SY85 Waveform/Sample Utilities Tutorial and Other Useful Information

Section One: Preparing Samples to be Loaded Into the SY85's Wave Memory

Note: I do not cover loading samples from a wave card since they are so impossible to find, and there's no mention in the manual or elsewhere that a sample can be loaded to a wave card.
Also, Yamaha defines a waveform as consisting of one or more samples.

1)Format all the disks you are going to be using with the SY85.

2) Press the DISK sub mode button, and use the <> buttons to get to the FORMAT DISK screen.

IMPORTANT NOTE: The FORMAT DISK screen does not remind you that all data on the disk will be erased. DO NOT format disks with the 85 *and* your PC, even if you may be going to edit your samples with sample editing software before you load them into the SY85. Any new formatting will erase previous formatting. If your synth disk drive is broken, data will have to be transmitted to the SY85 via an external MIDI storage device. More on that later.
Also, ALL SAMPLE DATA IN VOLATILE MEMORY IS LOST when the SY85 is turned off.

2)Use only 720K dsdd floppies! HDs may work for a while, I eventually had problems with the SY85 reading files on HDs. Sony makes superior floppies and you can still pick up 10 packs of dsdd for under four bucks from several web sites. Do this: Google "10MFD2DDCF price". If you're going to be doing a lot of sampling, buy a whole bunch of them, because they are quickly becoming outdated. If you still want to chance using HDs, the square hole (not the write protect one) must be covered before it can work on the older SY85 drive. Thin vinyl electrician' tape probably works the best. Remember to write protect your finished disks.

3)Before they're put on disk, sample files MUST have been converted to .Wxx files (xx= sample number from 00 to 99), or the SY85 will render them "illegal" and ask you to press the EXIT button. To convert, for example, .WAV or MP3 sample files to .Wxx files, you must have file conversion software, such as Awave that will do so. Before you download your samples onto the floppy, all file extensions must be sequentially numbered, such as .W01, .W02, .W03, etc. This is true whether or not the samples are in a single or multi sample waveform. If there are duplicate numbers, the later number will erase its earlier duplicate. Also, file names MUST BE ALL CAPS AND NO LONGER than eight characters.

Section Two: Loading Samples Into the SY's Wave Memory
For simplicity's sake, we will assume the SY has been shut down and the wave volatile memory is cleared.

1)Insert the floppy into the SY's drive.

2)Hold down SHIFT while pressing UTILITY. The WAVEFORM NUMBER SELECT screen will appear. If it isn't already so, toggle the waveform number to 00. You can program up to 64 waveforms, depending on your total wave memory. To give you an idea, I have expanded my (volatile) memory to 8MB, which allows me to load enough samples for about ten to fifteen simple multisample waveforms. Not a lot, eh? A typical multisample, such as strings takes up nearly a full floppy disk,

NOTE: After a floppy is formatted on the SY85, there is 713k space available. No single sample file can exceed that figure. However, remember that more than one sample file can be assigned to a waveform number. For example, you could have a multisampled waveform consisting of several full 713k samples (depending on your total wave memory) All you need to do is load all your samples into the same waveform number.
However, there is a catch. Whatever way you want to accomplish it, on your PC, etc., the numbers in the .Wxx file extensions must all be different or a file with the same file extension as another will erase the previously loaded one with the same number. It is obvious to assign and load the files sequentially beginning with .w01. However, when you reach the SY85's limit of 99 sample files/extension numbers, you WILL

be forced to think out how you're going to reassign them. The way I get around this is I create a composite disk (disks) of samples that I'm only going to use for a composition or gig, etc. Then I start fresh renumbering on my next composition, etc. It is very rare that even a gig will use up all the allotted slots.

3)Press the DISK sub mode button. You are now at the WAVE DISK 1 SAMPLE screen. As the title says, you can only load or save one sample at a time. However, if you have an external MIDI storage device that receives and transmits sample files, you can use the SY85's SAMPLE DUMP RECEIVE/TRANSMIT (pages 248,249). I never could get my 85 and MIDI unit to synchronize. Maybe you'll have better luck.

4)Press the DISK= file number button and toggle through the sample files on the disk until you get to the sample file(s) you want to load into the SY. If you are the one who previously saved the samples to the disk, they should already be named in sequential order to make things easier. More on that later.

