Current Common bulk dump
2) AN1x Current Scene bulk dump
3) AN1x Current Step Seq Pattern bulk dump
4) AN1x User Voice 1 ... 128

2.2.1 AN200 Native Bulk Dump

This message sets the special parameters for AN200.
Unlike Parameter change, one message can modify multiple parameters.

```
11110000    F0H         Exclusive status
01000011    43H         YAMAHA ID
0000nnnn    0NH         N:Device Number
01011100    5CH         Model ID
0sssssss    SSH         ByteCountMSB
0ttttttt    TTH         ByteCountLSB
0ggggggg    GGH         Address High
0mmmmmmm    MMH         Address Mid
01111111    LLH         Address Low
0vvvvvvv    VVH         Data
   :         :
0kkkkkkk    KKH         Check-sum
11110111    F7H         End of Exclusive
```

Address and Byte Count are given in tables <1-n>.
Byte Count is indicated by the total size of the Data in tables <1-n>.
Bulk dump is received when the beginning of the block is specified in "Address."
"Block" indicates the unit of the data string that is indicated in tables <1-n> as "Total Size."
Check sum is the value that produces a lower 7 bits of 0 when ths Start Address, Byte Count, Data, and the Check sum itself are added.

2.2.1.1 System bulk dump

This message sets the System block (see Tables <2-1> and <2-2>).

2.2.1.2 Current Voice Common bulk dump

This message sets the Common block of the voice is sounding currently (see Tables <1-1> and <1-2>).

2.2.1.3 Current Voice Additional bulk dump

This message sets the Additional block of the voice is sounding currently (see Tables <1-1> and <1-4>).

2.2.1.4 Current Voice Element bulk dump

This message sets the Element block of the voice is sounding currently (see Tables <1-1> and <1-3>).

2.2.1.5 Current Scene1 bulk dump

This message sets the Scene1 block of the voice is sounding currently (see Tables <1-1> and <1-5>).

2.2.1.6 Current Scene2 bulk dump

This message sets the Scene2 block of the voice is sounding currently (see Tables <1-1> and <1-6>).

2.2.1.7 Current Voice Step Seq bulk dump

This message sets the Step Seq block of the voice(SYNTH Track) is sounding currently (see Tables <1-1> and <1-7>).

2.2.1.8 Current Rhythm Step Seq bulk dump

This message sets the Step Seq block of the Rhythm Track is sounding currently (see Tables <2-1> and <2-8>).

2.2.1.9 Current Effect bulk dump

This message sets the Effect block (see Tables <2-1> and <2-3>).

2.2.1.10 Current Multi Part bulk dump

This message sets the Multi Part block (see Tables <2-1> and <2-6>).

2.2.1.11 User Pattern Voice bulk dump

This message sets the User Pattern Voice block (see Tables <1-1> and <1-8>).

2.2.1.12 User Pattern Voice Additional bulk dump

This message sets the User Pattern Voice Additional block (see Tables <1-1> and <1-9>).

2.2.1.13 User Pattern Voice Scene1 bulk dump

This message sets the User Pattern Voice Scene1 block (see Tables <1-1> and <1-10>).

2.2.1.14 User Pattern Voice Scene2 bulk dump

This message sets the User Pattern Voice Scene2 block (see Tables <1-1> and <1-11>).

2.2.1.15 User Pattern Effect bulk dump

This message sets the User Pattern Voice Effect block (see Tables <2-1> and <2-9>).

2.2.1.16 User Pattern Multi Part bulk dump

This message sets the User Pattern Voice Multi Part block (see Tables <2-1> and <2-8>).

2.2.1.17 User Pattern Rhythm Step Seq bulk dump

This message sets the User Pattern Rhythm Step Seq block (see Tables <2-1> and <2-8>).

2.2.1.18 User Song bulk dump

This message sets the User Song block (see Tables <2-1> and <2-8>).

2.2.2 AN1x bulk dump

The AN1x bulk dump messages are received and changed as data of the AN200.

```
11110000    F0H         Exclusive status
01000011    43H         YAMAHA ID
0000nnnn    0NH         N:Device Number
01011100    5CH         Model ID
0sssssss    SSH         ByteCountMSB
0ttttttt    TTH         ByteCountLSB
0ggggggg    GGH         Address High
0mmmmmmm    MMH         Address Mid
01111111    LLH         Address Low
0vvvvvvv    VVH         Data
   :         :
0kkkkkkk    KKH         Check-sum
11110111    F7H         End of Exclusive
```

The details are the same as for 2.2.1 (AN200 Native Bulk Dump). However, see Table <3-1> for the Base address.
More details (Address, Byte Count, etc.), see the AN1x parameter list included with the AN1x.

2.2.2.1 AN1x Current Common bulk dump

When the Common block bulk data of the voice sounds currently is received from the AN1x, the AN200 responds to it (see the Table <3-1>).

The following parameters are invalid on the AN200, or affect differently compared with the ones applied to the AN1x.
 Scene Select (Always "Scene1" is fixed.)
 Layer Mode ("Single" or "Unison")
 Layer Pan, Layer Separation
 Common Vtrl Matrix 1—2 Data (Source, Parameter, Depth)
 Vari-Ef Type (Always "Gutar Amp.Simulator" is fixed.)
 Dly-Ef, Rev-Ef Data (Type, Return, Parameter 1—7)
 Arpeggio/StepSEQ Scene Sw. ("Off" or "On" (only Scene1-side)")
 FreeEG Track Scene Switch ("Off or "On" (only Scene1-side)")
 Parameters in connection with Arpeggio.

2.2.2.2 AN1x Current Scene1 bulk dump

When the Scene1 block bulk data of the voice sounds currenly is received from the AN1x, the AN200 responds to it (see the Table <3-1>).

The following parameters are reacted by the AN200.
 Ctrl Matrix 16 Data (Source, Parameter, Depth)

2.2.2.3 AN1x Current Step Seq Pattern bulk dump
When the Step SEQ block of the voice sounds currenly is received from the AN1x, the AN200 responds to it (see the Table <3-1>).

The Following parameters are invalid on the AN200, or affect differently compared with the ones applied to the AN1x.
 Step Seq Base Unit
 Step Seq Length
 Step Seq CtrlChange Value1...16

2.2.2.4 AN1x User Voice bulk dump

When the User Voice block bulk data is received from the AN1x, the AN200 responds to it (see the Table <3-1>).

The following parameters are invalid on the AN200, or affect differently compared with the ones applied to the AN1x.
 Data of Scene 2
 Common Data (See 2.2.2.1)
 Scene1 Data (See 2.2.2.2)

3. Realtime Messages

3.1 Active Sensing
```
11111110    FEH
```
This is transmitted by 200msec.
After FE is received one time, if the MIDI signal does not come within 400 msec, AN200 will act the same as when ALL SOUND OFF, ALL NOTE OFF, and RESET ALL CONTROLLERS are received, and return to the condition where has not been received once.

3.2 Timing Clock
```
11111000    F8H
```
ON/OFF of the transmitting and receiving can be set.

3.3 Start
```
11111010    FAH
```
ON/OFF of the transmitting and receiving can be set.

3.4 Continue
```
11111011    FBH
```
ON/OFF of the transmitting and receiving can be set.

3.5 Stop
```
11111100    FCH
```
ON/OFF of the transmitting and receiving can be set.

4. System Common Messages

4.1 Song Position Pointer
```
11110010    F2H
0vvvvvvv    SONG POSITION LSB
0vvvvvvv    SONG POSITION MSB
```
ON/OFF of the transmitting and receiving can be set.

<1-1>
Parameter Base Address
MODEL ID = 5C (AN1x)

Parameter	Address			Description
	(H)	(M)	(L)	
Curret Voice	10	00	00	Current Voice Common
	10	0D	00	AN200 Current Voice Add
	10	0E	00	Current Voice Step Seq
	10	10	00	Current Voice Element
	10	30	00	AN200 Current Voice Scene1
	10	31	00	AN200 Current Voice Scene2
AN200 User Pattern Voice	20	00	00	AN200 User Pattern Voice 1
	:	:	:	:
	20	7F	00	AN200 User Pattern Voice 128
AN200 User Pattern Voice Add	22	00	00	AN200 User Pattern Voice Add 1
	:	:	:	:
	22	7F	00	AN200 User Pattern Voice Add 128
AN200 User Pattern Voice Scene-1	40	00	00	AN200 User Pattern Voice Scene-1 1
	:	:	:	:
	40	7F	00	AN200 User Pattern Voice Scene-1 128
AN200 User Pattern Voice Scene-2	41	00	00	AN200 User Pattern Voice Scene-2 1
	:	:	:	:
	41	7F	00	AN200 User Pattern Voice Scene-2 128

<1-2>
MIDI Parameter Change table (Current Voice Common Buffer)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default
10 00 00	1	20...7F	Voice Name 1	Ascii Code	I
01	1	20...7F	Voice Name 2	Ascii Code	n
02	1	20...7F	Voice Name 3	Ascii Code	I
03	1	20...7F	Voice Name 4	Ascii Code	t
04	1	20...7F	Voice Name 5	Ascii Code	
05	1	20...7F	Voice Name 6	Ascii Code	P
06	1	20...7F	Voice Name 7	Ascii Code	t
07	1	20...7F	Voice Name 8	Ascii Code	n
08	1	20...7F	Voice Name 9	Ascii Code	
09	1	20...7F	Voice Name 10	Ascii Code	
0a	1	00...16	Voice Category	--,Pf...Wv	--
0b	1		NOT USED (AN1x : Scene Select)	Scene1(1):fixed	1(scene1)
0c	1	00...01	Unison Sw. (AN1x : Layer Mode)	off(0),on(1)	00(off)
0d	1		NOT USED		--
0e	1		NOT USED		--
0f	1	01...20	Unison Detune	1...32	6

10	2	27...F0	Common BPM	20(14h) ... 40(28h) ... 240(F0h) ... 300(12Ch)	*3	8C(140)
12	1		NOT USED			--
13	1		NOT USED			--
14	1		NOT USED			--
15	1		NOT USED			--
16	1		NOT USED			--
17	1		NOT USED			--
18	1		NOT USED			--
19	1		NOT USED			--
1a	1		NOT USED (AN1x : Var-Ef Type)	Gutar Amp.Simulator:fixed		0d (Amp.Sim.)
1b	1	00...02	Output Gain (AN1x : reserve)	+0dB(0), +6dB(1), +12dB(2)		00(+0dB)
1c	2	00...64	Gutar Amp.Simulator : Dist Drive	0...100		64(100)
1e	2	00...03	Gutar Amp.Simulator : Amp.Type	off(0) ,stack(1) ,combo(2) ,tube(3)		01(stack)
20	2	22...3C	Gutar Amp.Simulator : LPF	1.0k~Thru		30(5.0kHz)
22	2	00...64	Gutar Amp.Simulator : Dist Out Level	0~100		3c(60)
24	2		NOT USED			--
26	2		NOT USED			--
28	1	04...28	3-Band EQ Low Freq	32Hz(04)...2.0kHz(28)		11(140Hz)
29	1	34...4C	3-Band EQ Low Gain	-12dB(34)...0(40)...+12dB(76)		40(+0dB)
2a	1	0E...36	3-Band EQ Mid Freq	100Hz(0E)...10.0kHz(36)		28(2.0kHz)
2b	1	34...4C	3-Band EQ Mid Gain	-12dB(34)...0(40)...+12dB(4C)		40(+0dB)
2c	1	0A...78	3-Band EQ Mid Resonance(Q)	1.0(10)...12.0(78)		0A(1.0)
2d	1	1C...3A	3-Band EQ High Freq	500Hz(1C)...16.0kHz(3A)		34(8.0kHz)
2e	1	34...4C	3-Band EQ High Gain	-12dB(34)...0(40)...+12dB(4C)		40(+0dB)
2f	1		NOT USED			--
30	1		NOT USED			--
31	1		NOT USED			--
32	2		NOT USED			--
34	2		NOT USED			--
36	2		NOT USED			--
38	2		NOT USED			--
3a	2		NOT USED			--
3c	2		NOT USED			--
3e	2		NOT USED			--
40	1		NOT USED			--
41	1		NOT USED			--
42	2		NOT USED			--
44	2		NOT USED			--
46	2		NOT USED			--
48	2		NOT USED			--
4a	2		NOT USED			--
4c	2		NOT USED			--
4e	2		NOT USED			--
50	1		NOT USED			--
51	1		NOT USED			--
52	1		NOT USED			--
53	1		NOT USED			--
54	1		NOT USED			--
55	1		NOT USED			--
56	1		NOT USED			--
57	1		NOT USED			--
58	2		NOT USED			--
5a	2		NOT USED			--
5c	1	00...03	Free EG Trigger	free(0),midi in notes(1),all notes(2),seq start(3)		03(seq start)
5d	1	00...04	Free EG Loop Type	off(0),forwardd(1),forwardd-half(2), alternate(3),alternate-half(4)		01(forward)
5e	1	02...60	Free EG Length	1/2bar(2),1bar(3),3/2bars(4), 2bars(5),3bars(6),4bars(7),6bars(8), 8bars(9),1.0sec(0A)...8.0sec(50) ...16.0sec(60)		05(2bars)
5f	1		NOT USED			--
60	1	00...40	Free EG Trk Param 1	off(0)...Track Level(40)	*1	00(off)
61	1	00...01	Free EG Trk Scene Switch 1	off(0),on(1)		00(off)
62	1	00...40	Free EG Trk Param 2	off(0)...Track Level(40)	*1	00(off)
63	1	00...01	Free EG Trk Scene Switch 2	off(0),on(1)		00(off)
64	1	00...40	Free EG Trk Param 3	off(0)...Track Level(40)	*1	00(off)
65	1	00...01	Free EG Trk Scene Switch 3	off(0),on(1)		00(off)
66	1	00...40	Free EG Trk Param 4	off(0)...Track Level(40)	*1	00(off)
67	1	00...01	Free EG Trk Scene Switch 4	off(0),on(1)		00(off)
68	2	00...01	Free EG Trk1 Data1 MSB	0...1	*2	1
		00...7F	Free EG Trk1 Data1 LSB	0...127	*2	0
6a	2	00...01	Free EG Trk1 Data2 MSB	0...1	*2	1
		00...7F	Free EG Trk1 Data2 LSB	0...127	*2	0
: : :						
03 66	2	00...01	Free EG Trk1 Data192 MSB	0...1	*2	1
		00...7F	Free EG Trk1 Data192 LSB	0...127	*2	0
03 68	2	00...01	Free EG Trk2 Data1 MSB	0...1	*2	1
		00...7F	Free EG Trk2 Data1 LSB	0...127	*2	0
03 6a	2	00...01	Free EG Trk2 Data2 MSB	0...1	*2	1
		00...7F	Free EG Trk2 Data2 LSB	0...127	*2	0
: : :						
06 66	2	00...01	Free EG Trk2 Data192 MSB	0...1	*2	1
		00...7F	Free EG Trk2 Data192 LSB	0...127	*2	0
06 68	2	00...01	Free EG Trk3 Data1 MSB	0...1	*2	1
		00...7F	Free EG Trk3 Data1 LSB	0...127	*2	0
06 6a	2	00...01	Free EG Trk3 Data2 MSB	0...1	*2	1
		00...7F	Free EG Trk3 Data2 LSB	0...127	*2	0
: : :						
09 66	2	00...01	Free EG Trk3 Data192 MSB	0...1	*2	1
		00...7F	Free EG Trk3 Data192 LSB	0...127	*2	0
09 68	2	00...01	Free EG Trk4 Data1 MSB	0...1	*2	1
		00...7F	Free EG Trk4 Data1 LSB	0...127	*2	0
09 6a	2	00...01	Free EG Trk4 Data2 MSB	0...1		

