REFERENCE MANUAL FOR THE REGISTERED USER'S VERSION OF THE FGM

# the Fun Graphics Machine v6

A MULTI-FEATURED PROGRAM FOR
CREATING & MANIPULATING
GRAPHICS & HI-RES SCREENS
IN WAYS THAT NO PERSON
HAS EVER TRIED BEFORE⌣

## USES

SIGNS
FLYERS
POSTERS
BROCHURES
SCORE CARDS
NEWSLETTERS
CUSTOM LABELS
GREETING CARDS
CUSTOM CALENDARS
INSTRUCTIONAL DEMOS
ANIMATED CORRESPONDANCE
LEARNING ABOUT GRAPHICS
GRAPHICS CONVERSION
KEYBOARD OVERLAYS
BUSINESS CARDS
DISK ENVELOPES
VIDEO TITLING
DISK LABELS
REPLY CARDS
POST CARDS
QSL CARDS
FORMS
FUN⌣

## FEATURES

**LOAD PRINT SHOP & PRINT MASTER** GRAPHICS FILES, HI-RES, **DOODLE & KOALA** SCREENS, **BUSY BEE** CLIP ART, **NEWSROOM** PHOTOS & BANNERS, **FGM** CHARACTER SETS & GRAPHICS, **HANDYSCANNER-64** FILES, **MORE!**

**SAVE** GRAPHICS FOR USE WITH **PS & FGM**, HI-RES & **DOODLE** SCREENS, **BUSY BEE** CLIP ART, CHARACTER SETS FOR USE IN **FGM**.

**SCREEN MANIPULATION:** WYSIWYG, 3 WORK SCREENS, LINKED SCREENS, FLIP, INVERT, REVERSE, EXPAND, REDUCE, STRIP GRAY, BORDERS, STRETCH, SHRINK, PIXEL EDITOR, ADD TEXT & GRAPHICS, SMOOTHING.

**GRAPHICS MANIPULATION:** FLIP, INVERT, REVERSE, CROP, ROTATE, FASTEN TO SCREENS, **CAPTURE** FROM SCREENS, **PS** COMPATIBLE.

**PRINTERS:** CBM 1525 & EMULATING, EPSON, GEMINI, STAR, C.ITOH, PANASONIC & EMULATING.

**DEMOS:** RECORD & PLAY YOUR OWN RECORDED KEYSTROKES.

## ↓ Chapter Index ↓

Welcome to the FUN GRAPHICS MACHINE v.6. This new version of the FGM has been in the making for several years and is a major update over earlier versions of FGM. It includes many new features to make it faster, smoother, friendlier, and more powerful. FGM has been well tested by some very *ruthless* and *fearless beta testers*.

This one program will let you use your COMMODORE 64 to do things that those with Amigas, Apples and IBM's can't do as quickly or easily. Show off your C64! Labels (any size!) should be a *snap* after you do a couple, and the higher powered systems are unlikely to do any better. Most computer systems are rendered pretty equal by their printers, just as a good sound system is no better than the speakers.

Please don't let yourself become overwhelmed by all the of things that FGM will let you do. FGM can be as simple or complicated as you wish. Fasten a PS graphic to the screen with a word or two, or do a full newsletter or brochure. Crank out custom labels by the thousands. With FGM you can do nearly anything with hi-res screens. Many of FGM's functions simply don't exist in other programs. If a hi-res function exists in another program but not in FGM it's often possible to use FGM's screens in the other program and vice/versa.

Perhaps FGM's biggest fault is that it does too much. There are some who would rather a program did as much of the thinking and creating for them as possible. *FGM isn't quite like that.* I've given you as much control as possible over the hi-res screens, but I leave it for you to create on them. Yes, the number of *keystroke commands* available on the HI-RES EDITOR can be daunting, but with fewer you'd have less power. Note that the *menu screens* (load, save, print, etc.) do not require you to use any *keystroke commands*; just make your selections and follow the prompts. While on the *menu screens* the only way you can "harm" a hi-res screen is by loading another screen over it.

You definitely don't need to be an artist to create screens with FGM; FGM lets you use *pre-drawn graphics and screens*, and there are many *thousands* of these in the *public domain*. You can also create some amazing screens by just using what's in the program when you load it up. EXPERIMENT! PLAY! TRY THINGS; "I WONDER WHAT WOULD HAPPEN IF I PRESSED..."! CLOSE YOUR EYES AND PRESS KEYS AT RANDOM! LET YOUR CAT WALK ON THE KEYBOARD! You aren't going to lock-up or crash FGM, and you *might* even create something useful. Try anything you want; you can always get back to the menu by pressing RETURN.

I have put a lot of time into error trapping FGM. This means I have tried to make it as *idiot-proof* as possible (including from myself:). With menu selections the *defaults* are usually the normal/best choices (just press RETURN). If you enter unacceptable values they will be rejected. You can usually cancel out of anything, and pressing RETURN a few times will always bring you back to the Main Menu with no harm to anything ("RETURN TO HOME"). Things that do "massive harm" to a screen (ie: erasing it) will ask you to confirm with a Yes.

If something doesn't work as you wanted please refer to the INDEX; maybe I've included a reference to a page that will quickly help you. The functions do work as described in the manual. At worst, darest I mention it, you could *read the manual:*).

Hoping that FGM helps to breath added life into your C64 and computing, I leave you with a sincere wish for HAPPY FGMing:). *Ron*
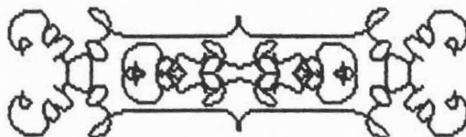
# Reference Manual for the
# Fun Graphics Machine
## # Registered User's Version 6 #

# Table of Contents

## FGM PRINTOUTS-INFO

**FRONT COVER (80%):** TWO SCREENS ACROSS (66 COL) BY FOUR SCREENS DOWN (87 ROWS), AT A DENSITY OF 90 DPI. DOUBLE PRINT WAS USED WITH 1/240" DOT ADVANCE & 1/216" LINEFEED ADVANCE BEFORE THE SECOND PASS (LF IS COMPENSATED FOR). THE TOP PART WAS DONE AS TWO SCREENS LINKED ACROSS, AND THE TWO COLUMNS BELOW WERE EACH DONE AS THREE SCREENS LINKED DOWN. THE SCREEN FILES WERE NAMED SO THAT THEY WERE ALL LINKED TOGETHER, AND THE PAGE WAS PRINTED USING JUST THE STARTING FILENAME. THE **TOC, KEYSTROKE SUMMARIES, INDEX & BACK COVER** WERE DONE IN A SIMILAR MANNER.

**TITLE PAGE (100%):** THREE SCREENS LINKED DOWN AT 80 DPI. THOSE SNAZZY LITTLE SCROLLS WERE DONE USING A PS GRAPHIC IN THE PD CALLED "CAROL"; FLIP-FASTEN, INVERT-FASTEN.

**FGM ADDICTION (90%):** PAGE 37. TWO SCREENS ACROSS BY THREE DOWN AT A DENSITY OF 120 DPI. ORIGINALLY DONE WITH V410.

**FGM/ATP MUSIC, JERRY'S MACHINE (100%):** PAGE 81. TWO ACROSS BY THREE DOWN AT 90 DPI. THE MUSIC & MACHINE IMAGES ONLY OCCUPIED ONE SCREEN EACH BUT WERE USED ON TWO SCREENS ACROSS BECAUSE I NEEDED MORE ACROSS-SPACE FOR THE TEXT.

**LETTERHEAD:** PAGE 111. FRED'S LETTERHEAD IS THREE SCREENS ACROSS AT 120 DPI. THE PAGE WAS REDUCED TO 80% AND THEN THE LETTERHEAD AND LABEL WERE PASTED ON.

**BUSINESS CARDS (66%/100%):** PAGE 112. CARDS ARE 2 ACROSS AT 90 DPI, REDUCED TO 66%. TEXT IS 1:1 AT 90 DPI.

**GREETING CARDS (100%):** PAGE 113. TWO SCREENS ACROSS BY THREE DOWN AT 90 DPI.

**THE PRE-LOADED GRAPHICS:** #1 IS A **SEMI-CIRCLE** AND SOME **ANGLED LINES**; USE FOR "DRAWING". #2 A **THE CAT** I SNAGGED HIM/HER/IT FROM THE PD SOME YEARS AGO. #3 IS THE **FGM DOG, SPARKY,** DRAWN BY **JERRY FREADMAN** AND NAMED BY HIS KIDS. #4 HOLDS **CHARACTER GRAPHICS** FOR USE AS BORDERS. #5 IS THE **FGM (C)** GRAPHIC, USEFUL FOR BORDERS AND SIZING THINGS. BUFFER #6 IS TEMPORARY; NO TELLING WHAT WILL BE IN IT.

## CHAPTER 1 :   *INTRODUCTION*

To "get started" with the FGM you simply need to load and run the BOOT
(load":*",8 and RUN), then select one of the four FGM SECTIONS. These
SECTIONS are explained on the following pages. If this is your first
time in FGM then you might want to select DEMO-ER and view the demos
on the flip side of the disk. Refer to page 71 for how to play demos.
For most other uses the CREATOR section is a good choice.

FGM can be roughly divided into three parts; the SECTIONS, the MENUS,
and the HI-RES SCREEN EDITOR.

SECTIONS (pg-4): Each of the FGM SECTIONS (ie: CREATOR, DEMO-ER,
CLIPART, PRINTER, and the READER utility) has its own strengths; ie:
CREATOR for loading/saving graphics and character sets, DEMO-ER for
record/playing demos, CLIPART for loading ".." clipart files and
smoothing, PRINTER for printing. All SECTIONS allow loading hi-res
screens, and all of the HI-RES EDITOR'S MODES are available in most of
the SECTIONS (the PRINTER SECTION lacks GRAB and PIXEL EDIT Mode).
Note that the only time the FGM program disk needs to be in the drive
is when going between SECTIONS.

MENUS: These are the text screens where you make selections from (ie:
load/save a graphic, screen or character set, go to another SECTION,
etc.). The MAIN MENU is the first menu that comes up after a SECTION
is loaded. Each SECTION has is own MAIN MENU and sub-menus).

HI-RES EDITOR: This is where you are when a hi-res screen is visible,
and is where you do things to the hi-res screens such as *fastening* or
*capturing* graphics, *writing text, pixel editing*, and everything else.

The HI-RES EDITOR has six MODES (pg-16, back cover). Each of the MODES
has different abilities (ie: TEXT Mode lets you type text onto the
screens, GRAB Mode lets you grab screen areas into a graphic buffer).
The HI-RES EDITOR is available while in any of FGM's SECTIONS.

IMPORTANT: When you first go the the HI-RES EDITOR the screens will
likely be filled with *GARBAGE*, or possibly with a screen left behind
by another program. To ERASE the visible hi-res screen so you can get
down to business; press Sh CTRL E, then press Y at the Y/N? prompt. To
view another of the three hi-res screens just press X.

USING THIS MANUAL: I have arranged this manual in the order of *most
frequent usage* (I hope). This chapter tells how to load FGM, and gives
an overview of the *four* SECTIONS. Chapter 2 is important because it
explains how to make MENU selections, and things you ought to know
about disk access (ie: *loading, saving, filenames*). The HI-RES EDITOR
is covered in Chapter 3. This is what you use for all of your hi-res
work. Chapters 4-7 cover FGM's four SECTIONS; CREATOR, DEMO-ER,
CLIPART, and PRINTER. The rest of the chapters cover a myriad of
things. The inside back cover has a SUMMARY of all of the hi-res
commands; these will likely be the most used pages.

You don't need to learn/memorize this whole manual in order to use
FGM, but you probably will have to refer to it often until you get
familiar with the program (that's one reason for the spiral binding:).
And please, do take advantage of the INDEX; although it doesn't cover
*EVERYTHING* it should help you to get around in the manual easier.

## < LOADING FGM >

Use load":*",8 to load the FGM BOOT. If the disk is in a drive that's
not device 8 then use that device number instead of the 8.

```
┌─────────────────────────────────────────┐
│  The FUN GRAPHICS MACHINE   v6.0         │
│     (c) 1991   Ron C. Hackley            │
│    PO# 1191, Roseburg, OR 97470          │
│                                          │
│       Reg. User's Version   #a000        │
│                                          │
│   ┌───────┐  ┌─────────┐  ┌────────┐     │
│   │ANYKEY │  │>CREATOR │  │RETURN  │     │
│   │  TO   │  │ DEMO-ER │  │  TO    │     │
│   │SELECT │  │ PRINTER │  │ LOAD   │     │
│   │       │  │ CLIPART │  │        │     │
│   │       │  │ SFINDER │  │        │     │
│   └───────┘  └─────────┘  └────────┘     │
└─────────────────────────────────────────┘
```

**1**
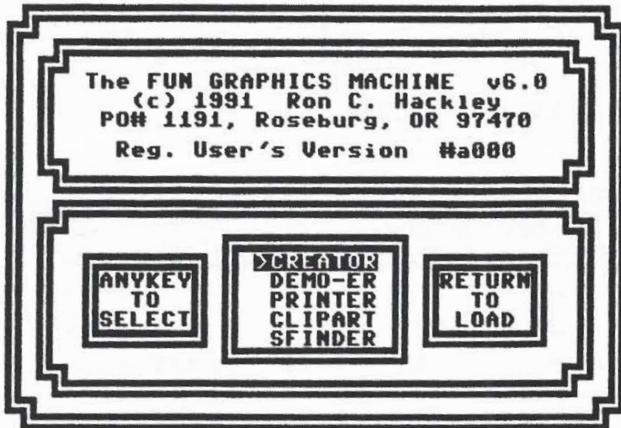
**AFTER THE BOOT LOADS, RUN IT.** A box with selections in it will be at
the lower-middle of the screen. Press any key (**ANYKEY**) except **RETURN**
and the bar will move through the selections. When the selection you
want is highlighted press **RETURN**. You may also use the **JOYSTICK** and
**FIRE BUTTON** (in port 2).

The first four selections are the four **FGM SECTIONS**. Once the FGM is
loaded you may go back and forth between these *sections* as long as the
**FGM PROGRAM DISK** is in the drive.

If this is your first time in the FGM then select DEMO-ER so you can
view the demos (if you wish). Then refer to the chapter on DEMO-ER for
instructions on ·playing demos, or just jump right in and see how your
intuition is (you can't hurt anything).

If you select SCREEN FINDER (SFINDER) then it will be loaded and run.
SCREEN FINDER is a "stand-alone" program that can help you to *CAPTURE
HI-RES SCREENS* that may have been left behind by other programs. See
HI-RES SCREEN FINDER in *CHAPTER 10*.

**FASTLOAD Y/N?:** After you select one of the *sections* you'll be asked if
you want to use the built-in *fastloader* (1541 only). Just press **RETURN**
if you don't and press Y if you do. The *fastloader* will only remain
active until FGM is loaded and will offer no speed-up after that. DO
**NOT** use the built-in fastload if you have a fastload cartridge.

**FGM** is a big program and can take up to a couple of minutes to load
(normal CBM slow-load). Most *fast-load cartridges* (or systems like
JiffyDOS) should load FGM *considerably* faster. As FGM loads the border
color will change as each module is loaded. You will also get the
normal CBM "loading *filename*" message so you'll know if an error
occurs. If you have problems loading FGM please refer to *PROBLEMS* in
the *APPENDIX* (pg 127).

## < FGM'S SECTIONS — OVERVIEW >

There are four main sections to FGM; CREATOR, DEMO-ER, CLIPART, and PRINTER. Although similar, each section has its own unique abilities. You may go between sections as needed as long as the FGM program disk is in the drive. The HI-RES SCREEN EDITOR is available in all four sections, although there are a few hi-res functions which are limited while in the CLIPART and PRINTER sections. Each FGM section has its own Main Menu and is covered in its own chapter.

```
FUN GRAPHICS MACHINE 'CREATOR' 6.0
    (c)1991 Ron C. Hackley  #0000

  1 LOAD A GRAPHIC FILE
  2 LOAD A HI-RES SCREEN
  3 LOAD A CHARACTER SET
  4 GOTO HI-RES SCREEN EDITOR

  5 SAVE A GRAPHIC
  6 SAVE A HI-RES SCREEN
  7 SAVE A CHARACTER SET

  8 CHARACTER EDITOR
  / LINK MENU
  0 DISK FUNCTIONS - DIRECTORY
  + PRINTER/OTHER OPTIONS

        SELECT  NUMBER
```

```
FUN GRAPHICS MACHINE 'DEMO-ER' 6.0
    (c)1991 Ron C. Hackley  #0000

  1 LOAD A GRAPHIC FILE
  2 LOAD A HI-RES SCREEN
  3 LOAD A CHARACTER SET
  4 GOTO HI-RES SCREEN EDITOR

  5 PLAY A DEMO
  6 SAVE A HI-RES SCREEN
  7 RECORD A DEMO

  8 LOAD COLOR EDITOR
  / LINK MENU
  0 DISK FUNCTIONS - DIRECTORY
  + PRINTER/OTHER OPTIONS

        SELECT  NUMBER
```

```
FUN GRAPHICS MACHINE 'ClipArt' 6.0
    (c)1991 Ron C. Hackley  #0000

  1 LOAD CLIP ART  FILE
  2 LOAD A HI-RES SCREEN
  3 SMOOTH WITH EXPAND: YES
  4 GOTO HI-RES SCREEN EDITOR

  5 SAVE CLIP ART
  6 SAVE A HI-RES SCREEN

  LAST CLEARED: 0

  / LINK MENU
  0 DISK FUNCTIONS - DIRECTORY
  + PRINTER/OTHER OPTIONS

        SELECT  NUMBER
```

```
FUN GRAPHICS MACHINE 'PRINTER' 6.0
    (c)1991 Ron C. Hackley  #0000

  1 PRINTER OUTPUT

  2 LOAD A HI-RES SCREEN

  3 PRINTER FILES

  4 HI-RES SCREEN FUNCTIONS

  / LINKS

  D DIRECTORY

  + CREATOR/OTHER

        SELECT  NUMBER
```

Most menu selections may be made by either pressing the appropriate number/character, or by using the CURSOR KEYS/JOYSTICK (port 2) to move the SELECT BAR over the desired selection and pressing RETURN or the FIRE BUTTON. The SELECT BAR defaults to #4 HI-RES SCREEN EDITOR so just pressing RETURN will take you to the hi-res screens.

## < FGM'S SECTIONS - OVERVIEW >

THE DIFFERENCES BETWEEN FGM'S FOUR SECTIONS:

1. CREATOR: This is FGM's "main section". The below three functions
are only available while in the CREATOR section:

                SAVING PS/FGM GRAPHICS
                SAVING CHARACTER SETS
                CHARACTER EDITOR


2. DEMO-ER: This section is where you RECORD and PLAY demos. All
hi-res editing functions are available. The only real difference
between CREATOR and DEMO-ER (other than the ability to record/play
demos) is that DEMO-ER does not have the functions listed above as
being exclusive to CREATOR.

NOTE: When in CREATOR and DEMO-ER the graphics and character set files
are READ instead of LOADED. This simply means that if you try to load
a graphic or character set file that's too big (an improper file) it
won't crash the program. Oversize SCREEN FILES will crash the program;
load oversize screens (ie: KOALA) from the CLIPART section.

3. CLIPART: This started as an FGM UTILITY but has become a section of
its own. This section contains a very handy SMOOTHING ROUTINE, and
will let you LOAD/SAVE RANGED AREAS of the screen in a compressed
format. It is hoped that the clip art files that FGM uses will be
compatible with clip art/programs that Eric Lee (BUSY BEE SOFTWARE &
The Write Stuff) is working on.

When HI-RES SCREENS are loaded using the CLIPART section they are READ
instead of LOADED. This means you can safely load oversize screen
files (ie: multi-color).

While in CLIPART most of the hi-res editing functions are available,
just like while in CREATOR and DEMO-ER. Screens may be loaded and
saved. Loading and saving of graphics and character sets is not
supported; these have been replaced with loading and saving of clip
art (ranged areas of the screen). The following hi-res functions are
not available while in the CLIPART section:

        GRAPHICS BUFFERS 5 AND 6 ARE CLEARED AND UNAVAILABLE!
        GRAB'S SCREEN ROTATE (11x11) IS NOT AVAILABLE
        ADJUST'S CAPTURE IS LIMITED TO 3 ROWS INSTEAD OF 4

4. PRINTER: This is where you go to print your screens. You can load
screens while in this section but loading of other files and saving of
files is not available. The HI-RES EDITOR is available but a couple of
the hi-res functions aren't, or are limited. The following hi-res
functions are not available when in the PRINTER section:

        NO GRAB (CAPTURE) MODE
        NO GRAPHICS BUFFER #6 (its contents are destroyed)
        NO PIXEL EDIT MODE (cursor will appear w/F7 though!)
        ADJUST MODE'S CAPTURE IS LIMITED TO 3 ROWS INSTEAD OF 4.

## < FGM'S SECTIONS - OVERVIEW >

**When on ANY of the MAIN MENUS the following keys may be used:**

CURSOR KEYS/JOYSTICK: Use these to move the SELECT BAR over a selection, then press RETURN or FIRE to select, OR press one of the numbers that corresponds to the menu selection.

; or D: Disk Directory. If *multiple drives* are being used and PROMPTS are OFF pressing D will prompt for DRIVE A B C and pressing ; won't (if PROMPTS are ON then you'll be prompted regardless of which you use).

@: Pressing the @ key will give you a COMMAND LINE for sending commands to the disk drive. If you press RETURN without entering anything then the *error channel* will be read and reported. If *multiple drives* are being used then you will be prompted "A or B or C" before the COMMAND LINE appears.

Sh Q: This will STOP the program. A *SYS* will be in the upper-left corner of the screen. Move the cursor over the *SYS* and press RETURN if you wish to *fully* QUIT FGM. Type RUN and press RETURN to re-start FGM. This is provided in case you have need to browse through the BASIC of a section. NOTE: Some cartridges may corrupt areas of memory that FGM uses when their commands are used.

To go between FGM's *sections* select + from the Main Menu of any *section*. A *sub-menu* will appear with choices of other *sections*. Select one of the choices and you'll be prompted to put the FGM PROGRAM DISK in the drive and press RETURN. Double-selecting/clicking the selection will do the same thing.

The FGM PROGRAM DISK must be in the drive in order to go between the *sections*. Once in a *section* the PROGRAM DISK may be removed and a DATA DISK put into the drive. If the PROGRAM DISK is not found in the drive when it's needed (ie: when going between *sections*) then you will be prompted to put it into the drive or press C to CANCEL.

IN SUMMARY: CREATOR will probably be best for most work since it lets you LOAD/SAVE PS/FGM graphics. All hi-res functions except smoothing are available. Use CLIPART if you want to load multi-color screens, load/save clip art files or use the SMOOTHING ROUTINE. The PRINTER section allows for most of the hi-res functions so for something like labels you can often do all of your work while in PRINTER (use CUSTOMIZER to install the default graphics that you want). DEMO-ER is used for recording/playing demos, of course. All hi-res functions are available just like in CREATOR.

The next chapter covers INPUT/OUTPUT (*keyboard & disk*), followed by the chapter on the HI-RES SCREEN EDITOR. This is because you will probably be referring to these two chapters the most. If you have just loaded one of the FGM sections then please refer to the chapter on that section.

## CHAPTER 2:      INPUT/OUTPUT (I/O)

### <  SELECTING  MENU  ITEMS  >

This is the most important I/O Section; how you tell FGM what to do.
With most of the prompts it should be pretty obvious what they want.
Most prompts default to either the last selection or the recommended
selection for that prompt.

Moving around FGM's Menu selections is fast and easy. Most selections
can be made using the RETURN key and several of the keys near to it;
your other hand can be free for munchies or whatever. Most selections
may also be made using just the JOYSTICK.

**ANYKEY**: This term is used widely in these docs but rarely will be seen
in the program. ANYKEY means that pressing almost any key will give
the desired response (ie: toggle YES NO). RETURN and RUN/STOP are the
two keys that should not be used as ANYKEY. RETURN will generally
select the highlighted item and RUN/STOP will usually cancel some-
thing. Any other key may be used. Note that some keys repeat and some
don't; non-repeating keys will stop as each selection is highlighted
and wait until you release/press the key again. Pick a key that you
like for ANYKEY and start using it (or them). The cursor keys are real
handy for ANYKEY on the C64. With the C128 an Icontroller can be handy
(the JOYSTICK can be used as ANYKEY).

**MENU SELECTIONS**: A SELECT BAR is available while on most of FGM'S
menus and may be used instead of pressing the number keys. To select
one of the menu selections use the UP/DOWN CURSOR KEYS or JOYSTICK to
move the bar over the desired selection and press either RETURN or
FIRE (the FIRE BUTTON on the JOYSTICK). If an invalid selection is
made (ie: selecting a blank row) or an invalid key is pressed (ie:
SPACE) the SELECT BAR will be returned to its default location which
is #4 HI-RES SCREEN EDITOR.

When the below prompts appear one of the items will be highlighted
(reversed). Press ANYKEY to move through the selections and RETURN to
select the reversed item.

**YES NO**: When this prompt appears the default selection will be
highlighted (reversed). To toggle between YES and NO press ANYKEY,
or tap the joystick right. To accept the highlighted selection
press RETURN or FIRE.

**A or B or C**: This prompt will appear before most disk accesses if
multiple drives are being used and PROMPTS are ON. Only A or B
will appear if two drives are being used. This prompt operates the
same as the YES NO prompt; ANYKEY to toggle and RETURN to select.

**ACR DWN**: This prompt stands for ACROSS or DOWN. It will appear
when you link the screens. This operates the same as the above.

**1 2 3 4 5 ALL**: This prompt will appear when you need to
select a graphic buffer to load/save. The default will be the
graphic buffer that's presently active. When loading/saving
character sets you'll get a similar prompt 1 2 3 ALL. These
operate the same as the above prompts.

## < SELECTING MENU ITEMS >

When a prompt appears that wants a *number* (ie: ROWS TO PRINT 25) you can select the default by pressing RETURN or FIRE.

When the *filename entry prompt* appears you can get a Selective Directory of files beginning with any *character-period* prefix by pressing either RETURN or FIRE.

When the *directory* is listing you can continue it by pressing SHIFT or JOYSTICK DOWN. STOP the listing by tapping RETURN, RUN/STOP, or FIRE. Move the SELECT BAR with UP/DOWN CURSOR or JOYSTICK. Select a file by pressing RETURN or FIRE.

JOYSTICK: The joystick should be plugged into PORT 2 (the port nearest to the ON/OFF switch). It is possible to go between sections, load files, and even print them using only the joystick. In most cases pressing the FIRE BUTTON at a menu prompt will do the same thing as pressing RETURN.

When the SELECT SCREEN prompt (for load/save/print) appears, moving the JOYSTICK RIGHT or using CURSOR RIGHT will do the same thing as pressing X. Once the screen you want is visible press RETURN or FIRE.

When on the hi-res screens the joystick operates a little differently. The joystick will move the *graphic/cursor* around. Holding the FIRE BUTTON down and then moving the JOYSTICK will *SCROLL* the screens like pressing F1-F4.

THE MOST COMMONLY USED KEYS while on the menus are shown below (for the C64). RETURN is a *safe* key; pressing it a few times will always return you back to the Main Menu of whatever section you are in. If you are listing a directory and want to cancel just press RETURN a couple of times.

```
  COMMONLY USED KEYS WHILE ON THE MENUS
  SEND                       WITH
  DISK      C      *          ↑     RESTORE
 COMMAND                     PM    (NOT USED)
                        ↑WILDCARD (FILENAMES)
 SELECTIVE───────────────────┐
  ↑                          ↓
 DIRECTORY       ]
  ↓              ;      =     RETURN
 ALL→
                             SELECT ITEM
                           STOP DIRECTORY

         ↗      SHIFT      CRSR   CRSR
                          ↑↓      ←→
       LINK    ADVANCE    SELECT  TOGGLE
       MENU    DIRECTORY   BAR    LEFT/
                          UP/DWN  RIGHT
```
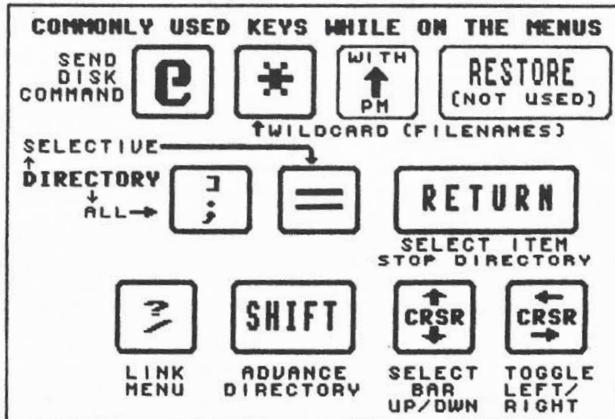
## < LOADING FILES >

**REF :** SELECTIVE DIRECTORY, FILENAMES

When the *filename entry prompt* appears you can either type in a file-
name or use the Selective Directory to pick a filename from the
directory. A *character-period* will be printed on the *filename entry
line* (ie: "s." if loading/saving a screen). If this prefix is not part
of the filename you want to load then DELete it and enter the filename
you want, then press RETURN.

To CANCEL and return to the Main Menu just hold the DELete key down
until the filename (prefix) is deleted, then press RETURN.

### LOADING FROM THE DIRECTORY

PRESS RETURN or FIRE to get a directory listing of all files
on the disk that begin with the *character-period* prefix.

PRESS ; to get a directory listing of ALL files on the disk.

PRESS = to get a directory listing of all files on the disk
that begin with the first two characters on the *filename entry
line*. This is so you can enter your own *search characters*. You
can use this if you don't know the exact spelling of a
filename but you know what the first two characters are.

After either entering a filename or selecting one from the directory
the program will say "CHECKING". FGM checks for the presence of a file
before going to load it. This will cause the drive's activity light to
blink on, off, then back on for the actual load.

Some filenames (ie: PRINT MASTER) are in true UPPERCASE ASCII which
looks the same on the screen as Commodore UPPERCASE ASCII. Normally,
if you try to load a true ASCII filename using Commodore ASCII you'll
get a *file-not-found* (even if loading from the directory listing). If
FGM gets a *file-not-found* it will convert the filename into true ASCII
and try again ("CHECKING" will appear a second time). If FGM finds the
file it will load it, else you'll get a *file-not-found* message.

FGM looks for a certain prefix at the beginning of the filename when
you load some file types; NEWSROOM PHOTOS & BANNERS, and DOODLE
SCREENS. Additionally, the up-arrow can be used at the beginning of
the filename to signal FGM that the file is a PRINT MASTER type
graphic that's missing the ".gra" at the end of the filename (FGM
normally looks for the ".gra" *extension* to identify PM graphics).

| TYPE | PREFIX | FOR |
|------|--------|-----|
| SCREEN | ph. | Newsroom Photos |
| " | bn. | Newsroom Banners |
| " | dd | Doodle Screens |
| GRAPHIC | up-arrow | Print Master graphics |

(*up-arrow* not needed if PM filename ends in ".gra")

The above prefixes are how the above programs save their files.

# < SAVING FILES >

REF : SELECTIVE DIRECTORY, FILENAMES

When the *filename entry prompt* appears you can either type in a file-
name or use the Selective Directory to pick a filename from the
directory. A *character-period* prefix will be printed on the *filename
entry line* (ie: "g." if saving a graphic). If this prefix is not part
of the filename you want to save under then DELete it, enter the
filename you want, then press RETURN.

To CANCEL and return to the Main Menu  just hold the DELete key down
until the filename (prefix) is deleted, then press RETURN.

SAVING USING THE DIRECTORY: When you save using the *directory listing*
you'll be selecting a filename that already exists. The existing file
must be scratched before the new one can be saved. FGM will take care
of the "scratch and replace" for you after asking if you want to
REPLACE FILE? YES  NO (the default is YES).

   PRESS RETURN or FIRE to get a directory listing of all files
   on the disk that begin with the *character-period* prefix.

   PRESS ; to get a directory listing of ALL files on the disk.

   PRESS = to get a directory listing of all files on the disk
   that begin with the first two characters on the *filename entry
   line*. This is so you can enter your own *search characters*. You
   can use this if you don't know the exact spelling of a
   filename but you know what the first two characters are.

After entering a filename or selecting one from the directory the
program will say "CHECKING". If FGM finds that the file already exists
on the disk you'll be asked "REPLACE FILE? YES  NO". If you select NO
you'll be taken back to the Main Menu. If you select YES then the
existing file(s) will be scratched and the new file(s) will be saved
in its place. This is a "scratch *then* save", not "save with replace".

If you are using *multiple drives* and PROMPTS are ON (selected through
0 DISK FUNCTIONS) you'll be asked "DRIVE A B C" before the save takes
place. The drive that was previously accessed will be highlighted and
will be selected if you just press RETURN or FIRE.

Once the file(s) are saved you'll get a message reporting the status
of the save and the number of blocks free on the disk. This number may
not be accurate for drives other than the 1541. Press RETURN to return
to the Main Menu.

If you get a "DISK FULL" error FGM will ask if you want to VALIDATE
the disk to remove the *splat (\*) file(s)*. Normally you should select
YES for this prompt. Validating a disk will not harm it unless there
are *relative* or *random)* files on the disk, which FGM neither creates
or uses. NOTE: When a 1541 drove gets down to two blocks free it will
issue a DISK FULL error even if it was able to successfully complete
the save. In this case you don't need to validate the disk. If in
doubt check the directory for *splat (\*) files*; if you see any then you
should validate the disk.

—9—

## <   T H E   S E L E C T I V E   D I R E C T O R Y   >

The Selective Directory makes loading and saving files a lot easier; you don't have to remember filenames. You can display the *entire directory* or just those files on the disk that begin with the *first two characters* on the *filename entry line*, then select from the list.

FGM pre-prints a prefix on the *filename entry line* when you go to load or save a file. This is as a convenience and I think you'll find FGM a lot faster and easier to use if you use the recommended prefixes; just pressing RETURN or FIRE when the pre-printed prefix is on the *filename entry line* will give you a listing of all files that begin with the prefix. See **FILENAMES** for an explanation of prefixes that FGM uses.

> To display a directory of all files that begin with any *character-period* prefix just press RETURN or FIRE at the filename prompt when the prefix appears (or enter your own *character/period* prefix).

> Press = to display a directory of all files that begin with (equal) the first two characters on the *filename entry line* (other than *and including* a character followed by a period).

**2**

> Press ; or D to display the entire directory.

When the desired directory is displayed it will list until it either gets to the bottom of the screen or doesn't find any more files. If the list will extend beyond the bottom of the screen a "SHIFT FOR MORE" prompt will appear. Hold the SHIFT KEY or use the JOYSTICK to see more of the directory.

To STOP the listing so you can make a selection from the list of visible files (or cancel) tap RUN/STOP, RETURN, or FIRE. After you've stopped the listing you can use the cursor keys or joystick to move the bar to the selection you want. If you just press RUN/STOP or RETURN you'll be taken back to the Main Menu

When the *bottom of the directory* is found or you STOP the listing there will be two selections below it:

> **ANOTHER DISK**: Select this if you want to see the directory again or if you want to see the directory of another disk.

> **CANCEL**: Takes you back to the Main Menu. You can also CANCEL by just pressing RETURN before using the cursor keys to make the SELECT BAR visible.

After you have either pressed the STOP key, FIRE, or the end of the directory is reached you can select one of the files or ANOTHER DISK. Tap the up/down cursor key or joystick and a SELECT BAR will appear. Use the up/down cursor keys or joystick to position the *SELECT BAR* over the selection you wish, then press RETURN. NOTE: To CANCEL without making a selection you can just press R/S, FIRE, or RETURN unless the SELECT BAR is present. If the SELECT BAR is present then move it over **CANCEL** and press RETURN or FIRE.

## < FILENAME PREFIXES >

FGM pre-prints a _character-period_ prefix on the _filename_ entry line
when you go to load or save a file. The _character-period_ provided will
depend on what type of file you are going to load or save. The _prefix_
is provided as a convenience and is intended to help you identify
files saved by FGM, and to make use of the Selective Directory easier.
When SAVING a file you don't _have_ to use the _prefix_ but its use is
recommended. When LOADING a file don't use the _prefix_ unless it's part
of the filename of the file you want to load.

Following are the _pre-printed prefixes_ that FGM provides:

    g.  for graphics
    c.  for color files (menu/cursor colors)
    d.  for demo files
    e.  for group-saved character sets
    f.  for character sets (fonts)
    g.  for graphics
    i.  for files _printed to disk_ (intermediate)
    p.  for printer files
    s.  for hi-res screens
    u.  for FGM utility files
    z.  for files _printed to disk_ (compacted)
    ..  for clip art files

When loading NEWSROOM photos and banners you'll have to provide the
"ph." or "bn." prefix, and when loading/saving DOODLE screens you'll
have to provide the "dd" prefix.

If you want to load from the Selective Directory enter the first two
characters (ie: dd, ph, bn) and press = for a list of all files that
begin with those two characters.

    ph.  for Newsroom photos
    bn.  for Newsroom banners
    dd   for Doodle files

**WILDCARDS:** When loading files saved by other programs you may need to
use _wildcards_ (? and *) to get FGM to accept the filename. If you try
to load using the Selective Directory and get a _file-not-found_ then
you _will_ need to use _wildcards_ to load the file. KOALA files with
their _reversed first character_ are most notable. Replace the reversed
character with a "?" and type in the rest of the filename (usually
something like "?pic a*" will do). **NOTE:** KOALA and other large multi-
color files should be loaded using **CLIPART'S** LOAD A SCREEN option.

**NOTE:** If you get a FILE NOT FOUND message after selecting a file from
the directory that _doesn't_ have reversed characters in it this may be
because the filename is padded out with spaces. Try _typing in_ the
filename with an * at the end of the name.

## < LINKED FILENAMES >

**HOW FILENAMES ARE INCREMENTED:** This has to do with how FGM uses the filenames that you give it. When saving *linked screens* or *graphics* FGM will create *additional filenames* for the other files (screens or graphics) based on the *starting filename* you give it. For this reason you need to use a little care in selecting the third and/or fourth characters in a filename.

Linked screens and graphics are saved as *individual files*; if you save three screens linked across then three screen files will be saved to the disk. Each file will have the same filename except for the third and/or fourth character position in the filename which is *incremented*, depending on *link status*.

The different filenames that FGM creates by *incrementing the filenames* is what FGM uses to know what to load when loading or printing linked screens. The incrementing is done by the program when you do a save so you really don't need to worry about it, but knowing how the filenames are incremented will be helpful.

**DOWN-LINKED SCREENS:** When you save down-linked screens the *third* **2** *character* in the filename will be incremented as each screen down is saved. This also applies to saving "linked" graphics. If the filename you enter for the first file is "s.al flyer" then the second and third screens will be named "s.bl flyer" and "s.cl flyer", repectively. Note that the third character is incremented.

**LINKED GRAPHICS:** When saving "linked graphics" (saving all five graphics so they be be loaded all at once), if the filename you enter is "g.a birds" then the following four filenames will be "g.b birds", "g.c birds", "g.d birds", and "g.e birds". This also increments the *third character* in the filename.

**ACROSS-LINKED SCREENS:** The *fourth character* will be incremented for each screen across that's saved. If the filename you enter for the first (ie: left) screen is "s.al card" then the next two filenames would be "s.a2 card" and "s.a3 card".

An example of filenaming is shown below for a set of *linked screens* saved 3 across by 3 down. Note that you can't save 3 screens across <u>and</u> 3 screens down with one save; the first set of screens were saved 3 across, then the next set. You need to provide the *starting filename* for each *set* of saves.

| LEFT (you provide name) | CENTER | RIGHT |
|---|---|---|
| 1.   s.al flyer | s.a2 flyer | s.a3 flyer |
| 2.   s.bl flyer | s.b2 flyer | s.b3 flyer |
| 3.   s.cl flyer | s.c2 flyer | s.c3 flyer |

Note that you may **DOWN-LINK** the screens and load a set of the above screens downward; to load the center set of screens enter a starting filename of "s.a2 flyer".

## < FILENAME INCREMENTING >

When *linked* (multiple) screens or graphics are being loaded or saved FGM will *increment* one or two of the characters in the filename to create the additional filenames. When a character in the filename is *incremented* what happens is that the *ASCII value of the character position* is incremented. The ASCII value of "a" is 65 and when incremented to 66 we have a "b".

| CHARACTER | ASCII | CHARACTER | ASCII |
|-----------|-------|-----------|-------|
| a | 65 | 6 | 54 |
| b | 66 | 7 | 55 |
| c | 67 | 8 | 56 |
| space | 32 | 9 | 57 |
| ! | 33 | : | 58 |
| " | 34 | ; | 59 |

**WHY YOU OUGHT TO UNDERSTAND THIS:** The ASCII value for "9" is 57 and the next value (58) is a colon (:) which doesn't work well in a filename. Next after that is 59, a semicolon (;) which works lousy as part of a filename. During a linked save if FGM increments the 3rd or 4th character into something like a semicolon or a colon then you're going to have some messed-up filenames.

**AN EXAMPLE:** If you decided to save the five graphics "linked" and started with a filename of "g.7 stuff" the first three files would save fine. The fourth file would save with a filename of "g." because the third character would be a *colon*. In the fifth file the third character would be a *semi-colon* (;) which also doesn't work well as part of a filename. Your files may save fine but you'll have a hard time accessing them because of the filenames (if you should do this it can be easily corrected using a *disk doctor*).

**ANOTHER EXAMPLE:** If you save three screens linked across and use a filename of "s.1 filename" you'll have problems. Note that the *fourth character is a space* instead of a *letter or number*. The first file will save just fine, as will the second file with a filename of "s.1!filename". The third file will try to save with a filename of "s.1"filename"; note the *quote* between the "s.1" and "filename". *This isn't good* and you'll likely need to get the *disk doctor* out.

The point here is to be a little bit careful with the characters that you use when naming *linked screens or graphics*. Use of a "s.a1", "s.b1", etc., filenaming system is safe; by the time you got to "z" you'd be 26 down and that's unlikely. Use a letter for the third character and a number for the fourth character.

You may use "s.1a", "s.1b", etc., if you don't expect to have more than ten files linked down. ZERO is the lowest starting *number*. Don't use *starting numbers* higher than *five* for graphics or eight for linked screens; if you do you'll end up with the problem filenames explained above. I recommend the "s.a1", "s.a2" filenaming convention for linked screens (character first) because it greatly reduces the chances of creating problem filenames, and with something like keyboard overlays it's possible to exceed ten files down.

# < MULTI—DRIVE  SUPPORT >

**REF :** UTILITIES; "u.poll drives"

**MULTI-DRIVE SUPPORT:** FGM supports up to three drives (devices). When FGM is first RUN it checks the serial port for devices 8-12 and sets some memory locations accordingly.

FGM calls the drives A, B, and C, with A being assigned to the *lowest numbered drive* (device#) and C assigned to the *highest numbered drive* (B will be assigned to the highest numbered drive if two drives).

The **PROGRAM DRIVE** is the drive that will be accessed when FGM needs to load another FGM section. Normally that will be assigned to the drive that you booted FGM up from. If you have three drives, 8, 9, and 10, and booted FGM from drive 9 then drive 9 (B) will become the drive FGM will expect to see the FGM PROGRAM DISK in.

*Note:* If you load the FGM boot and then access *another* drive (ie: to look at the directory) before running the boot you may get a *file-not-found* error when the boot trys to load FGM. This is because the FGM boot will look to the *last drive accessed* for the FGM program.

The **DATA DRIVE(S)** are *the other* drive(s). The PROGRAM DRIVE may also be used as a DATA DRIVE simply by selecting it when prompted for DRIVE A B C. FGM will still go there when it needs programs.

The FGM defaults to **PROMPTS ON** which means you'll be prompted for the drive (A B C) before each disk access. The drive (A  B  C) that is *presently* active will be highlighted when this prompt appears sso just pressing RETURN will select it. If needed, use ANYKEY (the cursor keys or = are handy for this) or the JOYSTICK to toggle between A B C, and RETURN or FIRE to select.

**PROMPTS** (prompting for drive# A B C) may be turned off. This option is in the "0" selection on most *sections*. *PROMPTS* may be *permanently* turned off by using the **COLOR CUSTOMIZER** utility.

Even if **PROMPTS are off** they will still appear when some selections are made. Pressing D for a Directory (instead of ;) will prompt for DRIVE A B C. Pressing "@" to send a *disk command* will also prompt for drive. Being prompted for drive number (letter) before sending each disk command may seem clumsy but I've found it much better to KNOW which drive the command is going to. The default will be the active DATA DRIVE so just pressing RETURN will select it. Using the "@" is a handy way to change the active (A B C) drive when PROMPTS are turned off; FGM will go to the last drive accessed for data.

**A UTILITY,** "u.poll drives" is included. This will *poll* the serial bus and set up the program according to what's found (like when booting up). Use this to let FGM know if you turn a drive on or off. This utility will also let you select another drive as the PROGRAM DRIVE.