IMPORTANT NOTE: Just as they are numbered, the samples must also be loaded in the same order they will be assigned to the keyboard, from lowest to highest note.

5)Press the LOAD button, then ENTER, then ENTER again.

6)Choose the next sample (if applicable), press ENTER, then ENTER again. Repeat this process for all samples in waveform 00.

Section Three: Assigning Waveforms
1)Now the samples just loaded must be assigned to the waveform. So while still in the wave editing mode (SHIFT+UTILITY), press the SYNTH SETUP sub mode button. The WAVEFORM EDIT screen will appear. Press ENTER and the WAVEFORM ASSIGN screen will appear. If all dashes appear in the FROM and TO fields, press the ON button. Press the FROM button and toggle up to the highest sample number in the waveform. Press TO and toggle to the lowest, if necessary. If you press ON and toggle and the dashes won't turn to numbers, make sure you're in the right waveform by pressing EXIT twice.

2)To reassign a set of samples to another waveform number, hold down SHIFT and press UTILITY to see the WAVEFORM NUMBER SELECT screen. Toggle to the waveform number you want to remove the samples from. Press the SYNTH SETUP sub mode button to see the WAVEFORM EDIT screen. Press ENTER to see the WAVEFORM ASSIGN screen. Press the OFF button. The numbers will turn to dashes. Press EXIT twice to return to the WAVEFORM NUMBER SELECT screen. Toggle to the waveform number you'd like to reassign the samples to. Again, press the SYNTH SETUP sub mode button, then ENTER, and on the WAVEFORM ASSIGN screen, press ON, then toggle the FROM and TO fields until the correct numbered samples appear.

3)To prepare to load another waveform's worth of samples, Press SHIFT and UTILITY and the WAVEFORM NUMBER SELECT screen will appear. Toggle to 01 or another desired number and repeat directions **3)** through **8)** above.

NOTE: It is good to get into the practice of checking the WAVE MEMORY STATUS screen every now and then to see how close you're getting to reaching the memory limit. Believe it or not, this is easy.
1)It doesn't matter where you are in the SY's Waveform section. Simply press and hold down the SHIFT button.

Section Four: Assigning a Waveform in a Voice Bank

1)Press VOICE, then EDIT. Access the OSCILLATOR screen.

2)Press the INTERNAL II BANK MEMORY button.

3)Press the F1 oscillator select button and toggle to the sample waveform number you want to use for that voice. It truly pays to be organized, almost anal, with such a system as we have here. To keep things as simple as possible, I make sure I always load samples into the waveform number that I programmed in the voice. That way, I won't get a scare or have to fart around with wondering why I don't get any sound out of a voice who's samples I just loaded.

4)Here's the moment you've been waiting for! You can now use every single parameter available in voice mode to further shape your single or multi sample waveform, including the effects. However, there are some drawbacks. For example, you cannot use the amplitude envelope generator to sustain when it isn't there in the original sample. Or extend the frequency range of frequencies that aren't there by using the SY85's filtering. Those edits must be done by looping using sample editing software before the sample is even loaded into the SY.

5)Save your voice like any other voice using STORE,ENTER,ENTER. You can later copy it to any location, including the voice card. The waveform assignment number set on the oscillator screen will "follow" the new location.

Section Five: Editing Waveform Parameters
This assumes that Section Two has been completed.

1)Hold down SHIFT, then press UTILITY to see the WAVEFORM NUMBER SELECT screen. Toggle to the waveform to be edited.

2)Press the SYNTH SETUP sub mode button to see the WAVEFORM EDIT screen. Press ENTER. I ignore the WAVEFORM NAME screen (you get there by pressing the > button), because I've never been clear on its function, and I can't get the name to be saved.

3)On the WAVE ASSIGN screen, press the ON button to make sure the correct range of samples are assigned to the waveform. If all you see is dashes, check to make sure you're in the right waveform**.**

4)If the samples were loaded correctly, you will hear the correct sample across its proper keyboard note range. If for some reason you want to initialize the waveform parameters, press UTILITY, then the SEQ SETUP sub mode button. Single files cannot be initialized, but they can be erased by saving another file over them. Or use a PC.

