YAMAHA A3000 Professional Sampler: Power User

Introduction

The A3000 signals Yamaha's re-entry into the professional sampler market. It is a very powerful, very easy to use sampler. The first part of this power user will address many of the important features available with the Version 1.2 software. The second part will address features introduced with Version 2 software.

This article will address each particular screen via its **mode, function and page** as follows: [MODE]: [FUNCTION]: [Page]. This means you can navigate to the very page or screen by pressing the MODE button first, followed by the FUNCTION Key, then via turning Knob #1 you can navigate to the particular screen in question. Knob 1 is the navigation knob, and turning it will take you through the various pages of a particular Function. Each page is identified in the lower left corner of the screen.

When the up/down arrows appear in the lower left of the screen just above the first knob it means that Knob 1 can be turned to select additional pages. A single down arrow indicates that you are at the *top* of the list and you can turn the knob clockwise to see the other pages; a single up arrow indicates the *bottom* of the list and a counterclockwise turn is available to take you back up the list; both an up and down arrow indicate pages in both directions. Alternatively, successive presses of the selected Function key (red LED is lit) can navigate forward through the pages, while pressing the green Mode LED in question, will take you backward through the pages. Unlike Knob 1, both the Function key and the Mode LED will wrap around as they scroll through the page screens.

The Knobs will increment if you turn them one click and will travel a further distance with speed. You will find that the longer you are in contact with the Knob during a turn, the farther it goes. If you use a technique of short and very fast turns, you will no doubt frustrate yourself (spinning your wheels, so to speak). Maintain contact through your turn and you will be more efficient.

Basic A3000 Terminology

The basic A3000 recording is called a **Sample**. On most conventional samplers, a "sample' is waveform data only. An A3000 'sample' contains information like its key mapping, MIDI channel, filter, envelope, LFO and MIDI channel. In addition, each sample has its own sweepable parametric EQ (32Hz-16kHz). Samples can be (if it is convenient) grouped into objects called ***sample banks***. Samples in the same bank can be treated as a single sample. This is great for multisampled instruments like pianos, drum kits or a map of beats where you want to treat a group of samples all together instead of repeating the same operation to each sample. If you need to edit samples within a sample bank the A3000 provides for a method to do this, easily. (See "**Editing Samples Within a Sample Bank"** section below).

Next up the food chain is a **Program.** A Program is an organization of samples and related settings into a playable sound or set of sounds. In fact, you do not play samples directly—you play samples that have been placed into a Program. In a Program you can make any number of the samples (or sample banks) active by simply turning on the "ToPgm" (To Program) switch for that sample (or sample bank). When you select **[PLAY]:**

[SAMPLE]: [SmpSel] (that is, **[PLAY]** mode, **[SAMPLE]** function, **[SmpSel]** Sample Select screen) the A3000 conveniently lists all of the data currently in memory. A sample or sample bank (indicated by a reverse video "B") can be activated for the current Program by turning the "To Pgm" parameter to ON. You can organize you data into various Programs (001 – 128). A Program can be as simple as a single breakbeat loop or it can contain an entire multi-timbral, multi-channel ensemble. Additionally, a Program can contain an analog to digital (A/D) input, such as a setup for a microphone, mixer or CD player etc., routed through the A3000's 3 effect processors. In fact, a program can be all of these simultaneously.

At the top of the food chain is the **Volume**. A Volume is, simply put, everything in the A3000 at the time you save it. When you save a Volume to disk it stores all the Programs and all the samples that make them up, even the unassigned samples. For example, the Acoustic Piano Volume (on the CD-ROM) contains several different Piano Programs, stereo and mono versions, each made from sets of individual samples. One of the first problems user have is how to get a Program from Volume "X" and one from Volume "Y" in the machine at the same time, especially when you discover that each Volume load *completely* replaces the previous Volume load. The solution is simple: load individual Programs. When you load an individual Program it will be loaded with all the samples that make it up. The A3000 keeps track of all the used samples and will load them, if necessary. If several Programs utilize the same samples the A3000 will detect this and obediently not load them again. Once you have assembled all your favorite Programs in memory, simply save it as a new Volume. More details on this a little later.

The Front Panel

The front panel is very straightforward. On the right front panel you have a Matrix (a grid). With 5 **MODES** listed *vertically*, each with a green LED select button. These green LEDs flash in response to various incoming MIDI messages. There are six **FUNCTION** keys running *horizontally* across and each of these has a red LED above it. Use the Mode buttons **first** to select the area in which you want to work, then use one of the six Function keys to choose the particular feature.

The 5 Modes are **Play**, **Edit, Record, Disk,** and **Utility**. To make and enter selections you use the 5 knobs under the screen. These knobs are continuous turn, and most knobs can always be turned to change the parameter listed directly above it. They also have a push function that allows you to *select* and/or *execute* commands. When the red arrow/indicator is lit above a knob it indicates that the knob can be pushed to either select another page or to execute a task. For example, pressing Knob #1 from all screens of the matrix will take you to a screen where you can see a list of all samples, sample banks, and where you can activate or de-activate the "SmpSolo" (sample solo) and "MIDI → Smp" (MIDI to Sample) functions. More on these functions in a moment.

DISK Mode & SCSI Issues

If you are using a CD-ROM drive, external hard drive, etc., with the A3000 you will need to Configure the SCSI bus. Navigate to the [DISK]:[DISK]:[CONFIG]. Here use Knob 2 to scan the various SCSI ID numbers. You should see a listing of the ID's for all the various connected devices. Of course, each SCSI device should have a unique ID. Set the [MOUNT] parameter to ON for all appropriate devices.

It is a convention on the A3000 to 'point' or direct the software at a particular target SCSI or floppy disk device via the [DISK]:[DISK]:[DISK] page. If you want to save to the floppy drive you would first ensure that this page is directed at that device. The A3000 recalls the last device with which it has communicated.

