

**malletKAT**

For those who want immediate results, follow the steps below. You should still read the MANUAL later, but this will satisfy that urge to PLAY IT IMMEDIATELY!

1. Get a table, put a KAT MASTER Octave and a couple of KAT EXPANDER Octaves on it and connect them with the 7 pin din cables you received in the box.
2. Plug two footswitches into the back of the KAT into the jacks marked FOOTSWITCH 1 and 2. Any footswitch will do, just make sure to plug in footswitches before you power the KAT on so that the KAT can read what type you have when it powers-up.
3. Plug the AC Adapter you received in the box into AC POWER. Then plug the small round plug end of the AC ADAPTOR (which has a positive "tip" - by the way - the "tip" is the inside of the plug cylinder) into the KAT. The display should show words now. The KAT then goes into PLAY MODE.
4. Then connect your own MIDI cable (5 pin din cable) from one of the KAT MIDIOUTS on the back, to the MIDI IN on a synth, tone generator, sampler, drum machine, etc. Get the "synth" on MIDI Channel 1. If you have a second "synth" put it on MIDI CHANNEL 2 and connect it to a KAT MIDI OUT or the MIDI THRU on your 1st "synth". If you have a third "synth" put it on MIDI CHANNEL 3 and connect it in with a MIDI cable.
5. Now PLAY!

The Footswitch plugged into FOOTSWITCH 1 will do sustains, the Footswitch plugged into Footswitch 2 will step you through a loop of 16 SETUPS that will quickly demonstrate some of the KAT's power.

Here is a summary of what you should notice from the 16 SETUPS as you step through them with Footswitch 2:

- SONG:01 SETUP:01 - A pretty normal SETUP, just using A Controller  
SONG:01 SETUP:02 - Pitch RANGE has moved up an octave.  
SONG:01 SETUP:03 - Synth to PROGRAM 5.  
SONG:01 SETUP:04 - Low MINIMUM VELOCITY: soft hits are quiet.  
SONG:01 SETUP:05 - Limited MAXIMUM VELOCITY: hard hits are softer  
SONG:01 SETUP:06 - HOLD TIME is out to 2 seconds.  
SONG:01 SETUP:07 - Now B Controller also to synth 1, a fifth away  
SONG:01 SETUP:08 - Now all 3 Controllers, making major chords.
- SONG:02 SETUP:01 - A pretty normal split SETUP on two synths.  
SONG:02 SETUP:02 - Pretty normal overlapped SETUP on two synths.  
SONG:02 SETUP:03 - Normal 3 synth split.  
SONG:02 SETUP:04 - Normal 2 synth doubling.  
SONG:02 SETUP:05 - 2 synth crossfading.  
SONG:02 SETUP:06 - 1 synth octave crossfading.  
SONG:02 SETUP:07 - 1 synth both retuned and normal.  
SONG:02 SETUP:08 - HiHat function on Footswitch 1.

## TABLE of CONTENTS

- 1) INTRODUCTION
- 2) PRODUCT DESCRIPTION
- 3) THE OUTSIDE WORLD: UNPACKING and SHIPPING  
STANDS  
CASES  
BACK PANEL  
Power  
Footswitches  
MIDI In  
MIDI Out  
Expander Inputs  
Sensitivity Adjust
- 4) KAT OPERATING MODES: PLAY, FOOTFUNCTION, EDIT
- 5) TUTORIAL
- 6) SCREENS AND BRIEF DESCRIPTIONS
- 7) APPENDIX:
  - A: SETUP WORKSHEET
  - B: TROUBLESHOOTING HELP
  - C: WARRANTY
  - D: INSTRUCTIONS FOR INSERTING NEW SOFTWARE CHIPS
  - E: SYSexc DATADUMP documentation
  - F: MIDI IMPLEMENTATION CHART
  - G: VELOCITY CURVES DOCUMENTATION

## INTRODUCTION (1 - 1)

Hello! Welcome to the KAT! The KAT MIDI PERCUSSION CONTROLLER is a sophisticated musical instrument. It has a collection of features designed and developed for the needs of a percussionist.

The KAT can be as simple or complex as you want. There are so many features that a beginner in the world of electronics and MIDI might at first be intimidated by the extent of the possibilities. If you are a **BEGINNER** don't lose heart! **Go through the tutorials!** You will find **them well worth the small amount of time they take.** They are written with the beginner in mind.

The **SCREENS AND BRIEF DESCRIPTIONS** (SECTION (6)) are intended to be used as an **INDEX**. If you are **ADVANCED**, or just **BOLD and RECKLESS** then feel free to skip around the manual using the **SCREENS and BRIEF DESCRIPTIONS** (Section (6)). This section shows you every screen that can appear on the KAT display, gives you a brief description of it, and references of where to look for details.

Regardless of your MIDI knowledge level you will find that it is very difficult to remember *all* the features in the KAT. That is entirely normal. All you should expect of yourself is to learn what you need to use *right now*. The features that you don't regularly use are difficult to remember - don't expect yourself to remember all that is in this manual. Just remember that when you want to start doing more advanced things with the KAT the features you will need are waiting in here for you to rediscover.

## PRODUCT DESCRIPTION (2 - 1)

The KAT is a velocity sensitive MIDI controller with a vibe-like layout that is expandable from 1 to 4 octaves. The KAT is 49 note polyphonic so your polyphony will always be determined by what you play into. The foam rubber playing pads were selected for their feel, durability, and their ability to limit the mallet impact noise. The KAT comes supplied with strapping bars that may be used to link all of your octaves together into one solid unit. An optional back-lit display is available to make the display readable in the dark.

The KAT has 3 MIDI OUT jacks which carry identical information. This gives you more cabling options and eliminates the need for a MIDI THROUGH BOX for larger systems. The KAT has a MIDI IN jack to provide a MIDI MERGE function. This feature coupled with the KAT CHANNEL SHIFT mapping feature is very useful for systems that include sequencers, other controllers, or pitch benders.

The KAT can be controlled by stepping through **SETUPS** which you have programmed into the KAT prior to actual performance by using the **EDIT MODE**. There are 256 **SETUPS** that are grouped into 32 **SONGS** of 8 **SETUPS** each. Each **SETUP** controls 36 KAT and MIDI parameters. As you **STEP** from one **SETUP** to another you can have any or all of these parameters change in any way you like.

To provide for spontaneous changes there is a **FOOTFUNCTION MODE** where every NOTE PAD on your KAT can perform an instant edit function while in the **PLAY MODE**.

The notes you play on the KAT can be played in any pitch range, with a variety of dynamic feels (including cross-fades) and the KAT is capable of programmable sustains so that you can play staccato and still be able to get long legato sounds.

You can control anything that has a MIDI input: synthesizers, drum machines, samplers, sequencers, transcription software on personal computers, etc. You can connect the KAT up to an array of instruments and control three or more at a time. By simply stepping into the next **SETUP** you not only can change which devices you are controlling, but you can also change the programs selected on the instruments you are controlling.

UNPACKING AND SHIPPING:

When you receive your KAT it is packed into one or two boxes. You should find the number of octaves you ordered, two strapping bars for each Expander Octave, an Expander Cable for each Expander Octave (and one extra cable for when you are stranded in Iowa), an AC Adaptor, some extra screws, a manual, and a warranty card.

You obviously found the manual. Inside the front cover flap you will find the warranty card. Fill it out and send it in so we can keep track of you. Also you will find some felt side protectors that you can stick on the right hand edge of each Expander if you want.

If you ever have to ship the KAT back in for a repair or update use care and good judgement. **Pack the units in snugly with noodles, paper, etc. so that they are not flopping around in the box during shipping.** Do not put the feet of one unit on top of the pads of another. Putting pads against pads is OK.

Shipping expenses are the responsibility of the consumer (you).

STANDS:

There are a whole variety of stands you can use with the KAT. If you use the strapping bars or one of the mount on a board ideas from the **TUTORIAL** page (5 - 1/1) then you can use virtually any stand: the "waiters tray" type stands like **STANDTASTIC**, **ROK STEADY**, **INVISIBLE**, or **ULTIMATE SUPPORT** etc. If you don't want to use the strapping bars you could mount each octave individually on a long **ULTIMATE SUPPORT** stand with two support brackets for each octave.

It is largely a matter of personal taste.


CASES:

Again this is a matter of personal taste and needs. For some a softshell case is fine. Some of you will want a hardshell case. Some want a case for 4 octaves strapped together, some want a case with all octaves separate and stacked next to each other. Some want two 2 octaves on top of each other. If you want some suggestions of specific cases and manufacturers give us a call, we'll be glad to help.

BACK PANEL:


**Power:**

Your KAT is turned on and off by plugging and unplugging the supplied AC adaptor into a 110V outlet and then into the back of the KAT. The AC adaptor has a **positive tip** on a 2.1mm female jack that plugs into the KAT. If you lose your AC adaptor the **important** thing is to get an AC Adaptor with a "**positive tip**". The "tip" is actually the **inside** of the plug on the end of the adaptor cord - this part touches the male post in the center of the KAT POWER hole in the back of the instrument. This is shown symbolically on AC Adaptors as:

**CORRECT POLARITY:** 

The Yamaha adapters for the RX21, RX21L, MDF1 (MIDI Disk) etc. work fine in a pinch.

The Casio, Roland, and Korg ones are the **WRONG POLARITY** because they have a negative tip:

**INCORRECT POLARITY:** 

As far as **Voltage** and **Current** the AC Adaptor output should be between +7V and +12V and should be at least 200 mA (> 0.2 Amp)

**Footswitches:**

Personal taste again. Any kind will work if you plug them in before turning the KAT on.

**MIDI In:**

The KAT has a MIDI IN jack to receive MIDI information from another controller, a sequencer, or a computer. The KAT **MERGES** all this information together with the information the KAT wants to send to MIDI and then sends that **MERGED** data stream to the three MIDI OUT jacks.

This is useful if you want a sequencer (that doesn't have a **MERGE** function itself) and the KAT to both be able to play on the same synths. Since they only have one input jack your synths can't have a cable coming from both the sequencer and the KAT at the same time. You don't want to be unplugging cables during performance so what do you do?

You connect only the KAT MIDI OUT to your synths. You also connect another KAT MIDI OUT to the MIDI IN of the sequencer. You take the MIDI OUT of the sequencer and put it into the MIDI IN on the KAT. This sounds like a dog chasing its tail but if your sequencer doesn't **MERGE** then it won't send live KAT NOTE ON and OFFs back through into the KAT (which if it did would come back out of the KAT into the sequencer again, ETC. and be a real earache.)

If your sequencer does do a **MERGE** then you don't need to do this. Connect the KAT MIDI OUT into the sequencer MIDI IN and connect only the MIDI OUTPUTs of your sequencer to the synths.

The MIDI IN CHANNEL SHIFT feature allows you to map information from one selected CHANNEL to another specified CHANNEL. See TUTORIAL SESSION 11 page 5 - 11/1.

BACK PANEL (cont.):

**MIDI Out:**

The KAT has three MIDI OUT jacks that carry the same MIDI information. Three are provided in case you have several synths without MIDI THRU's. Also this gives you more cabling options.

The KAT MIDI OUT is a **MERGE** of the internal KAT MIDI information that needs to be sent out and the information that is coming in the MIDI IN.

**Expander Inputs:**

The KAT has three EXPANDER Inputs so that the 1 Octave Master can be expanded to 2, 3, or 4 octaves. These inputs expect only the 7 PIN DIN cables that were supplied with your KAT. Do not try to force a 5 PIN DIN cable (MIDI cable) into these inputs!

**Sensitivity Adjust:**

The small trimpot inside this hole in the back of the KAT Master Octave needs a small screwdriver. Turning this trimpot clockwise (looking from the back) turns the SENSITIVITY UP. When you first get your KAT you probably want this trimpot UP ALL THE WAY. A new KAT is not overly sensitive to light strokes. This is no accident. There are two reasons for that:

1. A specific attempt was made in the design of the KAT to avoid problems with interaction and false triggering. If a mallet instrument which gets struck with varying amounts of dynamics is to not interact or false trigger, there is a certain danger zone of sensitivity that must be avoided.

2. The KAT does get more sensitive over time. FSR (Force Sensitive Resistors), the material of choice for this kind of application, does get more sensitive after you beat it for weeks.

If your KAT starts out **very** sensitive in the beginning, you will have big problems 2 months later. Instead your KAT *breaks-in* like a fine wine, or a fine violin. After several months your KAT is simply more sensitive.

After a year or more you may notice the sensitivity of the KAT increase. If your KAT eventually gets too sensitive and the internal software gets too busy sorting through false triggering and interaction you may start to notice your KAT starting to lose some of its improved sensitivity or some notes seem to stop working. If this happens try actually turning **down** the sensitivity - turn it counterclockwise, facing the back of the KAT. This is one case where turning **down** the sensitivity adjust can actually result in an improved sensitivity.



BACK PANEL (cont.):

There is also a "trimpot" inside the Master that adjusts the top end of your dynamics. That trimpot can be adjusted if after a year or so your sensitivity has gone up a lot, making it easier to hit the top end of the dynamic measuring range. If this trimpot is adjusted it should be done so with extreme care. **You should mark the position of the trimpot before you have moved it at all!** Then move the trimpot clockwise - looking from the front with your KAT laying upside down. Then turn the KAT back over and play a PROGRAM on your synth that has a very pronounced VELOCITY effect. Adjust the trimpot in small amounts and turn it back over and play crescendo rolls - listening for a stretching of the upper dynamic limit (meaning that you have to hit harder to get the MAXIMUM VELOCITY). Use VELOCITY CURVE 08, with a VELOCITY range of 00-127. Only the very top levels of dynamic produce above the minimum in CURVE 08, so soft hits will be totally silent. If you adjust too far you will notice that you can't seem to get the upper VELOCITY values at all anymore. When you reach that point back the trimpot off until you seem to regularly get the upper VELOCITY values. Now try this as a new upper dynamic limit.

If you adjust the trimpot too far the other way you will get MAX VELOCITY with medium hits. If this happens adjust the trimpot other way!

If you get confused, return the trimpot to its original setting (which you marked earlier) and try again later.

## KAT OPERATING MODES (4 - 1)

The KAT has three main modes: the **PLAY MODE**, the **FOOTFUNCTION MODE**, and the **EDIT MODE**.

### PLAY MODE

When in the **PLAY MODE**, the KAT is performance oriented. The **NOTE PADS** on the KAT play MIDI notes (from 1 to 3 notes per pad) like you would expect and the small **LEFT FUNCTION PAD** will send out a MIDI ALL NOTES OFF command if you hit it two or three times (your PanicButton). **FOOTSWITCHES 1 and 2** will perform exactly as you have programmed into your current **SETUP** (do SUSTAINS, SETUPSTEPPING, FOOTNOTES, or SEQ CONTROL) and **FOOTSWITCH 3** will select the **FOOTFUNCTION MODE**. If you hit the **RIGHT FUNCTION PAD** twice you will enter the **EDIT MODE**.

### FOOTFUNCTION MODE

If you depress the **FOOTSWITCH** plugged into **FOOT 3** while you are in **PLAY MODE** you will enter the **FOOTFUNCTION MODE**. When you release the **FOOTSWITCH** plugged into **FOOT 3** you leave the **FOOTFUNCTION MODE** and return the basic **PLAY MODE**.

While you are in the **FOOTFUNCTION MODE** every **NOTE PAD** you hit on the KAT will perform a specific MIDI command or KAT EDIT function. The actions you can perform quickly by this live **FOOTFUNCTION MODE** include: live MIDI PROGRAM CHANGES, RANGE changes, live MIDI VOLUME changes, live VELOCITY and HOLD time changes, SETUP STEP, SETUP BACKUP, SONG INC, SONG DEC, live MIDI CHANNEL selections, live MONO / POLY changes, and even a SETUP RECALL (to get back to the original SETUP after you have messed it up using all these editing features.)

### EDIT MODE

If you hit the **RIGHT FUNCTION PAD** twice while in the **PLAY MODE** you will enter the **EDIT MODE**. While you are in the **EDIT MODE** a single hit on the **RIGHT FUNCTION PAD** returns you to the **PLAY MODE** again.

Editing is performed mainly by 6 **NOTE PADS**: **C#4**, **D#4**, **F#4**, **G#4**, **A#4** and **B4** (all residing on the Master Octave).

- C#**: In **EDIT MODE** adds a small amount to value of selected parameter.
- D#**: In **EDIT MODE** adds a large amount to value of selected parameter.
- F#**: In **EDIT MODE** scrolls forward through **SETUP** or **GLOBAL** screens.
- G#4**: In **EDIT MODE** rotates cursor through the parameters that can be changed on the current screen.
- A#4**: In **EDIT MODE** scrolls backwards through **SETUP** or **GLOBAL** screens.
- B4**: In **EDIT MODE** toggles between **SETUP SCREENS** and **GLOBAL SCREENS**.

(**C5**: In **EDIT MODE** toggles between **SETUP SCREENS** and **HELP SCREENS**.)

The **EDIT MODE** has three sets of screens: the **SETUP SCREENS**, the **GLOBAL SCREENS**, and the **HELP SCREENS**.

## KAT OPERATING MODES (4 - 2)

EDIT MODE (cont.)

### SETUP SCREENS

The **SETUP SCREENS** consist of 22 screens that allow you to EDIT each of your 256 **SETUPS**. The parameters contained in the **SETUP SCREENS** are:

KEYBOARD ASSIGNMENT of CONTROLLERS A, B, or REASSIGNMENT  
CONTROLLER A NOTE PAD LIMITS on the KAT Keyboard  
CONTROLLER A MIDI CHANNEL and PROGRAM CHANGE value  
CONTROLLER A VELOCITY range (MINIMUM and MAXIMUM)  
CONTROLLER A VELOCITY CURVE  
CONTROLLER A MIDI VOLUME level  
CONTROLLER A Octave RANGE  
CONTROLLER A Half-step TRANSPOSE  
CONTROLLER A HOLD time

CONTROLLER B NOTE PAD LIMITS on the KAT Keyboard  
CONTROLLER B MIDI CHANNEL and PROGRAM CHANGE value  
CONTROLLER B VELOCITY range (MINIMUM and MAXIMUM)  
CONTROLLER B VELOCITY CURVE  
CONTROLLER B MIDI VOLUME level  
CONTROLLER B Octave RANGE  
CONTROLLER B Half-step TRANSPOSE  
CONTROLLER B HOLD time

X CHANNEL and PROGRAM CHANGE value  
FX PROGRAM CHANGE value  
A VOLUME send to X CHANNEL -> YES/NO  
A RANGE affect REASSIGNMENT PITCHES -> YES/NO  
A TRANSPOSE affect REASSIGNMENT PITCHES -> YES/NO  
FOOT 1 assignment  
FOOT 2 assignment  
SETUPSTEP result  
MIDI IN CHANNEL SHIFT

EDIT MODE (cont.)

**GLOBAL SCREENS**

The **GLOBAL SCREENS** consist of 10 screens that allow you to EDIT the parameters that affect the KAT as a whole. When in the **EDIT MODE** the **B** on the Master Octave toggles you back and forth between the **SETUP SCREENS** and the **GLOBAL SCREENS**. The parameters included in the **GLOBAL SCREENS** are:

- Permanent Memory Protect ON/OFF
- A SETUP COPY screen
- PROGRAM CHANGE RECEIVE ENABLE/DISABLE and CHANNEL #
- REASSIGNMENT PITCH AND CHANNEL definitions
- FOOTNOTE PITCH, CHANNEL, and VELOCITY values
- HI-HAT OPEN/CLOSE PITCH, CHANNEL, and VELOCITY values
- A DATADUMP screen
- A DATA RECEIVE screen

**HELP SCREENS**

The **HELP SCREENS** consist of 50 screens that act as a reminder of what alternate functions the 49 KAT NOTE PADS and **LEFT FUNCTION PAD** perform in the **EDIT** and **FOOTFUNCTION MODES**. When in the **EDIT MODE** the **HI C (C5)** on the Master Octave toggles you back and forth between the **SETUP SCREENS** and the **HELP SCREENS**.

## TUTORIAL (5 - 0)

This tutorial is divided into sequential short lessons that take you from "powering on" to understanding all of the KAT'S functions and abilities. The easiest way to understand your KAT is to follow every step of the tutorial.

Follow through this tutorial exactly as it says - each individual session builds on the ones before it - so take the time to go through the whole bunch - in a couple of consecutive separate sittings if you like.

You will find it very helpful to make copies of the **SETUP** worksheet (APPENDIX A) to use as you read through the tutorial and later to document your **SETUPS**.

- SESSION 1: MECHANICAL ASSEMBLY, RIGHT FUNCTION PAD,  
LEFT FUNCTION PAD, SONGS & SETUPS, EDIT MODE,  
NOTE PADS as FUNCTION PADS
- SESSION 2: PERMANENT MEMORY, EDITING A SETUP, SAVING A SETUP,  
COPYING A SETUP, PLAYING SOME NOTES
- SESSION 3: FOOTSWITCH ASSIGNMENTS AND SETUPSTEPPING
- SESSION 4: KEYBOARD ASSIGNMENT and LIMITS - A, B, &  
REASSIGNMENT CONTROLLER
- SESSION 5: MIDI CHANNELS, PROGRAM CHANGES
- SESSION 6: RANGE, TRANSPOSE, and HOLD
- SESSION 7: MINIMUM & MAXIMUM VELOCITY, VELOCITY CURVE, VOLUME
- SESSION 8: FOOTFUNCTION, FOOTFUNCTION COMMANDS
- SESSION 9: REASSIGNMENT CONTROLLER
- SESSION 10: FOOTNOTES AND HI-HAT
- SESSION 11: MIDI IN/MERGE/OUT, MIDI IN CHANNEL SHIFT, MIDI IN  
PROGRAM CHANGE RECEIVE, DATA DUMP, and DATA RECEIVE

SESSION 1

MECHANICAL ASSEMBLY:

You have the option of using the strapping bars to "strap" your KAT into one solid piece and place on a stand, or use any other reasonable arrangement you can come up with. Some ideas already implemented by KAT users are: (a) mounting on tom-tom stands, (b) adhering velcro to the backs of your octaves and to a piece of wood long enough for your entire instrument so that the individual octaves can be placed side by side on the wood and then on a keyboard stand (the wood could be hinged in the middle), (c) drilling holes in a piece of wood that match up with the feet under the KAT so the individual octaves simply fit right into the holes (this piece of wood could be hinged in the middle so that it could fold up into 1/2 the size), or (d) simply placing side-by-side on a table.

