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**Drumulator Graphic Rhythm Composer Manual**

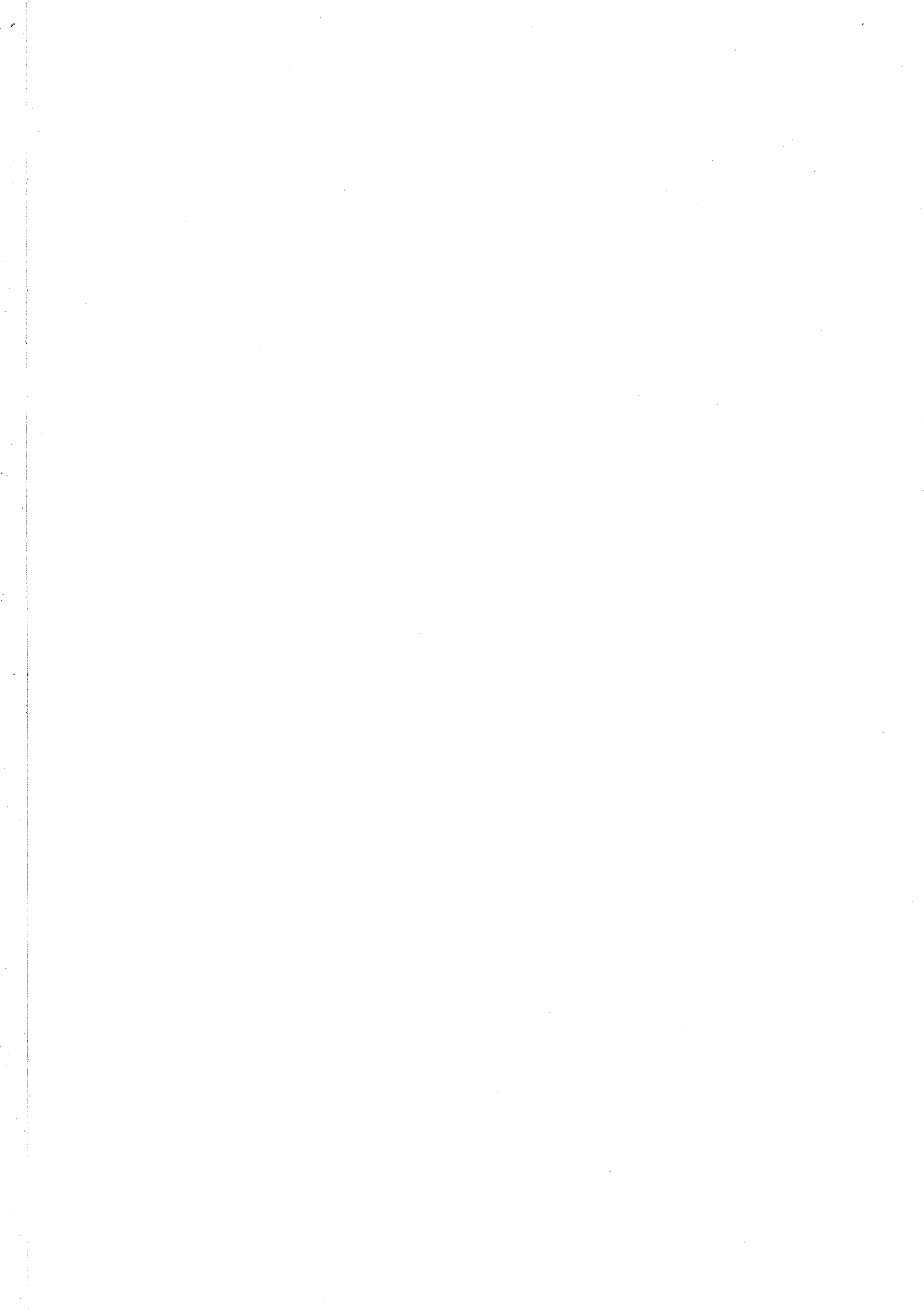
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by Craig Anderton

Version 1.0

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## Graphic Rhythm Composer Overview

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And you thought the Drumulator was pretty cool...well, just wait until you hook it up to a computer and video display. You'll be able to graphically see where every beat falls in every Drumulator part you program, program level (not just accent) for every beat of every drum sound, edit graphically in step time, store complete songs on diskette, write extremely long songs if that's your thing, and much more. You will also have about 300% greater note capacity than the stand-alone Drumulator.

Because the GRC program uses a computer, if you already have a meaningful relationship with computers the program will be that much easier to learn. But if you don't understand computers, don't worry; if you can insert a slice of bread in a toaster and toast it, you can get the GRC up and running.

On that note of encouragement, let's forge ahead. The GRC is a great program, so turn the page and get ready to start learning about it.



## How to Use this Manual

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First of all, don't take this manual too seriously once you get past Section 1...the real action is happening on the screen of your TV or video monitor. This is where the GRC program asks questions, gives instructions, and offers advice on what to do next. The manual exists mainly to get you started, give you some background on how the system works, and act as a tutor to further explain what you see on the screen. Once you acquire some proficiency with the GRC, you will seldom have to refer to the manual since much of the information you need will be presented on-screen.

However, as you learn the program be sure to follow the instructions given in this manual to the letter. Computers and computer programs are very literal-minded; if they want a comma, better give them a comma and not a period. If they want you to hit keys in a particular sequence, hit them in that exact sequence or you will confuse their little silicon brains.