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## CHAPTER 3:   HI-RES SCREEN EDITOR

**ENTRY:** #4 or RETURN from Main Menu
**EXIT:** RETURN for Main Menu of any FGM *section*
<u>AVAILABLE IN</u>: CREATOR, DEMO-ER, PRINTER, CLIPART

This is where you work and play with the *graphics* and *hi-res screens*.
You can't hurt anything while up here (ie: disk files), and pressing
<u>RETURN</u> a few times will always take you back to the Main Menu. When
you first enter the EDITOR you'll be in <u>GP Mode</u> (which stands for
<u>G</u>RAPHICS <u>P</u>LACEMENT Mode) and one of the *movable graphics* will be
visible. If you just booted up FGM then it's likely that the hi-res
screen(s) will be filled with *garbage* and the *movable graphic* may be
difficult to see. Press <u>*Shift CTRL E*</u> to <u>ERASE</u> the visible screen.
Press X to got between the three hi-res screens (view another area).

FGM holds *three independent hi-res screens* in memory at any one time.
The screen you are viewing is the *active screen*. The *active screen* is
the only screen you can do anything to (ie: goof-up). There is one
exception; if screens are *across-linked* then <u>TEXT Mode's</u> INSERT and
DELETE will affect unseen screen areas to their right.

Screens may be *linked* which means they are "connected" for editing,
loading, saving, and printing. *Linked screens* remain as three
independent screen files on disk, and FGM uses the filenames to
determine their locations.

The <u>HI-RES SCREEN EDITOR</u> has SIX *MODES* within it and in most cases you
can go between the *modes* by pressing the correct *mode entry key(s)*.
Pressing RETURN will always return you to <u>GP Mode,</u> and pressing RETURN
while in <u>GP Mode</u> will always take you to the <u>Main Menu</u>. Pressing the
RETURN key a few times will always take you from the hi-res screens to
the Main Menu with no harm to the screens.

The <u>CURSOR KEYS</u> or <u>JOYSTICK</u> are used in all modes to move the *cursor*
or *movable graphic* around the screens.

The <u>F1-F6</u> keys operate in all modes to *scroll* the screen unless
screens are *linked*.

## THE MODE ENTRY KEYS:

|          |                                                    |
|---------:|----------------------------------------------------|
|       GP | <u>RETURN</u> key from other modes                 |
|     GRAB | <u>G</u> from <u>GP Mode</u> (only)                 |
|     TEXT | <u>T</u> or <u>DEL</u> from other modes            |
|   ADJUST | <u>J</u> from other modes, <u>CTRL J</u> from <u>TEXT Mode</u> |
| TRANSFER | <u>Shifted T</u> from other modes                  |
| PIXEL EDIT | <u>F7</u> from other modes                       |
|   SMOOTH | <u>Shift CTRL S</u> from <u>GP Mode</u> (<u>CLIPART</u> section only). |

The CURSOR and BORDER colors will change as you go between hi-res
modes. A utility "<u>u.prnt colval</u>" is provided which will print the
colors that will be found in each mode.

## < THE HI-RES MODES >

**1. GP MODE:** This is the *base hi-res mode* where you can manipulate screens and graphics. GP Mode is the only mode where the *movable graphic* is visible. The SCREENS may be *erased, flipped, inverted, reversed, expanded, reduced, grays stripped, line borders drawn,* and *graphics fastened to the screens.* GRAPHICS may be *flipped, inverted, cropped, reversed, rotated,* and *fastened* to the screens. Pressing RETURN while in the other modes will return you to GP Mode.

**2. GRAB MODE:** Press G from GP Mode. GRAB Mode is used for CAPTURING areas of the hi-res screens into one of the six graphics buffers. GRAB Mode can also be used for ROTATING an 11x11 area of the hi-res screens. GRAB Mode is not available when in the PRINTER section of the program, and GRAB's ROTATE is not available in CLIPART.

**3. TEXT MODE:** Press T or DELete from any other mode. Use for putting text and character borders on the screens and erasing areas of the screen. TEXT Mode's INSERT and DELETE are real handy for moving things around the screens (pushing and pulling) and for stretching areas of the screen.

**4. PIXEL EDIT MODE:** Press F7 from any other mode. The first press of F7 will give you a 3x2 cursor. Position it over the area you want to edit and press F7 again for the PIXEL EDIT SCREEN. PIXEL EDIT Mode is NOT available while in the PRINTER section.

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**5. ADJUST MODE:** Press J, (CTRL J from TEXT Mode). ADJUST Mode can be used for *centering text* (ranged left-right scrolling), *slanting* screen areas, *inserting* or *deleting space between rows, vertically stretching* areas, *erasing a ranged area,* and *capturing rows.* ADJUST's CAPTURE is REAL handy for *outlining text* using its EOR, and for "filling" areas with its OR function. ADJUST Mode can also be used for *scrolling screens when they are linked.*

**6. TRANSFER MODE:** Press Shifted T from any mode but TEXT Mode. This mode lets you "capture" a screen area and then *copy it somewhere else.* Special effects are possible by overlapping *source* and *destination* areas and using TRANSFER'S EOR function.

**7. SMOOTH MODE:** Press Sh CTRL S while in GP Mode. Available only while in the CLIPART section of PGM. Once the *SMOOTH CURSOR* appears you set its size using Shift, C=, and CTRL combined with H & V like is done in TEXT Mode. To SMOOTH the area covered by the *SMOOTH CURSOR* tap the SPACE BAR. The SMOOTHING routine works by knocking pixels off of corners and is quite effective on many things.

**TO EXIT ANY MODE** just press RETURN and you'll be taken to GP Mode. Exit GP Mode to the Main Menu by pressing RETURN.

The next page gives an overview and some hints on some of the more important or often-used keys while on the hi-res screens. The pages that follow will be detailed descriptions of each HI-RES MODE except for SMOOTHING which is covered in the CLIPART section.

## KEYSTROKE OVERVIEW

Many key commands are available while on the *hi-res editor* and this can be confusing. There is some sense to it though!

The below three keys (C= Sh and CTRL) do nothing when pressed by themselves; one or more if them is usually *held down* and then the appropriate number/letter key is pressed (a quick *tap* will do).

C= key is the COMMODORE KEY (below the RUN/STOP key).

Sh is the SHIFT key. In this manual I generally preceed a key with Sh if SHIFT is to be used with it. Press x and press X both mean to press the X key *without* SHIFT. To access the F2, F4, F6, and F8 F-Keys you must always use SHIFT. Sometimes the manual will show Sh next to an F-Key and sometimes not; F2 & Sh F2 are *same-same*.

CTRL is the third key in this triology. It is used a lot in TEXT Mode because pressing C= or Sh with almost any number/letter key will print a character to the screen.

Functions which are easily *reversable* (*ie: flip, invert, reverse*) will usually take the least number of keys pressed. Keystrokes which can be massively destructive (*ie: erase, expand, reduce*) need more keys pressed at once and may prompt you to confirm Y/N.

Since the C= key is a *small key* and SHIFT if a *big key* I have tried to make this conform to the various functions. For example; when in GP Mode pressing F will flip the *graphic image*. If you press SHIFTED F the *entire screen* will flip (*the BIG graphic*). When using INSERT (DELETE) in TEXT and ADJUST Modes the C= key used with the proper key will do *pixel* inserts while SHIFT will do *column* or *row* inserts.

**MOVING THE CURSOR AROUND:** All modes have a cursor. In **GP Mode** the *cursor* is the *graphic* and in the other modes it's a *shaded box.* Use the cursor keys or joystick to move the cursor around. There are other keys which will move the cursor around faster (in larger steps).

CTRL A and CTRL D move the cursor *Across* or *Down* in larger steps. These could be used as tabs; you can set them to your own values using the COLOR CUSTOMIZER utility.

CTRL M moves cursor to approximate *center* of the screen. Handy for getting the cursor/graphic out of the way.

CTRL S and HOME do the same thing; move the cursor to the *upper left corner* of the screen. If already there and screens are *linked* then pressing either will bring the HOME SCREEN up.

RUN/STOP moves the cursor to the *left side* of the screen. If already there then R/S will generally move it down one cursor height. If screens are *across-linked* the HOME SCREEN will be called up instead.

**UNDOCUMENTED KEYPRESSES:** If you experiment around you may run into keypresses that duplicate documented ones. *Terrible things won't happen* but the command may do something like select a different character set or something like that. If you find an undocumented keypress go ahead and use it if you wish; it should cause no problems.

## < GP MODE OVERVIEW >

**ENTRY:** #4 from Main Menu, RETURN KEY from other modes
**EXIT:** RETURN for Main Menu, Mode Keys for other modes
**REF:** *SCROLLING : LINKED SCREENS : SPLIT SCREENS*

OVERVIEW: GP Mode stands for *Graphics Placement Mode*. GP Mode is the
"base" hi-res mode and is the mode that's present when you first go to
the hi-res screens. It is also the mode you are in just before you
exit to the Main Menu. GP Mode is the only mode in which the *movable
graphic(s)* are visible on the screen.

Use GP Mode for *manipulating screens and graphics*. While in GP Mode
screens can be *erased, flipped, inverted, reversed, expanded, reduced,
grays stripped, line borders drawn/erased,* and *screens copied*. The
visible (active) graphic may be *flipped, inverted, reversed, rotated,
cropped,* and *fastened to the screen(s)*.

When you enter GP Mode the *active (movable) graphic* will appear on the
screen. *This is how you know you're in GP Mode.* The screen may be
filled with *garbage*; FGM does not clear the screen areas when it
loads. This is so you can capture screens that may be left behind by
other programs. Also, by not clearing the screens they will be there
if the computer should *hic-up* and you need to reset and re-load FGM.

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## GP MODE SCREEN MANIPULATION:

    X   eXchange (go between) screens. This is called EXCHANGE
        because the screen you are viewing is always at the
        same memory location. When you press X the screen you
        are viewing is swapped with one of the other screens.

Sh CTRL ← Set HOME/ORDER of screens (see LINKED SCREENS)
    Sh F  FLIP the visible screen left/right
    Sh I  INVERT the visible screen upside-down
    Sh R  REVERSE the visible screen
      C   COPY *visible* screen to a *clear* screen

The COPY function is handy for making a *backup copy* of a screen before
manipulating it in some way that might ruin it (ie: make a COPY of a
screen before *reducing* it in case it doesn't come out the way you
want). To use the COPY function you must first ERASE one of the other
two screens. The COPY function looks for a clear screen to copy to. If
it finds one the *visible* screen will *reverse/unreverse* to indicate
that the *copy* has been made. Once a *copy* has been made you will be
unable to tell it from the original screen until you make a change to
one of them (if you have three copies you won't know you are going
between them when you press X, except the movable graphic will blink
off for a moment as the eXchange is made.

FLIP, INVERT and REVERSE should be pretty self-explanatory. Some uses
for FLIP and INVERT are: *greeting cards, expanding one screen onto
several, mirroring effects,* and *backwards images for T-Shirts*. Go
ahead and try them out; the results are fully reversable by pressing
the key again.

## < SCROLLING THE HI-RES SCREENS >

The screens may be *scrolled* up-down and right-left with F1-F6 while in
all of the hi-res modes, with some limits if screens are *linked*.
Screen scrolling is not available when screens are *across-linked* and
only *vertical scrolling* is permitted when screens are *down-linked*.
Scrolling of linked screens is limited because it would be very easy
to accidently get the screens out of alignment. Scrolling of *linked*
*screens* can still be done while in **ADJUST Mode** (just press J).

When screens are *unlinked* the F1-F6 keys are used for scrolling the
screens. Scrolling the screens will never harm them; screens can
always be scrolled back into position.

> F1      Scroll UP in ROW increments
> Sh F2   Scroll DOWN in ROW increments
>
> F3      Scroll RIGHT in COLUMN increments
> Sh F4   Scroll LEFT in COLUMN increments
>
> Sh F6   Scroll UP in PIXEL increments
> F5      Scroll LEFT in pixel increments

When screens are *across-linked* the F3/F4 keys are used for moving
across the linked screens and the other F-Keys normally used for
scrolling are inactive. One exception; full screen scrolling is
available when *2-linked across* and on the *3rd "un-linked" screen*.

When screens are *down-linked* the F1/F2/F6 keys are available for
up/down screen scrolling. The F3/F4 keys are used for moving across
screens (like pressing X for eXchange).

In **ADJUST Mode** the F1-F6 keys are active for scrolling the screens
regardless of *link status*. F1/F2/F6 will scroll the entire screen
up/down, and F3/F4/F5 will scroll the *ranged area* left/right.
**ADJUST Mode's** *range bar* can be made the full height of the screen so
full-screen scrolling can be done even when screens are linked.

In **TRANSFER Mode** you will not be able to scroll the *source* screen once
you set the *capture range*.

There is no *pixel scroll* right or down. To accomplish a *pixel scroll*
*right* do a *column scroll right* (F3) and then however many *pixel*
*scrolls left* (F5). Eight *pixel scrolls* is equal to one *column scroll*.
For a *pixel scroll down* do a *row scroll down* (F2) and then however
many *pixel scrolls up* (F6). Eight *pixel scrolls* up is equal to one *row*
*scroll up*.

*Pixel scrolling* up can be handy for providing additional spacing
between rows of text; after finishing a row scroll up a pixel or two
before typing the next row of text.

*Pixel scrolling* can also be used for repositioning a graphic in one of
the graphics buffers; fasten the graphic to the screen, *pixel scroll*
the screen as needed, then capture the graphic back into its buffer.

## < CONFIRMATION WINDOWS >

The following key combinations will give you a *window* that asks you to confirm (Y/N) the requested action. This is provided for functions which will forever change the *visible screen*. When the window appears you must press Y to get the requested action, any other key to CANCEL.

```
ERASE?          STRIP!          BORDER          BORDER
*****           GRAY            DRAW            UNDO
Y/N?            Y/N?            Y/N?            Y/N?
Sh CTRL E       Sh CTRL G       Sh +            Sh -

EXPAND          EXPAND          REDUCE          CONFIRMATION
→   →           → → →           ←   ←           WINDOWS
Y/N?            Y/N?            Y/N?             From GP MODE
Sh CTRL H       C= Sh CTRL H    C= CTRL H       press key
                                              ← combo shown
EXPAND          EXPAND          REDUCE           underneath
↓   ↓           ↓ ↓ ↓           ↑   ↑            for window
Y/N?            Y/N?            Y/N?
Sh CTRL V       C= Sh CTRL V    C= CTRL V        Press Y to do
                                                 function

                                                 Any other key
                                                 to cancel
                                                 window
```
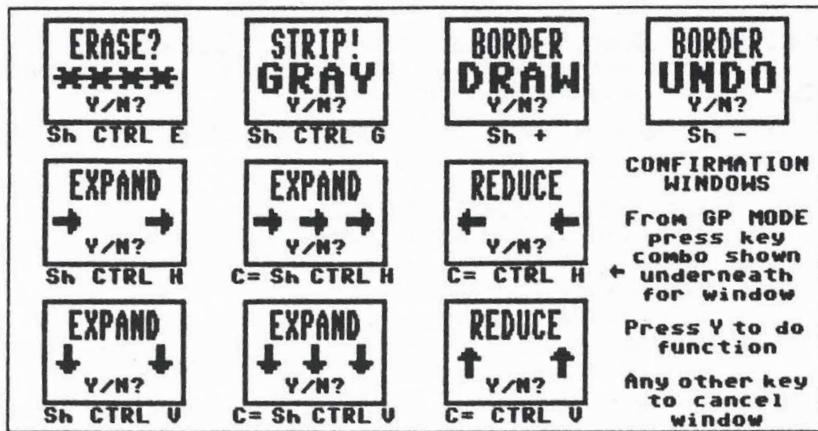
**EXPANDING THE SCREENS:** You may expand the visible screen as much as you want but *whatever goes off the screen is gone forever.* After 2X expanding the screen you can reduce it back down and it will be the same less whatever went off the screen.

**FGM'S CLIP ART** section has a **SMOOTH AFTER EXPAND** function which will *smooth* the screen after each *expand*. Most expands will be improved by *smoothing* after each *expansion*. *See Page 77.*

A *3X HORIZONTAL EXPANSION* will *not* affect the *rightmost column* of the screen. Similarly, a 3X vertical expansion will not affect the *bottom* row of the screen. This was necessary because of the method used for 3X expansions (*FYI*: 3x expansions are done using **TEXT Mode** routines and are similar to capturing an area of the screen as the Definable Character and then printing it back to the screen at the proper location and expansion). **3X HINT:** You can achieve "1.5X expansion" by using the 3X expansion (vertical or horizontal) and then doing a 2X reduction.

**REDUCING THE SCREENS:** You can reduce the visible screen as much as you want but once you reduce it you'll lose the resolution needed to re-expand it back to original.

**STRIP GRAY:** This function can perform *magic* by converting some *multi-color* screens (ie: Koala) to *hi-res b&w screens*. See **CLIPART'S LOAD A HI-RES SCREEN** on Page 78.

**BORDER DRAW/UNDO:** This will draw/erase a single line of pixels around the perimeter of the visible screen.

## < GRAPHICS MANIPULATION >

The active (visible) graphic can be flipped, inverted, reversed, cropped, and fastened to the screen in several ways. Use the CURSOR KEYS to move the graphic around the screen. Press one of the number keys 1-6 to make another graphic visible.

The #6 graphic buffer is a temporary graphic buffer, meaning that other functions will sooner or later corrupt its contents. GRAB'S ROTATE, ADJUST'S CAPTURE, and LOADING A GRAPHIC FILE will usually corrupt graphic buffer #6. So will going to the CLIPART or PRINTER sections (where it isn't available).

The contents of graphic buffer #5 will be corrupted when you go to the CLIPART section (where it isn't available).

## MANIPULATING THE GRAPHICS:

> USE *CURSOR KEYS* TO MOVE GRAPHIC AROUND THE SCREEN

1-6 SELECT GRAPHIC BUFFER to display
  F FLIP GRAPHIC left-right
  I INVERT GRAPHIC upside-down
  R REVERSE GRAPHIC. This is useful for previewing the entire area of the graphic that would PASTE onto the screen.

Sh HOME ROTATE 7x7 AREA of graphic. This will rotate the left-most 7 columns across by 7 rows down of the visible graphic by 90 degrees. An unconverted 2 block PS graphic will rotate fine but a 3 blocker is too wide to rotate all of. If you need to rotate the entire graphic fasten it to the screen and use the 11x11 SCREEN ROTATE.

## CROPPING THE GRAPHICS:

   ↑ CROP UP in row increments
 Sh ↑ CROP UP in pixel increments

   * UNCROP (down) in row increments
 Sh * UNCROP (down) in pixel increments

   ← CROP LEFT in column increments
   W UNCROP (wider) in column increments

You can quickly uncrop the graphic by re-selecting it. Graphics will also uncrop when you exit GP Mode.

When the visible graphic is moved past the right side of the screen it will jump to the left side of the screen. If the graphic is cropped then it won't jump over until the un-cropped area is moved past the right side of the screen. Ditto with moving graphics up/down.

NOTE: When you FLIP, INVERT, REVERSE, or ROTATE the graphic image on the screen, the buffer where the graphic is located is flipped, inverted, reversed, or rotated. When you CROP a graphic the buffer is not affected, only what you see on the screen; if you want a CROPPED graphic to save you must fasten the cropped graphic to the screen and then use GRAB to capture back into the buffer.

## < FASTENING GRAPHICS TO THE SCREENS >

The *movable graphic* is <u>not</u> part of the screen until you fasten it to the screen. Until then it's just a funny looking cursor. If you can move it with the cursor keys then it isn't part of the hi-res screen!

<u>FGM PROVIDES THREE WAYS OF FASTENING THE GRAPHICS TO THE SCREEN</u>:

o: <u>OVERLAY</u> graphic to screen. When you press o the graphic will be OVERLAYED to the screen and will appear exactly like it was on the screen before you pressed o.

Sh P: <u>PASTE</u> graphic to screen. This will replace the entire screen area under the 11 column by 7 row area of the graphic with the graphic (less if the graphic is cropped). To see the graphic area that will be written to the screen area press R to REVERSE the graphic area. Of the three ways of fastening the graphic to the screen PASTE is probably the least useful because it will wipe out screen areas that are covered by the graphic area.

p: <u>PUT/PICK-UP</u> will *Exclusive OR (EOR)* the graphic to the screen. This is usually the best way to fasten a graphic to the screen because you can easily *undo* it by pressing p again. The effect of EORing is the same as OVERLAY except where the screen and graphic on-pixels *match up*, in which case the *screen pixels* will be turned off. If the graphic image is overlapping an image on the screen area when you EOR you'll need to move the graphic off of the area to see the result. EOR can also be used to test if two graphics are identical; fasten one to the screen, then place the second graphic over it and press p. The pixels left on the screen are the areas where the two images differ. See <u>EOR</u> in the <u>APPENDIX</u>.
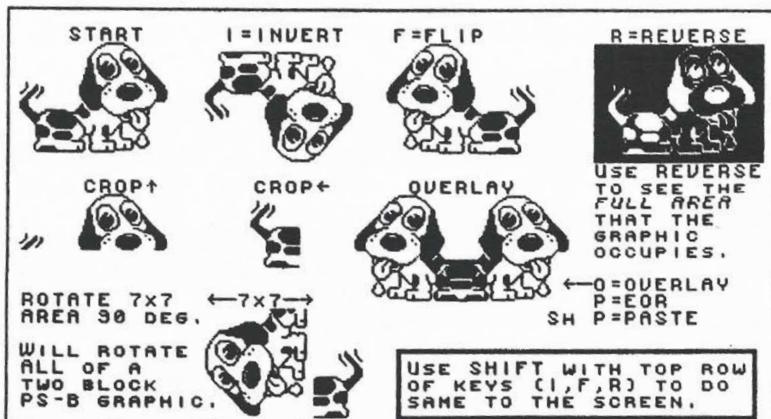
## < GRAB MODE >

**ENTRY:** Press G from GP Mode. Not available in PRINTER section.

**EXIT:** RETURN for GP Mode, MODE KEYS for other modes

**OVERVIEW:** GRAB Mode is used for grabbing (capturing) an 11 column by 7 row area of the screen into one of the graphics buffers. Once an area is in a buffer it can be *moved around*, *flipped*, *inverted*, *cropped*, *fastened* to the screens, and saved for use in FGM or PS.

**ACTIVE KEYS IN GRAB MODE:**
        G   ENTER GRAB MODE (from GP Mode)
        X   eXchange screens
      1-6   GRAB (capture) into buffer #
   CTRL E   ERASE area under cursor
  Sh HOME   ROTATE 11X11 area of screen
    F1-F6   SCROLL SCREEN (depending on link status)

**TO GRAB (CAPTURE) A SECTION OF SCREEN:**
When you press G an 11 column by 7 row CAPTURE CURSOR will appear on the screen. Use the cursor keys to move the CAPTURE CURSOR over the area you want to grab and press one of the numbers 1-6. This will replace whatever is in that graphic buffer with whatever is inside the CAPTURE CURSOR, then return you to GP Mode.

If you are capturing the graphic to SAVE and use in PS, FGM saves 7 rows down and PS will only use (print) 6.5 rows. To preview what PS will use, grab the graphic, then press shifted ↑ [up arrow] four times to CROP the graphic up four pixels.

If you are going to save the graphic as a 2 block graphic (for use in PS) only the left-most 6 columns will be saved. To preview what will be saved press ← [left arrow] five times to CROP left.

**ERASING A SECTION OF SCREEN:**
Move the CAPTURE CURSOR over some unwanted area of the screen and press  CTRL  E. This will ERASE the area covered by the cursor.

**ROTATING A SECTION OF SCREEN:**
Move the CAPTURE CURSOR over any area of the screen and press Shifted CLR/HOME. The area inside the CAPTURE CURSOR will be rotated by 90 degrees. Note that the area rotated will include four rows below the CAPTURE CURSOR. This is because the CAPTURE CURSOR is 11 columns wide by 7 rows down and an 11x11 area of the screen is rotated. Using this rotate function will corrupt the contents of graphics buffer #6.

If nothing happens when you press Shifted CLR/HOME then the CAPTURE CURSOR is too low on the screen. The bottom of the cursor must be at least four rows above the bottom of the screen. If need be you can scroll the screen up with the F1 key, then rotate the area.

An entire screen can be rotated by going to DEMO-ER and playing the "d.rotate" demo. The rotate demo uses a combination of GRAB, ROTATING A SCREEN SECTION, and FASTENING to accomplish it's task. There are two ROTATE DEMOS, one includes some docs and the other is just raw rotate.

# < TEXT MODE OVERVIEW >

**ENTRY:** Press **T** or **DELete** from any other mode
**EXIT:** RETURN for GP Mode, MODE KEYS for other modes
**REF:** EOR/OVERLAY/PASTE, LINKED SCREENS, SPLIT SCREENS

OVERVIEW: TEXT Mode is used for writing text to the hi-res screens, manipulating small areas of the screen (ie: flip, invert), drawing character borders, erasing areas of the screen, moving areas around, and a variety of other things.

Writing text to the screen(s) is as easy as entering TEXT Mode and typing on the keyboard, pretty much like using a word processor. TEXT Mode offers a variety of ways to place text on the screens. Five character sets are available to mix as you wish. 800 character sizes (expansions) are available. Text may be OVERLAYED, EOR'd, or PASTED to the screen. Rotation, Reverse, Italics, Bold, Downward Typing, Margins and Wordwrap are all available.

In TEXT Mode the CTRL Key is used with other keys to access TEXT Mode's features. Pressing almost any key or key combination without holding CTRL will usually result in a character being printed to the screen. Keys that are not used with CTRL while in TEXT Mode are the CURSOR KEYS, F-KEYS, RUN/STOP, CLR/HOME, and RETURN.

Use CTRL X to go between screens. If screens are linked then F3/F4 can also be used to go between screens. **3**

SCREEN SCROLLING is available with the F-Keys if link status permits.

SPLIT SCREENS are available if the screens aren't across-linked; use CTRL along with C= or SHIFT and X. See SPLIT SCREENS at the end of this chapter.

## INDEX TO TEXT MODE'S PAGES:

## <  TEXT  MODE  CURSOR  >

### MOVING THE *TEXT CURSOR* AROUND:

Use the CURSOR KEYS or a joystick in port 2 to move the TEXT CURSOR around the screen. The following keys can also be used:

|        |                                   |
|--------|-----------------------------------|
| CTRL A | ACROSS in larger steps            |
| CTRL D | DOWN in larger steps              |
| CTRL M | MIDDLE of screen (approximate)    |
| CTRL S | UPPER LEFT CORNER (same as HOME)  |
| R/S    | LEFT SIDE of screen               |
| Sh R/S | START of NEXT WORD                |
| HOME   | UPPER LEFT CORNER                 |

Pressing RUN/STOP (R/S) will take the cursor to column zero of the same row. If on column zero it will go to the left margin of the *next* row+cursor height down. To do a "carriage return" to the next row press R/S twice. If screens are *across-linked* the first press of R/S will put the cursor at the left-most column of the visible screen and pressing R/S again will put the cursor at the left margin of the *home screen*, down one row plus the cursor's height.

Pressing SHIFTED R/S will advance the cursor to the beginning of the next word. A "word" is defined as being any set pixels after a SPACE. Tracking may not be accurate at cursor sizes larger than 1:1. If screens are *across-linked* the screens will be flipped in as needed. This can be handy for *proof-reading* screens of text.

Pressing the HOME key will move the cursor to the *upper left corner* of the screen. If the cursor is already in the *upper left corner* and if screens are *linked* then the *home screen* will be swapped.

### CHANGING CHARACTER (CURSOR) SIZE:

800 character sizes are available from 1x1 to 32x25. Character size is accomplished by *expanding the characters in the buffers as they go to the screen*. This means that a character which is "smooth" at the smallest size may be "blocky" at expanded sizes. If you want smoother characters use the CLIPART section of FGM to do your text and then *smooth* it. Note that most text (in the buffers) does not use the bottom byte (row of pixels); it is usually reserved for underlining and descenders. When you expand a character the bottom (usually blank) line will be expanded too. As you make a character larger vertically it will print to the screen higher above the bottom of the cursor (the blank bottom byte will be expanded with the rest of the character).

|     |         |                                |
|-----|---------|--------------------------------|
|     | CTRL H  | Horizontally wider             |
| C=  | CTRL H  | Horizontally narrower          |
| Sh  | CTRL H  | Like CTRL H but bigger steps   |
|     | CTRL V  | Vertically taller              |
| C=  | CTRL V  | Vertically shorter             |
| Sh  | CTRL V  | Like CTRL V but bigger steps   |
|     | CTRL N  | Normalize Text Mode (1:1 cursor) |
|     | CTRL L  | Last size before Normalize     |

## <   T H E   C H A R A C T E R   S E T S   >

### SELECTING THE *ACTIVE CHARACTER SET*:

Press **CTRL** and one of the numbers 1-5. The border will flash and that character set will remain active until you ‘change it. The default character set is #4 which is the computer's UPPER/lower case character set in ROM.

FGM holds five character sets (often called *fonts*) at any one time. Each character set holds 128 characters. The character sets are held in "buffers" which are simply locations in memory where the data that defines what a character looks like are stored.

**CHARACTER SETS 1-3** are in RAM (memory); you can modify (edit) them, save them, and load in new set(s) to replace them. Since each character set holds 128 characters you could replace some of the Commodore Graphics which are in them with another set of characters (ie: have a set of *normal UPPER/lower case characters* and replace the characters that are accessed with the Commodore Key (C=) with a set of *italicized* or <u>underlined</u> characters).

**CHARACTER SETS 4 and 5** are the computer's character sets in ROM and can not be modified or loaded with new sets. <u>Character set 4</u> is standard UPPER/lower case text <u>and</u> the Commodore Graphics symbols located in the left side of the keyboard keys (access with C= and the key). <u>Character set 5</u> is very handy because it contains all of the Commodore graphics; those little symbols on the fronts of the keys. Access the symbols on the left side with C=, and the characters on the right side with SHIFT (and press the key). The Commodore Graphics are quite useful for making *lines, boxes, patterns,* and a whole lot more.

**FYI**: FGM's character sets are 1024 bytes long (they show as 5 blocks on disk because 1024 bytes is a *fraction* over 4 blocks - one block holding 254 bytes). Each *character definition* uses 8 bytes, so the 1024 bytes represent the 128 characters (or character definitions) in a character set.

## SELECTING HOW TEXT GOES TO THE SCREEN:

**PASTE/OVERLAY/EOR:** This determines how text reacts with the rest of the pixels on the screen when it is written (fastened) to the screen.

**PASTE** is the *default* and will be active each time you enter **TEXT Mode**. This is because PASTE is the most useful. PASTE means that the area covered by the cursor will be totally replaced by the character. Any part of another area that may be covered by the cursor (ie: a graphic) will be erased as the character is put in place. If the character happens to be a SPACE then the area under the cursor will be erased. The SPACE KEY is probably the best way to erase areas of the screen but is not effective for erasing when OVERLAY or EOR is on.

**OVERLAY:** Turn on OVERLAY when the cursor overlaps something else and you want the character to go to the screen without disturbing whatever else may be covered by the cursor.

**EOR (Exclusive OR):** This can be used for creating outlined characters and for various other interesting effects. To *outline* a character type it to the screen, turn EOR on, *scroll* the screen one pixel left and up (F5 & F6), then place the cursor over the character and type it again. See the **APPENDIX** for more about EOR.

<div align="center">

CTRL P  PASTE on
CTRL O  OVERLAY on
Sh CTRL 8  EOR on

</div>

The cursor color will change depending on which of the above is active. Anytime you *NORMALIZE* (**CTRL N**) the above will be set to PASTE.

**BOLD:** Press **Sh CTRL 1** to turn BOLD on. BOLD takes the *8-byte character definition*, shifts it a pixel left, then OR's the result with the original. This affects all text including the **Definable Character**.

**ITALICS:** Press **Sh CTRL 2** to turn *ITALICS* on. *ITALICS* takes the *8-byte character definition* and shifts the top four bytes right by a pixel. This affects all text including the **Definable Character**.

To turn off BOLD and *ITALICS* either NORMALIZE with **CTRL N** or exit/re-enter TEXT Mode.

**REVERSE:** Press **CTRL R** to REVERSE the character sets as they go to the screen. This is a *toggle*; press it once to turn reverse on and again to turn it off. REVERSE is also turned off with **CTRL N** and by exiting **TEXT Mode**. This affects all text including the **Definable Character**.

**ROTATION:** Press **CTRL :** to change the rotation of the characters as they go to the screen. Each press of **CTRL :** will change the rotation by 90 degrees counterclockwise. Rotation can be set back to upright (0 degrees) with **CTRL N,** by exiting **TEXT Mode,** or by pressing **CTRL :** until the rotation is right. This affects all text including the Definable Character.

<div align="center">

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</div>

## < DIRECTION OF PRINT >

**DIRECTION OF PRINT**: CTRL ↑ [up-arrow]. This *toggles* between the cursor moving *across* or *down* after writing each character to the screen. Use it for *typing down the screen* and for *pushing, pulling, stretching* screen areas up/down. The border color will be different depending on whether *across* or *downward* printing is in effect.

**WORDWRAP** is turned off (if it was on) when typing down the screen. When you reach the bottom of the screen the cursor will move to the top, one cursor width over to the left.

Besides being useful for *downward printing* the downward direction is useful with the INST/DEL key to move things on the screen in an up/down direction. Use INSERT to push the area below the cursor *downwards*, and use DELETE to pull it *upward*. Using C= and INST will vertically "stretch" an area similar to using C= and I in **ADJUST Mode**.

The **DIRECTION OF PRINT** is set back to *across* with **CTRL N** or by exiting **TEXT Mode**. NOTE: Using CTRL ↑ [up-arrow] to toggle direction will turn **WORDWRAP** off (WORDWRAP is not available when typing in the downward direction).

**NORMALIZE: CTRL N** makes the cursor size 1:1 (smallest), turns PASTE on, sets **DIRECTION** to *across*, turns BOLD, ITALICS, REVERSE, and ROTATION off. Using *NORMALIZE* sets **TEXT Mode** to the same defaults it's in on every entry <u>and</u> sets the cursor to its smallest size. **CTRL N** does not turn WORDWRAP off.

**LAST SIZE:** Pressing **CTRL L** will return the cursor the *last* size it was before using **CTRL N**. Anytime you exit **TEXT Mode** the present cursor size will also become the **LAST SIZE** and it will be that size when you re-enter **TEXT Mode**.

## < INSERT/DELETE >

**INSERT/DELETE:** Use **INSERT** and **DELETE** for moving text and graphics around the screens. If you need to move a graphic around it's quite easy to do it by using the **INSERT** and **DELETE** functions. **INSERT** and **DELETE** operate *across* the screen when *typing across* and they operate *up/down* when typing *down* the screen, at whatever size the cursor is.

**DELETE (ACROSS):** Pressing the **INST/DEL** key will pull anything under and to the right of the cursor one column left, deleting the character (or whatever) to the left of the cursor. If screens are *across-linked* then this will pull from the right margin across any unseen screens.

**DELETE (DOWN):** When typing in the **DOWN DIRECTION** pressing **INST/DEL** will pull anything under and anything below the cursor up one row.

**NOTE:** Tapping the **INST/DEL** key once is a handy way to enter **TEXT Mode**.

**ERASE:** Move the cursor over the area and press the **SPACE BAR**. This won't disturb other areas of the screen like **DELETE** does.

**INSERT:** There are several ways to **INSERT; COLUMN INSERT, PIXEL INSERT,** and **PIXEL INSERT WITH SHADOW**. **PIXEL INSERT WITH SHADOW** is used for *stretching* areas of the screen. A *special function* is available which will **INSERT** or **DELETE** while *wrapping* to the bottom of the screen.

**INSERT (ACROSS):** When in the *across* (default) direction **INSERT** pushes everything under and to the right of the cursor to the right, just like most word processors. Anything pushed off the right margin is gone forever (unlike most word processors). If screens are *across-linked* then whatever is pushed right will be pushed across the unseen screens into the right margin.

               Sh INST/DEL: INSERT a COLUMN (8 pixels)
               C= INST/DEL: INSERT a PIXEL
                 C= CTRL I: INSERT a PIXEL (leave shadow)

**INSERT (DOWN):** When **DIRECTION** is set for typing *down the screen* using the above **INSERTS** will push whatever is under the cursor down and leave a *SHADOW.* INSERTING DOWN always leaves a *shadow.*

Leaving a *SHADOW* means that when the **INSERT** takes place the column or *left-most pixels* under the cursor are not erased; they are left *behind.* This is used for STRETCHING areas of the screen either horizontally or vertically depending on which **DIRECTION** the cursor movement is set for.



PIXEL INSERT: ACROSS AND DOWN
PIXEL INSERT w/SHADOW
STRETCH THINGS →
SLOPE THINGS DOWN   SLOPE THINGS UPWARDS
The Fun Machine Graphics
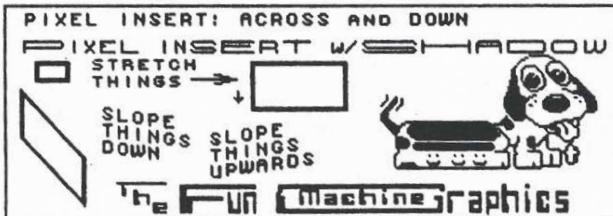
## < AUTO-STRETCH & WRAPPING >

"**AUTO-STRETCH**" (for lack of a better name): This function evolved into the FGM without my knowledge; it just happened. At first I tried to eliminate it because it was a "bug" but after experimenting with it for awhile I found it to be useful, so I left it.

THIS FUNCTION SHOULD NOT BE USED ON *ACROSS-LINKED* SCREENS UNLESS YOU ARE ON THE *RIGHT-MOST* SCREEN! If you want to know <u>why</u> you shouldn't use it go ahead and give it a try (you'll likely mess up the screens).

What **AUTO-STRETCH** does is to do a *pixel insert* either with or without *shadow*, then move the cursor one column left and repeat. With smallest-size text the first time this is done the effect will be that one pixel will be inserted *between* each character. After that the cursor will begin falling on character pixels which are on and it will stretch the character (or anything on the screen). Use **AUTO-STRETCH** to space out the characters on a line so your right margins are even (justified); place the cursor on the right side of the screen, then hold <u>C= CTRL T</u> until the spacing is as you want. This function is easy to use and can be very handy but needs to be experimented with. Please see the "d.bug or not" DEMO.

> <u>C= CTRL T</u>: Do PIXEL INSERT <u>WITH</u> SHADOW, then move cursor one column left.

> <u>Sh CTRL T</u>: Do PIXEL INSERT <u>WITHOUT</u> SHADOW, then move cursor one column left.



```
AUTO-STRETCH USING C= CTRL T

AUTO-STRETCH        AUTO-STRETCH
AUTO-STRETCH        AUTO-STRETCH
BEST USE MAY BE FOR PUTTING SPACES
BETWEEN CHARACTERS FOR JUSTIFICATION.
BEST USE MAY BE FOR PUTTING SPACES
BETWEEN CHARACTERS FOR JUSTIFICATION.
```

**INSERT/DELETE WITH WRAPPING**: These two functions can be used on a single screen to "push" (**INSERT**) or "pull" (**DELETE**) all of the way to the bottom of the screen. If you had a screen full of text like this and you wanted to open up a few columns so you could add a word then this is the function to use. Use the **DELETE** function if you wish to close up a few columns. These two functions only work on single screens and are not available when screens are *across-linked*.

> <u>CTRL I</u>: **INSERT**. This function pushes a single row to the right starting from the cursor position, and leaves a shadow (which you can erase with the SPACE). What goes off the right side is wrapped to the left side of the row below, then repeated until the bottom right corner of the screen is reached. What goes off the bottom right corner may be gone forever, though you can usually recover some by using <u>CTRL U</u> to pull it back up.

> <u>CTRL U</u>: **PULL UP** (ie: **DELETE**). This function pulls the row that's to the right of the cursor *into the* cursor, and each column of each row follows. The reverse of <u>CTRL I</u>.

### < FLIP - ROTATE - DEFINABLE CHARACTER - BORDERS >

**FLIPPING AND ROTATING A 1:1 AREA OF THE SCREEN:** Use these functions to change the *orientation* of any area under the *smallest text cursor*. If the cursor is larger than its smallest size then only the 1:1 area in the upper left corner of the text cursor will be affected. These functions are handy for changing the direction an arrow points and for creating lines that aren't supported by the **Commodore** *graphics sets*. They are often used in conjunction with the Definable Character; type a 1:1 arrow to the screen, rotate it so it points in the desired direction, press F8 to *capture* it as the Definable Character, then move the cursor elsewhere and type the Definable Character to the screen using **CTRL =**.

> **CTRL F**   FLIP area under 1:1 cursor
> **Sh CLR/HOME**   ROTATE area under 1:1 cursor by 90 degrees.

**THE DEFINABLE CHARACTER:** This is simply a *miniature capture box* that lets you capture anything under the 1:1 portion of the Text Cursor and then print it to the screen just like any other character. Bold, Italics, Reverse, Paste/Overlay/EOR, and Text Size all are effective with the Definable Character. The Definable Character is very useful for repairing areas that may have been accidently damaged; capture a similar area and print it to the damaged area.

> **F8**   *Capture Area* under 1:1 cursor as *Definable Character*
> **CTRL =**   Print Definable Character to the screen
> **C= CTRL =**   Print built-in *Happy Face* to screen

You can permanently change the definition of the Definable Character by using the **"u.customizer"** utility. Note that this utility will also make **permanent to disk** all five graphics and three character sets that are present in the program at the time it's used. *Also*, when you save all three character sets as *one* the Definable Character will be saved with them so it will be loaded with them.

**CHARACTER BORDERS:** While in **TEXT Mode** you can cause *anything* under the 1:1 text cursor to be written around the screen perimeter. Graphics buffer #4 is pre-loaded with a bunch of *character tiles*. Fasten #4 to the screen, then place the cursor over the tiles and write them around the screen to create some nice borders. Try rotating the tiles with 1:1 ROTATE before using them as borders.

> **DOING CHARACTER BORDERS:** With the cursor at its **smallest size** place it over the area you wish to write as a border and press **Sh C= CTRL** and **B**. This is almost like v.410 except you have to press more keys. To erase the border place the cursor over a blank area and press **Sh C= CTRL** and **B** again.

**LINE BORDERS** are easily drawn while in **GP Mode**: Press **Sh +** to draw a line border. Press **Sh -** to *undo* a line border. With both functions a window will appear asking you to confirm.

## < MARGINS & WORDWRAP >

When screens are **LINKED** you will have **MARGINS**, and **WORDWRAP** will be available. If screens are *down-linked* then the margins will be on the left and right sides of each screen. If screens are *across-linked* then the left margin will be on the left side of the left-most screen and the right margin will be on the right side of the right-most screen.

**MARGINS** specify the area that **INSERT** and **DELETE** will be active on. This area includes everything between (inside) the margins and the area covered by the margins. Anything outside the margins will be safe from **INSERT** and **DELETE**. You may type text outside the margins but **ACROSS INSERT** and **DELETE** can't be used when outside the margins. **TEXT Mode** is the only mode that cares about margins; the other modes do not interact with the margins.

When you type text into the right margin the cursor will move to the left margin, one cursor height down. If the screens are *across-linked* then the left-most screen will be swapped in. If WORDWRAP is on then the preceeding word will also be pulled down.

If you are on the **left margin** and hit **DELETE** the cursor will move to the right margin and one cursor height up (nothing will be deleted). If the screens are *across-linked* then the rightmost screen will be swapped in (the one with the right margin on it).

## < SETTING THE MARGINS >

This may be done at any time while in **TEXT Mode**. It does not cause any rearranging of the images on the screens. Press **CTRL N** to make the cursor its smallest size, position the cursor over one of the margins, and press **Sh CTRL M**. The margin color will change; use the left/right cursor keys to move the margin where you wish it to be and then press **RETURN** to set the margin. There are *limits* set as to how far margins can be moved (you'll find them). It is sometimes possible to move the left margin and right margins so the left margin is to the right of the right margin but this is not recommended!

If you are using **WORDWRAP** the margins should be set wider than the widest word you expect to type; if you type in a word that won't fit between the margins then unknown things may happen when the program tries to wrap the word. The results may not be what you want.

When you go to the **LINK MENU** the position of the margins (in columns) is displayed near the bottom of the **LINK MENU**. These will appear as L=# and R=# for left and right margins respectively, with the # being the column position. With *unlinked* screens these values won't appear.

## < WORDWRAP >

**WORDWRAP**: This function makes typing bunches of text onto the screens a LOT easier. When **WORDWRAP** is on and you type *onto the right margin* the word you are typing will be pulled to the *left margin, one cursor height* down.

After a **WRAP** takes place if you hit the **DELETE** key once before typing any further the word will be returned to the right margin where it was before it wrapped.

**WORDWRAP** is only available when margins are present (when screens are linked), and only works on text that is 2x2 or less in size. If the cursor size is larger than two rows high or two columns wide then **WORDWRAP** will not be effective but you will be **WARNED** when the cursor hits the right margin; the bell will *ding* and you won't be able to type past the right margin.