If you have 4 octaves and choose to use the strapping bars, when you tear your set down for transporting we suggest that you only remove the middle two strapping bars. This divides your KAT into two easily managed two-octave pieces. Each two octave piece could be put in its own case. This way each set up and tear down you would only have to remove two strapping bars as opposed to 6.

( First a **CAUTION**. There are two sizes of back cover screws. When you receive your KAT, the MASTER octave has 5 - 6-32 x 1/4" screws and 3 - 6-32 x 1/2" and the expanders have just 8 - 6-32 x 1/2" screws each. The reason for two screw sizes is for the use of the metal strapping bars. When the bars are used, longer screws are necessary. When the bars are not used the **SHORT SCREWS MUST** be used in the two middle holes in the back of the MASTER Octave (if long screws are used the MIDI IN and EXPANDER 3 jack **MAY BE DAMAGED!** - look and you'll see why!) In all OTHER holes, when not using the strapping bars, either screw size may be used.)

When strapping bars are used, exchange the short screw from the middle of the MASTER Octave and long screw on the display end of the Master Octave where the strapping bar does not extend.

Don't use excessive force in plugging and unplugging expander cords . ( Gently wiggling the cables back and forth while inserting or removing them makes it easier to do. )

To use the strapping bars, follow these steps:

Select a clean, flat work area: a table, counter, or floor area, where you have enough length for your entire KAT. You will need a regular flat blade screw driver and two strapping bars for every expander you own.

Place your MASTER octave, pad side down, on the left of your workspace so that the jacks are facing away from you. You should be looking at the back cover of your MASTER octave and you should see 4 rubber feet and 8 screws holding the back cover onto the MASTER chassis.

Take an EXPANDER and place it, pad side down, to the right of your MASTER octave, so that its jack is facing away from you and the back cover, rubber feet, and 8 long screws holding the cover on are visible. Place the rest of your EXPANDER octaves to the right of the previous one in the same manner as above. All the jacks should be facing away from you.

SESSION 1 (cont.)

MECHANICAL ASSEMBLY: (cont.)

With your flat blade screwdriver, remove the 4 screws from the cover of your MASTER octave that are closest to the EXPANDER. Note that one of these (the one next to the label that says "CAUTION Short Screw Unless Using Strapping Bar") is a small screw and will not be long enough to use on the strapping bars - swap it with the long screw in the upper left hand corner where the strapping bars will not extend. Now remove the 8 screws from your EXPANDERS as well.

Take a strapping bar and place it so it straddles across from your MASTER octave to your EXPANDER octave next to it. Adjust the positions of the octaves and the orientation of the strapping bar so that the holes of the strapping bar and those of the back cover and chassis line up (NOTE: the strapping bars only fit on in one direction). The recessed holes on the strapping bar should be visible. Get 4 long (6-32 x 1/2") machine screws started into the bar, cover, chassis, assembly. Do not tighten down yet.

Do the same with the second bar from the MASTER octave to the EXPANDER octave and then for the gaps between other adjacent octaves.

The screw by the MIDI IN jack MUST be SMALL. The other 3 screws in your MASTER octave that are not in a strapping bar could be long (6-32 x 1/2") if necessary. The screw by the EXPANDER 3 jack on the MASTER must be long (6-32 x 7/16") if you are using strapping bars, short (6-32 x 1/4") if not.

Now that all the screws have been started, go ahead and tighten the screws on the whole assembly. The proper installation of the strapping bars will result in a solid 2, 3, or 4 octave instrument.

SESSION 1 (cont.)

Your KAT MASTER octave has two extra small pads just below the display. A **LEFT FUNCTION PAD** and a **RIGHT FUNCTION PAD**.

RIGHT FUNCTION PAD:

The **RIGHT FUNCTION PAD** has only one function: to toggle you back and forth between the **PLAY MODE** and the **EDIT MODE**. "Toggles" means it switches you back and forth. When in the **PLAY MODE**, hitting the **RIGHT FUNCTION PAD** twice will put you into the **EDIT MODE**. When in the **EDIT MODE** (whether in the **SETUP SCREENS**, the **GLOBAL SCREENS**, or the **HELP SCREENS**) hitting the **RIGHT FUNCTION PAD** once will put you back into the **PLAY MODE**. (In **FOOTFUNCTION MODE** it has a special function of entering you into a **SETUP SELECT MODE** - allowing you to instantly access any **SETUP** in the first 13 **SONGS**. (see 5 - 8/1 to 5 - 8/11).)

When you first power the KAT on the display says:

```
-----  
|HELP:R FNC TWICE|  
| THEN HIT HI C |  
-----
```

This screen reminds you that the **HELP SCREENS** will remind you of what the alternate functions of the KAT NOTE PADS are in the **EDIT MODE** and **FOOTFUNCTION MODE**.

Then the following screen appears on the display:

```
-----  
|SONG:xx SETUP:xx|  
|* PLAY MODE ON *|  
-----
```

This is the screen you will see when you are in the **PLAY MODE**. Whenever you are "playing" you should be in the **PLAY MODE**.

Hit the **RIGHT FUNCTION PAD**. Notice nothing happens. Hit the **RIGHT FUNCTION PAD** again and now the display should say:

```
-----  
|SONG:xx SETUP:xx|  
|KBD ASSIGN x x x|  
-----
```

The bottom line may say something different but you should notice one of the numbers blinking. You are in the **EDIT MODE**. The **EDIT MODE** is the mode you put the KAT in to edit or change the internal settings and **SETUPS**.

Keep hitting the **RIGHT FUNCTION PAD** and you should notice the display changing back and forth between the **PLAY MODE** screen and one of the **EDIT MODE** screens where a number is blinking. Note that to get from the **EDIT MODE** to **PLAY MODE** you need to hit the **RIGHT FUNCTION PAD** only once. However, to get from the **PLAY MODE** into the **EDIT MODE** screens, you must hit the **RIGHT FUNCTION PAD** twice in a row without hitting any other pads in between. The reason you must hit the **RIGHT FUNCTION PAD** twice in a row to get out of **PLAY MODE** is so that you don't accidentally get out of **PLAY MODE** during a live performance.



**SESSION 1** (cont.)

**LEFT FUNCTION PAD:**

The **LEFT FUNCTION PAD** does a variety of things depending upon what mode the KAT is in. In the **PLAY MODE**, hitting the **LEFT FUNCTION PAD** two or three times sends an "ALL NOTES OFF" command out to MIDI. The purpose of this is as a "panic button" to stop any notes which get "stuck on" in any of the instruments you are controlling.

If you hit it twice the KAT will send out both the MIDI "ALLNOTESOFF" Command and MIDI "SUSTAINOFF" Command to each of the 16 MIDI Channels. This is very fast but not all synths respond to it. If it doesn't shut the stuck note off, hit it a **THIRD TIME**. Now the KAT sends out a specific MIDI "NOTEOFF" Command for every single note on every single MIDI Channel. This takes 2.5 seconds but should get the note off.

So use **LEFT FUNCTION PAD** twice for a quick attempt at ALL NOTES OFF. If it doesn't shut it off hit it a third time and that should do it.

In the **EDIT MODE**, hitting the **LEFT FUNCTION PAD** twice will **SAVE** your current **SETUP** into **PERMANENT MEMORY** (if **MEMORY** is not protected).

The **LEFT FUNCTION PAD** and the **RIGHT FUNCTION PAD** also have another special function, in combination with the footswitches, when you are defining a **REASSIGNMENT** in the **GLOBAL SCREENS** (see **TUTORIAL - SESSION 9**).

**SONGS and SETUPS:**

Inside your KAT is a **PERMANENT MEMORY** that will hold 256 groups of settings. Each group of settings is called a **SETUP**. The **SETUPS** are grouped into 32 **SONGS**. Each **SONG** holds 8 **SETUPS** (32 **SONGS** times 8 **SETUPS** each is 256). During an actual song, you might want to change which instruments your KAT is controlling, change the type of sound those instruments are making, the pitch range you are playing in, or even how long notes sustain. These are some of the settings contained in each one of your **SETUPS**.

In each of 32 **SONGS** you can have 8 different **SETUPS**, which can change virtually any parameter of your performance. You can program an entire performance into your **SONGS** and **SETUPS** and step through the various **SETUPS** with a footswitch while your hands are free to play. (More about footswitches and **SETUP STEPPING** later).

To see what settings are actually stored in a **SETUP** see the **SETUP WORKSHEET** in **APPENDIX A**.

SESSION 1 (cont.)

EDIT MODE:

Another way to see what is in a **SETUP** is to:

a) Hit the **RIGHT FUNCTION PAD** until the bottom line of the display does **NOT** say "**\* PLAY MODE ON \***" - one number should be blinking - you are now in the **EDIT MODE**. In the **EDIT MODE** you can see and change what's in your **SETUPS**.

b) Hit the **F#** on your **MASTER Octave (F#4)** repeatedly and watch the bottom line change. These screens are called the **SETUP SCREENS** and they show you what is in a particular **SONG** and **SETUP** (probably **SONG:01 SETUP:01**). Once you start seeing the same screens again for the second time (the screens "wrap-around"), move on to step c).

c) Now hit the **B (B4)** on your Master Octave. You have now entered the **GLOBAL SCREENS**. Hit the **F# (F#4)** on your Master Octave repeatedly so you can get an idea of what parameters are contained in the **GLOBAL SCREENS**. Once you start seeing the same screens again for the second time (the screens "wrap-around"), move on to step d).

d) Now hit the **C (C5)** on your Master Octave. You have now entered the **HELP SCREENS**. Hit any pad on the **KAT** and the display will tell you what special function that pad does in the **EDIT** and **FOOTFUNCTION MODES**. When you have done enough of that hit the **RIGHT FUNCTION PAD** to return to **PLAY MODE**.

**SUMMARY SO FAR:**

The **EDIT MODE** consists of 3 groups of screens: the **SETUP SCREENS**, the **GLOBAL SCREENS**, and the **HELP SCREENS**. The **RIGHT FUNCTION PAD** toggles you between **EDIT** and **PLAY MODES**. The **LEFT FUNCTION PAD** is "ALL NOTES OFF" during **PLAY MODE** and is "SAVE SETUP" during **EDIT MODE**. The **B4** pad toggles you between the **SETUP** and **GLOBAL SCREENS** if you are in the **EDIT MODE**. The **C5** pad toggles you between the **SETUP** and **HELP SCREENS** if you are in the **EDIT MODE**.

**SESSION 1** (cont.)

**NOTE FUNCTION PADS:**

When this manual refers to a specific NOTE PAD on the KAT that pad will be denoted (in bold) by a note letter and an octave number. On a 4-octave KAT the lowest C on the left of the KAT is **C1**. The far left EXPANDER contains the pads **C1**, **C#1**, **D1**, etc. to **B1**. The expander to the right of that (which is two octaves away from the MASTER Octave) contains the NOTE PADS **C2** to **B2**. The 3rd EXPANDER from the left (the one next to the Master Octave) has NOTE PADS **C3** to **B3**. The Master Octave has the NOTE PADS **C4** to **C5** (**C5** is the highest note on the KAT regardless of how many octaves you have) and the **LEFT FUNCTION PAD** and the **RIGHT FUNCTION PAD**. So a 3 octave KAT has NOTE PADS **C2 - C5**! Get it???

All of the NOTE PADS on the KAT can do another function other than play notes. All have a special function in the **FOOTFUNCTION MODE** (when you have **FOOTswitch 3** depressed you are in **FOOTFUNCTION MODE**). You will learn about this in Session 8.

Also, 7 of the NOTE PADS on the Master Octave have a special function in the **EDIT MODE**. You have already seen, in this session, that the **B4** and **C5** NOTE PADS are toggle pads to get to the **GLOBAL SCREENS** and **HELP SCREENS** from the **SETUP SCREENS**. The 5 ACCIDENTAL NOTE PADS on the Master Octave allow you to do all of the editing of the **SETUP** and **GLOBAL SCREENS**. Since the display shows a # nicely, the ACCIDENTAL NOTE PADS will always be referred to as # PADS.

Basically, what you need to be able to do in the **EDIT MODE** is to see any parameter stored in the KAT and be able to change it if you want to. The five sharps on the MASTER octave allow you to do this.

**FOLLOW THESE STEPS:**

First of all, don't worry about messing up your KAT's present settings. All the changes you will be doing are temporary - you can't make permanent changes to the KAT without actually trying to - you will find out how to make permanent changes in the KAT in SESSION 2.

- a) Get into **EDIT MODE** (use **RIGHT FUNCTION PAD**).
- b) Repeatedly hit the **F#4** NOTE PAD. Note that you are **scrolling forward** through the screens.
- c) Repeatedly hit the **A#4** NOTE PAD. Note that you are **scrolling backward** through the screens.

SESSION 1 (cont.)

NOTE FUNCTION PADS (cont.):

d) Using the **F#4** and **A#4** NOTE PADS find the screen that says:

```
-----  
|SONG:xx SETUP:xx|  
|A: CHxx PGRM xxx|  
-----
```

e) Now we will find out **HOW** to change the parameters on the screens - later you will find out **WHY** and **WHAT** these screens and parameters are for. The SONG # is probably blinking. Hit the **G#4** NOTE PAD and now the SETUP # is blinking. Continue hitting the **G#4** and notice that the "blinking" moves from parameter to parameter. This blinking is called a **CURSOR**. You can move the cursor from parameter to parameter with the **G#4** NOTE PAD.

Hitting **F#4**, **G#4**, and **A#4** on your MASTER octave allows you to place the cursor on any parameter. Now to **change** the numbers!

f) Now hit the **D#4** NOTE PAD and notice that it adds a small amount to the parameter that the cursor is on. Use the **G#4** to select another parameter and then use the **D#4** to change the value.

g) Now hit the **C#4** NOTE PAD and notice that it generally adds a larger amount to the selected parameter.

h) Now use all 5 of the Master # PADS to explore around the screens and practice changing parameter values. Note that sometimes the **D#4** adds 10, sometimes 12, and sometimes 32, depending on the parameter. Note that the **C#4** sometimes adds 1 and sometimes 3 depending on the parameter.

Understanding how to change parameter values in the KAT is half the battle in learning how to use the KAT. The rest of the battle is learning MIDI and how the parameters in the KAT can work for you. That is what the entire rest of the TUTORIAL is about.

SESSION 1 (cont.)

NOTE FUNCTION PADS (cont.):

**REVIEW:**

Master Octave has NOTE PADS C4 to C5 and the two FUNCTION PADS.

**RIGHT FUNCTION PAD:** Toggles you between **EDIT MODE** and **PLAY MODE**.

**LEFT FUNCTION PAD:** **ALL NOTES OFF** if hit 2 or 3 times in **PLAY MODE**.  
**SETUP SAVE** if hit twice in **EDIT MODE**.

**C#4:** In **EDIT MODE** adds a small amount to the selected parameter.

**D#4:** In **EDIT MODE** adds a larger amount to the selected parameter.

**F#4:** In **EDIT MODE** scrolls forward through **SETUP/GLOBAL SCREENS**.

**G#4:** In **EDIT MODE** rotates **CURSOR** through the parameters that can be changed on the current screen.

**A#4:** In **EDIT MODE** scrolls backwards through **SETUP/GLOBAL SCREENS**.

**B4:** In **EDIT MODE** toggles between the **SETUP** and **GLOBAL SCREENS**.

**C5:** In **EDIT MODE** toggles between the **SETUP** and **HELP SCREENS**.

SESSION 2

PERMANENT MEMORY:

When you turn on the KAT, it automatically loads in the last **SETUP** that you were using when you last turned the instrument off. The KAT loads this **SETUP** from **PERMANENT MEMORY** into a **SCRATCH-PAD** (no relation to NOTE PAD) **MEMORY**. When you edit a **SETUP** you are changing the **copy** of the **SETUP** in the **SCRATCH-PAD MEMORY**.

Now you will edit in a specific **SETUP** using the 5 # PADS on the Master Octave. Using the **G#4**, **C#4**, and **D#4** NOTE PADS to make the **SONG** value be 03 and the **SETUP** value to also be 01 (if you are in the **PLAY MODE** hit the **RIGHT FUNCTION PAD** twice to get into **EDIT MODE**).

Now use the **F#4** and **A#4** NOTE PADS to get to this screen:

```
-----  
|SONG:03 SETUP:01|  
|KBD ASSIGN x x x|  
-----
```

Using the **G#4**, **C#4**, and **D#4** NOTE PADS make the values on that screen match the values on **SETUP EXAMPLE 1** on the next page. Then use the **F#4** to get to the next screen and edit the parameters on that screen to match below, etc. until you have edited all 22 **SETUP SCREENS** to have the values in **SETUP EXAMPLE 1** on the next page.

The ||| symbol is used to represent the black box you can select on the display. The black box is shown to represent one of the Controllers being turned off.

After you have gone through all of your **SETUP SCREENS** for **SONG:03 SETUP:01** and edited them to match the **SETUP EXAMPLE 1** on the next page, proceed on to find out how to make changes to the KAT's **PERMANENT MEMORY**.

SESSION 2 (cont.)

PERMANENT MEMORY (cont.):

SETUP EXAMPLE 1

KeyBoard ASSignment:       A         B         |  |  |  

A:   LIMITS              C1       to              C5  

A:   CHannel             01       ProGRaM       01  

A:   VELOCITY            40       to              127  

A:   Velocity CURVe     01       VOLume        127  

A:   RANGE               +0       TRANSPoSE     00  

A:   HOLD                0.250s  

B:   LIMITS              C1       to              C5  

B:   CHannel             02       ProGRaM       04  

B:   VELOCITY            40       to              127  

B:   Velocity CURVe     01       VOLume        127  

B:   RANGE               +0       TRANSPoSE     00  

B:   HOLD                1.250s  

X:   CHannel             03       ProGRaM       01  

FX:  CHannel            16        ProGRaM       01  

AVOLUME -> X CHannel      Y  

ARANGE -> REAS:           N  

ATRNSP -> REAS:          N  

FOOT 1:                  SUSTAINAB  

FOOT 2:                  SETUPSTEP  

SETUPSTEP:              NXTSET  

MIDIIN SHIFT CHannel   1   -> CHannel   1

SESSION 2 (cont.)

PERMANENT MEMORY (cont.):

When you have edited a **SETUP** you must realize that all the changes you have just made are temporary. You have edited a **copy** of the **SETUP** in **SCRATCH-PAD MEMORY**. If you like the changes then you should **SAVE a SETUP**. But first you must turn the memory protect off.

To turn memory protection off follow these steps:

- a) Get into **EDIT MODE**. (**RIGHT FUNCTION PAD**)
- b) Hit the **B4** NOTE PAD to get into the **GLOBAL SCREENS**.
- c) Hit the **F#4** or **A#4** NOTE PADS to scroll through the screens until you see:

```
-----  
|PERMANENT MEMORY|  
|XXXXXXXXXXXXXXXXXX|  
-----
```

Use the **C#4** or **D#4** NOTE PADS to change the blinking parameter from " **IS PROTECTED** " to " **CAN BE CHANGED** ". When permanent memory is protected, you can not save anything to permanent memory.

SAVING A SETUP:

To **SAVE a SETUP** follow these steps:

- a) Get into **EDIT MODE**. (**RIGHT FUNCTION PAD**)
- b) Hit the **LEFT FUNCTION PAD** twice. You will see:

```
-----  
|SETUP SAVED INTO|  
|PERMANENT MEMORY|  
-----
```

You have **SAVED a SETUP!**

( If instead you saw a screen that said:

```
-----  
|MEMORY PROTECTED|  
|CAN'T SAVE SETUP|  
-----
```

Then you should repeat the steps at the top of the page to turn off memory protection. )



SESSION 2 (cont.)COPYING A SETUP:

Once you start creating **SONGS** on the KAT you will want to **COPY SETUPS** so that you can start an entire song out with the same basic settings and then go back and put in the individual differences from **SETUP** to **SETUP**. Another reason to **COPY SETUPS** is to copy a **SETUP** from one **SONG** to another **SONG**.

To **COPY A SETUP** follow these steps:

- a) Get into **EDIT MODE**.
- b) Get into the **GLOBAL SCREENS**.
- c) Hit the **F#4** or **A#4** NOTE PADS to scroll through the screens until you see:

```
-----
|SETUP COPY HIT A|
|FROMxx:xxTOxx:xx|
-----
```

- d) On **POWER-UP** the parameters will start out at "FROM01:01TO01:02". (If you have something in **SONG:01 SETUP:02** that you want to keep, then just read this and don't actually do the actions requested.) Hit the **A4** NOTE PAD on the Master Octave like you are prompted. Now the display says:

```
-----
|COPY HIT A AGAIN|
|FROMxx:xxTOxx:xx|
-----
```

- e) Hit the **A4** NOTE PAD again as prompted and the **SETUP** is **COPIED!**
- f) Also note the "TO :**SETUP** " value has changed to 03. This makes it easier copy a **SETUP** through an entire **SONG** or group of **SETUPS**. Hit the **A4** NOTE PAD repeatedly and you will see the TO :**SETUP** value getting bigger every two hits. You are rapidly copying the **SETUP** to a whole series of **SETUPS**.