So much for how to use the manual, now let's set up the GRC.

**SECTION 1: GETTING READY**

## **1A HOW TO TELL APPLES FROM ORANGES: CHOOSING A COMPUTER**

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The GRC requires an Apple II+ or IIe microcomputer. You can also use an Apple-compatible computers as long as it can run Apple DOS 3.3 (check with your computer store if you don't know whether your Apple-compatible computer can run DOS 3.3). Other computers, such as those made by Commodore, Radio Shack, IBM, and so on will not work with the GRC. The GRC will also not work with other Apple computers, such as the Lisa, MacIntosh, or Apple III.

Apple aficionados often ask whether the GRC will work with Apples that have Language Cards installed; the answer is yes. The GRC will also work if the computer does not have a Language Card installed.

Incidentally, older Apple II computers can be retrofitted to Apple+ status, thus qualifying them for use with the GRC. This procedure can be performed by most Apple service centers; refer to them for pricing and feasibility of the conversion.

## **1B OTHER REQUIRED EQUIPMENT**

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In addition to the computer, you will also need:

- o Single (or double) Apple Disk II disk drive
- o Apple-compatible joystick
- o Suitable video monitor or TV set (see Section 1C)
- o A cord to connect the computer to the monitor
- o The fabulous E-Mu Drumulator, which we already assume you know how to use (read the manual if not)
- o E-mu Systems GRC diskette
- o GRC Interface Cable (included with the GRC package)
- o Additional 5.25" diskettes for saving your compositions (available from computer stores).

**IMPORTANT NOTE:** As soon as you unpack your GRC package, fill out and send in your warranty card!! We can only inform you of updates, or provide factory service, if you have returned the warranty card to us...so fill it out now...you are getting drowsy...fill out the warranty card...

## **1C INITIAL SYSTEM TEST**

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Here's how to install your computer and make sure that the GRC is ready to function.

1. Verify that all AC-powered equipment is turned off

before hooking things up.

2. The Disk II has a cable coming from it which connects to a circuit board; this circuit board plugs into the computer. Take off the top lid of your computer and note that there are several long connectors located towards the rear of the computer. If the disk drive circuit board is already plugged in, check that it is plugged into connector (slot) 6. (Each connector has an identifying number printed between the connector and rear panel, on the top side of the computer's main circuit board.) If the disk drive circuit board is not already plugged into the computer, plug it into slot 6.

3. With the top still off, locate connector 7 (just to the right of connector 6). Next, locate the end of connector 7 closest to the computer keyboard. Looking towards the right from this end of the connector, you will see a socket labelled "GAME I/O". Take the special adapter cable included with the GRC and plug it in as shown in Figure 1 (note that the cable must trail out towards the rear panel, and also note that Apple has thoughtfully drilled out a little slot on the rear panel through which you can thread this cable).

**Caution:** In this step and step (4), we're dealing with plugging little tiny pins into little tiny sockets. Work carefully in order to avoid damaging these parts. If the joystick doesn't seem to be functioning properly when you start work with the GRC, check that the plugs are seated firmly in their connectors before panicking.

4. Plug the joystick connector into the socket on top of the adapter cable you just installed. Again, thread the cable towards the rear and out through the slot in the rear panel. You might want to tape this cable against the rear panel so that pulling on the joystick doesn't pull the joystick plug out of its socket.

5. Put the lid back on the Apple. The top of the lid also serves as a convenient place to put the disk drive.

6. Run a suitable cable from the Apple video output jack (located on the opposite end of the rear panel from the power cord) to your video monitor (black-and-white or color). If you do not have a video monitor, you can use an ordinary TV set providing that you buy a gizmo called an RF modulator. This connects between the computer and TV, and translates computer talk into TV talk. Modulators can cost as little as \$20 or as much as \$60; the cheap ones work just fine, and are available from just about any computer store. Tip: Modulators generally send out a switch-selectable signal on your choice of Channel 3 or Channel 4. Check out both options; your TV might work better with one channel than with the other.

7. Connect the free end of the GRC Interface Cable to the CLK/CAS IN jack on your Drumulator.

8. Carefully insert the GRC diskette into the disk drive, label side up with the label side going in last (see Figure 2). Push the diskette all the way in until it snaps gently in place, then push down on the disk drive door until it is flush with the disk drive front panel.

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Caution: Please remember that diskettes are delicate and store valuable data. Do not bend them, sit on them, expose them to strong magnetic fields, subject them to temperature extremes, leave them out in the sun, or use them as coasters.

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9. Plug in the AC cords for your TV or monitor, computer, and Drumulator.

10. Turn on the TV. Next, turn on the computer; you will hear a beep, the disk drive light will come on, and the drive itself will make interesting whirring noises (don't be alarmed, these are normal disk drive sounds). After approximately 8 seconds, the disk drive light will go out and your TV screen will announce that the GRC is ready to go.

What? Your TV isn't announcing anything? Check that if you are using a TV and modulator that you're tuned to the right channel, and that all connections have been properly made. If the disk drive light never came on, you have an older Apple II that is not suitable for this application unless it is retrofitted to Apple II+ status.