The **WRAP** (or **WARN**) only occurs if the character you type on the right margin is a letter or Commodore Graphic; if you type a space, number, or punctuation then the character will be put *on* the right margin and the cursor will move to the left margin without **WRAP** taking place.

**TO TURN WORDWRAP ON**: Press **CTRL W**. **WORDWRAP** will stay on until you either exit to the Main Menu or use CTRL ↑ [up-arrow] to change **DIRECTION**. If you want **WRAP** on and don't know if it's already on then just press **CTRL W** to be sure.

**TO TURN WORDWRAP OFF**: **EXIT** to the Main Menu or press CTRL ↑ [up-arrow] to change **DIRECTION**. If you want to be sure **WRAP** is off press the CTRL ↑ [up-arrow] key twice.

**WARN**: This function is a part of **WRAP**. If WRAP is on and the cursor is larger than 2x2 a bell will *ding* when you type into the right margin and the cursor won't move past the right margin. Additionally, **WARN** is always in effect at any cursor size when you try to type past the lower right corner of the screen.

**BEWARE**: When **WRAP** occurs it will over-write anything that happens to be where the word goes (left margin, one cursor height down). If a graphic happens to be near the left margin and a word is wrapped there then the graphic will be messed up.



```
USE SOME CAUTION WHEN YOU HAVE
WORDWRAP ON; IT WILL HAPPILY WRAP
        OVER ANYTHING ON THE
        LEFT MARGIN AND THERE
        IS NO RECOVERY! MOVE THE
        LEFT MARGIN TO THE RIGHT
        OF THE GRAPHIC TO BE SAFE!
```

## VIEWING/EDITING A CHARACTER BUFFER ON THE HI-RES SCREEN:

While in **TEXT Mode** the character sets in the buffers may be copied to the hi-res screen for viewing or editing. After editing a character set on the screen it can be sucked back into any of the three character buffers and saved.

Character sets may be edited using **CREATOR'S CHARACTER EDITOR** but I usually prefer to use this method of editing them. The advantage of using the **CHARACTER EDITOR** is that the edit screen isn't cluttered by pixels from adjacent characters. The advantage of writing the characters to the screen and editing them is that you can quickly test them out at expanded sizes; place the text cursor over the character you want to test, press F8 to capture the area as the Definable Character, then use **CTRL =** to print it to the screen at whatever size you make the cursor. Also, *editing character sets on the screen* may be done while in any of FGM's sections.

## COPYING THE ACTIVE CHARACTER SET TO THE SCREEN:

Use **CTRL 1-5** to select the buffer you want to copy to the screen and then press **C= CTRL Y**. If you wanted to see a different set press **CTRL 1-5** to select a different buffer and press **C= CTRL Y** again.

When a character set is copied to the screen it will overwrite the top 3 rows +8 columns of the screen so you usually shouldn't do this to a screen that already has something on it.

**3**

You can make changes to the characters on the screen (put the cursor on top of them and press F7 twice for **PIXEL EDIT MODE**). This won't affect the character set in RAM until you write it back.

## WRITING THE SCREEN AREA BACK TO A CHARACTER BUFFER:

Press **C= CTRL Z** to write the contents of the top of the screen back to the **active** character buffer. **ANYTHING** at the top of the screen will be written back to the selected buffer, so you can use this to capture character sets that you have loaded/captured to the FGM from another program, or possibly to create character sets which when typed out right would re-construct a graphic that was sucked into the buffer.

**NOTE**: If *character buffer #4 or 5* (the computer's character sets in ROM) are active then **C= CTRL Z** won't do anything.

You can pull more than one character set to the screen by scrolling the screen up after each set is written. Five sets will fit on a full screen. These could be *saved as screens*, and when you want to use a character set load the screen, scroll the set you want into position, then suck it into a character buffer. Since they are screens you can also print them out at various densities for reference.

# < PIXEL EDIT MODE >

**ENTRY:** F7 from any mode
**EXIT:** RETURN for GP Mode, MODE KEYS for other modes

Available when in **CREATOR**, **DEMO-ER** and **CLIPART**. **PIXEL EDIT Mode** will "blow up" the screen area under the *Pixel Edit Cursor* so you can turn individual pixels on or off. This mode is not available when in the **PRINTER** section; you'll be able to get the *2x3 Pixel Edit Cursor* but the *editor* won't be available in the PRINTER section.

Tap F7 and a *three column by two row cursor* will appear. This is the *Pixel Edit Cursor* and it may be moved around the hi-res screen with the cursor keys.

Tapping F7 when the *Pixel Edit Cursor* is visible will take you to the **PIXEL EDITOR** and the area under the cursor will be shown blown-up. The **PIXEL EDITOR'S** screen will display most of the active keys. Use the cursor keys to move the cursor around. Other keys function as follows:

|          |                                                           |
|---------:|-----------------------------------------------------------|
| D        | Turns on DRAW; moving cursor will leave a trail           |
| E        | Turns on ERASE; moving cursor will erase pixels           |
| S        | Turns on SKIP; moving cursor won't affect the pixels      |
| *        | DRAWS RIGHT                                                |
| ↑        | [up-arrow] DRAWS UPWARDS                                   |
| z        | TOGGLES PIXEL under cursor on/off (and sets SKIP)          |
| SPACE    | ERASES to RIGHT                                            |
| DEL      | DELETES PIXEL at cursor location and moves left           |
| HOME     | MOVES CURSOR to upper left corner                          |
| RUN/STOP | MOVES CURSOR to left side of edit screen                  |
| £        | [English Pound] MOVES CURSOR to middle of screen          |
| RETURN   | Back to hi-res screen with changes                        |
| C        | CANCELS without changing the screen                       |

The JOYSTICK may be used (in port 2). Use the stick to move the cursor and use the fire button to toggle pixels on/off) (like pressing z). Although it's a little tricky, you can also use the joystick to move the *Pixel Cursor* position on the unseen hi-rs screen (like using the F-Keys). To do this you hold the fire button down and then move the joystick. The trick is that pressing the fire button also toggles the pixel underneath so you need to start with the pixel underneath in its opposite condition. It takes good timing but can be used.

**FYI:** When viewing an area of the screen you are actually viewing the memory contents at that location. If you put the *Pixel Edit Cursor* in the upper-left corner and go to the **PIXEL EDITOR** the top 8 pixels across are the bits in address 8192dec. The next set down is 8193. Continue down for 6 more bytes, then move right one column to its top and that's 8200. The bit values are from right to left with the least significant bit on the right. If you stopped the program and poked 8192 with 255 (128+64+32+16+8+4+2+1) you'd get a horizontal line in the upper left corner.

## < PIXEL EDIT MODE >
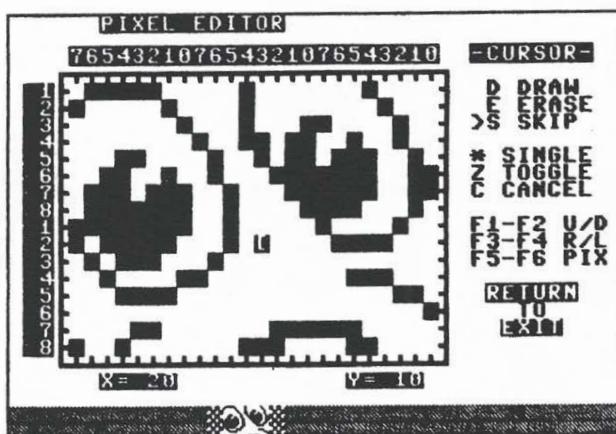


The two *cross hairs* on the PIXEL EDIT SCREEN divide the edit area into *six character areas*. This is for your reference and can be handy when when editing character sets on the screen.

The F-Keys F1-F6 are used to move the area of the hi-res screen being viewed on the PIXEL EDIT SCREEN to another location. Think of this as moving the unseen *Pixel Edit Cursor*. The X= and Y= near the bottom of the PIXEL EDIT SCREEN will indicate the *location on the screen* that you are observing.

   F1/F2 move the unseen Pixel Edit Cursor UP/DOWN (Y= position)
   F3/F4 move the Pixel Edit Cursor RIGHT/LEFT (X= position)
       F5 SCROLLS the screen LEFT by pixels if link status permits
       F6 SCROLLS the screen UP by pixels if link status permits

The *window* at the bottom of the screen shows the area that you are editing and any changes will be reflected on it. The changes in the *window* will not be written to the screen until you either press RETURN to go back to the hi-res screen, or use one of the F-Keys to view another area. To CANCEL and go back to the hi-res screen without making any changes press C.

The area shown in the *window* includes one column to the left and right of the editable area. This is shown shaded. If the position being viewed at is the extreme left (X=0) or right (x=37) sides of the screen then the shaded area will show what's at the opposite side of the screen, one column up. This is being mentioned so it won't confuse you if it happens.

When the screen is scrolled with F5/F6, or when it's moved with F1-F4 *and* the edit area is on the bottom rows, the *window* will temporarily display something other than the edit area before it updates. This only takes a fraction of a second and happens because the *window area* is sharing its area with the hi-res screen and whatever was at that location on the hi-res screen must be written back.

# SIGNS OF FGM ADDICTION

Your eye sees ... But your mind sees ...

Your idea of a Good Time is a brand new disk of Print Shop Graphics !

Borders are more, Much More than a simple Line, w/Definable Characters

Your Self-Image Changes, Are You Really ... or are you this ?

Your Huge Pile of Blank Disks ... Rapidly Dwindles To ...

And a Pixel Editor No Longer Means a Tiny Man Who Runs a Newspaper!

Happy FGMing

THE ABOVE WAS SENT TO ME BY DAN SHACKELFORD. IT'S A GOOD EXAMPLE OF A FUN-THING THAT CAN BE DONE WITH FGM USING A FEW GRAPHICS, SOME TEXT, AND A BIT OF WIT😊. THE ORIGINAL WAS 2 ACROSS BY 3 DOWN AT 120 DPI, AND HAS BEEN REDUCED BY 10% TO FIT HERE. DAN ORIGINALLY DID THIS WITH V4.10 OF FGM AND SINCE I HAD TO CHANGE THE DOG I TAMPERED WITH IT A *LITTLE*, MAINLY BY HITTING ALL OF THE CHARACTERS WITH THE SMOOTHING ROUTINE (AND CHANGING THE DOG😊).

## < ADJUST MODE OVERVIEW >

**ENTRY:** Press J (CTRL J from TEXT Mode)
**EXIT:** RETURN for GP Mode, MODE KEYS for other modes

OVERVIEW: ADJUST Mode is used for working on *full rows* (across) of the
screen. ADJUST Mode could also be called *ranged left/right scrolling*.
Ranged rows may be scrolled left/right (for *centering* things). Rows
may be *pulled up* and *pushed down* to make more space between them.
*Vertical stretching* and *shrinking* of screen areas can be done. Areas
can be *captured*, *scrolled*, then EOR'd back to the screen for easy
*OUTLINING*, or *OVERLAYED* back for "*fill patterns*". Also useful for
*moving row(s) of text* around. *Slanting of screen areas* can be done
using this mode. When in ADJUST Mode *screen scrolling* is available
regardless of *link status*.

ADJUST Mode may be entered from any of the other modes, and you can go
from ADJUST Mode to any of the other modes except GRAB Mode.

When you enter ADJUST Mode a *horizontal range bar* (cursor) will appear
across the screen. The bar will default to whatever vertical size the
*text cursor* was. Anything covered by the bar is in its *active range*.
You can change the *range* (size) of the bar using the +/- keys, and
*move the bar* by using the up/down cursor keys.

ACTIVE KEYS: When in ADJUST Mode the F1-F6 keys are active for
SCROLLING *regardless* of the screen *link configuration*. F1/F2/F6 will
scroll the entire screen up/down, and F3/F4/F5 will scroll the *ranged*
area left/right. Use the X key to go between screens. SPLIT SCREENS
are available if *link status* permits (see SPLIT SCREENS on page 52).

|       | |                                                         |
|------:|-|---------------------------------------------------------|
| X     | | eXchange screens                                        |
| r     | | REVERSE screen                                          |
| +     | | Increase ADJUST bar size (range)                        |
| -     | | Decrease ADJUST bar size (range)                        |
| C= I  | | INSERT (push) a line (pixel). Use for stretch.          |
| C= U  | | Pull screen UP a line (pixel). Use for shrink.          |
| C= E  | | ERASE a line (pixel).                                   |
| CTRL I| | INSERT a row (pushes down)                              |
| CTRL U| | PULL screen UP a row                                    |
| CTRL E| | ERASE area under range bar                             |
| =     | | CAPTURE 1-4 rows (1-3 rows in PRINTER, CLIPART)         |
| o     | | OVERLAY captured rows to screen                         |
| p     | | PUT/PICK-UP (EOR) captured rows                         |
| Sh P  | | PASTE captured rows to screen                           |
| C= >  | | AUTO ROW SPACER                                         |
| C= F8 | | One F5/F6 combination                                   |
| Sh F8 | | Eight F5/F6 combinations (SLANT)                        |
| CTRL  | | [left arrow] ROLL A ROW                                 |

## < INSERT - DELETE - ERASE >

**INSERT/DELETE/ERASE ROWS and LINES:** Use these functions to increase or decrease the amount of spacing between rows, either in *row* (8 pixel) or *line* (single pixel) increments. This function doesn't care what size the **ADJUST Bar** is; everything is referenced from the *top* of the **ADJUST Bar**. When working with *lines* the *line of pixels* at the *very top* of the **ADJUST Bar** is the *reference point*.

*INSERTING* will *push* the screen down one *row* or *line*, starting at the top of the **ADJUST Bar**. Whatever was at the bottom of the screen will disappear forever unless you do a **DELETE** (pull it back up) before doing anything else. When a *row* or *line* is INSERTed it will leave a *shadow*; the top-most *row* or *line* will remain. This *shadow* is useful for *stretching*; place the top of the **ADJUST Bar** over some text or a graphic and press **C= I**. Use F-6 to scroll the screen upwards as needed to position the area under the bar. **WARNING:** when you *scroll the screen upwards* whatever was at the top of the screen will now be at the bottom and **ADJUST'S INSERT** may push it into *oblivion*.

<center>

CTRL I   INSERT (Push Down) ROW
C= I   INSERT (Push Down) LINE (pixel)

</center>

*DELETING* a *row* or *line* pulls *the screen up* in either *row* or *line* (pixel) increments. The area at the top of the **ADJUST Bar** will be *replaced* by the area just below it and the entire screen area below the **ADJUST Bar** will be *pulled up*. This function can be used to *vertically shrink* a screen area or to *un-do* an unacceptable **INSERT**.

Note that the area *below* the bottom of the screen will also be pulled up; this is so you can recover something that may accidently have been pushed off the screen (if you act immediately). Very often "garbage" will be pulled up from the bottom because the area below the screen is used as a temporary storage area for many things. This garbage can usually be avoided if you can push (**INSERT**) a few empty rows before doing a **DELETE**. It's usually easier to just move the **ADJUST Bar** over the garbage and press **CTRL E** to erase it.

<center>

CTRL U   DELETE (Pull Up) ROW
C= U   DELETE (Pull Up) LINE

</center>

*ERASING ROWS* simply erases the entire area covered by the **ADJUST Bar**.

*ERASING LINES* erases the single pixel "line" at the very top of the **ADJUST Bar**. Use these functions after an **INSERT** to get rid of the *shadow* (unless you wish to *stretch*). Also handy for erasing large areas of the screen. If you want to erase the whole screen from a certain point downward and the **ADJUST Bar** is at its smallest size simply press - once and the cursor will cover to the bottom part of the screen.

<center>

CTRL E   ERASE ROW
C= E   ERASE LINE

</center>

<center>

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</center>

## < VERTICAL STRETCHING & SHRINKING >

VERTICAL STRETCHING: Since C= I leaves a *shadow* when it *PIXEL INSERTS* you can use it for vertically *stretching* text, graphics, or anything else on the screen. You can make a graphic or a row (or rows) of characters a few pixels taller by placing the ADJUST Bar over the area and pressing C= I. a few times. If you don't like the result you can undo it by using C= U to "shrink" it back UP again.

C= I pushes *down* from the top of the ADJUST Bar, leaving the top line of pixels alone, but they get copied one line down too. This is the "stretch". To see *exactly* what's on the top line of pixels tap F7 twice for the PIXEL EDITOR. The top line of pixels shown on the PIXEL EDITOR screen are the ones that will be "stretched".

Pixel Scrolling the screen up (F6) can be used to move the line you want to *stretch* into position. Note that SCROLLING the screen will move the top of the screen to the bottom and if you do an INSERT you'll lose that portion. Another way to adjust the screen up/down without scrolling is to use C= I to *push* ("scroll") the screen down and C= U to *pull* it up.

CTRL I leaves *full-row shadows*. Although not as useful for stretching, this can be used to *repeat a row* multiple times. Handy for filling a screen with a pattern that's on one row.

Both the C= I PIXEL INSERT and the CTRL I ROW INSERT push the screen down and what goes off the bottom may be lost. You may be able to recover the last line/row by using C= U or CTRL U.

VERTICAL SHRINKING: Use C= U to "shrink" an area vertically. This can be used to make text or graphics a few pixels shorter. Unlike *stretch*, this is not always reversable; you can use *stretch* to add pixels back but they will be a *shadow* of the top *line*, not the *line* that was lost during the *pull-up*.

## < ADJUST'S CAPTURE >

**CAPTURING ROWS**: Four rows (three in **PRINTER** and **CLIPART**) can be captured and copied to another location on the same or a different screen. The **ADJUST Bar** must be **less** than five rows in height for this to function. Press the = key to capture the area, then move the **ADJUST Bar** to the new location (same or another screen) and press unshifted p to EOR or Shifted P to PASTE the area to the screen.

      =   CAPTURE 1-4 rows (1-3 rows in PRINTER & CLIPART)
      o   OVERLAY captured rows to screen
      p   PUT/PICK-UP (EOR) captured rows
  Sh P   PASTE captured rows to screen

**FILL PATTERNS**: Capturing a couple of rows of a pattern and OVERLAYING them to the screen can be used for some interesting effects. For filling characters, reverse the screen before overlaying. NOTE: If you are overlaying to a reversed screen you should probably capture the fill pattern from a reversed screen. Use **PIXEL EDIT** if need be to smooth out or outline the filled characters.
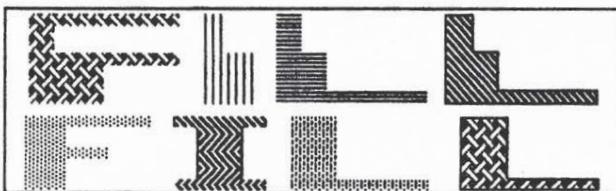


**EASY OUTLINING**: **ADJUST'S CAPTURE** function makes creating outlined characters a snap. Put some text on the screen (larger than 1:1), move the **ADJUST Bar** over it, and press = to capture it. Next press F5 and F6 once to scroll the area left/up a pixel. Finally, press p to EOR the captured area back. If you don't like the result press p again and the area will be undone. Many special effects are possible using this. Try doing the above but make the bar smaller before pressing p. This will give you a half-outline. With DEMOS, moving the bar somewhere and repeatedly pressing p will cause the captured area to flash on and off the screen. See the demo on **ADJUST's EOR** to see more about this.
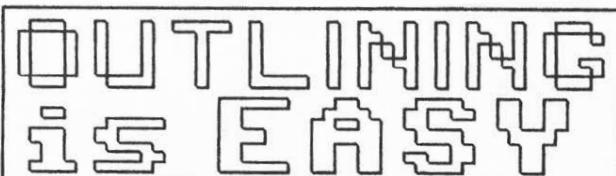


**NOTE**: **ADJUST'S** capture buffer is very temporary; when you capture something you should transfer it where you wish before doing much else. If you exit to another mode the capture buffer will become filled with garbage and that's what will be written back when you use **CTRL =**. Also note: the contents of graphics buffer #6 (the temporary one) will be corrupted when you use **ADJUST'S CAPTURE**.

## < SLANTING, BENDING, ROLLING ROWS >

**SLANTING and BENDING**: By placing the **ADJUST Bar** over an area of the screen you can *slant the screen area to the* **right** by doing a series of F5/F6 combinations (press F5, then F6, then repeat). The ranged area will be moved a pixel left, then the entire screen will be scrolled up a pixel. To *slant something to the* **left** put the bar **above** the area so the area will *move up into the bar* instead of *out of it*. For *bending* you would probably want to press F6 several times between each press of F5 so the screen scrolls up several pixels.

There are two keys that will do the above combinations for you "automatically". Pressing **C= and F8** will do one **F5/F6** combination. Pressing **Sh and F8** will do eight **F5/F6** combinations.

**UNDO**: If you *slant* an area of the screen and don't like the results (or do it accidently) you can recover. Press RETURN to exit ADJUST, press Sh F to FLIP the screen, press J for ADJUST, place the bar over the same area and repeat whatever you did. Then go unflip the screen.



**ROLL A ROW**: This function only operates on a single row and is included as an aid for capturing character sets and screens from other programs. 1:1 size character sets from some other programs can be loaded to the screen and then pulled into one of the character buffers for use in FGM. Some character sets may include a few extra bytes at the beginning and when loaded to the screen they won't look usable; you'll see what looks like a character set but it will be kinda messed up. **ROLL A ROW** might help you to straighten up the character set so it's useful. Place the **ADJUST Bar** over the row and press **CTRL←[left arrow]** to "roll" the row until the character set is recognizable. If the character set isn't recognizable after seven uses of **CTRL←[left arrow]** then it probably can't be recovered using this method. Note that this rolls the left side of the screen to the right side, kind of like *scrollING*; doing CTRL←[left arrow] eight times and one F3 to *scroll* the area right will return the area to its original condition.



Screens from some other programs may need the help of ROLL to make them useful in FGM. Quik Paint, Micro Illustrator, and Paint Magic are among these. See page 59 for more about loading screens from other programs.

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## < AUTOMATIC ROW SPACER (ARS) >

This function "automatically" does something that you can do manually; put *additional lines (pixels) between rows*. Let's say you had a screen full of single height text (like this) and you wanted to add two lines (pixels) of spacing between each row. To do this manually you would position the ADJUST Bar at the bottom of the screen, do C= I, C= E, C= I, then move the ADJUST Bar up one row and repeat the process, continuing until you got to the top of the screen.

The AUTO ROW SPACER will do the above for you. The vertical size of the ADJUST Bar determines how many lines will be inserted between each row so the first thing you do is use + and - to set the ADJUST Bar size. Then move the bar to the starting point you desire (remember, the ADJUST Bar will move *upwards* after each insert). Lastly, *hold* the C= key and press the > key. The process will begin and continue until the bar reaches the top of the screen OR you release either the C= or > key. If you only want to do a single ARS then hold one key and tap the other once. This operates very quickly so it's a good idea to get familiar with it before using it on something important.

## NOTES ON AUTO ROW SPACING:

(1) Anything that goes off the bottom of the screen is gone! Inserting a single line between each of 25 rows of text will push the bottom three rows off the screen (you'd be adding 24 pixels and 24 pixels divided by 8 pixels per row =3 rows). Take this into consideration!

(2) If you have graphics, text larger than single height, text that straddles rows (occupies more than one row), or a border then this function probably shouldn't be used because it *erases lines as it moves upwards*. This will create gaps where you won't want them.

(3) You may use this in a demo. Some earlier FGMs didn't have this capability. The demo will even play properly on earlier FGMs as long as the viewer doesn't press C= to speed up a demo during an ARS.

| | |
|---|---|
| **1st AMENDMENT**<br>Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people to peaceably assemble, and to petition the Government for a redress of grievances. | **1st AMENDMENT**<br>Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people to peaceably assemble, and to petition the Government for a redress of grievances. |
| **1st AMENDMENT**<br>Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people to peaceably assemble, and to petition the Government for a redress of grievances. | **1st AMENDMENT**<br>Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people to peaceably assemble, and to petition the Government for a redress of grievances. |
| TOP: NO ARS          R-TOP: ARS +2<br>BOT: ARS +1          R-BOT: ARS +3 | |

## < T R A N S F E R   M O D E >

**ENTRY**: Press Shifted T from any mode except TEXT Mode
**EXIT**: RETURN for GP Mode, MODE KEYS for other modes
**REF**: EOR/OVERLAY/PASTE, SCROLLING

OVERVIEW: TRANSFER Mode is used for "capturing" a variable size area
of the screen (up to 32 columns by 25 rows) and copying it elsewhere
on the same or a different screen. TRANSFER does not capture into a
buffer; the source location is noted and the image is copied from
there to the destination area.

## KEYS USED IN TRANSFER MODE:

```
        Sh T   Enter TRANSFER Mode
         X     eXchange screens           _____
      CTRL H   Cursor larger horizontally
       C= H    Cursor smaller horizontally   THESE WORK
      CTRL V   Cursor larger vertically       LIKE IN
       C= V    Cursor smaller vertically     TEXT MODE
      CTRL N   Cursor to 1:1 size         _____
         F8    CAPTURE AREA UNDER CURSOR
         =     CAPTURE AREA UNDER CURSOR
      RETURN   to EXIT TRANSFER Mode
     CURSOR KEYS TO MOVE CURSOR
```

AFTER AREA IS CAPTURED (F8 or =):

```
         X    eXchange screens (if link status permits)
         o    OVERLAY source to destination
         P    EOR source to destination
       Sh P   PASTE source to destination
      RETURN  to EXIT
```

## SCROLLING:

F1-F6 SCROLL the screens (depending on link status). Once you capture
an area you will not be able to scroll that screen. There is one
exception; if screens are un/down-linked and you press X to cycle back
to the source screen you will be able to scroll it (note: if you do
scroll the source you'll change what's in the source area.

## CAPTURING AN AREA:

Make the cursor the size of the area you want to capture (use C= and
CTRL keys with H & V just like in **TEXT Mode**), then press F8 or =. This
is the SOURCE area. The border will ripple with color to let you know
that the area has been captured and you're expected to take it else-
where and copy it to other areas.

GOING BETWEEN SCREENS AFTER CAPTURING:
If screens are unlinked or downlinked you can cycle through all three
screens by pressing X.

If screens are across-linked you will not be able to leave the source
screen UNLESS the screens are linked two-across AND you are on the
third "unlinked" screen.

If two-across linked and on the third screen you can go to the other
two screens by pressing X. You won't be able to to go back to the
third screen until you press RETURN to exit the capture.

## < T R A N S F E R   M O D E >

FASTENING: Once you've *captured an area* by using F8 or = the *border* will begin *rippling with color*. Move the cursor to the *destination* area. If you want to *copy* to *another screen* then press X. If X doesn't work then the *link configuration* won't permit leaving the source screen; you can't leave an *across-linked source screen* after capturing an area unless it's the *third screen* of *two linked across*.

The *cursor size* may be *increased* after an area is captured. This isn't normally recommended but it is available. When you increase the cursor size you'll also be increasing the size of the *source area* that is copied from (which may be on another screen that's not visible). If you're on the source screen then increasing the cursor size may create *source/destination overlap* (see next page).

The *source area* may be *fastened (copied)* to the *destination area* in three ways; EOR, OVERLAY, and PASTE, the same as *fastening graphics* in GP Mode.

|        |                                              |
|--------|----------------------------------------------|
| X      | eXchange screens (if *link status* permits)  |
| p      | *EOR source* to destination                  |
| o      | *OVERLAY source* to destination              |
| Sh P   | *PASTE source* to destination                |
| RETURN | Exit TRANSFER                                |

You may *copy* to your heart's content using any combination of the above keys except RETURN. To cancel (when you're done) press **RETURN** and you'll be taken back to the *transfer cursor*. At this point you can either *capture something else* or *exit to one of the other modes* with the *mode keys*. Press RETURN for GP Mode.

EOR (unshifted p): EOR is usually the best way to *fasten* images to the *destination area* because it lets you **PREVIEW THE POSITIONING** (*EOR* will *undo* what *EOR* does by *EORing* again). If you aren't sure if the cursor is in the right location then press p to EOR the image to the screen and check it out. If it isn't right then press p again and it will *undo* because you are EORing it over itself. This is identical to what happens in GP Mode when you *fasten a graphic* to the screen with unshifted p and then "sponge it back up" by pressing unshifted p again. After you're happy with the positioning you can just leave the image, or you can OVERLAY/PASTE it (you can use OVERLAY or PASTE directly over an EOR with the proper results). See EOR on page 124.

OVERLAY and PASTE should be pretty self-explanatory by now. If not then please refer to GP Mode on *fastening graphics* (page 22).

NOTE: Occasionally the *screen order* and *HOME position* may become *confused* after using TRANSFER. This is most likely to happen if screens are *downlinked and you're recording a demo*. *No problem;* if this happens simply press X to make the screen visible that you want as HOME and (in GP Mode) press Sh CTRL ←[left-arrow] until the screen order is correct (see page 48; SETTING HOME/ORDER).

DEMO WARNINGS: TRANSFER Mode isn't 100% reliable when used in demos; see page 73, item 4. Also, F8 and = shouldn't be used in TRANSFER Mode if you need compatibility with the shareware FGM DEMONSTRATOR.

## <  TRANSFER  MODE  NOTES  >

### TRANSFERRING *FULL* SCREEN WIDTHS:

**TRANSFER'S** *Capture Cursor* can only be made 32 columns wide so if you
want to transfer a full screen width (40 columns) you'll need to do it
in two steps (pieces). Make the cursor its full width (32 columns),
capture the left half and move/fasten it where you want it, press
**RETURN** to exit/re-enter **TRANSFER Mode**, then capture the right half
(you don't need to change cursor size). Unshifted p (EOR) can be used
to make sure the two halves line up before making things permanent;
move the second half (cursor) to where you think it should go and
press unshifted p. The area that *overlaps* should disappear. If it
doesn't disappear then the two halves aren't lined up properly; press
unshifted p again to restore the screen, move the cursor, and try
again. Once the areas line up properly press either o or **Shifted P** to
**OVERLAY** or **PASTE** the second half to the screen.

REM: You can use GP Mode's *COPY function* to copy a *full screen* to a
*blank screen*.

### SOURCE/DESTINATION OVERLAP:

When you *capture an area* the program makes note of the location and
that's where it copies from. If the area you want to *transfer to*
overlaps the area the data is in then **TRANSFER** will probably give you
unexpected results. This is because you'll be writing to (changing)
the area you're copying from as you copy from it. If you OVERLAY or
**PASTE** to the area it's difficult to anticipate the results but they
will be permanent; the *source area* will be changed beyond recovery. If
you use unshifted p (EOR) the results will be equally unpredictable
but they will be reversable (unless you **EOR** the *transfer area* directly
over itself in which case the *source area* will disappear forever).
Using **EOR** with *source* and *destination* areas overlapping can be used
for special effects and creating unusual patterns. If you don't like
the results just keep EORing (pressing unshifted p) and the screen
will eventually return to normal.



THE PATTERNS SHOWN HERE WERE CREATED
BY CAPTURING THE ABOVE CIRCLE FOR
TRANSFER, THEN MOVING THE CURSOR ONE
COLUMN OR ONE ROW AND EORING WITH P.
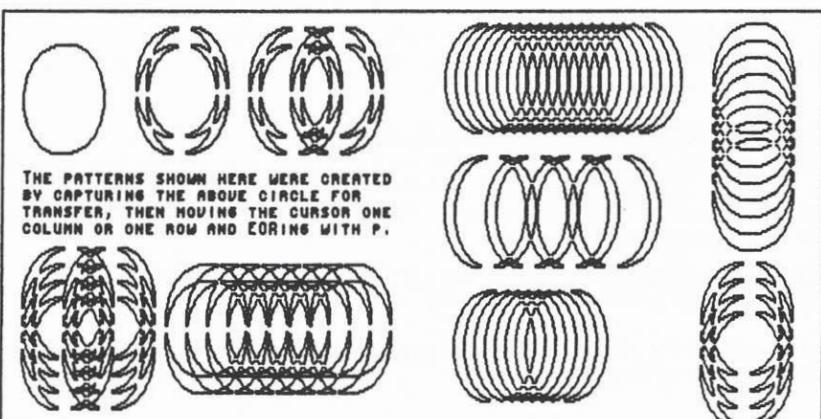
# < LINKED SCREENS >

**OVERVIEW**: Linking the screens allows you to "connect" them for easier editing, loading, saving, and printing. Screens may be linked either 2-3 ACROSS or 2-3 DOWN. Linked screens may be printed ACROSS and DOWN in the same printing (ie: print 3 screens across by 12 down).

When screens are *linked* you can load, **save**, or print a *set* of screens by entering just one filename. *Linked screens* remain as *individual hi-res screen files on the disk* and each may be loaded, edited, re-saved, and printed by itself. The method of naming the files is what FGM uses to keep track of which screen file is which.

**MARGINS** are present when screens are *linked*, and **WORDWRAP** will be available. These features make typing in lots of text a lot easier.

## KEYS USED WITH LINKED SCREENS:
**Sh CTRL  [left arrow]**: SET HOME/ORDER (**GP Mode**)

**HOME key**: Moves cursor to upper-left corner of the screen. If already there then will swap the HOME screen in (the top or left-most screen).

**X**: Go between screens like pressing F3 (**CTRL X** in **TEXT Mode**).

**Shifted X**: When screens are linked 2-ACROSS pressing this *while in GP Mode* will take you to the *third "unlinked"* screen. Press X to exit the *third "unlinked"* screen.

**F1/F2** won't operate if ACROSS-LINKED unless in ADJUST Mode. If DOWN-LINKED or UNLINKED, F1/F2 will scroll the screen UP/DOWN.

**F3/F4** moves between screens like pressing X. When ACROSS-LINKED the F3 key will move the viewing area to the *right* by 20 columns and the F4 key will move it to the *left* by 20 columns (back and forth). When DOWN-LINKED F3/F4 and X act identical.

**F5 (PIXEL SCROLL LEFT)**: Only available in **ADJUST Mode** when screens are linked.

**F6 (PIXEL SCROLL UP)**: Works if screens are DOWN-LINKED. To use with ACROSS-LINKED screens enter **ADJUST** Mode (and be careful; the other screens won't be scrolled up).

## SCROLLING LINKED SCREENS:
**ACROSS-LINKED SCREENS** may not be scrolled in any direction unless you are in **ADJUST Mode**. The F3/F4 keys will *move the viewing window* right/left in 20 column increments. Pressing the X key acts like pressing F3.

**DOWN-LINKED SCREENS** may be scrolled UP/DOWN with F3/F4/F6. F3/F4 and X all act identical and swap the next screen in.

When A2 and on the *third unlinked screen* the F1-F6 *scroll keys* operate normally and scroll the screens.

## < SET LINK STATUS & HOME/ORDER >

**LINK STATUS:** This refers to the *link configuration* of the screens (how many are linked and in which direction). Screens may be **UNLINKED**, **2-3 ACROSS-LINKED**, or **2-3 DOWN-LINKED**. If screens are *linked* then a *letter/number combination* will appear on the Main Menu near the #4 selection. The letter will be either A or D and the number 2 or 3 depending on *link configuration*. For example, an A3 will appear if screens are linked across-three, and D2 will be there if linked down-two. If nothing is there then the screens are *unlinked*.

## SELECTING LINK STATUS:

**LINK STATUS** may be changed at any time by pressing / from the Main Menu of any section. This will take you to the **LINK MENU**. In **CREATOR** and **DEMO-ER** the *margin settings* will be displayed on the **LINK MENU**.

When you go to the **LINK MENU** the present *LINK STATUS* will be high-lighted on the screen. Just press RETURN for the Main Menu.

If you wish to change the *LINK STATUS* press one of the menu numbers to select how many screens you want involved. You will then be prompted **ACR DWN**. The default will be the last status unless screens were *unlinked*. If sceens were *unlinked* then DOWN will be the default. Use **ANYKEY** to toggle the selections and **RETURN** to select.

When the *LINK STATUS* is *set* or *changed* the margins will be set to their default values; left to 0 and right to maximum.

Anytime you change the *LINK STATUS* the screens will be **HOMED** first. This means the screen that was there when you exited the hi-res screens may be different when you re-enter. *Not to fear; linking* and *unlinking* the screens will never harm them. You may simply need to re-set the order of them.

**SETTING/CHANGING THE *HOME SCREEN* OR ORDER OF THE SCREENS:**
The **HOME** screen is the hi-res screen that appears when you press the HOME key twice. The HOME screen is the *top-most screen* if *down-linked* and the *left-most screen* if *across-linked*. The other two screens will follow as you press X or F-3.

First you'll select the HOME screen by getting it visible (if *linked two across* you may need to use *shifted X* for the *third screen*). Then you'll set it as HOME by pressing Sh CTRL←[left arrow]. After setting HOME you'll need to get the other two screens in the correct *order* (if they aren't). To set HOME and SCREEN ORDER follow the below steps:

1. Use X or F3/F4 to get the screen you wish as the *HOME SCREEN*.

2. While in **GP Mode** hold the **SHIFT** and **CTRL** keys down and tap the ← [left-arrow] key or the "f" key once. Doing this will *set* the visible screen as the *HOME SCREEN* and swap the ORDER of the two *unseen screens*.

3. Press X or F3 once to see if the next screen is in order. If not then press the HOME key twice to bring you back to the *HOME SCREEN* and repeat step #2.

# < TYPES OF LINKED SCREENS >

## ACROSS-LINKED SCREENS:

When screens are *across-linked* FGM effectively "connects" two or three screens across and lets you view them in *20 column increments*.

Either *two* or *three* screens *across* can be linked together for a total of 80 or 120 columns of workspace. The *viewing area* (what's visible) will be a 40 column "window" of the 80 or 120 columns. The left-most screen is the HOME screen. You can always return to the HOME screen by pressing the HOME key twice.

ACROSS-TWO: An A2 will appear on the Main Menu. Two of the three screens will be linked together giving 80 columns across to work with. When you press F3 or X to go between screens the viewing area will shift in 20 column increments (half a screen).

When two screens are *across-linked* the third screen is available to use as an *unlinked* screen. You may use it as a workspace, for loading in screen parts, or *whatever.* TRANSFER may be used to copy things to the linked screens. To access the third screen press Shifted X while in GP Mode. To exit and go back to the linked screens press X.

NOTE: The third "unlinked" screen can be loaded to and saved but you must first have it active (visible). To load/save the third unlinked screen first call it up with Shifted X, then press RETURN to exit to the Main Menu and load/save as normal. When you are prompted to SELECT SCREEN just press RETURN; if you use X to view another screen you won't be able to get back to the third screen unless you go back to GP Mode and use Shifted X again.

ACROSS-THREE: An A3 will appear on the Main Menu. All three screens will be *linked across* giving 120 columns of workspace. Note that you will probably have to use a printer density of 120 dpi or greater to print three screens across.

## DOWN-LINKED SCREENS:

DOWN-LINKED screens don't offer the same kind of "screen connection" as is available with *across-linked* screens. When editing you'll have to go between full screens instead of the half-screen increments that *across-linked* offers. To edit the area "between screens" you'll need to use SPLIT SCREENS (which is available).

The selection for 2 or 3 LINKED DOWN is mainly used for loading, saving, and printing, and whether it's 2 or 3 down makes no difference while working on the screens. All three screens are available by pressing X or F3. There will still be a HOME (top) screen with two screens "under" it. HOME/ORDER may be set with Sh CTRL ← [left-arrow].

SPLIT SCREENS are not available when screens are *across-linked*. When *unlinked* or *down-linked* the split screens may be accessed:

Sh X   ACROSS split
C= X   DOWN split

In TEXT Mode the CTRL key must be used with the above keys.

## < MARGINS >

**MARGINS:** Left and right margins are provided when the screens are linked (you have no choice). The margins are intended for **TEXT Mode** and really don't do anything in the other modes except provide you a visual guide. In **TEXT Mode** the margins provide *boundaries* for TYPING TEXT, INSERT/DELETE, and WORDWRAP.

When you link the screens the margins will default to the maximum for the *link configuration* you selected, and will have no effect on your work unless you change their position or turn **WORDWRAP** on.

Anything to the right of the right margin will not be affected by INSERT or DELETE while in **TEXT Mode** (**TEXT Mode** is the only mode which allows you to INSERT/DELETE across multiple screens).

**MARGINS MAY BE RE-SET AT ANY TIME.** Changing the margins will have no effect on the formatting of the screens, only on the area that **TEXT Mode** and WORDWRAP respond to. The active margin area includes the area under (covered by) the margin markers.

When **DOWN-LINKED** is selected the margins are confined to the width of the 40 column screen. You will see the same margins on all three screens. Text may be typed outside the area that's in margins but DELETE and INSERT won't work in these areas.

**3**

**ACROSS-LINKED** screens will have margin limits depending on whether 2 or 3 screens across are being used. For two *linked-across* the right margin cannot be brought off of (*left of*) the second screen, and for *three across* the right margin cannot be brought left of the third screen. Note that if the right margin is set *left of the center* of one of the screens it will appear twice as you move across the screens with P3 or X; once on the screen area just before the right-most screen and again on the right-most screen (in a different but correct position). This is because both viewing areas overlap the right margin so it will be seen in both areas.

Normally text will wrap around to the next row when you type past the right margin. When WORDWRAP is turned on if you type a character onto the right margin then it and any preceeding connected characters will be pulled to the next row and will *overwrite anything already there*. Hitting DELETE before further typing will move the word back to the end of the previous row but anything that was overwritten is lost.

**SETTING MARGINS: Sh CTRL M.** The Text Cursor must be at 1:1 *smallest* size (hit CTRL N) and *on one of the margins*. After pressing Sh CTRL M the margin color will change and margin can be moved with the cursor keys. Press RETURN to set the margin position. Note that the margins have some limits and you won't be able to move them *anywhere*. It is possible to move the right margin left of the left margin; not recommended and all bets are off if you do it.

## < LOAD/SAVE LINKED SCREENS >

**LOADING/SAVING LINKED SCREENS (ACROSS or DOWN LINKED):**
The screens **must** be *linked* before doing a *linked load* or *save*, else
you'll only be able to load/save a single screen.

*Linked* screens are actually saved as *independent* 32 block hi-res or
DOODLE screens just like *unlinked* screens, the difference being that
when *linked* both or all three screens can be loaded/saved without the
need for you to do each one individually.

If the screens are *linked* when you go to load or save a screen, you
will be prompted:

              LOAD (SAVE) x SCREENS ACROSS (DOWN)  YES  NO

If you select NO to this you'll go to the **SELECT SCREEN** prompt so you
can select an individual screen to load/save. If you answer YES the
screens will be *HOMED* and you'll be prompted for a *starting filename*.
Note that before any *linked load or save* the screens will be HOMED
(same as you pressing the HOME key twice while on the hi-res editor).

**SAVING LINKED SCREENS:** The *filename* is important when saving *linked
screens* because this is what the program uses to determine the order
to load them back in. What the program does when it saves linked
screens is give each screen the same filename except either the 3rd or
4th character of the filename (depending on DOWN or ACROSS) is changed
(*incremented*) for each screen.

The program pretty much takes care of everything for you for each set
of *linked screens* that you save or load; whatever character or number
you put in the *third* and *fourth* positions of the filename will be
*incremented* as appropriate for the type load/save. If you are planning
on creating a page of linked screens and want to be able to print them
all out at once I suggest you follow the "s.al filename" convention.
If you are saving the screens in DOODLE format then replace the "s."
with "dd" (ie: "ddal").

Creation of ACROSS-LINKED and DOWN-LINKED screens may be intermixed
for the same page printout as long as you use the proper filenaming
conventions so **PRINTER** finds everything in the right place. IE: Let's
say you want to do a *flyer* that has a *banner* that is *two screens
across* at the top, and the rest of the flyer will be *two side-side
columns* of *three screens down*. The banner can be done/saved as *two
screens across*, then each *column* can be done/saved as *three screens
down*. Base all of the other filenames on the *two banner filenames* and
they'll all be "tied together" so you can print them all at once.
Please see **FILENAMES** for more about how filenames are handled for
*linked screens*.

**LOADING LINKED SCREENS:** Enter the filename of the *starting screen* and
the program will load the other screens according to the *link status*
in effect (2 or 3, across or down). Screens **must** be *linked* in order to
load linked screens, else only the first screen file will be loaded.

## < SPLIT SCREENS >

### AVAILABLE IN MOST HI-RES MODES EXCEPT WHEN SCREENS ARE ACROSS-LINKED

SPLIT SCREENS are used to display the left side of one screen against the right side of another screen (across-split), or to display the bottom half of one screen over the top half of another screen (down-split). SPLIT SCREENS can be used for working "between" screens, and for mirroring effects. Splitting the screens is a pretty safe thing to do; FGM will return the screens to normal whenever you press X unless you use the cancel split without unsplitting option.

SCROLLING of the screens is not readily available when screens are split. This is because the screens could become quite a confused mess if you scrolled them and then unsplit them. Split screens may be scrolled by entering ADJUST Mode but be aware that you may create alignment problems with the other two unseen screen halves when the screens are unsplit.

## KEYS TO USE:

```
           Sh X    ACROSS Split
           C= X    UP/DOWN Split
              X    UNSPLIT split screens
  Sh CTRL C= X    CANCEL SPLIT without unsplitting
```

When in Text Mode use the CTRL key with the above keys.