SESSION 2 (cont.)

PLAYING SOME NOTES:

Now you have put in a **SETUP** that should allow you to do some playing, (I'll bet most of you have already cheated and done some playing).

Now, get into the **PLAY MODE (RIGHT FUNCTION PAD)**.

Next you must get the correct connections to the instrument you want to control (hereafter we will call this instrument "your synth" even though it might be a drum machine, a sampler, a sequencer, or several various instruments).

Plug a MIDI cable (5 pin male din plugs) into one of the MIDI OUT jacks in the back of the KAT. Plug the other end of the MIDI cable into the MIDI IN jack on your synth.

Now you must get your synth set up. You should tell your synth to respond to MIDI CHANNEL 01. If you don't know how to do this, consult your synth's manual, the store you bought it from, or the manufacturer. Select OMNI MODE OFF if you can.

Now you should be able to play your KAT and get sound out of your synth. If you don't get any sound refer to the **APPENDIX** for troubleshooting help.

SESSION 3

FOOTSWITCH ASSIGNMENTS & SETUPSTEPPING:

Now that you have done some playing on your KAT the next thing you should do is get some footswitches and plug them in. Footswitches will become very important to you - they will allow you to do **SUSTAINS** and **SETUPSTEPPING** and live editing through the **FOOTFUNCTION MODE**. There are two types of Footswitches, "normally open" ones and "normally closed ones". You don't need to worry about what that means because either type work fine with the KAT **if you plug them in BEFORE you turn the KAT on**. This is because the KAT reads the Footswitches on power-up to tell what kind you are using and adjusts the software internally accordingly.

So, no excuses, don't be lazy - go get some Footswitches - you won't regret it.

Turn your KAT off, plug the Footswitches in and turn your KAT back on. Now get into the **EDIT MODE** and in the **SETUP SCREENS** find the one that looks like:

```
-----  
|SONG:xx SETUP:xx|  
|FOOT1: xxxxxxxxxx|  
-----
```

If you have been following the TUTORIAL this screen will say:

```
-----  
|SONG:03 SETUP:01|  
|FOOT1: SUSTAINAB|  
-----
```

Go ahead and make the **SUSTAINAB** blink with the **G#4** NOTE PAD. Now use the **C#4** or **D#4** NOTE PADS and see for yourself what choices you have for Footswitch 1 (same thing for 2). There are a total of 16 choices for both **FOOT 1** and **FOOT 2**:

```
SETUPSTEP  
SUSTAIN A  
SUSTAIN B  
SUSTAINAB  
SUSTAINAX  
SUSTN ABX  
SEQ CNTRL  
FOOTNOTE1  
FOOTNOTE2  
FOOTNOTE3  
FOOTNOTE4  
FOOTNOTE5  
FOOTNOTE6  
FOOTNOTE7  
FOOTNOTE8  
HIHAT
```

Earlier in the TUTORIAL you assigned **FOOT 1** to **SUSTAINAB** and **FOOT 2** to do **SETUPSTEP**. This is the standard assignment that some players use for **ALL** of their **SETUPS**. However, **FOOT 1** and **FOOT 2** are totally independent and can have any assignment in any **SETUP**.

SESSION 3 (cont.)

FOOTSWITCH ASSIGNMENTS & SETUPSTEPPING (cont.):

NOW FOR EXPLANATIONS ON EACH OPTION.

**SETUPSTEPPING:**

**SETUPSTEPPING** allows you to automatically advance through a planned sequence of **SETUPS** with your feet as you play freely with your hands. You should probably pick one **FOOTSWITCH** to be generally assigned to this function (unless you do this with the **FOOTFUNCTION**).

The **SETUPSTEP** screen selection (which follows the FOOT 1 and 2 screens):

```
-----  
|SONG:xx SETUP:xx|  
|SETUPSTEP:xxxxxx|  
-----
```

is very important in determining what actually happens when you use a **FOOTSWITCH** for **SETUPSTEPPING**. There are 4 choices of what the KAT will do when you do a **SETUPSTEP**:

- NXTSET
- RPTSNG
- BAKSNG
- NXTSNG

If you have selected **NXTSET** for your **SETUPSTEP**, when you do a **SETUPSTEP** the KAT will step to the **Next SETUP** in the current **SONG**. If you were at **SONG:05 SETUP:04** you would go to **SONG:05 SETUP:05**. If you are at the last **SETUP** (8) then you will step to the 1st **SETUP** of the next **SONG**. This is what you normally will select to step through your **SETUPS**.

If you have selected **RPTSNG** the KAT will **Repeat** this **SONG**, i.e. go back to the 1st **SETUP** of the current **SONG**. If you were at **SONG:05 SETUP:04** you would go to **SONG:05 SETUP:01**. This is used to make a circular loop that you can step through repeatedly.

If you have selected **BAKSNG** the KAT will go **BACK** a **SONG** i.e. go to the 1st **SETUP** of the **PREVIOUS SONG**. Example: If you are at **SONG:05 SETUP:04** and do a **SETUPSTEP BAKSNG** you will go to **SONG:04 SETUP:01**. This can be used to make a circular loop of up to 16 **SETUPS**.

If you have selected **NXTSNG** the KAT will go to the **Next SONG**. If you were at **SONG:05 SETUP:04** you would go to **SONG:06 SETUP:01**. This is used to end a **SONG** and proceed to the next **SONG**.

If a **SONG** has 6 different **SETUPS** you would have **SETUPS** 1 through 5 have a **SETUPSTEP** selection of **NXTSET** and **SETUP** 6 have a **SETUPSTEP** selection of **NXTSNG** so that after **SETUP** 6 you would go on to the next **SONG**.

As you **STEP** through your **SETUPS** a lot can be changing: what **MIDI CHANNELS** (which synths in a multi-synth situation) you are playing on, **PROGRAMS** on the synths you are playing into can be changed, the **RANGES**, **VELOCITY** characteristics, **HOLD TIMES**, and even what the **Footswitches** are assigned to can change.

**SESSION 3** (cont.)

**FOOTSWITCH ASSIGNMENTS & SETUPSTEPPING** (cont.):

**SUSTAIN A / SUSTAIN B / SUSTAINAB / SUSTAINAX / SUSTN ABX:**

You can choose to send a MIDI SUSTAIN command to the **A**, **B**, both **A** and **B**, both **A** and **X**, or all of **A B** and **X CHANNELS**. What actually happens when you do a MIDI **SUSTAIN** depends on the synths you are playing into, but generally it should cause notes that you play when the **SUSTAIN** Footswitch is down, to be **SUSTAINED**. The timing of when you press the footswitch down is important; notes that you hit before you press, or after you let up will not generally be **SUSTAINED**. This function is totally separate from the **HOLD TIMES** and from manually holding notes down.

( One useful thing to experiment with if you have more than one synth is having different **HOLD** times for the **A** and **B** Controllers. If you press the Footswitch before either Controller has released its note, both synths should sustain. If you press the Footswitch after the one with the short **HOLD** time has released its note but before the one with the long **HOLD** time has released its note, only the one with the long **HOLD** time will sustain. )

**SEQUENCER CONTROL:**

If you select **SEQUENCE CONTROL**, the first time you hit the **FOOTSWITCH** the **KAT** will send a MIDI **SEQUENCE START** command. The next time you hit the **FOOTSWITCH** the **KAT** will send a MIDI **SEQUENCE STOP** command. Most sequencers will respond appropriately to this, however any sequencers that require a timing clock as well will not respond to this because the **KAT** does not send a timing clock.

**FOOTNOTES:**

See **SESSION 10**.

**HIHAT:**

See **SESSION 10**.

SESSION 4

KEYBOARD ASSIGNMENT

The KAT can be thought of as being 3 separate Controllers: an **A** Controller, a **B** Controller, and a **REASSIGNMENT** Controller. The **A** and **B** Controllers are identical and totally independent. Usually the 3 separate Controllers would be assigned to 3 different synths (on 3 different MIDI CHANNELS) allowing you to control 3 different sounds at the same time on the KAT keyboard. Depending on the **LIMITS** you set up for the Controllers you could have the 3 Controllers be in totally separate areas of the KAT, or overlap partially in some areas, or double (or triple!) each other on the entire keyboard. They can have totally different octave **RANGES**, **VELOCITY** feels, **HOLD** times, or even **VOLUMES**.

However, even if you only have 1 synth, having 3 Controllers can give you very interesting possibilities. As an example, you could assign both **A** and **B** to the same MIDI CHANNEL. This will cause both to send notes to the same synth. To make this interesting you should have at least one difference between **A** and **B**, like:

- Different octave **RANGES**.
- Different half-step **TRANSPPOSES**.
- Different **VELOCITY** ranges or **CURVES** (including cross-fade).
- Different **VOLUMES**.
- Different **HOLD** times.
- Have only one of them be **SUSTAINED** by the Footswitch.

Combinations of these are even better.

To select a Controller simply get to this screen:

```
-----  
|SONG:xx SETUP:xx|  
|KBD ASSIGN x x x|  
-----
```

The first parameter on the bottom line turns the **A** Controller ON or OFF, the second parameter turns the **B** Controller ON or OFF, and the third parameter selects one of 7 **REASSIGNMENT** Controllers or turns the **REASSIGNMENT** Controller OFF. A **BLACK SQUARE** means OFF.

**SESSION 4** (cont.)

**LIMITS:**

The **LIMITS** of the **A** and **B** Controllers are set in these screens:

```
-----  
|SONG:xx SETUP:xx|  
|A:LIMITS xxx-xxx|  
-----
```

```
-----  
|SONG:xx SETUP:xx|  
|B:LIMITS xxx-xxx|  
-----
```

( **NOTE:** Corresponding screens of the **A** and **B** Controllers are 6 screens apart. Knowing that, you can quickly count 6 hits to go from **A** to **B** without having to look at the intervening screens. )

The **LIMITS** you select determine where the Controllers reside (assuming you have selected them in the **KBD ASSIGN** screen) on your KAT. ( The format of the naming of the NOTE PADS was described at length in SESSION 1. )

It is important to put in sensible **LIMITS**. The note on the left of the display should be lower than the note on the right. The **LIMIT** notes are included. As an example: if the **LIMITS** are **C#1- B4** that Controller would reside on all but 2 notes of a 4 octave KAT. The lowest NOTE PAD on a 4 octave KAT, the **C1**, and the highest note on any KAT, the **C5**, would not be included in the **LIMITS** of that Controller.

Once you have set the **LIMITS** for a Controller, it will send out a MIDI note on the appropriate MIDI **CHANNEL** for every NOTE PAD within the **LIMITS** of that Controller.

( The **REASSIGNMENT** Controller doesn't really have limits - every NOTE PAD is actually assigned individually - but the same effect can be achieved by disabling **REASSIGNMENT NOTES** that you don't want to play in the **REASSIGNMENT** - SESSION 9 will explain.)

**SESSION 5**

**MIDI CHANNELS:**

The original purpose behind MIDI was to simply allow musical instruments to be able to communicate with each other. Because of MIDI and your KAT you are able to "play" any other musical instrument that has a MIDI interface.

The concept of MIDI **CHANNELS** allows you to connect cables to several synths at one time but still control which ones respond to the notes that you play. The situation is analogous to the telephone system we all use. Your phone is connected to a lot of other phones, but when you make a call everyone else's phone does not ring, only the number you dialed does! You specifically decide who gets your call by which number you dial. It's simple. The phone company gives everyone a different number so that when you place a call you don't get two different people at one time.

MIDI **CHANNELS** are just like phone numbers. You can give each synth a different MIDI **CHANNEL** number. When you play a note on the KAT, the KAT sends three things out on the MIDI cables: the note value, a MIDI **CHANNEL** number, and a **VELOCITY** number. Any synth that was given that MIDI **CHANNEL** number will try to play that note. You can decide which synth plays your notes by which MIDI **CHANNEL** you "play them on".

Now, find either of these screens in the **SETUP SCREENS**:

```
-----  
| SONG:xx SETUP:xx |  
| A: CHxx PGRM xxx |  
-----  
-----  
| SONG:xx SETUP:xx |  
| B: CHxx PGRM xxx |  
-----
```

These screens define what MIDI **CHANNEL** the **A** and **B** Controllers will send their notes out on. These **CHANNELS** can be the same or different and can change from **SETUP** to **SETUP**.

All these notes are sent out on the same cable, so "get sent out on" a certain MIDI **CHANNEL** actually means that when the note is sent, that certain MIDI **CHANNEL** number is sent with it.



## TUTORIAL (5 - 5/2)

### SESSION 5 (cont.)

#### MIDI CHANNELS (cont.):

##### **EXAMPLE:**

Suppose you have a Yamaha DX7 and an AKAI S900 Sampler. Suppose you set the Yamaha on MIDI **CHANNEL 03** and the AKAI on MIDI **CHANNEL 01**. Also suppose the KAT has:

**A** and **B** Controllers both selected.  
**LIMITS** for **A** are **C1-F#3**, and for **B** are **C3- A4**.  
**MIDI CHANNELS** - **A**: CH03 , **B**: CH01

If your KAT is connected to both the Yamaha and the AKAI with MIDI cables, notes you play on the left side of the KAT will play on the Yamaha and notes you play on the right side of the KAT will play on the AKAI. Notes you play between **C3** and **F#3** will play on both instruments. The **A#4**, **B4**, and **C5** NOTE PADS on the Master Octave would not send out any MIDI notes at all. (Maybe you might use a **REASSIGNMENT** here to put 3 sounds from a drum machine on a third MIDI **CHANNEL** - but you'll find out about that later - SESSION 9.)

If you now go to the Yamaha and change its MIDI **CHANNEL** to 02, the notes you play on the left side of the KAT will not play on either synth because no one is paying attention to MIDI **CHANNEL 03** anymore - which the KAT doesn't know! It will still send notes out to **CHANNEL 03** regardless of whether anyone is listening. It is like that old tree falling in the forest ... Now put the Yamaha back on MIDI **CHANNEL 03**.

Normally, if you have more than one synth you will want to assign them to different MIDI **CHANNEL** numbers. Then in your **SETUPS** you would specify which one or two of them you control at any given time.

One more concept related to MIDI **CHANNELS** should be explained. There is also an **OMNI MODE** that can be turned on or off on your synths. **OMNI MODE OFF** means that your synth will respond only to notes on the MIDI **CHANNEL** it was set to - as in the example above. **OMNI MODE ON** means that your synth will respond to all notes it receives (omni means all) regardless of the MIDI **CHANNEL** it comes on! Normally you would want to be in the **OMNI MODE OFF** condition.

**SESSION 5** (cont.)

**PROGRAM CHANGES:**

The other parameter on the **A** and **B CHANNEL** screens is **PROGRAM CHANGE**. Your KAT has the ability to change which **PROGRAM** or sound patch your synth is playing. The KAT does not store the actual contents of the **PROGRAM**, it only stores the **PROGRAM number** which you want to select on your synth.

**PROGRAM CHANGE** is a number that can be sent to the specified MIDI **CHANNEL** that will cause the synth assigned to that **CHANNEL** to change to a new patch, preset, or **PROGRAM**. This **PROGRAM CHANGE** is sent when you first enter a **SETUP**. So as you step through your **SETUPS** with a Footswitch the sounds your synths are making can be changed. (Actually when you step into a new **SETUP** the KAT will send up to 4 **PROGRAM CHANGES** (one to the **A CHANNEL**, one to the **B CHANNEL**, one to the **X CHANNEL**, and one to **CHANNEL 16 (FX)**) as well as up to 3 **VOLUME** levels (one to **A**, one to **B**, and maybe one to **X**)).

The value of the **PROGRAM CHANGE** can be anything from 1 - 128, or "NO". Synths with banks of **PROGRAMS** may have a surprising way of assigning incoming MIDI **PROGRAM CHANGE** values to banks of **PROGRAMS** but there is generally a pattern that a little experimenting will reveal.

If you increment the value past 128 then you will send "NO" **PROGRAM CHANGE** at all (if you increment again you will end up back at 01). This is especially useful if you are going to step into a new **SETUP** to change some internal KAT settings instead of to cause your synth to change **PROGRAMS**. Whenever a synth gets a **PROGRAM CHANGE** command (even to change to the same **PROGRAM** that it is presently in) your synth will shut all its notes OFF. You don't always want that to happen. A lot of times you will want to let the notes sustain through your **SETUP** change. In that situation select "NO" for that **PGRM!**

```
-----  
|SONG:xx SETUP:xx|  
|X: CHxx PGRM xxx|  
-----
```

This screen defines an eXtra MIDI **CHANNEL** that you can send a 3rd (besides the **A** and **B Channels**) **PROGRAM CHANGE** value to. This is especially useful if you have a **REASSIGNMENT** going out on a third MIDI **CHANNEL** or if you have two MIDI effects devices you could put the second one on this **X CHANNEL** and control it with this screen.

```
-----  
|SONG:xx SETUP:xx|  
|FX:CH16 PGRM xxx|  
-----
```

This screen allows you to select a 4th **PGRM** value to send to **CHANNEL 16**. This is expected to be used for effects (**FX**) devices like MIDI reverbs, MIDI mixers, MIDI lighting units, or even a synth on **CHANNEL 16** that a **REASSIGNMENT** is sending notes to.

**SESSION 5** (cont.)

**PROGRAM CHANGES** (cont.):

When ANY **PGRM** (or **VOLUME**) value is edited all current **PGRM** and **VOLUME** changes are sent out to the appropriate **MIDI CHANNELS**. So if you get to the **PGRM** screen of whichever Controller you are using you should be able to see (and hear) your synth change **PROGRAMS** as you edit the **PGRM** value with the **C#4** and **D#4** NOTE PADS.

In the above example, with the Yamaha and the AKAI, the **A PGRM** value would affect the Yamaha and the **B PGRM** value would affect the AKAI. This enables you to keep your synths offstage and change them from the KAT, typically by stepping through **SETUPS** that you planned out ahead of time, or by using the **FOOTFUNCTION MODE** (SESSION 8).

If this doesn't seem to work check your synth to see if it has a **CONTROL CHANGE RECEIVE ON/OFF** selection. If so, this should be set to **CONTROL CHANGE RECEIVE ON**.

**SESSION 6**

**RANGE:**

Find one of the following screens on the KAT.

```
-----  
|SONG:xx SETUP:xx|  
|A:RANGExx TRNSxx|  
-----
```

```
-----  
|SONG:xx SETUP:xx|  
|B:RANGExx TRNSxx|  
-----
```

Each **RANGE** number on the KAT moves the sounded pitch on your synth by octaves up or down in pitch.

You can have separate **RANGES** for each of the **A** and **B** Controllers. These **RANGES** on the KAT do not actually change the range on your synths, they change the relative pitch of the notes that the KAT sends to your synths.

Be sure to keep the **RANGES** sensible to the synths you are playing into so that they don't produce unpredictable results. This means if a **RANGE** of -7 (or +7) sounds unpleasant then change the **RANGE** until it is where your ears want it. Different synths have different ranges and different **PROGRAMS** sound good in different **RANGES**, so experiment around.

**BEWARE:** The following is technical talk! If you are allergic to technical talk pass it by.

**How do the RANGES on the KAT correspond to the MIDI NOTE #s?**

With a **RANGE** of 0 (+0 = -0), the lowest C on a 4 octave KAT (C1) is MIDI NOTE #36, and the HI C (C5) on the MASTER octave is MIDI NOTE #84. If the **RANGE** is -1 then the low C (C1) is now #24 and the HI C (C5) is #72. Likewise, if the **RANGE** is +2, the C1 is now #60 and the C5 is #108.

By how you set up the **LIMITS** and **RANGES** of your **A** and **B** Controllers you can even make the right hand octaves on your KAT be lower in pitch than the left hand octaves.

**TRANSCOPE:**

The other parameter on the **RANGE** screen is the **TRANSCOPE** value. This is the amount of half steps to add to the pitch of the NOTE PAD. The **TRANSCOPE** can range from 0 to 15 steps (An octave and flatted third up).

If you can only play a piece in one key, you can now just as easily play in any other.

When doubling the **A** and **B** Controllers on top of each other, if one has a **TRANSCOPE** and the other does not, each NOTE PAD you play will give you two notes at whatever interval you have created. Doing this with two sounds actually can create new timbres. **TRY IT!**

SESSION 6 (cont.)HOLD TIME:

Find either of the two following screens on your KAT.

```

-----
| SONG:xx SETUP:xx|
| A: HOLD  x.xxxx|
-----
-----
| SONG:xx SETUP:xx|
| B: HOLD  x.xxxx|
-----

```

These two screens control the **HOLD TIMES** for the **A** and **B** Controllers. First, the "s" on your display means "seconds". **HOLD TIME** can either be given a value or turned **OFF**. When it is **OFF**, and you play a staccato note, a **NOTE ON** command is sent on the appropriate **MIDI CHANNEL** which starts the note playing. A **VERY** short time (less than a fiftieth of a second) later, a **NOTE OFF** command is sent, which causes the release of the note. How this short **NOTE ON** time affects the sound you end up hearing depends greatly on both the synth and the particular **PROGRAM** you are playing. This **NOTE ON** time is much shorter than what normally occurs on piano keyboards because a percussion players' technique is distinctively different. A percussion players' style is generally more staccato, so sounds, like string sounds, (which have a slow buildup) may not have time to make much of a sound at all. The result is that a lot of sounds on most synths don't sound right when played with the **HOLD MODE OFF** - the notes seem too short. To make them sound longer you select a **HOLD TIME** value.