11. Type 5 on the computer keyboard. The disk drive will whirr.

12. After the disk drive light goes off, type J. The screen will say ADJUST JOYSTICK TRIMMERS TO READ 125-130. Your joystick should have two trimmers present; adjust them until you obtain the desired readings, as shown on the screen. This calibrates the joystick and also verifies that it is working properly.

13. Press the RETURN key, then press the RESET key.

14. Turn on the Drumulator, and wait until it finishes its self-test. Then press EXTERNAL CLOCK and while holding this button, tap RUN/STOP. All Drumulator lights should go out and it will appear to be dead -- actually it's only sleeping, and eagerly waiting for you to wake it up via the GRC.

## 1D DISK PROTOCOL (HANDLING, WRITE-PROTECTING, AND COPYING)

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Since diskettes are not indestructible, we urge you to use the GRC diskette as a "master" diskette only, which you then copy on to other, "working" diskettes.

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Important: When you copy the GRC diskette for your own use, you are being prudent by not subjecting your master diskette to any more wear than is necessary. However, we should also add that if you copy the diskette with the intent of selling or giving away copies, you would be violating the copyright laws and generally acting in extremely poor taste. Of course, we assume that E-mu customers are outstanding, sensitive, intelligent people of good conscience; but just in case this manual falls into the wrong hands, we felt a warning might be necessary.

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Another reason for using the master diskette for copying purposes only is that as you compose measures, segments, and songs, they are stored on the diskette currently in the disk drive. If you stored all this on your master diskette, then every time you copied the master diskette to make "working" copies you would transfer all the measures, segments, and songs over to the working diskette as well, which you would then probably have to go back and erase. By simply copying the GRC files present on the master diskette over to working diskettes, you can save yourself the trouble of erasing unneeded files.

There is an easy way to write-protect your master diskette to prevent accidental erasure (this is just like busting out the tabs on a cassette so don't accidentally record over anything). Note that your GRC diskette has a small label along one of the edges, which is folded over both sides of the diskette. This is a write-protect tab; when present, you can't write on the diskette. When removed, you can. **LEAVE THIS TAB ON YOUR GRC DISKETTE AT ALL TIMES;** your reward will be never having to experience the sinking feeling that comes to those who accidentally erase a master diskette.

In Section 1C, we found out that the GRC works. Great! Now try to contain your enthusiasm just a little bit longer as we make a copy of the master diskette using the following procedure:

1. Remove the GRC diskette from the disk drive and turn off the Apple's power switch.
2. Insert an Apple DOS 3.3 System Disk (which should be provided with the Apple) into the disk drive, close the disk drive door, and turn on power to the Apple. The light will come on, and the disk drive will whirr.
3. The disk drive light will go off, and you will see a

right bracket ( ) on the screen, with a flashing rectangle (called the cursor) to the immediate right of the bracket.

4. Type: **LOAD COPYA**

5. Press the RETURN key, which is located towards the right-hand side of the Apple keyboard. The disk drive will whirr, and the light will come on.

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Important: For the remainder of this manual, letters which you need to type in will be in **BOLD**. Also, whenever you see (rtn) this means press the RETURN key; CTRL means press the CTRL key, RESET means press the RESET key, and ESC means press the ESC key.  
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6. The bracket and flashing cursor will re-appear. Type: **RUN (rtn)**

The disk drive will again do its flash and whirr routine.

7. The screen will now say **APPLE DISKETTE DUPLICATION PROGRAM, ORIGINAL SLOT: DEFAULT = 6**. Now press (rtn). The screen will add the line **DRIVE: DEFAULT = 1**. Press (rtn) again. The screen will add the line **DUPLICATE SLOT: DEFAULT = 6**. Press (rtn) again. The screen will add the line **DRIVE: DEFAULT = 2**. If you have two disk drives, type (rtn). If you have a single disk drive, type **1**, then type (rtn). The previously mentioned line will now say **DRIVE: 1**.

What all this means is that we've told the Apple the drive we want to copy from, and the drive to which we want to copy. The bottom of the screen will say -- **PRESS 'RETURN' KEY TO BEGIN COPY** --, so press (rtn) and let's forge ahead.

8. The screen will now say **INSERT ORIGINAL DISK AND PRESS RETURN**. Open the disk drive door, remove the DOS 3.3 system diskette from the disk drive, and pop in the GRC master diskette. Close the door and press (rtn). The disk drive will whirr and the screen will say **READING**.

9. The screen will now say **INSERT DUPLICATE DISK AND PRESS RETURN**. Open the disk drive door, remove the GRC diskette from the disk drive, and pop in your "working" diskette to which you want to copy the GRC program. Close the door and press (rtn). The disk drive will whirr and the screen will say **FORMATTING**.

10. The screen will now say **INSERT ORIGINAL DISK AND PRESS RETURN**. Open the disk drive door, remove your working diskette from the disk drive, and pop in the GRC diskette. Close the door and press (rtn). The disk drive will whirr and the screen will say **READING**.

11. The screen will now say **INSERT DUPLICATE DISK AND PRESS RETURN**. Open the disk drive door, remove the GRC diskette from

the disk drive, and insert your working diskette. Close the door and press (rtn). The disk drive will whirr and the screen will say WRITING.