Creating a New Sample

Let's go through a quick sample session. Let's assume you are recording a portion of audio from an audio CD as the source. If it is a CD-ROM player you can utilize the A3000's external control (EXT CTRL) features to cue the CD and start and stop it, remotely. If not, no big thing, you just have to operate the CD via its own front panel controls.

1. Make your audio connection from the CD out to the A/D inputs on the A3000 front panel.

2. [RECORD]:[MONITOR]:[MONITOR]: OUTPUT should be Stereo, and MONITOR should be switched to ON to hear the sample.

3. [RECORD]:[SETUP]:[REC DATA]. Select AD L/R as the INPUT, STEREO as the TYPE, and 44.1k as the FREQ. You can select 22k, 22k lo-fi, 11k, 11k lo-fi, 5k, or 5k lo-fi.

4. [RECORD]:[SETUP]:[TARGET]. Sample should be NEW and TO PGM should be ON. The default name of the recording will be "_NewSample" (If you are doing more than one sample, the A3000 has a unique auto mapping utilities that can be set under the "New" and "To Pgm" headings - change New to "New+" and set the To Pgm heading to C1→; C2→ etc.).

5. Also found under this heading is [RECORD]:[SETUP]:[KEY RANGE]. This where and how the sample is mapped. The default is Original key is C3 and it is mapped from C-2 through G8; TRIGGER - whether record is initiated and ended automatically via SRC (Source) IN and SRC OUT or manually; and PROCESS - auto-normalize which will ensure best record level – it is recommended that you leave this "off" when demonstrating, as it does take processing time).

6. Check the record level. [RECORD]:[METER]:[METER]. Use the REC LEVEL control to set the level. An inverse video "C" indicates clipping.

7. If you wish to record with Effects the next key in Record mode allows you to record through the 3 effects in series. [RECORD]:[EFFECT].

8. If you are using a CD-ROM player the next key [RECORD mode: EXT CTRL function: CD-DA controls the audio playback of the CD player. The CD will be started and stopped automatically when you enter and exit record.

9. You are ready to record [RECORD]:[RECORD]:[Record] press GO (Knob 5).

Your next screen will depend on whether you have selected Manual Only as the 'trigger' mode or SRC IN (source in) as the record trigger. Once you have completed your recording you can immediately check it by returning to PLAY mode. The new sample can be triggered via the front panel AUDITION key or via the MIDI note assigned as original key in KEY RANGE (C3 is default). The new sample will have its TO PGM parameter ON and will be found at the TOP of the list when you view the Sample Select page: [PLAY]:[SAMPLE]:[SmpSel].

The Loop Modes Explained

To truly understand the A3000 it is necessary to get the difference between the Wave Start / Wave End Address Points and the Loop Start / Loop End Address Points. Basically, **Wave** here refers to the audible portion of the recorded data. In other words, the Wave Start Point is where in the recorded data you have determined the first useful sound data begins. The Wave endpoint is the last bit of useful data. Meanwhile, the Loop Start and Loop End Points are pointers that tell the A3000 to play the data located in between again and again until either note off or until the envelope ends the sound. Notice that the Loop Start and End points must always lie inside the Wave Start and End points.

Navigate to [EDIT]:[TRIM/LOOP]:[WvMode]

The "LpMode" or Loop Mode parameters are as follows:

1. → means the sample will play forward once from Wave Start to Wave End Points, following the envelope settings. Typically, it behaves like a keyboard note-on. Lift your finger and the sound stops.
2. **Shot→** Is different from the above in that it will complete playback in spite of note-off. Typcially this is used as a drum trigger.
3. ← means the sample will play in reverse once from Wave End to Wave Start Points following the envelope settings, like a keyboard sound.
4. ←**Shot** plays in reverse like a drum pad triggered sound. It ignores the note-off.
5. →**0** means the sample plays forward, and will loop the sections defined by the Loop Start to Loop End addresses. It will follow the envelope release settings and fade out on that loop section.
6. →**0**→ will play the sample forward from the Wave Start Point, and will loop the sections defined by the Loop Start and Loop End address. It will remain in the loop section until note off, when it will continue on to the Wave End Point. For example, you record yourself counting "1 – 2 – 3 – 4 – 5". Your Wave Start point would be just prior to the word "one". Your wave End point would be just after the word "five". If you set Loop Start just prior to the word "two" and Loop End just after the word "three". When you press a note-on you would get: "one, two, three, two, three, two, three, two, three…(etc)" until note-off when you would hear the final "two, three" complete playback followed by "four, five." (Assuming the release envelope allows the decay.)

Missing from this list is **0**←, which would represent a reverse loop. Does this mean the A3000 does not do reverse looping? No, but it is handled a little differently. To create a reverse loop you will have to create a reverse version of the recorded data. This is accomplished by pressing the [COMMAND] button from any TRIM/LOOP screen and using Knob #1 to navigate to the [REVERS] screen. You execute reversing the current wave by pressing Knob #1, and confirming with Knob #5.

Effect Processors

Within the A3000 are **three effect processors each with 54 algorithms**. These are not your run of the mill 24-bit effect processors either. There are plenty of ***brand new*** algorithms developed specifically for this product. Some of the more uniquie ones are: Scratch (a programmable digital scratch), Auto Synth; Techno Modulation; Noisy delay; Flanger Pan; Radio; LoFi; TurnTable (programmable record surface noise), Beat Change (modifies

the waveform length in real time. Changes the length without changing pitch and is typically assigned to a controller like mod wheel); a new 2 way Rotary Speaker; Vocal Cancel (for removing vocals from a CD); Aphex Aural Exciter; our brilliant Guitar Amp Simulator w/ Noise Gate; all manner of distortions and touch sensitive wah combinations; Compressor; and all the other great ones you've come to expect with a Yamaha product.