When the **HOLD MODE** is **ON**, every note you play is held for exactly the time you specify (unless you manually hold the note down longer). This time can range from .025 seconds (25 milliseconds) in .025 second (25 ms) increments up to 6.375 seconds. If you play a run of notes, each note is held for its specified **HOLD TIME**.

So there are actually 3 ways to sustain notes on the KAT. *One*, by hand, like an organ, *Two*, by foot, like a vibe, and *Three*, to have the internal computer time out how long it **HOLDS** a note before it sends the **NOTE OFF** command.

Different sounds need different **HOLD TIMES** in different contexts, so it is a parameter worth adjusting.

**SESSION 7**

**MINIMUM and MAXIMUM VELOCITY:**

The KAT is a velocity sensitive instrument which means it senses how hard you play. The harder you play, the louder your synth will sound if 1) Your synth responds to velocity information, 2) the **PROGRAM** on your synth is set up to respond to velocity, and 3) your KAT is set up properly.

**VELOCITY** information is quite often used by synths for selecting the individual volume or loudness of particular notes. However, **VELOCITY** can also be used to control any number of other things from filter tuning (brightness) to amount of vibrato. What **VELOCITY** is used for depends on your synths capabilities and your personal taste and skill in creating **PROGRAMS** on your synth. Some **PROGRAMS** sound best if **VELOCITY** is not used at all - its all a matter of taste. In the following discussions **VELOCITY** will be assumed to be used for loudness, however, whatever the use, the following explanations of how to manipulate **MINIMUM VELOCITY**, **MAXIMUM VELOCITY** and **VELOCITY CURVE** still apply.

Each time you play a note, the KAT determines a **VELOCITY** corresponding to how hard you hit the note. This velocity is sent over MIDI with the pitch of the note and the MIDI **CHANNEL** number, so each **CHANNEL** could determine **VELOCITY** in a different way. In other words each **CHANNEL** could have a different feel.

When the KAT determines the velocity number to send for the note you play there are three things that count besides how hard you actually play, 1) the KAT's **MINIMUM VELOCITY** setting, 2) the KAT's **MAXIMUM VELOCITY** setting and 3) the KAT's **VELOCITY CURVE** setting (which will be explained soon).

The range of velocity numbers that can be sent over MIDI is from 0 (silence) to 127 (loudest).

```
-----  
|SONG:xx SETUP:xx|  
|A:VELOCTYxxx-xxx|  
-----  
|SONG:xx SETUP:xx|  
|B:VELOCTYxxx-xxx|  
-----
```

These screens define a **VELOCITY** range for the **A** and **B** Controllers. The left hand number is the **MINIMUM VELOCITY**, the right hand number is the **MAXIMUM VELOCITY**.

SESSION 7 (cont.)

MINIMUM and MAXIMUM VELOCITY (cont.):

The **MINIMUM VELOCITY** setting is the value that the KAT will send for the lightest hit that it senses you play. The setting you choose for **MINIMUM VELOCITY** is determined by the sound you are producing, the acoustics of the room you are playing in, and the requirements of the song. For maximum range of dynamics this should be set at 00 to 16. However, with a lot of sounds the low dynamics will be very soft in volume and you may not think the notes are responding because you can't hear them over room noise. Unless you specifically want to use a wide dynamic range you should generally raise this minimum up to around 40 or 64.

One other reason to use a high **MINIMUM VELOCITY** is if you are pressing notes with your fingers or mallets with the intention of manually holding notes down for a period of time instead of playing staccato. When you play staccato a hit only lasts about .002 seconds - a very short time. The KAT therefore figures out how hard you have hit the note within .002 seconds after you start to hit it so it can send a MIDI "note on" command out (this command includes 1) MIDI **CHANNEL** number, 2) pitch value, 3) and velocity). If the KAT took more time than this to figure out velocity you would start to notice a delay from when you hit the KAT until when you hear your synth play the note. However, if you **PRESS** the pads with your fingers or mallets, in the first .002 seconds you haven't caused much of an impact. This will cause most of your presses to be seen as very soft hits. With a lot of sounds this would be very undesirable so simply raise the **MINIMUM VELOCITY** up to even 120, if you wish, and this should make this style of playing work better.

The **MAXIMUM VELOCITY** setting is the value the KAT will send for the hardest hit that it senses you play. Like **MINIMUM VELOCITY** the **MAXIMUM VELOCITY** setting you choose depends on the context. Generally have this set at 127.

One of the main uses for a **MAXIMUM VELOCITY** setting is to limit the velocity to below a certain value. This is especially useful with older Yamaha synths and tone generators. For some reason the older Yamaha equipment doesn't send velocities over the full MIDI range. Because of this some of the **PROGRAMS** on older Yamaha equipment will sound distorted or overdriven when played by a Controller with a full velocity range. To alleviate this problem, simply drop your **MAXIMUM VELOCITY** limit down until the distortion is gone!

SESSION 7 (cont.)VELOCITY CURVE:

```

-----
| SONG:xx SETUP:xx|
| A:VCURVxx VOLxxx|
-----

```

```

-----
| SONG:xx SETUP:xx|
| B:VCURVxx VOLxxx|
-----

```

These screens define the **Velocity CURVES** the **A** and **B** Controllers use to determine the velocities between the **MINIMUM** and **MAXIMUM** you selected in the previous screen. Also the **VOLUME** level that is sent to the **A** and **B CHANNELS** upon entering this Setup are defined here.

The other factor in determining the actual velocity number that is sent by the KAT to your synth is the **VELOCITY CURVE** you select. As you hit harder, the **VELOCITY CURVE** determines how much louder your synth will play.

Suppose you do a roll on a note and you start playing very soft and gradually increase how hard you hit until you are hitting very hard. The **VELOCITY CURVE** will determine how soon and how rapid your synth gets louder and louder. One **CURVE** might keep the sound fairly soft until you are hitting very hard, and another **CURVE** might make even medium hits seem very loud. In short, these **VELOCITY CURVES** determine the dynamic feel of the KAT. Try different **CURVES** with different **PROGRAMS** on your synths, you will eventually notice that different synths (as well as different **PROGRAMS**) have different "feels" of their own. This is an area where experimentation is definitely called for.

The **VELOCITY CURVES** determine how **VELOCITY** range between the **MINIMUM** and **MAXIMUM** settings is related to your playing dynamics. **NOTE** that these three settings interact to provide you with an unlimited variety of combinations.

**VELOCITY CURVE 01** is a fairly normal feel (this is definitely a matter of personal taste, so try the curves yourself). The specifics of the **VELOCITY CURVES** are revealed in the **APPENDIX**.



SESSION 7 (cont.)

VELOCITY CURVE (cont.):

Brief description of each CURVE:

- VCURVE 01: STANDARD FEEL with a steady rise in VELOCITY as you hit harder.
- VCURVE 02: Soft hits give less VELOCITY than STANDARD.
- VCURVE 03: Soft hits give more VELOCITY than STANDARD.
- VCURVE 04: Soft hits give more VELOCITY than STANDARD.
- VCURVE 05: Soft hits give more VELOCITY than STANDARD.
- 
- VCURVE 06: Softest hits give MINIMUM VELOCITY.
- VCURVE 07: Softest hits give MINIMUM VELOCITY.
- VCURVE 08: All but the hardest hits give MINIMUM VELOCITY.
- 
- VCURVE 09: INVERSE curve with soft hits giving MAXIMUM VELOCITY and medium to hard hits giving MINIMUM VELOCITY.
- VCURVE 10: INVERSE curve with soft hits giving MAXIMUM VELOCITY, tapering off to MINIMUM VELOCITY at hard hits.
- VCURVE 11: Inverse curve with soft and medium hits giving MAXIMUM VELOCITY and hard hits giving MINIMUM VELOCITY.
- VCURVE 12: INVERSE curve with steady drop in VELOCITY as you hit harder.
- VCURVE 13: INVERSE curve where VELOCITY doesn't drop off until the hardest hits.
- VCURVE 14: INVERSE curve where VELOCITIES drop off less. Hard hits can still be heard somewhat.
- 
- VCURVE 15: SPECIAL curve where soft hits give medium VELOCITY, medium hits give MINIMUM VELOCITY, and hard hits give MAXIMUM VELOCITY.
- VCURVE 16: SPECIAL curve where soft hits are at low VELOCITY, Medium hits are at high VELOCITY, and hard hits are at low VELOCITY.

SESSION 7 (cont.)

VELOCITY CURVE (cont.):

Now a technical discussion of VELOCITY. If you don't want to get technical, go ahead and skip this.

The VELOCITY number that the KAT sends can be anything between 0 (silence) and 127 (loudest). Internally the KAT measures 9 separate levels of velocity when you hit a note. Basically, the VELOCITY CURVE dictates how the range between the MINIMUM VELOCITY and the MAXIMUM VELOCITY is assigned to the internally measured levels of 1 to 9. For any specific combination of MINIMUM VELOCITY, MAXIMUM VELOCITY, and VELOCITY CURVE there will be 9 numbers between 0 and 127 that the KAT will send, based on how hard you hit.

As an EXAMPLE, suppose you select a MINIMUM VELOCITY of 64, a MAXIMUM VELOCITY of 95 and VELOCITY CURVE 01. The KAT must transform the 9 internally measured velocity levels to numbers between 64 and 95. Internal level 1 (softest hit) will be at 64 and level 9 (hardest hit) will be at 95. Internal level 5 is 1/2 of the way between 1 and 9; with VELOCITY CURVE 01 this means that the sent VELOCITY will be half way between 64 (selected minimum) and 95 (selected maximum) or 80 because that is the way VELOCITY CURVE 01 is setup. Likewise an internally measured level of 7 will be half way between 80 and 95; which is 88 (because 7 is half way between 5 and 9). Likewise a level 3 translates into a 72 in this example.

If the MINIMUM VELOCITY was 120 and the MAXIMUM VELOCITY was 127 then a level of 1 (softest) would be sent out as a 120, a level of 2 sent as a 121, etc., to a level of 9 (hardest) being sent as a level of 127.

If the MINIMUM VELOCITY was 0 and the MAXIMUM VELOCITY was 127, then an internally measured level of 5 would translate into a 64, a 7 into a 96, a 3 into a 32, etc. Level 1 would actually not be quite 0 due to how VCURVE 1 is set up. Level 1 would probably be a velocity of 4.

However, in the above example if another VELOCITY CURVE was selected, the actual sent MIDI VELOCITY numbers would not be so evenly spaced. Some of the other CURVES (if minimum was 64) might make an internal 5 be sent as a 115 (OVER half way - middle hardness hits are loud - or a quick rise in VELOCITY number as you hit harder than soft hits but inevitably a lack of differentiation on harder hits), while others might make the internal 5 be sent as a 75 (middle hits are close in VELOCITY to soft hits and inevitably you get a larger differentiation on hard hits and very little differentiation on soft hits).

This is all very involved and can get very complex because all of these things interact. If this gave you a headache, then put your CURVES at 01 and leave them there until you feel more adventurous, then come back here and go through this again.

Those interested in cross-fades should try curves 6 - 8, combined with curves 9 - 14. As an example try curves 10 and 16 with MINIMUM VELOCITIES of 0. Where you put your MINIMUM VELOCITY and whether you use 1 - 5, or 6 - 8, determine whether you get blending at just the medium hits or across the whole soft to hard hit range.

SESSION 7 (cont.)

VOLUME:

The other parameter on the **VCURVE** screens is **VOLUME**. When you step into a new **SETUP**, **VOLUME**s for the **A** and **B CHANNEL**s (and optionally the **X CHANNEL**) can be sent to the synths on those **CHANNEL**s at the same time that the **PROGRAM CHANGES** are sent.

The use for this is to equalize the relative **VOLUMES** of the different **PROGRAM**s on your synths. One way to do this is to generally put your **VOLUME** levels at 95 and for sounds that need boosting have their **VOLUME** be 127 and for sounds that are louder than the rest put their **VOLUME** at 80.

This is basically a way to implement a MIDI mixer without actually buying one. This obviously will only work if the synth you are playing into responds to MIDI **VOLUME** commands. Most of the current synths being produced today do respond to MIDI **VOLUME**, but some of the older ones do not.

If you do not want any **VOLUME** commands sent, then change the **VOLUME** parameter to **OFF**. This doesn't shut your synth **OFF**! It just stops the sending of a **VOLUME** value to that **CHANNEL**.

As with **PROGRAM CHANGE** values, when you edit a **VOLUME** value, all **PROGRAM CHANGES** and **VOLUME**s get sent out MIDI with each change you make. This allows you to hear the effect of your **VOLUME**s as you change them.

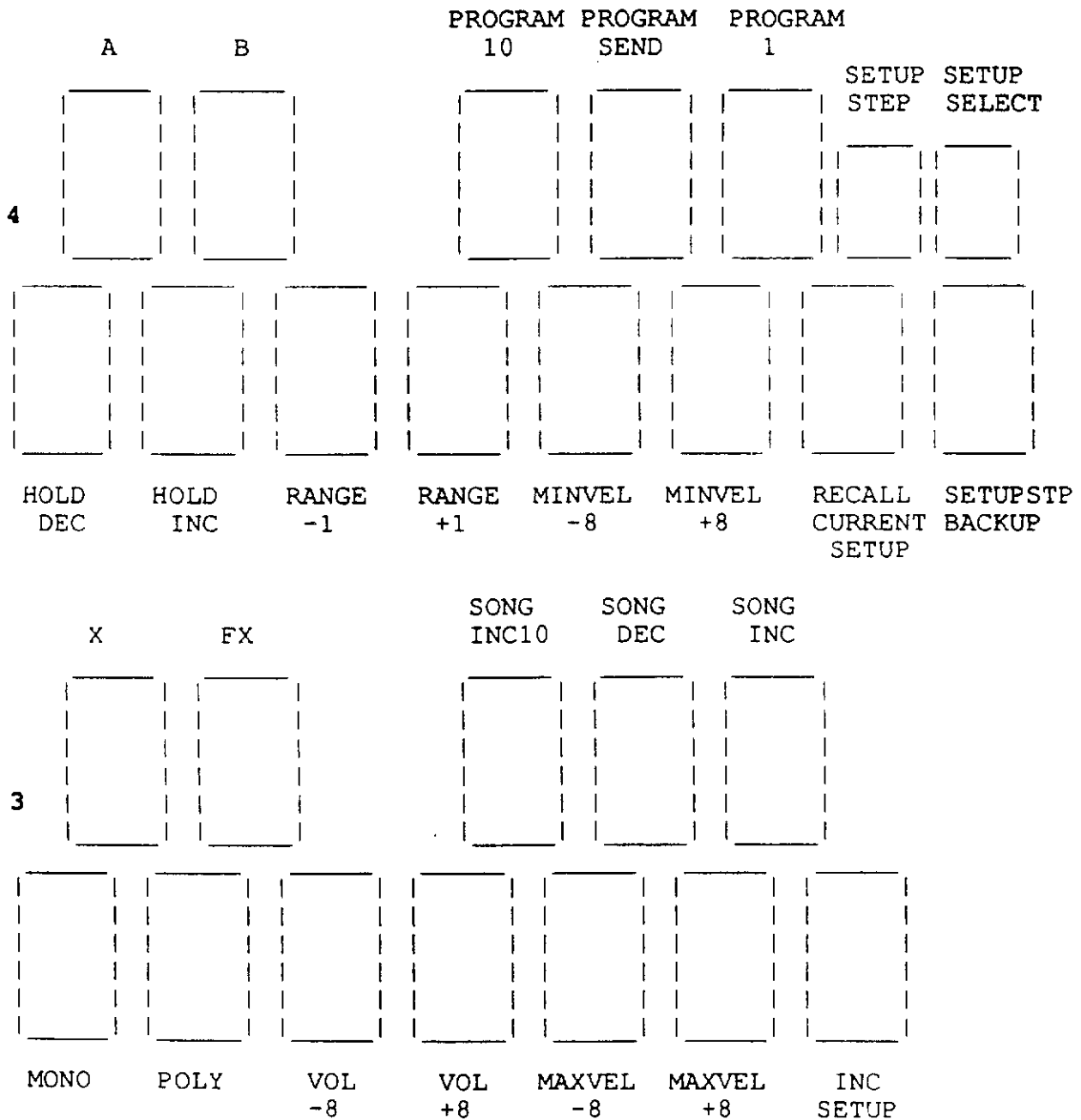
More technical talk: (You might think that this **VOLUME** parameter is the same thing as the **MAXIMUM VELOCITY** parameter. Not true. **VOLUME** is always associated with loudness, whereas even though **VELOCITY** is generally also associated with loudness, **VELOCITY** can be usefully associated with other factors as well in your synth: Filter Cutoff (brightness), Attack Envelopes, Pitch, and even choosing between a variety of samples. Also, dropping down the **MAXIMUM VELOCITY** limits your real dynamic range, whereas dropping the **VOLUME** setting down does not decrease the dynamic range, it simply lowers the **VOLUME** of your whole dynamic range.)

SESSION 8

FOOTFUNCTION:

FOOT3 is permanently assigned to FOOTFUNCTION. This feature allows you to change PROGRAMS, RANGE, HOLD TIME, VELOCITY settings etc. on just the A, just the B, or on both the A and B Controllers. You can also recall your present SETUP, the way it was before you altered its parameters using the FOOTFUNCTIONS. Also, you can perform a SETUP BACK STEP in case you go a SETUPSTEP too far with Footswitches 1 or 2 as you are STEPPING through your SETUPS.

All 49 NOTE PADS on a 4 octave KAT are used for this function (as well as the LEFT & RIGHT FUNCTION PADS). Any time you have Footswitch 3 depressed and hit a NOTE PAD you will invoke a special function as detailed below:



**TUTORIAL** (5 - 8/2)

**SESSION 8** (cont.)

**FOOTFUNCTION** (cont.):

2

CHAN 8	CHAN 9	CHAN 10	CHAN 11	CHAN 12		
CHAN 1	CHAN 2	CHAN 3	CHAN 4	CHAN 5	CHAN 6	CHAN 7

1

ALL NOTES OFF	CHAN 13	CHAN 14	CHAN 15	CHAN 16		
SETUP STEP BACKUP	SETUP STEP ADV	TRANPOSE -1	TRANPOSE +1	SEQ START	SEQ CONTINUE	SEQ STOP

SESSION 8 (cont.)

FOOTFUNCTION (cont.):

Since you have so many choices and combinations it does appear complex at first, but the **FOOTFUNCTION MODE** is actually very simple.

(1) You must be in **PLAY MODE**.

(2) Whenever you depress Footswitch 3 you leave the **PLAY MODE** and enter the **FOOTFUNCTION MODE**. When you release Footswitch 3 you exit the **FOOTFUNCTION MODE** and return to **PLAY MODE**.

While you are in the **FOOTFUNCTION MODE** you do not see any new message on the display. Being a performance **MODE** on the KAT the **FOOTFUNCTION MODE** is streamlined to be as transparent as possible.

While in **FOOTFUNCTION MODE** (Footswitch 3 depressed) the **NOTE PADS** do not make any sound - that is, they do not send out **MIDI NOTE ON** commands. Instead they either send out **MIDI CONTROL COMMANDS** or directly control parameters that are inside the KAT.

Most **COMMANDS** are done with one strike of your mallet while the **FOOTFUNCTION MODE** is active. So you press down Footswitch 3, hit a **NOTE PAD**, and release Footswitch 3.

An **EXAMPLE** will show you how easy this is:

- 1) Get into **PLAY MODE**.
- 2) Play a note and remember its pitch.
- 3) Depress Footswitch 3.
- 4) Hit **E4**.
- 5) Release Footswitch 3.
- 6) Now play the same note as step 2. Its pitch has now moved down an octave!
- 7) Repeat steps 3, 4, 5, 6 and now the note will have dropped another octave!
- 8) Repeat steps 3 - 6 and try the **F4** at step 4 and you can now move the **RANGE** back up in octaves!

**THAT'S REALLY ALL THERE IS TO IT!**

SESSION 8 (cont.)

FOOTFUNCTION (cont.):

Well, actually there **is** more. You can not only choose which **COMMANDs** to send, but also where you want the **COMMANDs** sent. Most **COMMANDs** you can choose to send to either the **A CHANNEL**, or **B CHANNEL**, or **BOTH A** and **B CHANNELs**, or **X CHANNEL** or **FX CHANNEL**. Simply, if you precede a **FOOTFUNCTION COMMAND** with a **Controller Select COMMAND** then the **COMMAND** will go to that selected Controller. If you do not select a Controller then the **COMMAND** will go to both **A** and **B**.

Another **EXAMPLE** will help:

- 1) Get into **PLAY MODE**.
- 2) Enter **FOOTFUNCTION MODE**.
- 3) Hit **A#4** three times.
- 4) Hit **G#4**.
- 5) Exit **FOOTFUNCTION MODE**.
- 6) You have just sent a **PROGRAM 3 COMMAND** to both **A** and **B**. Get into **EDIT MODE** to verify that both the **A** and **B PROGRAM** values are indeed now **3**.  
If they are not, then you probably didn't keep Footswitch 3 down the whole time between steps 2 and 5. When **COMMANDs** are a series of strikes, you need to keep the **FOOTFUNCTION MODE** active for the entire series because every time you re-enter the **FOOTFUNCTION MODE** the **KAT** reinitializes **Controller Select** to **BOTH A** and **B**, and resets **PROGRAM CHANGE SUM** to **OFF** (this will be explained shortly). If it didn't work, try it again, carefully. Then proceed below.
- 7) Get back into **PLAY MODE**.
- 8) Enter **FOOTFUNCTION MODE**.
- 9) Hit **C#4**.
- 10) Hit **F#4**.
- 11) Hit **A#4** twice.
- 12) Hit **G#4**.
- 13) Exit **FOOTFUNCTION MODE**.
- 14) You have just sent a **PROGRAM 12 COMMAND** to just **A**. **B** is still **3**. Get into **EDIT MODE** to verify that the **A PROGRAM** is **12** and the **B PROGRAM** is still **3**.