Address					Data	Parameter Name	Description		Default

				00...7F	Free EG Trk4 Data2 LSB	0...127	*2	0
:	:	:						
0C	66	2	00...01	Free EG Trk4 Data192 MSB	0...1	*2	1
			00...7F	Free EG Trk4 Data192 LSB	0...127	*2	0

TOTAL SIZE   668

*1 : see other table (Free EG Track Paramter List)
*2 : only Bulk Dump (not received as parameter change)
*3 : BPM = ((1st & 03h) * 128 + 2nd) + ((1st & 78h)/8)/10

<1-3>
MIDI Parameter Change table (Current Voice Element Buffer)

Address (H)	Size (H)	Data (H)	Prameter Name	Description		Default
10 10 00	1	00...02	Key Assign Mode	poly(0),mono(1),legato(2)		00(poly)
01	1	28...58	Pich Up (PB Range +)	-24(28)...+24(58)		42(+2)
02	1	28...58	Pich Down (PB Range -)	-24(28)...+24(58)		3E(-2)
03	1	00...7F	PEG Decay	0...127		0
04	1	00...7F	PEG Depth	-64...+63 semitones		40(+0)
05	1	01...03	PEG Switch	VCO1(1),VCO2(2),both(3)		03(both)
06	1	00...01	Portamento Mode	normal(0),sustain-key(1)	*1	00(normal)
				full-time(0),fingered(1)	*2	
07	1	00...7F	Portamento Time	0...127		2C(44)
08	1	00...01	LFO Reset Mode	off(0),key-on(1)		00(off)
09	1	00...14	LFO1 Wave	sine(0)...offset-s/h2(14)		00(sine)
0a	2	00...FF	LFO1 Speed	1(0)...256(FF)		53(84)
0c	1	00...7F	LFO1 Delay	0...127		0
0d	2	00...FF	LFO2 Speed	1(0)...256(FF)		1F(32)
0f	1	00...02	Sync Mode	off(0),vco1 mastter to slave(1), vco2 to vco1(2)		0(off)
10	1	00...7F	Sync Pitch	-64...+63		40(+0)
11	1	00...7F	Sync Pitch Depth	-64...+63		40(+0)
12	1	00...04	Sync Pitch Source	fixed(0),PEG(1),FEG(2),LFO1(3), LFO2(4)		00(fixed)
13	1	01...03	Sync Pitch Mod Switch	master(1),slave(2),both(3)	*5	03(both)
14	1	00...7F	FM Depth	-64...+63		40(+0)
15	1	00...04	FM Source 1	fixed(0),PEG(1),FEG(2),LFO1(3), LFO2(4)		00(fixed)
16	1	00...07	FM Source 2	VCO2 freq(0),VCO1(1),VCO1-sub(2), PEG(3),FEG(4),LFO1(5),LFO2(6),VCO2 output(7)		00(VCO2 freq)
17	1	00...04	VCO1 Wave	saw(0),pulse(1),saw2(2),mix(3) multi-saw(4)	*3	00(saw)
		00...06	VCO1 Wave	saw(0),pulse(1),inner1(2), inner2(3),inner3(4),square(5),noise(6)	*4	
18	1	00...7F	VCO1 Pitch Coarse	-64...+63 semitone		40(+0)
19	1	0E...72	VCO1 Pitch Fine	-50...+50 cent		40(+0)
1a	1	00...7F	VCO1 Edge	0...127		64(100)
1b	1	00...7F	VCO1 Pulse Width	0%(0)...50%(40)...99%(7F)	*7	40(50%)
		00...7F	VCO1 Mix	0...127	*8	
1c	1	00...7F	VCO1 PWM Depth	-64...+63	*7	40(+0)
		00...7F	Detune	0...127	*8	
1d	1	00...07	VCO1 PWM Source	fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4),LFO2-phase(5), LFO2-fast(6),VCO2(7)	*7	04(LFO2)
1e	2	01...FF	VCO1 Pitch Mod Depth	-127...+127		80(+0)
20	1	00...05	VCO2 Wave	saw(0),pulse(1),saw2(2),mix(3) triangle(4),sine(5)		00(saw)
21	1	00...7F	VCO2 Pitch Coarse	-64...+63 semitone		40(+0)
22	1	0E...72	VCO2 Pitch Fine	-50(0E)...+50 cent(72)		40(+0)
23	1	00...7F	VCO2 Edge	0...127	*9	7F(127)
24	1	00...7F	VCO2 Pulse Width	0%(0)...50%(40)...99%(7F)	*9	40(50%)
25	1	00...7F	VCO2 PWM Depth	-64...+63	*9	40(+0)
		00...7F	VCO2 X-MOD Depth	-64...+63	*10	
26	1	00...07	VCO2 PWM Source	fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4),LFO2-phase(5), LFO2-fast(6),VCO1(7)	*9	04(LFO2)
		00...04	VCO2 X-MOD Source	fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4)	*10	
27	2	01...FF	VCO2 Pitch Mod Depth	-127...+127		80(+0)
29	1	00...7F	Mixer VCO1 Level	0...127		7F(127)
2a	1	00...7F	Mixer VCO2 Level	0...127		0
2b	1	00...7F	Mixer Ring Mod Level	0...127		0
2c	1	00...7F	Mixer Noise Level	0...127		0
2d	1	00...7F	FilterEG Attack Time	0...127		0
2e	1	00...7F	FilterEG Decay Time	0...127		40(64)
2f	1	00...7F	FilterEG Sustain Level	0...127		7F(127)
30	1	00...7F	FilterEG Release Time	0...127		55(85)
31	1	00...7F	HPF Cutoff Freq	0(thru)...127		00(thru)
32	1	00...05	VCF Filter Type	LPF-24dB(0),LFP-18dB(1), LPF-12dB(2),BPF(3),HPF-12dB(4), BEF(5)		00(LPF-24dB)
33	1	00...7F	VCF Filter Cutoff	0...127		64(100)
34	1	0D...7F	VCF Filter Resonance	-12(0D)...0(19)...+102(7F)		19(+0)
35	2	00...FF	FilterEG Depth	-128...+127		A0(+32)
37	1	00...7F	FillrEG Velocity Sens	-64...+63		40(+0)
38	1	20...7F	VCF Keyboard Track	-32...+63		40(+0)
39	1	00...7F	VCF Filter Mod Depth	-64...+63		40(+0)
3a	1	00...7F	AmpEG Attack Time	0...127		0
3b	1	00...7F	AmpEG Decay Time	0...127		40(64)
3c	1	00...7F	AmpEG Sustain Level	0...127		7F(127)
3d	1	00...7F	AmpEG Release Time	0...127		24(36)
3e	1	00...7F	VCA Feedback Level	0...127		0
3f	1	00...7F	VCA Volume	0...127		69(105)
40	1	00...7F	AmpEG Velocity Sens	-64...+63		40(+0)
41	1	00...7F	VCA Amp Mod Depth	-64...+63		40(+0)
42	1	00...8F	Gutitar Amp.Simulator Dry/Wet	D63>W(1)...D=W(40)...D<W63(7F)		01(D63>W)

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43	1	00... 00	Distortion Switch	0(off),1(on)			1(on)
44	1	00...72	Ctrl Matrix Source1	off(0)...Assign Knob8(72)	*6,11		0(off)
45	1	00...2E	Ctrl Matrix Param 1	off...PEG Attack(2E)	*6		0(off)
46	1	00...7F	Ctrl Matrix Depth 1	Depends on Ctrl Matrix Param	*6		40(+0)
47	1	00...72	Ctrl Matrix Source2	off(0)...Assign Knob8(72)	*6,11		0(off)
48	1	00...2E	Ctrl Matrix Param 2	off...PEG Attack(2E)	*6		0(off)
49	1	00...7F	Ctrl Matrix Depth 2	Depends on Ctrl Matrix Param	*6		40(+0)
4a	1	00...72	Ctrl Matrix Source3	off(0)...Assign Knob8(72)	*6,11		0(off)
4b	1	00...2E	Ctrl Matrix Param 3	off...PEG Attack(2E)	*6		0(off)
4c	1	00...7F	Ctrl Matrix Depth 3	Depends on Ctrl Matrix Param	*6		40(+0)
4d	1	00...72	Ctrl Matrix Source4	off(0)...Assign Knob8(72)	*6,11		0(off)
4e	1	00...2E	Ctrl Matrix Param 4	off...PEG Attack(2E)	*6		0(off)
4f	1	00...7F	Ctrl Matrix Depth 4	Depends on Ctrl Matrix Param	*6		40(+0)
50	1	00...72	Ctrl Matrix Source5	off(0)...Assign Knob8(72)	*6,11		0(off)
51	1	00...2E	Ctrl Matrix Param 5	off...PEG Attack(2E)	*6		0(off)
52	1	00...7F	Ctrl Matrix Depth 5	Depends on Ctrl Matrix Param	*6		40(+0)
53	1	00...72	Ctrl Matrix Source6	off(0)...Assign Knob8(72)	*6,11		0(off)
54	1	00...2E	Ctrl Matrix Param 6	off...PEG Attack(2E)	*6		0(off)
55	1	00...7F	Ctrl Matrix Depth 6	Depends on Ctrl Matrix Param	*6		40(+0)
56	1	00...72	Ctrl Matrix Source7	off(0)...Assign Knob8(72)	*6,11		0(off)
57	1	00...2E	Ctrl Matrix Param 7	off...PEG Attack(2E)	*6		0(off)
58	1	00...7F	Ctrl Matrix Depth 7	Depends on Ctrl Matrix Param	*6		40(+0)
59	1	00...72	Ctrl Matrix Source8	off(0)...Assign Knob8(72)	*6,11		0(off)
5a	1	00...2E	Ctrl Matrix Param 8	off...PEG Attack(2E)	*6		0(off)
5b	1	00...7F	Ctrl Matrix Depth 8	Depends on Ctrl Matrix Param	*6		40(+0)
5c	1	00...72	Ctrl Matrix Source9	off(0)...Assign Knob8(72)	*6,11		0(off)
5d	1	00...2E	Ctrl Matrix Param 9	off...PEG Attack(2E)	*6		0(off)
5e	1	00...7F	Ctrl Matrix Depth 9	Depends on Ctrl Matrix Param	*6		40(+0)
5f	1	00...72	Ctrl Matrix Source10	off(0)...Assign Knob8(72)	*6,11		0(off)
60	1	00...2E	Ctrl Matrix Param 10	off...PEG Attack(2E)	*6		0(off)
61	1	00...7F	Ctrl Matrix Depth 10	Depends on Ctrl Matrix Param	*6		40(+0)
62	1	00...72	Ctrl Matrix Source11	off(0)...Assign Knob8(72)	*6,11		0(off)
63	1	00...2E	Ctrl Matrix Param 11	off...PEG Attack(2E)	*6		0(off)
64	1	00...7F	Ctrl Matrix Depth 11	Depends on Ctrl Matrix Param	*6		40(+0)
65	1	00...72	Ctrl Matrix Source12	off(0)...Assign Knob8(72)	*6,11		0(off)
66	1	00...2E	Ctrl Matrix Param 12	off...PEG Attack(2E)	*6		0(off)
67	1	00...7F	Ctrl Matrix Depth 12	Depends on Ctrl Matrix Param	*6		40(+0)
68	1	00...72	Ctrl Matrix Source13	off(0)...Assign Knob8(72)	*6,11		0(off)
69	1	00...2E	Ctrl Matrix Param 13	off...PEG Attack(2E)	*6		0(off)
6a	1	00...7F	Ctrl Matrix Depth 13	Depends on Ctrl Matrix Param	*6		40(+0)
6b	1	00...72	Ctrl Matrix Source14	off(0)...Assign Knob8(72)	*6,11		0(off)
6c	1	00...2E	Ctrl Matrix Param 14	off...PEG Attack(2E)	*6		0(off)
6d	1	00...7F	Ctrl Matrix Depth 14	Depends on Ctrl Matrix Param	*6		40(+0)
6e	1	00...72	Ctrl Matrix Source15	off(0)...Assign Knob8(72)	*6,11		0(off)
6f	1	00...2E	Ctrl Matrix Param 15	off...PEG Attack(2E)	*6		0(off)
70	1	00...7F	Ctrl Matrix Depth 15	Depends on Ctrl Matrix Param	*6		40(+0)
71	1		NOT USED				--
72	1		NOT USED				--
73	1		NOT USED				--
74	1		NOT USED				--
75	1	3E...42	Oct Shift	-2(3E), 0(40),+2(42)			40(+0)
76	1	00...7F	PEG Attack	0...127			0
77	1	00...14	LFO2 Wave	sine(0)...offset-s/h2(14)			05(triangle)
78	1	00...0F	LFO Assign Group	VCO1(bit3),VCO2(bit2),VCA(bit1), VCF(bit0)			00(LFO1 to All)
79	1	01..03	FM Algorithm	both(1),master(2),slave(3)	*5		03(slave)

TOTAL SIZE   7A

*1 : Key Assign Mode = poly
*2 : Key Assign Mode = mono,legato
*3 : Oscillator Sync Mode = off
*4 : Oscillator Sync Mode = on ('VCO1 master to slave' or 'VCO2 to VC1')
*5 : Oscillator Sync Mode = 'VCO1 master to slave'
*6 : see other table (Ctrl Matrix Paramter List)
*7 : VCO1 Wave is not MultiSaw.
*8 : VCO1 Wave is MultiSaw.
*9 : VCO2 Wave is not Triangle or Sine.
*10 : VCO1 Wave is Triangle or Sine.
*11 : CC# 3,5,7,8,9,10,15,16,18,19,22,28,29,31,34,35,39,48,49,50,51,57,59,68,71,72,73,74,75,80,81,82,83,88,89,MW~AC8 cannot be set.