ACROSS SPLIT: To view across-split screens press X until you see the screen you DON'T want to view as part of the split. Then press Shifted X and the left/right halves of the other two screens will be displayed. If the desired halves aren't on the desired sides press Shifted X again and the opposite halves will be swapped in. Use Shifted CTRL X when in TEXT Mode.

UP/DOWN SPLIT: To view up/down split screens press X until you see the screen you don't want to view as part of the split. Then press C= X (CTRL C= X in TEXT Mode). Continuing to press C= X will display the opposite upper/lower halves. Note that the up/down split is not an exact split; the up/down split takes place four pixels below the center of the screen (13 rows above, 12 rows below).

UP/DOWN SPLITTING of screens is useful for working on the area where two screens meet. When working on down-linked screens you are always working on one of the three full screens; you can't move in increments between down-linked screens as can be done with across-linked screens.

Splitting the screens up/down will allow you to use ADJUST Mode to pull or push screen areas up/down "across" down-linked screens. Up/down splitting can also be used for mirroring effects.

UNSPLITTING: Just press X (CTRL X in TEXT Mode). The screens will unsplit and the screen you started with will re-appear.

## < SPLIT SCREENS >

If you go to the Main Menu without *unsplitting* the screens they will remain *split* and you can save them. If saving, when the **SELECT SCREEN** prompt comes up the screens will *unsplit* if you press X to select a screen other than the split screen which is visible.

**NOTE:** In **TRANSFER Mode** you can *capture* on a *split screen* but if you exit the split screen TRANSFER will "lose" the captured location (but you won't know). The message here is don't exit a split screen if you have captured something in **TRANSFER Mode** (the screen border will be rippling with color).

## TO CANCEL SPLIT WITHOUT UNSPLITTING use Sh CTRL C= X:

This key combination is intentionally clumsy because it's not something you want to accidently do. It will *leave the screens split* but tell the program that they are now *unsplit*. If you use this the two unseen halves of the split screens you are viewing will be split between the halves of the original screen (the one present just before you split the screens). Cancelling a split like this probably isn't real useful but it's available if you want it.

**MIRRORING:** You can *mirror* a single screen left/right or up/down by *splitting the screens, flipping* or *inverting* them, then *unsplitting* them. What you'll end up with is one screen which will be unchanged, a second screen that *mirrors the left half* of the original, and a third screen that *mirrors the right half* of the original.

Starting with the screen you want to *mirror*, go erase the other two screens, then go back to the screen you want to *mirror* and press C twice to COPY the original screen to the other two screens. The screen will *reverse/unreverse* twice as the original is copied to the two cleared screens. You'll now have three identical copies of the screen.

**ACROSS MIRRORING:** Press Shifted X to *split* the screens, press Shifted F to *flip* the screens, then press X to *unsplit* the screens.

**UP/DOWN MIRRORING:** Press C= X to *split* the screens, press Shifted I to *invert* the screens, then press X to *unsplit* the screens.

If you *mirror a screen across* you can then *mirror the mirrored screen up/down*. Use the *across-mirrored* screen as the original, make two copies of it, then do *up/down mirroring* to it.
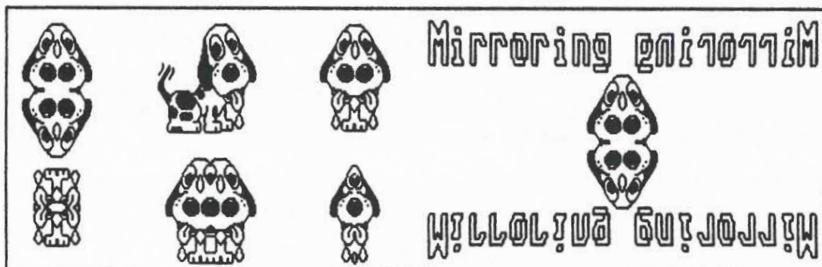
## CHAPTER 4: CREATOR SECTION

### < CREATOR OVERVIEW >

REF: LOADING, SAVING, SELECTIVE DIRECTORY, SELECT BAR

OVERVIEW: CREATOR is the "main section" of FGM's four sections; CREATOR, DEMO-ER, CLIPART, and PRINTER. Actually, each section is pretty much a "main section" of its own but I needed a reference and the CREATOR section came into existence first. CREATOR'S Main Menu Screen should be pretty familar to most of you FGM OLD-TIMERS.

Use CREATOR for most general graphics/screen work. CREATOR is the only FGM section which will let you SAVE GRAPHICS and CHARACTER SETS. It is also the only FGM section with the CHARACTER EDITOR, although you may still edit the character sets on the hi-res screen while in the other sections. The hi-res functions are available in all FGM sections although several sections have a few limits.

```
┌─────────────────────────────────────────┐
│  FUN GRAPHICS MACHINE 'CREATOR' 6.0      │
│     (c)1991 Ron C. Hackley  #0000        │
├─────────────────────────────────────────┤
│        1 LOAD A GRAPHIC FILE             │
│        2 LOAD A HI-RES SCREEN            │
│        3 LOAD A CHARACTER SET            │
│                                          │
│        4 GOTO HI-RES SCREEN EDITOR       │
│                                          │
│        5 SAVE A GRAPHIC                  │
│        6 SAVE A HI-RES SCREEN            │
│        7 SAVE A CHARACTER SET            │
│                                          │
│        8 CHARACTER EDITOR                │
│        / LINK MENU                       │
│        0 DISK FUNCTIONS - DIRECTORY      │
│        + PRINTER/OTHER OPTIONS           │
│                                          │
│          SELECT  NUMBER                  │
└─────────────────────────────────────────┘
```

THE FOLLOWING KEYS ARE ACTIVE WHILE ON ANY OF THE MAIN MENUS:
Pressing D or ; will READ THE DIRECTORY.

@: SEND COMMAND TO DISK DRIVE: A command line will appear. Just press RETURN to read the error channel.

Sh Q: STOP PROGRAM: Does what it says. To re-start do a RUN. To FULLY exit FGM put the cursor over the SYS and press RETURN.

CURSOR KEYS/JOYSTICK: Use to move the SELECT BAR.

RETURN or FIRE BUTTON: Selects the menu item that is highlighted by the SELECT BAR.

Many of CREATOR'S Main Menu Selections are the same as in the other sections. When explaining the Main Menus of other sections you will often be referred to CREATOR'S Main Menu Selections rather than repeat the same thing several times.

Following is a description of each selection except for the HI-RES SCREEN EDITOR which is explained in its own chapter.

# 1. LOAD A GRAPHIC FILE

REF : LOADING FILES, SELECTIVE DIRECTORY

Available in **CREATOR** and **DEMO-ER** sections. Use this menu selection to
load PRINT SHOP (PS-A or PS-B), PRINT MASTER, or FGM graphics into one
of the five graphics buffers. Once a graphic is loaded into a buffer
it can be manipulated, moved around the screens, and fastened to the
screens. Note that you can use either PS-A or PS-B graphics regardless
of your printer type. PS-B graphics will generally look better at a
density of 60 dpi (CBM 7-pin).

**NEWSROOM** photos and banners are NOT loaded using this selection; use
**#2 LOAD A HI-RES SCREEN** for NEWSROOM photos and banners.

When you make this selection you'll be prompted **LOAD GRAPHIC BUFFER
1 2 3 4 5 ALL**. Use ANYKEY or the JOYSTICK to highlight the number
of the graphic buffer you want to load to, then press RETURN or FIRE
to select. The default will be whichever graphic buffer is active.

After selecting the graphic buffer you will be prompted for a file-
name. As a convenience a "g." will be pre-printed on the filename
entry line. If the filename of the graphic you want to load does not
start with "g." then DELete the "g." and enter the filename of the
graphic you want to load. To CANCEL the load hold the DELete key until
the "g." is deleted and press RETURN. **NOTE**: The PS graphics on the
PRINTSHOP program disk have filenames that are numbers preceeded by
the letter "i", not the names shown on the card.

You may also load from the directory listing. If you just press RETURN
or the FIRE BUTTON at the "g." prompt you'll be shown a listing of all
files on the disk that begin with "g.". See **LOADING FILES** for more
about loading from the directory and using the Selective Directory.

Once the graphic or graphics are loaded you will be returned to the
Main Menu, with one exception; if you loaded a two-block PS-B graphic
you will be asked if you want to convert it into a three-block graphic
YES NO. If you select YES then the graphic in the buffer will be
horizontally expanded into a three-block PS-A graphic.

**PRINT MASTER:** Previous versions of the FGM required that you precede
the filename with an up-arrow if loading a PM graphic. This version
does not require the up-arrow; it wants to see the ".gra" extension at
the end of PM filename. Some PM compatible graphics files such as
those saved by Label Wizard may not have the ".gra" extension. To load
them properly you will need to use the up-arrow as the first character
in the filename. The up-arrow is ignored as part of the filename and
is only used to signal FGM that the file will be PM format so proper
decoding can be done. If a 3-block graphic looks all scrambled after
it loads then try loading it with the up-arrow as the first character
in the filename.

Graphics files are actually read, not loaded, so FGM won't be crashed
if you accidently load a file that's too big. FGM only uses 2 and 3
block graphics files.

## AUTO-LOADING GRAPHICS

**AUTO-LOADING:** You can auto-load all five graphics buffers at once by selecting **ALL** when prompted for which graphic buffer to load to. This option is handy if you have several sets of graphics which you use a lot. It's also useful when you do a demo with other than the default graphics; Include the graphics files with the demo file and put a short note at the start of the demo saying that the graphics should be loaded before the demo is played.

In order to use this option the graphic files must be named in a "special" way; all filenames must be the same except for the *third character* which is incremented the same way as is done for *down-linked screens*. Actually, the filename characters *after* the third character could be different and you could auto-load using a *wild card* (*) for the fourth character. **EXAMPLE:** If you have five files named "g.a dog", "g.b frog", "g.c cat", "g.d rat", and "g.e duck" you can load all five by using a *starting filename* of "g.a*". See **FILENAMES** for more about how FGM increments the filenames.

When you **auto-save"** the graphics buffers they will be saved according to the above rules so you don't have to worry about any filenames except for the first one.

If you are **auto-loading** a group of graphics and a two-block (PS-B) graphic is encountered the program will stop after loading it and ask if you want it **converted into three-block** (PS-A). Any remaining two-block graphics will be loaded according to your answer; the program **4** won't ask if you want to convert the rest of them.

**NOTES:** When some graphic files loaded into FGM they may have a line of "garbage" below the graphic. This happens when the graphic file is a tad larger than a PS graphic file and for whatever reason a few extra bytes were stored at the end of the graphic data (perhaps some kind of identification like someone's name?). PRINT SHOP will ignore these extra bytes so you won't see them when using these graphics in PS. FGM loads a full seven rows down so you may occasionally see some garbage on the bottom row. To get rid of the garbage **CROP** the graphic up a couple of pixels, **FASTEN** it to the screen, then **GRAB** it into the buffer to replace the graphic that was in the buffer.

Loading the PS graphics that are on the **PRINTSHOP MAIN PROGRAM DISK** can give you problems if you don't know a little detail; the names shown on the card of graphics are NOT the filenames of those graphics. The filenames are actually the letter "i" followed by a two-digit number that corresponds to the graphic, ie: i01 for Birthday Cake. Quite a few people (self included) have gotten *file-not-found* when trying to load PS graphics from the PS disk using the *names* of the graphics. The MAIN PS PROGRAM DISK is probably the only place that you'll run into this situation.

## 2. LOAD A HI-RES SCREEN

REF: LINKED SCREENS, SELECTIVE DIRECTORY, LOADING FILES

Available in CREATOR, DEMO-ER, CLIPART and PRINTER.

Use this menu selection to load hi-res screens created by FGM or other programs. The screen you load will "load over" the ACTIVE (visible) SCREEN erasing the previous screen that was there. If the screen you are loading is less than 32 blocks in length it will write over only a part of the screen and leave the portion below the load intact. Hi-res screens are normally at least 32 blocks (25 rows) in size but FGM will allow you to save partial screens of 1-25 rows so you can save just what you need.

You may load normal 32 block hi-res screens (ie: FGM, PS SCREEN MAGIC, DOODLE screens), and NEWSROOM photos and banners. Either unlinked or linked (multiple) screens may be loaded. Loading an unlinked screen loads one screen just like v.410 of the FGM. Loading linked screens will load several screens according to the link configuration.

LOADING UNLINKED SCREENS: If the screens are not linked you will be prompted to SELECT SCREEN. This prompt wants you to select the screen that will be loaded to. Press X, CURSOR RIGHT, JOYSTICK RIGHT, or RETURN and one of the hi-res screens will appear. Continue to press X or JOYSTICK RIGHT until you see the screen where you want the file loaded to, then press RETURN or the FIRE BUTTON.

LOADING LINKED SCREENS: If you have the screens linked you'll be prompted LOAD XX SCREENS ACROSS/DOWN YES NO (the XX and ACROSS/DOWN will read whatever the present link configuration is, ie: LOAD 2 SCREENS ACROSS YES NO). If you select YES the screens will be homed and you'll be prompted for a filename. If you select NO you'll be prompted to SELECT SCREEN just like with unlinked screens.

```
 FUN GRAPHICS MACHINE 'CREATOR' 6.0
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      LOAD HI-RES FILE TO SCREEN
      2 LINKED ACROSS  YES  NO
              HOME  OK
      INSERT DATA DISK and
    ENTER FILENAME: S,█
    # or $ for list
```
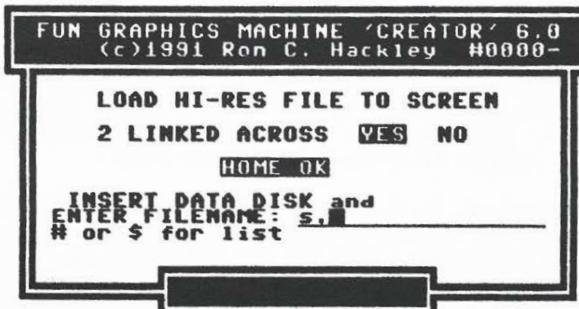
NOTE: If screens are linked two-across and you want to load to the third (unlinked) screen you should go to the HI-RES SCREEN EDITOR (#4 from the Main Menu) and make the third screen visible with Shifted X before trying to load to it. When you do this you'll get the "SELECT SCREEN" prompt instead of the LOAD LINKED SCREENS prompt.

## LOAD A HI-RES SCREEN (CONTINUED)

```
┌─────────────────────────────────────────────┐
│  FUN GRAPHICS MACHINE 'CREATOR' 6.0          │
│     (c)1991 Ron C. Hackley   #0000           │
│  ─────────────────────────────────────────   │
│        LOAD HI-RES FILE TO SCREEN            │
│           ▐ SELECT  SCREEN ▌                 │
│    ▨ to VIEW / RETURN to SELECT              │
│                                              │
└─────────────────────────────────────────────┘
```
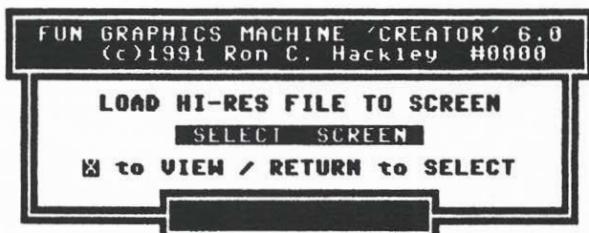
**SELECT SCREEN**: When this prompt appears it wants you to select the
screen that you want the hi-res file loaded to. Press X, CURSOR RIGHT,
JOYSTICK RIGHT, or RETURN and one of the hi-res screens will appear.
Continue pressing X, CURSOR RIGHT or JOYSTICK RIGHT until you see the
screen you want to load the file to, then press RETURN or the FIRE
BUTTON. This prompt will **not** appear if you are loading linked screens.

*HINT*: When prompted to **SELECT SCREEN** if you just press RETURN or the
FIRE BUTTON you'll be taken to the first screen and pressing RETURN or
the FIRE BUTTON again will select it.

After *SELECTING A SCREEN* or *ANSWERING YES* to the *LOAD LINKED SCREENS*
prompt you will be prompted for a filename. An "s." prefix will be
pre-printed on the *filename entry line*; if the filename of the screen
does not start with "s." then DELete the "s." and enter the filename
of the screen you want to load. If loading a DOODLE screen the file-
name must begin with "dd". In the unlikely(?) event that you need to
load a non-DOODLE file that begins with "dd" you'll need to replace
one of the d's with the *wild card* "?" or it won't load properly.



You may also load from the *directory listing*. If you just press RETURN
at the "s." prompt you'll be shown a listing of all files on the disk
that begin with "s.". See **LOADING FILES** for more about *loading from
the directory* and using the Selective Directory.

**NEWSROOM** photo filenames **must** begin with "ph.", and NEWSROOM banner
filenames **must** begin with "bn.". This is the way NR saves the files so
you shouldn't have to concern yourself with it. The NR file will look
like a bunch of *hash on the screen* as it's loaded but will change into
a photo or banner after it's loaded. **NOTE**: If a *photo* is *very tall and
narrow* it may *run into itself* during the conversion. This is unlikely
but it is possible. It will cause no problems other than the file
won't look quite right on the screen.

Once the screen(s) are loaded you will be returned to the Main Menu.

*HINT*: Character sets ("f." files) may be loaded to the hi-res screen.
Simply enter the "f." filename or select from the directory. Once a
character set is loaded to the screen you can edit it and/or suck it
into one of the character buffers 1-3 with C= CTRL Z.

## LOAD A HI-RES SCREEN (CONTINUED)

**LOADING SCREENS FROM OTHER PROGRAMS:** FGM can load hi-res screen files saved by many other programs. If the file is 32 blocks then there's an excellent chance that it will load properly. The screens saved by programs such as *PRINT SHOP'S SCREEN MAGIC, DOODLE, COMPUTER EYES, CADPAC 64, FLEXIDRAW, GRAPHICS MAGIC JR and OCP ART STUDIO* may be loaded in from any FGM area that supports loading hi-res screens.

**READER:** If a screen file from another program doesn't load properly you can try loading it with the FGM **READER** utility (u.reader*). **READER** will correctly load many hi-res formats which FGM's other sections don't support (or may even choke on). In **READER** you are free to try and load <u>anything</u>; files greater than 40 blocks will not crash FGM as they will in other areas. **READER** will even load program files to the screen, although they'll probably look like garbage.

In addition to normal hi-res and *DOODLE!*, **READER** correctly loads the following screens: *RUNPAINT(rph), BILLBOARD MAKER(bb), VIDCOM 64(b.), PERIPHERAL VISION(£), PICASSO'S REVENGE(£), compressed KOALA(gg), compressed DOODLE!(jj), and HANDYSCANNER 64. Compressed DOODLE!(jj)* saves are also supported.

*KOALA* and *SUPER SKETCH* screens can be loaded into **READER** but since the color info isn't used by FGM the screens may not look too good. You might be able to make the screen usable by using the **STRIP GRAYS** function. This function works especially well on screens from *CREATE WITH GARFIELD,* and will have varing results on screens from other programs. See **STRIP GRAYS** on <u>page 78</u> for more about this function.

Screens from some programs will load wrong to the screen but they can often be somewhat recovered. With screens from *QUIK PAINT, MICRO ILLUSTRATOR, and PAINT MAGIC* you must enter **TEXT Mode,** place the cursor in the upper left corner, then use **CTRL U** to pull the screen up as much as is needed (the bottom three to six rows of the screen will be lost). Then go into **ADJUST Mode** and use the **ROLL A ROW** function to roll each row by two pixels.

For screens that can't be loaded into FGM (ie: GEOS, game screens) you can often capture these by resetting the computer and using **SCREEN FINDER** to find/save the screen(s). With GEOS all you need do is reset the computer and load FGM; the GEOS screen you were viewing will be on one of FGM's three screens (press X to view the three screens).

**NOTE:** With files from some programs you may need to be creative with the *wild cards* (*?) to get the filename right for FGM. If a filename is *padded out with spaces* (ie: "filename          ") you'll probably have to <u>type in</u> the filename with an * at the end (loading it from the directory will probably give you a file-not-found).

**NOTE:** DO NOT attempt to load files larger than 40 blocks (ie: KOALA) unless you are in either **READER** or **CLIPART**. In the other sections these larger files will corrupt the program. If you do corrupt the program just reset the computer and re-load FGM; your screens will still be there.

# 3. LOAD A CHARACTER SET

**REF:** LOADING, SELECTIVE DIRECTORY

Available in **CREATOR** and **DEMO-ER**.

Use this menu selection to load character sets (*fonts*) into the FGM. Character sets for FGM normally begin with "f." although a character set doesn't HAVE to start with "f.".

When you make this selection to load a character set you will be prompted **LOAD CHARACTER BUFFER 1 2 3 ALL**. Use **ANYKEY** to highlight the selection you want and press **RETURN**.

After selecting the character buffer (1-3 or **ALL**) you will be prompted for a filename. An "f." will be pre-printed on the *filename entry line*; if the filename of the character set does not start with "f." then **DEL**ete the "f." and enter the filename of the character set you want to load. If you selected **ALL** to "auto-load" a file of three sets then an "e." will be pre-printed on the *filename entry line*.

You may also load from the directory listing. If you just press **RETURN** or **FIRE** at the "f." prompt you'll be shown a listing of all files on the disk that begin with "f.". See **LOADING FILES** for more about loading from the directory and using the Selective Directory.

**"AUTO-LOADING" THE CHARACTER SETS:** You can "auto-load" more than one character set at a time by selecting **ALL** at the 1-3 prompt. This works differently from *auto-loading graphics* in that this doesn't load several individual character set files; it loads *one large file* that contains all three character sets <u>and</u> the Definable Character. This large file of *all three sets* is created by using FGM to **SAVE** *all three character sets*. Character set files suitable for *auto-loading* begin with an "e." filename and are 13 blocks in length.

**LOADING CHARACTER SETS TO THE HI-RES SCREEN:** Character sets from other programs may sometimes be brought into FGM by loading them to the hi-res screens and then pulling them into one of the character set buffers. This applies to character sets which are 8x8 pixels in size. Larger character sets such as those in *GEOS and PRINT SHOP* cannot be loaded into FGM. Some alien character sets will load *almost right*; somewhat recognizable but not quite right. You may be able to fix these using **ADJUST Mode's** ROLL A ROW option.

**NOTE:** FGM *reads* character sets into the program's buffers. This provides pretty good insurance against loading an incorrect (oversize) file and crashing the program. Still, if trying to load in a character set from another program it's best to try loading it to the screen first; if the character set is recognizable on the screen then it will probably load into the character buffers with no problem. Also, if loading an "alien" character set into a character buffer it's best to load it into buffer #1, then check buffer #2 to see if the file overflowed into it.

# 5 . SAVE A GRAPHIC

REF : SAVING FILES, SELECTIVE DIRECTORY, FILENAMES

Available only in **CREATOR**. This menu selection will let you save the
graphics which are in the FGM graphics buffers. Graphics are saved in
PRINT SHOP format and may be used in FGM or other programs which use
PS graphics. Graphics are normally saved as 3 block (PS-A) but you can
save a 2 block (PS-B) size graphic if you wish.

When you make this selection you will be prompted **SAVE GRAPHIC BUFFER
1 2 3 4 5 ALL**. Use **ANYKEY** to highlight the number of the graphic
buffer you want to save, then press **RETURN** or **FIRE** to select. The
default will be whichever graphic buffer is active.

After selecting the graphic buffer (1-5 or ALL) you will be asked if
you want to save the graphic as a 2 block (PS-B) or 3 block (PS-A)
file. The default is 3 and will be selected if you just press **RETURN**.

After answering the **2 3 BLOCK** prompt you will be prompted for a
filename. A "g." will be pre-printed on the *filename entry line*. It's
suggested that you use the "g." prefix as part of the filename but you
don't have to. If you selected **ALL** to auto-save all five buffers you
should enter a *starting character or number* as the third character in
the filename (ie: "g.1"), plus the rest of the filename.

You may also save using the directory listing. If you just press
RETURN or FIRE at the "g." prompt you'll be shown a listing of all
files on the disk that begin with "g.". See **SAVING FILES** (pg 9) for
more about using the Selective Directory when saving files.

Using the directory listing to select a filename will cause a **REPLACE
EXISTING FILE YES NO** prompt to come up since the filename you wish to
use already exists. If you select **YES** (the default) then the existing
file will be scratched and the new file saved in its place.

**AUTO-SAVE**: You can auto-save all five graphics buffers at once by
selecting **ALL** at the 1-5 prompt. Each graphic will be saved as an
*individual file*, all with the same filename except for the *third
character* which will be *incremented*. See **FILENAMES**.

## —NOTES—

The **3 BLOCK GRAPHICS** that FGM uses/saves are 11 columns across by
7 rows down. Standard 3 block PS graphics are 6.5 rows down. If you
save a graphic for use in PS the bottom 4 pixel lines will not be used
by PS. To see how much of the graphic PS will use go to the hi-res
screens and use Shifted up-arrow to crop the graphic up four pixels.

**2 BLOCK SAVES** don't do any conversion, they just save a 2 block size
area of whatever is in the selected graphic buffer. A 2 block save
will save a 6 column by 6 row area of the graphic, starting at the
upper left corner. To see the area of the graphic which will be saved
with a 2 block save go to the hi-res screen and crop the graphic up
once with the up-arrow key, then left 5 times with the left-arrow key.

# 6. SAVE A HI-RES SCREEN

REF: SAVING FILES, SELECTIVE DIRECTORY, LINKED SCREENS

Hi-res screens may be saved while in CREATOR, DEMO-ER or CLIP ART, in either standard 32 block or DOODLE format.

Either unlinked or linked (multiple) screens may be saved. Saving an unlinked screen saves one screen just like v.410 of the FGM. Saving linked screens will save several screens according to the screen link configuration that's in effect.

```
FUN GRAPHICS MACHINE 'CREATOR' 6.0
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         SAVE A HI-RES SCREEN
         HOW MANY ROWS? 25
         2 LINKED ACROSS  YES  NO
              HOME  OK
     INSERT DATA DISK and
ENTER FILENAME: s.
# or $ for list
```
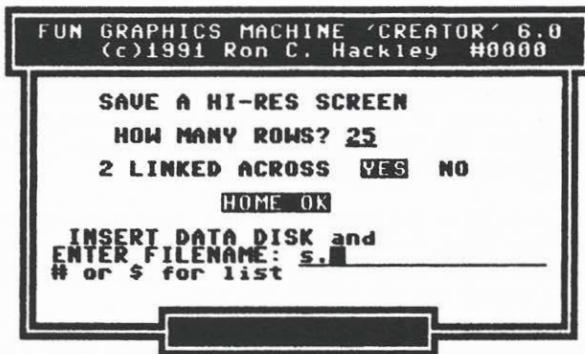
The first prompt will ask how many rows you want to save. 25 rows is a **4** full screen and is the default if you just press RETURN or FIRE. If you wish to save less than a full screen enter the number of rows and press RETURN. Saving partial screens can be handy for things like label artwork and letterhead which don't occupy a full screen. Also, when printing linked screens from disk the PRINTER section has an option which will tell it to only print however many rows are loaded instead of printing a full screen (also handy for letterhead).

SAVING UNLINKED SCREENS: You will be prompted to SELECT SCREEN. This prompt wants you to select the screen that you want to save. Press X, CURSOR/JOYSTICK RIGHT, or RETURN and one of the hi-res screens will appear. Continue to press X or CURSOR/JOYSTICK RIGHT until you see the screen you want to save, then press RETURN or FIRE.

SAVING LINKED SCREENS: If you have the screens linked you will be prompted SAVE XX SCREENS ACROSS/DOWN YES NO (the XX and ACROSS/DOWN will read whatever the present screen link configuration is, ie: SAVE 2 SCREENS ACROSS YES NO). If you select YES the screens will be homed and you'll be prompted for a filename. If you select NO you'll be prompted to SELECT SCREEN just like with unlinked screens.

NOTE: If screens are two-linked across and you want to save the third (unlinked) screen you should go to the HI-RES SCREEN EDITOR (#4 from the Main Menu) and get the third screen visible with Shifted X before trying to save it. When you do this you'll get the SELECT SCREEN prompt instead of the SAVE LINKED SCREENS YES NO prompt.

## SAVE A HI-RES SCREEN (CONTINUED)

<u>SELECT SCREEN</u>: When this prompt appears it wants you to select the
screen that you want to save. The <u>SELECT SCREEN</u> prompt will <u>not</u> appear
if you are saving linked screens. Press X, CURSOR/JOYSTICK RIGHT, or
RETURN and one of the hi-res screens will appear. Continue pressing X
or CURSOR/JOYSTICK RIGHT until you see the screen you want to save,
then press RETURN or FIRE. If screens are *linked two-across* you will
only be able to select from those that are linked.

<u>HINT</u>: When prompted to <u>SELECT SCREEN</u> if you just press RETURN you'll
be taken to the first screen and pressing RETURN again will select it.

After selecting the screen or answering YES to the <u>SAVE LINKED SCREENS</u>
prompt will be prompted for a filename. An "s." will be pre-printed on
the *filename entry line*; if the filename of the screen does not start
with "s." then delete the "s." and enter the filename. If saving as a
DOODLE screen the filename must begin with "dd".

You may also save using a filename from the directory listing. If you
just press RETURN or FIRE at the "s." prompt you'll be shown a listing
of all files on the disk that begin with "s.". See <u>SAVING FILES</u> for
more about saving using the Selective Directory.

If the filename you are using already exists on the disk then you will
be prompted <u>REPLACE EXISTING FILE YES NO</u>. Select YES and the file
will be scratched and replaced by the new one, or, in the case of
*linked screens*, the file<u>s</u> will be scratched and replaced.

Once the screen or screens are saved you will be shown how many blocks
are free. This number may not be correct for 1581's and hard drives.
Press RETURN to return to the Main Menu.

If a disk error should occur and a file isn't properly closed (a
splat * file) you'll get an error message and be asked if you want to
validate the disk. You should answer YES to this prompt unless there's
some special reason you don't want to.

<u>NOTE</u>: Screens saved in DOODLE format will be *black and white*. DOODLE
screens saved by FGM are not saved from the same memory location as
DOODLE uses. This won't cause you any problems when using FGM saved
screens with DOODLE but some other programs (ie: WORD WRITER 5) do not
recognize DOODLE files if they don't have a load address of 24576. If
this causes a problem a *utility program* is included on the FGM disk
which will correct the load address of any DOODLE files on the disk.

<u>HINT</u>: Character sets in the character buffers may be *written to the*
*hi-res screen and then saved as a screen*. This can be handy if you
want to see several character sets at once and select which ones you
want to pull into the character buffers. To get the character sets to
the screen use <u>C= CTRL Y</u> to bring a set to the screen, scroll the
screen up four rows, then repeat with the next buffer.

# 7. SAVE A CHARACTER SET

**REF**: SAVING FILES, SELECTIVE DIRECTORY

Available in **CREATOR**. Use this menu selection to save the character set buffer(s) in **FGM** after making changes to them or creating new character sets. Character sets 1-3 may be saved either individually or as one large file containing all three sets.

When you select this function you'll be prompted **SAVE CHARACTER BUFFER 1 2 3 ALL**. Use **ANYKEY** to highlight the number of the character buffer that you want to load the character set into, then press **RETURN**. The default selection will be whichever character buffer is active **unless** 4 or 5 are active (which can't be saved). If buffer 4 or 5 is active then you'll be offered buffer 3 as the default.

You can save *all three character sets* and the Definable Character as one large file. To do this select **ALL** when prompted for which character buffer to save.

After selecting the character buffer (1-3 or **ALL**) you will be prompted for a filename. An "f." will be pre-printed on the *filename entry line*. If the filename of the character set does not start with "f." then delete the "f." and enter the filename of the character set you want to load. If you selected **ALL** to save all three buffers then an "e." will be pre-printed on the *filename entry line*.

You may also "scratch and save" from the directory listing. If you just press **RETURN** or **FIRE** at the "f." (or "e.") prompt you'll be shown a listing of all files on the disk that begin with "f." (or "e."). See **SAVING FILES** for more about saving using the directory and using the Selective Directory.

Another way to save the character sets is by copying them to the screen using **C= CTRL Y** while in **TEXT Mode**, then doing a normal <u>screen save</u>. Up to five character sets will fit on a screen. If you use this method then you'll have to load the screen and use **C= CTRL Z** to get the character sets you want into the buffers. One reason for using this method is that you can preview the character sets, scroll the set(s) you want into position, then pull them into the character buffer(s).

# 8 . CHARACTER EDITOR

Available in **CREATOR**. The **CHARACTER EDITOR** is one way to edit the
character sets in buffers 1-3. It is similar to using the **PIXEL EDITOR**
except the work area is 8x8 pixels, the size of a character.

When you make this selection you'll be prompted **1 2 3 ALL** for the
number of the character set (buffer) you wish to edit, 1-3. Use **ANYKEY**
to highlight and **RETURN** to select. Character sets four and five are
the computer's character sets in ROM and can't be edited. **ALL** is a
left-over from other prompts and shouldn't be selected.

After selecting the number of the *character set* you'll be prompted to
*enter the character* you want to edit. Press one of the keys and the
character will appear on the *edit screem*. Use the SHIFT or C= key with
the character keys to access <u>all</u> of the characters.

The edit screen will display most of the active keys. Use the CURSOR
KEYS to move the cursor around. Other keys function as follows:

|  |  |
|---|---|
| D | DRAW; moving cursor will leave a trail |
| E | ERASE; moving cursor will erase |
| S | SKIP; moving cursor won't affect the pixels |
| * | DRAWS RIGHT |
| [up-arrow] | DRAWS UPWARDS |
| z | TOGGLES PIXEL under cursor on/off |
| DEL | DELETES PIXEL at cursor location and moves right |
| HOME | MOVES CURSOR to upper left corner |
| Sh HOME | CLEARS the edit screen |
| C | CANCELS without changing the character |

The joystick may be used in port 2. Use the fire button to *toggle*
*pixels on/off* (like pressing Z).
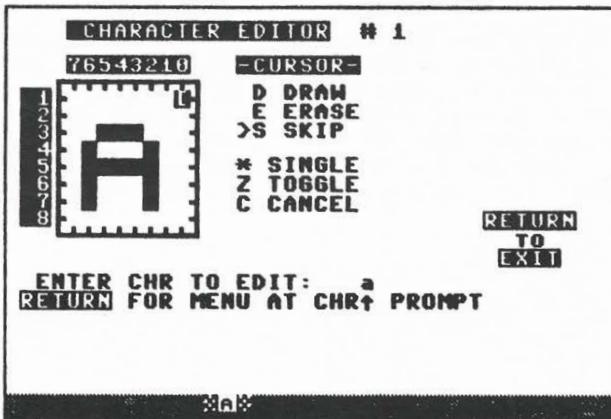


Another way to edit a character set is to pull it to the screen with
C= CTRL Y while in **TEXT Mode**, PIXEL EDIT the characters, then suck the
character set back into the buffer with C= CTRL Z.

## ╱ LINK MENU

Available when in <u>CREATOR</u>, <u>DEMO-ER</u>, <u>PRINTER</u>, <u>CLIPART</u>.

This selection will take you to a *sub-menu* where you can change the *link status* of the screens. If you didn't want to be here just press **RETURN** to return to the Main Menu.

```
╔═══════════════════════════════════════╗
║  FUM GRAPHICS MACHINE 'CREATOR' 6.0    ║
║      (c)1991 Ron C. Hackley  #0000     ║
╠═══════════════════════════════════════╣
║                                        ║
║        █ UN-LINK                       ║
║        2 LINK-2                        ║
║        3 LINK-3                        ║
║        █L= 0█ █R= 39█                  ║
║                                        ║
║                                        ║
║                                        ║
║          ┌─────────────────┐          ║
║          │ SELECT  NUMBER  │          ║
║          └─────────────────┘          ║
╚═══════════════════════════════════════╝
```
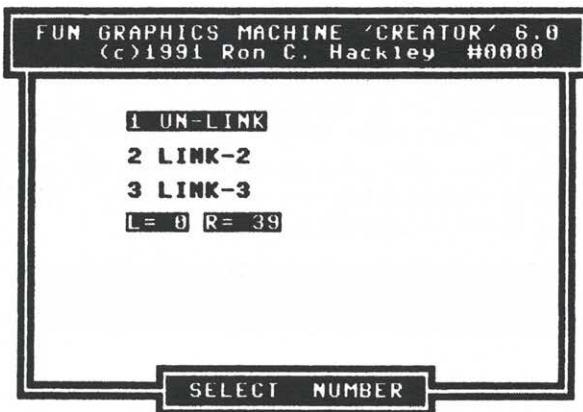
<u>1 UNLINK</u>: Turns off *linked screens* and you'll have three independent screens. Scrolling in all directions is available.

<u>2 LINK</u>: Select for linking two screens either *across* or *down*.

<u>3 LINK</u>: Select for linking three screens either *across* or *down*.

If you select 2 or 3 you'll be prompted <u>ACR</u> or <u>DWN</u> for ACROSS or DOWN. Press **ANYKEY** to toggle and **RETURN** or **FIRE** to select. If screens were *unlinked* the default will be DWN, else it will be the last active.

When changing *link status* the screens will be *HOMED* before the new status is set. This is so the FGM can keep track of what's happening. If the screen order isn't what you need then use the <u>SET SCREEN ORDER</u> function in <u>GP Mode</u>.

When screens are *linked* a *letter/number* will appear on the Main Menu to the left of the #4 menu selection, and on the <u>LINK MENU</u>. This *letter/number* indicates the *link status*.

|    |          |    |        |
|----|----------|----|--------|
| A2 | ACROSS-2 | D2 | DOWN-2 |
| A3 | ACROSS-3 | D3 | DOWN-3 |

After you answer the **ACROSS** or **DOWN** prompt you'll be taken back to the Main Menu unless you are in <u>DEMO-ER</u>. If in <u>DEMO-ER</u> you'll stay on the <u>LINK MENU</u> until you press **RETURN**. This is because the <u>LINK MENU</u> can also be accessed while *recording* a demo, and you'll have a chance to verify that the *link status* is correct before continuing with a demo.

# O. DISK FUNCTIONS/DIRECTORY

**REF : MULTIPLE DRIVES**

Available when in **CREATOR, DEMO-ER, CLIPART** and **PRINTER**.

**Pressing** D from the Main Menu will give you a directory of the active drive. If multiple drives are present you will be prompted A or B or C whether PROMPTS are on or off.

**Pressing** ; from the Main Menu will also give you the directory but you won't be prompted for the drive if **PROMPTS** are off.

**Pressing** O will take you to a *sub-menu* where you can choose to send commands to the disk. Just press **RETURN** to return to the Main Menu.

The available selections will vary somewhat depending on which section you are presently in (**CREATOR** has the most options). **PRINTER** does not have this option. Below is **CREATOR'S** *sub-menu*.

```
FUN GRAPHICS MACHINE 'CREATOR' 6.0
     (c)1991 Ron C. Hackley  #0000

        1 SCRATCH A FILE
        2 VALIDATE
        3 BELLS on
        4 PROMPTS on
        5 DISK COMMAND


        SELECT   NUMBER
```
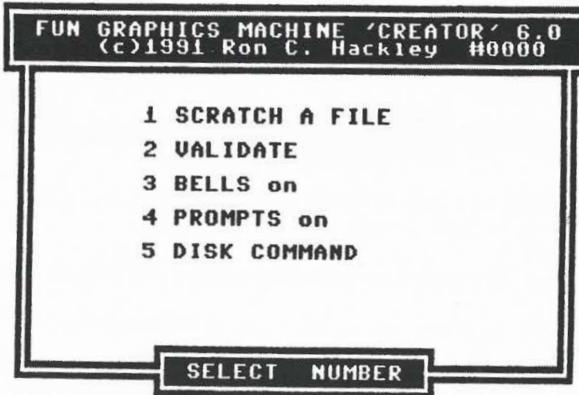
**1. SCRATCH A FILE:** Will take you to the *filename entry line*. Either type the filename in or use the Selective Directory to select a file to *scratch*.

**2. VALIDATE:** This should be used if the disk develops a **SPLAT** (*) file. The * is to the right of the filename on the directory and indicates a file that was *never closed after a save*. If your disk has insufficient space to complete a save (disk full) then a splat file will be created. Otherwise, this may happen with some cartridge's turbo-save routines, if the disk itself is defective, or if the drive gets in a bad mood.

If a *splat file* exists it must be corrected using **VALIDATE**. Do *not* try and *scratch* a *splat file*; **VALIDATE** will take care of that and clean up the disk. **VALIDATE** should *never* be used on a disk which contains *random or relative files* (which FGM neither creates or uses).

## DISK FUNCTIONS (CONTINUED)

**3. PROMPTS on (off):** If using multiple drives this toggles on/off
whether FGM will prompt DRIVE A or B or C before each DATA DISK
access. With multiple drives the FGM PROGRAM DISK is expected to be in
the drive (device number) it was booted from. This could be A,B, or C.
The other drive(s) will be used for DATA. See MULTIPLE DRIVES for more
about this. This prompt won't appear if using one drive.

**4. BELLS on (off):** Toggles the bell on/off. Normally when the bell
dings the border flashes. The border will still flash when bells are
off so that you'll know when you do something that would normally ring
the bell. When in DEMO-ER you also have the option of turning the
FLASH off. This may be useful when playing demos if you don't want the
border to flash.

**5. SEND DISK COMMAND:** Select this if you want to send a command to the
disk drive, such as formatting a disk, renaming a file, changing
partitions or subdirectories, etc. You'll be offered a Command Line to
enter your command on. Just hitting RETURN will read the error channel
of the selected drive. To send a command type the command you wish to
send and hit RETURN. The command will be sent and then the error
channel will be read.

This selection may also be accessed by pressing @ from the Main Menu
of any section.

## EXAMPLES:

4

| COMMAND | RESULT |
|---------|--------|
| >? " | read error channel |
| >? "s:filename | scratch file |
| >? "n:diskname,id | format disk |
| >? "r:new name=old name | rename file |
| >? "i: | initialize drive |
| >? "/:name | change sub-partition (1581) |
| >? "cp17 | change partition (CMD HD) |

The >? " shown above is provided by FGM. Type your command to the
right of it and press RETURN. Note that sending the "uj" command is
likely to lock-up the system (a "bug" in many 1541's).

**NOTE:** The Command Line is a simple INPUT prompt and will let you use
all some "illegal" keys. You should especially avoid using the up/down
cursor keys or the quote key.

**REMEMBER:** The "SEND DISK COMMAND" FUNCTION IS AVAILABLE IN ALL
SECTIONS (CREATOR, DEMO-ER, CLIPART, PRINTER) BY PRESSING THE @ KEY.

```
DISK COMMAND:
>? "r0:newname=oldname
          00 ok
```

# + PRINTER/OTHER

**REF:** FGM SECTIONS

Available when in **CREATOR, DEMO-ER, CLIPART** and PRINTER

This will take you to a sub-menu where you can choose to go to other FGM sections. Just press RETURN to return to the Main Menu.

The selections will vary slightly depending on which section you are presently in. Below is an example of **CREATOR'S** sub-menu.

```
    FUN GRAPHICS MACHINE 'CREATOR' 6.0
         (c)1991 Ron C. Hackley  #0000

         1   PRINTER
         2   DEMO-ER
         3   CLIPART
         4   LOAD OTHER




              SELECT   NUMBER
```
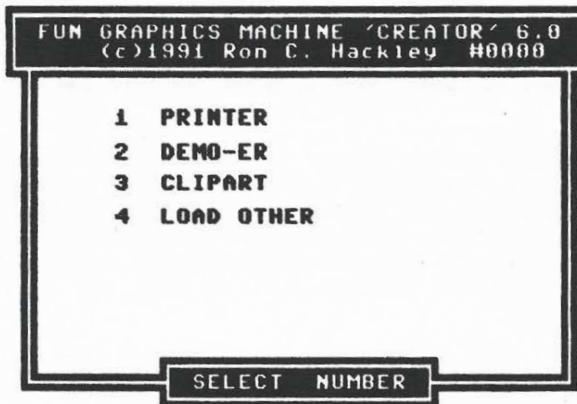
**SELECTIONS 1-3:** When you select 1-3 you'll be prompted to put the PROGRAM DISK INTO THE DRIVE and press RETURN. To CANCEL press RUN/STOP or C. FGM expects to find the PROGRAM DISK in the drive FGM was booted from. If the PROGRAM DISK is in the correct drive you can just select the number (1 2, or 3) twice and avoid having to press RETURN. If the program file isn't found you'll get a file-not-found message and be re-prompted to either put the PROGRAM DISK IN THE DRIVE or CANCEL.

**4 LOAD OTHER:** This is so you can load a utility program (there's a bunch of them on the disk). When you make this selection you'll be prompted for a filename and a "u." prefix will be printed on the filename entry line. Either enter a filename or just press RETURN for a listing of all files that begin with the "u." prefix.