The **C#4** caused the **COMMAND** to be sent only to Controller **A**.

SESSION 8 (cont.)

FOOTFUNCTION (cont.):

Repeat steps 7 - 13 with **D#4** at step 9. This will cause the **PROGRAM 12 COMMAND** to be sent to just **B**.

Repeat steps 7 - 13 with **C#3** at step 9 and at step 10 hit **F#4** twice. This will cause a **PROGRAM 22 COMMAND** to be sent only to the **X CHANNEL**.

Repeat steps 7 -13 with **D#3** at step 9 and you will now cause a **PROGRAM 22 COMMAND** to be sent to the **FX CHANNEL**.

SUMMARY: While Footswitch 3 is depressed you can enter **FOOTFUNCTION COMMANDS** by hitting NOTE PADS. If you precede a **COMMAND** with a **Controller Select** NOTE PAD you will send the **COMMAND** only to one Controller or CHANNEL. If you simply send a **COMMAND** without preceding it with a **Controller Select** NOTE PAD it will go to both **A** and **B**.

The **Controller Select** NOTE PADS are:

**D#4** = **B** only  
**C#4** = **A** only  
**D#3** = **FX** only  
**C#3** = **X** only

Some **COMMANDS** can only go to **A** or **B** (like **RANGE**, **TRANSPOSE**, **VELOCITY** settings, **VOLUME**, etc.). Some **COMMANDS** can go to **A**, **B**, **X**, or **FX** (like **PROGRAM**, **MONO**, **POLY**, etc.)

Some **COMMANDS** result in MIDI information being sent out and some result in changes in the internal settings in the KAT. Each **COMMAND** description includes an explanation of whether the change is just internal to the KAT, or whether information also goes out MIDI.



SESSION 8 (cont.)

FOOTFUNCTION COMMANDS:

**SETUPSTEP BACKUP by C5**

This **COMMAND** allows you to recover quickly when you have **SETUPSTEPPED** too far. It will cause you to **BACKUP** through your **SETUPS**.

There is a possible source of confusion here. This is setup to work with your **SETUPSTEP** parameters of **NXTSET** and **NXTSNG**. Suppose you have 6 **SETUPS** in **SONG 1** and you want to **STEP** from **SETUP 5** to 6 in **SONG 1**. Suppose also you accidentally hit the Footswitch assigned to **SETUPSTEP** twice instead of once. You will **STEP** from 5 to 6, and then accidentally from 6 to **SETUP 1** of **SONG 2** (since 6 is the end of this **SONG** it would have a **SETUPSTEP** setting of **NXTSNG**). To correct for that extra Footswitch step you want to do a **SETUPSTEP BACKUP** from **SONG:02 SETUP:01** to **SONG:01 SETUP:06**. This is what a **SETUPSTEP BACKUP** indeed will do. **IF SETUPSTEP BACKUP CROSSES A SONG BOUNDARY IT WILL GO BACK TO THE LAST SETUP IN THE PREVIOUS SONG. THIS IS NOT NECESSARILY SETUP:08!**

Results in MIDI information being sent out and changes the internal settings in the KAT.

**SETUP SELECT by RIGHT FUNCTION PAD**

You can instantly select any **SETUP** in the first 13 **SONGS**. It takes 3 mallet strikes to do, but it is very useful. The first **C** on your Master Octave (**C4**) represents 1, the **C#4** represents 2, **D4** is 3, **D#4** is 4, etc up to **C5** is 13.

The procedure for doing a **SETUP SELECT** is as follows:

- 1) Press down on Footswitch 3 to enter **FOOTFUNCTION**.
- 2) Hit the **RIGHT FUNCTION PAD** to enter **SETUP SELECT MODE**.
- 3) Hit two **MASTER NOTE PADS**. The first represents the **SONG #** and the second represents the **SETUP #**.
- 4) Release Footswitch 3 to exit **FOOTFUNCTION MODE**.

**EXAMPLE:**

Press down Footswitch 3. Hit **RIGHT FUNCTION PAD**. Hit **E4** then **G4**. Release Footswitch 3.

The above steps would put you into **SONG 05 SETUP 08**, because **E4** represents 5 and **G4** represents 8!

Results in MIDI information being sent out and changes the internal settings in the KAT.

**SETUPSTEP ADVANCE by LEFT FUNCTION PAD**

Although you would normally have either **FOOT 1** or **FOOT 2** handle this, there are times where you may want to use both of those Footswitches for separate **SUSTAINS** of **A** and **B**, or assign the Footswitches to a couple of **FOOTNOTES** to play some drum sounds. In those kinds of situation this gives you another way of accomplishing a **SETUPSTEP**. This **COMMAND** also follows the **SETUPSTEP** parameter settings of **NXTSET**, **NXTSNG**, **RPTSNG**, **BAKSNG** (so it is not a **SETUP INC**).

Results in MIDI information being sent out and changes the internal settings in the KAT.

SESSION 8 (cont.)

FOOTFUNCTION COMMANDS (cont.):

**RECALL CURRENT SETUP** by **B4**

This allows you to get back to what the current **SETUP** was like before you changed it with the **FOOTFUNCTION COMMANDS**. Remember when you do any kind of editing of a **SETUP** whether in the **EDIT MODE** or in the **FOOTFUNCTION MODE** the changes you make are only changes in the copy of your **SETUP** in **SCRATCH-PAD** memory. The **FOOTFUNCTION B4** will get the original **SETUP** back out of **PERMANENT MEMORY**.

Results in MIDI information being sent out and changes the internal settings in the KAT.

**PROGRAM CHANGE COMMANDS** by **F#4**, **G#4**, and **A#4**

The **PROGRAM CHANGE COMMANDS** allow you to send **PROGRAM CHANGES** to any of the **A**, **B**, **X**, or **FX** (16) **CHANNELS**. The explanations at the beginning of this **SESSION** went through a couple of examples of this.

Here's the rules:

There are 3 things you must do to perform a **FOOTFUNCTION PROGRAM CHANGE**:

1) **SELECT A CHANNEL.**

Default is both **A** and **B**

**D#4** = **B** only

**C#4** = **A** only

**D#3** = **FX** only

**C#3** = **X** only

2) **ADD UP A CHANGE SUM.**

Every hit of **F#4** adds ten and every hit of **A#4** adds one to the **CHANGE SUM**. So two **F#4** hits and then three **A#4** hits would **ADD UP** to 23.

The order of the hits in **ADDING UP** the **CHANGE SUM** doesn't matter, you're just **ADDING UP** numbers!

Hitting either **F#4** or **A#4** **NOTE PADS** does not actually send out a **PROGRAM CHANGE**. It just adds to a value stored in the KAT, the **CHANGE SUM**.

If you are adding up 13, you wouldn't want to send 10, then 11, then 12, then 13 as **PROGRAM CHANGES**. You just want to send 13, the final result that you are purposely adding up to.

**F#4** = **ADD 10** to the **CHANGE SUM** being added up.  
**A#4** = **ADD 1** to the **CHANGE SUM** being added up.

3) **SEND THE CHANGE SUM.**

The **G#4** **NOTE PAD** will send out a **PROGRAM CHANGE COMMAND** to the **Selected CHANNEL** (if you don't specifically select a **CHANNEL**, then the **PROGRAM CHANGE** will go to both the **A** and **B CHANNELS**). The value that is sent out is determined by hits on **F#4**, and **A#4** **NOTE PADS** prior to hitting the **G#4**.

SESSION 8 (cont.)

FOOTFUNCTION COMMANDS (cont.):

If you don't ADD UP a **CHANGE SUM** with the **F#4** and **A#4** NOTE PADS before hitting the **G#4** NOTE PAD nothing will be sent.

**G#4** = ACTUALLY SEND CREATED PROGRAM CHANGE SUM OUT MIDI

Results in MIDI information being sent out and changes the internal settings in the KAT.

EXAMPLES: See page 5 - 8/4 and 5 - 8/5.

**CHANGE MINIMUM VELOCITY** by **G4** and **A4**:

Hitting **G4** will subtract 8 from the **MINIMUM VELOCITY** of the **Selected Controller**. Hitting **A4** will add 8 to the **MINIMUM VELOCITY** of the **Selected Controller**.

Results in changes in the internal settings in the KAT.

**CHANGE RANGE** by **E4** and **F4**:

Hitting **E4** will subtract one octave from the **RANGE** of the **Selected Controller**. Hitting **F4** will add one octave to the **RANGE** of the **Selected Controller**.

Results in changes in the internal settings in the KAT.

**CHANGE HOLD TIME** by **C4** and **D4**:

Hitting **C4** will subtract .025 seconds (25 milliseconds) to the **HOLD TIME** of the **Selected Controller**. Hitting **D4** will add .025 seconds to the **HOLD TIME** of the **Selected Controller**.

Results in changes in the internal settings in the KAT.

**INC SETUP** by **B3**:

Hitting **B3** will add one to the **SETUP #**. **SETUP 8** will **INC** to next **SONG**, **SETUP 1**. This is simple **INCREMENTING**. It does not pay any attention to the **SETUPSTEP** settings of **NXTSNG**, **RPTSNG**, **BAKSNG**, **NXTSET**.

Results in MIDI information being sent out and changes the internal settings in the KAT.

**DEC SONG** by **A#3**:

Hitting **A#3** will simply subtract one from the **SONG #**.

Results in MIDI information being sent out and changes the internal settings in the KAT.

SESSION 8 (cont.)

FOOTFUNCTION COMMANDS (cont.):

**INC+ SONG by G#3:**

Hitting **G#3** will simply add one to the **SONG #**.

Results in MIDI information being sent out and changes the internal settings in the KAT.

**INC++ SONG by F#3:**

Hitting **F#3** will simply add ten to the **SONG #**.

Results in MIDI information being sent out and changes the internal settings in the KAT.

**CHANGE MAXIMUM VELOCITY by G3 and A3:**

Hitting **G3** will subtract 8 from the **MAXIMUM VELOCITY** of the **Selected Controller**. Hitting **A3** will add 8 to the **MAXIMUM VELOCITY** of the **Selected Controller**.

Results in changes in the internal settings in the KAT.

**CHANGE VOLUME by E3 and F3:**

Hitting **E3** will subtract 8 from the **VOLUME** of the **Selected Controller**. Hitting **F3** will add 8 to the **VOLUME** of the **Selected Controller**.

Results in MIDI information being sent out and changes the internal settings in the KAT.

**POLY by D3:**

Hitting **D3** will send a MIDI **POLY COMMAND** to the **Selected Controller**

Results in MIDI information being sent out.

**MONO by C3:**

Hitting **C3** will send a MIDI **MONO COMMAND** to the **Selected Controller**

Results in MIDI information being sent out.

**CHANNEL CHANGE by D#1, F#1, G#1, A#1, C2 through B2:**

Hitting any of the above NOTE PADS will change the **CHANNEL** assigned to the **Selected Controller** to the selected **CHANNEL**.

Results in changes in the internal settings in the KAT.

**SEQUENCE STOP by B1:**

Hitting **B1** will send out a MIDI **SEQUENCE STOP COMMAND**.  
Results in MIDI information being sent out.

SESSION 8 (cont.)

FOOTFUNCTION COMMANDS (cont.):

**SEQuence CONTINUE** by **A1**:

Hitting **A1** will send out a MIDI **SEQUENCE CONTINUE COMMAND**.  
Results in MIDI information being sent out.

**SEQuence START** by **G1**:

Hitting **G1** will send out a MIDI **SEQUENCE START COMMAND**.  
Results in MIDI information being sent out.

**CHANGE TRANSPOSE** by **E1** and **F1**:

Hitting **E1** will subtract one half-step from from the **TRANSPOSE** setting of the **Selected Controller**. Hitting **F1** will add one half-step to the **TRANSPOSE** setting of the **Selected Controller**.

**SETUPSTEP ADVANCE** by **D1**:

This **COMMAND** is also performed by the **LEFT FUNCTION PAD**, look for explanations on that on Page 5 - 8/6.

**SETUPSTEP BACKUP** by **C1**:

This **COMMAND** is also performed by the **C5 (HI C) NOTE PAD**, look for explanations on that on Page 5 - 8/6.

**ALLNOTESOFF** by **C#1**:

This **COMMAND** results in actually an entire series of MIDI **COMMANDS** to be sent out. The purpose is to shut off notes that are stuck on in any synths you are playing into.

SESSION 8 (cont.)

FOOTFUNCTION COMMANDS (cont.):

EXAMPLE:

If you performed the following sequence of events:  
(We will assume you are in SONG:01 SETUP:03)

<press FOOT3>, <E4>, <A4>, <C#4>, <F#4> <F#4> <A#4> <G#4>, <D#4>, <D4>, <release FOOT3>, <A4>, <G3>, <press FOOT3>, <F4>, <B4>, <C5>, <release FOOT3>, <pressFOOT3>, <C#3>, <G#2>, <release FOOT3>

You would get the following results:

- <press FOOT3> Enter FOOTFUNCTION MODE (no change on LCD display).
- <E4> Subtract 1 from the internal RANGE of both the A and B Controllers (when C#4, D#4 are not hit default is both A and B)
- <A4> Add 8 to the MINIMUM VELOCITY of both the A and B Controllers.
- <C#4> From now on affect only A Controller parameters.
- <F#4><F#4><A#4> Construct a CHANGE SUM of 21 to send out to MIDI. (10+10+1)
- <G#4> Send the CHANGE SUM (21) out to the A Midi CHANNEL.
- <D#4> From now on affect only B Controller parameters.
- <D4> Add .025 Seconds to your B HOLD TIME.
- <release FOOT3> Exit FOOTFUNCTION MODE (still you have seen no change on the display).
- <A4> Simply plays a note. (not in FOOTFUNCTION MODE any more)
- <G3> Simply plays a note.
- <press FOOT3> Enter FOOTFUNCTION MODE again. (return to default of both A and B Controllers)
- <F4> Add 1 to the RANGE of both A and B.
- <B4> Recall SETUP (SONG:01 SETUP:03 in this example), inevitably undoing all the changes you had just made.
- <C5> BACKUP 1 SETUP STEP (to SONG:01 SETUP:02 in this example).  
This (and SETUPSTEP, INCSONG etc) are the only FOOTFUNCTION events that change the LCD display.
- <release FOOT3> Exit FOOTFUNCTION MODE.
- <pressFOOT3> Enter FOOTFUNCTION MODE again. (return to default of both A and B Controllers)
- <C#3> From now on affect only X CHANNEL parameters.
- <G#2> Change the X CHANNEL in the KAT to CHANNEL 11.
- <release FOOT3> Exit FOOTFUNCTION MODE.

SESSION 9

REASSIGNMENT CONTROLLER:

Hold onto your hat. Here is where all kinds of wierd things can be done. You can put a couple of percussion sounds on a drum machine on just the bottom several notes of your KAT, put 3 note chords onto one synth, or assign 16 splits or zones to the KAT, or rearrange the notes on the KAT to create alternate tunings or move that one note that is so hard to reach in that one certain piece, etc.

**WHAT IS IT?:**

A REASSIGNMENT is just a collection of MIDI NOTES and MIDI CHANNELS. The REASSIGNMENT Controller can send any one NOTE value you specify to any one MIDI CHANNEL you specify. Simply, for every note on the KAT you can specify individually what pitch you want and what synth you want it to play on.

The REASSIGNMENT Controller gets its VELOCITY settings (MINIMUM VELOCITY, MAXIMUM VELOCITY, and VELOCITY CURVE) and HOLD TIME from the A Controller.

You can choose to have the A Controller's RANGE or TRANSPOSE affect the REASSIGNMENT Controller's pitches, if you want.

The REASSIGNMENT Controller gives you a lot of control and offers a lot of possibilities to do diverse types of things. But, nothing is for free! To get that control you have to do more work. You have to specifically enter the NOTE and CHANNEL values for every note on the KAT! The A and B Controllers make a lot of things easy for you, they place the NOTE PADS in normal half-step tuning on one MIDI CHANNEL per Controller. However, that limits you away from more exotic possibilities. Thus the birth of the REASSIGNMENT Controller.

To help ease the pain of entering in all that information, the 3 Footswitches should be used in the creation of a REASSIGNMENT (will be explained later).

There are 7 REASSIGNMENTS you can create. You can choose any ONE of them at a time in any SETUP with or without A and B. Generally, some of the REASSIGNMENTS will be made to serve a third or fourth synth (standard tuning with all on one MIDI CHANNEL), one may have a fun tuning you came up with (special tuning on one MIDI CHANNEL), and a couple may include just a couple of notes to control special effects sounds (special tuning on several MIDI CHANNELS).

SESSION 9 (cont.)

REASSIGNMENT CONTROLLER (cont.):

**CREATING A REASSIGNMENT by EDIT NOTE PADS:**

Get into the **EDIT MODE** and then into the **GLOBAL SCREENS**. Find this screen:

```
-----  
|REASSIGN #x Kxxx|  
|TO Mxxx xxx CHxx|  
-----
```

This is the screen where you define your REASSIGNments. The # is which REASSIGNMENT you have selected to edit, the K-note is the pad on the KAT you want to redefine, the M-note is the MIDI pitch you want that KAT-pad to play, and the CHannel is the Channel you want that KAT-pad to play on. Note that if you increment a M-note value past 128 it will result in **disabling** that individual REASSIGNMENT NOTE (resulting in an **OFF** for a note value - note this **OFF** means only this specific NOTE is **OFF**, not the entire REASSIGNMENT). You need this ability when you want to have the REASSIGNMENT be active only in a specific region of the KAT. On the **A** and **B** Controllers limiting them to a specific region is easy because of the **LIMITS**. Here, any regions you want inactive you must specifically deactivate.

To create a REASSIGNMENT you may simply use the 5 # NOTE PADS on the Master Octave. If after a while you get sick of hitting the G#4 to move the cursor around, go on to find out how to use the Footswitches to make this easier.

**CREATING A REASSIGNMENT by Footswitches:**

When you are in the **EDIT MODE** at the **GLOBAL SCREENS**, all three Footswitches lose their original functions and perform a specific action to allow you to quickly enter in a REASSIGNMENT's NOTES and CHANNELS. Each one is used with NOTE PADS on the KAT to enter in one of the parameters on the REASSIGNMENT screen.

If you depress Footswitch 1 and hit a NOTE PAD, that note will appear in the "K-note" slot (regardless of what is blinking). Pretty simple!

If you depress Footswitch 2 and hit a NOTE PAD, a MIDI note value will appear in the M-note slot (regardless of what's blinking). If that value is octaves away from where you wanted it, you have two choices: 1) to hit a NOTE PAD on a different octave of the KAT, or 2) to depress Footswitch 2 and hit the **LEFT FUNCTION PAD** (yes, yet another use for that little pad!) to move future values from the NOTE PADS down an octave - or depress Footswitch 2 and hit the **RIGHT FUNCTION PAD** to move future values up an octave.

This is necessary because MIDI NOTES cover 10 1/3 octaves while the KAT physically is only 4 octaves (fortunately!).

You can hit several times in one Foot depression to move up or down several octaves in a hurry.



**SESSION 9** (cont.)

**REASSIGNMENT CONTROLLER** (cont.):

If you depress Footswitch 3 and hit a NOTE PAD, you will select the MIDI CHANNEL. Each note on the KAT represents a MIDI CHANNEL - chromatically, sequentially - with the Master Octave having CHANNELS 1 to 13 (so those of you with a single octave get the first 13 CHANNELS to work with). This means the 3rd octave is CHANNELS 5 to 16, the 2nd octave is 9 to 16 and 1 to 4, and the 1st (lowest) octave is 13 to 16 and 1 to 8. If it seems confusing, just use your Master Octave and then the 4 notes just before the Master Octave when you need to get at 13 to 16.

If you depress Footswitch 3 and hit the **LEFT FUNCTION PAD** (another use - sorry!) you will perform a **REASSIGNMENT CREATION AUTOSTEP**. What it does is almost as fancy as the name. When you do a **REASSIGNMENT CREATION AUTOSTEP** the K-note after the one displayed will get a MIDI NOTE value one greater than the one displayed and will get the same MIDI CHANNEL and then the display will advance the value of the next K-note to proudly show you what it has done and to be in position for you to do it again. This allows you to rapidly fill in standard tuning values after you have setup the lowest one of the range you are interested in.

Try these things now! There is an example on page 5 - 9/4.

**PLAYING A REASSIGNMENT:**

To play a REASSIGNMENT you simply get to the KBD ASSIGN screen and change the black box on the bottom right to a # depending on which REASSIGNMENT you want to use.

```
-----  
|SONG:xx SETUP:xx|  
|KBD ASSIGN x x x|  
-----
```

You can have a REASSIGNMENT selected by itself or with one or both of the **A** or **B** Controllers. A very interesting affect can be created by selecting a REASSIGNMENT that has an unusual tuning (backwards for example) and the **A** Controller with its normal tuning, at the same time.

SESSION 9 (cont.)

REASSIGNMENT CONTROLLER (cont.):

THERE ARE THREE OTHER SETUP SCREENS THAT AFFECT THE REASSIGNMENT CONTROLLER.

-----  
| SONG:xx SETUP:xx|  
AVOLUME ->X CH:x

This screen determines whether the **A VOLUME** value will be sent to the **X Channel**. This is normally used if you are using a **REASSIGNment** Controller on a third MIDI CHANNEL and wish to control the **VOLUME** of that CHANNEL as well. To make this work you would need to make the **X CHANNEL** be the same as the CHANNEL all your notes are assigned to in the **REASSIGNMENT**.