<1-4>
MIDI Parameter Change table (AN200 Current Voice Additional Buffer)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default
10 0d 00	1	0...7F	Scene Control Param	0...127	0
01	1	00...7F	VCO1/2 Balance	-64...0...+63	40(+0)

<1-5>
MIDI Bulk Dump Parameter table (AN200 Current Scene-1)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default
10 30 00	2	00...FF	LFO1 Speed	1(0)...256(FF)	53(84)
02	1	00...7F	AmpEG Attack Time	0...127	0
03	1	00...7F	AmpEG Decay Time	0...127	40(64)
04	1	00...7F	AmpEG Sustain Level	0...127	7F(127)
05	1	00...7F	AmpEG Release Time	0...127	24(36)
06	1	00...7F	FilterEG Attack Time	0...127	0
07	1	00...7F	FilterEG Decay Time	0...127	40(64)
08	1	00...7F	FilterEG Sustain Level	0...127	7F(127)
09	1	00...7F	FilterEG Release Time	0...127	55(85)
0A	1	00...7F	Portamento Time	0...127	2C(44)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default
0B	1	00...7F	Sync Pitch	-64...+63	40(+0)
0C	1	00...7F	FM Depth	-64...+63	40(+0)
0D	1	00...7F	Mixer Noise Level	0...127	0
0E	1	00...05	VCF Filter Type	LPF-24dB(0),LFP-18dB(1), LPF-12dB(2),BPF(3),HPF-12dB(4), BEF(5)	00(LPF-24dB)
0F	1	00...7F	VCF Filter Cutoff	0...127	64(100)
10	1	0D...7F	VCF Filter Resonance	-12(0D)...0(19)...+102(7F)	19(+0)
11	2	00...FF	FilterEG Depth	-128...+127	A0(+32)
13	1	00...7F	VCO1/2 Balance	-64...0...+63	40(+0)
14	1	00...7F	Volume	0...127	64(100)
15	1	00...7F	Pan	CENTER(0),L63...C...R63(1...64...127)	40(64)
16	1	00...7F	Effect Send	0...127	0
17	1	00...7F	Effect parameter	refer to Effect Type List <Table 2-4>	0

TOTAL SIZE   18

mm = 00 ~ 7F : User Voice Scene-1 No.1 ~ User Voice Scene-1 No.128

<1-6>

MIDI Bulk Dump Parameter table (AN200 Current Scene-2)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default
10 31 00	2	00...FF	LFO1 Speed	1(0)...256(FF)	53(84)
02	1	00...7F	AmpEG Attack Time	0...127	0
03	1	00...7F	AmpEG Decay Time	0...127	40(64)
04	1	00...7F	AmpEG Sustain Level	0...127	7F(127)
05	1	00...7F	AmpEG Release Time	0...127	24(36)
06	1	00...7F	FilterEG Attack Time	0...127	0
07	1	00...7F	FilterEG Decay Time	0...127	40(64)
08	1	00...7F	FilterEG Sustain Level	0...127	7F(127)
09	1	00...7F	FilterEG Release Time	0...127	55(85)
0A	1	00...7F	Portamento Time	0...127	2C(44)
0B	1	00...7F	Sync Pitch	-64...+63	40(+0)
0C	1	00...7F	FM Depth	-64...+63	40(+0)
0D	1	00...7F	Mixer Noise Level	0...127	0
0E	1	00...05	VCF Filter Type	LPF-24dB(0),LFP-18dB(1), LPF-12dB(2),BPF(3),HPF-12dB(4), BEF(5)	00(LPF-24dB)
0F	1	00...7F	VCF Filter Cutoff	0...127	64(100)
10	1	0D...7F	VCF Filter Resonance	-12(0D)...0(19)...+102(7F)	19(+0)
11	2	00...FF	FilterEG Depth	-128...+127	A0(+32)
13	1	00...7F	VCO1/2 Balance	-64...0...+63	40(+0)
14	1	00...7F	Volume	0...127	64(100)
15	1	00...7F	Pan	CENTER(0),L63...C...R63(1...64...127)	40(64)
16	1	00...7F	Effect Send	0...127	0
17	1	00...7F	Effect parameter	refer to Effect Type List <Table 2-4>	0

TOTAL SIZE   18

mm = 00 ~ 7F : User Voice Scene-2 No.1 ~ User Voice Scene-2 No.128

<1-7>

MIDI Bulk Dump Parameter table (Current Step Seq)

Address (H)	Size (H)	Data (H)	Prameter Name	Description		Default
10 0e 00	1	04,06,07	Step Seq Base Unit	1/8(4)...1/12(6)...1/16(7)		07(1/16)
01	1	08,0C,10	Step Seq Length	8step(8),12step(C),16steps(10)		10
02	1		NOT USED			--
03	1		NOT USED			--
04	1		NOT USED			--
05	1		NOT USED			--
06	1	00...7F	Step Seq Note No 1	C-2(0)...G8(7F)		C3(3C)
07	1	00...7F	Step Seq Note No 2	C-2(0)...G8(7F)		C3(3C)
08	1	00...7F	Step Seq Note No 3	C-2(0)...G8(7F)		C3(3C)
09	1	00...7F	Step Seq Note No 4	C-2(0)...G8(7F)		C3(3C)
0A	1	00...7F	Step Seq Note No 5	C-2(0)...G8(7F)		C3(3C)
0B	1	00...7F	Step Seq Note No 6	C-2(0)...G8(7F)		C3(3C)
0C	1	00...7F	Step Seq Note No 7	C-2(0)...G8(7F)		C3(3C)
0D	1	00...7F	Step Seq Note No 8	C-2(0)...G8(7F)		C3(3C)
0E	1	00...7F	Step Seq Note No 9	C-2(0)...G8(7F)		C3(3C)
0F	1	00...7F	Step Seq Note No 10	C-2(0)...G8(7F)		C3(3C)
10	1	00...7F	Step Seq Note No 11	C-2(0)...G8(7F)		C3(3C)
11	1	00...7F	Step Seq Note No 12	C-2(0)...G8(7F)		C3(3C)
12	1	00...7F	Step Seq Note No 13	C-2(0)...G8(7F)		C3(3C)
13	1	00...7F	Step Seq Note No 14	C-2(0)...G8(7F)		C3(3C)
14	1	00...7F	Step Seq Note No 15	C-2(0)...G8(7F)		C3(3C)
15	1	00...7F	Step Seq Note No 16	C-2(0)...G8(7F)		C3(3C)
16	1	00...7F	Step Seq Velocity 1	rest(0),1...127		100(64)
17	1	00...7F	Step Seq Velocity 2	rest(0),1...127		100(64)
18	1	00...7F	Step Seq Velocity 3	rest(0),1...127		100(64)
19	1	00...7F	Step Seq Velocity 4	rest(0),1...127		100(64)
1A	1	00...7F	Step Seq Velocity 5	rest(0),1...127		100(64)
1B	1	00...7F	Step Seq Velocity 6	rest(0),1...127		100(64)
1C	1	00...7F	Step Seq Velocity 7	rest(0),1...127		100(64)
1D	1	00...7F	Step Seq Velocity 8	rest(0),1...127		100(64)
1E	1	00...7F	Step Seq Velocity 9	rest(0),1...127		100(64)
1F	1	00...7F	Step Seq Velocity 10	rest(0),1...127		100(64)
20	1	00...7F	Step Seq Velocity 11	rest(0),1...127		100(64)
21	1	00...7F	Step Seq Velocity 12	rest(0),1...127		100(64)
22	1	00...7F	Step Seq Velocity 13	rest(0),1...127		100(64)
23	1	00...7F	Step Seq Velocity 14	rest(0),1...127		100(64)
24	1	00...7F	Step Seq Velocity 15	rest(0),1...127		100(64)
25	1	00...7F	Step Seq Velocity 16	rest(0),1...127		100(64)
26	1	00...7F	Step Seq Gate Time LSB 1		*1	94%(3C)
27	1	00...7F	Step Seq Gate Time LSB 2		*1	94%(3C)

28	1	00...7F	Step Seq Gate Time LSB 3		*1	94%(3C)
29	1	00...7F	Step Seq Gate Time LSB 4		*1	94%(3C)
2A	1	00...7F	Step Seq Gate Time LSB 5		*1	94%(3C)
2B	1	00...7F	Step Seq Gate Time LSB 6		*1	94%(3C)
2C	1	00...7F	Step Seq Gate Time LSB 7		*1	94%(3C)
2D	1	00...7F	Step Seq Gate Time LSB 8		*1	94%(3C)
2E	1	00...7F	Step Seq Gate Time LSB 9		*1	94%(3C)
2F	1	00...7F	Step Seq Gate Time LSB 10		*1	94%(3C)
30	1	00...7F	Step Seq Gate Time LSB 11		*1	94%(3C)
31	1	00...7F	Step Seq Gate Time LSB 12		*1	94%(3C)
32	1	00...7F	Step Seq Gate Time LSB 13		*1	94%(3C)
33	1	00...7F	Step Seq Gate Time LSB 14		*1	94%(3C)
34	1	00...7F	Step Seq Gate Time LSB 15		*1	94%(3C)
35	1	00...7F	Step Seq Gate Time LSB 16		*1	94%(3C)
36	1		NOT USED			--
37	1		NOT USED			--
38	1		NOT USED			--
39	1		NOT USED			--
3A	1		NOT USED			--
3B	1		NOT USED			--
3C	1		NOT USED			--
3D	1		NOT USED			--
3E	1		NOT USED			--
3F	1		NOT USED			--
40	1		NOT USED			--
41	1		NOT USED			--
42	1		NOT USED			--
43	1		NOT USED			--
44	1		NOT USED			--
45	1		NOT USED			--
46	1	00...07	Step Seq Gate Time MSB 1	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
47	1	00...07	Step Seq Gate Time MSB 2	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
48	1	00...07	Step Seq Gate Time MSB 3	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
49	1	00...07	Step Seq Gate Time MSB 4	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4A	1	00...07	Step Seq Gate Time MSB 5	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4B	1	00...07	Step Seq Gate Time MSB 6	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4C	1	00...07	Step Seq Gate Time MSB 7	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4D	1	00...07	Step Seq Gate Time MSB 8	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4E	1	00...07	Step Seq Gate Time MSB 9	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4F	1	00...07	Step Seq Gate Time MSB 10	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
50	1	00...07	Step Seq Gate Time MSB 11	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
51	1	00...07	Step Seq Gate Time MSB 12	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
52	1	00...07	Step Seq Gate Time MSB 13	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
53	1	00...07	Step Seq Gate Time MSB 14	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
54	1	00...07	Step Seq Gate Time MSB 15	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
55	1	00...07	Step Seq Gate Time MSB 16	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
56	1	00...01	Step Seq Mute 1	MuteOFF(0),MuteON(1)		MuteOFF(0)
57	1	00...01	Step Seq Mute 2	MuteOFF(0),MuteON(1)		MuteOFF(0)
58	1	00...01	Step Seq Mute 3	MuteOFF(0),MuteON(1)		MuteOFF(0)
59	1	00...01	Step Seq Mute 4	MuteOFF(0),MuteON(1)		MuteOFF(0)
5A	1	00...01	Step Seq Mute 5	MuteOFF(0),MuteON(1)		MuteOFF(0)
5B	1	00...01	Step Seq Mute 6	MuteOFF(0),MuteON(1)		MuteOFF(0)
5C	1	00...01	Step Seq Mute 7	MuteOFF(0),MuteON(1)		MuteOFF(0)
5D	1	00...01	Step Seq Mute 8	MuteOFF(0),MuteON(1)		MuteOFF(0)
5E	1	00...01	Step Seq Mute 9	MuteOFF(0),MuteON(1)		MuteOFF(0)
5F	1	00...01	Step Seq Mute 10	MuteOFF(0),MuteON(1)		MuteOFF(0)
60	1	00...01	Step Seq Mute 11	MuteOFF(0),MuteON(1)		MuteOFF(0)
61	1	00...01	Step Seq Mute 12	MuteOFF(0),MuteON(1)		MuteOFF(0)
62	1	00...01	Step Seq Mute 13	MuteOFF(0),MuteON(1)		MuteOFF(0)
63	1	00...01	Step Seq Mute 14	MuteOFF(0),MuteON(1)		MuteOFF(0)
64	1	00...01	Step Seq Mute 15	MuteOFF(0),MuteON(1)		MuteOFF(0)
65	1	00...01	Step Seq Mute 16	MuteOFF(0),MuteON(1)		MuteOFF(0)

TOTAL SIZE   66

*1 : MSB bit 2-0 -> bit 9-7
       LSB bit 6 -0 -> bit 6-0
*2 : This should be transmitted after sending Step Seq Gate Time LSB n.

<1-8>

MIDI Bulk Dump Parameter table (User Pattern Voice)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default
20 mm 00	1	20...7F	Voice Name 1	Ascii Code	I
01	1	20...7F	Voice Name 2	Ascii Code	n
02	1	20...7F	Voice Name 3	Ascii Code	I
03	1	20...7F	Voice Name 4	Ascii Code	t
04	1	20...7F	Voice Name 5	Ascii Code	
05	1	20...7F	Voice Name 6	Ascii Code	P
06	1	20...7F	Voice Name 7	Ascii Code	t
07	1	20...7F	Voice Name 8	Ascii Code	n
08	1	20...7F	Voice Name 9	Ascii Code	
09	1	20...7F	Voice Name 10	Ascii Code	
0a	1	00...16	Voice Category	--,Pf...Wv	--
0b	1		NOT USED (AN1x : Scene Select)	Scene1(1):fixed	1(scene1)
0c	1	00...01	Unison Sw. (AN1x : Layer Mode)	off(0),on(1)	00(off)
0d	1		NOT USED		--
0e	1		NOT USED		--
0f	1	01...20	Unison Detune	1...32	6
10	2	27...F0	Common Tempo	20(14h) ... 40(28h) ... 240(F0h) ... 300(12Ch)	8C(140)
12	1		NOT USED		--
13	1		NOT USED		--
14	1		NOT USED		--
15	1		NOT USED		--
16	1		NOT USED		--