5)To assign samples to the next waveform, press EXIT twice to get back to the WAVEFORM NUMBER SELECT screen. Toggle to the new desired waveform number, and repeat steps **2)** through **4).**

Section Six: Editing Sample Parameters

1)Hold down SHIFT and press UTILITY to see the WAVEFORM NUMBER SELECT screen. Toggle to the waveform to be edited.

2)Press the SYNTH SETUP sub mode button to see WAVEFORM EDIT screen.

3)Press the > button to see the SAMPLE EDIT screen.

4)Press ENTER. You are now at the SMPL MAP page. If you're not, press the < page button. This is where the sample's root , highest keyboard note and lowest keyboard note data is entered. Refer to page 243 thru 246 of the manual. It's pretty straightforward. Simply press the > page button to access the SMPL DATA screen. This is where the sample volume and loop type is set. Remember, #00 is a sample. You will find that the SY's looping capability is a joke, so if you're serious at all about shaping your samples, you will want to get sample editing software. The TWE Wave Editor was developed by Yamaha and is conveniently free.. There may be other web sites it can be downloaded from, but start with:
http://www.easysounds.de/free.htm or
http://yamahasynth.com/download/twe.html The manual can be found at http://www.yamaha.co.uk/xg/download/xgworks/tweman.pdf
The manual is a PDF file and you need at least Acrobat Reader 5.0 to download.
Also free is the WavePad Sample Editor, which can be downloaded at any number of freeware sites. However, the demo does not allow you to save files. Check out he Zero-X Seamless Looper. It's available at lots of sites for free, but the demo also does not save files. Looping sounds with complex harmonic structures are hell to loop. These two have all of the editing tools you need to polish up even fair quality samples.
I am biased toward my Awave Studio. Hands down, it has the easiest and most visual looping utilities. But it's also a format converter with over 200 formats you can batch. It also does a WHOLE BUNCH of other things. If you have $140, it's a real bargain.
http://www.fmjsoft.com   (No, I don't get a commission).

Section Seven: Saving Samples to Disk or External Device
When the SY85 is turned off, all sample and waveform data in the volatile memory is lost, so all sample files and waveform parameters must be saved to an SY85 FORMATTED DISK, write protect off.
You may want to extract sample data from a loaded third party disk. Many times there is no way to tell which samples belong to what waveforms. I have even seen disks that have samples with no names!

1)Hold down SHIFT and press UTILITY. The WAVEFORM NUMBER SELECT screen will appear. Toggle to the first (lowest numbered) named waveform.

2)Press the SYNTH SETUP sub mode button and the WAVEFORM EDIT screen will appear. Press ENTER and the WAVEFORM ASSIGN screen will appear. Take note or write down the numbers of the samples in that waveform. Do steps 1 and 2 with all desired waveforms.

3)Press the DISK sub mode button to see WAVE DISK 1 SAMPLE screen.

4)Press the SAVE button. Toggle to the SAMPLE= number contained in the waveform you want to save to disk. Toggle to the DISK= file number you want to save the sample to.
NOTE: Notice that the disk# starts at 01, but the sample number starts at 00, and you must make sure the disk= number will always be one higher than the sample number before saving, or you'll have a big, complicated mess that can't be reversed without loading the sample, setting the parameters all over again and saving again.

5) If you are saving a sample (and its parameters) back onto the disk you loaded it from, you need not worry about renaming the sample, because the SY will read the name off the original disk. Simply pree SAVE, then ENTER twice.

6) If you are saving samples to a new disk, there is no name information that the SY can read off the disk. Instead of a sample name, you will see ---NEW--- on the LCD. So press the NAME button. You are at the FILE NAME screen. Name the sample (that will appear along with its disk number). This is not to be confused with the waveform name. For example, you can have a waveform name of DRUMS 1, but the samples in that waveform may be called SNARE, BASS, RIDE, etc.

7)After you've named the sample, you can still go back to the WAVE DISK 1 SAMPLE screen by pressing EXIT (which erases the name you just entered), or you can press the ENTER button, then ENTER again to save the sample file to disk.

8)As mentioned before, you can also transmit and receive samples from an external MIDI storage unit using the SY's Sample Dump feature. However, some devices reassign the sample's .Wxx extension with a .MID (MIDI) extension. In that case, the samples would need to be run through file format conversion software and copied onto an SY85 formatted dsdd disk. This is a lot of trouble, but overall might be faster than the SY's drive, especially if you have a lot of files.