Your Own Custom Operating Setup

As you begin working with the A3000, you will develop a working method. Here are some basic things that will help you get the most out of your sessions. First, you need to decide on how you want to organize the sample data list in the A3000. You refer to this list quite often during an edit session. How it appears is something you can determine. Here's how:

Sample Sort: Navigate to [PLAY]:[SAMPLE]:[SmpSort] (that is, press [PLAY] mode: [SAMPLE] function, then select the [SmpSort] screen). This screen will control how you look at the list of sample data you have in the A3000 memory. How you set up these next 3 parameters will determine how the Sample Select and Sample Bank screens appear. The parameters are Name, Program On, and In Bank.

1. **Name**: You can look at a list of all the samples and sample banks (denoted by an inverse video "B") in memory by name either forward or backward alphabetically or "off" (the order they were created). "Forward" works for most users.
2. **PgmOn**: You can select either "top" or "mixed". "Top" automatically places the current Program's active sample banks and/or samples at the top of the list (Knob fully counterclockwise). While "mixed' leaves the active sample in the list according to the Name parameter setting.
3. **InBank**: Can be set to either "hide" or "show". Select "hide" when you do not want to see all the individual sample names that are encased in a bank – a drum kit would be an example of a bank. "Show", on the other hand, lists not only the name of the sample bank but every sample within that bank. Banks will be listed first, followed by individual samples. Samples that are within banks will show up on the SmpSel list with a dash, "-" in the ToPgm column. The status of a sample within a bank is determined by the status of the sample bank.

The [PLAY]: [SAMPLE]: [SmpSel] and [SmpBank] screens are very important screens that you will refer to time and time again during a session. You may wish to set Name to Forward; Pgm On to Top; and In Bank to Hide.

Customize the Program "Inits"

The A3000 has the ability to memorize your favorite settings and will make these the system defaults (the status when "initialized"). You may wish to use a certain configuration of the effect processors, or a particular system setting may be to your liking, or you may have a controller setup that fits with your particular keyboard controller. These settings are stored in non-volatile memory and are **not** lost when you power down. The procedure to create your own "inits" would be to setup the A3000 as you like to work, then execute the "Set Init" function described below. These custom Program "inits" are found from any [PLAY] mode screen (top row) when you press the [COMMAND] key and navigate to the [SET INIT] Screen.

- Press and light [PLAY] green; and [COMMAND] red
- Turn Knob #1 fully clockwise to see the [SET INIT] screen
- Turn the parameters you wish to memorize to "ON". EFFECT / SETUP / CONTROL
- **Press** Knob #1 to **execute** the settings, followed by Knob #5 to confirm.

When you execute the [Set Init] function the A3000 will memorize the current settings as the Initialize defaults. This means that when you initialize a new Program, your favorite settings will be in place.

To fully understand what the A3000 is doing here consider this: the [PLAY] mode has the following 6 function categories: Program, Sample, Easy Edit, Effect, Setup and Control. Any item that you set in 'Effect', 'Setup' and/or 'Control' can be memorized by this SET INIT feature and will be recalled whenever you Initialize a program or turn the A3000 on.

For example, you have a project where you need the effects to default as follows: EFFECT 1 = Hall; EFFECT 2 = Chorus; and EFFECT 3 = 3Delay; simply set up a Program with these 3 effects in place and then execute the SET INIT steps above. Or, the keyboard you use to control the A3000 has sliders that you have programmed to send Control Change messages 12, 13, 14, and 15. You can set the defaults of the Control Matrix in the A3000 to be the standard controls for any of 59 A3000 destinations. Now whenever you power up or use the INIT Program or INIT All Program commands, the A3000 will recall <u>your</u> effect and controller settings.

Maybe you're a DJ that uses a microphone and mixer as standard operating equipment; Remember each A3000 Performance can have loops, multi-samples, multi-channel ensembles and include a 'live" A/D input as part of its makeup. Each of your Programs could have an A/D setup always routed to EFFECT processor #3 set to "Ambience" as your personal effect. This can be made the initial setting for all programs by executing the SET INIT scenario after setting up your microphone input via the [PLAY]:[SETUP]:[AD Setup] and [AD Output] screens.

Customize Sample "Inits"

There is also a Sample [EDIT] level "Set Init" function, which allows you to set up default settings for a particular sampling session. Each sample taken inherits whatever settings you wish.

This function is found from any [EDIT] mode screen when you press [COMMAND], then turn Knob #1 fully clockwise to [SET INIT].

- Press and light the following lights [EDIT] green; and [COMMAND] red
- Turn Knob #1 fully clockwise to see the [SET INIT] screen
- **Press** Knob #1 to **execute** the current settings, followed by Knob #5 to confirm.

Although similar in nature to the Program Inits described above, these sample edit level "inits" are designed to make a particular sample session easy for the type of sampling you are doing. For example, when you are sampling a piano project you may want to have a velocity sensitive low pass filter automatically in place for each sample. You may also want to apply a piano type envelope with a release rate of 61 (the default envelope is a very severe organ type envelope – Release 127) to each sample as you take it. You may also wish to have your controllers automatically mapped a specific way

for each sample. A3000 provides a means to do this at the sample level via the Set Init function at the sample level

As you get to know how you like to work, you will really appreciate these 2 very powerful SET INIT features. They make **your** particular way of working part of **your** A3000's operating system.

MIDI to Sample (MIDI → Smp) and Sample Solo (SmpSolo)

"MIDI → Smp" is short for MIDI to Sample. This useful function comes in very handy when you are handling lots of samples in memory. It is of particular use during editing and "mapping" or setting key ranges. When activated, any incoming MIDI signal that triggers a sample will automatically recall that samples data to the visible edit buffer. This means that what you hear is what you are editing, and it takes the guesswork out of knowing what sample's data you are viewing and changing. Simply touch your MIDI controller and, if the sample is audible, you are seeing its data in the screen. This function can be found by pressing Knob #1 from any (mode) screen.