	Addr	Size	Range	Parameter	Value	Note	Default
	17	1		NOT USED			--
	18	1		NOT USED			--
	19	1		NOT USED			--
	1a	1		NOT USED (AN1x : Var-Ef Type)	Gutar Amp.Simulator:fixed		0d (Amp.Sim.)
	1b	1	00...02	Output Gain (AN1x : reserve)	+0dB(0), +6dB(1), +12dB(2)		00(+0dB)
	1c	2	00...64	Gutar Amp.Simulator : Dist Drive	0...100		64(100)
	1e	2	00...03	Gutar Amp.Simulator : Amp.Type	off(0) ,stack(1) ,combo(2) ,tube(3)		01(stack)
	20	2	22...3C	Gutar Amp.Simulator : LPF	1.0k~Thru		30(5.0kHz)
	22	2	00...64	Gutar Amp.Simulator : Dist Out Level	0~100		3c(60)
	24	2		NOT USED			--
	26	2		NOT USED			--
	28	1	04...28	3-Band EQ Low Freq	32Hz(04)...2.0kHz(28)		11(140Hz)
	29	1	34...4C	3-Band EQ Low Gain	-12dB(34)...0(40)...+12dB(76)		40(+0dB)
	2a	1	0E...36	3-Band EQ Mid Freq	100Hz(0E)...10.0kHz(36)		28(2.0kHz)
	2b	1	34...4C	3-Band EQ Mid Gain	-12dB(34)...0(40)...+12dB(4C)		40(+0dB)
	2c	1	0A...78	3-Band EQ Mid Resonance(Q)	1.0(10)...12.0(78)		0A(1.0)
	2d	1	1C...3A	3-Band EQ High Freq	500Hz(1C)...16.0kHz(3A)		34(8.0kHz)
	2e	1	34...4C	3-Band EQ High Gain	-12dB(34)...0(40)...+12dB(4C)		40(+0dB)
	2f	1		NOT USED			--
	30	1		NOT USED			--
	31	1		NOT USED			--
	32	2		NOT USED			--
	34	2		NOT USED			--
	36	2		NOT USED			--
	38	2		NOT USED			--
	3a	2		NOT USED			--
	3c	2		NOT USED			--
	3e	2		NOT USED			--
	40	1		NOT USED			--
	41	1		NOT USED			--
	42	2		NOT USED			--
	44	2		NOT USED			--
	46	2		NOT USED			--
	48	2		NOT USED			--
	4a	2		NOT USED			--
	4c	2		NOT USED			--
	4e	2		NOT USED			--
	50	1		NOT USED			--
	51	1		NOT USED			--
	52	1		NOT USED			--
	53	1		NOT USED			--
	54	1		NOT USED			--
	55	1		NOT USED			--
	56	1		NOT USED			--
	57	1		NOT USED			--
	58	2		NOT USED			--
	5a	2		NOT USED			--
	5c	1	00...03	Free EG Trigger	free(0),midi in notes(1),all notes(2),seq start(3)		03(seq start)
	5d	1	00...04	Free EG Loop Type	off(0),forwardd(1),forwardd-half(2), alternate(3),alternate-half(4)		01(forward)
	5e	1	02...60	Free EG Length	1/2bar(2),1bar(3),3/2bars(4), 2bars(5),3bars(6),4bars(7),6bars(8), 8bars(9),1.0sec(0A)...8.0sec(50) ...16.0sec(60)		05(2bars)
	5f	1		NOT USED			--
	60	1	00...40	Free EG Trk Param 1	off(0)...Track Level(40)	*7	00(off)
	61	1	00...01	Free EG Trk Scene Switch 1	off(0),on(1)		00(off)
	62	1	00...40	Free EG Trk Param 2	off(0)...Track Level(40)	*7	00(off)
	63	1	00...01	Free EG Trk Scene Switch 2	off(0),on(1)		00(off)
	64	1	00...40	Free EG Trk Param 3	off(0)...Track Level(40)	*7	00(off)
	65	1	00...01	Free EG Trk Scene Switch 3	off(0),on(1)		00(off)
	66	1	00...40	Free EG Trk Param 4	off(0)...Track Level(40)	*7	00(off)
	67	1	00...01	Free EG Trk Scene Switch 4	off(0),on(1)		00(off)
	68	2	00...01	Free EG Trk1 Data1 MSB	0...1	*8	1
			00...7F	Free EG Trk1 Data1 LSB	0...127	*8	0
	6a	2	00...01	Free EG Trk1 Data2 MSB	0...1	*8	1
			00...7F	Free EG Trk1 Data2 LSB	0...127	*8	0
:	:	:					
03	66	2	00...01	Free EG Trk1 Data192 MSB	0...1	*8	1
			00...7F	Free EG Trk1 Data192 LSB	0...127	*8	0
03	68	2	00...01	Free EG Trk2 Data1 MSB	0...1	*8	1
			00...7F	Free EG Trk2 Data1 LSB	0...127	*8	0
03	6a	2	00...01	Free EG Trk2 Data2 MSB	0...1	*8	1
			00...7F	Free EG Trk2 Data2 LSB	0...127	*8	0
:	:	:					
06	66	2	00...01	Free EG Trk2 Data192 MSB	0...1	*8	1
			00...7F	Free EG Trk2 Data192 LSB	0...127	*8	0
06	68	2	00...01	Free EG Trk3 Data1 MSB	0...1	*8	1
			00...7F	Free EG Trk3 Data1 LSB	0...127	*8	0
06	6a	2	00...01	Free EG Trk3 Data2 MSB	0...1	*8	1
			00...7F	Free EG Trk3 Data2 LSB	0...127	*8	0
:	:	:					
09	66	2	00...01	Free EG Trk3 Data192 MSB	0...1	*8	1
			00...7F	Free EG Trk3 Data192 LSB	0...127	*8	0
09	68	2	00...01	Free EG Trk4 Data1 MSB	0...1	*8	1
			00...7F	Free EG Trk4 Data1 LSB	0...127	*8	0
09	6a	2	00...01	Free EG Trk4 Data2 MSB	0...1		
			00...7F	Free EG Trk4 Data2 LSB	0...127	*8	0
:	:	:					
0C	66	2	00...01	Free EG Trk4 Data192 MSB	0...1	*8	1
			00...7F	Free EG Trk4 Data192 LSB	0...127	*8	0

(from Here : User Voice Scene's Data)

	Size	Range	Parameter	Value	Default
	1	00...02	Key Assign Mode	poly(0),mono(1),legato(2)	00(poly)
	1	28...58	Pich Up (PB Range +)	-24(28)...+24(58)	42(+2)

1	28...58	Pich Down (PB Range -)	-24(28)...+24(58)		3E(-2)
1	00...7F	PEG Decay	0...127		0
1	00...7F	PEG Depth	-64...+63 semitones		40(+0)
1	01...03	PEG Switch	VCO1(1),VCO2(2),both(3)		03(both)
1	00...01	Portamento Mode	normal(0),sustain-key(1)	*9	00(normal)
			full-time(0),fingered(1)	*10	
1	00...7F	Portamento Time	0...127		2C(44)
1	00...01	LFO Reset Mode	off(0),key-on(1)		00(off)
1	00...14	LFO1 Wave	sine(0)...offset-s/h2(14)		00(sine)
2	00...FF	LFO1 Speed	1(0)...256(FF)		53(84)
1	00...7F	LFO1 Delay	0...127		0
2	00...FF	LFO2 Speed	1(0)...256(FF)		1F(32)
1	00...02	Sync Mode	off(0),vco1 mastter to slave(1), vco2 to vco1(2)		0(off)
1	00...7F	Sync Pitch	-64...+63		40(+0)
1	00...7F	Sync Pitch Depth	-64...+63		40(+0)
1	00...04	Sync Pitch Source	fixed(0),PEG(1),FEG(2),LFO1(3), LFO2(4)		00(fixed)
1	01...03	Sync Pitch Mod Switch	master(1),slave(2),both(3)		03(both)
1	00...7F	FM Depth	-64...+63		40(+0)
1	00...04	FM Source 1	fixed(0),PEG(1),FEG(2),LFO1(3), LFO2(4)		00(fixed)
1	00...07	FM Source 2	VCO2 freq(0),VCO1(1),VCO1-sub(2), PEG(3),FEG(4),LFO1(5),LFO2(6),VCO2 output(7)		00(VCO2 freq)
1	00...04	VCO1 Wave	saw(0),pulse(1),saw2(2),mix(3) multi-saw(4)	*11	00(saw)
	00...06	VCO1 Wave	saw(0),pulse(1),inner1(2), inner2(3),inner3(4),square(5),noise(6)	*12	
1	00...7F	VCO1 Pitch Coarse	-64...+63 semitone		40(+0)
1	0E...72	VCO1 Pitch Fine	-50...+50 cent		40(+0)
1	00...7F	VCO1 Edge	0...127		64(100)
1	00...7F	VCO1 Pulse Width	0%(0)...50%(40)...99%(7F)	*15	40(50%)
	00...7F	VCO1 Mix	0...127	*16	
1	00...7F	VCO1 PWM Depth	-64...+63	*15	40(+0)
	00...7F	Detune	0...127	*16	
1	00...07	VCO1 PWM Source	fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4),LFO2-phase(5), LFO2-fast(6),VCO2(7)	*15	04(LFO2)
2	01...FF	VCO1 Pitch Mod Depth	-127...+127		80(+0)
1	00...05	VCO2 Wave	saw(0),pulse(1),saw2(2),mix(3) triangle(4),sine(5)		00(saw)
1	00...7F	VCO2 Pitch Coarse	-64...+63 semitone		40(+0)
1	0E...72	VCO2 Pitch Fine	-50(0E)...+50 cent(72)		40(+0)
1	00...7F	VCO2 Edge	0...127	*17	7F(127)
1	00...7F	VCO2 Pulse Width	0%(0)...50%(40)...99%(7F)	*17	40(50%)
1	00...7F	VCO2 PWM Depth	-64...+63	*17	40(+0)
	00...7F	VCO2 X-MOD Depth	-64...+63	*18	
1	00...07	VCO2 PWM Source	fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4),LFO2-phase(5), LFO2-fast(6),VCO1(7)	*17	04(LFO2)
	00...04	VCO2 X-MOD Source	fixed(0),PEG(1),FEG(2), LFO1(3),LFO2(4)	*18	
2	01...FF	VCO2 Pitch Mod Depth	-127...+127		80(+0)
1	00...7F	Mixer VCO1 Level	0...127		7F(127)
1	00...7F	Mixer VCO2 Level	0...127		0
1	00...7F	Mixer Ring Mod Level	0...127		0
1	00...7F	Mixer Noise Level	0...127		0
1	00...7F	FilterEG Attack Time	0...127		0
1	00...7F	FilterEG Decay Time	0...127		40(64)
1	00...7F	FilterEG Sustain Level	0...127		7F(127)
1	00...7F	FilterEG Release Time	0...127		55(85)
1	00...7F	HPF Cutoff Freq	0(thru)...127		00(thru)
1	00...05	VCF Filter Type	LPF-24dB(0),LFP-18dB(1), LPF-12dB(2),BPF(3),HPF-12dB(4), BEF(5)		00(LPF-24dB)
1	00...7F	VCF Filter Cutoff	0...127		64(100)
1	0D...7F	VCF Filter Resonance	-12(0D)...0(19)...+102(7F)		19(+0)
2	00...FF	FilterEG Depth	-128...+127		A0(+32)
1	00...7F	FillrEG Velocity Sens	-64...+63		40(+0)
1	20...7F	VCF Keyboard Track	-32...+63		40(+0)
1	00...7F	VCF Filter Mod Depth	-64...+63		40(+0)
1	00...7F	AmpEG Attack Time	0...127		0
1	00...7F	AmpEG Decay Time	0...127		40(64)
1	00...7F	AmpEG Sustain Level	0...127		7F(127)
1	00...7F	AmpEG Release Time	0...127		24(36)
1	00...7F	VCA Feedback Level	0...127		0
1	00...7F	VCA Volume	0...127		69(105)
1	00...7F	AmpEG Velocity Sens	-64...+63		40(+0)
1	00...7F	VCA Amp Mod Depth	-64...+63		40(+0)
1	01...7F	Gutitar Amp.Simulator Dry/Wet	D63>W(1)...D=W(40)...D<W63(7F)		01(D63>W)
1	00... 00	Distortion Switch	0(off),1(on)		1(on)
1	00...72	Ctrl Matrix Source1	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 1	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 1	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source2	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 2	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 2	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source3	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 3	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 3	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source4	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 4	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 4	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source5	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 5	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 5	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source6	off(0)...Assign Knob8(72)	*14,19	0(off)

1	00...2E	Ctrl Matrix Param 6	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 6	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source7	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 7	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 7	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source8	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 8	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 8	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source9	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 9	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 9	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source10	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 10	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 10	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source11	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 11	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 11	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source12	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 12	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 12	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source13	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 13	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 13	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source14	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 14	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 14	Depends on Ctrl Matrix Param	*14	40(+0)
1	00...72	Ctrl Matrix Source15	off(0)...Assign Knob8(72)	*14,19	0(off)
1	00...2E	Ctrl Matrix Param 15	off...PEG Attack(2E)	*14	0(off)
1	00...7F	Ctrl Matrix Depth 15	Depends on Ctrl Matrix Param	*14	40(+0)
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1	3E...42	Oct Shift	-2(3E), 0(40),+2(42)		40(+0)
1	00...7F	PEG Attack	0...127		0
1	00...14	LFO2 Wave	sine(0)...offset-s/h2(14)		05(triangle)
1	00...0F	LFO Assign Group	VCO1(bit3),VCO2(bit2),VCA(bit1), VCF(bit0)		00(LFO1 to All)
1	01..03	FM Algorithm	both(1),master(2),slave(3)	*13	03(slave)

(from Here : User Voice StepSEQ's Data)

1	04,06,07	Step Seq Base Unit	1/8(4)...1/12(6)...1/16(7)		07(1/16)
1	08,0C,10	Step Seq Length	8step(8),12step(C),16steps(10)		10
1	00...03	NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1	00...7F	Step Seq Note No 1	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 2	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 3	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 4	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 5	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 6	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 7	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 8	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 9	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 10	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 11	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 12	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 13	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 14	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 15	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Note No 16	C-2(0)...G8(7F)		C3(3C)
1	00...7F	Step Seq Velocity 1	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 2	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 3	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 4	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 5	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 6	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 7	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 8	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 9	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 10	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 11	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 12	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 13	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 14	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 15	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 16	rest(0),1...127		100(64)
1	00...7F	Step Seq Gate Time LSB 1		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 2		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 3		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 4		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 5		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 6		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 7		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 8		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 9		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 10		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 11		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 12		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 13		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 14		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 15		*20	94%(3C)
1	00...7F	Step Seq Gate Time LSB 16		*20	94%(3C)
1		NOT USED			--
1		NOT USED			--

129

Size	Data	Parameter Name	Description		Default
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1		NOT USED			--
1	00...07	Step Seq Gate Time MSB 1	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 2	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 3	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 4	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 5	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 6	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 7	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 8	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 9	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 10	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 11	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 12	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 13	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 14	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 15	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...07	Step Seq Gate Time MSB 16	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*20	0
1	00...01	Step Seq Mute 1	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 2	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 3	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 4	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 5	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 6	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 7	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 8	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 9	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 10	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 11	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 12	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 13	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 14	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 15	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 16	MuteOFF(0),MuteON(1)		MuteOFF(0)

TOTAL SIZE   748

mm = 00 ~ 7F : User Voice No.1 ~ User Voice No.128

```
*1  :  see other table(Arpeggio Type List)
*2  :  see other table(Ctrl Matrix Parameter List)
*3  :  become available only when Step Seq is selected and Kbd Mode='ptn-sel&norm' or 'ptn-sel&note-shift'
*4  :  only when Arpeggio is selected
*5  :  only when Step Seq is selected
*6  :  except *3
*7  :  see other table (Free EG Track Paramter List)
*8  :  only Bulk Dump (not received as parameter change)

*9  :  Key Assign Mode = poly
*10 :  Key Assign Mode = mono,legato
*11 :  Oscillator Sync Mode = off
*12 :  Oscillator Sync Mode = on ('VCO1 master to slave' or 'VCO2 to VC1')
*13 :  Oscillator Sync Mode = 'VCO1 master to slave'
*14 :  see other table (Ctrl Matrix Paramter List)
*15 :  VCO1 Wave is not MultiSaw.
*16 :  VCO1 Wave is MultiSaw.
*17 :  VCO2 Wave is not Triangle or Sine.
*18 :  VCO1 Wave is Triangle or Sine.
*19 :  CC# 3,5,7,8,9,10,15,16,18,19,22,28,29,31,34,35,39,48,49,50,51,57,59,68,71,72,73,74,75,80,81,82,83,88,89,MW~AC8 cannot be set.
*20 :  MSB bit 2-0 -> bit 9-7
       LSB bit 6 -0 -> bit 6-0
```

<1-9>

MIDI Bulk Dump Parameter table (User Pattern Voice additional)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default
22 mm 00	1	0...7F	Scene Control Param	0...127	0
01	1	0...7F	VCO1/2 Balance	-64...0...+63	40(+0)

TOTAL SIZE   2

mm = 00 ~ 7F : User Voice Add No.1 ~ User Voice Add No.128

* This Bulk Dump should be transmitted after sending User Voice Bulk (20 mm 00).