This selection will load a BASIC program into FGM's BASIC area at $4800 and run it. This is not the normal start of BASIC, and space is limited to around 35 blocks. If you try and load your own BASIC program using this selection it may or may not work, and FGM may or may not work afterwards without re-loading it. If you want to write your own utilities for use in FGM it is suggested that you examine the existing utility programs. Most FGM utilities can be stopped for inspection with Shifted Q.

# CHAPTER 5:    DEMO-ER SECTION

## < DEMO-ER OVERVIEW >

**OVERVIEW**: Use **DEMO-ER** to *RECORD* and *PLAY* demos. The **DEMO-ER** section is very similar to the v6 FGM DEMONSTRATOR. All hi-res editing functions are available. Besides the ability to *record/play* demos, the only real difference between **DEMO-ER** and **CREATOR** is that **DEMO-ER** doesn't support the saving of graphics or character sets.

Demos are simply *recorded keystrokes*. When you are *recording* a demo every key you press while on the hi-res screens is *recorded*. When you *play* a demo back the keystrokes on disk are placed into the *keyboard buffer* and FGM retrieves them just as if you were pressing the keys.

Besides being useful for showing how to do things with the hi-res screens (their original purpose), demos are handy for other things like *rotating full screens* and *animated correspondence*. Please see **USES FOR DEMOS** at the end of this chapter.

```
FUN GRAPHICS MACHINE 'DEMO-ER' 6.0
    (c)1991 Ron C. Hackley  #0000

    1 LOAD A GRAPHIC FILE
    2 LOAD A HI-RES SCREEN
    3 LOAD A CHARACTER SET

    4 GOTO HI RES SCREEN EDITOR

    5 PLAY A DEMO
    6 SAVE A HI-RES SCREEN
    7 RECORD A DEMO

    8 LOAD COLOR EDITOR
    / LINK MENU
    @ DISK FUNCTIONS - (D)IRECTORY
    + PRINTER/OTHER OPTIONS

         SELECT  NUMBER
```

**5**

**THE FOLLOWING KEYS ARE ACTIVE WHILE ON ANY OF THE MAIN MENUS:**
Pressing D or ; will *READ THE DIRECTORY*.

    **@:**  **SEND COMMAND TO DISK DRIVE**: A *command line* will appear.
        Just press **RETURN** to read the *error channel*.

    **Sh Q:**  **STOP PROGRAM**: Does what it says. To re-start do a RUN.
                  To *FULLY exit* FGM put the cursor over
                  the *SYS* and press RETURN.

    **CURSOR KEYS/JOYSTICK**: Use to move the SELECT BAR.

    **RETURN** or **FIRE BUTTON**: Selects the menu item that is
                        highlighted by the SELECT BAR.

Following are **DEMO-ER'S** Main Menu selections. Many of **DEMO-ER'S** Main Menu selections are the same as in **CREATOR** and you will be referred to **CREATOR** for these selections.

# 5. PLAY A DEMO:

PLAYING A DEMO is *real easy*. Select 5 PLAY A DEMO from the menu and press RETURN or FIRE at the "d." filename prompt. A list of all demos on the disk will be displayed (all filenames beginning with "d.". Use the cursor keys or joystick to *highlight* a filename and press RETURN or FIRE. FGM will then display the SPEED that the demo was *recorded* at, followed by the DELAY for PAUSES. Accept these by just pressing RETURN or FIRE, or enter another value if you wish. Zero is the *fastest* and moves along at a pretty good clip. 255 is the *slowest* and is probably much too slow for SPEED, although 255 can be useful for DELAY. Values of 10-30 for SPEED are probably the best for most demos.

## ONCE A DEMO STARTS PLAYING USE THE FOLLOWING KEYS:

PRESS SHIFT KEY to PAUSE the demo. The demo will freeze until you release the SHIFT KEY. SHIFT-LOCK may also be used.

PRESS C= KEY (Commodore Key) to let the demo run at FULL SPEED.

PRESS C= CTRL and SHIFT KEYS to CANCEL the demo. Hold all three keys down at once for about a second, then release them. This will CANCEL the demo and will generally return you to the Main Menu. *Sometimes* you will simply be left on the HI-RES SCREEN EDITOR (depending on what the demo was doing when you canceled it). If this happens just press RETURN for the Main Menu.

When you *play* a demo the demo expects to find the same graphics and character sets in the buffers as were used when it was *recorded*. If the graphics or character sets are different (ie: a flipped graphic) then the demo will *play* differently than intended.

The demos provided on the FGM PROGRAM DISK expect to see the *default* FGM graphics in the buffers, although some demos don't rely on the graphics and will probably *play* ok.

You can easily re-load the FGM default graphics and character sets if need be. To re-load the default graphics use 1 LOAD A GRAPHIC and select ALL at the LOAD GRAPHIC BUFFER# prompt. Enter or select "g.1 fgm grabuf" for the filename ("g.1*" will do) and press RETURN (with the FGM program disk in the drive). This will re-load all five graphics buffers.

To re-load the three default character sets use 3 LOAD A CHARACTER SET and select ALL at the LOAD CHARACTER BUFFER# prompt and press RETURN at the "e." prefix. *Group saved* character sets begin with an "e." prefix, and the "e." file on the FGM disk contains the default character sets and the Definable Character.

Some demos may begin with a message (put in by the person who authored the demo) that certain graphics or character sets need to be loaded before the demo is *played*. If you see this message then CANCEL the demo and go find/load the associated graphics or character sets, *then* play the demo. The graphics/character set files will most likely be loadable using the ALL option.

# 7.  RECORD  A  DEMO:

*Recording* demos is really pretty easy. Once you select **RECORD A DEMO** from the Main Menu you'll be prompted for a filename. After entering a filename you'll be prompted for two other things; **SPEED** and **DELAY**.

**SPEED**: This value determines the speed at which the demo will *play*.

**DELAY**: This value determines how long the demo will **PAUSE** during *playback* when it encounters a *pause code* (C= CTRL P). **NOTE**: Pressing C= will jump out of a **PAUSE**. If you use a **PAUSE** value of 255 you can add messages in the demo such as "PRESS C= KEY TO CONTINUE" and the demo will wait until it either times-out or the C= key is pressed.

The **SPEED** and **DELAY** values that you enter for the *recording* are the ones that will be offered as the defaults when the demo is *played*. These default values can be changed before *playing* the demo and can be permanently changed by using the "u.demo util" utility.

After the filename, **SPEED**, and **DELAY** have been entered you'll be taken to the **HI-RES SCREEN EDITOR**. Just use it as normal and everything you do will be *recorded* to the disk as a SEQuential file. The first thing you should do is ERASE THE SCREENS with **Sh CTRL E**; if you don't then the demo won't erase the screens when it *plays*.

**TWO ADDITIONAL KEY COMMANDS ARE AVAILABLE WHILE RECORDING A DEMO:**

> C= CTRL P: This will put a *pause code* into the *recording* which will cause the demo to **PAUSE** during *playback* for the amount of time entered in **DELAY**.

> C= CTRL E: This will put a code into the demo which will cause the screen to be ERASED during *playback*. Normally you should ERASE a screen using **SHIFT CTRL E** (where the Y/N prompt comes up) at the beginning of a recording. There may be times when you want to leave the screen intact so you can trace over it, but you want the screen to be ERASED when the demo *plays*. This is where C= CTRL E comes in handy. It will cause the screen to be ERASED during *playback* but won't ERASE it during *record*.

**NOTE**: The little window area in the **PIXEL EDITOR** will not be present while doing a *recording*. It will be present during *playback*.

Pressing RETURN while in **GP Mode** will take you to the below menu. If you don't want this menu then just press RETURN again.

> 1. DONE RECORDING
> 2. CHANGE LINKS

**PRESS #1** to **FINISH THE RECORDING**. Once a *recording* is finished it cannot be re-started (although you may append other demos to it).

**PRESS #2** to go to the **LINK MENU**. Select the new *link status*, then press RETURN to go back to the hi-res screen and continue the *recording*. The change will be *recorded* but you won't see the LINK MENU during *playback*.

5

# < RECORDING: *RULES & HINTS* >

**1. RETURN GRAPHICS & DEFINABLE CHARACTER TO NORMAL *BEFORE YOU EXIT*:**
When a demo starts playing it expects the graphics, character sets,
and Definable Character to be *the same as they were when you did the
recording*. If any of these are different (ie: *flipped, gone*) then the
demo won't play back as you expect. **ALSO:** When beginning a demo it's a
*very good idea* to select the graphic and character set, *even if the
they are the defaults*. This is so an FGM which has be CUSTOMIZED with
*different default buffers* will play the demo properly.

**2. MAKE SURE YOU HAVE ENOUGH SPACE ON THE DISK FOR THE DEMO:** THIS IS
IMPORTANT! If space runs out on the disk while *recording a demo* then
bad things will happen, the worst being that you will lose your demo.
The length of the demo depends on how many keys you press. As a rule,
single keypresses take one byte and multiple keypresses (ie: with C=,
CTRL, SHIFT) take three bytes. Each block on a disk can hold 254 bytes
(the other two bytes are used for info on the next track and sector of
the file). Note that **TIME** has nothing to do with the length of a demo;
it's how many keys you press.

**3. DON'T USE ADJUST MODE'S AUTO ROW SPACER (ARS) IN A DEMO!**

**4. TRANSFER MODE:** This mode is not 100% reliable with demos. The demo
will record fine but strange things *may* happen when the demo is
played. This seems to be a run-time error, and it has hidden itself
from me incredibly well. Most of the time **TRANSFER** will work fine in
demos, but occasionally not. Probably best not to make a long demo
that uses TRANSFER a lot. **ALSO:** DON'T USE **CTRL N** or = while in
TRANSFER if you want compatibility with the FGM v6 DEMONSTRATOR.

**5. ERASE THE SCREEN(S) AT THE BEGINNING OF THE DEMO!:** The demos don't
automatically erase the screen(s) when they start; you have to do that
as part of the *recording*. If the screens are already clear and you
start doing a demo on them without doing an erase as part of the demo
then when the demo plays back it won't erase the screen(s); it will
just start writing over whatever may already be on the screen.

**6. MOVE THE CURSOR FASTER WITH** *CTRL A, CTRL D, CTRL M, CTRL S, HOME,*
and the *RUN/STOP KEYS*. Using these keys not only "jumps" the cursor
around faster but reduces the number of keystrokes that are *recorded*.

**7. USE GRAPHICS BUFFER #6 AS AN "INVISIBLE" GP MODE CURSOR:** When in
**GP Mode** the graphic in the active buffer will be visible. There may be
times when you want to be in **GP Mode** but you don't want any of the
graphics to appear. Right after you clear the screen go into **GRAB Mode**
and CAPTURE some blank screen into buffer #6. Then, as long as buffer
#6 is active you won't see a graphic on the screen when you're in
**GP MODE**. Note that after using some functions buffer #6 may fill with
garbage (it's also a *temporary buffer*). **ADJUST Mode's** CAPTURE, and
ROTATING A SCREEN AREA will corrupt buffer #6. If you see garbage in
#6 then enter **GRAB Mode** and re-capture some blank screen into it.

**8. MAKE A LARGE DEMO** BY MAKING **SMALLER DEMOS** AND **APPENDING THEM
TOGETHER:** Then you can perfect each part rather than having to re-do
the entire demo because of a mistake. There are a few rules that must
be followed; see **THE DEMO UTILITY** on pages 118-119.

## < DEMO-ER'S *MAIN MENU* SELECTIONS >
### (THE *REST* OF THEM)

**1. LOAD A GRAPHIC FILE:** For loading PS and PM graphics. Works just like it does in <u>CREATOR</u>. See <u>CREATOR</u> for more about this.

**2. LOAD A HI-RES SCREEN:** For loading hi-res and DOODLE screens. Also NEWSROOM photos and banners. Works just like it does in <u>CREATOR</u>.

**3. LOAD A CHARACTER SET:** For loading characters sets (of course). Works just like it does in <u>CREATOR</u>.

**4. GOTO HI-RES SCREEN EDITOR:** Takes you to the hi-res screens and all of the editing functions. Pressing RETURN does the same. Unless you are recording a demo, this works just like it does in <u>CREATOR</u>. See <u>HI-RES SCREEN EDITOR</u> for more about this.

**6. SAVE A HI-RES SCREEN:** Use for saving a screen or *linked screens*. Works just like it does in <u>CREATOR</u>. See <u>CREATOR</u> for more about this.

**8. LOAD COLOR FILE:** Right off, this is <u>not</u> for adding color to your screen artwork; FGM is not a "color" program. This selection allows you to load a *color file* that you have made/saved using the Color Editor utility. Color files are files which contain information about which colors to use for the borders, screens, and cursors. If you want a demo to *play back* using different colors than the defaults then use the COLOR EDITOR UTILITY to create a file with the colors that you wish. As an example, say you didn't want the cursors to be visible while a demo *played;* create a color file in which the cursors are all "white" and use it. A color file is already on the FGM disk that is set up like this; "c.white cursors". Load "c." color files by using <u>DEMO-ER'S LOAD OTHER</u> option.

**/ LINK MENU:** Use for changing the *link* status of the screens. Works just like it does in <u>CREATOR</u> with one small difference. When you change the *link status* while in <u>DEMO-ER</u> you won't be immediately returned to the Main Menu as is done in other sections; you'll stay on the <u>LINK MENU</u> until you press RETURN, which will either take you to the Main Menu or back to a *recording in progress*. The LINK MENU operates this way while in <u>DEMO-ER</u> so you can "double-check" your selection before continuing a recording.

**0 DISK FUNCTIONS - DIRECTORY:** This selection will take you to a sub-menu similar to the one in <u>CREATOR,</u> but *much more limited*. It has an additional selection; FLASH ON (off). See <u>CREATOR</u> for more about any other selections.

> **FLASH ON (off):** This selection will toggle on/off the *flashing of the border* that normally occurs when the *bell dings*. Even if you turn the *bell off* the *flash* will still occur unless you use this selection to disable the *flash*. Disabling the *flash* is provided so you can turn the *flash off* when *playing a demo*. The *flash* will remain disabled until you either re-enable it with this selection or exit the <u>DEMO-ER</u> section.

**+ PRINTER/OTHER OPTIONS:** Will let you go to one of the other sections. Works just like it does in <u>CREATOR</u>. See <u>CREATOR</u> for more about this.

## < SOME USES FOR DEMOS >

**ANIMATED CORRESPONDENCE**: Fender Tucker suggested this term to describe
one use for the V6 FGM DEMONSTRATOR program on LOADSTAR-82. Record a
demo-letter to someone and then send them the v6 FGM DEMONSTRATOR
program along with the demo so they can play the demo. Demos recorded
by this v6 FGM are 99% compatible with the v6 FGM DEMONSTRATOR program
(don't use **CTRL N** or = in **TRANSFER Mode** if recording a demo for the
v6 FGM DEMONSTRATOR program - it won't recognize them). The FGM
DEMONSTRATOR is available on LOADSTAR #82, Q-LINK, GEnie, and
hopefully in many PD libraries.

**ROTATING FULL SCREENS SIDEWAYS**: Demos can be used to automatically do
things to the screen(s) that are difficult to do manually. An example
of this is the **ROTATE SCREEN DEMO** which takes any hi-res screen which
is present and rotates it sideways by using a combination of **GRAB** and
**ROTATE AREA**. This can be very handy when making keyboard overlays.
Rotating a full screen is something I would have had a very difficult
time explaining in the manual so I made a demo which does it for you.

**SAVING SPACE**: A saved screen occupies 32 blocks on disk and three
linked screens gobble up 96 blocks. If you record the making of the
screen(s) as a demo it will be saved in a much more compact manner.
Examples of screens to "save" as demo recordings are scorecards for
games, notes to friends or enemies, templates for calendars, forms,
page templates, etc.. This can be handy for uploading "screens". Any
necessary graphics files or character sets can be included with the
demo file, and you can even tutor (or fun) as you create the screens.
This has the disadvantage that you must play the demo to reconstruct
the screen but with a **SPEED** and **DELAY** of zero it won't take very long,
and it's usually more interesting than just loading a screen.

**A HINT**: If you are going to make a demo that uses different graphics
or character sets than the defaults; "group save" (ALL) the graphics
you are going to use in the demo before you record the demo. Do this
in **CREATOR** by selecting ALL at the **SAVE GRAPHIC BUFFER#** prompt. Use a
starting filename such as "g.1 fredz demo" if the demo is called
"d.1 fredz demo". THEN, when you record the demo make reference at the
beginning of the demo that the demo needs that set of graphics and/or
an "e." character set. Then the viewer can **CANCEL** the demo and go load
the needed files.

**VIDEO**: Instructional videos and video titling can be done with FGM by
recording what you want as a demo and then hooking a VCR up to your
computer and playing the demo back. The cursor colors can be made
invisible and the flash on the screen (when the bell rings) can be
turned off. This is done by loading a different color file.

**JUST FOR THE FUN OF IT**! You don't have to know what you want to record
on the hi-res screen in order to do a demo. Just start a recording and
then start playing around. If you do something fantastic and forget
how you did it then just play the demo back. Write a demo-letter to a
friend, or something for uploading to the world. Even if you just use
text on the screens you'll find you can be much more expressive with
FGM demos. Be warned; others will be able to see when you changed your
mind and changed a word (unlike a word processor:).

# CHAPTER 6:    CLIPART SECTION

## < CLIPART OVERVIEW >

This FGM utility lets you save/load *CLIP ART* (ranged areas of the
screen). All HI-RES EDITING MODES are available, plus a very handy
*RANGED SMOOTHING ROUTINE*. Although the CLIPART section is billed as a
"utility" it can be used to do almost everything that can be done in
CREATOR, and CLIPART is a great tool for importing multi-color screens
into FGM and converting them to black & white.

```
FUN GRAPHICS MACHINE 'ClipArt' 6.0
     (c)1991 Ron C. Hackley   #0000

     1 LOAD CLIP ART  FILE
     2 LOAD A HI-RES SCREEN
     3 SMOOTH WITH EXPAND: YES

     4 GOTO HI-RES SCREEN EDITOR

     5 SAVE CLIP ART
     6 SAVE A HI-RES SCREEN

     LAST CLEARED: 0

     / LINK MENU
     0 DISK FUNCTIONS - DIRECTORY
     + PRINTER/OTHER OPTIONS

          SELECT  NUMBER
```

BE WARNED! WHEN YOU COME TO THE CLIPART SECTION THE *PRESENT CONTENTS
OF GRAPHICS BUFFER #5 AND 6 WILL BE LOST!* These graphics buffers are
used to store the additional routines needed for this section and are
not available while in the CLIPART section. When you exit the CLIPART
section *graphic buffer #5* will be filled with *vertical lines* and
*temporary graphic buffer #6* will probably be filled with *garbage.*

**6**

The CLIPART section is very similar to CREATOR with a few differences:

    -*CLIP ART* files instead of *GRAPHICS* files are loaded/saved.

    -*SCREEN* files are *READ* instead of *LOADED.*

    -*GRAPHICS BUFFERS #5* and *#6* are not available (are lost!).

    -*ADJUST'S CAPTURE RANGE* is limited to three rows.

    -*GRAB'S SCREEN ROTATE* (16x16 area) is not available.

    -*SMOOTHING MODE* is only available in the CLIPART section.

Except as noted on the following pages, the menu selections shown
above operate the same as they do in CREATOR. Please refer to
CREATOR's Main Menu selections for more about using them.

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## << SMOOTHING ROUTINE >>

**SMOOTH MODE:** This hi-res function will smooth out images on the screen and remove the "jaggies". It accomplishes this by clearing pixels as needed (knocking off corners). Smoothing may not improve everything but it does a pretty darn good job with most things and makes final smoothing with the **PIXEL EDITOR** a lot less tedious. Many interesting effects are possible using this. R. Eric Lee (Busy Bee Software & *The Write Stuff*) deserves credit and a *thank-you* for providing me with the algorithm for this routine (although he failed to warn me that it would grow into five+ pages of code:).

**CLIPART'S SMOOTHING** is accessed from **GP Mode** by pressing **SHIFT CTRL S**. A cursor will appear. Make the cursor the size you want using the H & V keys with **C= CTRL** and **SHIFT** just like in **TEXT Mode**. To smooth an area tap the SPACE BAR. To exit **SMOOTH Mode** press RETURN. If you exit to the Main Menu right after a smooth you will be shown how many pixels were cleared. I find this of interest and maybe you will too.

While the .SMOOTH CURSOR is present you can **SCROLL SCREENS** and go between them as *link status* permits. Pressing R will REVERSE THE SCREEN. SMOOTHING A REVERSED IMAGE IS OFTEN USEFUL.

**SMOOTH WITH EXPAND:** Main Menu Selection #3 is used to *toggle* this function ON and OFF. When ON the PGM will *automatically* do a *smooth* after each *screen expansion*.

**HINT:** If you are going to expand an image and smooth it, do the smoothing at *each stage of the expansion* (which *SMOOTH WITH EXPAND* does). With *text* it is generally best to put text on the screen at the smallest size, then use *SMOOTH WITH EXPAND* to make the characters larger. The results will be different depending on which direction you expand in first (H or V). I prefer to do the *vertical expansion* first. When *experimenting*, use the **COPY SCREEN** function to keep a *back-up* the screen you are experimenting with.

**NOTE:** If you **REVERSE** the screen and then smooth it you will likely have *pixels set in the corners* when you **un-REVERSE** the screen. This is because the REVERSED CORNERS were knocked off by the SMOOTHING.



Sh CTRL S = SMOOTH MODE        SPACE=DO IT

SMOOTHING
SMOOTHING
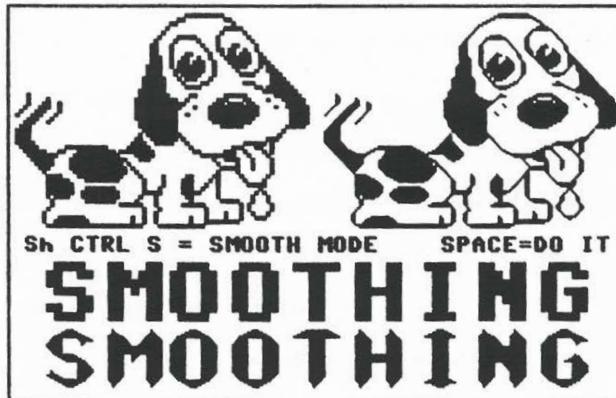
## #2  LOADING  SCREENS (not Clip Art)

While in the **CLIPART** section of FGM when you load hi-res screens they
will be **read** instead of **loaded**. *Reading* is a little bit slower but it
allows FGM to read in any size file without crashing the program; FGM
will only read in what it can handle. This is especially useful for
loading KOALA and other *multi-color* files which are greater than 37
blocks. *Don't worry about it*; it just happens as if you were loading a
screen from one of the other sections.

## <<  STRIP  GRAY  -*-  STRIP  GRAY  >>

### USING *STRIP GRAY* TO CONVERT *MULTI-COLOR* TO *HI-RES* BLACK & WHITE:

This isn't an exact science but you can usually get excellent results.
What **STRIP GRAY** does is remove bit (pixel) pairs that are 01, which is
background color #1 for multi-color files. If a byte of pixels was
01010101 then the whole byte would be zero'd.

Start by loading the *multi-color* screen file (ie: KOALA) to a screen.
Then go **ERASE** one of the other screens, return to the *multi-color*
screen and press c to make a **COPY**. The **COPY** is optional and is so you
have a *back-up* in case another try is needed. Next, press **SH CTRL G**
and answer **Yes** at the **STRIP GRAY?** prompt. If the results aren't what
you hoped for then **ERASE** the screen, go to the **COPY**, make a **COPY** of
it, **REVERSE THE SCREEN** and try **STRIP GRAY** again. If the result is
still poor try *scrolling a pixel left* and repeating. At the extreme,
load the screen back into the program from which it was created,
change the colors, and try again. Once you have a useful image on the
screen make a **COPY** of it and then try **SMOOTH** on it.

Below is a multi-color KOALA-type screen "as loaded", and after using
both **STRIP GRAY** and **SMOOTH** on it. See the difference for yourself.
There are *thousands* of these screens available and many of them should
convert just fine.

6
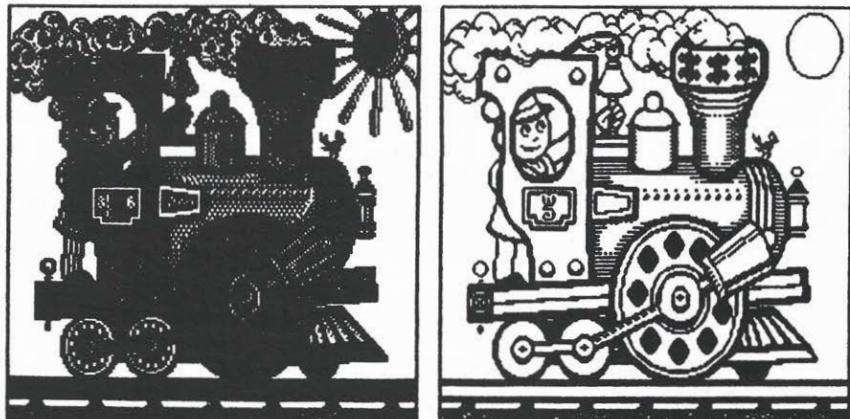


THE ABOVE SCREEN IS CALLED CHOO CHOO AND WAS DRAWN BY A
MASTER OF COMMODORE ARTWORK, WAYNE SCHMIDT (PIXELSMITH).

## < LOADING CLIPART FILES>

CLIP ART files are *RANGED* (variable sized) areas of the FGM screen which you save to re-use in FGM. The size of the area that's saved can be from *one column* by *one row* to *three screens across or down.* CLIP ART files saved by FGM are *compressed* when they are saved which results in the files being smaller than they'd otherwise be. The CLIP ART files FGM saves/loads are *not* compatible with CLIP ART files from other programs; they are intended to be *cross-compatible* with a collection of CLIP ART that BUSY BEE SOFTWARE is putting together.

## #1 LOAD CLIP ART FILE:

FGM CLIP ART filenames begin with "**..**" and are stored as USR files. This is pretty good insurance against accidently loading a clip art file as a graphic or screen so I won't go into that warning and you don't need to worry about it. The first "**.**" in the filename is for compatibility with BUSY BEE'S CLIPART. The second "**.**" is for FGM compatibility (Selective Directory).

Load a clip art file just like you'd load any other file; either enter the filename or select one from the Selective Directory. The main difference is that you'll have to place the cursor over the area of the screen where you want the image to go (unless loading a multiple "linked" screen file).

Before actually loading the file FGM will first read the *header* to determine the *size of the file.* If the file is larger than one screen *across or down* then the screens will be *linked* before loading (you'll have the opportunity to CANCEL after being shown the size). If the file is larger than one screen down <u>and</u> one screen across you'll be asked which way to load it (across or down).

When LOADING a *RANGED* (up to 40 col x 25 row) CLIP ART file you'll need to place the cursor (shaded area) over the screen area where you want the image to go. Press X to go between screens as desired. Then press o, p, or P (<u>OVERLAY, EOR, PASTE</u>) to read the file to the screen. The default is EOR which will be done if you just press RETURN. The reason for using EOR as the default is that EOR *can be undone* by *loading/EORing the file back over itself.* When placing the cursor you may make the cursor smaller vertically to load less of a file. You can make the cursor smaller horizontally but the file won't load properly.

Once the cursor is on the hi-res screen there is no way to CANCEL the load. If you must CANCEL the load and don't have a spare screen that you can dump it on then make the cursor its smallest size, move it somewhere that is clear, then press p. If you accidently EOR the image to the screen you can remove it by re-loading the file and EORing over the image again.

Files larger than 40 columns by 25 rows ("linked screens") will be PASTED to the screens; no option to OVERLAY or EOR. If the file is greater than 40 columns you'll see the loading taking place on the left-hand screen. The other screen(s) are also being written to but you won't see the *screen flipping* that normally takes place when screens are loaded.

# < SAVING CLIPART >

## #5 SAVE CLIP ART:

You may save a *RANGED AREA* of up to one screen, or you can save two or three screens *linked across or down* as a CLIP ART file.

If the screens are *linked* you'll be asked if you want to save them "linked". Select NO if you want to save a *ranged area* of one screen instead of several screens. *Linked screens* saved as CLIP ART files can only be loaded from within the CLIPART section!

When saving a *RANGED AREA* of one screen you'll need to put the cursor over the area and *set the size of the cursor* (use H&V with C, CTRL, and SHIFT just like in TEXT Mode). Once the range (size) is set press RETURN and you'll be prompted for a filename. To cancel, delete the filename prefix and press RETURN.

When setting ranges to load or save the screens may be SCROLLED and SPLIT (if *link status* permits), and REVERSED. Go between screens by pressing X.

## CLIPART'S *OTHER* MENU SELECTIONS:

**#3 SMOOTH WITH EXPAND YES (NO)**: Selecting this will toggle between having the screens *automatically smoothed* after each *expand* or not. HINT: To smooth *after* reduce go to the *EXPAND PROMPT* but cancel *without* expanding, then do the *reduce*.

**#6 SAVE A HI-RES SCREEN**: Works just like it does in CREATOR.

**DOTS CLEARED**: Not a menu selection but present on the menu. This will tell you how many pixels were cleared during the last SMOOTHING. Other functions may corrupt this value so it's best to check it *right after* SMOOTHING if the answer is important to you.

**/ LINK MENU**: Works just like it does in CREATOR.

**0 DISK FUNCTIONS - DIRECTORY**: Press D or ; for the directory. DISK FUNCTIONS in this section are limited to sending commands to the drives. The *command line* may be accessed either through this selection or by pressing @ while on the Main Menu.

**↑ PRINTER/OTHER**: For going to another FGM section. Works just like like it does in CREATOR.

**CUSTOMIZING CLIPART**: The *default cursor size* for the SMOOTH CURSOR, and the *default graphic buffer#* when entering CLIPART may be changed if you aren't afraid of BASIC. The CLIPART BOOT file ("u.clipart") contains the BASIC that needs to be changed (it's *somewhat* notated). Use Sh Q to STOP the FGM (from any section), load the "u.clipart" file (load"u.clip*",8), make the changes, then *scratch the old file* from your back-up disk and *save the modified file* in its place. IMPORTANT: Make the BASIC neither longer or shorter; there's ml above which will move with the BASIC and if it gets relocated the program will crash.

**FGM MUSIC:** THIS *GREAT* USE FOR **FGM** WAS ORIGINALLY SENT TO ME BY **MIKE HUTCHINSON** OF **NORTH ADAMS, MA.** BEING A MUSICIAN, **CHAUNCEY WESTBROOK** SAW THE POSSIBILITIES AND HAS BEEN DEVELOPING THIS INTO THE **ATP SYSTEM** FOR USE WITH THE **FGM.** THE SCREEN SHOWN BELOW WAS CREATED BY A DEMO THAT **CHAUNCEY** PRODUCED FOR v410 OF THE **FGM** TO SHOW HOW TO USE HIS **ATP MUSIC SYSTEM.**
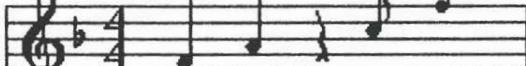


**VOILA !**  A PIECE OF CAKE...NOW WITH PRACTICE **you** CAN PRODUCE QUALITY MUSIC MANUSCRIPTS.

FOR MORE INFORMATION CONTACT...

Chauncey Westbrook c/o
Abu Tajj Publications
200 E. Church Lane #405
Philadelphia, PA 19144
215   843-0118

HAPPY COMPUTING ☺

– �֍ – �֍ – ✶ – ✶ – ✶ – ✶ – ✶ – ✶ – ✶ – ✶ – ✶ –

THE ARTWORK BELOW WAS DONE BY **JERRY FREADMAN** (THE **FGM** KEYBOARD OVERLAY KING☺). THE MAN CAME FROM A **MAC-TO-64** PD DISK AND WAS MODIFIED USING **OCP ART STUDIO,** THEN LOADED INTO FGM WHERE THE MACHINE PART WAS ADDED. THE ROLLERS WERE DONE USING THE FGM GRAPHIC IN BUFFER #1.

## CHAPTER 7: *PRINTER SECTION*

### < PRINTER OVERVIEW >

FGM's <u>PRINTER</u> section lets you print out the hi-res screens, either those in *memory* or screens that have been *saved to disk*. A *SET OF* (ie: up to *3-across* by *26+down*) *linked screens saved on disk* can be printed out using just one filename. A variety of options and densities are available depending on the printer you are using.

The <u>HI-RES SCREEN EDITOR</u> is available while in the <u>PRINTER</u> section and *most hi-res functions are present*. This means you can edit the hi-res screens without going back to <u>CREATOR</u>. You <u>will</u> have to go to one of the other sections if you want to save the edited screen though. <u>GRAB Mode</u>, <u>PIXEL EDIT Mode</u>, and <u>GRAPHICS BUFFER #6</u> are not available in the <u>PRINTER</u> section, and <u>ADJUST'S CAPTURE</u> is limited to *three rows*.
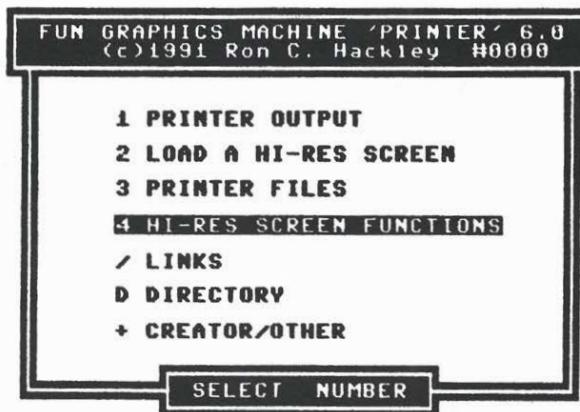
```
┌────────────────────────────────────────┐
│ FUN GRAPHICS MACHINE 'PRINTER' 6.0      │
│     (c)1991 Ron C. Hackley  #0000       │
├────────────────────────────────────────┤
│                                         │
│        1 PRINTER OUTPUT                 │
│                                         │
│        2 LOAD A HI-RES SCREEN           │
│                                         │
│        3 PRINTER FILES                  │
│                                         │
│        4 HI-RES SCREEN FUNCTIONS        │
│                                         │
│        / LINKS                          │
│                                         │
│        D DIRECTORY                      │
│                                         │
│        + CREATOR/OTHER                  │
│                                         │
├────────────────────────────────────────┤
│          SELECT  NUMBER                 │
└────────────────────────────────────────┘
```

<u>THE FOLLOWING KEYS ARE ACTIVE WHILE ON ANY OF THE MAIN MENUS</u>:
Pressing D or ; will *READ THE DIRECTORY*.

@: <u>SEND COMMAND TO DISK DRIVE</u>: A *command line* will appear. Just press <u>RETURN</u> to read the *error channel*.

Sh Q: <u>STOP PROGRAM</u>: Does what it says. To re-start do a RUN. To *FULLY exit* FGM put the cursor over the *SYS* and press RETURN.

<u>CURSOR KEYS/JOYSTICK</u>: Use to move the SELECT BAR.

<u>RETURN</u> or <u>FIRE BUTTON</u>: Selects the menu item that is highlighted by the SELECT BAR.

The very first time you go to the <u>PRINTER</u> section you'll be taken to a screen explaining that you must first select a printer. Then you'll be taken to the <u>SELECT PRINTER</u> utility to select a printer and you'll have to answer some *frightful questions* (not really). See <u>SELECTING A PRINTER</u> in PRINTER'S APPENDIX.

# < PRINTER'S MENU SELECTIONS >

## 1. PRINTER OUTPUT:

This selection will take you through a series of "set-up" questions in preparation for printing (ie: *density, rows to print, double height, how many screens across, width, select screens, dots between screens, left margin,* OTHER OPTIONS; *repeat* [for labels and letterhead], *serialize, double print*). The selections available will vary depending on your printer's capabilities.

## 2. LOAD A HI-RES SCREEN:

Use this for loading *linked* or *unlinked screens* just like in the other sections. Do not try and load screen files larger than a 37 block DOODLE while in PRINTER or you will likely crash the program. Loading large NEWSROOM photos while in PRINTER may also crash into the program but it won't be as severe; you'll get a message after the load that you MUST RE-LOAD PF (re-load the *printer file*). If the MUST RE-LOAD PF message appears put the FGM disk back into the drive and press RETURN (you can't cancel out of this prompt).

## 3. PRINTER FILES:

This will take you to a sub-menu where you can either load a PRINTER FILE (a "p." printer file that you have customized), or go to the SELECT PRINTER utility and select another printer/change set-ups.

## 4. HI-RES SCREEN FUNCTIONS:

The HI-RES SCREEN EDITOR is available but some functions are limited or unavailable while in the PRINTER section.

          no GRAB Mode
          no PIXEL EDITOR (but cursor will appear w/F7)
          no GRAPHICS BUFFER #6
          ADJUST'S CAPTURE is limited to 3 rows.
All other hi-res functions/modes are available.

## / LINK MENU:

This operates the same as it does in the other sections. Note that screens must be *linked* if you want to print them out *linked,* and *unlinked* to print them out *unlinked.* You can print *multiple unlinked* screens across.

## D DIRECTORY:

Select this for the directory. You can also get the directory listing by pressing ; (semi-colon). The other sections work this way too.

## + CREATOR/OTHER:

Go to FGM'S other sections; CREATOR, DEMO-ER, CLIPART.

On the following pages will be an explanation of #1 PRINTER OUTPUT for non-CBM printers, followed by output for CBM printers. Note: Some of FGM's non-CBM information also relates to CBM printer output).

# #1. PRINTER OUTPUT

**UNLINKED SCREENS**: These are printed out just like you'd do with v.410, where you select the screen(s) you want to print. You can print up to 3 screens across (same or different) depending on the *density* you select. If you want to print *unlinked screens* skip ahead to the bottom of the page.

**LINKED SCREENS**: If the screens are *linked* when you go to print you will be prompted **PRINT LINKED SCREENS YES  NO**. If you answer NO you'll be returned to the **PRINTER'S** Main Menu. To print *unlinked screens* the screens must be *unlinked*, and to print *linked screens* the screens must be *linked* (if need be, just press / from the Main Menu and go change the *link configuration*).

If you answer YES to **PRINT LINKED SCREENS YES  NO** the next prompt will be **FROM DISK YES  NO**. Answer NO if the screens are *in memory*. Answer YES if you want the program to load screens *from disk* and print them.

**HOW MANY DOWN?** will appear if **FROM DISK** is selected. This wants to know how many *panels* downward to load/print (a *panel* being 1-3 screens across).

```
FUN GRAPHICS MACHINE 'PRINTER' 6.0
      (c)1991 Ron C. Hackley  #0000


    2 LINKED ACROSS  YES  NO
             HOME OK

    FROM DISK Y/N? y
    HOW MANY DOWN? 3
```

If you answer YES to **FROM DISK** you'll be prompted for a starting *filename* and FGM will check for its presence. The program only checks for the *starting file*, not for the others. If the program fails to find a screen file on the disk while screens are being printed it will abort. If this happens you can continue the print-out from where it stopped by scrolling the screen(s) upward and re-starting the printout again from where it stopped (after finding out why it didn't find the filename).

The *link status* determines how the program will load/print *linked screens*. If *linked across* the program will load however many *across* (2 or 3) and print them. If *linked down* the program will load each screen, print it, then load the next.

FGM has two main **PRINTER** sections; 8/9 pin non-CBM (ie: EPSON) and 7 pin CBM (ie: 1525/MPS-803). The pages that follow will cover **PRINTER OUTPUT** for 8/9 pin printers (some relates to 7-pin too). Following that will be **PRINTER OUTPUT** for 7-pin CBM type printers.

# < NON-CBM PRINTER >

Most of the following prompts will default to the *last selection* you
made, although SCREENS and WIDTH will be different if you change *link*
status. Very often you can go through *all of the prompts* by just
pressing RETURN or FIRE at the default. If you make a mistake you'll
have to go back to the Main Menu and start over again but most of the
defaults will be whatever your last selections were. To go back to the
Main Menu just keep pressing RETURN.

If you are printing *unlinked screens* then DENSITY will be the first
menu screen you'll see after selecting #1 PRINTER OUTPUT.

SELECT DENSITY: Use the up/down cursor keys or joystick to *select the*
*density* and then press RETURN or FIRE. The SELECT BAR will be on the
*last selection*. If you are printing *linked screens across* and select a
lower density than will fit you'll get an INVALID message (ie: three
screens *linked across* will give an INVALID if you select 80 dpi).

NOTE: The  printer files are "generalized" and not all printers will
be able to use all of the densities that are displayed. Consult your
printer manual if in doubt about your printer's density capabilities.
The selections shown below will vary somewhat depending the printer
driver selected for your printer.
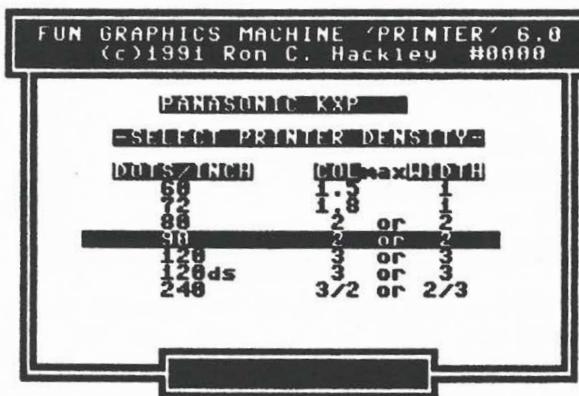


The values listed under COL and WIDTH refer to the maximum number of
screens that can be printed at that density, and/or the maximum width.
For example; if you want to print three screens across you'll have to
select a density of 120 or 240. Anything else would be too wide and
won't fit. When the SCREENS and WIDTH prompts come up the selections
available will depend on the *density* you select here.

At 60 and 72 dpi you won't be able to print two full screens across;
only a portion of the right screen will be printed. At 60 dpi half
(20 columns) of the *right screen* will be printed. At 72 dpi 32 columns
of the *right screen* will be printed. The printout will be 8" wide at
either density if "two" screens across are printed.

# < NON-CBM PRINTER >

```
┌─────────────────────────────────────────────┐
│   FUN GRAPHICS MACHINE 'PRINTER' 6.0          │
│     (c)1991 Ron C. Hackley  #0000             │
│  ┌─────────────────────────────────────────┐ │
│  │ DOTS LEFT: 80  LINE: 640                │ │
│  │ HOW MANY ROWS? 25                       │ │
│  │ DOUBLE HEIGHT  YES NO                    │ │
│  │ SCREENS: 1    2                         │ │
│  │ WIDTH:    1X                            │ │
│  │ DOTS BETWEEN SCREENS 0- 80              │ │
│  │      LAST/MAX: ? 0                       │ │
│  │ LEFT MARGIN 0- 80/ 90                    │ │
│  │      LAST/MAX: ? 0                       │ │
│  │ OTHER OPTIONS  YES NO                    │ │
│  └─────────────────────────────────────────┘ │
│  ┌─────────────────────┐                      │
│  └─────────────────────┘                      │
└─────────────────────────────────────────────┘
```
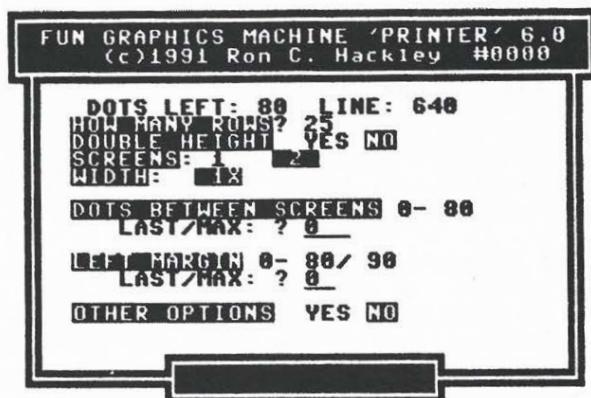
**HOW MANY ROWS:** Default is 25 (a full screen) or *last selection*. If you delete the number or enter 0 you'll be taken back to the Main Menu.

> **AUTO ROW SETTING:** When printing <u>non</u>-DOODLE *linked screens from disk* you can tell FGM to print only as many rows as it loads for each set of panels across. If you saved your *top set* of screens as 7 rows and saved the *next set* as 20 rows then FGM will only print 7 rows of the *first set* and 20 rows of the *second set* instead of printing all 25 rows of both. To enable this feature press "f" when prompted for ROWS TO PRINT. This option is only available for *linked-from-disk* printouts of non-DOODLE screens; you'll be returned to the Main Menu if you press "f" and it's not permitted. The *final screen before printout* will show 0 rows to print when this option is enabled and the value will be corrected after the first set of screens is loaded (if you had entered 0 for ROWS TO PRINT then FGM would have taken you back to PRINTER'S Main Menu and you wouldn't have made it this far).

**DOUBLE HEIGHT YES NO:** Select YES to print at DOUBLE HEIGHT.

**SCREENS 1 2 3:** How many screens *across* do you want to print? This will highlight the *last selection* unless you have selected a new density and the previous selection won't fit at the new density. Use ANYKEY to highlight the selection you want, then press RETURN or FIRE to select. If *linked screens* have been selected then you won't be able to answer this prompt; this will show the number of screens across that will be printed and "LINKED" will be next to the number.