If you work with a MIDI controller, be it a keyboard, drum pads, guitar, bass or wind controller, this will quickly become one of your favorite tools.

Also on this page is "SmpSolo" (short for Sample Solo). Again, this is found from any screen by pressing Knob #1. This useful function will allow you to isolate a single sample. For example, you may have several sounds layered on a key or across the keyboard. When you activate the "SmpSolo" function on a sample in the list, it will be the only one heard. This function is used while working on a single sample and you would like to momentarily hear just that sample—just like a solo button on a mixing console. This is function is invaluable when working on complex layers.

Editing Samples within a Sample Bank [SmpBank]

You can edit samples even when they have been included in a sample bank. A sample bank is a convenient way of grouping sounds together. Typically, a drum kit or a piano multi-sample would be in their own respective banks. If you needed to route the piano to Effect processor #2, as a sample bank you could do it all in one operation. It would be awful to have to identify each sample separately in the piano voice, and then have to send each to the effect individually. But does this mean that you can't get at the individual samples to make in depth changes once they are encased in a bank? The answer is no. Here's how it's done:

If you are using a MIDI controller, it is highly recommended that you make use of the MIDI→Smp function described above. To set this function: Press Knob 1 from any mode screen. Set MIDI→Smp to ON. What you hear, is what you see and edit.

Navigate to [PLAY]: [SAMPLE]: [SmpBank] screen. This screen identifies the current Sample Bank (on the top line) and the current or last played sample (on the bottom line). The arrow indicates the sample is part of the bank. Leave the A3000 on this screen at the time you enter EDIT mode. This will allow you to **view and edit** the individual sample's data while it is within a bank.

Press the [EDIT] mode button. If you view the [MAP/OUT]: [KeyRange] page you can quickly verify that each sample's data comes to the screen upon being triggered. As soon as you touch a new key range, the data for that key range will come to the screen.

If you operate without a MIDI keyboard you would select the sample bank and sample from the listing on the [PLAY]: [SAMPLE]: [SmpBank] screen. Use knob 2 to select the bank (a Program can include more than one sample bank) and either knob 3 or 4 to scroll through the individual samples of that bank. Leave the A3000 on this screen at the time you enter EDIT mode. This will allow you to view and edit the individual sample's data while it is within a bank.

Press the [EDIT] mode button. The data of the sample bank and sample you last viewed will be in the edit buffer. Use the AUDITION button to hear the sample.

DUPLICATE

The A3000 allows you to "Duplicate" any sample without using additional sample RAM. The Duplicate feature will duplicate the name and add an asterisk (*) for the first duplicate, 2 asterisks (**) for the second and so on. You can create as many duplicates as you need. You can redo the Wave Start and End points, you can redo the Loop Start and End points, retune, filter, EQ, redo the key range, effects, etc., etc., all without using additional sample RAM memory.

You can use several duplicates of the same sample in a single Program. The same sample can be used in as many Banks as you create. No matter how many times you duplicate the wave, it never uses additional sample RAM. The A3000 just stores a new set of "pointers" to the sample data and adds an additional asterisk to the name. Those of you familiar with random access hard disk recording systems are familiar with the concept of a digital recording being stored on the hard disk and then accessed via control data. In such systems you create and store a playlist, which is basically small packets of control information about when to start and stop playback of each sound file, how loud to play it, panned to a particular channel, etc. You can access the recorded data again and again with different start and end points; you can play it over and over, each time with a different effect or EQ. You can even access it multiple times, simultaneously, tuned differently in each duplicate. The A3000 treats the **sample** in a similar manner; the parameters you attach to it are similar to the packets of information that control a sound file. You create a new set of "pointers" to the sample waveform when you duplicate it. This is a non-destructive edit.

Only the Extract function causes additional sample memory to be used. The Extract job allows you to isolate particular data and throw the excess away. If you attempt to Extract data from a Duplicate, the A3000 will then create a new sample before it discards the excess. You never touch your original when editing a Duplicate. This will use additional memory. But since you can start each Duplicate from any Start Address, it is actually unnecessary to Extract data. For example, you have a 4 bar loop, create a Duplicate, turn the Loop OFF, redo the Wave Start and End Addresses so that you isolate a single snare hit. Now you can tune, effect, redo the key range and otherwise torture this Duplicate to your hearts content.

You can find the Duplicate feature from the [PLAY]: [SAMPLE]: area, press [COMMAND], use Knob 1 to navigate to the [DUPL] screen. Select the sample you wish to duplicate from the sample list or trigger it via MIDI, press Knob 1 to execute the function. The A3000

automatically names the duplicate by adding an (*) asterisk to the original name. You can rename it, if you wish.

Record a beat, make a bunch of duplicates that you slice up via the Wave Start and End points, into individual events or hits. You can tune, EQ and filter these smaller hits and then add them back into the mix to reinforce the main loop, accenting selected beats. Or create unique stutter steps with them. You can reverse the hits and super impose them on the forward playing original loop to create a wacky inside-out effect. Send some of them into a special effect you've set up. Let your imagination run wild.