12. Repeat step (10).

13. Repeat step (11).

14. Repeat step (10).

15. Repeat step (11).

16. Repeat step (10).

17. Repeat step (11).

18. The screen will now say INSERT ORIGINAL DISK AND PRESS RETURN. Open the disk drive door, remove your working diskette from the disk drive, and insert the GRC diskette. Close the door and press (rtn). The screen will now ask DO YOU WISH TO MAKE ANOTHER COPY? If you have the patience to do so, type Y (rtn), press (rtn) again, make sure that the original (GRC) diskette is in the drive, close the door, press (rtn) once more, go back to step (9) above, and proceed from there.

If you can't wait to start playing with the GRC, we certainly understand; when the screen asks DO YOU WISH TO MAKE ANOTHER COPY?, type N (rtn). You will then see the right-hand bracket and flashing cursor mentioned back in step (3) of the Initial System Test.

(Do, however, come back to this section eventually and copy a bunch of diskettes so that they're ready to go when inspiration strikes. Be sure you label each diskette to make it easier to find particular compositions later on. Write on an adhesive label first then affix the label to the diskette sleeve; writing directly on to the diskette can damage it.)

To get back into the GRC from the copy program:

1. Insert a working diskette into the drive.

2. Type: **PR#6**

The disk drive will whirr, and the screen will display the FUNCTION MENU. If the screen does not display the menu then leave the diskette in the drive, turn the computer off, wait a few seconds, then turn the computer back on again.

## 1E GRC BASICS

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You'll be happy to know that the hard part is over...now we're almost ready to play. Here are some definitions:

File: Your computer stores blocks of information (such as measures or songs) on diskette as files -- not unlike the files you find in a file cabinet, except that these are electronic instead of comprising sheets of paper. Each file should have its own name so that you can unambiguously refer to it. Files may be stored on diskette, deleted from the diskette, or renamed at almost any time during operation of the GRC.

Function Menu: The Function Menu (or menu for short) is what appears on the screen when you first call up the GRC program, and lists the five basic GRC functions.

System reset: Resetting the system lets you exit from a particular GRC function back to the Function Menu, from which point you can select a different GRC function. To reset an Apple II+, press **RESET**. To reset an Apple IIe, press the **CTRL** key and while holding this key, press **RESET**.

System reset also works as a "panic button". If at any time you find yourself lost in the program, reset the system and you will be able to return to the Function Menu (however, resetting does erase whatever you were working on at the time of the reset unless you had previously saved your work on diskette).

## 1F THE FIVE MAIN GRC FUNCTIONS

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The menu lets you choose from five options:

1) Measure Writer. This lets you compose and edit individual measures of rhythm via the computer's joystick-controlled graphics display. Measures can be named, then stored as files on diskette.

2) Segment Writer. You may combine small groups of measures to form a larger rhythmic unit called a segment. Segments can be named, then stored as files on diskette.

3) Song Writer. This function combines measures and segments together to form a complete song. Songs can be named, then stored as files on diskette.

4) Song Player. This plays back the rhythms you programmed using the previous functions. The screen displays each measure as it is being played.

5) Utilities. This function allows for boring (but useful)



operations such as listing, renaming, and deleting files.

You enter any function from the main menu by typing the appropriate number (as indicated on the screen, next to the function name). You exit any function with a system reset. Note that when you reset, you lose anything you were working on unless you save it first.

So far, so good. Let's write a measure.



**SECTION 2: MEASURE WRITER**

## 2A GETTING STARTED WITH MEASURE WRITER

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From the main menu, type 1. The screen will ask you to wait, then say:

ENTER MEASURE NUMBER  
?

Give your measure a number between 1 and 999; for now, type 1 (rtn). Next, the screen will say:

ENTER MEASURE LENGTH 1-4  
?

This sets the number of beats in the measure. Let's be traditional and go for four beats per measure, so type 4 (rtn). Keep your eye on the screen for a tasty visual display that looks like something out of Star Trek II; after a few seconds of this, the Measure Writer Grid appears.

## 2B THE MEASURE WRITER GRID

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The left hand side of the grid lists the various Drumulator sounds. The lines to the right of each sound are divided into four smaller lines; each line represents one beat (a quarter note). There is also a white "blip" underneath the middle of each of the four small lines, as well as another blip at the far left of each line and at the junction of the four smaller lines. These blips indicate where you may write or erase drum notes, and correspond directly to the chosen auto-correct setting (described later). In this case, the auto-correct setting is eighth notes so there are eight blips per line. If auto-correct was set to sixteenth notes, there would be sixteen blips per line.

You will also see a small diamond-shaped cursor flashing at the top left-hand corner of the screen. If this cursor is flitting about erratically, make sure that the joystick connection is good; if the connection appears to be all right, then run the joystick calibration procedure mentioned in Section 1C and described more fully in section 5D.

The text at the bottom of the grid provides the following information:

1. The measure number (MEASURE: 1).
2. Measure length (LENGTH: 4).
3. Line resolution (LINE RES.: 8). This indicates the

auto-correct setting for the line where the cursor currently resides.

4. The current volume level (CURRENT LEVEL: 11). In other words, if you were to program a drum beat right now, it would be at this volume level. Like the Drumulator, the level is given in Drumulator Volume Units (DVU) with 15 being the maximum volume.

The row of asterisks along the bottom indicates that you are in EDIT mode.