**WIDTH 1X 2X 3X:** This will highlight the *last selection* unless the SCREENS selection won't permit it. In that case it will show the *maximum width which will fit*. If only one screen will fit then you won't get to select this; it will show a *width of 1* and go to the next prompt. Use ANYKEY to highlight, then press RETURN or FIRE.

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## < NON-CBM PRINTER >

SELECT SCREEN(S): This is for *UNLINKED* screens and won't appear if *LINKED* screens have been selected. Use this to select the screen(s) you want to print. If more than one screen is being printed you'll have to select LEFT, CENTER, and RIGHT screens for the printout (CENTER if printing 3 screens across). You may select the same screen or different screens for each position. Press X, cursor right or joystick right to go between screens, and RETURN or FIRE to select. If you just press RETURN at this prompt the first hi-res screen will appear and can be selected by pressing RETURN again.

DOTS BETWEEN: This prompt wants to know how many *dot-spaces* to put between multiple screens. It only appears if more than one screen (column) *across* is being printed and dots are available. This is limited to 255 *dot-spaces*, less if fewer will fit. *Dot-spaces* will be at the same density as the rest of the printout.

LEFT MARGIN: THIS IS DIFFERENT THAN 410! It works in DOT-SPACES at the *selected density* (ie: at 90 dots/inch if you enter 180 the margin will be two inches; 180/90=2"). The available range (0-x) will be shown. If a number larger than will fit is entered "INVALID" will be displayed. This prompt will come up even if no dots are available for a margin, just so you know. To *center* the printout enter a number half of the amount the prompt gives for maximum. NOTE: Most printers used with FGM will print a maximum width of eight inches and most paper is eight and a half inches wide. To truely *center* a *printout* you'll need to either move the paper a quarter-inch left of the printer's left margin, or add a quarter-inch of additional dots (22 dots would be about a quarter-inch at a density of 90 dpi).

OTHER OPTIONS YES NO: Select YES to access a *sub-menu* for REPEAT (ie: *labels* and *letterhead*), SERIALIZE, and DOUBLE PRINT. With some screen *link configurations* this prompt won't appear (ie: *REPEATING linked screens from disk* isn't permitted).

```
FUN GRAPHICS MACHINE 'PRINTER' 6.0
    (c)1991 Ron C. Hackley  #0000


HOW MANY?      ? 9000
LF SPACE       ? 40    / 216

SERIALIZE      YES NO
START #...     ? 0000
CHR SET 1-5    ? 4
COL ACROSS     ? 0
ROWS DOWN      ? 0

DOUBLE PRINT   YES NO
DOT ADV 0-2    ? 0
ADV 0-3        0     / 216
```

## OTHER OPTIONS: YES  NO

OTHER OPTIONS: REPEAT, SERIALIZE, DOUBLE PRINT

REPEAT SCREENS: This is not available if screens are *down-linked* or if *printing linked screens from disk*. Use this for labels, forms, and letterhead. The default is *one* which means do *one screen* - no repeats, just as though you'd never come here. If you enter a number greater than one you'll be prompted for REPEAT SPACING.

The REPEAT SPACING value determines how much space to linefeed after printing each set of rows. The default value *should* give the correct spacing (Epson) between printouts of standard 15/16" mailing labels when printing 7 rows to each label. For other size labels you'll need to enter another value here. See LABELS and LETTERHEAD in PRINTER'S APPENDIX for more about printing labels.

FORM FEED FOR LETTERHEAD: If you enter an "f" instead of a value for REPEAT SPACING the program will send a form feed after each printout. If you are going to use this then you should reset your printer's TOP OF FORM before starting the printout. An off/on will usually suffice.

The default value for REPEAT SPACING can be permanently changed to another value by first using another value, then going to SELECT PRINTER and writing the disk with the *printer file in memory*. See SELECT PRINTER in PRINTER'S APPENDIX.

SERIALIZE YES NO: This prompt will only appear if REPEAT has been selected. If you select YES then you will be prompted for the STARTING NUMBER, CHARACTER SET, and X/Y (across/down) LOCATION.

SERIALIZE will write a *four-digit number with leading zeros* (ie: 0005) to the screen and this number will be incremented after each REPEAT. Note that the number will become a *permanent* part of the screen; whatever was in the *x/y location* you select will be overwritten by the serial number. Use for serializing labels, scorecards, etc.

DOUBLE PRINT YES NO: When you answer YES to this prompt several other prompts may appear depending on the *density* you selected:

PIX ADV: This wants to know how many 240ths of an inch to move the printhead to the right before doing the second pass. Entering *one* will cause the printhead to start 1/240" over on the second pass. Not available at all density selections. *USE SOME CAUTION WITH THIS*; it probably will not work with all printers or at all densities (ie: If *one* is used at 80 dpi my Panasonic will lock up after several rows, but no problems with 90 dpi). Most likely to give problems if DOTS LEFT=0. Find out what does/doesn't work with your printer and make notes!

LF ADV: This wants to know how many 1/216" to linefeed before the *second pass* of the printhead. This advance is compensated for when the next row is printed so the printout will be the same size as it would be if this wasn't used.

# < ALL CORRECT YES NO? >

<u>COLOR</u>: If you are using an NX-1000 RAINBOW or compatible and you told
*FGM so during SELECT PRINTER* you will be prompted to enter a number
that corresponds to the color you want.

After answering all of the prompts you will be shown the below screen
which shows your selections. The *reversed numbers* after <u>LEFT MARGIN</u>
and <u>DOTS BETWEEN</u> are the *inch equivalents* of your selections.

```
FUN GRAPHICS MACHINE 'PRINTER' 6.0
       (c)1991 Ron C. Hackley  #0000

    DOTS LEFT: 80   LINE: 640
    DENSITY: 90
    SCREENS: 2
    WIDTH: 1
    LEFT MARGIN: 0/ 90           0"
    DOTS BETWEEN: 0              0"
    DOUBLE HEIGHT: No
    DOUBLE PRINT: Yes   PA 0  LA 0
    LINES TO PRINT: 25
    REPEAT: 9000    SPACE: 48/ 216
    START SER#: 0   0X    0Y
    HOLD F-7 DURING PRINT TO PAUSE
    ALL CORRECT   YES  NO
```
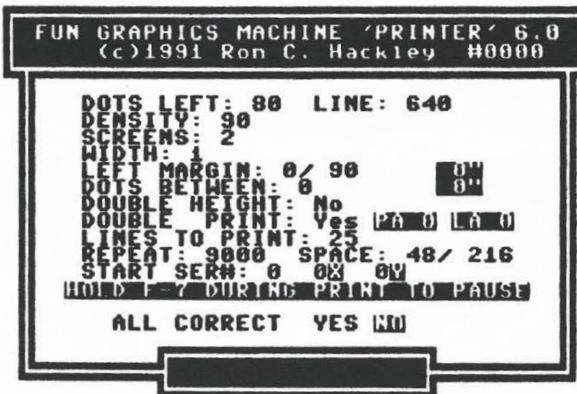
<u>IS EVERYTHING CORRECT YES NO</u>: *ONLY* by selecting YES will printing
start. Just press RETURN for the Main Menu. A quick tap of ANYKEY but
RETURN will toggle this selection to YES. While this prompt is on you
can <u>JOG</u> the printer's linefeed by pressing J. Pressing J will cause
the printer to do its minimum linefeed. The amount of linefeed will
depend on your printer and what you choose during set-up for linefeed
spacing (ie: n/72 or n/216). With C. Itoh/NEC use +/- instead of J to
*jog forward/backward 1/144"*. Handy for taking the slack out.

After printing starts a *colored bar* will begin moving down the screen.
This bar represents what's being processed/sent to the printer. If
your printer or interface has a good size buffer than this bar may be
considerably ahead of the printout.

<u>TO PAUSE/CANCEL</u>: <u>HOLD</u> the <u>F7</u> key until the program takes you to a
<u>PAUSING MESSAGE</u>. If *linked from disk* is selected the program will load
the screens into memory before it starts printing and PAUSE will not
be effective until *after printing begins* so you may need to <u>HOLD</u> F7
for awhile. Likewise if printing at <u>DOUBLE HEIGHT</u>.

When printing is completed you'll be shown the above <u>ALL CORRECT</u> menu
screen again. This is just so you can see what your selections were.
Press RETURN for the Main Menu.

If a lock-up occurs during printout try using RUN/STOP-RESTORE to
escape. Check the bottom of your screens for contamination any time
you use RUN/STOP-RESTORE.

## < CBM PRINTER OUTPUT >

This section is for Commodore 1525/MPS801/803 and emulating printers. These printers are generally limited to a *single density* of 60 *dots per inch* (dpi) which equals 480 *dots per line* (8"*60dpi=480). A few emulating printers have a "high density" mode. If FGM supports it then that selection will be offered.

*Linefeed spacing* is different than with 8/9-pin printers because these printers use 7 pins for graphics. A hi-res screen is made up of 25 rows down, 8 pixels down per row. 8-pin printers will print the screens with 25 passes of the printhead, one pass for each full screen row. 7-pin printers must take the rows in smaller chunks. THIS MEANS THAT A FULL SCREEN PRINTOUT WITH A 7-PIN PRINTER TAKES 29 ROWS.

After you select **#1 PRINTER OUTPUT** and answer any prompts about PRINTING LINKED SCREENS you'll receive several other prompts:

```
FUN GRAPHICS MACHINE 'PRINTER' 6.0
     (c)1991 Ron C. Hackley   #0000

   DOTS LEFT: 160
   60 DOTS/INCH
   HOW MANY ROWS? 29
   DOUBLE HEIGHT  YES NO
   SCREENS:  1   1.5

         SELECT  SCREEN
   X to VIEW / RETURN to SELECT

  LEFT MARGIN 0- 160/ 60
     LAST/MAX: ? 0

  OTHER OPTIONS  YES NO
```
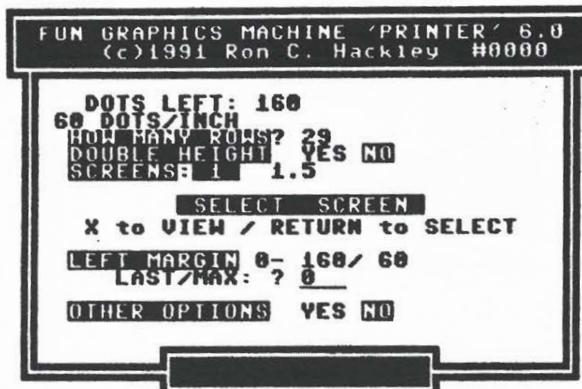
HOW MANY ROWS 1-29: A full screen down takes 29 linefeeds (passes of the printhead), to print the 25 *screen rows*. 29 is the default. To print fewer rows enter the number and press RETURN.

DOUBLE HEIGHT YES NO: Select YES for a double height printout, else just press RETURN for the NO default.

COLUMNS: 1 1.5: This lets you choose whether to print 1 or 1.5 screens across. Printing 1.5 screens across will print one screen on the *left side* of the paper and the *leftmost 20 columns of the second screen* on the right side of the paper. That's all that will fit at a density of 60 dpi.

SELECT SCREEN(S): Press X, cursor right, or joystick right to view the screens and when the one you want is *visible* press RETURN or FIRE. If you are printing 1.5 screens then you'll be prompted to select the **LEFT,** then **RIGHT** screen. Pressing RETURN/FIRE when this prompt comes up will take you to the first hi-res screen and pressing RETURN/FIRE again will select it.

## < CBM PRINTER OUTPUT >

<u>LEFT MARGIN</u>: This works by sending *blank graphic dots* (*dot-spaces*). Each *dot-space* is 1/60". The available range (0-X) will be shown. If a number larger than will fit is entered you'll get an INVALID message. For a margin of one inch enter 60 at the prompt.

<u>OTHER OPTIONS YES NO</u>: This will take you to a sub-menu for <u>REPEAT</u> (ie: labels), <u>SERIALIZE</u>, and *maybe* <u>DOUBLE PRINT</u> (depending on your printer). Please refer to the 8/9-pin section for more about these options. Note that the <u>FORM FEED</u> for letterhead probably won't work right with many printers in this group because they simply don't have a form feed command.

After answering all of the prompts you will be shown the below screen which shows your selections:

```
FUM GRAPHICS MACHINE 'PRINTER' 6.0
      (c)1991 Ron C. Hackley  #0000

     DOTS LEFT: 160
     DENSITY: 60
     SCREENS: 1

     LEFT MARGIN: 0/ 60        ▋▊
     DOUBLE HEIGHT: No
     LINES TO PRINT: 29
     REPEAT: 6889  SPACE: 2
     START SER#: 0  ▊▊  ▊▊

     ALL CORRECT  YES ▐NO▌
```
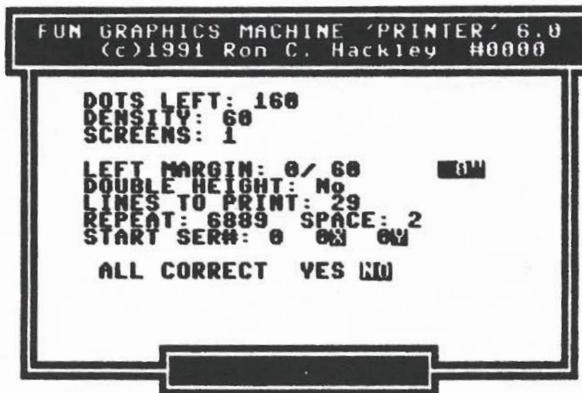
<u>IS EVERYTHING CORRECT YES NO</u>: Only by selecting YES will printing begin (a quick tap of ANYKEY but RETURN will toggle the selection to YES). After printing starts a colored bar will begin moving down the screen. This bar represents what's being processed and sent to the printer. Note that the colored bar moves down the screen in full-row increments (25 rows to a screen) so it won't exactly track the rows that are being printed by a 7-pin printer.

<u>TO PAUSE/CANCEL</u>: <u>HOLD</u> the <u>F7 key</u> until the program takes you to a <u>PAUSING SCREEN</u>. If *linked from disk* is selected the program will load the screens into memory before it starts printing and PAUSE will not be effective until after printing begins, so you may need to <u>HOLD</u> F7 for awhile. Likewise if printing at <u>DOUBLE HEIGHT</u>.

When printing is completed you'll be shown the above <u>ALL CORRECT</u> menu screen again. This is just so you can see what your selections were. Press RETURN for the Main Menu.

If a lock-up occurs during printout try using RUN/STOP-RESTORE to escape. Check the bottom of your screens for contamination any time you use RUN/STOP-RESTORE.

## < PRINTER NOTES/HINTS >

**EMULATION:** Most printer interfaces and many 8/9 pin printers with built-in interfaces can be set to either transparent (may be called ASCII, STAR, IBM, etc.), or set to emulate a 7 pin Commodore printer. This is usually done by setting switches. 7 pin Commodore emulation will give you the least capabilities. If using 7 pin (true or emulation) you must select from the 7 pin group (select the 1525).

**BLANK ROWS:** Before each screen row is sent to the printer FGM checks to see if the row contains any on-pixels. If the row is blank then FGM just sends a linefeed instead; no sense printing blank rows. This feature is not active when printing more than one unlinked screen across. With labels you can usually get slightly faster printouts if you leave blank rows under the label and "print" them instead of entering a **REPEAT SPACING** value. This is usually possible with standard mailing labels.

**COLOR PRINTING:** FGM is not a color program and does not support printing color files. However, you can still do some excellent color work using FGM. George Remillard has sent me some unbelievable color printouts that he has done with FGM, using multiple passes and changing the ribbon (colors) and screen between each pass. George gets additional colors by mixing colors (overprinting one over another). Doing this requires patience, practice, and some savvy, but the results are truely outstanding. This method can also be used for adding color to labels. Another way, which I enjoy, is to get out the felt-tip pens and hand color (paint by numbers without the numbers:).

**60 DPI NOTES:** Single-height printouts at 60 dpi will generally look better if you use 2 block (PS-B) graphics; the 3-block (PS-A) graphics tend to look stretched out horizontally at 60 dpi.

FGM can be used to "convert" 3-block graphics into 2-block. Simply fasten the graphic to the screen, do one horizontal reduction of the screen (C= CTRL H), then GRAB the graphic back into a graphics buffer. Many 3-block PS-A graphics began life as 2-blockers and were expanded once horizontally to make them into 3-blockers; these will convert perfectly. With graphics that were drawn as 3-block you may have to experiment. A few things that may help; scroll the screen a pixel left (F5) before the reduction, flip and/or reverse the graphic before reducing, go to CLIPART and expand/smooth/reduce the screen.

Sometimes **FULL SCREENS** can be horizontally reduced with good results. At 60 dpi you can print 1.5 screens across. If you horizontally reduce each of three screens once you can fit all three onto 1.5 screens. Reduce the screens, then use **TRANSFER** to move the reduced sections onto 1.5 screens or use **DELETE** to pull them together. When creating the screens use unreduced graphics and larger (at least double width) characters. Before reducing each screen do a COPY of it to another screen in case you need to edit it and try again (once reduced a screen will rarely expand back up the same).

INCHES 0 1 2 3 4 5 6 7 8

60 DPI 1234567890123456789012345678901234567890123456789012345678901234567890

72 DPI 1234567890123456789012345678901234567890123456789012345678901234567890123456789012

80 DPI 1234567890123456789012345678901234567890123456789012345678901234567890123456789012

90 DPI 1234567890123456789012345678901234567890123456789012345678901234567890123456789012

120 DPI 1234567890123456789012345678901234567890123456789012345678901234567890123456789012

240 WI 123456789012345678901234567890123456789012345678901234567890...

INCHES 0 1 2 3 4 5 6 7 8

THE ABOVE CHART CONSISTS OF PRINTOUTS AT VARIOUS DENSITIES. THE NUMBERS PRINTED AFTER EACH DENSITY REPRESENT COLUMNS ON THE HI-RES SCREENS. THE * SHOWS WHERE EACH SCREEN'S 40TH (LAST) COLUMN IS. USE THIS CHART TO ESTIMATE THE SIZE OF YOUR PRINTOUTS AND WHERE THINGS WILL BE LOCATED ON THE PAPER. THIS TEXT AND THE RULERS ABOVE ARE THREE SCREENS ACROSS (120 COLUMNS) PRINTED AT A DENSITY OF 120 DPI.

DOING IT WITH MATH ⇨

INCHES = (COLUMNS x 8)/DENSITY
COLUMNS = (INCHES x DENSITY)/8
LEFT MARGIN (PRINTING) = INCHES x DENSITY

60 DPI    72 DPI    80 DPI    90 DPI    120 DPI    240 WI

## CHAPTER 8 :   PRINT TO DISK

OVERVIEW: FGM's PRINT TO DISK (PTD) utility will let you print either
*linked* or *unlinked* screens to disk *instead of* to paper. Once *PRINTED
TO DISK* the file(s) may be used for creating "stand-alone" printouts
(printouts which don't require FGM), or (maybe) for printing from
within a word processor.

*THIS CAN BE A POWERFUL UTILITY!* This utility was originally written so
KEYBOARD OVERLAYS for FGM (or anything else) could be printed to disk,
compacted, and could then be printed out "linked" by *anyone with an
Epson compatible printer*. This certainly isn't limited to keyboard
overlays; any set of screens can be printed to disk, such as signs,
newsletter articles, cards, etc. *Compacting* is done by a separate
utility so both a C64 & C128 overlay could fit on one disk-side, and
to bring the files down to a reasonable size for ARC/SDA'ing.

Once you print your artwork to disk you can upload it or otherwise
freely distribute it, along with "fgm z.print", and share it with the
world of Epson/Gemini compatible users.

NOTE: PRINT TO DISK and associated programs will not work with 7-pin
printers or C.Itoh/NEC. Their output is intended for use with EPSON
COMPATIBLES such as the PANASONIC KX-P printers and may not work
properly with other printers unless you want to do some hacking on the
program. *The programs in this chapter are provided without warranty
but with high hopes that you find them usable and useful.*

There are several program files associated with PRINT TO DISK which
will all be further explained later:

1. "u.print 2 disk": This FGM utility will boot-up a printer file
(p.z) and "dFGMpBP" which is PTD'S BASIC. This is similar to the
regular non-CBM PRINTER section except it prints the screens to
disk instead of to paper. The codes printed to disk are the same
ones that would have been sent to the printer (starting to get the
idea?:). The files this utility creates begin with a filename of
"i." (for *intermediate*).

2. "fgm i.print": This is a *stand-alone program* which is used for
printing the "i." *raw file* generated by PRINT TO DISK. You can
print    several rows of letterhead or label artwork, then use
"fgm i.print" for a printout (separate from FGM). This routine
supports REPEAT and FORM FEED options for labels and letterhead.

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3. "compactor" & "u.compactor": These are used to convert the "i."
files into "z." files, which are compacted files that can be read
and printed by "fgm z.print". "u.compactor" can be used from
within FGM but is limited to compacting files 32 blocks or less
(<= a full screen). "compactor" should be used for larger files,
and should be used with a *freshly reset* computer.

4. "fgm z.print": This is a *stand-alone printout utility* like
"fgm i.print". It is used for *un-compacting/printing* the "z."
files. An option is available to print "*linked down*" so a set of
"z." files can be printed one after the other, as with overlays.

## < PRINTING TO DISK >

**1. PRINTING A _SCREEN_ or _DISK_ FILE TO DISK:** Load up FGM, then use **LOAD OTHER** to load the "**u.print 2 disk**" utility. This utility will boot "**dFGMpBP\***" which is a modified version of **PRINTER** and operates pretty much the same.

When printing screens to disk you need to decide which files ("i." or "z.") you'll be generating for. The "i." files are the *raw graphics data* printed to the disk by **PRINT TO DISK (PTD)** and can be printed to paper by using "**fgm i.print**". Some word processors may also be able to read/output these files to the printer. If you are going to directly use the "i." files created by **PTD** then you may need to load a **PRINTER FILE** into **PTD** which is compatible with your printer.

When you load **PTD** the "**p.z print2disk**" **PRINTER FILE** will be loaded as the default. If you are generating for "fgm z.print" then this is the correct **PRINTER FILE** *regardless* of your printer. It is also correct for "CRT" printers if generating for "**fgm i.print**" (it's essentially the same as "**p.a.epson.crt**"). If your printer is *non-CRT* and you are generating for "**fgm i.print**" then you should load the "**p.b.eps.non**" **PRINTER FILE** using **PTD'S** #3 Main Menu selection.

Either *linked* or *unlinked* *screens* may be *printed* to *disk*. The "**fgm z.print**" program can handle printing one or two screens across at 80 dpi and up to three screens across at 120 dpi. 2X/3X Width may be used. Double height may be used but ONLY with single screens at 1X Width; anything more will create a *monster* "i." file which the computer will choke on when you go to use it!

**PRINTING SCREENS ALREADY IN _MEMORY_ TO DISK** (*unlinked* or *linked*): This is for printing (to disk) the screen(s) already in FGM. You will be prompted for a filename to write the file under. An "i." *filename* prefix (for *intermediate*) will be provided on the *filename entry line*.

**PRINTING _LINKED_ SCREENS FROM _DISK_ TO _DISK_:** Screens must be properly *linked* to do this (just like if you were printing from disk to paper). **FGM will provide the destination filenames** based on the beginning *source* filename you provide so **do not** use wildcards in the filename! If the beginning *source* filename is "s.al overlay" then the beginning *destination* filename will be "i.al overlay", followed by "i.bl overlay", etc. Each *set* of screens printed *across* (ie: s.al, s.a2) will be printed to disk as *one* file (ie: i.al).

If *multiple drives* are used when printing linked screens from disk then you can select *source* and *destination* drives. Use of two drives is highly recommended; the files printed to disk will occupy as many blocks as the files being read. A 1541 drive will only be able read and print 10 screens to the same disk before running out of space (10 source+10 destination =20 files x32 blocks per file=640 blocks). Since a C64 overlay uses 12 screens you'd need to either split your work between two disks or scratch the "s." screens as the "i." files are written. An option is provided in PTD to *scratch* the *source files* as the *destination files* are written.

# < PRINTING TO DISK >

SCRATCH SCREEN FILE(S)  YES NO: This prompt will only appear if you
are using *one drive* or if you've selected the same drive for the
*source* and *destination* drive. If you answer YES to this prompt then
the "s." SCREEN files will be scratched as the "i." files are printed
to disk. BEST TO HAVE A BACK-UP OF THE SCREEN FILES; "i." files cannot
be edited or easily converted back to "s." screen files. Once the "s."
screen files are scratched they are *GONE FOREVER*.

DENSITY: The "fgm z.print" program expects a density of 80 dpi or
120 dpi to be used; if you use anything else with files destined for
"fgm z.print" you'll end up having to re-do it.

If you are making "i." files to use with "fgm i.print" or other
programs then use whatever density you want the printout to be at.
*WARNING:* if you create an "i." file of something like three screens
across at 240 dpi 3X width you'll create a *monster file* which will be
too big for "fgm i.print". Setting a margin can also create *monster
files* because each margin-dot (space) is printed to disk.
"fgm i.print" will let you know if a file is too big.

Most of the remaining prompts (DOUBLE HEIGHT, SCREENS, WIDTH, DOTS
BETWEEN, L MARGIN) are the same as in PRINTER. DOUBLE (2X) WIDTH may
be used if printing a *single screen across*, and the left margin may be
set. Actually, as long as you use the 80 or 120 dpi selection any
options that appear will be ok to use (if using DOUBLE HEIGHT don't
use more than one screen across!).

After answering the L MARGIN prompt there will be two additional
prompts which won't be found in the regular PRINTER:

PROVIDE LINEFEEDS  YES  NO: Should FGM send linefeeds? The default
is YES and should be used if you are going to later generate "z."
files. The option to say NO is available in case *you* need it for
"i." files.

PRINT TO DISK AS  PRG  SEQ: Do you want it written as a PROGRAM or
SEQUENTIAL file? The default is PRG which must be used if the "i."
files are going to be used with fgm i.print or fgm z.print. SEQ
may be useful to you for your own projects.

IS EVERYTHING CORRECT  YES  NO: When you answer YES to this prompt the
hi-res screen will be turned on and printing to disk will commence. If
printing *linked screens* from *disk to disk* the first set of screens
will be loaded, printed, then the next set, until your answer to the
HOW MANY DOWN prompt is satisfied.

DO NOT USE THE PAUSE FUNCTION (holding F-7) while screens are *printing
to disk* unless you want to CANCEL the printout. The screen that is
printing cannot be stopped part way through; when the screen is
finished being printed to disk the FGM will check the F-7 key before
loading/printing the next screen(s). If F-7 is pressed then printing
will be canceled.

## < FGM I.PRINT >

**2. "fgm i.print":** This utility is for printing the raw "i." files that
were **PRINTED TO DISK** by **PTD**. It loads the file from disk into memory,
then sends the data directly to the printer. This cannot be run from
within FGM. When **PRINTing TO DISK** the "i." files for use with this
utility you may use whatever options are available (ie: any density
supported, three screens across, etc.).

```
PRINT I.FILE

This FGM utility will print an
i. file previously printed to disk
by FGM's PRINT 2 DISK utility.

Use this for printing letterhead and
labels without loading FGM.

The printer MUST be compatible with
the PRINT 2 DISK utility!
(most likely EPSON crt)

TO BE USED SEPARATE FROM FGM, NOT WITH!

DRIVE#? 8

FILENAME? i.1 letterhead
```

The **fgm i.print** utility has **REPEAT** option. You can use this for labels
and letterhead. Enter ff when asked how many rows to linefeed between
repeats and a *formfeed* will be sent after each file is printed.

Some word processors can print external files, which means you may be
able to print "i." files from within your word processor. With these
word processors you can include a command within the text which will
read the "i." file and send it directly to the printer. Thus, you can
print a *letterhead graphic file* to disk, then have your word processor
print the letterhead along with your text. The options for **LINEFEEDS**
**YES NO**, and **PRG SEQ** file types, are provided in case you need them.

You may run into problems. I had *high hopes* of being able to do this
with PaperClip but I had nothing but trouble. *Finally*, I discovered
the problem; PaperClip *forces* you to assign one number (0-255) as a
*null code*, and PaperClip will NEVER send that code to the printer.
*Guess what;* when you load an external file (which is suppossed to be
sent to the printer without any interpretation) PaperClip will still
ignore the "null codes" (which are actually *graphics data*). I use a
null of 255 which means that PaperClip won't send any 255 graphics
codes (vertical lines) to my printer. This can cause the printer
anything from minor to massive confusion. In the case of PaperClip the
only "fix" is to not use any graphics .which will generate the null
code. Luck! Not easy but it can be done. You may have better luck with
other word processors (seems to me this is a natural for the C128
version of *The Write Stuff*).

## < COMPACTOR >

**3. COMPACTOR**: If the file(s) you *PRINTed TO DISK* are for use with **"fgm z.print"** then you will have to use __COMPACTOR__ to *compact/convert* the "i." file(s) into "z." files. Since one big reason for __PRINT TO DISK__ is keyboard overlays I wanted to maximize the number of screens that would fit on a disk. With 32 block screens only one overlay will fit on a 5.25" disk. By compacting the screens either two C64 or one C64 and one C128 overlay can usually be fitted on a disk, with room left for **"fgm z.print"**.

**NOTE**: Not all files will be smaller after going through the compacting process. Keyboard overlay files will generally be quite a bit smaller. Highly detailed screen files may become larger (I'm working on this one). Either way you must still run the "i." files through this to get compatibility with **"fgm z.print"**.

```
Use this program to compact PRINTER
FILES (hi-res screens printed to disk
by the FUN GRAPHICS MACHINE). The
compacted files created by this
program can then be printed by
the Z.PRINT program.

IF FILE IS >32 BLOCKS USE THE
NON- u. VERSION SEPARATE FROM FGM!

1. CREATOR

2. CONTINUE
```

There are two versions of __COMPACTOR__; **"compactor"** and **"u.compactor"**:

**"u.compactor"**: This version may be loaded and used from within FGM on files no larger than 32 blocks! Using it on a larger file will likely crash FGM.

**"compactor"**: Use this for files larger than 32 blocks. This must be loaded as a normal BASIC program. It cannot be run from within FGM; if FGM is running then the computer must be reset before using this program.

You'll be prompted for *SOURCE* and *DESTINATION* drive (device) numbers. Then you will be asked if you wish to have the *source* ("i.") files scratched as the "z." files are created. If using a single drive and compacting many screens then you should probably answer Yes to this prompt else the disk probably won't have enough space to hold both the "i." and "z." files.

**8**

You must know the <u>full</u> starting *filename*; loading from the directory is not available. When prompted for a *starting filename* do not use any *wildcards* (? *); the program generates the "z." filenames using the "i." filenames, and wildcards aren't permitted in filenames when saving. The program will compact/convert <u>all</u> files that have the same filename except for the *incremented third character*.

## < FGM Z.PRINT >

**4. "fgm z.print":** This program is used to print "z." files to an EPSON
compatible printer. The main purpose for the **"fgm z.print"** program is
to provide a way for FGM users to share their artwork ("z.files") with
non-FGM users (ie: newsletter articles, keyboard overlays, etc.). The
program is designed to print at densities of 80 dpi, 120 dpi, <u>or</u>
240 dpi at triple width.

```
Use this FGM utility to print hi-res
z. files which have been PRINTED TO
DISK by the FUN GRAPHICS MACHINE v6.
OUTPUT IS MEANT FOR EPSON COMPATIBLES!

PRINTER GROUP:
   ▷1. EPSON
    2. GEMINI 10X

STARTING FILENAME ? z.1 64 overlay
CHECKING 0 ok
LOADING # 1 z.2 test

FILE IS 2  SCREENS ACROSS
ORIGINAL DENSITY 120  dpi

SELECT DENSITY:
   ▷1. 80 dpi
    2. 120 dpi
    3. 240 dpi 2X

PROVIDE LINEFEEDS y
PAUSE BETWEEN FILES y/▊
```

**"fgm z.print"** must be loaded as a normal BASIC program. It cannot be
run from within FGM; if FGM is running then the computer should be
reset before using this program. Before using **"fgm z.print"** for a
printout it's a good idea to reset your printer <u>and</u> interface. An
off/on of the computer should do the job.

This program prints similar to printing *linked screens down*; it loads
the first file, prints it, *increments* the *third character* in the
filename, then the program goes looking for the next filename (ie:
z.a1 overlay, z.b1 overlay). Wildcards may be used in the filename.
When a file is not found the program considers the printout done.

After selecting your *printer type* you'll be prompted for a starting
filename. The program will check the file and inform you how many
screens across it is and what density it was originally printed at.
Then you'll be prompted to select the density; only densities which
will fit the page will be displayed (ie: if three screens across were
printed at 120 pdi you won't be offered 80 dpi).

The next prompt wants to know if you want the program to PAUSE between
files. If you answer No the program will print all of the files it can
find that follow the starting filename without pausing between.

You can customize your own default starting filename into FGM Z.PRINT
so when you include it with your "z.file(s)" the user won't have to
hassel with filenames (and you won't have to tell them). LOAD
"fgm z.print" and LIST line 9. You will find an INPUT statement,
followed by z., followed by 14 spaces. Enter your filename to the
*right* of the z., press RETURN, then save fgm z.print under whatever
filename you wish (ie: "run me") and include it with your z. files.

# SELECT PRINTER

**OVERVIEW**: Use **SELECT PRINTER** for selecting and setting up the FGM for your printer. When you first go to FGM's **PRINTER** section you'll have no choice; you must go through this before you can use the **PRINTER** section. The prompts are pretty straight-forward and the default values are usually the best selection.

**SELECT PRINTER** is a utility which means you can load it from any section by using the **LOAD OTHER** option (filename "u.sel.prntr"). It may also be loaded via **PRINTER'S** #3 Main Menu selection.

```
┌─────────────────────────────────────────┐
│      FGM PRINTER SELECTION MODULE        │
│                                          │
│   Press 1 or 2 for your printer group.   │
│                                          │
│   1  8 PIN PRINTERS: (most printers      │
│         with external interfaces, some   │
│         with built-in interfaces).       │
│                                          │
│   2  7 PIN COMMODORE                     │
│         (1525/MPS-803 emulating printers)│
│                                          │
│   3  FILE IN RAM:  NONE LOADED           │
│                                          │
│   4  GO TO 'PRINTER'                     │
│                                          │
│   5  GO TO 'CREATOR'                     │
│                                          │
│            SELECT NUMBER                 │
└─────────────────────────────────────────┘
```

The first thing you need to do is select which *PRINTER GROUP* your printer falls into; **#1 8/9-PIN** or **#2 7-PIN**. If you don't know this you'll need to open up that *book of horrors*, your PRINTER MANUAL, and find out. OR, make one of the selections (1 or 2) and see if you get lucky and your printer is listed. Generally, most printers with *external interfaces* are 8/9-PIN. Most (**but not all**) printers with *built-in Commodore* interfaces are 7-PIN for graphics. Refer to page 105. If using an 8/9 PIN printer in Commodore 7-PIN emulation you **must** select from the 7-PIN group (the 1525 selection will do).

**MENU SELECTION #3** is so you can use the *printer file* that's presently *in memory* as the default (if you come here from **PRINTER** a *printer file* will *already be in memory*). This is so you can change the default **LAST WAS** of **PRINTER'S** prompts (ie: **ROWS TO PRINT**: 7 for labels instead of the normal default of 25). To use this first go to **PRINTER** and go through all of the prompts for a printout using the values *you* want to become the defaults (it's ok if you do a printout). Then load this **SELECT PRINTER** utility and select #3 to use the *printer file already in memory*, answer the prompts, then *write the selection to disk* or *save as a separate printer file*.

**MENU SELECTION #4** will take you to the **PRINTER** section UNLESS you haven't yet selected a printer in which case it will bring you right back here.

# < SELECT PRINTER-2 >

After you select #1 or #2 for your PRINTER GROUP something similar to
one of the below screens will appear. Use the cursor keys to highlight
your printer and press RETURN. If you don't see your printer listed
then select CANCEL and try the *other* group.

For most 8/9-PIN printers the EPSON (crt) or EPSON (non-crt) are the
the most likely to work. Most printers that support CRT also support
*non-crt*. The CRT selecton offers more densities if it's supported. See
CRT in SELECT PRINTER-7 for an explanation of CRT.

```
  USE CURSOR KEYS TO HIGHLIGHT          USE CURSOR KEYS TO HIGHLIGHT
      (Press RETURN to Select)              (Press RETURN to select)

EPSON (crt)        NX-10C            CBH-1525
EPSON (non-crt)    NL-1000C          MPS801//803
EPSON FX           NX-1000           OKI-20
EPSON RX80         NX-1000C          OKI-120
EPSON FX850        BLUE CHIP M128    SEIKOSHA 1000VC
LQ2500 (8 pin)     CITIZEN 2006X     CANCEL
LQ2500 (24 pin)    SPIRIT-80
C.Itoh Prowriter   CANCEL
GEMINI 10X
STAR SG-10
STAR SD-10
MPS-1000
MPS-1200
NEC
PANA KXP1080/91
KXP1124 (8 pin)
KXP1124 (24 pin)
ROLANDS
NL-10C
```

After highlighting one of the above selections and pressing RETURN the
appropriate PRINTER FILE will be loaded for that selection. PRINTER
FILES contain information about linefeed spacing, codes for bit-image
modes, etc. The PRINTER FILE is where any changes you make will be
recorded when you write the changes to disk. You might want to make
note of the file that's loaded for future reference (the filename will
be something like "p.a*.").

## 24 PIN PRINTERS:
Several of the selections have (24 pin) after the name. These
selections are meant for using that printer in its 24 pin mode. When
used in the 24 pin mode FGM will only use 8 of the 24 pins per pass.
The result will be true 24 pin output but will take a little longer.
NOTE: 24 pin output probably won't be useful for most graphics work; a
full hi-res screen will only be 1.1" high!

## FOR REGULAR 8-PIN (EMULATED) PRINTOUTS USE THE (8 PIN) SELECTION!!!!!

SOME THINGS YOU NEED TO KNOW ABOUT 24 PIN PRINTERS: In 8 pin emulation
(EPSON LQ-2500) they don't fully emulate a 9 pin printer; the output
will be 17% taller, and the resolution will actually be worse. This
can give you a bad time with programs like PS. If your printer has IBM
PROPRINTER emulation you might have better results with it; the
8 pin emulation is much better. The disadvantage is fewer densities
are available. With FGM I suggest you use the LQ-2500 emulation unless
the tallness bothers you. If you want to try IBM PROPRINTER emulation
with FGM then use the EPSON (non-crt) selection and set your printer
to PROPRINTER mode with AGM OFF.

## < SELECT PRINTER-3 >

Once you have selected a printer and the printer file is loaded the below **SET-UP MENU** will appear. If your printer is 7-PIN it won't appear - skip ahead to the next page.

```
BEST answer for below prompts
will USUALLY be the defaults.

Accept Defaults by pressing RETURN.

FGM PROVIDES LINEFEEDS y/n    y

SECONDARY ADDRESS    ? 5

IS PRINTER IN IBM MODE y/n?  n

LINEFEED SPACING INCREMENT  [S] 216
(n/ 216 best if supported)

>1. n/ 216  (ESC 51 n)
 2. n/72   (ESC 65 n)

GRAPHIC SPACING  ? 24 / 216   [S] 24

6 LPI SPACING   ? 36 / 216   [S] 36
```

**FGM PROVIDES LINEFEEDS**: Should FGM provide linefeeds (**YES**) or does your printer/interface "automatically" provide linefeeds so FGM doesn't need to (**NO**)? BEST ANSWER IS USUALLY YES. See "LINEFEEDS & SECONDARY ADDRESSES" on page 107.

**SECONDARY ADDRESS**: FGM wants the printer interface to be *TRANSPARENT* which usually calls for a *secondary address* of 4 or 5. **FIVE IS USUALLY THE BEST CHOICE**, and is usually coupled with a **YES** answer to the LINEFEEDS prompt. Secondary addresses of four set most interfaces to auto-linefeed and they aren't truly transparent for bit-image work. **NOTE**: Some *Commodore ready printers with built-in interfaces* may need *secondary addresses* of 0 or 255.

**IBM MODE Y/N?**: Some printers have an *IBM mode* and when using this mode some of the printer codes need to be adjusted. With most EPSON compatibles you'll gain nothing by using *IBM mode* (except possible problems with other programs). With printers that have a built-in interface (such as the Commodore MPS-1000) using the *IBM mode* may offer many benefits over using 7-PIN CBM emulation. **NOTE**: If using an MPS-1000 in IBM mode with its *internal interface* you should probably use a *secondary address* of 255.

**LINEFEED SPACING INCREMENT**: What *increments* to use for linefeeds after printing a row. If your printer supports n/216" (most do) then it's the best selection (n/144" for C.ITOH/NEC).

**GRAPHIC SPACING**: How many of the above *increments* to advance after printing each row. The default should be correct.

**6 LPI SPACING**: How many of the above *increments* are needed for a linefeed spacing of six lines per inch? The default should be fine.

# <  SELECT  PRINTER—4  >

**AFTER ANSWERING THE *SET-UP QUESTIONS* THE BELOW MENU WILL APPEAR:**

```
          PRINTER SELECTION COMPLETE
          PRINTER: PANA KXP1080/91
          SEC ADDRESS 5

            g= 1   sp= 0   gc= 51
     1   WRITE SELECTION TO DISK
     2   GO TO 'PRINTER'
     3   (RE)SELECT PRINTER
     4   WRITE NEW PF TO DISK
     5   EDIT INITIALIZATION CODES



              SELECT NUMBER
```

**1. WRITE SELECTION TO DISK:** This will write the information you
entered *onto the* **PRINTER FILE** (ie: "p.a.*") that was loaded earlier.
This changes the FGM disk from original! Use #2 below to go try out
your selection before making it permanent! Only use this selection on
a *back-up copy* of FGM located on a 1541 or compatible drive! If you
don't write the changes to disk you will have to go through **SELECT
PRINTER** each time you go the **PRINTER** section.

**2. GO TO PRINTER:** This will take you to FGM's **PRINTER** section *without*
re-writing the PRINTER FILE. The first time you **SELECT PRINTER** you
should use this selection to try the printer set-up out before writing
it onto the disk. If the set-up works then use **PRINTER'S** #3 Main Menu
selection to *come back here* and make the changes permanent.

**3. (RE)-SELECT PRINTER:** Takes you back to **SELECT PRINTER'S** entry menu.

**4. WRITE NEW PF TO DISK:** This lets you save a *separate printer file*
(normally, one of the "master" printer files on disk is changed when
you write the selection(s) to disk). One reason to save a separate
printer file is to have a *custom printer file for labels*. After
selecting a printer use #2 to go to the **PRINTER** section. Go through
all of the prompts for a printout, selecting the default DENSITY, ROWS
TO PRINT, LEFT MARGIN, REPEAT LF SPACING, etc., of what you would use
for labels, then come back here to **SELECT PRINTER**, select #3 on the
Entry Menu to use the file in memory and then save the file using this
selection. Then you can re-load the file into **PRINTER** using **PRINTER'S**
#3 Main Menu selection whenever you want to do labels and the defaults
will be correct.

**5. EDIT INITIALIZATION CODES:** See the next page.

## < SELECT PRINTER-5 >

### 5. INITIALIZE - EDIT PF CODES:

Each **PRINTER FILE** has 13 bytes which can hold codes to send to the printer at the beginning of each printout. You may enter your own codes here for doing things such as *initializing the printer* at the start of each printout or sending a *software-disable* for your printer's *paper-out detector*.

When the below screen comes up it will show you the 13 bytes in the **PRINTER FILE** *IN MEMORY*. The contents will vary; for some *printer files* it will be all zeros and others will have some codes. With some printers FGM must also use this area; if you see any codes other than 27,64 (a printer reset) then don't disturb them; put your codes before them. With *color printers* (ie: STAR RAINBOW) several codes are sent from here to set the color of the printout, and with NEC/C.ITOH the commands to set density and "enhanced" are placed here. If codes are already located here then chances are FGM not only uses them but also *changes them* according to your selections in **PRINTER**. *Bottom line:* Codes already here other than 27,64 should probably be left alone!

```
                    EDIT PF CODES
          INITIALIZATION CODES:
          0      0      0      0      0      0      0      0
          111
          0      0      0      27     64

          MAKE CHANGES Y/N     n
```

FGM will read the codes from left to right until it finds the first *NON-ZERO CODE*, then will send that code and the remaining codes to the printer. Note that if a 27,64 RESET CODE is used it must be *before* any other codes or it will simply nullify them. In the above example if you wanted to disable the *paper-end detector* on a PANASONIC printer you'd enter the codes shown in the below example:

```
                    EDIT PF CODES
          INITIALIZATION CODES:
          0      0      0      0      0      0      0      0
          111
          0      27     64     27     56

          MAKE CHANGES Y/N     n
```

# < PRINTER GROUPS >

In FGM I break printers down into three broad GROUPS:

**A. 8/9 pin Epson/Star/Gemini**: This is further broken down into two sub-groups; **CRT** and **NON-CRT**. These are generalized terms but in FGM they refer to whether a printer supports a **MASTER SELECT** code or not. If your printer has a **MASTER SELECT** for bit-image graphics then it most likely supports more densities than those without. Refer to the next page for a definition of "CRT".