Pitch Bend Control

What's to get excited about? Pitch Bend is pitch bend, right? Try using this trick on your dance loops. [EDIT]:[MIDI/CTRL]:[Vel&PB] screen. Here you can set the Pitch Bend parameter to control playback pitch in the "Normal" way or set it to "Slow" to get the sound of a turntable coming to a stop when you move the wheel down. Or try "Slow&Reverse" – this will slow down playback to almost a full stop at about half way in the down direction but then start up the played portion of the sample, in reverse when the wheel is at the full down position. With a little practice you can "work the wheel" like scratching a turntable. Here's how this works: you are playing data into an audio buffer. The more you play into the buffer, the more there is to playback in reverse. You can "cue" and repeat segments by aggressively working the wheel. Other pitch bend modes are Stop and Stop&Reverse. These use the pitch wheel to initiate play of the loop. There are also PB settings for different values for PB up and PB down over a 2 octave range.

Real time Beat Change

Among the 54 effect algorithms per effect processor is Beat Change. This unique effect, which is typically used in the 100% Wet balance position, takes incoming signal and allows you to adjust the tempo without affecting the pitch. This, of course, defies the laws of physics. The demonstration disk "Drum Variations" shows this off to good effect. Load this disk into the A3000. If it is your first time, simply place the disk in the A3000 drive and power up. The A3000 has a "diskette autoload" feature that will load the data. The second Program 002 "Modwheel" shows off the Beat Change effect. The samples are mapped just below middle "C", and as you hold down a key that triggers a loop you can move the modulation wheel, which will raise and lower the tempo, yet the sound does not "munchkin-ize".

There are 9 programmable parameters in the Beat Change algorithm, as follows:

1. **Beat Change (Ctrl) – leave this set at 0 because this is what the assigned controller changes in real-time.**
2. **Beat Range** – amount of overall tempo change (playback speed) – value should equal Pitch Range
3. **Pitch Change (Ctrl) – leave this set at 0 because this is what the assigned controller changes in real-time.**
4. **Pitch Range** – amount of overall pitch change. Value should equal Beat Range
5. **Accuracy Type** – weights the result toward sonic or rhythmic accuracy.
6. **EQ Frequency**
7. **EQ Gain**
8. **EQ Width**

9. **Dry/Wet Balance** – keep totally Wet for full effect or mix in some Dry signal to create a parallel part.

A controller assigned to parameter 1 (Beat Change) will cause the Tempo to increase by the amount set by parameter 2 (Beat Range). The value of Beat Change should remain at 0 because you will be effecting it in real time via the controller. When the Beat Range and Pitch Range are equal, there will be no change in pitch as the tempo changes. This effect algorithm can also be used to change the Pitch without changing the tempo. This is accomplished by making the assigned controller change parameter 3 – Pitch Change, rather than parameter 1 – Beat Change. You can assign either a MIDI controller device or an A3000 front panel knob to make the adjustments in real-time. This is handled via [PLAY]:[CONTROL]:[PgmCtrl 1] and assigning a Panel control is handled via [UTILITY]:[PANEL PLAY]:[KnobSet].

Beat Change is used to match tempos of different beats. It gets used during sessions where the background vocals parts are made to fit over tracks – imagine being able to change the key without altering the tempo. With this effect, you can put key modulations in the remix without calling the singers back to "take it up a whole step". You can slow down or speed up that "found" sample to make it work in context of the rest of your data. Turn a squeaky soprano into a sultry contralto, all in real time as you hear it. No more headaches setting up complex parameters in a computer software program. When you get the timing or pitch that you want you can use the A3000's re-sample feature to create a new version. That's right! You can use the A3000 Panel Play feature to adjust the tempo and / or pitch of a sample and then re-sample the data. Simply assign the Beat Change feature to a front panel knob and use it to setup the effect the way you want during the re-Record process.

Assigning Beat Change to a New Sample:

You can assign the Beat Change control to any physical MIDI controller or to a front panel knob via a control change assignment. Let's say you want Beat Change to be controlled by Knob #2. The steps to assigning Beat Change as the effect and Knob #2 as the controller are as follows:

1. First, Create your sample. Turn the samples "To Pgm" parameter to ON making it active in a new Program, as normal. This is done on the [PLAY]: [SAMPLE]: [SmpSel] Sample Select page.

2. Samples typically default to Stereo OUT assignment. There are 2 ways to route your sample to the Effect processor(s). Either at the Sample [EDIT] level or, at the Program [PLAY] level via the Easy Edit functions.

- **Sample Level:** Each sample can be stored with the Output routed to the Stereo outputs, or the EFFECT(S). Navigate to the [EDIT]: [MAP/OUT]: [Output] page and set the MAIN OUT to EFFECT 1.
  Or
- **Program Level**: EASY EDIT. The data stored at the sample level can be offset or over ridden at the Program level via the Easy Edit functions. This allows each sample to be used entirely differently in each Program. To route the active sample to the EFFECTS enter PLAY mode. Select the EASY EDIT functions. Turn Knob 2 or 3 to scroll to the MAIN OUTPUT select parameter. Set it to EFFECT 1. [PLAY]: [EASY EDIT]: Main Output parameter.

3. Choose the BEAT CHANGE effect. On the [PLAY]: [EFFECT]: [Effect Type] page turn KNOB #2 (Effect 1) to select the Beat Change algorithm.

4. Assign a device to control the tempo change. [PLAY]: [CONTROL]: [PgmCtl 1] page. This Controller Matrix allows you to assign a MIDI controller to change the Beat / Pitch Control features of the Effect. When you select this page you will note that the default setup is to control EFFECT 1, parameter 1, Beat Change. This is what we want. If necessary, set it as mentioned. Set the number under Device Knob to an appropriate Control Change number you wish to use (001, for example, would allow the modulation wheel to change the beat). To set this device, simply press the Knob below the word "Device" making the red arrow blink, then move the controller (mod wheel) you want to assign. Its control change number will appear in the screen. Press the Knob again to lock it in.

5. You can also control the Beat Change with an A3000 Knob. To do this: Select the [UTILITY]: [PANEL PLAY]: [Knob Set] page. Set Knob #2 as follows: CTRL = ON; T-ch = 1 (transmit channel); Device = 001 (Modulation wheel, for our example).