-----  
| SONG:xx SETUP:xx|  
ARANGE -> REAS:x

This screen determines whether the **A octave RANGE** will affect the pitches of the **REASSignment** notes if you are using a **REASSIGNMENT** Controller. This allows you to move a standard tuned third synth **REASSIGNMENT** up or down in octaves like the **A** and **B** Controllers. The **TRANSPOSE** can be used in conjunction with the **RANGE** to have different amounts added to the **REASSIGNMENT** Controller than the **A** Controller.

-----  
| SONG:xx SETUP:xx|  
ATRNSP -> REAS:x

This screen determines whether the **A half-step TRANSPose** value will affect the pitches of the **REASSignment** notes if you are using a **REASSIGNMENT CONTROLLER**. This is essential if you want to create 3 note chords on individual NOTE PADS (using **A**, **B**, and **REASSIGNment** all on one MIDI CHANNEL).

SESSION 9 (cont.)

REASSIGNMENT CONTROLLER (cont.):

**EXAMPLE:**

**Simple 3rd synth.**

One of the basic uses of the **REASSIGNMENT** Controller is to allow you to control a 3rd synth on a third MIDI CHANNEL.

- 1) Make the following screen **exactly** in your **GLOBAL SCREENS** using the EDIT # NOTE PADS:

```
-----  
|REASSIGN #4 K C1|  
|TO M C2 48 CH04|  
-----
```

- 2) Depress Footswitch 3, hit the **LEFT FUNCTION PAD** 48 times, then release Footswitch 3. This did 48 **REASSIGNMENT CREATION AUTOSTEPS**. Now your **REASSIGNMENT** is NOTES 48 to 96 on CHANNEL 4.

- 3) In the **SETUP SCREENS** get exactly this:

```
-----  
|SONG:01 SETUP:01|  
|KBD ASSIGN x x 4|  
-----
```

- 4) Connect up to a synth (hopefully a third one) on CHANNEL 4, get into **PLAY MODE**, and play!

SESSION 10

FOOTNOTES:

**FOOTNOTES** are simply 8 MIDI NOTE and CHANNEL combinations that can be assigned to Footswitch 1 or 2. The use of this is generally to put a bass drum or snare on a Footswitch while the KAT keyboard is being used for other things.

**CREATING FOOTNOTES:**

To create a **FOOTNOTE** get the following **GLOBAL SCREEN**:

```
-----  
| FOOTNOTE 1 |  
|TO M C2 48 CH01|  
-----
```

This is the screen where you define the MIDI pitch and CHannel for the 8 **FOOTNOTES**. The MIDI NOTE values are shown in both the NOTE and NUMBER formats. This defines **FOOTNOTE 1** to be MIDI NOTE 48 on CHANNEL 01.

Now get the next **GLOBAL SCREEN**:

```
-----  
| FOOTNOTE 1 |  
|MIDI VLCTY = 95|  
-----
```

This is the screen where you define the MIDI VeLoCiTies to be sent for each of the 8 **FOOTNOTES**. Since a Footswitch is not a **VELOCITY** sensitive device you must assign a static **VELOCITY** here.

**USING FOOTNOTES:**

Now get to the **SETUP SCREENS** and make this screen:

```
-----  
|SONG:01 SETUP:01|  
|FOOT1:FOOTNOTE1|  
-----
```

This screen assigns **FOOTNOTE1** to Footswitch 1. (It could just as well be assigned to Footswitch 2 of course.) Plug in your Footswitch and step on it. If you don't hear anything make sure that you have a synth on MIDI CHANNEL 1 and that you have a good **VELOCITY** value for the **FOOTNOTE**.

A MIDI NOTE ON is sent when the Footswitch is depressed. When you release the Footswitch a MIDI NOTE OFF is sent.

SESSION 10 (cont.)

HI-HAT:

The **HI-HAT** is simply a pair of MIDI NOTE and CHANNEL combinations that can be assigned to Footswitch 1 or 2. The use of this is generally to put a hihat or some other percussion on a Footswitch while the KAT keyboard is being used for other things.

There are two NOTES assigned to one Footswitch when you use the **HI-HAT**. One NOTE (**CLOSED**) is played when you depress the pedal, the other NOTE (**OPEN**) is played when the pedal is released. Unfortunately this cute arrangement necessitates sending a NOTE OFF immediately after the NOTE ON is sent. This works fine on a drum or percussion machine, but not on a synth with a slow building string or horn sound!

```
-----  
| HI-HAT  xxxxxx|  
| IS Mxxx xxx CHxx|  
-----
```

This is the screen where you define the MIDI pitch and CHannel for both the **OPEN** and **CLOSED HI-HAT**.

```
-----  
| HI-HAT  xxxxxx|  
| MIDI VLCTY = xxx|  
-----
```

This is the screen where you define the MIDI VeLoCiTies to be sent for both the **OPEN** and **CLOSED HI-HAT**.

**SESSION 11**

**THIS SESSION IS A CATCHALL SESSION FOR EVERYTHING THAT DIDN'T FIT ANYWHERE ELSE.**

**MIDI IN / MERGE / OUT:**

The KAT has a MIDI **MERGE** feature where it takes the MIDI IN data and sends it out the MIDI OUT, (**MERGED** appropriately with KAT data that could be coming out simultaneously). This ends up being very useful in equipment setups that include sequencers, drum machines, or computers.

**If your MERGE seems to not respond correctly on some MIDI CHANNELS, then read the CHANNEL SHIFT explanations below.**

**MIDI IN CHANNEL SHIFT:**

The **MIDI IN CHANNEL SHIFT** is a small MIDI mapper. In each **SETUP** you can shift the information on a particular **CHANNEL** to a different **CHANNEL**.

One typical use is to route pitch bend to a system of synths. The KAT does not do pitch bend (but it can make your pitchbend more powerful if you do have it from something else)

**EXAMPLE:**

Imagine you have 5 synths. Imagine you have a synth that can generate pitch bend (from a breath controller maybe). Have that synth send its pitch bend data on **CHANNEL 5**. Take the output from that synth and connect it to the **MIDI IN** on the KAT.

Now, imagine that the other 4 synths are on MIDI CHANNELS 1,2,3,4 and are hooked up to the KAT. If on the 1st **SETUP** you had:

```
-----  
|SONG:01 SETUP:01|  
|MIDIN CH05->CH01|  
-----
```

In this **SETUP** the MIDI IN information on **CHANNEL 5** will get shifted over to **CHANNEL 1**.

Then on the next **SETUP** you could have:

```
-----  
|SONG:01 SETUP:02|  
|MIDIN CH05->CH04|  
-----
```

In this **SETUP** the MIDI IN information on **CHANNEL 5** will get shifted over to **CHANNEL 4**.

**ETC.**

In this situation you can do pitch bend freely and change where it goes (by **SETUPSTEPPING** with the Footswitches).

SESSION 11 (cont.):

MIDI IN PROGRAM CHANGE RECEIVE:

The **MIDI IN PROGRAM CHANGE RECEIVE** allows the KAT to respond to **PROGRAM CHANGE COMMANDS** received from the MIDI IN. You must **ENABLE** this and select the proper **CHANNEL**. This allows the KAT to be **STEPPED** through its **SETUPS** by a sequencer, computer, etc. The following screen has the KAT **ENABLED** to respond to **PROGRAM CHANGES** on **CHANNEL 6**:

```
-----  
| PGM CHNG RECEIVE |  
|  ENABLED  CH:06 |  
-----
```

If the KAT receives a **PROGRAM CHANGE** value of 1 to 8, the KAT will go to **SONG:01 SETUP:01** to **SONG:01 SETUP:08**. If the **PROGRAM CHANGE** value is a value between 9 and 16 the KAT will go to **SONG:02 SETUP:01** to **SONG:02 SETUP:08**. If the value is between 17 and 24 the KAT will go to **SONG:03**, etc. If the value is between 121 and 128 the KAT will go to **SONG:16**. Since MIDI only can send **PROGRAM CHANGE** values of 1 to 128, the last half of the KAT's 256 **SETUPS** (**SONG:17** to **SONG:32**) can not be reached by a **MIDI PROGRAM CHANGE**.

This happens before the **MIDI IN CHANNEL SHIFT** so it is the actual **CHANNEL** sent in that counts.

DATA DUMP:

You can save the information in the KAT to a **MIDI DISK DRIVE** or to **MIDI SYSEX LIBRARIAN PROGRAMS** on Personal Computers. You can do this through the **DATA DUMP** screen in the **GLOBAL SCREENS**. I strongly suggest to **EVERYONE** that it is well worth the \$250 to go out and buy a **MIDI DISK**. They are easy to use and a necessary backup if you want peace of mind from power surges etc. corrupting your **PERMANENT MEMORY**. For maximum safety always **SAVE TWO DUMPS** of what you want protected, on separate disks.

When you do a **DATA DUMP** the KAT will send a whole block of data out the **MIDI OUT**. To have the **DUMP** be successful, you need to have the **MIDI OUT** from the KAT connected into the **MIDI IN** on the storage device (**MIDI DISK** or **Computer**). You also need to get the storage device into a mode where it is sitting waiting for data **BEFORE** you send it.

Find the following screen in your **GLOBAL SCREENS**:

```
-----  
| DATADUMP xxxxxxxx |  
| HIT LFT FUNC PAD |  
-----
```

To do a **DATADUMP** first you must select the type of data you want to save. You have 6 choices:

- 1 **SETUP**
- 1 **SONG**
- ALL 32 SONGs**
- ALL GLOBAL INFORMATION**
- ALL ALL (everything!)**
- 1 **REASSIGNMENT**

**SESSION 11** (cont.):

**DATA DUMP** (cont.):

If you choose **1 SETUP** you will dump the current **SETUP** you are at. The KAT will dump from **PERMANENT MEMORY**, not **SCRATCH-PAD MEMORY**, so if you have done some editing of your **SETUP** and haven't **resaved** it, remember the changes would only be **DUMPed** if it were saved into **PERMANENT MEMORY** first.

If you choose **1 SONG** you will **DUMP** the current **SONG** you are at. Again the **SONG** will be retrieved from **PERMANENT MEMORY** for **DUMPing**.

If you choose **ALL 32 SONGs** all 32 **SONG**s will be **DUMPed**.

If you choose **ALL GLOBAL INFORMATION** that will include:

Your **REASSIGNMENTS**  
Your **FOOTNOTES** and **HI-HAT** settings.  
Your **PROGRAM CHANGE RECEIVE STATE** and **CHANNEL**.

If you choose **ALL ALL**, **EVERYTHING** IN YOUR KAT WILL BE **DUMPED** OUT. This is the largest dump and is about 16,000 bytes.

If you choose **1 REASS**, only 1 **REASSIGNMENT** will be **DUMPed**. The **REASSIGNMENT** that is **DUMPed** is determined by the selected **REASSIGNMENT** on the **GLOBAL SCREEN** for **REASSIGNMENT DEFINITION**, 5 Screens backwards from the **DATADUMP SCREEN** (see page 5 - 9/1).

After you have selected the type of **DUMP** you want to perform, next you hit the **LEFT FUNCTION PAD** (OH NO!). The screen prompts you to hit the **LEFT FUNCTION PAD** a second time:

```
-----  
|DATADUMP xxxxxxxx|  
|HIT L FUNC AGAIN|  
-----
```

When you hit the **LEFT FUNCTION PAD** a second time the **DATADUMP** is actually performed. When the **DATADUMP** is finished the following message is displayed.

```
-----  
|DATADUMP xxxxxxxx|  
| DUMP COMPLETED |  
-----
```

If you now want to do another **DATADUMP** you must do something to tell the KAT that you saw the **DUMP COMPLETED** message. To do this you simply need to perform any screen operation, like change the type of **DATADUMP** you are going to do, or even just hit the **G#4** once. This will return you to the screen instructing you to **HIT** the **LET FUNC PAD**.

When you do a **DATADUMP** the data in the KAT is not literally dumped out like a dumptruck, that is the KAT's internal data is not removed when you do a **DATADUMP**. A **COPY** of the internal KAT data is sent out **MIDI**.

The format of the data sent out in a **DATADUMP** is detailed in **APPENDIX E**.



**SESSION 11** (cont.):

**DATA RECEIVE:**

To receive data back in go to the next **GLOBAL SCREEN:**

```
-----  
|DATA RCV xxxxxxxx|  
| xxxxxxxxxxxxxx |  
-----
```

To do a **DATARECEIVE**, first you must select the type of data you want to receive. You have the same 6 choices:

- 1 **SETUP**
- 1 **SONG**
- ALL 32 SONGs**
- ALL GLOBAL INFORMATION**
- ALL ALL** (everything)
- 1 **REASSIGNMENT**

If you choose 1 **SETUP**, you will load the **RECEIVED SETUP** into the current **SETUP** you are at (which is not necessarily the **SONG SETUP** location it originally came from when you saved it).

If you choose 1 **SONG**, you will load the **RECEIVED SONG** into the current **SONG** you are at.

If you choose **ALL 32 SONGs**, all 32 **SONG**s will be loaded.

If you choose **ALL GLOBAL INFORMATION**, that will include:

- Your **REASSIGNMENTS**
- Your **FOOTNOTES** and **HI-HAT** settings.
- Your **PROGRAM CHANGE RECEIVE STATE** and **CHANNEL**.

If you choose **ALL ALL**, **EVERYTHING** IN YOUR **KAT** WILL BE **REPLACED** BY WHAT YOU **RECEIVE** IN.

If you choose 1 **REASS**, only 1 **REASSIGNMENT** will be **RECEIVED**. The **REASSIGNMENT** that is **RECEIVED** is determined by the selected **REASSIGNMENT** on the **GLOBAL SCREEN** for **REASSIGNMENT DEFINITION**, 6 Screens backwards from the **DATARC** **SCREEN** (see page 5 - 9/1).

After you have selected the type of **RECEIVE** you are expecting, next you must change the bottom line from **NOT ENABLED** to **ENABLED/WAITING**.

```
-----  
|DATA RCV xxxxxxxx|  
|ENABLED/WAITING|  
-----
```

Now the **KAT** is sitting awaiting data.

**SESSION 11** (cont.):

**DATA RECEIVE** (cont.):

Next you must go to your storage device and cause **it** to do a **DATADUMP** back out to the KAT. The MIDI OUT of the storage device must be connected to the MIDI IN of the KAT.

When the data is sent to the KAT, the bottom line of the display will show one of three possible messages:

**COMPLETED OK**  
**HEADER ERROR**  
**DATA ERROR**

To get the KAT to know you have seen the displayed message, hit the **G#4 NOTE PAD**.

If you get **COMPLETED OK**, then you know that all went well.

If you get **HEADER ERROR**, it is likely that the type of data you are expecting is not the type you are getting (or you are not receiving KAT data at all!) Try selecting **another** data type and go through the above steps again.

If you get **DATA ERROR**, it is likely that the data in your storage device got corrupted somehow. Recheck cables and try again.

## SCREENS AND BRIEF DESCRIPTIONS (6 - 1)

### PLAY MODE SCREEN:

```
-----  
|SONG:xx SETUP:xx|  
|* PLAY MODE ON *|  
-----
```

This is the screen you will see when you are in the **PLAY MODE**. Whenever you are "playing" you should be in the **PLAY MODE**.

### SETUP SCREENS:

```
-----  
|SONG:xx SETUP:xx|  
|KBD ASSIGN x x x|  
-----
```

This is the first **SETUP** screen. The KeyBoard ASSIGNment screen allows you to choose which of the **A**, **B**, and/or **REASSIGNment** Controllers you want to be active in this **SETUP**. You can have any combination of controllers active in a **SETUP**.

**SEE ALSO PAGES:** (5 - 4/1), (5 - 9/1), (5 - 9/3)

```
-----  
|SONG:xx SETUP:xx|  
|A:LIMITS xxx-xxx|  
-----
```

The first of 6 screens defining the **A** controller. This screen defines where on the KAT keyboard the **A** Controller resides.

**SEE ALSO PAGES:** (5 - 4/2)

```
-----  
|SONG:xx SETUP:xx|  
|A: CHxx PGRM xxx|  
-----
```

This screen defines what MIDI Channel the **A** Controller will send its notes to and what ProGRaM change value will be sent to this **A** Channel when you first enter this **SETUP**.

**SEE ALSO PAGES:** (5 - 5/1) to (5 - 5/4), (5 - 8/1) to (5 - 8/11)

```
-----  
|SONG:xx SETUP:xx|  
|A:VELOCITYxxx-xxx|  
-----
```

This screen defines a **VELOCITY** range for the **A** Controller. The left hand number is the minimum velocity, the right hand number is the maximum velocity.

**SEE ALSO PAGES:** (5 - 7/1) to (5 - 7/5), (5 - 8/1) to (5 - 8/11)

```
-----  
|SONG:xx SETUP:xx|  
|A:VCURVxx VOLxxx|  
-----
```

This screen defines the Velocity CURVe the **A** Controller uses to determine the velocities between the minimum and maximum you selected in the previous screen. Also the VOLUME level that is sent to the **A** Channel upon entering this Setup defined here.

**SEE ALSO PAGES:** (5 - 7/3) to (5 - 7/6), (5 - 5/4), (5 - 8/1),  
(5 - 8/5), (5 - 8/9)

SCREENS AND BRIEF DESCRIPTIONS (6 - 2)

SETUP SCREENS (cont.)

-----  
| SONG:xx SETUP:xx |  
A:RANGExx TRNSxx

This screen defines the octave RANGE and half-step TRAnSpose settings for the A Controller.

**SEE ALSO PAGES:** (5 - 6/1), (5 - 8/1) to (5 - 8/11)

-----  
| SONG:xx SETUP:xx |  
A: HOLD x.xxxs

This screen defines the computer HOLD time between NOTE ON and NOTE OFF for the A Controller.

**SEE ALSO PAGES:** (5 - 6/2), (5 - 8/1) to (5 - 8/11)

-----  
| SONG:xx SETUP:xx |  
B:LIMITS xxx-xxx

The first of 6 screens defining the B controller. This screen defines where on the KAT keyboard the B Controller resides.

**SEE ALSO PAGES:** (5 - 4/2)

-----  
| SONG:xx SETUP:xx |  
B: CHxx PGRM xxx

This screen defines what MIDI CHannel the B Controller will send its notes to and what ProGRaM change value will be sent to that B CHannel when you first enter this Setup.

**SEE ALSO PAGES:** (5 - 5/1) to (5 - 5/4), (5 - 8/1) to (5 - 8/11)

-----  
| SONG:xx SETUP:xx |  
B:VELOCITYxxx-xxx

This screen defines a VELOCITY range for the B Controller. The left hand number is the minimum velocity, the right hand number is the maximum velocity.

**SEE ALSO PAGES:** (5 - 7/1) to (5 - 7/5), (5 - 8/1) to (5 - 8/11)

-----  
| SONG:xx SETUP:xx |  
B:VCURVxx VOLxxx

This screen defines the Velocity CURVe the B Controller uses to determine the velocities between the minimum and maximum you selected in the previous screen. Also the VOLume level that is sent to the B CHannel upon entering this Setup defined here.

**SEE ALSO PAGES:** (5 - 7/3) to (5 - 7/6), (5 - 5/4), (5 - 8/1),  
(5 - 8/5), (5 - 8/9)

SCREENS AND BRIEF DESCRIPTIONS (6 - 3)

SETUP SCREENS (cont.)

-----  
|SONG:xx SETUP:xx|  
B:RANGExx TRNSxx

This screen defines the octave RANGE and half-step TRAnSpOse settings for the B Controller.

SEE ALSO PAGES: (5 - 6/1), (5 - 8/1) to (5 - 8/11)

-----  
|SONG:xx SETUP:xx|  
B: HOLD x.xxxx

This screen defines the computer HOLD time between NOTE ON and NOTE OFF for the B Controller.

SEE ALSO PAGES: (5 - 6/2), (5 - 8/1) to (5 - 8/11)

-----  
|SONG:xx SETUP:xx|  
X: CHxx PGRM xxx

This screen defines an eXtra MIDI CHannel that you can send a 3rd (besides the A and B CHannels) ProGRaM change value to.

SEE ALSO PAGES: (5 - 5/3) to (5 - 5/4), (5 - 8/1) to (5 - 8/11)

-----  
|SONG:xx SETUP:xx|  
FX:CH16 PGRM xxx

This screen defines a 4th ProGRaM change value that is sent to MIDI Channel 16 when the Setup is first entered. (Normally used for effects (FX) devices).

SEE ALSO PAGES: (5 - 5/3) to (5 - 5/4), (5 - 8/1) to (5 - 8/11)

-----  
|SONG:xx SETUP:xx|  
AVOLUME ->X CH:x

This screen determines whether the A VOLUME value will be sent to the X CHannel. This is normally used if you are using a REASSIGNment Controller on a third MIDI CHANNEL and wish to control the VOLUME of that CHANNEL as well.

SEE ALSO PAGES: (5 - 5/4), (5 - 9/4)

-----  
|SONG:xx SETUP:xx|  
ARANGE -> REAS:x

This screen determines whether the A octave RANGE will affect the pitches of the REASSignment notes if you are using a REASSIGNment Controller.

SEE ALSO PAGES: (5 - 9/4)

SETUP SCREENS (cont.)

-----  
|SONG:xx SETUP:xx|  
ATRNSP -> REAS:x

This screen determines whether the **A** half-step TRAnSPose value will affect the pitches of the REASSignment notes if you are using a REASSIGNment Controller.