<1-10>

MIDI Bulk Dump Parameter table (User Pattern Voice Scene-1)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default
40 mm 00	2	00...FF	LFO1 Speed	1(0)...256(FF)	53(84)
02	1	00...7F	AmpEG Attack Time	0...127	0
03	1	00...7F	AmpEG Decay Time	0...127	40(64)
04	1	00...7F	AmpEG Sustain Level	0...127	7F(127)
05	1	00...7F	AmpEG Release Time	0...127	24(36)
06	1	00...7F	FilterEG Attack Time	0...127	0
07	1	00...7F	FilterEG Decay Time	0...127	40(64)
08	1	00...7F	FilterEG Sustain Level	0...127	7F(127)
09	1	00...7F	FilterEG Release Time	0...127	55(85)
0A	1	00...7F	Portamento Time	0...127	2C(44)
0B	1	00...7F	Sync Pitch	-64...+63	40(+0)
0C	1	00...7F	FM Depth	-64...+63	40(+0)
0D	1	00...7F	Mixer Noise Level	0...127	0
0E	1	00...05	VCF Filter Type	LPF-24dB(0),LFP-18dB(1), LPF-12dB(2),BPF(3),HPF-12dB(4), BEF(5)	00(LPF-24dB)
0F	1	00...7F	VCF Filter Cutoff	0...127	64(100)
10	1	0D...7F	VCF Filter Resonance	-12(0D)...0(19)...+102(7F)	19(+0)
11	2	00...FF	FilterEG Depth	-128...+127	A0(+32)
13	1	00...7F	VCO1/2 Balance	-64...0...+63	40(+0)
14	1	00...7F	Volume	0...127	64(100)
15	1	00...7F	Pan	CENTER(0),L63...C...R63(1...64...127)	40(64)
16	1	00...7F	Effect Send	0...127	0
17	1	00...7F	Effect parameter	refer to Effect Type List <Table 2-4>	0

TOTAL SIZE   18

mm = 00 ~ 7F : User Voice Scene-1 No.1 ~ User Voice Scene-1 No.128

<1-11>

MIDI Bulk Dump Parameter table (User Pattern Voice Scene-2)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default
41 mm 00	2	00...FF	LFO1 Speed	1(0)...256(FF)	53(84)
02	1	00...7F	AmpEG Attack Time	0...127	0
03	1	00...7F	AmpEG Decay Time	0...127	40(64)
04	1	00...7F	AmpEG Sustain Level	0...127	7F(127)
05	1	00...7F	AmpEG Release Time	0...127	24(36)
06	1	00...7F	FilterEG Attack Time	0...127	0
07	1	00...7F	FilterEG Decay Time	0...127	40(64)
08	1	00...7F	FilterEG Sustain Level	0...127	7F(127)
09	1	00...7F	FilterEG Release Time	0...127	55(85)
0A	1	00...7F	Portamento Time	0...127	2C(44)
0B	1	00...7F	Sync Pitch	-64...+63	40(+0)
0C	1	00...7F	FM Depth	-64...+63	40(+0)
0D	1	00...7F	Mixer Noise Level	0...127	0
0E	1	00...05	VCF Filter Type	LPF-24dB(0),LFP-18dB(1), LPF-12dB(2),BPF(3),HPF-12dB(4), BEF(5)	00(LPF-24dB)
0F	1	00...7F	VCF Filter Cutoff	0...127	64(100)
10	1	0D...7F	VCF Filter Resonance	-12(0D)...0(19)...+102(7F)	19(+0)
11	2	00...FF	FilterEG Depth	-128...+127	A0(+32)
13	1	00...7F	VCO1/2 Balance	-64...0...+63	40(+0)
14	1	00...7F	Volume	0...127	64(100)
15	1	00...7F	Pan	CENTER(0),L63...C...R63(1...64...127)	40(64)
16	1	00...7F	Effect Send	0...127	0
17	1	00...7F	Effect parameter	refer to Effect Type List <Table 2-4>	0

TOTAL SIZE   18

mm = 00 ~ 7F : User Voice Scene-2 No.1 ~ User Voice Scene-2 No.128

*   This Bulk Dump should be transmitted after sending User Voice Bulk (20 mm 00).

<1-12>
AN200 Control Matrix & Free EG Track Parameter List

Parameter Name		Ctrl Matrix : Parameter	Ctrl Matrix : Calc. Method	Ctrl Matrix : Source						Free EG : Trk Param
Group	Param Name	Data Value	Multiply or Add *1	CC AT	Data Range	Vel KeyRnd	Data Range	KeyTrk	Data Range	Data Value
---	off	0	---	---		---		---		0
---	Total Tune	1	add	x		O	(-64) - (+63)	x		
	Pitch Up	2	add	O	(-24) - (+24)	x		x		
	Pitch Down	3	add	O	(-24) - (+24)	x		x		
PEG	PEG Decay	4	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	1
	PEG Depth	5	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	2
	PEG Switch			x		x		x		3
	Portmnt Time	6	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	4
LFO	LFO1 Wave			x		x		x		5
	LFO1 Speed	7	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	6
	LFO1 Delay	8	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	7
	LFO2 Speed	9	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	8
SYNC	Sync Mode			x		x		x		9
	Sync Pitch	10	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-32) - (+32)	10
	SyncPit Dp	11	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	11
	Sync Pitch Src			x		x		x		12
	Sync Pmod Sw			x		x		x		13
FM	FM Depth	12	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	14
	FM Source1			x		x		x		15
	FM Source2			x		x		x		16
VCO1	VCO1 Wave			x		x		x		17
	VCO1 Pitch	13	add	x		x		O	(-64) - (+63)	18
	VCO1 Fine	14	add	x		x		O	(-64) - (+63)	19
	VCO1 Edge	15	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	20
	PW1/Mix	16	add	O	(-64) - (+63)	x		x		21
	PWM1/Detune	17	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	22
	PWM1 Src			x		x		x		23
(LFO)	VCO1 Pmod Dp	18	add	O	(-63) - (+63)	x		x		24
VCO2	VCO2 Wave			x		x		x		25
	VCO2 Pitch	19	add	x		x		O	(-64) - (+63)	26
	VCO2 Fine	20	add	x		x		O	(-64) - (+63)	27
	VCO2 Edge	21	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	28
	PW2	22	add	O	(-64) - (+63)	x		x		29
	PWM2/Xmod Dp	23	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	30
	PWM2/Xmod Src			x		x		x		31
(LFO)	VCO2 Pmod Dp	24	add	O	(-63) - (+63)	x		x		32
MIXER	VCO1 Lvl	25	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	33
	VCO2 Lvl	26	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	34
	Ring Mod Lvl	27	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	35
	Noise Lvl	28	mul	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	36
VCF	FEG Attack	29	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	37
	FEG Decay	30	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	38
	FEG Sustain	31	add	O	(-64) - (+63)	x		x		39
	FEG Release	32	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	40
	HPF Cutoff	33	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	41
	VCF Type			x		x		x		42
	VCF Cutoff	34	add	O	(-64) - (+63)	O	(-64) - (+63)	(x)	VCF KeyTrk	43
	Resonance	35	add	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	44
	FEG Depth	36	mul	O	(-64) - (+63)	(Vel x) KeyRnd	FEG VelSns (-64) - (+63)	O	(-64) - (+63)	45
	FEG Vel Sens			x		x		x		46
	VCF Key Trk			x		x		x		47
(LFO)	VCF FMod Dp	37	add	O	(-64) - (+63)	x		x		48
VCA	AEG Attack	38	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	49
	AEG Decay	39	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	50
	AEG Sustain	40	add	O	(-64) - (+63)	x		x		51
	AEG Release	41	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	52
(MIXER)	VCA F.B.	42	mul	O	(-64) - (+63)	x		x		53
	VCA Volume	43	mul	O	(-64) - (+63)	(Vel x) KeyRnd	AEG VelSns (-64) - (+63)	O	(-64) - (+63)	54
	AEG Vel Sns			x		x		x		55
(LFO)	VCA Mod Dp	44	add	O	(-64) - (+63)	x		x		56
Dist.	Dry/Wet	45		O	(-64) - (+63)	x		x		---
PLG-AN	PEG Attack	46	add *2	O	(-64) - (+63)	O	(-64) - (+63)	O	(-64) - (+63)	57
	LFO2 Wave			x		x		x		58
	FM Algorithm			x		x		x		59
AN200	VCO 1/2 Balance			x		x		x		60
	Effect Param			x		x		x		61
	Effect Wet Level			x		x		x		62
	Track Pan			x		x		x		63
	Track Level			x		x		x		64

*1. The effect of the controller on the parameter value is either added or multiplied as indicated. Also, when two or more different controllers are simultaneously assigned and applied to the same parameter, the combined effect of the controllers on the parameter value follows the same rule (is either added or multiplied).
*2. For these parameters, positive values decrease the time, making the EG rate faster.

<2-1>
Rhythm Track Parameter Base Address
MODEL ID = 6D

Parameter	Address			Description
	(H)	**(M)**	**(L)**	
System	00	00	00	System
Current Effects	02	01	00	Cuttnet Effect
Current Multi Part	08	00	00	Rhythm Track 1 Part Parameter
	:	:	:	:
		02	00	Rhythm Track 3 Part Parameter
		08	00	Synth Track Part Parameter
Current Rhythm StepSeq	10	00	00	Current Rhythm Trk1 Step Seq
	:	:	:	:
		02	00	Current Rhythm Trk3 Step Seq
User Pattern Rhythm Step Seq	20	00	00	User Pattern Rhythm Trk1 Step Seq 1
	:	:	:	:
		7f	00	User Pattern Rhythm Trk1 Step Seq 128
	21	00	00	User Pattern Rhythm Trk2 Step Seq 1
	:	:	:	:
		7f	00	User Pattern Rhythm Trk2 Step Seq 128
	22	00	00	User Pattern Rhythm Trk3 Step Seq 1
	:	:	:	:
		7f	00	User Pattern Rhythm Trk3 Step Seq 128
User Pattern Effect	30	00	00	User Pattern Effect 1
	:	:	:	:
		7f	00	User Pattern Effect 128
User Pattern Multi Part	40	00	00	Rhythm Trk 1 User Pattern Part 1
	:	:	:	:
		7f	00	Rhythm Trk 1 User Pattern Part 128
	41	00	00	Rhythm Trk 2 User Pattern Part 1
	:	:	:	:
		7f	00	Rhythm Trk 2 User Pattern Part 128
	42	00	00	Rhythm Trk 3 User Pattern Part 1
	:	:	:	:
		7f	00	Rhythm Trk 3 User Pattern Part 128
	48	00	00	Synth Track User Pattern Part 1
	:	:	:	:
		7f	00	Synth Track User Pattern Part 128
User Song	60	00	00	Song1 measure1
	:	:	:	:
		7f	00	Song1 measure128
	:	:	:	:
	69	00	00	Song10 measure1
	:	:	:	:
		7f	00	Song10 measure128
	70	00	00	Song1 measure129
	:	:	:	:
		7f	00	Song1 measure256
	:	:	:	:
	79	00	00	Song10 measure129
	:	:	:	:
		7f	00	Song10 measure256

<2-2>
MIDI Parameter Change table (SYSTEM)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default (H)
00 00 00	4		(RESERVED)		--
04	1		(RESERVED)		--
05			(NOT USED)		--
06	1		(RESERVED)		--
07	2	01...C8	Play Effect Gate Time	1%(1)...200%(C8)	64(100%)
09	1	00...03	Step Seq Loop Type	forward(0),backward(1),alternateA(2), alternateB(3)	00(forward)
TOTAL SIZE	09				

<2-3>
MIDI Parameter Change table (CURRENT EFFECT)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default (H)
02 01 00	1	00 - 03	EFFECT TYPE MSB	refer to Effect Type List <Table 2-4>	00
01	1	00 - 02	EFFECT TYPE LSB	refer to Effect Type List <Table 2-4>	00
02	1	00 - 7F	EFFECT PARAMETER	refer to Effect Type List <Table 2-4>	00
TOTAL SIZE	3				

<2-4>
Effect Type List

Type MSB	Type LSB			
	00	**01**	**02**	**03**
00	Delay1(mono)	Delay2(stereo)	Delay3(cross)	Reverb
01	Flanger1	Flanger2	Chorus	--
02	Phaser1	Phaser2	Phaser3	--
03	AmpSim1	AmpSim2	AmpSim3	--

<2-4-1>

Effect type	Control Paramater	Value		
Delay 1 (mono)	Tempo Sync Resolution	0 - 127		table#3
Delay 2 (stereo)	Tempo Sync Resolution	0 - 127		table#3
Delay 3 (cross)	Tempo Sync Resolution	0 - 127		table#3
Reverb	Reverb Time	0 - 127	0.3 s - 16.0 s	table#2
Flanger 1	LFO Speed	0 - 127	0.00Hz - 39.7Hz	table#1
Flanger 2	LFO Speed	0 - 127	0.00Hz - 39.7Hz	table#1
Chorus	LFO Speed	0 - 127	0.00Hz - 39.7Hz	table#1
Phaser 1	LFO Speed	0 - 127	0.00Hz - 39.7Hz	table#1
Phaser 2	LFO Speed	0 - 127	0.00Hz - 39.7Hz	table#1
Phaser 3	LFO Speed	0 - 127	0.00Hz - 39.7Hz	table#1
AmpSim 1	Drive	0 - 127		
AmpSim 2	Drive	0 - 127		
AmpSim 3	Drive	0 - 127		

table#1
LFO Frequency

Data	Value	Data	Value	Data	Value	Data	Value
0	0.00	32	1.34	64	0.69	96	8.41
1	0.04	33	1.38	65	2.77	97	8.74
2	0.08	34	1.43	66	2.86	98	9.08
3	0.12	35	1.47	67	2.94	99	9.42
4	0.16	36	1.51	68	3.02	100	9.75
5	0.21	37	1.55	69	3.11	101	10.0
6	0.25	38	1.59	70	3.19	102	10.7
7	0.29	39	1.64	71	3.28	103	11.4
8	0.33	40	1.68	72	3.36	104	12.1
9	0.37	41	1.72	73	3.44	105	12.7
10	0.42	42	1.76	74	3.53	106	13.4
11	0.46	43	1.80	75	3.61	107	14.1
12	0.50	44	1.85	76	3.70	108	14.8
13	0.54	45	1.89	77	3.86	109	15.4
14	0.58	46	1.93	78	4.03	110	16.1
15	0.63	47	1.97	79	4.20	111	16.8
16	0.67	48	2.01	80	4.37	112	17.5
17	0.71	49	2.06	81	4.54	113	18.1
18	0.75	50	2.10	82	4.71	114	19.5
19	0.79	51	2.14	83	4.87	115	20.8
20	0.84	52	2.18	84	5.04	116	22.2
21	0.88	53	2.22	85	5.21	117	23.5
22	0.92	54	2.27	86	5.38	118	24.8
23	0.96	55	2.31	87	5.55	119	26.2
24	1.00	56	2.35	88	5.72	120	27.5
25	1.05	57	2.39	89	6.05	121	28.9
26	1.09	58	2.43	90	6.39	122	30.2
27	1.13	59	2.48	91	6.72	123	31.6
28	1.17	60	2.52	92	7.06	124	32.9
29	1.22	61	2.56	93	7.40	125	34.3
30	1.26	62	2.60	94	7.73	126	37.0
31	1.30	63	2.65	95	8.07	127	39.7

table#2
Reverb time

Data	Value	Data	Value
0,1	0.3	64,65	3.5
2,3	0.4	66,67	3.6
4,5	0.5	68,69	3.7
6,7	0.6	70,71	3.8
8,9	0.7	72,73	3.9
10,11	0.8	74,75	4.0
12,13	0.9	76,77	4.1
14,15	1.0	78,79	4.2
16,17	1.1	80,81	4.3
18,19	1.2	82,83	4.4
20,21	1.3	84,85	4.5
22,23	1.4	86,87	4.6
24,25	1.5	88,89	4.7
26,27	1.6	90,91	4.8
28,29	1.7	92,93	4.9
30,31	1.8	94,95	5.0
32,33	1.9	96,97	5.5
34,35	2.0	98,99	6.0
36,37	2.1	100,101	6.5
38,39	2.2	102,103	7.0
40,41	2.3	104,105	7.5
42,43	2.4	106,107	8.0
44,45	2.5	108,109	8.5
46,47	2.6	110,111	9.0
48,49	2.7	112,113	9.5
50,51	2.8	114,115	10.0
52,53	2.9	116,117	11.0
54,55	3.0	118,119	12.0
56,57	3.1	120,121	13.0
58,59	3.2	122,123	14.0
60,61	3.3	124,125	15.0
62,63	3.4	126,127	16.0

table#3
Tempo resolution

Data	Value
0~7	1/32
8~15	1/24
16~23	1/16
24~31	1/12
32~39	3/32
40~47	1/8
48~55	1/6
56~63	3/16
64~71	1/4
72~79	1/3
80~95	3/8
96~127	1/2