6. Turn Knob #1 or press the 2nd Function button to select the [KNOB CTL] page: The Knob Control page is where you can play the knobs. Each of the knobs will probably have (1:064) above it. This would signify MIDI channel 1, value 64. The value 64 is center for controls that run from 0-127. Values above 064 will increase the Tempo, below will slow the Tempo, however, the pitch should remain the same!

7. You can use the Function keys to trigger samples. [UTILITY]: [PANEL PLAY]: [Fkey Set] page. Set Function key #1 to trigger the note to which you have assigned your sample; C3 is the default assignment.

The Function buttons can send note-ons. This is set via [UTILITY]: [SYSTEM]: [KEYS] page. Set the ASSGINABLE parameter to "Fkey Play on/off". When the ASSIGNABLE key light is illuminated no other functions work but the Function keys can now send note-ons to the assigned samples. Depending on the sample LOOP parameter you can have the full sample playback from a single touch (Shot →) or you can have it turnoff when you let go. The samples assigned to the Function Keys will follow the amplitude envelope generator (AEG) setting of the sample. If you want the sample to play endlessly, set the AEG release rate to 0. Use the ASSIGNABLE key (lit) to convert the Function keys to triggers. You can activate the ASSIGNABLE key at any time.

[UTILITY]: [PANEL PLAY]: [Knob Set] page. Here is where you can define control change numbers for knobs 2,3,4 and 5, set the MIDI Channel, On/Off condition, and the Device (or controller number). As with the Function keys above, you can set the values manually or via MIDI. You can program the parameter control knob to offset (+/-) above and below a center value or just to send positive (+) values, depending on what you wish to accomplish. When setting the Play mode Control parameters you can specify the offset type and the range over which the knob has affect. [PLAY]: [CONTROL]: [PgmCtrl 2] page.

As with the Function keys above, the [ASSIGNABLE] key can be set to select Knob Control at any time, from any screen—even during a sample record session. If you select "Fkey ON/OFF" as the Assignable option (Utility – System) and then activate the [ASSIGNABLE] button while viewing the [Knob Ctrl] screen, you have a situation where both the Knobs and Function Keys are activated as Panel Play controllers, simultaneously.

Resampling and Time Compression / Expansion

The Resample routine is found under [EDIT]: [TRIM/LOOP]: [COMMAND key]: RESMPL. This page allows you to (1) adjust the length (longer or shorter) of the playback time (Time Stretch) without affecting the sample's pitch or (2) to adjust the Pitch directly (Pitch Conversion) without effecting the length. A time Stretch of 100% is no change. 50% plays in half the time, 200% takes twice as long to play, 300% takes 3 times as long, 400% 4 times as long, etc. Beyond a certain point it becomes an *unusal effect*- but that's just fine. You can weight the results toward rhythmic accuracy or sound quality. You can time stretch a specific number of samples or set the value via the convenient % scale. You can calculate any exact time or tempo you need. An interesting thing to note is that **you can audition how the Time Compression/Expansion or Pitch Conversion will sound before you execute it**. This is accomplished by simply pushing and holding the (TmStretch) knob. You can, of course, change the Pitch without changing the tempo.

The RESAMPLE routine is found under the COMMAND key when pressed from [EDIT] mode: [TRIM/LOOP] function. Executing this routine actually re-writes the sample data.

Resampling Audio through the Effects

A very useful trick on the A3000 is re-sampling data through the Effect processors. This connection is handled internally by the A3000 operating system. Prepare the sample and apply the effects PLAY mode. You can utilize any or all the effect processors in any manner you wish. 1/2/3/ signifies the 3 processors in parallel. 1→2/3 signifies 1 and 2 in series while 3 remains in parallel. 1→2→3 is all 3 processors in series. When ready, navigate to the [RECORD]: [SETUP]: [Rec Data] page.

Set the INPUT parameter to ST OUT (Stereo Out). This connects the A3000 Stereo output (post Effects) to the record input via internal routing. You can use either triggered record or manual record as your method; the A3000 will resample the data and create a new sample. You can even resample at a lower or higher sample rate, as necessary.
(Notice that nothing can be set on the [RECORD] mode: [EFFECT] function page – the RecEfSw (Record Effect Switch) is forced to off – this page is used for original recordings, only, not re-samples).

Building Custom Volumes

Assembling custom volumes from programs found in other volumes is a simple procedure. You must first load individual Programs from different volumes. Then, after you have the programs you want, you simply create a new Volume and load those programs into your new custom volume. The procedure to load individual Programs into the A3000 is:

1. Navigate to the [DISK]: [DISK]: [Disk] page and select the appropriate source disk- SCSI or floppy.
2. Next navigate to the [DISK]: [VOLUME]: [Volume] page and select the appropriate Volume that contains your favorite Program.
3. Next navigate to the [DISK]: [PROGRAM]: [PgmLoad] page and select your favorite Program from a listing of all Programs in the selected Volume.
4. Now instead of executing the load, press the [COMMAND] key. Here you re-route the selected Program to any of the 128 locations.

5. Use this method to assemble your favorite Programs into A3000 memory. When all are in memory create a new Volume ([DISK]: [VOLUME]: [VOLUME] page, select **">NEW"**), name and save all the favorite data together.

The Push Knobs and Real-time Loop Start and End Point Designation

The simplicity with which you can create ***perfect*** sample loops on the A3000 makes it a pleasure to use. It shows some of the new thinking that went into the A3000 for break-beat users. The A3000 let's you use the Knob controls like Punch in / Punch out buttons on a tape recorder. You use them to define the Loop Start and Loop End points. For example, if you are going to create an 8 bar loop, your recording should include at a least few bars out front and a bit extra at the end.

