

I P int TM

*Hi-Res Interlaced Color Graphics for the Commodore 128 D **

**Required Hardware:*

Commodore 128D
or
Commodore 128 upgraded to 64K of Video RAM

1351 or Compatible Mouse

1541, 1571 or Compatible Disk Drive

RGBI color or 80-column monochrome Monitor

Also Supports:

COLOR PRINTERS: Star NX-1000 & NX-2400 Rainbow
Okimate 10 & 20
and others!

1700 / 1750 RAM Expansion

1581, RAMLINK, CMD Hard Drive

**640 x 400 pixels
ONSCREEN!
Choose up to 4000
apparent colors from
a theoretical 65,536!**

Written by

Rick Kane

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Serial No.

165992

This LPaint
belongs to:

Notes

Table of Contents

GETTING STARTED	5	PRINT MENU	23
Quick Start Instructions	6	Secondary Address; Density; Height;	
Main Menu	6	Mode (Rotate); Print	
I PAINT IN DEPTH	7	OPTIONS MENU	24
FREEHAND TOOLS:	7	EXIT; Color/Mono; Over/With/Thru/Mask;	
Pen; Brush; Spraycan		Grid;	
SHAPES MENU	8	Crosshair; Wide Mode; Smooth; Micro;	
Shading;		Fields 1 & 2	
Line; Box; Triangle; Circle		CLEAR MENU	26
3-D SOLIDS	10	Halftones, Window, Clear	
Sphere; Toroids; Cylinders; Spools		RAM EXPANSION	27
FILL	11	Pre-loading RAM Disk;	
PALETTE MENU	12	Saving files from RAM Disk	
Color Selection; Color Wash; Ink & Paper		BOOTING I PAINT	29
MAGNIFY	13	Startup Menu; Memory	
AREAS MENU	14	SETUP MENU	30
Safe; OpenSafe; Clip; Paste; Reverse;		Mouse; REU Configuration;	
Flip; Reflect; MakePattern		Printer Parameters; Sample Window;	
DRAW MODE & PATTERNS MENU	16	Load Setup; Save Setup; Paint	
TEXT MENU	16	SYSTEM FILES	32
Direction; Size; Options; Priority;		Setup; Printer Driver; Key File;	
Pattern; Underlining;		Additional Files	
Orientation: Flip, Reflect, Rotate, Upright		FILE COMPATIBILITY	33
Color & Reverse; System Character Sets;		Picture Files; Clip and Pattern Files;	
Keyboard Controls; Function Key Macros		Font Files	
FILE MENU	19	PRINTER DRIVERS	34
DISK Operations	20	General; I PAINT Drivers; Basic 8 Drivers	
Device; Directory; Command		TROUBLESHOOTING	36
FILE Operations	20	INDEX	39
LOAD: Picture, Clip, Pattern, Font,			
Printer Driver			
SAVE: Picture, Clip, Pattern			

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Changes & Clarifications

I Paint v 1.5b / Feb 92

1. LPaint and EARLY 128's

A small number of the earliest 'flat' C128's came with an RGBI controller chip that was slightly different than later models. If it seems like the colors are shifted to one side of the pixels you draw; or in monochrome, you see a vertical band of 'garbage' on one side of the screen, you should run the program 'patch.ip4oldvdc'. It will make a couple of changes that accomodate the early video controller. The changes are permanent, and the patched version will work incorrectly on the later 128's and 128D, so **DO NOT use your original disk!** Make a 'whole disk' copy first. If you're not sure whether you need this patch, you can run it anyway. It won't make the changes if your computer doesn't need them!

2. PRINT: 'MODE a/h' replaces 'ROTATE y/n' (p.23)

If you're familiar with I Paint v1.3, you will notice this change in terminology. Because of size limitations, most I Paint Printer Drivers do not support Basic 8's ROTATE option; rather this is handled through the use of a separate 'landscape' driver. Some drivers, most notably some color drivers, make use of this control to alter printout in other ways. That's why it was renamed. For drivers that DO support rotate as an option, 'MODE A' is the same as version 1.3's 'ROTATE N', and 'MODE B' is identical to 'ROTATE Y'. Some printer .INFO files may still refer to Rotate.