## 2C MOVING THE CURSOR

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To send the cursor in a particular direction, move the joystick in the same direction. If you move the cursor off the right side of the grid, it will return back to the beginning of the line on the left side of the grid. If the cursor goes off the top, it will re-appear at the bottom of the grid and if it goes off the bottom, it will re-appear at the top.

## 2D WRITING AND ERASING NOTES

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An Apple-compatible joystick includes two pushbuttons. On Kraft and Hayes model joysticks, these are built into the base and are different colors. On TG model joysticks, one pushbutton is on the top of the joystick and the other is built into the base.

What we call pushbutton 0 (PBO) is the red button on a Kraft/Hayes joystick and the base button on a TG joystick. What we call pushbutton 1 (PB1) is the dark-colored button on a Kraft/Hayes joystick and the top button on a TG joystick.

To write or erase a note, position the cursor at the desired beat on the line to the right of the desired sound. Pressing PBO will write a note (if none exists), or erase an existing note. If you continue to hold PBO down and move the cursor, you will write or erase a string of notes.

Move the cursor up to the bass drum line and practice writing a simple part (or complex; we won't stop you).

## 2E CHANGING LEVELS

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To change levels, hold down PBI and watch CURRENT LEVEL: towards the bottom of the screen. Push the joystick away from you to increase level; pull the joystick towards you to decrease level.

To change the level of an existing note, first set the desired level as described above, then erase the note and re-write it with the new level value. You can change the level of a string of notes by holding down PBO and going over the string twice -- once to erase the notes, and once again to re-write them with the new levels.

The length of each note's tail gives an indication of level, with each dot in the tail representing a level increase of 2 Drumulator Volume Units (DVU). The maximum is 15 DVU, and the minimum is 1 DVU (unlike the standard Drumulator, 0 DVU is not used by the GRC).

## 2F CHANGING AUTO-CORRECT

---

Each sound line can have its own auto-correct value.

1. Move the cursor at the beginning (downbeat) of the measure.
2. While holding the joystick to the left, press PBO to decrease the auto-correct value and PBI to increase the auto-correct value. LINE RES.: (towards the bottom of the screen) will show the new value, and the blips which indicate possible cursor positions will change to reflect the new auto-correct setting. Unlike the Drumulator, the GRC allows for half-note and quarter note triplets, but does not allow for hi-resolution mode.

Note that changing auto-correct will not change the timing of existing notes; however, to erase a note a blip must exist under the note to be erased. Example: If you record a rhythm in eighth note triplets, you will not be able to erase all the notes if your auto-correct value is eighth notes. You would have to select an auto correct of eighth notes triplets, although you could also use an auto-correct setting with higher resolution (such as sixteenth-note or thirty-second note triplets).

Now play around with the joystick and write a sample Drumulator part. When you've finished, play it back as described in the next section.

## 2G PLAYING THE MEASURE

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Use the computer keyboard, not the joystick, to select this function. Type P, and the screen will say:

ENTER TEMPO (40 - 200)  
?

Type in a tempo between 40 and 200 on the keyboard, then press (rtn). The measure will play, accompanied by a cursor moving along the bottom of the screen to show where you are in the measure.

You now have three options. You can:

1. Return to EDIT mode by typing E;
2. Change the tempo by pressing (rtn), typing the new tempo, and pressing (rtn) again to resume playing; or
3. Typing S for step play, which is a useful function for checking specific edit points and mixes. Holding the joystick to the left will now move the cursor to the left, while holding the joystick to the right will move the cursor to the right. Leaving the joystick centered will keep the cursor stationary. Tapping the joystick to the right or left lets you move the cursor a step at a time. If the cursor drifts around of its own accord, run the joystick calibration procedure mentioned in Section 1C and described more fully in section 5D.

If you want to exit step play to play the measure at the normal tempo, type N. If you want to return to EDIT mode, type E.

## 2H LOADING AND SAVING MEASURES

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To save a measure on diskette:

1. Make sure you are in EDIT mode (as indicated by the row of asterisks along the bottom of the screen).
2. Type S; the disk drive will become active. Unless you try to save a measure which has the same number as an existing measure, the measure you want to save will be stored on diskette. The file name which identifies the measure is the same as the measure number.
3. If you try to save a measure that has the same number as an existing measure, the GRC will say:

MEASURE ALREADY EXISTS -  
SHOULD I REPLACE IT?  
(TYPE Y OR N)

Type Y if you want to replace the previously stored measure, N if you want to keep the previously stored measure. If you want to store the new measure but not replace the existing measure, you can change the number of the measure to be saved (see Section 2I) and save the measure under this new file name.

To load a measure from diskette:

1. Make sure you are in EDIT mode (as indicated by the row of asterisks along the bottom of the screen).

2. Type L. The screen will ask:

ENTER MEASURE NUMBER  
?

3. Type in the measure number followed by (rtn), and the diskette will read the measure information back into the GRC.

The GRC includes an automatic back-up feature whereby any measure already in the system is saved under the measure file name 0 before the new measure is loaded. Thus, if you were working on a particularly complex measure and forgot to save it before calling up the next measure, you can simply load measure 0 and the back-up file will appear. Do not number any measure as 0; let the GRC reserve this measure number for its back-up function.

## 2I CHANGING CURRENT MEASURE NUMBER

---

There are generally two reasons for changing a measure number. The first was described above, where you accidentally chose an existing measure number for a new measure number. The second occurs if you want to create a new measure which is very much like the measure you are working on, but with a few minor differences. After saving the original measure, you can then change the number of that measure, make the desired changes, then save the new measure on diskette under the new number.