<2-5>

MIDI Parameter Change table (User Voice EFFECT)

Address (H)			Size (H)	Data (H)	Prameter Name	Description	Default (H)
30	nn	00	1	00 - 03	EFFECT TYPE MSB	refer to Effect Type List <Table 2-4>	00
		01	1	00 - 02	EFFECT TYPE LSB	refer to Effect Type List <Table 2-4>	00
		02	1	00 - 7F	EFFECT PARAMETER	refer to Effect Type List <Table 2-4>	00
TOTAL SIZE		3					

nn = Pattern Number

<2-6>

MIDI Parameter Change table (MULTI PART)

Address (H)			Size (H)	Data (H)	Prameter Name	Description	Default (H)
08	pp	00	1		(RESERVED)		--
		01	1		(RESERVED)		--
		02	1		(RESERVED)		--
		03	1		(RESERVED)		--
		04	1		(RESERVED)		--
		05	1	00 - 7F	VOLUME	0 - 127	64
		06	1	00 - 7F	PAN	CENTER/RANDOM (*1) (0),L63...C...R63(1...64...127)	40
		07	1	00 - 7F	EFFECT1 SEND	0 - 127	00
		08	1		(RESERVED)		--
		09	1		(RESERVED)		--
		0A	1	00 - 7F	FILTER CUTOFF FREQUENCY (*2)	-64 - +63	40
		0B	1	00 - 7F	FILTER RESONANCE (*2)	-64 - +63	40
		0C	1		(RESERVED)		--
		0D	1		(RESERVED)		--
		0E	1		(RESERVED)		--
TOTAL SIZE		0F					

pp = Part Number (00 - 02 : Rhythm Track 1 - 3, 08 : Synth Track)

*1 CENTER when pp = 08(Synth Track), RANDOM when pp = 0,1,2(Rhythm Track)
*2 reserved when pp = 08(Synth Track)

<2-7>

MIDI Parameter Change table (User Voice MULTI PART)

Address (H)			Size (H)	Data (H)	Prameter Name	Description	Default (H)
4p	nn	00	1		(RESERVED)		--
		01	1		(RESERVED)		--
		02	1		(RESERVED)		--
		03	1		(RESERVED)		--
		04	1		(RESERVED)		--
		05	1	00 - 7F	VOLUME	0 - 127	64
		06	1	00 - 7F	PAN	CENTER/RANDOM (*1) (0),L63...C...R63(1...64...127)	40
		07	1	00 - 7F	EFFECT1 SEND	0 - 127	00
		08	1		(RESERVED)		28
		09	1		(RESERVED)		00
		0A	1	00 - 7F	FILTER CUTOFF FREQUENCY (*2)	-64 - +63	40
		0B	1	00 - 7F	FILTER RESONANCE (*2)	-64 - +63	40
		0C	1		(RESERVED)		--
		0D	1		(RESERVED)		--
		0E	1		(RESERVED)		--
TOTAL SIZE		0F					

nn = Pattern Number
p = Part Number (0 - 2 : Rhythm Track 1 - 3, 8 : Synth Track)

*1 CENTER when pp = 08(Synth Track), RANDOM when pp = 0,1,2(Rhythm Track)
*2 reserved when pp = 08(Synth Track)

<2-8>

MIDI Parameter Change table (Rhythm Track Current Step Seq Pattern)

Address (H)			Size (H)	Data (H)	Prameter Name	Description	Default
10	0p	00	1		NOT USED		--
		01	1		NOT USED		--
		02	1		NOT USED		--
		03	1		NOT USED		--
		04	1		NOT USED		--
		05	1		NOT USED		--
		06	1	00...78	Step Seq Inst 1	Ba1C(0)...DgW7(78)	SD10
		07	1	00...78	Step Seq Inst 2	Ba1C(0)...DgW7(78)	SD10
		08	1	00...78	Step Seq Inst 3	Ba1C(0)...DgW7(78)	SD10
		09	1	00...78	Step Seq Inst 4	Ba1C(0)...DgW7(78)	SD10
		0A	1	00...78	Step Seq Inst 5	Ba1C(0)...DgW7(78)	SD10
		0B	1	00...78	Step Seq Inst 6	Ba1C(0)...DgW7(78)	SD10
		0C	1	00...78	Step Seq Inst 7	Ba1C(0)...DgW7(78)	SD10
		0D	1	00...78	Step Seq Inst 8	Ba1C(0)...DgW7(78)	SD10
		0E	1	00...78	Step Seq Inst 9	Ba1C(0)...DgW7(78)	SD10
		0F	1	00...78	Step Seq Inst 10	Ba1C(0)...DgW7(78)	SD10
		10	1	00...78	Step Seq Inst 11	Ba1C(0)...DgW7(78)	SD10
		11	1	00...78	Step Seq Inst 12	Ba1C(0)...DgW7(78)	SD10
		12	1	00...78	Step Seq Inst 13	Ba1C(0)...DgW7(78)	SD10
		13	1	00...78	Step Seq Inst 14	Ba1C(0)...DgW7(78)	SD10
		14	1	00...78	Step Seq Inst 15	Ba1C(0)...DgW7(78)	SD10
		15	1	00...78	Step Seq Inst 16	Ba1C(0)...DgW7(78)	SD10
		16	1	00...7F	Step Seq Velocity 1	rest(0),1...127	100(64)
		17	1	00...7F	Step Seq Velocity 2	rest(0),1...127	100(64)
		18	1	00...7F	Step Seq Velocity 3	rest(0),1...127	100(64)

19	1	00...7F	Step Seq Velocity 4	rest(0),1...127		100(64)
1A	1	00...7F	Step Seq Velocity 5	rest(0),1...127		100(64)
1B	1	00...7F	Step Seq Velocity 6	rest(0),1...127		100(64)
1C	1	00...7F	Step Seq Velocity 7	rest(0),1...127		100(64)
1D	1	00...7F	Step Seq Velocity 8	rest(0),1...127		100(64)
1E	1	00...7F	Step Seq Velocity 9	rest(0),1...127		100(64)
1F	1	00...7F	Step Seq Velocity 10	rest(0),1...127		100(64)
20	1	00...7F	Step Seq Velocity 11	rest(0),1...127		100(64)
21	1	00...7F	Step Seq Velocity 12	rest(0),1...127		100(64)
22	1	00...7F	Step Seq Velocity 13	rest(0),1...127		100(64)
23	1	00...7F	Step Seq Velocity 14	rest(0),1...127		100(64)
24	1	00...7F	Step Seq Velocity 15	rest(0),1...127		100(64)
25	1	00...7F	Step Seq Velocity 16	rest(0),1...127		100(64)
26	1	00...7F	Step Seq Gate Time LSB 1		*1	94%(3C)
27	1	00...7F	Step Seq Gate Time LSB 2		*1	94%(3C)
28	1	00...7F	Step Seq Gate Time LSB 3		*1	94%(3C)
29	1	00...7F	Step Seq Gate Time LSB 4		*1	94%(3C)
2A	1	00...7F	Step Seq Gate Time LSB 5		*1	94%(3C)
2B	1	00...7F	Step Seq Gate Time LSB 6		*1	94%(3C)
2C	1	00...7F	Step Seq Gate Time LSB 7		*1	94%(3C)
2D	1	00...7F	Step Seq Gate Time LSB 8		*1	94%(3C)
2E	1	00...7F	Step Seq Gate Time LSB 9		*1	94%(3C)
2F	1	00...7F	Step Seq Gate Time LSB 10		*1	94%(3C)
30	1	00...7F	Step Seq Gate Time LSB 11		*1	94%(3C)
31	1	00...7F	Step Seq Gate Time LSB 12		*1	94%(3C)
32	1	00...7F	Step Seq Gate Time LSB 13		*1	94%(3C)
33	1	00...7F	Step Seq Gate Time LSB 14		*1	94%(3C)
34	1	00...7F	Step Seq Gate Time LSB 15		*1	94%(3C)
35	1	00...7F	Step Seq Gate Time LSB 16		*1	94%(3C)
36	1	00...7F	Step Seq Pitch 1	0...127		0(00)
37	1	00...7F	Step Seq Pitch 2	0...127		0(00)
38	1	00...7F	Step Seq Pitch 3	0...127		0(00)
39	1	00...7F	Step Seq Pitch 4	0...127		0(00)
3A	1	00...7F	Step Seq Pitch 5	0...127		0(00)
3B	1	00...7F	Step Seq Pitch 6	0...127		0(00)
3C	1	00...7F	Step Seq Pitch 7	0...127		0(00)
3D	1	00...7F	Step Seq Pitch 8	0...127		0(00)
3E	1	00...7F	Step Seq Pitch 9	0...127		0(00)
3F	1	00...7F	Step Seq Pitch10	0...127		0(00)
40	1	00...7F	Step Seq Pitch11	0...127		0(00)
41	1	00...7F	Step Seq Pitch12	0...127		0(00)
42	1	00...7F	Step Seq Pitch13	0...127		0(00)
43	1	00...7F	Step Seq Pitch14	0...127		0(00)
44	1	00...7F	Step Seq Pitch15	0...127		0(00)
45	1	00...7F	Step Seq Pitch16	0...127		0(00)
46	1	00...07	Step Seq Gate Time MSB 1	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
47	1	00...07	Step Seq Gate Time MSB 2	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
48	1	00...07	Step Seq Gate Time MSB 3	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
49	1	00...07	Step Seq Gate Time MSB 4	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4A	1	00...07	Step Seq Gate Time MSB 5	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4B	1	00...07	Step Seq Gate Time MSB 6	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4C	1	00...07	Step Seq Gate Time MSB 7	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4D	1	00...07	Step Seq Gate Time MSB 8	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4E	1	00...07	Step Seq Gate Time MSB 9	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
4F	1	00...07	Step Seq Gate Time MSB 10	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
50	1	00...07	Step Seq Gate Time MSB 11	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
51	1	00...07	Step Seq Gate Time MSB 12	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
52	1	00...07	Step Seq Gate Time MSB 13	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
53	1	00...07	Step Seq Gate Time MSB 14	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
54	1	00...07	Step Seq Gate Time MSB 15	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
55	1	00...07	Step Seq Gate Time MSB 16	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
56	1	00...01	Step Seq Mute 1	MuteOFF(0),MuteON(1)		MuteOFF(0)
57	1	00...01	Step Seq Mute 2	MuteOFF(0),MuteON(1)		MuteOFF(0)
58	1	00...01	Step Seq Mute 3	MuteOFF(0),MuteON(1)		MuteOFF(0)
59	1	00...01	Step Seq Mute 4	MuteOFF(0),MuteON(1)		MuteOFF(0)
5A	1	00...01	Step Seq Mute 5	MuteOFF(0),MuteON(1)		MuteOFF(0)
5B	1	00...01	Step Seq Mute 6	MuteOFF(0),MuteON(1)		MuteOFF(0)
5C	1	00...01	Step Seq Mute 7	MuteOFF(0),MuteON(1)		MuteOFF(0)
5D	1	00...01	Step Seq Mute 8	MuteOFF(0),MuteON(1)		MuteOFF(0)
5E	1	00...01	Step Seq Mute 9	MuteOFF(0),MuteON(1)		MuteOFF(0)
5F	1	00...01	Step Seq Mute 10	MuteOFF(0),MuteON(1)		MuteOFF(0)
60	1	00...01	Step Seq Mute 11	MuteOFF(0),MuteON(1)		MuteOFF(0)
61	1	00...01	Step Seq Mute 12	MuteOFF(0),MuteON(1)		MuteOFF(0)
62	1	00...01	Step Seq Mute 13	MuteOFF(0),MuteON(1)		MuteOFF(0)
63	1	00...01	Step Seq Mute 14	MuteOFF(0),MuteON(1)		MuteOFF(0)
64	1	00...01	Step Seq Mute 15	MuteOFF(0),MuteON(1)		MuteOFF(0)
65	1	00...01	Step Seq Mute 16	MuteOFF(0),MuteON(1)		MuteOFF(0)

TOTAL SIZE   66

p = Part Number (0 - 2 : Rhythm Track 1 - 3)

*1 : MSB bit 2-0 -> bit 9-7
      LSB bit 6 -0 -> bit 6-0
*2 : This should be transmitted after sending Step Seq Gate Time LSB n.