Setup:

1. [EDIT]: [TRIM/LOOP]: [Config] page. Set End Type to ADDRESS. Set ZERO to ON. Reading the sample in Address units lets you see the number of samples taken (44,100 per second if your sample rate is 44.1 kHz). The 'Zero' parameter means that you will make cuts only on zero cross points. You could alternatively set 'Snap' to on – this will only allow loops where the level of the loop end matches the loop start. These make for perfect loops without those annoying clicks or pops at the joint.

2. [EDIT]: [TRIM/LOOP]: [Wave] page shows the entire length of the recorded sample. (If your wave begins at approx. 4410, that represents the start point of your recorded data. The pre-trigger parameter defaults to record 100ms of data before the Start Point – at 44,100 that's approximately 4,410 samples). The Wave page shows the full length of the recorded data.

3. [EDIT]: [TRIM/LOOP]: [WvMode] page shows the Loop status. Set the "LpMode" or Loop Mode status to loop the entire wave: " →O" Use the AUDITION button to play the sample back. You will want to have the AUDITION key set to 'toggle' mode so that you do not have to hold it down. This is accomplished on the [UTLITY]: [SYSTEM]: [Keys] page.

4. Change to the [EDIT]: [TRIM/LOOP]: [Loop] page. By pressing or "punching in" the Loop Start point, KNOB 2, you can accurately define it and then with KNOB 3 you will "punch out" the Loop End point during playback. While the sample cycles around via the AUDITION key, "punch" the Loop Start and Loop End knobs, just prior to the first beat and just prior to beat 1 of the 9th measure, to create your perfect 8 bar loops. It continues to play and as it comes around you hear a seamless musical loop! Just like puching in and out on an analog tape deck, you need only be consistant about your timing. That is, land on the same spot, *just* prior to the down beat for both 'in' and 'out' points. (If you miss the "perfect" loop, you can undo your work and try again or use the Step feature to search the nearest "zero cross point" by turning the knob.) The STEP settings changes the resolution of your edits: x1 single sample, x10 samples, x100 samples, x1,000 samples, x10,000 samples. To quickly move from address 489,734 to address 0, please use the 10,000 sample resolution.

Calculation of Loop Tempo

Navigate to the [EDIT]: [TRIM/LOOP]: [Config] page. Set the End Type to BEAT. Then return to the LOOP page. Your defined loop will be displayed in terms of Beats (to the nearest thousandth of a beat). The Tempo can be calculated in BPM by simply pressing KNOB 4. This is a reading based on the number of samples between the start and end points as defined by your loop. The calculation is based on the assumption that your music is between the tempos of 80 bpm and 159.99 bpm and that you are using some dividend of 4 measures.

The 'LpMonitr' or Loop Monitor feature let's you hear just ahead of the loop start point – push and hold it to preview the data up to ½ a second (500ms) – it plays the lead in data only once then cycles through the loop.

TWE: The Wave Editor

TWE is software that Yamaha Corporation has created as a service to users, and is distributed at no cost. This is, as the name implies, a full wave editor for Windows 95 equipped PCs. This is for those you that like to edit via a graphic interface. It is available for download from Yamaha at the United Kingdom's web site **www.yamaha.co.uk** or from your local Yamaha dealer. This will allow you to convert AIFF and WAV files, loop, time compress, EQ, append waves, cut copy and paste, etc., etc. You can load to and from your computer via SCSI.

System Reset

If you are sure your A3000 is behaving badly and all else fails then execute the system reset. It will return your unit to factory, out of the box condition. To reset the A3000 hold [Program:Play] + [Assignable] keys down simultaneously and power up. The A3000 pauses momentarily, then goes through its normal boot up. All memorized system parameters are reset to factory defaults. This includes the parametric EQ, and any memorized controller, effects or setup "inits". This will also require you to reconfigure the SCSI bus, if you had connected drives. To do this: Press [DISK] mode: [DISK] function: [Config] page; select and remount any attached SCSI devices.

Frequently Asked Questions

- **Each A3000 Program is saved with its original location memorized. In other words, if you create and save Program 015, the A3000 remembers that it was created in slot 015 and will load back into Program 015. Why is this?**

This feature makes it easy to use your Programs as part of a MIDI system. If you have programmed your sequencer to recall the A3000 Program via a program change, it is very convenient to have each Program location remembered. Even though today you may remember that "SONG for X" is Program #15, 3 months from now you'll wish you had written it down somewhere.

You can load any Program from within any Volume, to any location when you utilize the Load Program Command feature (see Building Custom Volumes).

- **In using the Easy Edit feature I couldn't change the sample's key range beyond the limits of the original key range. Why is this?**

This operator error is due to a misunderstanding of the key range mapping procedure. When setting key range the A3000 gives you 3 key parameters: Original Key, Low Note, High Note. If you attempt to place the High note limit **lower** than the Low note limit, the A3000 will not let you. Sounds innocent enough? Let's give an example of how it can bite you: You originally key mapped a sample as follows:

Original Key = F3, Low = C3, High = C4 .

You attempt to change the samples key range using the Program Easy Edit feature to the following settings:

Original Key = F1, Low = C1, High = C2.

Basically, moving it down 2 octave from the original key range. This can be done. The problem arises, in our example, if you attempt to set the High Note limit (to C2) ***before*** you set the Low Note limit (which is still set to C3). This very thing caused the SOS reviewer, Chris Carter, to wrongly conclude that you could not set the key range outside of the original samples key range. But as you can see: you can. Simply set the Low and High note limits, as necessary, recognizing that the each cannot be outside of the other.