To change the current measure number:

1. Check that you are in EDIT mode (as indicated by the row of asterisks along the bottom of the screen).

2. Type C. The screen will ask:

ENTER MEASURE NUMBER

?

3. Type the new measure number followed by (rtn). The screen will show the updated measure number.

## 2J DELETING MEASURES

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To delete a measure while in EDIT mode:

1. Type D. The screen will ask:

ENTER MEASURE TO DELETE!

?

2. Type the measure number followed by (rtn). The screen will now ask:

DO YOU REALLY WANT TO DELETE MEAS. (number of measure)?  
(TYPE Y OR N)

3. Type Y if you want to delete the measure, N if you're having second thoughts about whether you really want to trash that measure on which you worked so hard. Typing either one will return you to EDIT mode, where you can resume editing the measure which you were working on prior to calling up the delete command.

## 2K PRINTING OUT YOUR MEASURE

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The GRC is such a wonderful program that if you have a Grappler+ interface board for your Apple plugged into Slot 1 and an Epson FX-80 printer, you can even print out the screen measure display by doing the following:

1. Make sure you are in EDIT mode (as indicated by the row of asterisks along the bottom of the screen).

2. Type H. Unless you have the appropriate interface card, nothing will happen; otherwise, your printer will spring to life. Upon completion of the print you will return to EDIT mode.

## 2L STARTING A NEW MEASURE

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Now we know how to write, edit, load, save, delete, change the number of, and print out a measure. After doing all this, you are probably ready to start work on a new measure. However,



note that you must first save any measure on which you are currently working to diskette (important)! Otherwise, starting a new measure will erase the measure on which you were working. To start a new measure:

1. Make sure you are in edit more, then press the ESC key (towards the left-hand side of the Apple keyboard). The screen will say:

ENTER MEASURE NUMBER  
?

2. Type the new measure number followed by (rtn). If you hit an invalid character, the screen will say REENTER?

3. After entering the new measure number, the screen will say:

ENTER MEASURE LENGTH 1-4  
?

4. Enter the new measure length followed by (rtn), and you will be ready to start writing a new measure.

Note: If you enter a number for an existing measure, you will erase that measure as soon as you complete step (4). If you suspect that you may have called up an existing segment, do a system reset before completing step (4), re-enter Measure Writer, and start over.

**SECTION 3: CREATING SEGMENTS AND SONGS**

### 3A CREATING A SEGMENT

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You can combine individual measures into longer rhythmic groups called segments. Measures can also be repeated by using repeat commands in much the same way that a stand-alone Drumulator can repeat segments while in song mode. Unlike measures, which are identified by numbers, segments are identified by a single letter. However, you cannot use the letters S, M, and R as segment names since these are reserved by the computer for other uses. To create a segment:

1. If you are using a function other than Segment Writer, press and hold **CTRL** then press **RESET**. This returns you to the main Function Menu, where you can type 2 to select the segment writer function.

2. The screen will ask you to:

ENTER SEGMENT LETTER

If you enter S, M, or R, the screen will ignore you and wait for a valid letter. For now, type A. The screen will say:

ENTER EACH MEASURE IN THIS SEGMENT

TERMINATED BY A RETURN

\*\*\*\*\*

3. Type the number of the first measure that makes up the segment, then press **(rtn)**.

4. Type the number of the next measure that makes up the segment, then press **(rtn)**.

5. Continue typing measure numbers followed by **(rtn)** until you have entered all the measure numbers in the segment.

6. To repeat a measure, type the measure number followed by **R** then the number of repeats. For example, typing **1R1 (rtn)** would play measure 1 then repeat it once. Had you typed **1R5 (rtn)**, measure 1 would play once then repeat five more times.

### 3B EDITING AND SAVING A SEGMENT

---

To save a segment, press and hold **CTRL** then press **S**. The segment will be stored under the appropriate letter name. If you want to exit Segment Writer mode without saving the segment, do a system reset (press and hold **CTRL** then press **RESET**).

If a segment already exists on diskette with the same letter name, the screen will ask:

SEGMENT ALREADY EXISTS-  
SHOULD I REPLACE IT?  
(TYPE Y OR N)

Type Y to replace the existing segment, N if you don't want to replace the existing segment. If you type Y, the new segment will be saved on diskette and the screen will ask:

ENTER SEGMENT LETTER

If you want to create another segment, assign it a letter and proceed from this point; otherwise, reset the system to return to the Function Menu. If you type N, the previously stored segment will remain stored on the diskette, and the current segment you have been working on will be erased. The screen will now say:

ENTER SEGMENT LETTER

You may enter a new segment at this point, or do a system reset to return to the main menu.

Note: You cannot edit a segment while in Segment Writer mode. If you want to change a previously stored segment, write a new segment with the same letter name and save it on diskette. This will erase the old segment and replace it with the edited version.

### 3C WRITING A SONG

---

The GRC creates songs by combining individual measures and segments. The procedure is quite similar to writing songs on a stand-alone Drumulator, except that being able to include individual measures as well as segments adds extra flexibility.

There are three songwriting modes: ADD (where you add together the various segments and measures to make a song), SCROLL (which allows you to review the segments and measure in the song), and EDIT (which -- as you might suspect -- lets you edit the song.