SEE ALSO PAGES: (5 - 9/4)

-----  
|SONG:xx SETUP:xx|  
FOOT1: xxxxxxxxxx

This screen defines what FOOTswitch 1 will do in this Setup.  
SEE ALSO PAGES: (5 - 3/1) to (5 - 3/3)

-----  
|SONG:xx SETUP:xx|  
FOOT2: xxxxxxxxxx

This screen defines what FOOTswitch 2 will do in this Setup.  
SEE ALSO PAGES: (5 - 3/1) to (5 - 3/3)

-----  
|SONG:xx SETUP:xx|  
SETUPSTEP:xxxxxxx

This screen defines what SETUPSTEP event will occur **IF** you have either FOOT1 or FOOT2 assigned to SETUPSTEP and then depress that FOOTswitch.

SEE ALSO PAGES: (5 - 3/1) to (5 - 3/3), (5 - 8/6 to 8/10)

-----  
|SONG:xx SETUP:xx|  
MIDIN CHxx->CHxx

This screen defines the settings for the MIDI IN CHannel SHIFT feature. The CHannel specified on the left is the input CHannel to be shifted. The CHannel specified on the right is the CHannel to be shifted to. (This functions as a mini-mapper to reroute pitchbend information (etc.) to a variety of CHannels from one single input CHannel.)

SEE ALSO PAGES: (3 - 2), (5 - 11/1)

SCREENS AND BRIEF DESCRIPTIONS (6 - 8)

HELP SCREENS (cont.)

**A4**

-----  
|EDIT=PLAYS NOTES|  
FOOT= MINVEL INC

This screen indicates that the **A** on your Master Octave will simply PLAY notes in the EDIT MODE and will INCrement the value of MINimum VELOCITY by 8 in the FOOTFUNCTION MODE.

**G#4**

-----  
|EDIT=CURSOR MOVE|  
FOOT= PRGRM SEND

This screen indicates that the **G#** on your Master Octave will MOVE the CURSOR to the next value on the current screen that may be changed in the EDIT MODE and will SEND the PRoGRaM change value that was added up with the **F#4** and **A#4** pads in the FOOTFUNCTION MODE.

**G4**

-----  
|EDIT=PLAYS NOTES|  
FOOT= MINVEL DEC

This screen indicates that the **G** on your Master Octave will simply PLAY notes in the EDIT MODE and will DECrement the value of MINimum VELOCITY by 8 in the FOOTFUNCTION MODE.

**F#4**

-----  
|EDIT=SCREENADVNC|  
FOOT= PRGRM TEN

This screen indicates that the **F#** on your Master Octave will ADVaNCe forward to the next screen in the EDIT MODE and will add TEN to the value being added up to eventually be sent as a PRoGRaM change in the FOOTFUNCTION MODE.

**F4**

-----  
|EDIT=PLAYS NOTES|  
FOOT= RANGE INC

This screen indicates that the **F** on your Master Octave will simply PLAY notes in the EDIT MODE and will INCrement the RANGE value in the FOOTFUNCTION MODE.

SCREENS AND BRIEF DESCRIPTIONS (6 - 9)

HELP SCREENS (cont.)

E4

```
-----  
|EDIT=PLAYS NOTES|  
|FOOT= RANGE DEC |  
-----
```

This screen indicates that the **E** on your Master Octave will simply PLAY notes in the EDIT MODE and will DECrement the RANGE value in the FOOTFUNCTION MODE.

D#4

```
-----  
|EDIT= INC + |  
|FOOT= B SELECT |  
-----
```

This screen indicates that the **D#** on your Master Octave will add a small amount (1 or 8 or 0.025s) in the EDIT MODE and will SELECT ONLY the B CONTROLLER to be affected by the following FOOTFUNCTION commands (default is A and B both) in the FOOTFUNCTION MODE.

D4

```
-----  
|EDIT=PLAYS NOTES|  
|FOOT= HOLD INC |  
-----
```

This screen indicates that the **D** on your Master Octave will simply PLAY notes in the EDIT MODE and will INCrement the HOLD time value by 0.025s in the FOOTFUNCTION MODE.

C#4

```
-----  
|EDIT= INC ++ |  
|FOOT= A SELECT |  
-----
```

This screen indicates that the **C#** on your Master Octave will add a large amount (10 or 12 or 32 or 1.000s) in the EDIT MODE and will SELECT ONLY the A CONTROLLER to be affected by the following FOOTFUNCTION commands (default is A and B both) in the FOOTFUNCTION MODE.

C4

```
-----  
|EDIT=PLAYS NOTES|  
|FOOT= HOLD DEC |  
-----
```

This screen indicates that the **LOW C** on your **Master Octave** will simply PLAY notes in the EDIT MODE and will DECrement the HOLD time value by 0.025s in the FOOTFUNCTION MODE.



SCREENS AND BRIEF DESCRIPTIONS (6 - 10)

HELP SCREENS (cont.)

**B3**

-----  
|EDIT=PLAYS NOTES|  
FOOT= SETUP INC

This screen indicates that the **B** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will advance to the next consecutive SETUP regardless of SETUPSTEP settings in the FOOTFUNCTION MODE.

**A#3**

-----  
|EDIT=PLAYS NOTES|  
FOOT= SONG DEC

This screen indicates that the **A#** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will DECrement the SONG value in the FOOTFUNCTION MODE.

**A3**

-----  
|EDIT=PLAYS NOTES|  
FOOT= MAXVEL INC

This screen indicates that the **A** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will INCrement the MAXimum VELOCITY value by 8 in the FOOTFUNCTION MODE.

**G#3**

-----  
|EDIT=PLAYS NOTES|  
FOOT= SONG INC

This screen indicates that the **G#** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will INCrement the SONG value in the FOOTFUNCTION MODE.

**G3**

-----  
|EDIT=PLAYS NOTES|  
FOOT= MAXVEL DEC

This screen indicates that the **G** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will DECrement the MAXimum VELOCITY value by 8 in the FOOTFUNCTION MODE.

**F#3**

-----  
|EDIT=PLAYS NOTES|  
FOOT= SONG INC10

This screen indicates that the **F#** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will INCrement the SONG value by 10 in the FOOTFUNCTION MODE.

SCREENS AND BRIEF DESCRIPTIONS (6 - 11)

HELP SCREENS (cont.)

F3

-----  
|EDIT=PLAYS NOTES|  
FOOT= VOLUME INC

This screen indicates that the **F** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will INCrement the VOLUME value by 8 in the FOOTFUNCTION MODE.

E3

-----  
|EDIT=PLAYS NOTES|  
FOOT= VOLUME DEC

This screen indicates that the **E** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will DECrement the VOLUME value by 8 in the FOOTFUNCTION MODE.

D#3

-----  
|EDIT=PLAYS NOTES|  
FOOT= FX SELECT

This screen indicates that the **D#** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will SELECT ONLY the FX channel for the following FOOTFUNCTION commands (default is A and B both) in the FOOTFUNCTION MODE.

D3

-----  
|EDIT=PLAYS NOTES|  
FOOT= MIDI POLY

This screen indicates that the **D** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will send out a MIDI POLY MODE command in the FOOTFUNCTION MODE.

C#3

-----  
|EDIT=PLAYS NOTES|  
FOOT= X SELECT

This screen indicates that the **C#** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will SELECT ONLY the X channel for the following FOOTFUNCTION commands (default is A and B both) in the FOOTFUNCTION MODE.

C3

-----  
|EDIT=PLAYS NOTES|  
FOOT= MIDI MONO

This screen indicates that the **C** on the octave next to your Master Octave will simply PLAY notes in the EDIT MODE and will send out a MIDI MONO MODE command in the FOOTFUNCTION MODE.

SCREENS AND BRIEF DESCRIPTIONS (6 - 12)

HELP SCREENS (cont.)

**B2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 7

This screen indicates that the **B** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 7 in the FOOTFUNCTION MODE.

**A#2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 12

This screen indicates that the **A#** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 12 in the FOOTFUNCTION MODE.

**A2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 6

This screen indicates that the **A** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 6 in the FOOTFUNCTION MODE.

**G#2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 11

This screen indicates that the **G#** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 11 in the FOOTFUNCTION MODE.

**G2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 5

This screen indicates that the **G** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 5 in the FOOTFUNCTION MODE.

**F#2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 10

This screen indicates that the **F#** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 10 in the FOOTFUNCTION MODE.

SCREENS AND BRIEF DESCRIPTIONS (6 - 13)

HELP SCREENS (cont.)

**F2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 4

This screen indicates that the **F** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 4 in the FOOTFUNCTION MODE.

**E2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 3

This screen indicates that the **E** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 3 in the FOOTFUNCTION MODE.

**D#2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 9

This screen indicates that the **D#** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 9 in the FOOTFUNCTION MODE.

**D2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 2

This screen indicates that the **D** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 2 in the FOOTFUNCTION MODE.

**C#2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 8

This screen indicates that the **C#** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 8 in the FOOTFUNCTION MODE.

**C2**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 1

This screen indicates that the **C** on the octave 2 octaves away from your Master Octave will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 1 in the FOOTFUNCTION MODE.

SCREENS AND BRIEF DESCRIPTIONS (6 - 14)

HELP SCREENS (cont.)

**B1**

-----  
|EDIT=PLAYS NOTES|  
FOOT= SEQ STOP

This screen indicates that the **B** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will send a MIDI Sequencer STOP command in the FOOTFUNCTION MODE.

**A#1**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 16

This screen indicates that the **A#** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 16 in the FOOTFUNCTION MODE.

**A1**

-----  
|EDIT=PLAYS NOTES|  
FOOT=SEQCONTINUE

This screen indicates that the **A** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will send a MIDI Sequencer CONTINUE command in the FOOTFUNCTION MODE.

**G#1**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 15

This screen indicates that the **G#** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 15 in the FOOTFUNCTION MODE.

**G1**

-----  
|EDIT=PLAYS NOTES|  
FOOT= SEQ START

This screen indicates that the **G** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will send a MIDI Sequencer START command in the FOOTFUNCTION MODE.

**F#1**

-----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 14

This screen indicates that the **F#** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 14 in the FOOTFUNCTION MODE.

SCREENS AND BRIEF DESCRIPTIONS (6 - 15)

HELP SCREENS (cont.)

**F1** -----  
|EDIT=PLAYS NOTES|  
FOOT= TRNSP INC

This screen indicates that the **F** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will INCrement the TRANSPOSE value in the FOOTFUNCTION MODE.

**E1** -----  
|EDIT=PLAYS NOTES|  
FOOT= TRNSP DEC

This screen indicates that the **E** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will DECrement the TRANSPOSE value in the FOOTFUNCTION MODE.

**D#1** -----  
|EDIT=PLAYS NOTES|  
FOOT= CHANNEL 13

This screen indicates that the **D#** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will change a selected CHANNEL to 13 in the FOOTFUNCTION MODE.

**D1** -----  
|EDIT=PLAYS NOTES|  
FOOT=SETUP STEP

This screen indicates that the **D** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will perform a SETUP STEP in the FOOTFUNCTION MODE.

**C#1** -----  
|EDIT=PLAYS NOTES|  
FOOT=ALLNOTESOFF

This screen indicates that the **C#** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will send a MIDI ALL NOTES OFF COMMAND in the FOOTFUNCTION MODE.

**C1** -----  
|EDIT=PLAYS NOTES|  
FOOT=SETSTPBAKUP

This screen indicates that the **C** on the bottom octave of a 4 octave KAT will simply PLAY notes in the EDIT MODE and will perform a SETUP BACKUP in the FOOTFUNCTION MODE.

SPECIAL SCREENS

-----  
|HELP:R FNC TWICE|  
THEN HIT HI C

This is the screen that is popped onto the display for 2 seconds on power-up. This screen reminds you that the **HELP SCREENS** will remind you of what the alternate functions of the KAT NOTE PADS are in the **EDIT MODE** and **FOOTFUNCTION MODE**.

-----  
|SETUP SAVED INTO|  
PERMANENT MEMORY

This is the screen that is popped onto the display for 2 seconds when you SAVE a SETUP in the **EDIT MODE** by hitting the **LEFT FUNCTION PAD** twice.

**SEE ALSO PAGES:** (5 - 2/3)

-----  
|MEMORY PROTECTED|  
CAN'T SAVE SETUP

This is the screen that is popped onto the display for 2 seconds when you try to SAVE a SETUP without having first enabled PERMANENT MEMORY to a " CAN BE CHANGED " state in the **GLOBAL SCREENS**.

**SEE ALSO PAGES:** (5 - 2/3)

-----  
|MEMORY PROTECTED|  
CANT ALTER VALUE

This is the screen that is popped onto the display for 2 seconds when you try to alter the parameters in the **GLOBAL SCREENS** without having first enabled PERMANENT MEMORY to a " CAN BE CHANGED " state in the **GLOBAL SCREENS**.

**SEE ALSO PAGES:** (5 - 2/3)

APPENDIX A:

SETUP WORKSHEET:

SONG: # \_\_\_\_\_ SETUP # \_\_\_\_\_

KeyBoard ASSignment: \_\_\_\_\_

A: LIMITS \_\_\_\_\_ to \_\_\_\_\_

A: CHannel \_\_\_\_\_ ProGRaM \_\_\_\_\_

A: VELOCITY \_\_\_\_\_ to \_\_\_\_\_

A: Velocity CURVe \_\_\_\_\_ VOLume \_\_\_\_\_

A: RANGE \_\_\_\_\_ TRANSDPOSE \_\_\_\_\_

A: HOLD \_\_\_\_\_ s

B: LIMITS \_\_\_\_\_ to \_\_\_\_\_

B: CHannel \_\_\_\_\_ ProGRaM \_\_\_\_\_

B: VELOCITY \_\_\_\_\_ to \_\_\_\_\_

B: Velocity CURVe \_\_\_\_\_ VOLume \_\_\_\_\_

B: RANGE \_\_\_\_\_ TRANSDPOSE \_\_\_\_\_

B: HOLD \_\_\_\_\_ s

X: CHannel \_\_\_\_\_ ProGRaM \_\_\_\_\_

FX: CHannel 16 ProGRaM \_\_\_\_\_

AVOLUME -> X CHannel Y / N

ARANGE -> REAS: Y / N

ATRNSP -> REAS: Y / N

FOOT 1: \_\_\_\_\_

FOOT 2: \_\_\_\_\_

SETUPSTEP: \_\_\_\_\_

MIDIIN SHIFT CHannel \_\_\_\_\_ -> CHannel \_\_\_\_\_



APPENDIX A:

SETUP WORKSHEET

SONG: # \_\_\_\_\_ SETUP # \_\_\_\_\_

KeyBoard ASSignment: \_\_\_\_\_

A: LIMITS \_\_\_\_\_ to \_\_\_\_\_

A: CHannel \_\_\_\_\_ ProGRaM \_\_\_\_\_

A: VELOCITY \_\_\_\_\_ to \_\_\_\_\_

A: Velocity CURVe \_\_\_\_\_ VOLume \_\_\_\_\_

A: RANGE \_\_\_\_\_ TRANSDPOSE \_\_\_\_\_

A: HOLD \_\_\_\_\_ s

B: LIMITS \_\_\_\_\_ to \_\_\_\_\_

B: CHannel \_\_\_\_\_ ProGRaM \_\_\_\_\_

B: VELOCITY \_\_\_\_\_ to \_\_\_\_\_

B: Velocity CURVe \_\_\_\_\_ VOLume \_\_\_\_\_

B: RANGE \_\_\_\_\_ TRANSDPOSE \_\_\_\_\_

B: HOLD \_\_\_\_\_ s

X: CHannel \_\_\_\_\_ ProGRaM \_\_\_\_\_

FX: CHannel 16 ProGRaM \_\_\_\_\_

AVOLUME -> X CHannel Y / N

ARANGE -> REAS: Y / N

ATRNSP -> REAS: Y / N

FOOT 1: \_\_\_\_\_

FOOT 2: \_\_\_\_\_

SETUPSTEP: \_\_\_\_\_

MIDIIN SHIFT CHannel \_\_\_\_\_ -> CHannel \_\_\_\_\_

APPENDIX A:

SETUP WORKSHEET:

SONG: # \_\_\_\_\_ SETUP # \_\_\_\_\_

KeyBoard ASSignment: \_\_\_\_\_

A: LIMITS \_\_\_\_\_ to \_\_\_\_\_

A: CHannel \_\_\_\_\_ ProGRaM \_\_\_\_\_

A: VELOCITY \_\_\_\_\_ to \_\_\_\_\_

A: Velocity CURVe \_\_\_\_\_ VOLume \_\_\_\_\_

A: RANGE \_\_\_\_\_ TRANSCOPE \_\_\_\_\_

A: HOLD \_\_\_\_\_ s

B: LIMITS \_\_\_\_\_ to \_\_\_\_\_

B: CHannel \_\_\_\_\_ ProGRaM \_\_\_\_\_

B: VELOCITY \_\_\_\_\_ to \_\_\_\_\_

B: Velocity CURVe \_\_\_\_\_ VOLume \_\_\_\_\_

B: RANGE \_\_\_\_\_ TRANSCOPE \_\_\_\_\_

B: HOLD \_\_\_\_\_ s

X: CHannel \_\_\_\_\_ ProGRaM \_\_\_\_\_

FX: CHannel 16 ProGRaM \_\_\_\_\_

AVOLUME -> X CHannel Y / N

ARANGE -> REAS: Y / N

ATRNSP -> REAS: Y / N

FOOT 1: \_\_\_\_\_

FOOT 2: \_\_\_\_\_

SETUPSTEP: \_\_\_\_\_

MIDIIN SHIFT CHannel \_\_\_\_\_ -> CHannel \_\_\_\_\_

## APPENDIX B:

### TROUBLESHOOTING HELP

If you are having trouble playing into your synth with the KAT check the following:

- 1) Make sure that the KAT, your synth, and your amp are all turned on.
- 2) Make sure that your synth makes sound when you play on its own keyboard, if it has one.
- 3) Make sure that you have a MIDI cable connected from a KAT MIDI OUT to your synth's MIDI IN. You might also try using a different MIDI cable.
- 4) Verify that the SETUP in your KAT is sensible. If you are not sure, SESSION 2 of the TUTORIAL puts the whole KAT into a sensible pitch range with a reasonable hold time.
- 5) Verify that your synth is on the same MIDI CHANNEL as the KAT and is set up to receive incoming notes and control information. Also verify that there is nothing unusual about the sound your synth is making (like a slow building texture sound that a short HOLD TIME is not long enough for).
- 6) Verify that your KAT is seeing NOTE PADS by getting into the **HELP SCREENS** (SESSION 2) and when you hit NOTE PADS other than **C5 (HI C)** on your MASTER octave you should see the display change.
- 7) Verify that your EXPANDER cables are 7 pin din plugs (NOT 5 pin din MIDI cables!).
- 8) Take off the back cover of the octave you are have problems with and make sure that the blue connectors carrying the signals from the KAT keyboard are properly connected to the circuit board.

IF YOU EXPERIENCE A PROBLEM WITH YOUR KAT, TRY TO ISOLATE SPECIFICALLY WHERE THE PROBLEM IS.

ARE THE EXPANDER CABLES CAUSING A PROBLEM? DISCONNECT OR SWAP THEM TO SEE.

IS THE AC ADAPTOR THE PROBLEM?

IS IT YOUR MASTER OCTAVE OR YOUR EXPANDER OCTAVE?

IS IT YOUR SYNTH OR AMP?

HOW ABOUT YOUR FOOTSWITCHES OR MIDI CABLES?

TRY SWAPPING NOTE PADS IF ONE NOTE HAS A PROBLEM.

THE MORE YOU CAN RULE OUT OR DISCOVER BEFORE YOU CALL US, THE EASIER IT WILL BE FOR US TO HELP YOU SOLVE YOUR PROBLEM.

See also page 3 - 3 on the Sensitivity Trimpot.

## **APPENDIX C:**

### **WARRANTY**

The **KAT** has a limited warranty. The **KAT** is warranted against defects due to materials or workmanship for 90 days on labor, 6 months on FSR, and 1 year on all other parts.

**WARRANTY RESTRICTIONS:** Damage or defects sustained through unauthorized repair or tampering, and/or abusive treatment are not covered by this warranty. The warranty does not cover damages to the **KAT** as a result of use with a non-specified power supply or connections to another instrument that has malfunctioned.

The shipping expenses and arrangements for repair are the responsibility of the purchaser.

## APPENDIX D:

### INSTRUCTIONS FOR INSERTING NEW SOFTWARE CHIPS

TOOLS NEEDED: 1 Small flat and 1 medium flat screwdriver.

1) Find a smooth, clean, flat surface and place your KAT MASTER octave upside down on it with the jacks facing away from you.

2) Remove back cover of MASTER octave of KAT (8 screws). (Remember NEVER to put a long screw into the two holes in the back middle of the KAT where the jacks are - unless through a strapping bar).

3) When the MASTER is opened you should see a large circuit board to the left and back of the metal enclosure.

4) On the left side of the circuit board are two chips in special sockets. These sockets have machined, gold pins to insure that your software chips will continue to make good contact in the sockets.

Note that the two chips in the sockets have a white label on them. The one on the left has a label with an "L" on it and the one on the right has a label with a "R" on it. Do not remove the chip next to those two that says TC5564PL-15. This is your **SETUP** and **GLOBAL PERMANENT MEMORY**.

To remove the old chips, you will use your small flat screwdriver. You want to pry the chips out of their sockets. The socket is soldered into the circuit board, so don't try to pry it out. You also want to take turns prying a little bit at a time on each side of the chip. If you pry a LOT on one side, you will bend the cute little legs on the other side as the chip pivots on them. Don't be scared - just pry a little on each side alternately until the chip is out. Take your time, don't be in a hurry. Make sure you insert the small screwdriver **BETWEEN** the chip and the socket before you start to pry each time.