- **Sometimes there are dashes under the parameters I want to edit, particularly in [Play] mode's Easy Edit and sometimes in [EDIT] mode. I am locked out of editing. Why is this?**

This sounds like you have attempted to edit something while having the software pointing elsewhere. You are seemingly locked out of Easy Edit mode by the dreaded dashes. This occurs when in attempting to edit sample you have the software pointing to a Sample Bank [PLAY]: [SAMPLE]: [SmpBank] instead of at Sample Select - [PLAY]: [SAMPLE]: [SmpSel]. Or vice versa: you have the software pointing to Sample Select when, in fact, you want to see the data of a sample that is within a bank. See section on "**Editing samples within a sample bank".**

The screen from which you enter Edit mode makes a difference about what you will see in the edit buffers. If you enter Easy Edit from the [PLAY]: [SAMPLE]: [SmpBank] screen you will get the dashes because you are pointing at an individual sample that is part of a bank – by definition the sample bank allows you to treat all the samples together as if they were a single sample. Simply, return to the [PLAY]: [SAMPLE]: [SmpSel] screen, point the software at the entire Sample Bank – it will be listed on the Sample Select list with an inverse video "B" before its name. Now when you go to Easy Edit you can effect the entire sample bank (as if it were a single sample) via the parameters.

Conversely, if you attempt to go to the [EDIT] level from the [PLAY]: [SAMPLE]: [SmpSel] page when attempting to edit a sample that is part of a sample bank, you will get the dashes. Simply, go back to the [PLAY]: [SAMPLE]: screen and select the [SmpBank] page. Now when you go back to the EDIT level you will see the data of samples within that bank.

A3000 Version 2: Enhancements

Yamaha is pleased to announce Version 2 of the A3000 Professional Sampler. Version 2 adds important new performance, editing, and utility features that make the A3000 even more powerful and even easier to use.

Major New Features

LOOP REMIX:

Automatically rearranges a looped breakbeat into new variations. Gives you lots of new mileage out of your breakbeat patterns. Go to [EDIT]:[TRIM/LOOP]:[LoopRmx] Page. Select a sample loop and try it out! You have 5 variations (1-5) and 4 types (A-D). Selecting lower numbers and letters produce more subtle results (for example, "1A") and selecting higher numbers will give you more radical results (try a "5D"!).

LOOP DIVIDE:

Automatically slices up a breakbeat pattern and maps the pieces to successive keys along the keyboard. You can then generate your own variations manually at the keyboard. A sample can be divided equally into any of 2 to 32 pieces. Go to [PLAY]:[SAMPLE]:[COMMAND]:[LOOPDIV] to access this feature!

TEN NEW FILTER TYPES:

Version 2 now offers you a total of 16 different filter types:

1. LowPass 1
2. LowPass 2
3. HiPass 1
4. HiPass 2
5. BandPass
6. BandElim
7. LowPass 3
8. Peak 1
9. Peak 2
10. 2 Peaks with new Distance parameter
11. 2 Dips with new Distance parameter
12. Dual LPFs with new Distance parameter
13. LPF + Peak with new Distance parameter
14. Dual HPFs with new Distance parameter
15. HPF + Peak with new Distance parameter
16. LPF + HPF with new Distance parameter

The Distance parameter available on the last seven types is the distance between the two filters. It is available as a destination in the modulation matrix! Go to [EDIT]:[FILTER]:[Filter] page to check out all of the filters!

MIDI CONTROLLED PROGRAM LFO:

Version 2 adds a powerful new LFO that you can set up separately for each program. This new LFO can be synced by external MIDI clock. The new LFO appears as a source in the modulation matrix. Go to [PLAY]:[CONTROL]:[PgmLFO] to check out this function!

NEW EFFECT ROUTINGS:

In Version 2 the Effects can be configured as follows: 1/2/3, 1>2/3, 1>2>3, 1/2>3, 1>2<3, and each effect can be routed to any of the assignable outputs. To access this feature, go to [PLAY]:[EFFECT]:[EfType] page. The new routing configurations are1/2>3 and 1>2<3.

NEW MODULATION MATRIX FEATURES:

New destinations include: FEG Level, Cutoff Distance, Filter Gain, Pgm LFO depth. New sources include: NoteNumber, Velocity, Program LFO. Go to [PLAY]:[CONTROL] to access these now features!

NEW SAMPLE MANAGEMENT FEATRUES:

1. ARRANGE Program or Sample Bank: This allows the automatic mapping of all samples included in a Program or a Sample Bank to successive keys.
2. MOVE Program or Sample Bank: This allows the automatic building of a Sample Bank from either a Program or another Sample Bank. Or the building of a Program from a Sample Bank.
3. COPY: This allows the copying of all sample parameters from one sample to another, from one Sample Bank to another, or from one Program to another. When copying Programs, you have the option to merge the data, or to copy just one of the effect blocks.
4. FREEZE Sample Bank: This takes the bank offsets to the samples in the bank, and writes them to the samples themselves.

IMPROVED INTERFACE FEATURES:

1. The new, safer disk saving routine always confirms destination.
2. Better layout of Easy Edit, with more parameters on screen at each page.
3. All key limits can be set to = Orig (original key). If used as a SET INIT or in the record page, this can facilitate much faster keyboard mapping. Especially useful for drums and oneshot samples.
4. The ASSIGNABLE button can now be used to toggle MIDI>Smp on/off.

NEW DISK FEATURES:

Import Sample Enhancements:
Improved Akai ™S1000 Import (velocity range now translated).
Roland™ Import now supported for many titles.
Emu™ sample import now supported for many titles.
AIFF Export.

Multiple Floppy Save:
You can now save data aross multiple floppy disks.

LARGER SCSI DISK:
You can use disks of up to 8 GB.

PARTITION OFFSET:
To access disks with more than 8 partitions, there is a " Partition" offset, which allows you to offset the first partition read by the A3000.

IMPROVED SCSI AND FLOPPY SPEED:
Offers faster loading from both floppy and SCSI disks, as well as improved SMDI transmission.