To get into ADD mode to write a song:

1. If the screen does not show the main Function Menu, reset the system and type 3. If the screen is already showing the main Function Menu, simply type 3. The screen will then ask you to wait.

2. Next, the screen will ask:

SONG NAME ?

If you are working on a new song, type in the name of the

song followed by (rtn). The name can be up to 21 characters long (including spaces). You cannot use numbers or punctuation symbols in a song title.

After typing in the song name, press (rtn). The screen will indicate that you are in ADD mode, and show the first step of the song as:

1---

This will be followed by a flashing cursor. The step number is analogous to the step number of a stand-alone Drumulator in song mode.

If you want to edit an existing song rather than write a new song, type in the name of the existing song followed by (rtn). Then press and hold CTRL and type L. This will load the existing song; proceed to the Section 3E for information on how to edit the song.

3. Enter the first step of the song. If the first step is a measure, type M, followed by the measure number, followed by (rtn). If the first step is a segment, type S, followed by the segment letter, followed by (rtn). If you enter something illegal (such as a segment letter that is not preceded by the letter S), the computer will beep and the screen will reject your entry.

4. As with the stand-alone Drumulator, while in Song Writer mode you can enter repeat symbols to repeat a particular segment, measure, or group of segments and/or measures.

To enter a Repeat Start command at a song step, type R followed by (rtn). The screen will indicate this song step as REP START.

Enter the segments or measures to be repeated, then enter the Repeat End command by typing R, followed by the number of times the loop is to repeat, followed by (rtn). The screen will indicate this song step as REP., followed by the song step where the repeat starts, followed by the number of times the loop is to be repeated. If no repeat start has been entered, Song Writer will automatically insert one at the beginning of the song (this does now show up on the screen, however).

### 3D SAVING, LOADING, AND LISTING SONGS

---

While in ADD mode, you can save a song to diskette, load a song from diskette in order to edit it or review its steps, or list the songs currently stored on diskette.

To save a song:

1. Press and hold CTRL, then type S. The current song will be saved on diskette.

2. Song Writer will then ask for a new SONG NAME, at which point you may write a new song. If you want to return to the main Function Menu, reset the system.

To load a song:

1. Select Song Writer mode from the Function Menu.

2. When Song Writer asks for a new SONG NAME, enter the name of the song you want to load followed by (rtn). The screen will show:

1---

You could now write a new song; however, if you want to load an existing song, press and hold CTRL then type L. The song steps will appear on the screen, and you will be in SCROLL mode. To review the steps in the song, refer to Section 3F on scrolling.

3. To edit the newly loaded song, type E to leave scroll mode, and refer to Section 3E on editing. To play the song, refer to the Section 4A on Song Player mode.

To list the measures, segments, and songs on the diskette, you must be in ADD mode. To return to ADD mode from SCROLL mode, type E then A. To return to ADD mode from EDIT mode, type A. After confirming that you are in ADD mode, press and hold CTRL then type C (short for catalogue). After looking over the catalogue of titles, press (rtn). You will return to the song you were working on while in ADD mode, except that you will now be in SCROLL mode. At this point you can either scroll through the song or edit the song.

### 3E EDITING A SONG

---

Edit mode allows you to insert, delete, change, or add song steps. After typing E in order to enter EDIT mode from scroll mode, you will see a flashing cursor on the screen. Pushing the joystick away from you will move the cursor up through the song step lines, while pulling the joystick towards you will move the cursor down through the song step lines. If the joystick is stationary the cursor should be stationary as well; if the cursor drifts, run the joystick calibration procedure mentioned in Section 1C and described more fully in section 5D.

To insert a song step:

1. Check that you are in EDIT mode, then move the cursor to

the song step immediately following where you want to insert the new step. Type **I**. The screen will go blank, then re-appear; the cursor will flash at the inserted song step.

2. Enter the appropriate song step information by typing either **M** followed by a measure number and **(rtn)**, **S** followed by a segment number and **(rtn)**, or one of the repeat commands followed by **(rtn)**.

3. After pressing **(rtn)**, Song Writer reverts to scroll mode. To add another song step, type **E** and move the joystick to the appropriate line as described in step (1) above. Enter the desired song step as described above in step (2).

4. To save the edited song, type **E** to return to EDIT mode, then type **A** to return to ADD mode. Once in ADD mode, you can save the song as described above in Section 3D.

To delete a song step:

1. Make sure you are in EDIT mode. If you are in ADD mode, press and hold **CTRL** then type **E**. This will put you in SCROLL mode. Once you are in SCROLL mode, type **E** to enter EDIT mode.

2. Move the cursor to the song step you want to delete, then type **D**. The screen will go blank, then re-appear with the selected step deleted.

3. After deleting the step, Song Writer reverts to scroll mode. To delete another song step, type **E** to return to edit mode, move the joystick to the appropriate line, and delete the song step as described in step (2) above.

4. To save the edited song, type **E** to return to EDIT mode, then type **A** to return to ADD mode. Once in ADD mode, you can save the song as described above in Section 3D.

To change a song step:

1. While in EDIT mode, move the cursor to the song step you want to change, then type **C**. The song step will disappear, and the flashing cursor will indicate that it's time to enter the different song step.