Section Eight: Making Backup Copies of Disks
The SY85's DISK BACKUP function (UTILITY, DISK sub mode button, > button) should only be used by those who have absolutely no other way to copy their disks. It took me 22 times of swapping the source disk and the target disk to copy 612Kb of samples! This can't be good news for a floppy drive I've heard so much about breaking down and wearing out. Also, remember to format the target disk on the SY, or the machine will go through the motions of copying, but it really isn't.
Much better is to format a target disk on the SY85 and use an external MIDI device. My device copied the same 612Kb with only two swaps.

Of course, a computer can also be used. Again, the target disk must be formatted on the 85. My PC (XP) has never had a problem working with an SY85 disk. Copying a disk on a computer can be done a few ways. I can't speak for those of you with MACs.

1)First, in Windows Explorer, I click on 3 1/2 FLOPPY (A:)

2)I drag down the EDIT menu and click on SELECT ALL, then COPY.

3)Then I click on my SY85 Samples folder I created.

4)Again, I go to the EDIT menu and clicked PASTE. All sample files on the floppy are copied to my Samples folder. I use the files in this folder

as my backup in case anything happens to the floppy. Of course, any wise person will also back up their entire files on CDR or DVD.

5) Here's one final suggestion for organizing samples for performing, studio or personal recording. After I've edited, loaded and assigned my samples to their waveforms, and after I've assign all the waveforms that I'm going to use (for a song, gig, etc.) to voices, and after I've edited those voices just the way I want them, I can then I take notes and create a "composite" set of floppies or a CD-RW (if you have the compatible MIDI outboard equipment). That way, you don't have to fart around with loading some samples off of this and that disk.
To make a composite floppy, I extract one sample file at a time from my sample library by right clicking on the file, then selecting SEND TO, then slide my mouse over to 3 1/2 FLOPPY [A:] and clicking.

NOTE: Keep in mind that a formatted SY85 disk only has 713K available space. Before you go through the trouble of copying, add up the k's that each sample uses. You can also right click on a file and drag it into the floppy drive.
Also, when you save a sample a sample from the SY85 that has not been saved before, the sample parameters are also saved along with some peripheral information. This data adds up , especially if you have, let's say a drum kit you're saving. Sometimes you may get the dreaded "DISK IS FULL" message. This means that you had enough room on the disk for the sample data, but not the additional sample parameter data. Press EXIT and pull out the floppy, go to your computer and jog things around to make more room on the disk. I try to keep 50k open.
In all honesty, if you don't want to store your samples in a computer, I found that some MIDI storage devices work fast. Or, you can use both. My MIDI device only has a 128k buffer, so I use it to transfer SY85 files to disk, then I insert the disk into my PC and download.
Only you can decide if all this is too much trouble for the ability to vastly extend the SY85's sound palette. The only real money investment is in the floppies. The learning curve is not really bad. Perhaps Yamaha was too ambitious but left out the ergonomics to keep the price competitive.

Section Nine :*Expanding the Waveform Memory*
Everyone knows the SY85 manual says that the maximum SIMM RAM the unit will accept is 2MB (2X1MB), and with the 512k that comes with the synth, that's a total of 2.5 MB. However, after extensively surfing the net, I have found several accounts of those who have successfully installed 8MB and even 16MB. However, do this at your own risk. I don't want someone to blame me for their machine exploding.
NOTE: When installing two SIMM (it MUST be SIMM, 30 pin, less than 80 ns, parity or non parity) boards, both must have the same memory capacity. In other words, one cannot be 1MB and the other 4MB, etc.
After installing the RAM boards, the Wave memory must be initialized. When you turn on the unit, the display screen will give you a message that there is a memory mismatch, or something like that. So:
1)Hold down SHIFT and press UTILITY.
2)Press the SEQ SETUP sub mode button to see the WAVE INITIALIZE screen.
3)Use slider F2 to select the type of memory to be initialized. In this case, it's VOLATILE.
4)Press ENTER, then ENTER again. If you press ENTER once, but change your mind (I don't know why anyone would), you can press EXIT.
NOTE: This is my personal opinion, but I don't understand why the SYEMB06 boards are so sought after. Sure they were non-volatile memory. But they were only 512k and you could only install two of them. I have been working with the SY85's waveform utilities for about a year now, and I can tell you, if your working with higher quality looped samples, that 1MB of non-volatile memory will buy you about one multisampled (1 sample per octave) acoustic guitar. I know volatile memory is a bitch, but 4MB SIMM boards can be found with no problem (in the states) starting at about $15.