3. MORE on PRINTER DRIVERS (p.34)

I Paint loads the first Printer Driver it finds on the disk; or finding none, it defaults to an Epson driver. Additional Printer Drivers, as well as Fonts, are contained in the file named 'Fonts+Printer1.5'. This is a program which you must load and RUN to extract all the extra Printer Drivers and fonts. You must use a disk with at least 247 blocks free- **DO NOT USE YOUR ORIGINAL DISK!** If you find another driver that is better suited to your printer, make it the first (or only) driver on your work disk.

Several new Printer Drivers have been added; including COLOR drivers for the Star Rainbow printers, the Okimate 10 & 20, and others. In general, almost all of the I Paint Printer Drivers now check the STOP key to allow you to cancel printout. You don't have to hold down the STOP key; just a straightforward press will do. When the printer finishes the current line, it will check if you had pressed the STOP key, and if so, it will end. If you press STOP then change your mind before the printer finishes the line, just press any other key and the printer will continue. With multi-pass Printer Drivers, such as color or high-density 8-pin drivers, the STOP key is only checked at the end of the COMPLETE set of passes.

Most I Paint Printer Drivers have an '.info' file associated with them. Run the program 'READ/PRINT-SEQ' to access that information. Again, note that any driver info files that refer to 'ROTATE N or Y', substitute the new term 'MODE A or B'.

I Paint™

Hi-Res Interlaced Color Graphics for the Commodore 128

System requirements:

Commodore 128D or 128 with 64K video RAM added
1571, 1541 or compatible Disk Drive
1351 or compatible Mouse in port 1
RGBI or 80-column monochrome Monitor
(Commodore 1902, 2002, 1084 series or compatible)

Recommended:

1700, 1764, or 1750 RAM Expansion or compatible
Graphics Printer

FOREWORD

From the first tiny seeds of interlaced information in the summer of 1988 (!), I Paint flowers. While this is not an unusual amount of time for development, it does show that I Paint has not been rushed to the market; and I believe it will prove worth the wait. Because of the deliberate pace of its development, I Paint is much more than "simply" the only commercial program to exploit interlaced graphics on the C-128. It was designed with the artist, computer and otherwise, in mind. From the first, it was intended that you would want I Paint even if it were NOT interlaced. Many features have no analog in any other 8 bit graphics package; some are scarce in the 16-bit world. You will find a rich 'soil' that only seems to get more fertile, the more you work it, the richer the rewards. I wish you many hours of pleasure with I Paint

Meanwhile, I'd like to thank several people for their help and support in bringing as fine a package as we could to 128 users. First, thanks to Loren Lovhaug and Frank Hudson who lent much energy, enthusiasm and expertise to the program and the manual. Thanks also to Lou Wallace and Dave Darus for the excellent programming language "BASIC 8", which is used extensively. Thanks to Fred Bowen at Commodore for quick answers to questions concerning the 128 Operating System and RAMDOS. Finally, thanks to beta testers Nathan Beck (guten tag!) and Curt Meintsma for their valuable input.

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WHY READ THIS?

We know how many computer users work when it comes to using their latest software purchase: pitch the manual off to the side, boot up and go to it! Later they might refer to the manual if they have trouble or a question, but otherwise everything's strictly trial and error.

We have gone to great lengths to make I Paint easy and intuitive to use without having to pore over the manual. However, because I Paint is a powerful product introducing several unique features and concepts to Commodore 128 paint programs, many features almost **REQUIRE** further reading to be fully exploited. By browsing the **TERMS & CONCEPTS** below, you may be spared from searching for answers to fundamental questions. Spending a few minutes with the **TERMS & CONCEPTS** section will save you time and help acquaint you with the I Paint environment. Once you understand the basics of the powerful C-128 interlace mode and I Paint's distinctive mouse/icon operating system, you can move on to the short **GETTING STARTED** section. The **IN DEPTH** section of the manual goes further into the actions of each menu item and is indispensable to full realization of I Paint's power.

TERMS & CONCEPTS

This section will help define the way I Paint works; especially, how it differs from other programs that you may be familiar with.

Most I Paint functions are accessed with the use of the Commodore 1351 mouse (or its equivalents such as the M3 Mouse) with the aid of various menus and gadgets. Therefore we will start by looking at how I Paint makes use of the mouse and both of its buttons.

DOUBLE-CLICK??