**1. CRT**: This is for printers which support a **MASTER SELECT**, and most of the following densities are available; 60, 72, 80, 90, 120, 120ds, 240. The **GRAPHICS START CODES** sent to the printer are **ESC * m nl n2**, or in ASCII it's **27, 42, 1-7, nl, n2**. The 27 is the ESCape code that tells the printer a command is coming. The 42 (*) is the code used for **MASTER SELECT** (we're going into bit image mode). The 1-7 (m) is the number that determines the density (note: the 1-7 doesn't follow a sequence of lower to higher density). The nl and n2 are two numbers that tell the printer how many dots across to print in bit-image mode. The program takes care on nl and n2; all you need concern yourself with is whether the **ESC * m nl nl** is the command your printer uses to go into bit-image mode. Check your printer manual. If **MASTER SELECT** is supported then a "CRT" type printer is your best choice.

**2. NON-CRT**: These printers usually support four densities; 60, 120, 120ds, and 240. The **GRAPHICS START CODES** sent to the printer are **ESC m nl n2**, or in ASCII it's **27, m, nl, n2**. The 27 is the ESCape code that tells the printer a command is coming. The "m" is a code that determines the density. Epson compatibles use 75, 76, 89, and 90 for "m". Some Gemini printers use 75, 76, 120, 121. The nl and n2 are two numbers that tell the printer how many dots across to print in bit-image mode.

**B. 8/9 pin C.Itoh/NEC**: Printers in this group use different codes than (A) and the value of the pins is opposite (bit 1 is at the top). Using FGM's **FORM FEED** option for letterhead may not work right with these printers; the printer's **form length** value gets confused when the linefeed spacing is set for graphics.

**C. 7 pin Commodore 1525/MPS-803 and emulating printers**: This group also includes the **SEIKOSHA 1000VC** and most **OKIDATA** printers. The printers in this group are quite different from A&B. They use seven pins which is a real #$% to decode from a screen that is grouped in sets of 8 pixels. That aside, most are limited to a single density of 60 dpi (480 dots across a page; 480/60=8 inches across). Since a hi-res screen is 320 dots across you'll only be able to print 1.5 screens across with these printers. A few 7 pin printers have a "high-density" mode which allows either 120 dpi, or a denser printout at 60 dpi size. Where possible I have tried to support these options.

**IMPORTANT**: Nearly all printers/interfaces used with a C64/C128 can be set to emulate Commodore 7 pin (ie: 1525/MPS801/803) printers. Most will default to this. If you have a choice, Commodore emulation is the least desirable. If using Commodore 7-pin emulation you must select from the 7 pin (C) group of printers.

## < DENSITY and CRT >

**DENSITY**: This refers to how many dots per inch (dpi) are printed to the paper. This is a function of your printer; FGM sends codes to the printer to tell it to print X dots (n1 n2) at a certain density, then follows the code with X bytes of graphics data.

A normal single-screen printout sends 320 *dots/dot-spaces across* to the printer. This is how many dots (pixels) are across a single hi-res screen. The width of the printout will vary depending on which density you selected.

**PRINTOUT WIDTH**: This is easy! *Divide (uh-oh) the number of dots* sent (the number of screens x 320) by the density in dpi. One screen is 320 dots and at 80 dpi equals 320/80=4 inches across. Two screens across at 90 dpi is 640/90=7.1 inches. When using *double* and *triple* width add one screen for each width, ie: One screen 3X width at 120 dpi equals 960(3x320) divided by 120=8 inches.

**PRINTOUT HEIGHT**: This is fixed by the vertical spacing of the *pins in the printhead. Most* 8/9 pin printers have pins spaced 1/72" apart. Since we are using eight pins that means each pass of the printhead covers 8/72", and then we must linefeed 8/72" (with 7-pin printers it's 7/72"). A hi-res screen is 25 rows or passes of the printhead (29 rows for 7 pin and only four pins are used for the last row). So, for most printers you would multiply the number of rows by 8/72". For a full screen of 25 rows this would be 25*8=200/72=2.777 inches high.

**CRT**: This stands for *Cathode Ray Tube*; that one-eyed thing staring back at you when you compute or watch tv. This is where it gets kinda vague (to me). What you see on the CRT is usually NOT quite what the printout will look like; the proportions will be different and an image that looks square or round on the screen will look rectangular or oblong on a printout (all depending on selected density). You'll usually have to live with this and try to develop a sense of what to expect at each density. ANYWAY, "CRT" usually refers to a printer being capable of printing at an *across density* equal to the printer's *downward density*. Doing this means that x dots across and x dots down will measure out the same on paper in inches. Most 8/9 pin printers have pins which are 1/72" in diameter, hence they are spaced 1/72" apart vertically. This means they have a fixed vertical density of 72 dpi. A horizontal density of 72 dpi is normally specified as the **CRT** density, the same as the fixed vertical density. If you have a box on the screen that's 100x100 pixels it will print out square on paper (though it won't look square on the screen). Personally, I find little use for 72 dpi in most *graphics* work with FGM because the images are usually too wide.

**NOTE**: By using the 2X and 3X WIDTH options you may be able to get "densities" which your printer doesn't otherwise support. Many printers don't have 80 dpi but you can accomplish the same size printout by using 240 dpi (which most 8/9 pin printers have) at a 3X WIDTH (240/3=80). See the PRINTOUT SAMPLES

## < LINEFEEDS and SECONDARY ADDRESSES >

AUTO-LINEFEEDS are an option provided by many printers and interfaces. When a printer is set to *auto-linefeed* it will do a linefeed whenever it sees a CARRIAGE RETURN (chr$(13)). When an interface is set to *auto-linefeed* it will send a chr$(10) *linefeed code* to the printer along with the chr$(13) CARRIAGE RETURN.

HERE'S WHERE THE POTENTIAL FOR TROUBLE LIES: If your printer interface is set for *auto-linefeeds* it will send (re: *add*) a 10 to the printer every time it sees a 13, even if the 13 is *graphics data*. The printer gets a 13 and a 10 as graphics data when only a 13 was sent by the program. This will mess up your printout! Thirteens seem relatively rare in graphics data so it probably won't happen often and sometimes the error will be so small it's not even noticable (one 10 would add two dots up/down to the right of the 13).

This is where the importance of SECONDARY ADDRESSES comes in. With most interfaces using a *secondary address* of 4 will cause the inter- face to "provide" auto-linefeeds (which we don't want). A *secondary address* of 5 will make most interfaces fully transparent so they won't do *auto-linefeeds* (this is what we want).

When SELECT PRINTER asks if you want FGM to provide linefeeds the default is Yes and should normally be used. If your printer's switches are set for *auto-linefeed* then you should probably answer No. NOTE: Most printers, unlike interfaces, were given enough intelligence to know when they are in *bit-image mode* so you should have no problems if you use your printer's auto-linefeed; you'll just need to answer No when asked if FGM should provide linefeeds because the printer will be providing them.

A graphic, "g.test 13s" is on the FGM disk. If you insist on using a *secondary address* of 4 or otherwise letting your interface provide *auto-linefeeds* then this graphic can be used to test if *thirteens* will give you any problems (this only applies to Epson compatibles, not C.Itoh or 7-pin). Load the graphic into FGM, fasten it anywhere on a screen, draw a LINE BORDER around the screen (Sh +), then print the screen out. You might save the screen and try printing it out using other graphics programs too; a few will force you to use a *secondary address* of 4. I have found this most common in European programs. In Europe printer interfaces aren't a real common item; a "Centronics Interface" (a *cable*) from the User Port to the printer is most often used. There are no active elements (ie: the interface) so they don't have the problem of *auto-linefeeds* being generated by an interface, hence the *secondary address* doesn't make any difference.

COMMODORE MPS-1000/1200 PRINTERS: These printers have an *internal interface* or can be used with an *external interface*. Check your printer or interface manual to determine the best secondary address to use. NOTE: If you use these printers in their IBM (MPS-1000) or EPSON(MPS-1200) emulation modes you'll have MUCH more capability with FGM than you will using their 7-pin emulation.

## < PROBLEMS PRINTING >

In FGM I have attempted to give you a LOT of printer options and this increases the likelihood of running into problems because your printer doesn't support a selected option. The most likely place for problems is when using the options within DOUBLE PRINT. You shouldn't have any problems with general printing once you've selected the right printer.

LOCK-UP: If the program locks up the first time you try to print then most likely the PRINTER FILE is wrong or your interface is set for the wrong emulation. If you have an 8/9 pin printer and select from that group and your printer/interface is set for 7 pin emulation (or vice-versa) then you'll probably have problems. Another possibility is that external hardware (ie: a cartridge) is interfering. Try without the hardware and if it works let me know; maybe I can get around it.

If everything prints OK but the system LOCKS-UP when you exit PRINTER to go to another FGM section; this can be caused by a cartridge or an interface. Some cartridges use the computer's RAM (ie: EXPLODE) and this is likely to cause problems when used with FGM. Other cartridges (ie: AR4) "appear" at $8000-$9fff when a printer is accessed; I got around this problem by moving PRINTER related ml out of that area.

The SUPER GRAPHIX GOLD seems to have a quirk that can cause a LOCK-UP when doing a disk access after printing hi-res data (not just with FGM). The "fix" appears to be to send a "slow" command to the SSG when you first turn the system on and also anytime you reset the interface. The command is:

                open15,4,15:print#15,"sl":close15

PAPER DOESN'T ADVANCE: Most likely caused because you told FGM NOT to provide LINEFEEDS. Go to SELECT PRINTER and tell FGM YES to LINEFEEDS.

SPACES BETWEEN ROWS: Both FGM and your printer/interface are doing linefeeds. Go tell FGM NO to LINEFEEDS.

CAN'T GET ALL DENSITIES SHOWN ON MENU (locks up on some): Likely that your printer doesn't support all of the densities shown. Check the bit image section in your printer manual. The densities most likely to show on the menu which may not be supported are 72 & 90 dpi.

OKIDATA PRINTERS: FGM supports these printers in 7 pin Commodore emulation only, unless they have Epson emulation for graphics. Some of these printers are capable of 24 pin output but FGM doesn't support it. I called the U.S. "factory" in need of some further information (something was so vague in the printer manual that it made no sense, if you can believe that:). I was finally told that information beyond what's in the user manual does not exist. Yeah! Anyway, 24 pin support may be added later if I ever get an OKI 24 pin.

SEIKOSHA 1000VC: These direct-connect printers have some extra text capabilities beyond those of a standard 7-pin Commodore printer. They DO NOT have any additional graphics capability; they must emulate a Commodore printer at 60 dpi (regardless of the program used).

# <  L A B E L S  &  L E T T E R H E A D  >

FGM is a super program for doing *labels* and *letterheads*. Essentially, all you are doing is printing the hi-res screen(s) to labels, spacing any necessary space between labels, then *repeating*. The option to REPEAT SCREENS is available through PRINTER'S "OTHER OPTIONS YES NO" prompt (it will ask HOW MANY?).

ACROSS SIZE: When making your artwork you'll need to take the size of the label into consideration (you knew that:). The DENSITY you plan to print at will determine how many *columns* across the screen you can use for your artwork and still have it fit on the label. A *column* is the width of the *smallest cursor/text size*; there are 40 *columns* across the visible screen.

I prefer to use a density of 90 dpi for labels which means I can fit (3.5*90)/8=39 columns across a standard 3.5" label. *Multiply* the *width of the label* by the *density in dpi*, then *divide* the *answer* by 8 for *columns*. Round to the lowest whole number. Following are how many screen columns will fit *across* a standard 3.5" mailing label at various densities:

| DOTS | DPI | COLUMNS | |
|------|-----|---------|--|
| 210 ...... | 60 ...... | 26 | (CBM 7-PIN) |
| 252 ...... | 72 ...... | 31 | |
| 280 ...... | 80 ...... | 35 | |
| 315 ...... | 90 ...... | 39 | |
| 420 ...... | 120 ..... | 52 | |
| 840 ...... | 240 ..... | 105 | |

VERTICAL SIZE: The *vertical size* of the artwork is determined by the *linefeed spacing* of your printer, and for graphics this is pretty well set by the physical spacing of the pins in the printhead.

7 PIN (CBM) VERTICAL SPACING: These printers aren't nearly as standard on their pin spacing as 8-pin so you will probably have to experiment. Printers that have 7-pin *emulation* may have 7/72" linefeed spacing. Commodore printers could go in any direction.

Regardless, they all use 7 pins and this presents another little problem; the hi-res screen consists of 25 rows of 8 pixel down and the printer prints them in groups of 7 dot down. If you count 6 rows down the *screen* you'll be 6x8=48 pixels down. If you print 6 *printer rows* (ROWS TO PRINT 6) that will be 6x7=42 dots down which is less than the 48 pixels in 6 *screen rows*. You will have to think more in terms of *pixels down* than in *rows down* with 7 pin printers.

Best to do a full screen printout with markers down the left side to indicate each row. Then you can measure inches against the printout.

One more thing; when *repeating screens* with 7 pin output you'll be asked how many *linefeeds between screens*. With CBM printers the linefeed advance will be at the printer's *text mode linefeed spacing* (often 6lpi), not at the *graphics mode linefeed spacing*. 7-pin *emulating* printers may have different linefeed spacing.

# <  L A B E L S   &   L E T T E R H E A D  >

**8/9 PIN VERTICAL SPACING:** This is a *lot* easier than 7 pin! Each screen row is 8 pixels high and FGM uses 8 pins per pass of the printhead. This means that for each pass of the printhead one *screen row* is printed. Most printers have pins which are 1/72" inch apart so each screen row will take up 8/72" of the label. 8/72" is equal to 9 linefeeds per inch; if you print 9 screen rows the printout will be one inch high on the paper (or label).

Standard 15/16" mailing labels have a space of 1/16" between labels for a total of one inch from the top of one label to the top of the next. If you print eight screen rows of image plus one blank row (8+1=9) the labels will be in the correct position for printout on the next label (use 0 spacing between labels).

You can print more than one label at a time. One way is to put two 8-row labels on a screen with one blank row between each and print out the 18 screen rows as sets of two. The REPEAT SPACING will have to be set to zero because the blank rows are doing the linefeeds.

Three labels can be fit down a screen if you keep the artwork to 7 rows and have two blank rows between each. This is the way I usually do labels. You can print out the labels in sets of three down, ie: *RETURN ADDRESS, DO NOT BEND,* and *HAPPY COMPUTING.* The REPEAT SPACING between screens will need to be set equal to the two blank rows that wouldn't fit at the bottom of the screen, usually 16/72" or 48/216".

**YOU CAN PRINT MULTIPLE LABELS ACROSS** using either *linked* or *unlinked* screens. Since three labels will fit down a screen if you print three across you could have nine individual labels printed per repeat.

**LABELS CAN BE ANY SIZE:** Ray Brock sent me very nice return address labels that were printed *four per standard label.* Small but quite readable. Ray has also sent me *MONSTER address labels;* full-screen printouts done on paper and then cut and pasted to envelopes. The USPS couldn't miss them. Printing labels to paper and then pasting them to envelopes is a fast and cheap way to do labels, and it gives you much more room for creativity. They also don't seem to have the tendency to curl off the envelope.

**DISK LABELS:** If you want fantastic labels for your disks then make full-screen labels to paper (allow for the hub). Jerry Freadman has done some super disk labels with FGM. Use a glue stick to fasten the label to the disk (glued labels seems to stay put much better than adhesive labels because paste doesn't tend to soften when exposed to the heat inside the drive - which is compounded by the fact that most disks are black and readily absorb the heat).

**QSL (or any) POSTCARDS:** Post Cards are available in tractor feed and a full-screen printout can fill them nicely. Have a "general screen" that you can customize the text onto for each card. Perhaps a little cartoon that represents how your vacation was. ALSO CONSIDER: An 8.5x11 sheet of thick paper (=>.007") will give you four legal size postal cards when quartered; print your artwork (4 cards/screens), then have it copied onto #70 astro-bright paper (or whatever:).

## < LABELS & LETTERHEAD >

**LETTERHEAD:** Write a little story with words and/or graphics across the top of your letters like Fred Waldbauer did here. This option lets you print screen(s) across the top of a sheet of paper, then *form feed* to the top of the next sheet and *repeat*. You could print a ream of letterhead and it'd be all ready to use, still as tractor feed. Using *SERIALIZE* you could even number each sheet.

You can also print at the top _and_ bottom if you put the *bottom artwork* on the top of the screen and the *top artwork* on the bottom. Then start by printing at the bottom of one sheet after setting the printer's TOF (Top Of Form) there. Doing *letterhead* is much like doing *labels* except a *form feed* is done between each printout.

To do LETTERHEAD just go through the set-ups like you would for labels. When asked for LF SPACE enter the letter "f" (for *form feed*) instead of a number. **NOTE:** The ROWS TO PRINT prompt accepts "f" too, but for a totally different use; don't get the two confused. **NOTE ALSO:** This function may not work with CBM 7-pin and emulating printers because many lack a form feed.

**LABELS (AGAIN:):** I've received *great labels* from many FGMers. I wish I could include them all here to give you ideas but that's just not possible. Besides being used for addresses, labels are great for conveying *messages*, *opinions*, and *laughter*. Obvious are DO NOT BEND, HAPPY WHATEVER, and WRITE SOON. Browsing through your graphics collection is bound to give you some ideas. Sometimes a single graphic with a single word can say it all.

I MUST INCLUDE MY FAVORITE LABEL! I can still remember how I laughed when I saw this on the back of a letter I got from Guy Ingram. That's strong; making someone laugh before they even open the letter. I think this label is near-perfect but there are many spin-offs that can be fun too. WARNING: CONTENTS OF REFRIGERATOR ARE PROTECTED BY *TINY LITTLE BOB'S. GIANT GEESE. FOOD MUTATIONS. ETC.* And it needn't be a *label* either; make it larger for a sign with *expand* and *smoothing*.

WARNING!
CONTENTS OF ENVELOPE
ARE PROTECTED BY
TINY LITTLE PIT BULLS

THE BUSINESS CARDS ABOVE WERE SENT TO ME BY A COUPLE OF FGMERS. THEY HAVE BEEN REDUCED TO 66% OF ORIGINAL SIZE IN ORDER TO FIT HERE. MARK GRINAGER MADE THE THREE CARDS ON THE LEFT. JIM THOMAS MADE THE TWO CARDS ON THE RIGHT. THE LIMO CARD ISN'T FOR-REAL; IT'S JUST SOMETHING JIM CAME UP WITH WHILE PLAYING AROUND WITH FGM. THE CAT CARD IS A QUICKY I WHIPPED UP TO FILL THE EXTRA SPACE.

ALL CARDS WERE A FULL SCREEN ACROSS BY 18 ROWS DOWN, AND PRINTED AT A DENSITY OF 90 DPI. THIS GIVES YOU A 2"x3.56" CARD. BY PRINTING TWO-ACROSS AND USING THE REPEAT OPTION (IE: LABELS) YOU CAN PRINT TEN OF THESE ONTO A STD 8.5"x11" SHEET OF PAPER, THEN TAKE YOUR ARTWORK TO A GOOD COPY PLACE AND HAVE THEM COPY IT ONTO HEAVIER COLORED PAPER. YOU CAN EVEN DO DOUBLE-SIDED CARDS; JIM INCLUDES HIS PRICES ON THE BACK. IMAGINE, CUSTOM BUSINESS CARDS FOR ANY OCCASION☺.

AT 120 DPI USE ONE FULL SCREEN + 12 COLUMNS.

AT 80 DPI USE 35 COLUMNS OF A SINGLE SCREEN.

AT 60 DPI ONLY 26 COLUMNS WILL FIT INTO 3.5".

PS-B (2 BLOCK) GRAPHICS WILL OFTEN LOOK BETTER THAN 3 BLOCK AT 60 DPI.

THE NUMBER OF ROWS DOWN WILL VARY DEPENDING ON YOUR PRINTER'S GRAPHICS LINEFEED SPACING. THIS IS A FIXED VALUE. WITH MOST EPSON/GEMINI/PANASONIC PRINTERS 18 SCREEN ROWS WILL BE 2" DOWN (MOST ARE 9 LPI).

# GREETING CARDS

THIS WILL ONLY BE THE *BARE BASICS*. TEMPLATES FOR MAKING Greeting Cards WITH FGM ARE AVAILABLE IN MANY PD LIBRARIES, OR YOU CAN USE A LITTLE *MATH* TO FIGURE OUT THE POSITIONING. OR EXPERIMENT☺. TWO TYPES OF Greeting Cards ARE SHOWN HERE.

**TOP CARD:** CREATE EACH PANEL, *THEN* FLIP AND INVERT THE TOP TWO. YOU MAY NEED MORE THAN ONE SCREEN DOWN PER PANEL, WHICH IS TRICKIER. PERSONALLY, I PREFER TO JUST PRINT THE ARTWORK TO PAPER WITHOUT WORRYING ABOUT POSITIONING OR ANYTHING, THEN GET OUT SCISSORS AND PASTE, PASTE-UP A MASTER, THEN HAVE A COPY SHOP RUN IT ON THICKER COLORED PAPER. IT'S STILL CHEAP FOR A CUSTOM CARD, AND YOU CAN HAVE THEM RUN OFF ALL YOU WANT.



s.a1 ... s.a2

1ST FOLD → INSIDE RIGHT | INSIDE LEFT

s.b1 ... s.b2

BACK | FRONT / WELCOME AGGIN,

2ND FOLD →

## ACCORDIAN FOLD



s.a1 | FRONT | s.a2 ←FRONT→

s.b1 | s.b2 ←INSIDE→ LEFT

s.c1 | s.c2 ←INSIDE→ RIGHT

←— 8 —→
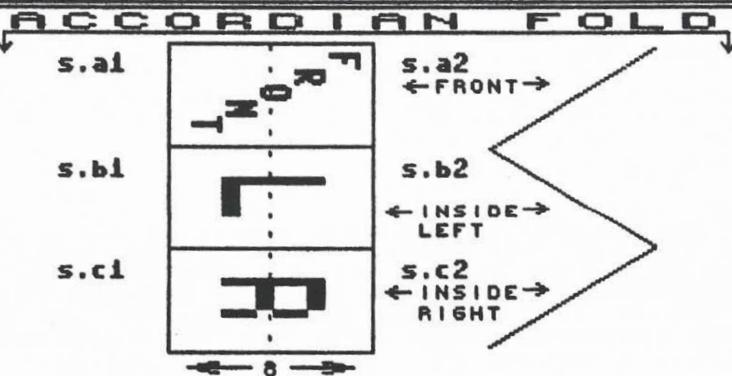
THE ABOVE TYPE OF CARD REQUIRES THE GRAPHICS AND TEXT BE SIDEWAYS. THE *ROTATE* DEMO MAY BE USED TO ROTATE FULL SCREENS. EACH PANEL MAY BE ONE TO THREE SCREENS ACROSS→. *NOTE:* THE "ACROSS" DENSITY (UP/DOWN THE PAPER, AS SHOWN) WILL BE 72 DPI WITH MOST PRINTERS. TWO BLOCK (PS-B) GRAPHICS MAY LOOK BETTER THAN 3 BLOCK AT 72 DPI VERTICAL DENSITY.

## CHAPTER 9:    *FGM UTILITIES*

### < FGM UTILITIES OVERVIEW >

**OVERVIEW**: A few utility programs are included on the FGM disk which will let you do additional things. These are programs with filenames that begin with "u.", and are intended to be loaded by FGM. The LOAD OTHER option in CREATOR, DEMO-ER, and CLIPART may be used to load these utilities, and several can be loaded via other menu selections; SELECT PRINTER from PRINTER and COLOR EDITOR from DEMO-ER. LOAD OTHER will provide a "u." prefix on the filename entry line; just press RETURN for a listing of the "u." files on the disk.

Some of the utilities will write to the FGM PROGRAM DISK to change the program. You will be warned before this happens and given a chance to cancel. When writing to the FGM PROGRAM DISK you should only write to a BACK-UP COPY OF FGM LOCATED ON A 1541 DRIVE! This particularly applies to SELECT PRINTER, COLOR CUSTOMIZER, and CUSTOMIZER.

You should be able to STOP most utilities for inspection by pressing **Shifted Q** just like in FGM's sections. In some utilities just pressing the STOP key will stop the utility. When FGM loads a utility it enables the STOP key so you'll be able to stop your own utilities.

**WRITING YOUR OWN FGM UTILITIES**: The LOAD OTHER option will load a BASIC program to $4801 and RUN it. Perhaps a program you wrote that does something to the hi-res screen at $2000-$3f40, then goes back to FGM. This isn't really programming FGM, it's actually running your own program from within FGM. Some of FGM's functions are available for your program to use but explaining how to access them could take into the year 2001. If you want to use FGM's functions from within your own program I've left it quite open for you to explore FGM, but you're just going to have to suffer some of the confusion I go through each time I look at some wierd code I wrote. The BASIC will lead you to the ml routines, but beware, the ml moves around, and self-modifying ml isn't uncommon (re: what you see may not be where it went or what it is). This isn't to trick you; I just used every trick I could think of to pack everything into FGM.

**NOT TO SCARE YOU!** Writing your own BASIC utility for use within FGM is pretty easy. It's only if you want to access FGM's hi-res functions that it can get harder. Exam the other utilities and the BASIC that supports each section to give you knowledge.

RAMTOP is set to $6c00 so you have about 9K maximum of BASIC space to play with. You can stick some ml at $3f40-$4400 but it won't stay around when you go back to another FGM section. Putting your own code in almost any other area of memory will most likely corrupt FGM! STOP and examine the other utilities to get an idea how to get back to FGM.

9

## < COLOR CUSTOMIZER >

**OVERVIEW:** FGM'S COLOR CUSTOMIZER (also called the *COLOR EDITOR*) is used for changing the colors of the borders and cursors in the various hi-res modes. If you don't like a *cursor color* you can use this utility to change it. The colors for FGM were selected with an eye towards being usable on a monochrome monitor (generally best for hi-res work) and may not be right for your monitor or tastes. Screen colors may also be changed but this is not recommended because the cursors "unwrite" themselves to white and will leave white "trails" on a colored screen .

To load the COLOR CUSTOMIZER utility use the LOAD OTHER option and load "u.color cust*". This utility may also be loaded from DEMO-ER using the #8 LOAD COLOR EDITOR selection.

```
        FUN GRAPHICS MACHINE
          COLOR CUSTOMIZER

    1 SELECT HI-RES MODE COLORS

    2 SELECT MENU COLORS

    3 WRITE CHANGES TO DISK

    4 TO HI-RES SCREENS

    5 LOAD COLOR FILE

    6 BELL on

    7 OTHER THING(S)

    8 DRIVE# PROMPTS on

    9 LOAD 'PRINT COLOR VALUES'

    + BACK TO MAIN PROGRAM
```

The COLOR CUSTOMIZER utility also contains menu selections that will allow you to change the CTRL A and CTRL D increments, set the DEFAULT SPEED OF THE JOYSTICK, DEFAULT GRAPHICS BUFFER 1-5, DEFAULT CHARACTER SET 1-5, and TURN THE BELL and/or PROMPTS "PERMANENTLY" OFF. You can go to the HI-RES SCREEN EDITOR while in this utility and check the results of your color and/or joystick selections.

**JOYSTICK:** FGM puts in a *delay* when the JOYSTICK is read. This is done because without the delay the cursor moves much too fast. You can usually get faster cursor movement by using the JOYSTICK instead of the CURSOR KEYS to move the cursor if you set the speed up a bit from the default. Note: this also affects the speed of the MENU SELECT BAR.

**NOTE:** If you are doing demos for others to run the demos probably won't run properly on someone else's "unchanged FGM" if you have changed the default graphic or character set buffer of your FGM unless you select graphics buffer #5 and character buffer #4 when you begin the demo (these are the defaults the demo expects). You may change the CTRL A and CTRL D values though; these values are recorded and will be installed before a demo is played.

# < COLOR CUSTOMIZER >

When    done using the **COLOR CUSTOMIZER** you have three options:

(1) Use + Go back to **CREATOR** and use the program with the changes (they won't be permanent though).

(2) **#3 WRITE CHANGES TO DISK**: Use this selection to make the changes permanent on the *master color file* or to save a *separate color file*. You'll be taken to a sub-menu:

   **#1 RE-WRITE MASTER COLOR FILE**: Select this to **MAKE THE CHANGES PERMANENT** so they will be the defaults every time you load FGM. When you use this the program makes changes to master files on the disk so *ONLY USE THIS ON A BACK-UP COPY OF FGM IN A 1541!*

   **#2 SAVE A USER COLOR FILE**: This selection will let you save the color changes as a separate **Color File** which can be loaded into **DEMO-ER**. Load the "c." file using DEMO-ER'S **LOAD OTHER** option.

(3) **#9** Load the below **PRINT COLORS** utility and view/print the values.


# < PRINT COLORS UTILITY >

Use this utility to print the *colors* of the *borders*, *screens*, and *cursors* in the various modes. Output may be to either *screen* or *printer*. Load this from the **COLOR CUSTOMIZER**, or use the **LOAD OTHER** option in any of the FGM sections and select "u.prnt.colval".

```
PRINT COLOR FILE VALUES

READ WHICH COLOR FILE?

    1. MASTER (default) FILE

    2. SEPARATE COLOR FILE

    3. COLOR FILE IN RAM

or GO BACK TO:

    4. CREATOR

    5. DEMO-ER

    6. PRINTER

    7. COLOR EDITOR

    8. STOP PGM

SELECT NUMBER
```

```
COLOR FILE: file in ram

MAIN MENU SCREEN: white
BORDERS: CREATOR: lt. blue
    DEMO-ER/PRINTER: green

HI-RES MODES:
                CURSOR    BORDER    SCREEN
GP              none      lt. blue  white
GRAF            gray-3    brown     white
TEXT  -------------       cyan      white
    DOWN BORDER: purple
    PASTE:    lt. blue
    OVERLAY:  orange
    EOR:      yellow
    MARGINS:  lt. grn
PIX EDIT:     lt. red    yellow    white
ADJUST:       purple     green     white
TRANSFER:     cyan       red       white

PRINTER BAR: orange
DEFAULT GRAPHIC: 5    DEFAULT CHAR: 4
    CTRL A= 13    CTRL D= 9    BELLS on

            PRINTER Y/N?
```

**9**

## < CUSTOMIZER >

This utility will let you *change the FGM* disk so the CHARACTERS SETS
(1-3), DEFINABLE CHARACTER, and GRAPHICS (1-5) *that are presently in
the program* will become the defaults. If you have some favorite
graphics or character sets that you'd like to make permanent in the
program so they are there every time you load FGM then use this.

```
This program will write the graphics,
character sets, & Definable Character
that are presently in the FGM to the
FGM program disk so they will become
the defaults.

ONLY USE THIS ON A BACK-UP DISK!

Back-up must have been made using a
FULL DISK COPIER. Do not use this
on a copy made with a FILE COPIER!

Do not use this on a copy located
on a 1581 disk!

NOTE: This program MUST be loaded
via FGM to work properly.

            1. DO IT

            2. RETURN TO CREATOR

            3. STOP FGM
```

To use this utility go into CREATOR and load the character sets and
graphics into the buffers, and capture something you want as the
Definable Character. Then use the LOAD OTHER option to load this
utility and follow the prompts.

You will be prompted for an ID CHARACTER; the character you enter will
appear to the right of your *User Number* on the Main Menu so you'll
know if you're using the modified FGM.

The *default graphic buffer (1-5)* and *character set buffer (1-5)* may be
changed. Use the COLOR CUSTOMIZER utility to do this.

NOTE: CUSTOMIZER makes changes to the disk and SHOULD ONLY BE USED ON
A BACK-UP COPY OF FGM LOCATED IN A 1541! This may not work right with
a 1581 or hard drives!

## < THE DEMO UTILITY >

OVERVIEW: The "u.demo util" utility can be used for APPENDING demo files together, and/or for COMPACTING demos. The "u.demo util" utility must be loaded using FGM's LOAD OTHER option. The directory is not available while in this utility so you should know the filenames of the demos you want ţo append or compact before coming to this utility.

```
-FGM DEMO UTILITY-

This utility will create new demo
files using existing demo files.

COMPACTOR will reduce the file size
of a demo by 10-25%. Compacted files
are also easier to edit with
a disk doctor.

APPENDER will take two demo files
and append them together into a
third demo file.

The DIRECTORY is not available in
this utility, and you must know the
filenames before using this.

        -PRESS SPACE BAR FOR MENU-
```

APPENDING DEMOS: Use this for appending demos together. There are a few good reasons for appending demos:

A) If you are making a long demo it is often easier to do it in smaller sections and then append them all together. That way you don't have to re-do the entire demo if you make a mistake or don't like how the section is coming together.

B) If you create a "library" of demo modules you can append them onto new demos you make.

C) If you do a demo and then decide to add something to it, either to the beginning or the end. Several things that are often overlooked when doing demos are:

1. Failing to CLEAR THE SCREENS at start of the demo. This can be corrected by doing a short demo that clears the screen(s) and appending the main demo to it.

2. Failing to RETURN THE GRAPHICS TO NORMAL (default) positions upon ending a demo so they'll be set up right for the next demo. This can be corrected by doing a short demo that returns them to normal and appending it onto the end of the main demo.

3. Making a demo on an FGM in which you've changed the default graphic or character buffer. These demos may not play correctly on a unmodified FGM unless you actually select a graphic buffer and character buffer when you first start the demo. If you don't do that then the fix is to do a short demo that selects a graphic and character buffer, then append your other demo to it.

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## < APPENDING & COMPACTING DEMOS >

When a demo is started the *graphic buffer* is initialized to #5, *character set to #4, screens are homed, cursor is homed, text size is* set to 1:1, and options such as *wrap, italics, bold, reverse,* are *reset.* These *resets* are not recorded which means *when you APPEND* a demo on it will use *whatever it finds* which usually won't be what it started with when it was recorded (ie: if the *text cursor* was larger than 1:1 the *appended demo* will use it thinking it's 1:1). If you are planning on appending a demo onto another you'll need to follow a few rules while recording in order to make the second demo compatible with the first.

THE SAFEST WAY TO EXIT A DEMO if you are going to append demos *onto* it is to make sure all of the graphics are flipped/inverted back into their starting positions, set the active graphic to #5, the active character set to #4, home the screens/cursor (hit CLR/HOME twice), normalize the *cursor size,* hit CTRL [up arrow] twice to turn off WRAP, and reset the TRANSFER Cursor size if it was changed. Just do the following:

1. In **TEXT Mode**: Press CTRL [up arrow] (twice), CTRL n, CTRL 4.

2. If **TRANSFER** was used enter **TRANSFER Mode** and make the Transfer Cursor 11 columns wide by 4 rows high, then exit **TRANSFER Mode**.

3. In **GP Mode**: Make sure graphics are in their "starting positions" (ie: unflipped), press #5, then CLR/HOME twice.

AFTER STARTING TO RECORD A DEMO THAT'S GOING TO BE APPENDED *ONTO*:

1. Exit the hi-res screen and set the *link status* so it's the same as the *previous* demo. If you want a *different link configuration* set the *link status* to the *previous status,* go to the hi-res screens, then exit again and change it to what you want.

2. Select the graphic and character set buffer that you want to be active (the previous demo may have left one of the other graphics or character sets active and it won't know that *the new demo initialized to graphics buffer #5 and character set #4*).

3. Set MARGINS (if *linked* and need be) and turn on WRAP if it was being used in the *previous demo.*

NOTE: Don't append demos that were recorded with different CTRL A or D values (pg-17). Very unlikely, but sure 'nuff, Jerry tried it:).

COMPACTING DEMOS: When demos are recorded some of the *shift codes* which are recorded aren't really needed for playback. This utility will *strip out the un-needed codes* and *write a new demo file.* The savings will vary but can amount to 20% or so. If you are going to APPEND files it is easiest to APPEND them first and then COMPACT the larger demo.

NOTE: A COMPACTED demo file can usually be edited somewhat by using a DISK DOCTOR. Making minor text changes is relatively easy if your DISK DOCTOR has a *text mode.* An un-COMPACTED demo file can also be edited with a DISK DOCTOR but may be a little more confusing.

## < MISCELLANEOUS UTILITIES >

POLL DRIVES "u.poll drives": If you are using multiple drives this utility will poll the drives and let you know which drive (A,B,C) is the PROGRAM DRIVE and which is/are the DATA DRIVES. Use this utility to let FGM know that another drive has been turned on if you turn a drive on or off after loading FGM.

SEQUENTIAL FILE READER "u.seq reader": This little ditty will read a SEQuential text file from disk to the screen. Just something that might be handy if you want to take a look at some email or possibly a "help screen" you've created without having to exit FGM. No Directory so you'll need to know the filename before using this utility.

EXIT FGM "u.EXIT FGM": I wrote this to re-activate my cartridge after exiting FGM and am including it because someone else may find use for it. As is, it will simply do a sys58260 BASIC COLD START. If you STOP (Sh Q) and LIST the utility you'll see that you can enter up to 9 characters. Enter your characters to replace the "sys58260:" that's in quotes (as-is it causes another sys58260 after the one FGM does).

The characters you put between the quotes will be put into the keyboard buffer before FGM does a sys58260, and they will be executed after the sys58260. This utility will make the last character in the string a CHR$(13); without it execution will not take place and the characters in the keyboard buffer would simply be left on the screen. If you have a cartridge sys that re-enables your cartridge you could put that sys between the quotes. After making the changes save the changed utility to disk before you RUN it!

SUPER SNAPSHOT "u.fix-save.ss": Some cartridges have compatibility problems with FGM, SS4 in particular. If SS4's turbo-save is enabled you will probably get save errors, lock-ups, and you may have problems when printing. This is a bug in the cartridge and the only way around it (I tried) is to disable the turbo-save feature. You could do this via the cartridge before/after loading FGM. This utility will modify FGM so the turbo-save is disabled by FGM when FGM loads. USE THIS ON A BACK-UP DISK LOCATED IN A 1541!

DOODLE LOCATION "u.doodle loc": When FGM saves DOODLE screens it saves them with a load address of 8192 which is not the same address that DOODLE saves from. This won't cause any problems with DOODLE but some other programs that use DOODLE files won't recognize the file unless it has the correct load address. This utility will search through a disk for DOODLE files and change their load addresses so they are DOODLE-correct. May not work right on 1581 or hard drives.

GARY LABELS "u.fgm to glm": Seven-row screen saves with FGM can be used in GLM if you use this utility. As with DOODLE, the load address must be changed or GLM won't recognize the file (GLM labels may be loaded directly into FGM as screens though).

# < CAPTURING HI-RES SCREENS >

## RESET SWITCHES

**OVERVIEW:** Hi-res screens from other programs can provide you with a variety of graphics and text images to use on your own hi-res screens (or to capture as graphics). This includes unusual start-up screens and menus. Even things like the GEOS NOTEPAD (almost anything on a GEOS screen can be *captured*). The problem with using these screens is that many programs (particularly games) don't store their hi-res screens to disk so we can't just load the screen into FGM.

HERE'S THE TRICK; A **RESET SWITCH**. These are built into the C128 but not the C64. If you don't have a reset switch look into getting one. They're inexpensive, $3-$20, and they all do the same thing. The real difference is how they connect into the computer (parallel port, serial port, clips, solder) and, of course, what they *look* like. If you're a bit handy with a soldering iron it's not hard to install one yourself. Some computer clubs have meetings where a handyperson with a soldering iron will install reset switches for members.

Besides helping you to capture hi-res screens **A RESET SWITCH WILL ALSO HELP YOUR COMPUTER TO LIVE LONGER!** Each time you off/on the computer you are *stressing the electronics* (not to mention the POWER SWITCH, which has been known to wear out and will cost more to replace than any reset switch costs).

While on the subject of **POWER SWITCHES**, when you finally turn the computer off for the night make sure you unplug or otherwise remove power from the POWER SUPPLY (a SWITCHABLE POWER STRIP is best), else it will happily sit there simmering and shortening it's lifespan (and possibly your computer's too!).

**WHEN YOU RESET THE COMPUTER** some pointers in memory are reset to what they were at start-up. Most of the data is still in memory but the computer is no longer looking (pointing) at it. This means you can often recover a program if the computer locks-up; do a RESET and then use an "un-new" or "old" program to reset the pointers. If a hi-res screen was visible when you reset the computer then it's probably still in memory and you can save it once you find it. This is where **SFINDER** on the next page comes in; do a RESET, then load **SFINDER** and use it to find and save the hi-res screen(s).

**NOTE:** Some hi-res screens are actually *text screens* using re-defined character sets for the graphics (ie: for a *rough* example, go into TEXT Mode, pull a graphic into a character buffer, then reconstruct it using the character keys). These screens are most likely to appear in games because this method allows very fast manipulation of the screen. You'll need to use something like SuperSnapshot to capture these screens.

You can often use FGM without **SFINDER** to capture screens in some areas. Just load FGM. The screen areas FGM uses are at 8192, 40960, and 57344. If the program you reset from had screens in those areas then they'll be in FGM after you load it.

## < HI-RES SCREEN FINDER >

OVERVIEW: The HI-RES SCREEN FINDER program (SFINDER) is provided to help you find and capture hi-res screens that may be left behind by other programs. Then you can load the screen into FGM and manipulate it or use parts of it for your own screen(s). This program may be loaded via the FGM BOOT or by using load"screen*",8.

Most hi-res screens that appear on your monitor can be captured using SFINDER and a RESET SWITCH. This includes hi-res screens in programs such as GEOS, PRINTSHOP, NEWSROOM, LOADSTAR, and many GAMES. A handy way to capture NR CLIP ART for use in FGM is to get the NR CLIP ART screen up, do a RESET, then use SFINDER to find/capture the screen (a much faster/easier way is to use a SuperSnapshot cartridge).

The first step is to get the hi-res screen you want to capture onto your monitor, then RESET your computer. C128 users can use the C128's RESET SWITCH. C64 users will need to add a RESET SWITCH or get a cartridge that has one.

```
┌─────────────────────────────────────────────────┐
│   ▐ FUN GRAPHICS HI-RES SCREEN FINDER ▌          │
│                                                  │
│  PRESS F1 or X to SEQUENCE screens               │
│                                                  │
│  PRESS F3 to REVERSE screen                      │
│                                                  │
│  PRESS F5 to SEE address or SAVE screen          │
│                                                  │
│  PRESS F7 to LOAD a screen                       │
│                                                  │
│  PRESS 'S' to STRIP GRAYS                         │
│   (some files - maybe)                           │
│                                                  │
│  PRESS 'Q' to QUIT                               │
│                                                  │
│  Pressing F1 or X will let you view the          │
│  screens in memory. When you see the             │
│  screen you want, press F5 or RETURN.            │
│  You will then be prompted for a                 │
│  filename to save the file under.                │
│                                                  │
│   -Press F-1 to begin viewing screens-           │
└─────────────────────────────────────────────────┘
```

After reseting the computer, load and run the SFINDER program. The above menu screen will appear. The above keys function as follows.

F-1 or X KEY: Either of these will turn on the hi-res screen and display memory at address 8192. IF THIS IS THE SCREEN YOU WANT TO SAVE THEN PRESS F-5 OR RETURN TO SAVE IT! If you press F-1 or X again another memory area will be copied to this area and the first screen will be lost.

Each time you press F-1 or X another 8K block of RAM will be copied to the hi-res screen at 8192. The areas that SFINDER looks at are 8192, 16384, 24576, 32768, 40960, 49152 (4k only), and 57344. After 57344 the program will cycle back through the above areas again. Since the areas are copied to 8192 if you do something like STRIP GRAY it won't affect the original and it will be there unchanged when you cycle back through again. Remember, the first screen you see (8192) is gone after you start to view the others.

## < HI-RES SCREEN FINDER >

R or F-3 KEY: Use to REVERSE the screen you are viewing.

S: Pressing the S key while a hi-res screen is present will STRIP GRAYS. This is the same function as in the FGM main program and works best on multicolor screens. Some screens may need to be REVERSED first to get satisfactory results.

F5 or RETURN: Pressing either of these keys will take you out of the hi-res mode and display the memory location where the screen you are viewing was copied from (and is still at). You'll be prompted for a filename to save the screen as. To cancel just press RETURN at the "s." filename prefix.

If you save the screen it will be saved as a 32 block hi-res screen with a load address of 8192. Note that 8192 is the same location that FGM uses for viewing the screens; if you just exit SFINDER and load FGM the hi-res screen will still be there, along with any screens located at 40960 and 57344.

F-7: Press this if you want load a screen to 8192. You'll be prompted for a filename; just press RETURN to cancel the prompt.

Q: Press Q to exit SFINDER and load FGM (the FGM program disk must be in the drive). If you want to quit SFINDER without loading FGM then press RUN/STOP.