Finally, to all you Newbies out there, here are a few more URLs where you can get good info on your SY85:
If you don't have the owner's manual, you can download it in PDF/ Adobe Acrobat format:
http://www2.yamaha.co.jp/manual/pdf/eml/english/synth/SY85E2.pdf
Other information about the SY85 is available at:
http://www.yamaha.com then look for their "knowledgebase".

Section Ten: *Categorizing a Sample Library*
 Earlier I touched on how to categorize samples for a sample library. I am perhaps a bit compulsive, but I have learned that getting around the SY85's waveform section is quite awkward, and it's best to be really organized when working with it. I have a fairly simple approach to naming my samples:

1) All samples must have exactly the same name as the voices that use them.

2) Names for Multisamples consist of the samples name with a suffix of its keyboard range. For example "CHOIRA" would be the lowest keyboard range for the Choir sample. "CHOIRB" would be the next lowest, and so on.Note that I don't use numbers, like 1..2..3..as suffixes in sample names because there are many times when I have had to differentiate instruments with numerals. Let's say I have 8 different multisample sets for guitar. The set for the fifth guitar would be named "GUITAR5A, GUITAR 5B, GUITAR5C", etc.
Another way that some people name their samples of guitars, stringed instruments and the sorts is to sample each open string. So for the guitar above, the sample set would be named "GUITR5E1, GUITRA2, GUITRD2", etc.
Still another way samples are named are by octaves. Samples may have a suffix of C1, C2, C#, etc. or G1, G2, G3, etc.

3) As far as mapping samples across the keyboard, I divide the number of multisamples by the number of octaves on the keyboard. Common sense tells us that mapping across a five board would yield different results than eight octaves.
Another way I map samples is a bit more complicated I go to the SAMPLE MAP screen and let the 85 tell me the root note.

IMPORTANT NOTE whenever you go to the SAMPLE MAP screen, do NOT touch the keyboard. The 85 has a nice feature that was designed poorly The way it's supposed to work is you press one of the F buttons under the LCD, then touch the key and its scale value is automatically entered. However, unfortunately, the cursor default on that screen is under ROOT NOTE, so if you go to that screen and touch the keyboard....yup, the root not becomes whatever note you touched. So when you go to that page, get in the habit of pressing the F button under SAMPLE. Then you can work unhindered.

Once I have my root note, I center it in its note range. Its assigned notes extend to the left and right of the keyboard until they butt up against the range of the sample next to them.

4) As far as building directories, I've made a point of downloading every free sample I could find from the internet I've already edited them and converted them to .Wxx format. Of course, I've kept their .mp3 and.wav files in their folders with them. My directory hierarchy is as follows:
a) Basic instrument type, such as keyboard, guitar, woodwind.
b) Instrument sub-category, such as electric piano, acoustic guitar, sax.
c) Specific brand or type, such as Fender Rhoades, 12 string guitar, alto sax.
d) Attributes, such as bright Fender Rhoades, plucked 12 string, breathy alto sax.
So, a directory might look like WOODWIND >SAX >ALTO >BREATHY Organizing percussion is very similar: PERCUSSION >SNARE >RIM . CRISP, etc.

5) Like I said, I believe the waveform section of the 85 was a marketing afterthought, because it is ergonomically a disaster. I've been working with it for about two years and there is no easy and quick way to use it. But, it is a blast to finally get something out of it. The idea that you can put a sample in a voice and edit it like a voice is great fun. Be warned that the only really good samples come with a price take. I've noticed that the typical sample you get free over the net have to be greatly EQ'd to be of any value.

One last bit of advice even if I am repeating myself. Things will go a lot easier if you work with your samples a composition or gig at a time. When you're done with them, put the floppies in a safe place (you should already have backups in some form). Then, if you need them again you won't have to recreate them - a real headache.