Unlike much other mouse-based software, I Paint doesn't use a "double-click" selection method. Instead, a deliberate press of the button is most effective. In the case of an area being outlined or a clip to be pasted, I Paint completes the box outlining the area before checking for a button press. Therefore, you must hold the button for a moment until the outline is drawn and erased. Some actions, such as **Clear**, require you to press a second time to confirm the command. I Paint will normally wait until you release a button before acting (or waiting for a "confirm" click).

WHICH BUTTON DO THEY MEAN?

I Paint utilizes both mouse buttons. This manual will refer to them as [ON] and [OFF], and will refer to "clicking" [ON] or [OFF], meaning to press the corresponding mouse button. The [ON] button is used to select from a menu, set the start/end point for an operation (such as lines & shapes, Areas, Windows, etc.), or to turn on/off **Draw**. The [OFF] button will **Cancel** an operation or switch between the **Draw** screen and the **Menu**.

Which button is which depends on whether you selected a right-handed or left-handed mouse during **Setup**. In general, the [ON] button is under your index finger, and the [OFF] button is under your middle finger. So if you have selected the right-handed mouse in I Paint's



setup, [ON] is the left button and [OFF] is the left; vice-versa for a left-handed mouse. With no setup file, I Paint defaults to a right-handed mouse. See the **Setup** section of this manual for a further discussion of the **Setup** options.

WHERE'S MY POINTER?

On some screens, you may have trouble seeing the pointer, or it may not be visible at all. This happens when the foreground and background colors are close to the same, or at times when the pointer is over a halftone section of screen. In the first case, the pointer may become completely invisible. In the second, the pointer is probably visible, but only as a "ghost" that is difficult to spot unless it's moving. In both cases, one remedy is to use **Crosshairs** to determine your location. For color problems, another is to select **Monochrome Mode**, for those difficult to negotiate areas.

FASTER ACTION

Several factors affect the speed of I Paint's activities; especially **Freehand draw**, **Fill**, **Print**, and **Shapes**. In general, monochrome mode is faster than color. If color isn't needed for a particular action, switching to monochrome mode will speed up the process. Modes that make use of the current selected colors, such as **Pen**, **Brush**, **Spray Can**, and **Shapes**, will work faster if color selection is "off" (no flags for **Ink** or **Paper** color for either field), as explained in the **Palette** section.

MANUAL CONVENTIONS

Both the Return and Enter keys will be referred to as [RETURN] in this manual and perform the same action within I Paint. The CONTROL key will be shown as [CTRL]. Other keys will usually be surrounded by square brackets, like this [KEY'S NAME]. The [ON] and [OFF] buttons on the mouse also will be set off with the square brackets. The Commodore logo key on the lower left of the 128's keyboard is shown as [C=]. In I Paint the [CTRL], [ALT], [SHIFT], and [C=] are held down in combination with another key to perform various special functions. The four C-128 shiftable function keys on the upper right of your 128's keyboard will be referred to as f1, f3, f5 and f7 (the unshifted keys) and F2, F4, F6, and F8 (the same keys with [SHIFT] held down). I Paint icon names and menu selections will usually be highlighted in **boldface** as an aid to finding them in the text and as a way of distinguishing them from normal English words.

JUST WHAT IS INTERLACE?

A video image is made up of horizontal scan lines. For various technical reasons, it is broken into two "fields" of scan lines, with one field displaying the "even" scan lines, the other displaying the "odd" lines. This is what is meant by interlaced; the image of one field appears between the scanlines of the other field. In this manual, Field 1 refers to the "even" scan lines - 2,4,6, etc., which are traced first - and Field 2 refers to the "odd" scanlines - 1,3,5, etc.

On a non-interlaced computer display, only one field is filled with data; the other is blank. On the 80 column screen of the 128, conventional non-interlace mode results in a resolution of 640 x 200 pixels (although it is possible to squeeze more scan lines onto the display of many

monitors). Interlaced mode doubles the number of scan lines holding information, doubling as a result the vertical pixel resolution to 640 x 400 pixels.

WHY DOES IT FLICKER?