<2-9>

MIDI Bulk Dump Parameter table (Rhythm Track User Step Seq Pattern)

Address (H)	Size (H)	Data (H)	Prameter Name	Description	Default
2p nn 00	1		NOT USED		--
	1		NOT USED		--
	1		NOT USED		--
	1		NOT USED		--
	1		NOT USED		--
	1		NOT USED		--
	1	00...78	Step Seq Inst 1	Ba1C(0)...DgW7(78)	SD10
	1	00...78	Step Seq Inst 2	Ba1C(0)...DgW7(78)	SD10

1	00...78	Step Seq Inst 3	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 4	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 5	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 6	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 7	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 8	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 9	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 10	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 11	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 12	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 13	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 14	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 15	Ba1C(0)...DgW7(78)		SD10
1	00...78	Step Seq Inst 16	Ba1C(0)...DgW7(78)		SD10
1	00...7F	Step Seq Velocity 1	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 2	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 3	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 4	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 5	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 6	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 7	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 8	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 9	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 10	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 11	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 12	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 13	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 14	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 15	rest(0),1...127		100(64)
1	00...7F	Step Seq Velocity 16	rest(0),1...127		100(64)
1	00...7F	Step Seq Gate Time LSB 1		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 2		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 3		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 4		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 5		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 6		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 7		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 8		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 9		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 10		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 11		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 12		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 13		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 14		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 15		*1	94%(3C)
1	00...7F	Step Seq Gate Time LSB 16		*1	94%(3C)
1	00...7F	Step Seq Pitch 1	0...127		0(00)
1	00...7F	Step Seq Pitch 2	0...127		0(00)
1	00...7F	Step Seq Pitch 3	0...127		0(00)
1	00...7F	Step Seq Pitch 4	0...127		0(00)
1	00...7F	Step Seq Pitch 5	0...127		0(00)
1	00...7F	Step Seq Pitch 6	0...127		0(00)
1	00...7F	Step Seq Pitch 7	0...127		0(00)
1	00...7F	Step Seq Pitch 8	0...127		0(00)
1	00...7F	Step Seq Pitch 9	0...127		0(00)
1	00...7F	Step Seq Pitch10	0...127		0(00)
1	00...7F	Step Seq Pitch11	0...127		0(00)
1	00...7F	Step Seq Pitch12	0...127		0(00)
1	00...7F	Step Seq Pitch13	0...127		0(00)
1	00...7F	Step Seq Pitch14	0...127		0(00)
1	00...7F	Step Seq Pitch15	0...127		0(00)
1	00...7F	Step Seq Pitch16	0...127		0(00)
1	00...07	Step Seq Gate Time MSB 1	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 2	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 3	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 4	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 5	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 6	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 7	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 8	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 9	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 10	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 11	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 12	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 13	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 14	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 15	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...07	Step Seq Gate Time MSB 16	1%(0)...100%(40)...200%(7F)...1600%(3FF)	*1,2	0
1	00...01	Step Seq Mute 1	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 2	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 3	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 4	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 5	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 6	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 7	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 8	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 9	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 10	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 11	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 12	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 13	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 14	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 15	MuteOFF(0),MuteON(1)		MuteOFF(0)
1	00...01	Step Seq Mute 16	MuteOFF(0),MuteON(1)		MuteOFF(0)

TOTAL SIZE   66

p   = Part Number (0 - 2 : Rhythm Track 1 - 3)
nn = User Pattern Number (0 - 7F)

*1 : MSB bit 2-0 -> bit 9-7
    LSB bit 6 -0 -> bit 6-0
*2 : This should be transmitted after sending Step Seq Gate Time LSB n.

<2-10>

MIDI Parameter Change table (User Song)

Address (H)	Size (H)	Data (H)	Prameter	Description		Default
6s mm 00	2	00 - FF, 100-17F, 3FFE, 3FFF	PATTERN NUM	P.001-P.256, U.001-U128, End, ----		P.001
02	2	14 - 12C, 3FFF	BPM	20.0 - 300.0, ----		140.0
04	2	01-C8, FF	PLAY FX GATETIME	01-200, ----		100
06	1	00 - 03, 7F	BEAT	16, 12, 8, ----		16
07	1	32 - 53, 7F	SWING			50
08	1	28 - 58, 7F	PITCH	-24 - 24, ----		0
09	1	00 - 01, 7F	LOOP TYPE	For, bACk, ----		For
0A	1	00-0F, 7F (*1)	TRACK MUTE	oooo-____, ----		oooo

TOTAL SIZE 0B

s = song number
mm = measure (0:1st, 1:2nd... 7f:128th)

Address (H)	Size (H)	Data (H)	Prameter	Description		Default
7s mm 00	2	00 - FF, 100-17F, 3FFE, 3FFF	PATTERN NUM	P.001-P.256, U.001-U128, End, ----		P.001
02	2	14 - 12C, 3FFF	BPM	20.0 - 300.0, ----	*2	140.0
04	2	01-C8, FF	PLAY FX GATETIME	01-200, ----		100
06	1	00 - 03, 7F	BEAT	16, 12, 8, ----		16
07	1	32 - 53, 7F	SWING			50
08	1	28 - 58, 7F	PITCH	-24 - 24, ----		0
09	1	00 - 01, 7F	LOOP TYPE	For, bACk, ----		For
0A	1	00-0F, 7F (*1)	TRACK MUTE	oooo-____, ----		oooo

TOTAL SIZE 0B

s = song number
mm = measure (0:129th, 1:130th... 7f:256th)

*1 bit 0: Synth Track, bit1: Rhythm Track 1, bit2:Rhythm Track 2, bit3:Rhythm Track 3,   Track(n) is muted when bit(n) = 1.
*2 BPM = ((1st & 03h) * 128 + 2nd) + ((1st & 78h)/8)/10

<3-1>

AN1x Parameter Base Address

MODEL ID = 5C (AN1x)

Parameter	Address			Description
	(H)	(M)	(L)	
Current Voice	10	00	00	AN1x Current Voice Common
	10	0E	00	AN1x Current Voice Step Seq Pattern
	10	10	00	AN1x Current Voice Scene1
User Voice	11	00	00	AN1x User Voice 1
	:	:	:	:
	11	7F	00	AN1x User Voice 128

Function...	Transmitted	Recognized	Remarks
Basic Default Channel Changed	1 - 4 1 - 16	1 - 4 1 - 16	
Mode Default Messages Altered	3 x **************	3 3,4 (m=1) *1 x	
Note Number : True voice	1 - 127 **************	0 - 127 0 - 127	
Velocity Note ON Note OFF	o 9nH,v=1-127 o 9nH,v=0	o 9nH,v=1-127 x	
After Key's Touch Ch's	x x	x o	
Pitch Bend	x	o 0-24 semi	
0,32	x	o	Bank Select
1,5,7,10	o	o	
11	x	o	
6,38	o	o	Data Entry
Control 64,65	x	o	
71-75	o	o	Sound Controller
Change 94	o	o	Effect Depth
98-99	o	o	NRPN LSB,MSB
16,18,19,80-83	o	o	Knob Control
Prog Change : True #	o **************	o 0 - 127 0 - 127	
System Exclusive	o	o	
: Song Pos. Common : Song Sel. : Tune	o *3 x x	o *2 x x	
System :Clock Real Time:Commands	o *3 o *3	o *4 o *2	
Aux :All Sound off :Reset All Cntrls :Local ON/OFF :All Notes OFF Mes- :Active Sense sages:Reset	x x x x o x	o(120,126,127) o(121) x o(123-125) o x	

Notes: *1 m is always treated as "1" regardless of its value.
          *2 if MIDI control is in or in/out
          *3 if MIDI control is out or in/out
          *4 if MIDI sync is external			

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

Rhythm Track Instrument List

Note No.	Note		Voice Name	Display	Description
0	C	-2	PulseBass C	bA1C	Filtered square wave synth bass
1	C#	-2	PulseBass C#	b1C°	
2	D	-2	PulseBass D	bA1d	
3	D#	-2	PulseBass D#	b1d°	
4	E	-2	PulseBass E	bA1E	
5	F	-2	PulseBass F	bA1F	
6	F#	-2	PulseBass F#	b1F°	
7	G	-2	PulseBass G	bA1G	
8	G#	-2	PulseBass G#	b1G°	
9	A	-2	PulseBass A	bA1A	
10	A#	-2	PulseBass A#	b1A°	
11	B	-2	PulseBass B	bA1b	
12	C	-1	SineBass C	bA2C	Super low sine wave bass
13	C#	-1	SineBass C#	b2C°	
14	D	-1	SineBass D	bA2d	
15	D#	-1	SineBass D#	b2d°	
16	E	-1	SineBass E	bA2E	
17	F	-1	SineBass F	bA2F	
18	F#	-1	SineBass F#	b2F°	
19	G	-1	SineBass G	bA2G	
20	G#	-1	SineBass G#	b2G°	
21	A	-1	SineBass A	bA2A	
22	A#	-1	SineBass A#	b2A°	
23	B	-1	SineBass B	bA2b	
24	C	0	PickBass C	bA3C	Pick bass
25	C#	0	PickBass C#	b3C°	
26	D	0	PickBass D	bA3d	
27	D#	0	PickBass D#	b3d°	
28	E	0	PickBass E	bA3E	
29	F	0	PickBass F	bA3F	
30	F#	0	PickBass F#	b3F°	
31	G	0	PickBass G	bA3G	
32	G#	0	PickBass G#	b3G°	
33	A	0	PickBass A	bA3A	
34	A#	0	PickBass A#	b3A°	
35	B	0	PickBass B	bA3b	
36	C	1	BD Analog	bd01	080 boom kick
37	C#	1	BD R&B 1	bd02	Dry kick drum
38	D	1	BD R&B 2	bd03	Sliced kick
39	D#	1	BD Lo-Fi	bd04	Loose gated kick
40	E	1	BD Jungle	bd05	Tight gated kick
41	F	1	BD Hip 1	bd06	Thumping kick drum with boosted low end
42	F#	1	BD Hip 2	bd07	Gated kick with harmonic overtones
43	G	1	BD Tech	bd08	Hard electric kick
44	G#	1	BD Dist 1	bd09	Heavily distorted kick
45	A	1	BD Dist 2	bd10	Punchy kick with overdrive
46	A#	1	BD Human 1	bd11	Voice drum "Tuh"
47	B	1	BD Human 2	bd12	Voice drum "Buh"
48	C	2	BD Elec 1	bd13	Trans kick
49	C#	2	BD Elec 2	bd14	090 distorted kick
50	D	2	BD Elec 3	bd15	090 house kick
51	D#	2	SD Live	sd01	Tight snare with slight room reverb
52	E	2	SD R&B 1	sd02	Snare with sharp attack
53	F	2	SD R&B 2	sd03	Snappy hip-hop snare
54	F#	2	SD Analog	sd04	080 analog snare
55	G	2	SD Hip 1	sd05	Loose snare with a gated effect
56	G#	2	SD Hip 2	sd06	Slightly muffled lo-fi snare
57	A	2	SD Hip 3	sd07	Hard smashing gated snare
58	A#	2	SD Cut	sd08	Jungle snare
59	B	2	SD Dodge	sd09	Fast sample hit
60	C	3	SD Timbre	sd10	Industrial hammer-like sound

Note No.	Note		Voice Name	Display	Description
61	C#	3	SD D&B	Sd11	Bright smash snare
62	D	3	SD Dist	Sd12	090 distorted snare
63	D#	3	SD Elec 1	Sd13	090 house snare
64	E	3	SD Elec 2	Sd14	090 tight snare
65	F	3	SD Rim 1	rim1	Heavily struck rim shot
66	F#	3	SD Rim 2	rim2	Lightly struck rim shot
67	G	3	HH D&B Cls	HHC1	Pedal hi-hat
68	G#	3	HH D&B Opn	HHo1	Hi-hat open and closed
69	A	3	HH Ana Cls 1	HHC2	090 tight closed hi-hat
70	A#	3	HH Ana Opn 1	HHo2	080 analog open hi-hat
71	B	3	HH Syn Cls	HHC3	Electric beat box hi-hat (closed)
72	C	4	HH Syn Opn	HHo3	Electric beat box hi-hat (open)
73	C#	4	HH Ana Cls 2	HHC4	090 house hi-hat (closed)
74	D	4	HH Ana Cls 2	HHo4	090 house hi-hat (open)
75	D#	4	Tom Dist	toM1	090 overdriven tom
76	E	4	Tom Ana 1	toM2	80's electro tom
77	F	4	Tom Ana 2	toM3	090 house tom
78	F#	4	Tom Synth	toM4	Resonant synthesizer zap
79	G	4	Tom Sine	toM5	High-pitched synthesized tom
80	G#	4	Crush Cym	CCYM	Loud crash cymbal
81	A	4	Ride Cym	rdC1	Ride cymbal struck on edge
82	A#	4	Ride Bell	rdC2	Ride cymbal struck on bell
83	B	4	Tambourine	tMbr	Palm-struck tambourine
84	C	5	Tabla Open	tbL1	Open tabla
85	C#	5	Tabla Mute	tbL2	Muted tabla
86	D	5	Tabla Nah	tbL3	Nah tabla
87	D#	5	Udu Low	udu1	African Udu drum low
88	E	5	Udu High	udu2	African Udu drum high
89	F	5	Udu Finger	udu3	African Udu finger
90	F#	5	Clave	CLAt	080 claves
91	G	5	Maracas	NrCS	Latin maracas
92	G#	5	Shaker	SHtr	Samba shaker
93	A	5	Clap	CLAP	090 house clap
94	A#	5	Scratch 1	SCr1	Forward record scratch
95	B	5	Scratch 2	SCr2	Backward record scratch
96	C	6	Scratch 3	SCr3	Record scratch back and forth 1
97	C#	6	Scratch 4	SCr4	Record scratch back and forth 2
98	D	6	Ripper	rPPr	Over-blown mic distortion
99	D#	6	Zap 1	ZAP1	Scratchy synth zap
100	E	6	Zap 2	ZAP2	Hi-res laser zap
101	F	6	Rev Low	rLLU	Eerie reverse reverb effect
102	F#	6	Synth Vibra	SYcb	Fluttering whistle-like noise
103	G	6	Metal	NEtL	Percussive metallic sound
104	G#	6	Click	CLCt	Squishy percussive noise
105	A	6	Gt Attack	GtAt	Electric guitar with wah effect
106	A#	6	Gt Power	GtPU	Sustaining distorted guitar chord
107	B	7	Stab Organ	Stor	Synth chord stab
108	C	7	SlowBass	bA4	Drone bass slow attack
109	C#	7	FingerBass	bA5	Drone bass fast attack
110	D	7	SynthBass 1	SbS1	030 saw wave (closed filter)
111	D#	7	SynthBass 2	SbS2	030 saw wave (half-open filter)
112	E	7	SynthBass 3	SbS3	030 saw wave (open filter)
113	F	7	SynthBass 4	SbS4	030 saw wave (high resonance)
114	F#	7	Digi Wave 1	dGU1	Falling synth note modulated with LFO
115	G	7	Digi Wave 2	dGU2	Sitar-like sound with long filter decay
116	G#	7	Digi Wave 3	dGU3	Sitar-like sound with vibrato
117	A	7	Digi Wave 4	dGU4	High-pitched UFO (looped)
118	A#	7	Digi Wave 5	dGU5	Synth note with a quick rise in pitch
119	B	7	Digi Wave 6	dGU6	Bell sound with a slight drop in pitch
120	C	8	Digi Wave 7	dGU7	Metal can struck with mallet

Pattern List

Preset Bank 1 (Bank MSB=63, LSB=0, Pgm#1-64)