2. Enter the desired song step by typing either **M** followed by a measure number and **(rtn)**, **S** followed by a segment number and **(rtn)**, or one of the repeat commands followed by **(rtn)**.

3. After pressing **(rtn)**, Song Writer reverts to scroll mode. To change another song step, type **E** to return to edit mode, and move the joystick to the appropriate song step as described in step (1) above. Enter the desired song step as described above in step (2).

4. To save the edited song, type **E** to return to EDIT mode,

then type A to return to ADD mode. Once in ADD mode, you can save the song as described above in Section 3D.

To add additional song steps:

1. Make sure you are in ADD mode. If you are in SCROLL mode, type E to return to EDIT mode; once in EDIT mode, type A to enter ADD mode.

2. The screen will go blank, then the cursor will jump to the end of the song. Continue adding song steps as described in Section 3C.

### 3F SCROLLING THROUGH A SONG

---

The display can only show 17 song steps at one time, however, in SCROLL mode you may scroll through the song in order to display the "off-screen" song steps.

Pulling the joystick towards you scrolls the song up, with the next line of the song appearing at the bottom of the screen. Pushing the joystick away from you blanks the screen at first, then scrolls up through the song. You will only see one line at a time displayed on the screen; however, shortly after you release the joystick the screen will display as many song steps as will fit on the screen. It may take you a while to get the hang of scrolling in the up direction, but practice makes perfect.

You can scroll through a song with less than 17 song steps, but no one here at E-mu can understand why anyone would want to.

### 3G ENTERING SCROLL MODE FROM EDIT OR ADD MODE

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While in EDIT mode, you may enter SCROLL mode by pressing ESC.

While in ADD mode, you may enter SCROLL mode by pressing and holding CTRL then typing E.

### 3H PRINTING OUT A SONG

---

If you have the appropriate equipment described in section 2K, you can print out the song step listing by typing H while in EDIT mode. Remember that you enter EDIT mode from SCROLL mode by typing E, and that you enter EDIT mode from ADD mode by first

entering SCROLL mode (press and hold CTRL then type E), then  
typing E.

**SECTION 4: PLAYING A SONG**

#### 4A PLAYING A SONG

---

If you are not already at the Function Menu, reset the system. Then type 4 to enter Song Player mode.

The screen will ask:

ENTER SONG NAME

Type the song name, followed by (rtn). The screen will then ask:

ENTER TEMPO (40-240)

Type in the tempo then press (rtn). The disk drive will whirr, the screen will load the measures and segments required for the song, then draw a grid. The lines below the grid will display the song name, the measure number currently being played, and the tempo. To play your composition, hit the keyboard's space bar. The grid will display each measure as it is playing.

After the song has played, you can "play it again, Sam" by hitting the space bar. If you want to play a different song, reset the system, enter Song Player mode, and repeat the steps given in this section to load and play a new song.

**SECTION 5: USING THE UTILITIES**

**SECTION 5: USING THE UTILITIES**

## 5A UTILITY FUNCTIONS

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Utility functions allow you to access some of the Apple's programs from the GRC. They allow you to do a variety of useful functions without having to change from the GRC diskette to the Apple System Disk. Note, however, that many of these utilities are also available within individual functions; you will probably want to use the utilities most when doing "file management" -- cleaning out old files, renaming songs, seeing what's on the diskette, and so on.

## 5B CATALOG

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To see a listing of all the files currently on the diskette, type **C**. Note that the measure numbers are preceded by **MEAS.** and that the segment letters are preceded by **SEG**. If there are more files than can fit on the screen, press the **space bar** to see the additional files. To return to the utilities menu, press (**rtu**).

## 5C ERASE SONG, SEGMENT, OR MEASURE

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To erase a song, segment, or measure, type **E**. You may then enter a measure number (make sure you precede it with **MEAS.**), a segment letter (make sure you precede it with **SEG.**), or a song name.

The screen will then warn you that you are about to erase something, and asks:

ARE YOU SURE ? (TYPE Y OR N)

If you type **N**, you will return to the utilities menu. If you type **Y**, what you wanted erased will be gone forever and you will return to the utilities menu.

## 5D JOYSTICK TRIM ADJUST

---

This important adjustment must be made for the joystick to work properly with the GRC.

From the utilities menu, type **J**. The screen will say **ADJUST JOYSTICK TRIMMERS TO READ 125-130**. Your joystick should have two trimmers present; adjust them until you obtain the desired readings, as shown on the screen. This calibrates the joystick

and also verifies that it is working properly.

After calibrating the joystick trimmers, press (rtn) to return to the utilities menu. Since proper calibration is vital to convenient GRC operation, we suggest running the joystick calibration occasionally. If you know that the trimmers have been moved, make sure you run the joystick trim adjust procedure before composing with the GRC.

#### **5E PRINT DISK CATALOG**

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If you have a printer interface card plugged into Slot 1, and a suitable printer, you can print out a catalog of the files on diskette by typing P from the utilities menu.

#### **5F RENAME A SONG**

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Yes, there is a way to rename songs but this must be done from the utilities menu. To rename the song, type R. The screen will ask SONG TO RENAME? Type the name of the song, and the screen will display the old name and ask you to type in the new name. After typing in the new name, the screen will ask ARE THESE NAMES CORRECT? (TYPE Y OR N). If N, you return to the utilities menu. If Y, The song is renamed and you then return to the utilities menu.