5) After you have those chips out, place the new chips in the appropriate sockets: KATL is in the left socket and KATR is in the right socket. Take a little care to align the legs of the chips into the pins of the sockets. Then push down evenly on the chip. It should snugly push down into the socket. Visually check to see that none of the legs got squished and are smashed under the chip.

6) Turn your KAT MASTER back over and turn it on. If the display is working then you are OK. If the display is not working turn the KAT back over and 1) Make sure that KATL is on the left and KATR is on the right, also 2) Try reinserting the chips (pry them out again to make sure the legs didn't get bent under the chip). If this still fails put your OLD software back in and give us a call.

7) After you have had the new software in and used it for several days, please send any old chips you have back to us. They are very reusable.

APPENDIX E:

SYSTEM EXCLUSIVE DATADUMP DOCUMENTATION

A KAT SYSTEM EXCLUSIVE DATA DUMP consists of two parts: 1) A 6 byte "header" that describes the dump and 2) the DATA! The # of bytes of the DATA is determined by the type of dump.

The 6 bytes of the header are defined below:

HEADER:

byte1: (0F0H) Start of System Exclusive Status Byte  
byte2: (00H)  
byte3: (00H)  
byte4: (15H) [ 00H, 00H, 15H ] is KAT's Company ID #.  
byte5: (69H) Instrument ID # for KAT MIDI PERCUSSION CONTROLLER.  
byte6: (00H - 05H) DUMP TYPE:  
  
00 = 1 SETUP (44 bytes SYSEXC DATA)  
01 = 1 SONG (352 bytes SYSEXC DATA)  
02 = ALL 32 SONGS (12 KBytes SYSEXC DATA)  
03 = ALL GLOBAL INFORMATION (2 KByte SYSEXC DATA)  
04 = ALL ALL (EVERYTHING) (16 KByte SYSEXC DATA)  
05 = 1 REASSIGNMENT (196 Bytes SYSEXC DATA)

The DATA is split into nibbles and sent in the following format:

"X" is a variable DATA nibble.

DATA:

byte1: 0XH Where X is the 1st nibble of DATA.  
byte2: 1XH Where X is the 2nd nibble of DATA.  
byte3: 2XH Where X is the 3rd nibble of DATA.  
byte4: 3XH  
byte5: 4XH  
byte6: 5XH  
byte7: 6XH  
byte8: 7XH  
byte9: 0XH Where X is the 9th nibble of DATA.  
byte10: 1XH Where X is the 10th nibble of DATA.

etc. etc.

etc. etc.

It takes two bytes of SYSTEM EXCLUSIVE transmission for every byte of raw DATA.

After all the DATA has been sent, the End Of System exclusive command (0F7H) is sent.

APPENDIX F:

MAT MIDI PERCUSSION CONTROLLER  
MIDI IMPLEMENTATION CHART

1/27/88  
6

Function ...	Transmitted	Recognized	Remarks
Basic Default	1-16	1-16	memorized
Channel Changed	1-16	1-16	
Mode Default	Mode 3	x	
Mode Messages Altered	POLY, MONO	x	
Note Number: True Voice	0-127 *****	x x	
Velocity Note ON	1-127	x	
Velocity Note OFF	0	x	
After Touch Key's	x	x	
After Touch Ch's	x	x	
Pitch Bender	x	x	
Control Change	71 o	x	MAIN VOLUME
	64 o	x	SUSTAIN
Prog Change: True #	o 0-128 *****	o 0-128 0-128	Can be transmitted to 4 Channels at once
System Exclusive	o	o	SETUPS, REASSIGNMENTS
System Common	: Song Pos : Song Sel : Tune	x x x	
System Real Time	: Clock : Commands	x o	x x START, STOP, CONTINUE
Aux Messages	: Local ON/OFF : All Notes OFF : Active Sense : Reset	x o x x	x x x x
Notes	All MIDI IN received is merged to MIDI OUT after "Channel Shift" in that SETUP has been done. Program Change received is examined for Channel before "Channel Shift" has been done. Note OFF by Internal HOLD time, or continued manual holding on Note Pad		

Mode 1: OMNI ON, POLY      Mode 2: OMNI ON, MONO  
Mode 3: OMNI OFF, POLY    Mode 4: OMNI OFF, MONO

o: Yes  
.: No

APPENDIX G:

VELOCITY CURVE DOCUMENTATION

For those of you who are truly gluttons for punishment, we will now get MATHEMATICAL about VELOCITY. This will include tables, formulas, and graphs explaining how the KAT determines the MIDI VELOCITY values that it sends out for the notes you play on the KAT.

The KAT internally can measure 9 distinct levels of dynamics from the KAT NOTE PADS. The bottom level is set by the "SENSITIVITY" trimpot that can be adjusted from the outside back of the KAT. The top level of dynamics is set by a trimpot that can be accessed only by opening the KAT Master Octave. (SEE pages 3 - 3 and 3 - 4).

The KAT must then take these 9 levels and correlate them to MIDI VELOCITY numbers that can range from 0 to 127. The KAT uses the MINIMUM VELOCITY (MINVEL), MAXIMUM VELOCITY (MAXVEL), and VELOCITY CURVE (VCURV) settings to do this correlation. The actual formula used is:

$$\text{MIDI VELOCITY} = \text{MINVEL} + (\text{VCURV}) \times (\text{MAXVEL} - \text{MINVEL})$$

*This result is then compared to the MAXVEL setting to insure that even if you put in backwards values for MINVEL a MAXVEL that the final result will always be less than the MAXVEL setting.*

The VELOCITY CURVE has a "% multiplier" for each of the 9 dynamic levels to dictate how to divide up the range between the MINIMUM and MAXIMUM VELOCITY settings. The 16 VELOCITY CURVES in the KAT are shown in table form below and in graph form after the examples.

	Soft Hits			Medium Hits				Hard Hits		
	1	2	3	4	5	6	7	8	9	
VCURVE 1	6%	12%	25%	38%	50%	63%	75%	88%	100%	
VCURVE 2	3%	3%	6%	6%	12%	31%	56%	81%	100%	
VCURVE 3	25%	31%	47%	59%	66%	75%	83%	90%	100%	
VCURVE 4	38%	59%	72%	78%	82%	85%	88%	94%	100%	
VCURVE 5	50%	56%	63%	69%	75%	81%	88%	94%	100%	
VCURVE 6	0%	0%	25%	38%	50%	63%	75%	88%	100%	
VCURVE 7	0%	0%	0%	0%	55%	70%	81%	90%	100%	
VCURVE 8	0%	0%	0%	0%	0%	0%	63%	81%	100%	
VCURVE 9	100%	100%	100%	100%	0%	0%	0%	0%	0%	
VCURVE 10	100%	100%	100%	75%	50%	25%	0%	0%	0%	
VCURVE 11	100%	100%	100%	100%	100%	100%	0%	0%	0%	
VCURVE 12	100%	88%	75%	63%	50%	38%	25%	0%	0%	
VCURVE 13	100%	100%	100%	100%	75%	50%	25%	12%	0%	
VCURVE 14	100%	100%	88%	75%	63%	50%	38%	25%	12%	
VCURVE 15	50%	50%	50%	0%	0%	0%	0%	100%	100%	
VCURVE 16	0%	25%	50%	75%	100%	75%	50%	25%	0%	



APPENDIX G (cont):

VELOCITY CURVE DOCUMENTATION (cont):

**VELOCITY CURVES** 6-8 are good for crossfading when used with the other controller using **VELOCITY CURVES** 9-13, especially if you want the softest hits to play on just one synth and hardest hits to play only on the other one. The combination of **CURVES** 7 and 9 is one good combination to try, so is 8 and 11, so is 6 and 12, etc.

**EXAMPLES:**

- 1) MINVEL=00, MAXVEL=127, VCURV=01, Internal KAT Dynamic=9

$$\text{MIDI VELOCITY} = 00 + (1.00)(127-00) = 127$$

- 2) MINVEL=00, MAXVEL=127, VCURV=01, Internal KAT Dynamic=5

$$\text{MIDI VELOCITY} = 00 + (.50)(127-00) = 64$$

- 3) MINVEL=00, MAXVEL=127, VCURV=01, Internal KAT Dynamic=1

$$\text{MIDI VELOCITY} = 00 + (.06)(127-00) = 8$$

(Even though the MINVEL is 0 and you have hit the softest hit the KAT can read, you don't get 0 as a result because of the 6% VCURV value for **VELOCITY CURVE 01** for the softest hit.)

- 4) MINVEL=00, MAXVEL=127, VCURV=08, Internal KAT Dynamic=1

$$\text{MIDI VELOCITY} = 00 + (0)(127-00) = 0$$

(0 means the note will **NOT** play - this is essential to be able to do crossfades where the dynamic extremes play only one synth)

- 5) MINVEL=00, MAXVEL=127, VCURV=08, Internal KAT Dynamic=5

$$\text{MIDI VELOCITY} = 00 + (0)(127-00) = 0$$

- 6) MINVEL=00, MAXVEL=127, VCURV=08, Internal KAT Dynamic=9

$$\text{MIDI VELOCITY} = 00 + (1.00)(127-00) = 127$$

(NOTE: From examples 4,5,6 you can see that the entire bottom of the KAT Dynamic Range produces no note with **VELOCITY CURVE 08** (and MINVEL=0). That is why **VELOCITY CURVE 08** is a good curve to use for cross fading.)

- 7) MINVEL=64, MAXVEL=103, VCURV=02, Internal KAT Dynamic=7

$$\text{MIDI VELOCITY} = 64 + (.56)(103-64) = 86$$

APPENDIX G (cont):

VELOCITY CURVE DOCUMENTATION (cont):

8) MINVEL=32, MAXVEL=127, VCURV=11, Internal KAT Dynamic=9

$$\text{MIDI VELOCITY} = 32 + (0) (127-32) = 32$$

9) MINVEL=32, MAXVEL=127, VCURV=11, Internal KAT Dynamic=5

$$\text{MIDI VELOCITY} = 32 + (1.00) (127-32) = 127$$

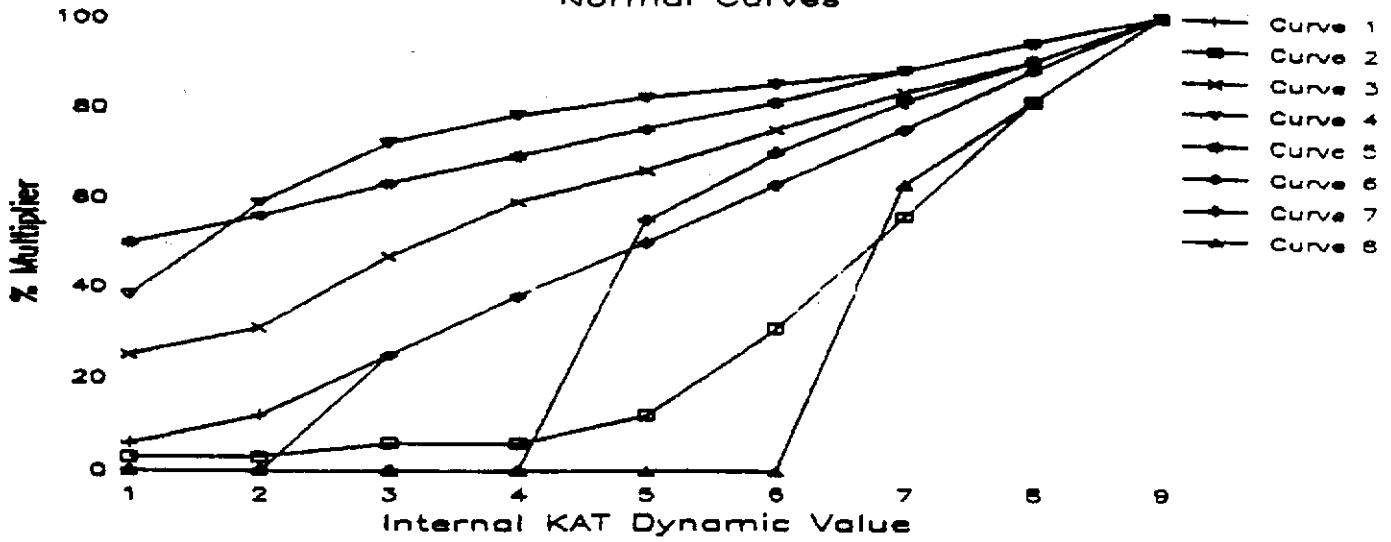
10) MINVEL=32, MAXVEL=127, VCURV=11, Internal KAT Dynamic=1

$$\text{MIDI VELOCITY} = 32 + (1.00) (127-32) = 127$$

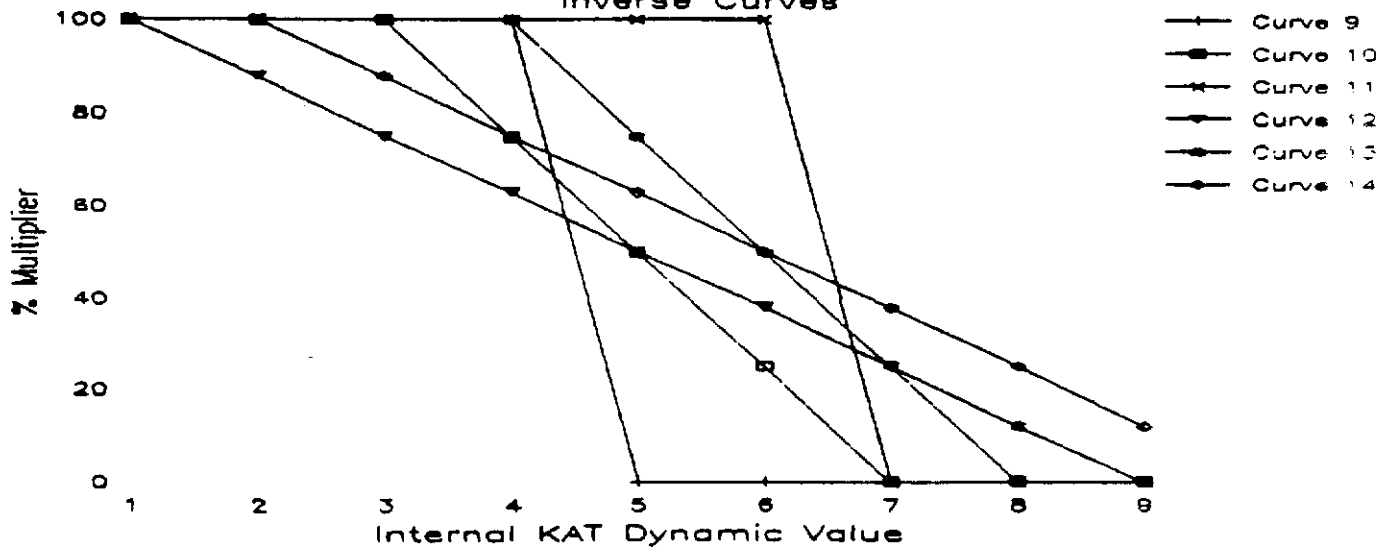
(NOTE: From examples 8,9,10 you can see that the top of the KAT Dynamic Range produces only soft notes (or no note if you make MINVEL=00) with **VELOCITY CURVE 11**. That is why **VELOCITY CURVE 11** is a good curve to use with **VELOCITY CURVE 08** for cross fading, if you want synth separation.

And now, finally, the graphs of what your **VELOCITY CURVES** look like!

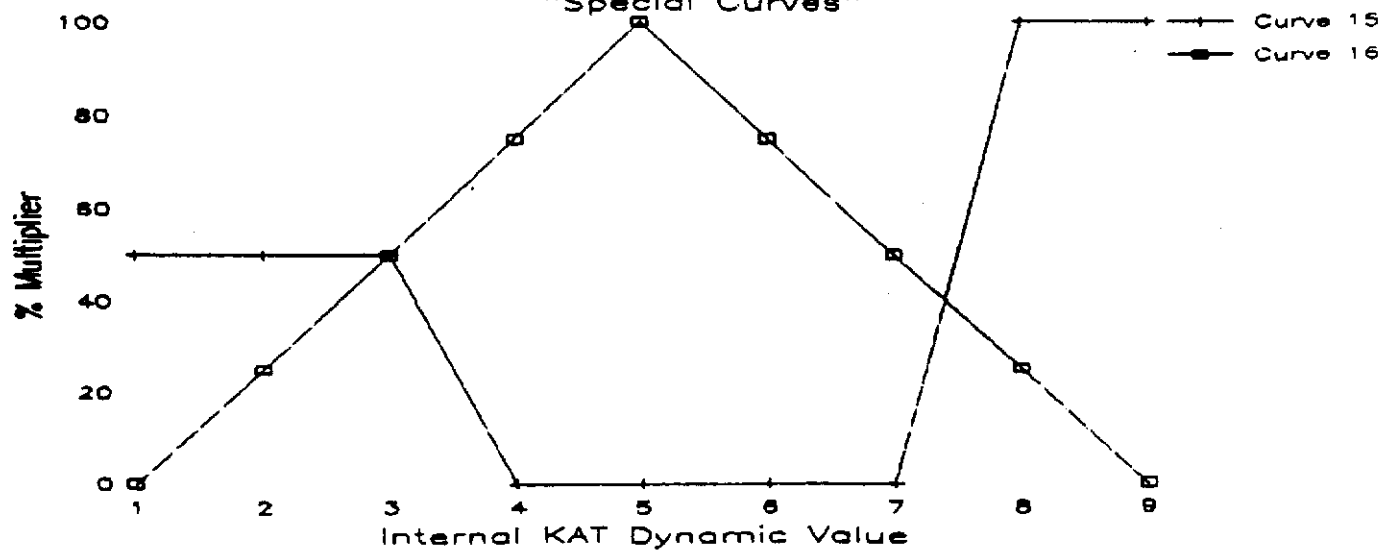
### VELOCITY CURVES 1-8 "Normal Curves"



### VELOCITY CURVES 9-14 "Inverse Curves"



### VELOCITY CURVES 15&16 "Special Curves"



October 1991

## malletKAT UPDATE

### ???? WHAT ????

New software for the malletKAT now allows you to **adjust** the **sensitivity** of all pads on your malletKAT. If one particular pad has a false triggering problem you are now able to *raise its threshold independently* to make it less sensitive, while maintaining a low threshold on the rest of your pads for maximum sensitivity on the rest of your keyboard.

### ???? WHY ????

The FSR sensors under your playing pads are large area sensors that must respond to a large range of dynamics from your mallets. They must withstand hard playing but also be sensitive to delicate passages. Combine this with the real world, e.g. wide temperature and humidity variations, handling by road crews, riding around upside-down in a truck, etc. Because of all this it is possible for one pad to be sensitive enough to "chatter" a bit by itself when your sensitivity trimpot is turned up. To protect you in these situations this new software has been added to your malletKAT.

We'd like you to be able to enjoy a sensitive playing range and also be able to accommodate the real world. This software addition will help you. Spend a short time reading the rest of this! It might come in very handy sometime!

A provision has also been added to the new software causing all pads to be read at power-up. If a particular pad on your malletKAT is seen to be oversensitive at power-up the malletKAT will automatically raise the threshold for that pad. This change is temporary and will be readjusted on next power-up (as opposed to permanent changes you make manually in the new Global Screen described above) .

For example, if you have a book sitting on top of your bottom octave, the malletKAT will raise the thresholds on the affected pads to stop those notes from playing themselves. Those pads will stay less sensitive during this time on (unless you manually adjust them). However when you turn off and then turn back on again the pads will readjust if the book is gone.

Also, to increase the ease of working with these new thresholds 3 new functions have been added. These new functions involve the Left and Right Function pads in conjunction with FOOTSWITCH 3. They allow you to temporarily raise or lower the thresholds of *all* your pads or to cause a new *automatic reading* of your pads that will *permanently* adjust all thresholds.

If you strike the RIGHT FUNCTION PAD *while* FOOTSWITCH 3 is *depressed* the thresholds of *all* your pads will be raised by 1. If you are in the middle of a solo and a note begins to play itself you can simply press FOOTSWITCH 3 down and *while* it is *depressed* strike the RIGHT FUNCTION PAD. Your whole instrument will become a little less sensitive, **but** the offending note, wherever it is, should stop embarrassing you. This effect is temporary and the next time you power-up your pads will be back to normal thresholds. A screen burst will verify that your thresholds have been increased.

If you strike the LEFT FUNCTION PAD *while* FOOTSWITCH 3 is *depressed* the thresholds of *all* your pads will be lowered by 1. A screen burst will verify that your thresholds have been increased.

If you press down on the LEFT FUNCTION PAD and the RIGHT FUNCTION PAD *simultaneously* *while* FOOTSWITCH 3 is *depressed* the thresholds of **all** your pads will be measured automatically and an appropriate set of **new thresholds** for all of your pads will be calculated and stored **permanently** into your malletKAT. A screen burst will verify that your thresholds have been measured and stored in permanent memory.

**WARNING:** Now that FOOTSWITCH 3 combines with the Right Function pad and the Left Function pad for these new threshold features you have *lost* FOOTFUNCTION with Left and Right Function pads (see manual Tutorial 5 - 8/1 to 8/6). The FOOTFUNCTION of the Left Function pad was to do a SetupStep Advance. Since that is available on FOOT 1 and FOOT 2 we didn't feel too guilty about taking it away from you.

However, the FOOTFUNCTION of the Right Function pad was very useful! So we just moved it! It is now accessed by holding down FOOT 2 and while FOOT 2 is down striking the Right Function pad and then two Master pads to select a specific Song and Setup as detailed on page 5 - 8/6.