Flicker is an inherent attribute of interlace mode displayed on conventional video monitors. One set of scan lines fades out as the other is interlaced in, causing a noticeable variation usually called "flicker". One solution is a high-persistence monitor capable of holding the original scan line image longer as the other set is drawn, but none of the common RGB monitors used on C-128's are high persistence units. In most cases, adjusting the contrast and brightness controls on your monitor can have a significant effect. Turn the contrast **down**, and compensate by bringing the brightness up. Colors that are highly contrasting increase flicker, so sometimes changing screen colors minimizes flicker. True polarizing filters also work very well, but they are relatively expensive. Most readily available and affordable filters are actually non-polarized smoked plexiglass anti-glare, however even these screens will reduce the apparent flicker. To see the effect, try using pair of polarized sunglasses with I Paint (check first that no one's watching you!)

While you're fooling around with your monitor, take the time to adjust you monitor's size and position controls, if it has them. On popular Commodore RGB monitors these controls are usually on the back. Adjust so the draw screen is centered and fills as much of the face of the monitor as possible. Certain RGB monitors do a better job of displaying interlace than others. For example, on the 1902A, some combinations of colors for the two fields have the effect of 'stretching' one field vertically with respect to the other. You may draw a solid line, only to have it appear as two dashed lines, disjointed from itself. This is only a video display problem, and will not affect your output to the printer. To see for yourself, switch to monochrome mode. This problem can be minimized by choosing less-contrasting colors for the two fields and it is never a problem in monochrome. In fact, if your monitor has this "shift", you will see a marked improvement in clarity in monochrome mode. In general, Commodore monitors with the flatter front (the 1902A and some 1084's; and a Magnavox near-1902A clone) have this problem; and the curved-front (1902, 2002, and some 1084's) monitors do not.

HOW MANY COLORS?

On the 128, each field has its own color data, arranged in 8 x 4 interlaced pixel "cells", which is superimposed with the other field's color data, for an effective color cell size of 8 x 8. This allows the mixing 4 of the 16 colors in any combination, vastly increasing the number of apparent colors. How many colors? Note: The answer to this question must by necessity be a little technical. For the non-technically inclined, you may skip ahead to "GETTING STARTED" and return here after experimenting with the **Palette** options in I Paint.

Using a semitone screen so that foreground and background colors are present in a cell produces a theoretical $16(\text{fg1}) \times 16(\text{fg2}) \times 16(\text{bg1}) \times 16(\text{bg2})$ - or 65536 colors. Eliminating all "repeats", where the same 4 colors are used, but reversed as far as field 1/ field 2 or foreground/background, results in 3876 unique combinations. But this isn't entirely fair.

Often, reversing two colors produces a different apparent color because of the particular semitone, or ratio of "on" to "off" pixels, in each field.

Think for a moment about just one field. If it is a 50% semitone, the same number of pixels are "on" (foreground) as "off". Now say your foreground color is red, and your background color is yellow. On this field, the apparent color will be orange. Reversing the colors produces the same apparent orange. However, if the semitone is 75% (foreground), red foreground and yellow background produce a more reddish orange; and reversing the colors makes a more yellowish orange. This technique can be expanded to the two fields of interlace, with a similar but expanded effect. It is possible to clear one field to a certain halftone and the other to a different one (see the section on **Clear**). You can achieve truly startling results using this characteristic.

GETTING STARTED

Before you begin to use I Paint it is a good idea to make a working copy for daily use and place your original disk out of the way for safekeeping. The process of copying your original disk so that it can be stored away is called "Backup". If anything ever happens to your working disk, you always can make another I Paint disk and continue with your work. I Paint is not copy-protected. Therefore registered users can conveniently install I Paint on any CBM compatible drive. **THIS IS NOT A LICENSE TO STEAL!** Copying may be done only for the original owner's personal use; no sharing between several machines or users is allowed without written permission. Upon selling the software to another, the owner agrees to give all originals, backups, and manuals to the purchaser.

So make a backup and put away your original before you go any further! You can use a whole disk copier or a file copier. A copy made with a whole-disk copier will be a bootable disk, like the original. If you use a file copier, first format a blank disk. Next, if you want your backup copy to autoboot run the "boot copier" program found on the I Paint disk, now. Finally copy the following files:

1. "run.ipaint" (should be first file on the copy)
2. The files which have names beginning with "ipaint" (".key*" and ".setup" are optional)
3. RAMDOS ("ramdos128.bin*") which enables I Paint to use a RAM disk with any Commodore-brand RAM Expansion Unit.
4. An optional printer driver. I Paint defaults to an Epson printer driver if none is found on the program disk.