No.	Pgm#	Pattern Name	Group	BPM
P001	1	Phatty		138
P002	2	Fat 5th		135
P003	3	Acid EG-O		125
P004	4	Noize On		140
P005	5	Joshin		134
P006	6	Flabber		170
P007	7	Bad Sign		136
P008	8	3rd Love		142
P009	9	5th Morf		134
P010	10	Short Saw		134
P011	11	Noizz		135
P012	12	Nu Basic		135
P013	13	The Race		135
P014	14	DarkTemple		145
P015	15	Maneki		150
P016	16	Gabbler		170
P017	17	No. 1		140
P018	18	Electra	techno	126
P019	19	Come Back		118
P020	20	Power X		128
P021	21	Crossfire		132
P022	22	Happy Joe		129
P023	23	Elitdance		135
P024	24	90s Line		127
P025	25	Mappet		130
P026	26	Last Dance		122
P027	27	HiPassLead		138
P028	28	Hook Time		139
P029	29	Voco Cry		140
P030	30	Fifth		130
P031	31	Tech Fade		132
P032	32	Comicstrip		136
P033	33	Finger		132
P034	34	Drip Drop		142
P035	35	Drib Hop		130
P036	36	Pulse Step		135
P037	37	Hybridz		132
P038	38	Gyroscope		128
P039	39	Cuneiform		140
P040	40	MinimalOrg		140
P041	41	Silver BO		135
P042	42	Crazy Acid		142
P043	43	Willis		135
P044	44	Inter		125
P045	45	Up There	house	145
P046	46	3rd Wave		116
P047	47	Millennia		121
P048	48	Snarly		125
P049	49	Afterhours		125
P050	50	Velocity		140
P051	51	Orbitron		120
P052	52	B-Tech		130
P053	53	Hard House		140
P054	54	HypnoHouse		120
P055	55	Hello 2001		110
P056	56	Ideo-Gram		130
P057	57	OWN-Q-Beat		128
P058	58	Overabound		125
P059	59	ExtensionD	breaks 1	135
P060	60	Dawn OFF		135
P061	61	Bug Filter		128
P062	62	Digi-FANG		105
P063	63	DarkWalker		115
P064	64	Sam-u-Rai		95

Preset Bank 1 (Bank MSB=63, LSB=0, Pgm#65-128)

No	Pgm#	Pattern Name	Group	BPM
P065	65	Induction		100
P066	66	Moon GAZA		120
P067	67	Pick-Sweep		105
P068	68	SwillJoker		130
P069	69	HONNOU		115
P070	70	NippingSIN		128
P071	71	Break-Qoo		140
P072	72	Inter Step		147
P073	73	Guri Guri		143
P074	74	Cyber Punk		130
P075	75	Xmod Fuzz		127
P076	76	Hood Lead		132
P077	77	Whirlwind		157
P078	78	One Stomp		165
P079	79	Rhino		130
P080	80	Vegas		135
P081	81	Dane	breaks 1	109
P082	82	Carina		118
P083	83	Hard Hop		120
P084	84	Science		130
P085	85	Blackbooty		130
P086	86	Mechanoid		130
P087	87	Springy		114
P088	88	Arnee		125
P089	89	Punch Bass		132
P090	90	HPF Move		130
P091	91	Raw Saw		132
P092	92	HiPassFire		137
P093	93	Uni Pluck		132
P094	94	MiniAttack		132
P095	95	Wiggin		102
P096	96	TribeGathr		107
P097	97	Basix		120
P098	98	Satori		138
P099	99	Not Cheap!		140
P100	100	Boolee		141
P101	101	ElecHopper		135
P102	102	Israel		142
P103	103	Neko		150
P104	104	Xmod Line		142
P105	105	Trance Saw		132
P106	106	Drifter		140
P107	107	2 Grey		135
P108	108	Sharp Cut		139
P109	109	Runner		134
P110	110	Rising		138
P111	111	Long Rezz		135
P112	112	Solid		134
P113	113	Diedsloppy	trance	150
P114	114	Big Mix		140
P115	115	Mai		140
P116	116	Tech Tron		128
P117	117	DesertRave		134
P118	118	Denter		139
P119	119	Syncer		130
P120	120	T-World		141
P121	121	GOA		145
P122	122	Karate		145
P123	123	Polarity-X		127
P124	124	Dendo-Girl		140
P125	125	Junop		130
P126	126	Kami		135
P127	127	Playerz		134
P128	128	Toddy		140

Preset Bank 2 (Bank MSB=63, LSB=1, Pgm#1-64)

No.	Pgm#	Pattern Name	Group	BPM
P129	1	New Boyz		104
P130	2	Naja		90
P131	3	Homies		92
P132	4	Waz Up		102
P133	5	G Money		99
P134	6	New York		105
P135	7	Old Fool		96
P136	8	Booty		102
P137	9	Free Hip	hiphop	96
P138	10	Hold Up		74
P139	11	Duh Funk		100
P140	12	Sealant		95
P141	13	Layin		110
P142	14	OooNo		102
P143	15	Ghost		80
P144	16	Trippin		70
P145	17	Creepers		76
P146	18	Magnetizer		89
P147	19	Elec Hop		90
P148	20	Generation		96
P149	21	Equuleus		86
P150	22	Musca		84
P151	23	Cetus		67
P152	24	Uproar		78
P153	25	Flippin		86
P154	26	Oranges		100
P155	27	Old Skool		65
P156	28	Trigger-D	triphop	69
P157	29	Trick		76
P158	30	Code Break		90
P159	31	CircuitBrk		114
P160	32	BttlString		110
P161	33	No Way Out		95
P162	34	Kick Rocks		102
P163	35	AJ		100
P164	36	Future Hop		96
P165	37	Cyber		95
P166	38	Krank		96
P167	39	Irie		165
P168	40	Orion		170
P169	41	Pass Out		170
P170	42	Feynmenn		170
P171	43	Inca		150
P172	44	DumbNbayc		160
P173	45	MowLowCow		180
P174	46	Kristel		165
P175	47	Ghosting		164
P176	48	Tech Step		170
P177	49	Optician		170
P178	50	BurtonsFin	drum'n bass	180
P179	51	All Dark		175
P180	52	Rider		160
P181	53	Devilfish		160
P182	54	Beestee		135
P183	55	Monoceros		88
P184	56	Lynx		88
P185	57	Hydrus		88
P186	58	Centaurus		129
P187	59	Cygnus		122
P188	60	Mars		82
P189	61	Mushroom		135
P190	62	Jazzwonka		125
P191	63	Dark Trip	breaks 2	100
P192	64	Stranger		132

Preset Bank 2 (Bank MSB=63, LSB=1, Pgm#65-128)

No.	Pgm#	Pattern Name	Group	BPM
P193	65	Crazy Hip		98
P194	66	Dark Hip		98
P195	67	Tripnotic		110
P196	68	BeatAnthem		120
P197	69	Beat O		130
P198	70	Cheekz		122
P199	71	Scene Bass		123
P200	72	Hood Bass		115
P201	73	Ruffy		118
P202	74	Drug Dist		125
P203	75	Sync Pulse		136
P204	76	Step Rezz		130
P205	77	Wild Scene		125
P206	78	Hyper Saw		116
P207	79	Dark Line		123
P208	80	Pulse Gruv		132
P209	81	Phanki		128
P210	82	E-Blub		126
P211	83	Bleach		126
P212	84	Hard Step		132
P213	85	Big Three		122
P214	86	Hardy		122
P215	87	Livin 12		94
P216	88	Lionbar		135
P217	89	Claw	breaks 2	96
P218	90	Dirty Dog		96
P219	91	Full Reso		96
P220	92	Funky		114
P221	93	Tinkly		125
P222	94	Porkyscrat		122
P223	95	Rowntree		124
P224	96	Granulator		150
P225	97	Mute Rezz		138
P226	98	Bungraa5va		170
P227	99	StormStack		136
P228	100	Norma		132
P229	101	AWA-dance		126
P230	102	Shandy		165
P231	103	ElectroBrk		120
P232	104	Rutger		135
P233	105	Fat Ohm		150
P234	106	Facevalue		160
P235	107	Seepy		155
P236	108	Draco		104
P237	109	Smoked		80
P238	110	Stealthy		108
P239	111	Strain		112
P240	112	Tribal		105
P241	113	Dorado		64
P242	114	Velpecula		49
P243	115	Pyxis		35
P244	116	Carm Down		105
P245	117	Subliminal		106
P246	118	Okyou		40
P247	119	Chacra		115
P248	120	Paranoia		120
P249	121	Burning	ambient	105
P250	122	Back Door		102
P251	123	Ambi Fade		98
P252	124	Bootes		92
P253	125	Sagitarius		75
P254	126	Aquarius		68
P255	127	Lacerta		44
P256	128	Fornax		55

Song 1 : Demo 1 (trance/breaks)
Song 2 : Demo 2 (triphop)
Song 3 : Demo 3 (ambient)

User Bank (Bank MSB=63, LSB=2, Pgm#1-64)

No.	Pre.#	Pattern Name	Group	BPM
U001	P099	Not Cheap!	trance	140
U002	P064	Digi-FANG	breaks 1	105
U003	P132	Waz Up	hiphop	102
U004	P006	Flabber	techno	170
U005	P192	Stranger	breaks 2	132
U006	P038	Gyroscope	house	128
U007	P071	Break-Qoo	breaks 1	140
U008	P147	Elec Hop	triphop	90
U009	P014	DarkTemple	techno	145
U010	P185	Hydrus	drum'n bass	88
U011	P105	Trance Saw	trance	132
U012	P060	Dawn OFF	breaks 1	135
U013	P191	Dark Trip	breaks 2	100
U014	P002	Fat 5th	techno	135
U015	P190	Jazzwonka	drum'n bass	125
U016	P098	Satori	trance	138
U017	P092	HiPassFire	breaks 1	137
U018	P129	New Boyz	hiphop	104
U019	P041	Silver BO	house	135
U020	P214	Hardy	breaks 2	122
U021	P126	Kami	trance	135
U022	P067	Pick-Sweep	breaks 1	105
U023	P164	Future Hop	triphop	96
U024	P003	Acid EG-O	techno	125
U025	P171	Inca	drum'n bass	150
U026	P113	Diedsloppy	trance	150
U027	P069	HONNOU	breaks 1	115
U028	P194	Dark Hop	breaks 2	98
U029	P004	Noize On	techno	140
U030	P177	Optician	drum'n bass	170
U031	P242	Velpecula	ambient	49
U032	P205	Wild Scene	breaks 2	125
U033	P101	ElecHopper	trance	135
U034	P078	One Stomp	breaks 1	165
U035	P130	Naja	hiphop	90
U036	P025	Mappet	techno	130
U037	P230	Shandy	breaks 2	165
U038	P043	Willis	house	135
U039	P081	Dane	breaks 1	109
U040	P149	Equuleus	triphop	86
U041	P035	Drib Hop	techno	130
U042	P178	BurtonsFin	drum'n bass	180
U043	P119	Syncer	trance	130
U044	P055	Hello 2001	breaks 1	110
U045	P224	Granulator	breaks 2	150
U046	P023	Elitdance	techno	135
U047	P189	Mushroom	drum'n bass	135
U048	P046	3rd Wave	house	116
U049	P057	OWN-Q-Beat	breaks 1	128
U050	P138	Hold Up	hiphop	74
U051	P032	Comicstrip	techno	136
U052	P215	Livin 12	breaks 2	94
U053	P128	Toddy	trance	140
U054	P075	Xmod Fuzz	breaks 1	127
U055	P159	CircuitBrk	triphop	114
U056	P010	Short Saw	techno	134
U057	P175	Ghosting	drum'n bass	164
U058	P102	Israel	trance	142
U059	P063	DarkWalker	breaks 1	115
U060	P221	Tinkly	breaks 2	125
U061	P036	Pulse Step	house	135
U062	P183	Monoceros	drum'n bass	88
U063	P244	Carm Down	ambient	105
U064	P226	Bungraa5va	breaks 2	170

AN200:U123,U124 & SU200:BANK A (Trip Hop Demo)
AN200:U125,U126 & SU200:BANK B (Trance Demo)
AN200:U127,U128 & SU200:BANK C (Break Beats Demo)

User Bank (Bank MSB=63, LSB=2, Pgm#65-128)

No.	Pre.#	Pattern Name	Group	BPM
U065	P125	Junop	trance	130
U066	P088	Arnee	breaks 1	125
U067	P134	New York	hiphop	105
U068	P018	Electra	techno	126
U069	P187	Cygnus	drum'n bass	122
U070	P037	Hybridz	house	132
U071	P066	Moon GAZA	breaks 1	120
U072	P131	Homies	hiphop	92
U073	P005	Joshin	techno	134
U074	P176	Tech Step	drum'n bass	170
U075	P104	Xmod Line	trance	142
U076	P094	MiniAttack	breaks 1	132
U077	P213	Big Three	breaks 2	122
U078	P007	Bad Sign	techno	136
U079	P169	Pass Out	drum'n bass	170
U080	P123	Polarity-X	trance	127
U081	P073	Guri Guri	breaks 1	143
U082	P135	Old Fool	hiphop	96
U083	P040	MinimalOrg	house	140
U084	P231	ElectroBrk	breaks 2	120
U085	P110	Rising	trance	138
U086	P083	Hard Hop	breaks 1	120
U087	P160	BttlString	triphop	110
U088	P034	Drip Drop	techno	142
U089	P188	Mars	drum'n bass	82
U090	P121	GOA	trance	145
U091	P064	Sam-u-Rai	breaks 1	95
U092	P211	Blech	breaks 2	126
U093	P049	Afterhours	house	125
U094	P152	Uproar	triphop	78
U095	P251	Ambi Fade	ambient	98
U096	P234	Facevalue	breaks 2	160
U097	P111	Long Rezz	trance	135
U098	P089	Punch Bass	breaks 1	132
U099	P137	Free Hip	hiphop	96
U100	P021	Crossfire	techno	132
U101	P209	Phanki	breaks 2	128
U102	P054	HypnoHouse	house	120
U103	P090	HPF Move	breaks 1	130
U104	P154	Oranges	triphop	100
U105	P001	Phatty	techno	138
U106	P167	Irie	drum'n bass	165
U107	P114	Big Mix	trance	140
U108	P244	Pyxis	ambient	105
U109	P241	Dorado	breaks 2	64
U110	P026	Last Dance	techno	122
U111	P182	Beestee	drum'n bass	135
U112	P112	Solid	trance	134
U113	P193	Crazy Hip	breaks 2	98
U114	P140	Sealant	hiphop	95
U115	P039	Cuneiform	house	140
U116	P204	Step Rezz	breaks 2	130
U117	P117	DesertRave	trance	134
U118	P093	Uni Pluck	breaks 1	132
U119	P161	No Way Out	triphop	95
U120	P017	No. 1	techno	140
U121	P186	Centaurus	drum'n bass	129
U122	P240	Tribal	breaks 2	105
U123	P146	Magnitizer	triphop	89
U124	P163	AJ	triphop	100
U125	P100	Boolee	trance	141
U126	P120	T-World	trance	141
U127	P059	ExtensionD	breaks 1	135
U128	P072	Inter Step	breaks 1	147

AN200:U123,U124 & DX200:U123,U124 (Trip Hop Demo)
AN200:U125,U126 & DX200:U125,U126 (Trance Demo)
AN200:U127,U128 & DX200:U127,U128 (Break Beats Demo)

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