SFINDER doesn't know a screen byte from any other byte; it simply copies RAM to an area where you can view it as a hi-res screen. Multicolor screens use the bit patterns in a different way and may look awful when you view them. STRIP GRAY may clear this up.

Some cartridges will not only let you capture/save hi-res screens but will also let you CONVERT A *TEXT SCREEN* INTO A *HI-RES SCREEN*. This is how I captured the various FGM text menus shown in the manual, using *SUPERSNAPSHOT*. Then I loaded them into FGM and edited them as needed. The *SUPERSNAPSHOT* cartridge is an excellent tool for capturing screens, although SS4's *turbo-save* has problems with FGM and I can't recommend it while using FGM unless you don't mind disabling the *turbo-save* (you'll still have its *turbo-load*).

REMINDER: When you first load SFINDER and press X or F1 to view the screens the first screen you see will be wiped out of memory as soon as you press X again to view another screen (all screen areas are copied to 8192 for viewing). If the first screen you see is the one you want then press RETURN and either save it or load up FGM. Note that if you cycle through the screen areas and are viewing a screen which is located at 40960 or 57344 then when you load FGM that screen will be present on two of your FGM screens (this could cause confusion if you aren't aware of it:).

Note that if you are using GEOS (64) and reset your computer the GEOS screen will be present on one of the screens if you just load up FGM; you don't need to use SFINDER.

## < EOR >

EOR stands for **EXCLUSIVE OR**, a *logic function*. You needn't learn *logic*, but EORing graphics and text to the screens is commonly done in FGM. Understanding a little about how EOR works and what it does can be helpful.

EOR is available along with OVERLAY and PASTE in the hi-res modes that support these items; GP Mode, TEXT Mode, ADJUST Mode, TRANSFER Mode, and when loading CLIP ART.

EOR is a way of comparing the bits (or pixels) in a byte (number). When you EOR two numbers together the binary bits that make up the numbers are compared in order to get a result.

If the **same bit** position in each of the two numbers is the same (both ON or both OFF) then the bit (or pixel) in the *resulting number* will be turned OFF.

If the **same bit positions** (or pixels) *differ* (ie: one is ON and the other is OFF) then the *resulting bit* will be turned ON.

```
ie:    SCREEN PIXELS      0110 0101      1101 0110
       GRAPHIC PIXELS     0101 0011      1011 1100
       RESULT TO SCREEN   0011 0110      0110 1010
```

Don't worry about the numbers and math; with FGM you just need to concern yourself with whether pixels match up or not, and this is something you can see right on the screen by using EOR.

We have two sets of *graphic pixels* that we work with on the hi-res screens. One set of pixels are the 64000 pixels that make up the *visible hi-res screen*. The other set of pixels are the pixels we *fasten* to the screen; *graphics, text, captured screens areas*.

When we EOR pixels to the screen the *matching pixel positions* on the *screen* are compared with the *graphic's or text's pixels* according to the above rules for EOR, and the *screen pixels* are *set* or *cleared* accordingly.

**WHAT IS EOR GOOD FOR** ? It is usually the best way to *fasten graphics* to the screens. This because you can *undo* the graphic simply by EORing over it again (all of the *screen pixels* will be returned back to their pre-EOR state). Also handy with ADJUST and TRANSFER modes because you can try out the positioning and *undo* it if you don't like it. In **TEXT Mode** EOR is probably most useful for *outlining characters*, although it can be used for *position checking*.

Besides *position testing*, EOR can be used for *outlining*, creating interesting *patterns*, *testing to see if two graphics are identical*, sending *encrypted messages*, and probably a few undiscovered things.

**REM**: EOR will *undo* what EOR does. If you EOR something to the screen you always *undo* it if you EOR the same thing over the same location.

## < EOR — OUTLINING >

**OUTLINING:** Creating *outlined characters* is pretty easy. Whether you use **ADJUST, TEXT,** or **TRANSFER** Mode is a matter of application and preference. If the text is no larger than four rows high then **ADJUST'S** Capture is the easiest to use because you can outline all the way across in one swoop, and if you don't like the results you can *undo* it in one swoop. With **TEXT Mode** you must type each individual character. Also, **ADJUST Mode** permits scrolling of screens regardless of the *link configuration* and screen scrolling is a necessary part of outlining. With **TEXT Mode** you must type each individual character.

The method used for *outlining* is about the same regardless of which mode you use; you'll place the text on the screen, scroll the screen a pixel up and left, then use EOR to place the text over itself.

**TEXT MODE:** Type the character(s) to the screen, hit F5 and F6 to *scroll* the screen, turn on EOR with **Sh CTRL 8,** then *re-type the text over itself.* If you type a wrong character move back over it and type it again (EOR *undoes* what EOR does).

**ADJUST MODE (4 ROW LIMIT):** Type the character(s), enter **ADJUST Mode,** capture the area by pressing =, hit F5 and F6 once to *scroll* the screen, then press p to EOR the area over itself. If you don't like it then either press p again to *undo* the EOR, or press Sh P to PASTE the captured (*unscrolled*) original back to the screen.

Try the following for some interesting effects. Use the above method to outline something that's four rows high, make the **ADJUST Bar** two rows high (press - twice), press p once, then make the bar 4 rows high again and press p a few times. You should get a *half and half effect.*

**TRANSFER MODE:** You will not be able to do this on the *same screen* because **TRANSFER** won't let you *scroll the source* after you *capture a range.* Take your *captured range* to another screen, PASTE it to the screen, then *scroll* the screen and press p to EOR over it.

**GP MODE:** GRABBING an *outlined image* into a graphics buffer then EORing it *over itself,* offset by a few columns or rows, can lend itself to some nice patterns. The **ASTERISK** * is quite effective for this.
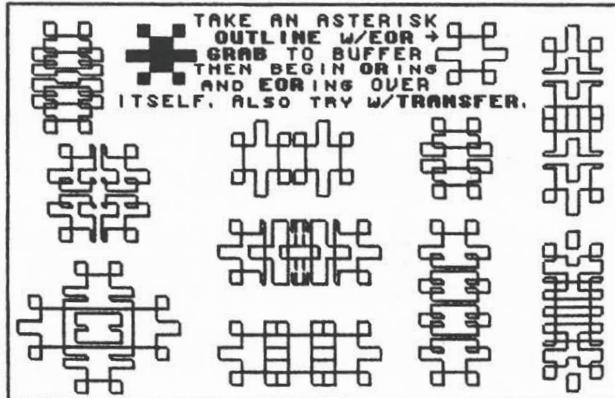
## < MORE EOR >

3D-like effects can be realized by *scrolling* the screen after each EOR and EORing again. This will take some experimenting, both with the characters you use and with the number of *scrolls* between EOR's. TRANSFER Mode is often best for this.

"LOOPY" outlined characters work best with the *thinner characters* such as those in buffer #1.
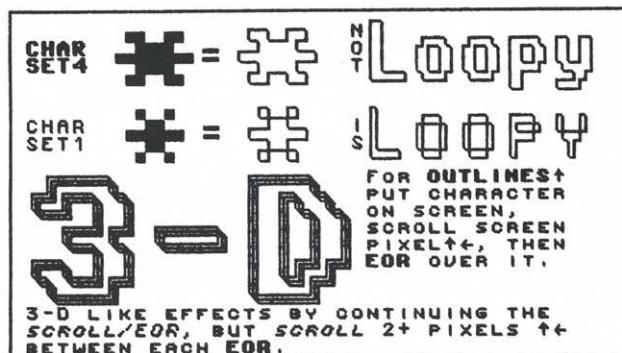


ENCRYPTED (SECRET) MESSAGES: I mentioned this earlier so guess I better see it through. Let's say you have a screen full of text and graphics that you only want those who are *privy* to see. Go into TEXT Mode and EOR a character or *custom character graphic* over the whole screen. The character that you use will need to be passed on to the person who is to decode the message. You could use one of the Commodore *Character Graphics*, possibly reversed, rotated, flipped, or place your own custom character somewhere *on the screen* and it can be captured as the Definable Character and used to EOR over the screen. Different sections of the screen could be EOR'd with different things, possibly with each level requiring its EOR *character* be EOR'd with the previous EOR *character*.

Here's an idea for the *creative masochists* among you; create a *GAME-PUZZLE* where you follow a trail of clues. Several encrypted (EOR'd) screens could be loaded as *linked screens*. Possibly graphics and characters sets too. Once on the hi-res screens the object would be to EOR the correct areas with the right characters in order to uncover more clues. Screens could be saved along the way so play (whatever) could continue later.

## < PROBLEMS, CARTRIDGES, CMD HD SUPPORT >

PROBLEMS: FGM has been very well tested by THE BETA TESTERS who tried things I never expected anyone to do. FGM has proven quite bug-free, and it's always under scrutiny. The FGM program should never be the cause of a crash or lock-up.

Problems with FGM will most likely be caused by making the wrong printer (or secondary address) selection, or external hardware, ie; a fastload cartridge, tight disk, or a marginal power supply. If you have erratic problems then suspect the power supply; it has a diode which weakens and adds ripple to the 5V line. This can cause you all kinds of frustration and sorrow (I know from experience!).

CRASH RECOVERY: If you should experience a lock-up there are several things you can try. First off, make a written note of what you just did and what the screen looks like.

  RESET: If you have a RESET SWITCH (C128's have them built in) then do a reset and re-load FGM. Your graphics and character sets will be replaced by the defaults but your hi-res screens will be there.

  R/S RESTORE: Try holding RUN/STOP and tapping RESTORE. If you get a "READY" and blinking cursor then do RUN/RETURN. NOTE: if in the PRINTER SECTION you should probably poke186,8 before RUNning.

  DRIVES: If doing disk access and things "hang up" then try turning the drive off and back on.

  PROGRAM CHECKER: Does a checksum of the FGM disk. See page 129.

SUPER GRAPHIX GOLD: This interface should be put into SLOW MODE for use with FGM. If you don't you may have a lock-up when you access the disk after printing. See page 108 for more info on the SGG.

CARTRIDGES: FGM has performed well with the most common FL cartridges. FGM works fine with JiffyDOS, even with a Final Cartridge II going at the same time. The SuperSnaphot 4 will give you problems if you don't turn its turbosave off (see page 120 for more). The EXPLODE cartridge may not be compatible with FGM; manufacturer's info indicates there may be some memory conflicts, so beware.

I highly recommend that you get a fast-load system of some kind. Your disks and drive will last a lot longer, and you'll have a lot more time for computing. For the best all-around compatibility I recommend JiffyDOS. For a cartridge I'd recommend SuperSnapshot 5; its ability to capture screens for use in graphics programs is a powerful feature. If you have BOTH you've got a lot of power.

CMD HARD DRIVE: FGM works very well with the CMD HD; go between FGM's sections in a couple of seconds or less, and loading/saving files is very fast. If you'll be going between partitions and subdirectories a lot then get used to the @ key for sending commands to the drive. I added a tiny bit of CMD HD support to FGM; if you use the directory listing to load (save) a file from the HD and it's a subdirectory (dir) then FGM will go to that subdirectory. Not available when in PRINTER; you'll have to use @ and send a disk command instead. This feature had to be jammed into an already tight program so I had to keep it pretty simple.

## < MODIFYING FGM >

You can make some changes to FGM's BASIC in order to customize the program more to your wants. You don't have to ANYKEY down to the section you want to boot or answer the FASTLOAD prompt. Change the default SMOOTH CURSOR's color & size. Make CREATOR & DEMO-ER READ screens. Other customizing is possible using the CUSTOMIZER & COLOR EDITOR utilities; see pgs 114-117. To change a program file you need to load it, change it, then resave it (after scratching the old file from your BACK-UP). For the BOOT, just load, change, re-save. Other files should be loaded with FGM already in place because FGM changes the bottom of BASIC; STOP FGM with Sh Q, then use load"filename",8 to load the file you want to change.

```
fgm boot
2 fl=0:rem 0=fl prompt:1=fl w/o prompt:
  2=no fl or prompt
4 df=000:rem default selection: 0,40,80,
  120,160: change above and re-save boot
6 dv=peek(186):poke3775,df
8 poke198,0:poke631,13:poke53265,27:prin
  t"▧▧▧";: sys2920:sys3738
10 ty=peek(2):ifty=160then16
12 iffl=.thensys2900:wait198,1:geta$:ifa
  $="y"thenf=1
14 x=0:c=.:gosub20:poke250,.:poke250,f:s
  ys4380:end
16 print"▧▧▧▧new":print"▧▧▧10"chr$(34)"s
  creen fin"chr$(34)",",dv:print"▧▧▧▧▧rU▧"
18 forx=631to638:pokex,13:next:poke198,8
  :end
20 open1,x,15:close1:ifst=.thenpoke853+c
  :x:c=c+1
22 x=x+1:ifx<13andc<3then20
24 poke695,c:poke186,dv:sys3800:return
26 rem▧▧▧▧▧▧▧▧▧
NOTE: ML IS ABOVE THE BASIC! MAKE THE
BASIC NEITHER LONGER OR SHORTER.
```

2 fl=0:rem 0=fl prompt:1=fl w/o prompt:
  2=no fl or prompt
USE TO CHANGE THE FASTLOAD PROMPT'S
DEFAULT. YOU CAN HAVE THE PROGRAM SKIP
THE FASTLOAD PROMPT AND EITHER USE OR
NOT USE THE FASTLOADER.

fl=0: WILL PROMPT Y/N? FOR FASTLOADER
fl=1: WILL USE FASTLOADER W/O PROMPT
fl=2: WON'T USE FASTLOADER OR PROMPT

4 df=000:rem default selection: 0,40,80,
  120,160: change above and re-save boot
BY CHANGING df= YOU CAN MAKE ANY OF
THE SECTIONS THE SECTION THAT THE
BOOT'S SELECT BAR DEFAULTS TO.

    0=CREATOR     40=DEMO-ER     80=CLIPART
    120=PRINTER   160=SFINDER

8 poke198,0:poke631,13:poke53265,27:ETC
CHANGE ↑ TO 1 AND FGM WON'T WAIT FOR
YOU TO SELECT A SECTION; THE ONE
SPECIFIED IN df= WILL BE LOADED.

---

```
u.EXIT FGM
0 rem exit fgm
2 print"▧▧▧▧EXIT FGM":goto20
4 a$="sys58260":rem ←replace the text
  ↑↑↑↑↑↑↑↑↑ with your own command
6 rem no longer than 9 characters
8 rem a$="sY706":rem ronz routine
10 iflen(a$)>9thenprint"a$ too long!":st
   op
12 forx=1tolen(a$):poke638+x,asc(mid$(a$
   ,x,1)):next:poke638+x,13
14 poke198,len(a$)+1:sys58260:end
THERE'S A LITTLE MORE BASIC BELOW THIS
```

### MODIFY CREATOR/DEMO-ER to READ SCREENS

164 s1=0:bh=peek(787):gosub34:j=00:gosub
168:goto176

CREATOR (FGMcBPG) AND DEMO-ER (FGMdBPG)
LOAD SCREEN FILES. IF YOU HAVE SPECIAL
NEED YOU CAN MODIFY THEM TO READ SCREEN
FILES BY CHANGING THE ABOVE j=00 TO
j=32. THIS WOULD BEST BE DONE WITH A
DISK DOCTOR. I DON'T RECOMMEND MAKING
THIS CHANGE BECAUSE FGM HAS NOT BEEN
100% CHECKED OUT THIS WAY & YOU MAY
RUN INTO PROBLEMS LOADING SOME FILES.
READING IS SLOWER BUT IT PERMITS YOU TO
LOAD IN LARGE KOALA-LIKE FILES WITHOUT
CRASHING FGM. THE CLIPART SECTION IS
ALREADY SET UP TO READ SCREEN FILES.

---

```
u.clipart boot
2 sys7481:sys40544:rem ca boot 596
4 poke19284,13:poke19401,10:poke19289,07
  :rem colors ↑smooth   cat↑save border↑
8 poke19538,39:poke19540,12:poke34134,4:
  rem cur size ↑h                  ↑v
12 poke18714,141:rem 144:147:150 grabuf
20 sys18696:print"▧▧10"chr$(34)"FGMca▧"ch
   r$(34)",",peek(186):sys18335:end
22 rem▧▧▧
ML IS ABOVE BASIC SO MAKE BASIC NEITHER
LONGER OR SHORTER (IF REPLACING A TWO
DIGIT NUMBER (IE:17) WITH A SINGLE DIGIT
NUMBER (IE:5) USE LEADING ZEROS (IE:05).
```

4 poke19284,13:poke19401,10:poke19289,07
  :rem colors ↑smooth   cat↑save border↑
SMOOTH CURSOR↑   CLIPART ↑ SAVE CUR/BDR
CHANGE ABOVE LINE IF YOU WANT DIFFERENT
CURSOR/BORDER COLORS. USE NUMBERS 01-15
FOR COLORS.

8 poke19538,39:poke19540,12:pok
  rem cur size ↑h             ↑v
SETS DEFAULT SIZE OF SMOOTH CURSOR.
ABOVE IS 39 COL ACROSS BY 12 ROWS DOWN.

12 poke18714,141:rem 144:147:150 grabuf
SET THE ACTIVE CHARACTER BUFFER 1-4 WHEN
ENTERING CLIPART. 141=1, 144=2, 147=3,
150=4. NOTE THAT BUFFERS 5&6 ARE NOT
AVAILABLE IN THE CLIPART SECTION.

# < BACK-UP, PROGRAM CHECKER >

FGM is not copy protected. Although quite possible it would've just given you hassels and limited your ability to fully use FGM.

It is best to make a *back-up copy* of FGM right away and start using it instead of the original. Besides the obvious insurance of having a back-up, this will usually notify you of any errors (there should be none). Equally important is that you'll have a disk to use that was created on your own drive, and your drive will usually be happiest when it's reading a disk written in its own handwriting. This is especially important when using fast-load systems. Use any *full-disk* copy program to make your back-up. You need not *nibble-copy*; a regular copy will be fine. You may also *file-copy*; see below.

Disks seem to fare surprisingly(!) well in the mail. When disks get messed up they usually get *physically damaged* and it's pretty obvious. One thing that's not so obvious is a TIGHT DISK. If a disk is tight you *may* get random errors. You should be able to easily spin the disk with your fingers (spread in the hub hole). I check all FGM disks like this so they shouldn't be tight when you get them. If you get random errors then check the disk to see if it's tight in the sleeve. Disks that are tight or folded can often be recovered by opening the sleeves and moving the disk to another sleeve.

A <u>PROGRAM CHECKER</u> is included on the disk which will check all vital files to verify that they are "as sent". If a disk has errors they will usually be reported when you make a back-up. The PROGRAM CHECKER is provided as an extra bit of confidence although I'm not really sure it's necessary. If you want to run it reset your computer, then load and run it. Checking the files takes awhile and need not be watched.

<u>FILE-COPY</u>: The FGM program may be *file-copied* to a 1581 or CMD Hard Drive. At the minimum you will need  to copy the boot, all files that begin with "FGM", the "u.clipart" boot, and whichever files are needed for your printer. See PRINTER GROUPS on page 105. Printers in group A need the "aFGMp" file, group B needs the "bFGMp" file, and group C needs "cFGMp". The appropriate "p." printer file is also needed.

<u>IMPORTANT</u>! The *SELECT PRINTER, COLOR CUSTOMIZER,* and *CUSTOMIZER* utilities should NOT be used on an FGM located on a 1581, CMD HD, or any other drive that isn't 1541 compatible! These utilities search and write to tracks and sectors and will mess up files if used on a 1581 or HD. If you use any of these utilities only use them on your back-up located in a 1541, then copy over to the 1581 or HD (at least go through SELECT PRINTER). Perhaps it would be best NOT to copy these utilities to a 1581/HD because they will probably make you very unhappy if you accidently use them.

## < MISC NOTES >

**TEXT** Mode's **INSERT** and **DELETE** are REAL handy for *moving* things around the screens and micro-adjusting spacing, both left/right and up/down.

Typing SPACES is very useful for ERASING areas of the screen. Use ADJUST's ERASE for erasing full rows.

Use the cursors for measuring. If you want to know if something is centered on the screen make the cursor the size of the space to its left, then compare with the right side. If in **TEXT** Mode you can insert/delete to adjust spacing while measuring. The ADJUST Bar cursor is handy for counting rows downwards.

ADJUST Mode is VERY USEFUL; get to know it. Besides the usual things like *centering, spacing, erasing, slanting, outlining, stretching and shrinking*, ADJUST's *CAPTURE* (=) is handy for *rearranging rows of text*, either on the same or a different screen. If you need to move a few rows to another screen or down a bit just capture and move them. How about *alphabetizing* a list of names on the screen. Put the ADJUST Bar over a name (rows) and press = to capture it, press CTRL U to remove that row, move the Bar over the name you want it to be above, press CTRL I to open up the space, then press Sh P to Paste the captured row to the new location. **REM**: The captured row is gone forever when you exit ADJUST Mode.

**MANUAL**: This manual was done using a C=64 with a Panasonic KX-P1080 printer, coupled by a Xetec SuperGraphix interface. Main programs used were FGM and PaperClip 64 (PC64 supports *micro-justification* which I feel is necessary for something like this manual). SuperSnapshot 4 was used to capture/convert most of the text (menu) screens to Doodle format, which were then loaded into FGM for processing and printout. Most of the manual's pages have been reduced to 80% of original. All full-pages done with FGM (ie: the cover) consist of multiple screens across and down, usually something like two screens linked across by three down. The pages were printed using just the starting filename.

The text used on many of the FGM-done pages is not as it appeared when it was *originally* typed to the screen; much of the >1:1 text has been hit with the SMOOTHING ROUTINE (you can smooth a single character or a whole screen). The dog on the cover was expanded 2X vertical and smoothed, then expanded 2X horizontal and smoothed. The cat was expanded *without* smoothing, then I used a small cursor as a "brush" to *selectivly* smooth areas. Most of the text is too small to really be smoothed but the smoothing routine knocks off some pixels anyway and I kind of like the effect. Go to CLIPART, type some 1:1 text to the screen, then expand the screen (smoothing will happen automatically unless you've turned it off). Or type text at a larger size and try smoothing it. Outlined characters tend to look much smoother after smoothing (be darned!;).

## < GLOSSARY >

**1:1** refers to the smallest size cursor.

**ACTIVE:** The hi-res screen, graphic buffer, or character set that you see/are using. The VISIBLE screen is the ACTIVE screen.

**BIT:** The smallest decision-making element in the computer. It's either *on* or *off*. When displayed on the hi-res screen *PIXELS* and *BITS* are the same thing; you are looking at memory and if a *BIT* is set then the *PIXEL* on the screen is black. Each *BYTE* contains 8 *BITS* (see *BYTE*).

**BUFFER:** A memory area where something is kept. The word *buffer* is used because they store things that are going between areas, ie: the *graphics buffers* hold the graphics that are loaded from disk, on their way to being fastened to the screen, and vice-versa.

**BYTE:** Eight bits which, when added together in their *on states*, equal 255. All *BITS* (*PIXELS*) are stored as numbers between 0-255 (*BYTES*), in the computer's memory and on disk.

**CAPTURE:** *Copy* a screen area to a buffer area. GRAB Mode *captures* 7x11 screen areas into a graphics buffer. ADJUST Mode can *capture* ROWS, and the Definable Character *captures* 1:1 screen areas.

**C=:** This means the Commodore Key; the key just below RUN/STOP.

**CHARACTER GRAPHIC:** Those little symbols on the fronts/tops of the keys. With *character set five* active all of them are available to print to a hi-res screen just like typing text. These are very useful!

**CHARACTER BUFFER:** A place in memory where the definitions for the text characters are stored. FGM has five character buffers.

**CLIPART:** An area of screen (a graphic image) that you "clip" and store to disk. Clipart is not very standardized; one program's clipart collection often won't work in another program. FGM's CLIPART section was written to be compatible with clipart from Busy Bee Software.

**COLUMN:** *COLUMNS* go *ACROSS*. One *COLUMN* is the width that a normal CBM character occupies. One *COLUMN* is eight *PIXELS* wide which is one *BYTE* (one memory address). There are 40 COLUMNS across the screen.

**CROP:** To trim off the bottom or right side of a graphic before placing it on the screen.

**CURSOR:** Any of the colored boxes that appear when you enter a mode other than GP Mode. In GP Mode the *graphic is the cursor*.

**DATA DISK:** A formatted disk that you use to load and save files on.

**DEFAULT:** The selection made if you just press RETURN at a menu prompt. In the hi-res section the defaults are whatever settings you find when you first enter the program (ie: graphic buffer #5 will be active so it's the default).

**DEFINABLE CHARACTER:** A 8x8 pixel area of the screen captured into memory so you can type it to the screen like any other character.

**DENSITY:** See page 106.

**DOTS:** Same as pixels, though usually refering to printer output.

# < GLOSSARY >

**EOR:** EXCLUSIVE OR. Usually the best way to fasten images to the screen. See EOR in the APPENDIX.

**FLIP:** Flip screen or graphic left-right.

**GRAPHIC:** Everything on the FGM hi-res screen is graphic including the text. This term generally refers to the PS type images that are in the graphics buffers.

**HI-RES SCREEN:** This is what we work with in FGM. There are 64000 pixels on a hi-res screen and you create what you want by turning them on or off. When on the PIXEL EDITOR you can individually turn each pixel on or off. In other areas of the program FGM takes care of the heavy work; when you type a character the appropriate pixels on the screen are changed. The 64000 pixels are arranged 320 pixels (40 COLUMNS) across by 200 pixels (25 ROWS) down, and are stored in memory or on disk as 8000 bytes.

**HOME:** The upper left corner of the hi-res screen. When screens are linked this also refers to the left-most or top-most screen.

**INVERT:** Flip *Upside-Down* (graphics or screens).

**LINES:** On the hi-res screen a line is a set of pixels across the screen, whether on or off. If *on* then you'll see a single pixel high line across the screen. There are 200 lines down the screen.

**LINKED SCREENS:** Connecting two or more screens together for purposes of editing, loading, saving, printing. The screen area you are viewing is usually the only screen you can do anything to. The exception; when screens are *across-linked* both INSERT & DELETE will affect unseen screen areas to their right.

**MULTI-COLOR:** Color screens such as KOALA. FGM is not a color program but these screens can be loaded into FGM (CLIPART SECTION) and sometimes converted into acceptable hi-res using STRIP GRAY.

**OVERLAY:** To *fasten pixels* (ie: graphics, text) onto the screen without disturbing adjacent pixels that may be covered by the cursor.

**PASTE:** Replaces the screen area with the entire text or graphic area.

**PIXEL:** Each *dot* on the screen is called a *pixel*.

**PROGRAM DISK:** The FGM disk that FGM needs to access when it goes between sections.

**PUT/PICK-UP:** Same as EOR. Meant to be a less intimidating term.

**REVERSE:** Turn *on-pixels* off and *off-pixels* on.

**ROW:** There are 25 rows down a screen. Each row is 8 pixels high, the size of the 1:1 text cursor.

**SMOKE:** What computers work on. If the smoke gets out then your computer will probably stop working.

**WRAP & WORDWRAP:** When typing and you type into the right margin the cursor will *wrap around* to the left margin, one row down. If WORDWRAP is on then the *entire word* you were typing will be pulled (wrapped) to the left margin, one cursor height down.

## < THANKS FOR THE HELP >

The FGM BETA TESTERS deserve a lot of credit for making FGM what it is. Besides looking for bugs, they have offered many suggestions which have been added to the program (rrring... hello... say Ron, I know there isn't any space left but it sure would be nice if...). Most of the BETA TESTERS are pretty heavy users of FGM. Jack Blewitt has used FGM to write many good articles (many about FGM), and some of these articles can be found around in the PRINTED TO DISK format. Ray Brock, Charles Canamar, Bill Reigel, and Jim Thomas have been doing a LOT of nice work with labels and superlabels. Jim Cooper bought an IBM, sigh! Still, the many QSI graphics disks that he put together are around and are quite a contribution to Commodore graphics. Jerry Freadman has become quite an expert at making keyboard overlays. I highly recommend that you order one of his FGM overlays; it will make using FGM a lot easier. The FGM dog is also Jerry's creation. Robin (Jerry's wife), deserves thanks here for her patience and understanding(?) of Jerry's FGM addiction:). George Doherty has uploaded some real nice C128 overlays to Q-LINK for a variety of programs. Dan Shackelford adds fun to the mail with posters like FGM ADDICTION (page 37). Bert Simmons uses FGM for the South Bay CUG newsletter and has done large brochures for a travel agency with FGM. Arnie Trobaugh uses FGM for the DAV newsletter he does, and often for letters. Fred Waldbauer does labels, letterhead (page 111), letters, and demos with FGM. Chauncey Westbrook has been creating music manuscripts with FGM (page 81).

| | | |
|---|---|---|
| Charlie Andrews | Paul Hughes | Dan Shackelford |
| Jack Blewitt | Peter Hughes | Bert Simmons |
| Ray Brock | Jeff Jones | Jim Thomas |
| Charles Canamar | Jerry Keegan | Arnie Trobaugh |
| Jim Cooper | R. Eric Lee | Fender Tucker |
| George Doherty | Glenn McGinnis | Frank Vanaman |
| Jerry Freadman | Bill Pitts | Fred Waldbauer |
| Robin Freadman | Francis Redmond | Chauncey Westbrook |
| Brenda Gann | Bill Reigel | Kathy Wright |

Special thanks to Charlie Andrews for the loan of a CMD Hard Drive; it saved me a LOT of time in preparing FGM. If you're thinking about getting another drive the CMD HD is the one to get. Besides its native mode, it emulates the 1541, 1571 and 1581, so it's like buying a bunch of drives, all much faster. It's very compatible and easy to use, which Charlie deserves a lot of the credit for.

Special thanks to Eric Lee (Busy Bee Software & The Write Stuff) for providing me with the smoothing algorithm. About fried my brain implementing it but it's a great addition to FGM. Eric also provided the compression routines for the CLIPART section, which should be compatible with Busy Bee's upcoming Clip Art Collection & DTP program.

Special thanks to the SYSOPS on Q-LINK for their help and support; SYSOP PH - Paul Hughes, SYSOP WP - Bill Pitts, SYSHELP KW - Kathy Wright, SYSHELP RS - Roger Silva, and Bob Grant.

Last but not least, thanks to the following people for their input and support with this project: Ray at Cal Copy, Art Gardner, Chet Hicks, Curtis Ibarra, Gabe LaRoya, David Lee, Paul Pataky, David Pennock, Ruth Ruotsalaimen, Rick Swallow, June Wingfield, and Egor. And to many other FGMers, thank you and I wish space permitted mention:).

# The Legal Stuff

# DISCLAIMER

```
* INDICATES PAGES WHICH
  HAVE AN ILLUSTRATION.
```

INDEX

# KEYSTROKE SUMMARY-1

## MODE ENTRY KEYS:

**GP MODE**: #4 FROM Main Menu
RETURN FROM OTHER MODES

**Grab (CAPTURE) Mode**: G FROM GP MODE

**Text Mode**: T OR DELETE

**ADJUST Mode**: J (CTRL J IN TEXT MODE)

**TRANSFER Mode**: Shifted T

**PIXEL EDIT Mode**: F7

**SMOOTH Mode**: Sh CTRL S (CLIPART ONLY)

PRESSING **RETURN** WILL EXIT TO **GP MODE** FROM OTHER MODES

---

## CURSOR MOVEMENT
CURSOR KEYS AND JOYSTICK

| | | |
|---|---|---|
| CTRL A | ACROSS FASTER | |
| CTRL D | DOWN FASTER | |
| CTRL M | MIDDLE OF SCREEN | |
| CTRL S | UPPER LEFT CORNER | |
| HOME. | " " " | |

RUN/STOP: LEFT MARGIN
Sh RUN/STOP: NEXT WORD
(TEXT MODE)

## CURSOR SIZE
TEXT, TRANSFER & SMOOTH MODES

| | | |
|---|---|---|
| CTRL H | HORIZ. LARGER | |
| SH CTRL H | ↑ABOVE FASTER | |
| C= CTRL H | HORIZ. SMALLER | |
| CTRL V | VERT. LARGER | |
| SH CTRL V | ↑ABOVE FASTER | |
| C= CTRL V | VERT. SMALLER | |
| CTRL N | SMALLEST SIZE | |
| CTRL L | LAST SIZE | |

---

## SCROLLING the SCREENS — F-KEYS

SCROLLING WRAPS THE SCREEN AROUND SO YOU CAN ALWAYS SCROLL THE SCREEN BACK INTO ITS ORIGINAL POSITION WITH THE F-KEYS.

**SCREENS CAN'T BE SCROLLED WHEN LINKED ACROSS.
**SCREENS CAN'T BE SCROLLED LEFT/RIGHT WHEN LINKED DOWN.
**IN ADJUST MODE SCREENS MAY BE SCROLLED REGARDLESS OF LINKING.

| unshifted | | SHIFTED | |
|---|---|---|---|
| ↑F1 | UP One ROW | ↓F2 | DOWN One ROW |
| →F3 | RIGHT One COLUMN | ←F4 | LEFT One COLUMN |
| ←F5 | LEFT One Pixel | ↑F6 | UP One Pixel |
| F7 | PIXEL EDIT MODE | F8 | CAPTURE DEF. CHAR. |

---

## SPLIT SCREENS

| | | |
|---|---|---|
| Sh X | SPLIT Left/Right | |
| C= X | SPLIT Up/Down | |
| X | EXIT (UNSPLIT) | |

**USE ↑↑ ↑w/CTRL IN TEXT MODE
Sh C= CTRL X EXIT w/o UNSPLIT

## LINKED SCREENS

| | | |
|---|---|---|
| X | Move RIGHT | |
| F3 | Move RIGHT | |
| F4 | Move LEFT (ACROSS) | |
| Sh X | Third UNLINKED | |
| Sh CTRL ← | Set HOME/ORDER | |

---

## GP Mode:
#4 from Main Menu
RETURN from other Modes

### SCREEN MANIPULATION

| | |
|---|---|
| X | EXCHANGE screens |
| C | COPY to blank screen |
| Sh F | FLIP screen ↔ |
| Sh I | INVERT screen ↑↓ |
| Sh R | REVERSE screen |
| Sh + | DRAW LINE BORDER |
| Sh - | UNDO LINE BORDER |
| Sh CTRL E | ERASE screen |
| Sh CTRL G | STRIP GRAY |
| Sh CTRL H | Horiz 2X EXPAND |
| C= Sh CTRL H | Horiz 3X EXPAND |
| C= CTRL H | Horiz 2X REDUCE |
| Sh CTRL V | Vert 2X EXPAND |
| C= Sh CTRL V | Vert 3X EXPAND |
| C= CTRL V | Vert 2X REDUCE |
| Sh CTRL ← | SET HOME/ORDER |
| Sh CTRL F | " " " |

### GRAPHICS MANIPULATION

| | |
|---|---|
| #1-6 | SELECT GRAPHIC |
| F | FLIP graphic ↔ |
| I | INVERT graphic ↑↓ |
| R | REVERSE graphic |
| Sh CLR | ROTATE 7x7 90 deg. |

### GRAPHIC CROPPING

| | |
|---|---|
| ← | NARROWER |
| W | WIDER |
| ↑ | CROP UP |
| Sh ↑ | PIXEL CROP UP |
| * | UNCROP (down) |
| Sh * | PIXEL UNCROP |

### GRAPHIC FASTENING

| | |
|---|---|
| o | OVERLAY |
| p | PUT/PICK-UP (EOR) |
| Sh P | PASTE |

## TEXT MODE

PRESS **T** OR **DEL**
See <u>CURSOR SIZE & MOVEMENT</u>

<u>SCREEN MANIPULATION:</u>

| | |
|---|---|
| CTRL X | EXCHANGE SCREENS |
| CTRL F | FLIP 1:1 AREA |
| Sh CLR | ROTATE 1:1 AREA |
| Sh CTRL R | REVERSE SCREEN |
| Sh C= CTRL B: | DRAW CHARACTER |
| | BORDER |

<u>TEXT INTERACTION W/SCREEN:</u>

| | |
|---|---|
| CTRL 1-5 | ACTIVE CHAR SET |
| CTRL R | REVERSE CHAR SETS |
| CTRL : | ROTATE CHAR SETS |
| Sh CTRL 1 | BOLD ON |
| Sh CTRL 2 | *ITALICS* ON |
| CTRL ↑ | TOGGLE DIRECTION |
| CTRL N | NORMALIZE |
| CTRL L | LAST SIZE |
| CTRL W | WORDWRAP ON |
| CTRL P | PASTE (default) |
| CTRL O | OVERLAY |
| Sh CTRL 8 | EOR (outlining) |
| Sh F8 | CAPTURE DEF. CHAR. |
| CTRL = | PRINT DEF. CHAR. |
| C= <u>CTRL =</u> | PRINT ⌣ FACE |
| Sh CTRL M | SET MARGINS |

<u>INSERT/DELETE:</u>
(INS=INST/DEL KEY)

| | |
|---|---|
| INS | DELETE COLUMN |
| Sh INS | INSERT COLUMN |
| C= INS | PIXEL INSERT |
| C= CTRL I | PIXEL INSERT |
| | (leaves shadow) |
| CTRL I | INSERT (wrapping) |
| CTRL U | DELETE (wrapping) |
| RUN/STOP | To LEFT MARGIN |
| Sh RUN/STOP | To NEXT WORD |

**"AUTO-STRETCH"** (INSERTS)

| | |
|---|---|
| C= CTRL T | With SHADOW |
| Sh CTRL T | No SHADOW |

DON'T USE ON ACROSS-LINKED
EXCEPT ON RIGHT-MOST SCREEN!

<u>MARGINS:</u> Sh CTRL M with 1:1
TEXT Cursor over one
of the Margins.

<u>TEXT BUFFER TO SCREEN</u>:
C= CTRL Y  BUFFER to SCREEN
C= CTRL Z  SCREEN to BUFFER

## TRANSFER MODE

**SHIFTED T**
See <u>CURSOR SIZE & MOVEMENT</u>

| | |
|---|---|
| X | EXCHANGE SCREENS as LINK STATUS PERMITS |
| F8 | CAPTURE AREA |
| = | "        " |
| O | OVERLAY |
| P | PUT/PICKUP (EOR) |
| Sh P | PASTE |

**RETURN** to EXIT

BORDER WILL *RIPPLE* WITH COLOR
WHEN AN AREA IS "CAPTURED".

## ADJUST MODE

PRESS **J** (CTRL J IN TEXT MODE)
<u>RANGED SCROLLING:</u> Use F-KEYS

| | |
|---|---|
| + | INCREASE RANGE BAR |
| - | DECREASE RANGE BAR |

<u>INSERT/DELETE (PUSH/PULL↑↓)</u>

| | |
|---|---|
| C= I | PIXEL INSERT (DOWN) |
| C= U | PIXEL DELETE (UP) |
| C= E | PIXEL ERASE (LINE) |
| CTRL I | ROW INSERT (DOWN) |
| CTRL U | ROW DELETE (UP) |
| CTRL E | ERASE AREA COVERED |

<u>ADJUST'S CAPTURE:</u>

| | |
|---|---|
| = | CAPTURE ROWS (1-4) |
| O | OVERLAY |
| P | PUT/PICKUP (EOR) |
| Sh P | PASTE |

<u>SLANT</u> *SLANT* S͟L͟A͟N͟T :

| | |
|---|---|
| C= F7 | ONE F5/F6 COMBO |
| Sh F8 | EIGHT F5/F6 |

<u>OTHER ADJUST FUNCTIONS:</u>

| | |
|---|---|
| C= > | AUTO ROW SPACER (RELEASE C= TO HALT) |
| CTRL ← | ROLL A ROW (1:1 BAR) |

## PIXEL EDIT MODE

PRESS **F7** FROM ANY MODE

## GRAB MODE

Press **G** from GP Mode

| | |
|---|---|
| 1-6 | CAPTURE AREA to a graphics buffer. |
| CTRL E | ERASE under CURSOR |
| Sh CLR | ROTATE 11x11 AREA |

## ✳PRESS RETURN TO EXIT ANY MODE✳

## MENU SELECTIONS:

| | |
|---|---|
| @ | SEND DISK COMMAND |
| ⌐ OR D | DIRECTORY |
| = | SELECTIVE DIRECTORY |

ANYKEY (BUT RETURN & R/S) TO
TOGGLE SELECTIONS SUCH AS
YES  NO  UP DWN  A B

## DEMOS:

<u>PLAYING:</u>  SHIFT to PAUSE
C= for FAST
Sh C= CTRL to CANCEL

<u>RECORDING:</u>
C= CTRL P  PAUSE CODE
C= CTRL E  ERASE on PLAY

# FGM's SECTIONS

THE HI-RES EDITOR IS AVAILABLE IN ALL SECTIONS.
PIXEL EDIT Mode and GRAB Mode not available in PRINTER.
FGM PROGRAM DISK must be in drive to go between SECTIONS.

## CREATOR  P-54

**USE FOR MOST GENERAL WORK**
LOAD PS/PM/FGM GRAPHICS
LOAD HI-RES & DOODLE FILES
LOAD NEWSROOM PHOTOS & BANNERS
LOAD CHARACTER SETS

SAVE PS/FGM GRAPHICS
SAVE HI-RES & DOODLE FILES
SAVE CHARACTER SETS

CHARACTER EDITOR

## DEMO-ER  P-70

FOR RECORDING/PLAYING DEMOS
LOAD PS/PM/FGM GRAPHICS
LOAD HI-RES & DOODLE FILES
LOAD NEWSROOM PHOTOS & BANNERS
LOAD CHARACTER SETS

RECORD & PLAY DEMOS

*ROTATE* DEMO FOR FULL SCREENS

SAVE HI-RES & DOODLE FILES

## CLIPART  P-76

USE FOR LOADING AND SAVING
COMPATIBLE CLIPART FILES,
SMOOTHING SCREEN AREAS,
AND CONVERTING KOALA FILES.

RANGED SMOOTHING
SAVE CLIPART (RANGED AREAS)
LOAD CLIPART
LOAD KOALA (AS B&W)
LOAD HI-RES, DOODLE, NR
SAVE HI-RES, DOODLE

## PRINTER  P-82

USE FOR PRINTING THE HI-RES
SCREEN(S). MOST OF THE HI-RES
EDITING MODES ARE AVAILABLE.
PIXEL EDIT AND GRAB AREN'T.

LOAD HI-RES SCREENS
  "   DOODLE SCREENS
  "   NEWSROOM PHOTOS
  "   NEWSROOM BANNERS
PRINT ANYTHING ON THE HI-RES
SCREENS, OR FILES FROM DISK.

## PRINT TO DISK  P-94

USE FOR PRINTING A SCREEN OR
SCREENS TO DISK. CREATE STAND-
ALONE FILES WHICH CAN BE
PRINTED BY EPSON COMPATIBLE
PRINTERS. SOME WORD PROCESSORS
CAN IMPORT/PRINT THE FILES
THAT ARE PRINTED TO DISK.

## UTILITIES  P-114

THE "U." FILES LOADED USING THE
LOAD OTHER OPTION OFFER SOME
ADDITIONAL APPLICATIONS; CHANGE
CURSOR/BORDER COLORS, COMPACT
& APPEND DEMOS, INSTALL YOUR
OWN GRAPHICS & CHARACTER SETS,
& WRITE YOUR OWN UTILITIES.

# FGM's HI-RES MODES

## PRESS RETURN TO EXIT ANY MODE

### GP Mode  P-18

**MANIPULATING SCREENS:** REVERSE,
FLIP, INVERT, EXPAND, REDUCE,
STRIP GRAY, LINE BORDERS.

**MANIPULATING GRAPHICS:** REVERSE,
FLIP, INVERT, CROP, FASTEN
GRAPHICS TO SCREENS.

### TEXT Mode  P-24

WRITING TEXT TO THE SCREENS
MANIPULATING 1:1 SCREEN AREAS
MOVING SCREEN AREAS AROUND
STRETCHING SCREEN AREAS
THE DEFINABLE CHARACTER
CHARACTER BORDERS

### GRAB Mode  P-23

USE FOR CAPTURING AREAS OF THE
SCREENS INTO THE GRAPHICS
BUFFERS. CAN THEN BE SAVED FOR
USE IN FGM AND PS, OR FASTENED
TO OTHER AREAS OF THE SCREENS.

ROTATE 11x11 SCREEN AREAS.

### ADJUST Mode  P-38

RANGED SCROLLING, CENTERING
CAPTURE ROWS, OUTLINING
PULL/PUSH ROWS UP/DOWN
STRETCH SCREEN AREAS
SLANT SCREEN AREAS
SCROLLING REGARDLESS OF LINKS.

### TRANSFER Mode  P-44

COPYING HI-RES AREAS AROUND
PATTERNS AND SPECIAL EFFECTS

### PIXEL EDIT  P-35

VIEW/EDIT PIXELS "BLOWN UP"

### SMOOTH Mode  P-77

(ONLY IN CLIPART SECTION)
RANGED SMOOTHING OF SCREEN
CREATE UNUSUAL CHARACTERS

### STRIP GRAY  P-78

A FUNCTION AVAILABLE WHILE IN
GP MODE. USE FOR CONVERTING
KOALA TO HI-RES.