If for some reason you validate (COLLECT) your backup copy, "boot copier" should be used to reprotect the boot sector.

I Paint may be installed to a partition on 1581 and compatible drives (such as a 1581 partition of a CMD hard drive). The partition must be from the root directory (it should not be inside another subdirectory) and must be named "ipaint" (no capital letters or spaces). It must be at least 560 blocks if you intend to include RAMDOS or 520 blocks if you do not. More blocks may be allocated if you wish as a storage area for fonts, etc.; or even to make room for a subdirectory within the "ipaint" subdirectory. See the manual of your drive for more information.

The file "run.ipaint" may be placed outside the subdirectory (usually as the first file on the disk) for easy access, and in the subdirectory (again, usually as the first file) for convenience. It will find the system files either way.

QUICK START INSTRUCTIONS

Plug your mouse into Port 1.

To load, either BOOT the disk or run "*" (or SHIFT/RUN)

After a title screen, you will be presented with these options:

f1 - Start I Paint

f3 - Setup I Paint

f5 - Install RAMDOS and exit to BASIC (if REU is present)

F8 - Exit

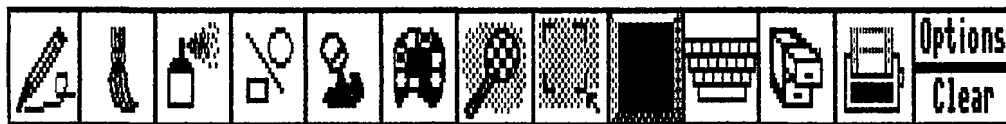
For a complete discussion of the options, see the "I PAINT SETUP" section. For now, press f1. Later you can choose to recognize the extra RAM and select colors. See the sections on RAM Expansion and Setup for further information.

When the title graphic comes on screen, the border cycles through the colors so you know the program is initializing.

After a moment, the disk is accessed once more, and the screen will clear bringing you to the I Paint screen and menu.

MAIN MENU

On entering I Paint, you will be at the **Main Menu**, which appears as follows:



The Pen icon will be reversed, indicating that you are in Pen Mode.

Here is a short description of the functions associated with each icon:

Pen:	draw points and complex curves
Brush:	draw using predefined shapes and halftones
Spray Can:	draw using an "airbrush" effect
Shapes:	2-D shapes and 3-D objects
Fill:	fill an enclosed shape with color, patterns, etc.
Palette:	select colors for draw; re-color (wash) areas
Magnify:	pixel editing of an enlargement
Areas:	define Clip , Paste , and Safe areas
Drawmode:	select Draw , Erase , or Pattern
Text:	place text on screen
Files:	all disk access
Print:	make hard copy of your work
Options:	Exit ; color/monochrome; affect of Draw and Paste on existing image; field-specific draw for "superimpose" effect; Grid select; Crosshair select; Wide , Smooth , and Micro drawing
Clear:	clear entire screen or a "window" to shades from 0% to 100%

I PAINT IN DEPTH

The following discussion of I Paint features is ordered in the same manner as the icons on I Paint's **Main Menu** bar.

When an entry in this section advises you to "See also:" it means that the operation of that command is modified by the settings possible through other menus, submenus or commands. Refer to the suggested areas for more information pertinent to the workings of the command you are concerned with.

FREEHAND DRAWING TOOLS

There are three modes of freehand drawing: **Pen**, **Brush**, and **Spray Can** each of which has its own I Paint icon. They operate similarly. Each remains in effect until one of the others is selected, and you will be returned to the current freehand mode after any of the other operations in the **Main Menu**. This allows you to select colors, drawmodes, even do clip, paste, fill or disk activities while maintaining your choice of Freehand mode. When one of the freehand modes is selected, the mode will change and its icon will replace the currently highlighted one, but you will remain on the **Main Menu** until you click [OFF].

PEN

After clicking [ON] the **Pen** icon, or on first arriving at the **Main Menu**, click [OFF]. The **Main Menu** will scroll off the screen and you will have an arrow pointer. You now have



freehand control over drawing. When you click [ON], you will hear a rising beep and the border will flash, and you are in **Draw Mode**. The arrow will disappear. Moving the mouse will now draw on (or erase from) the screen. Click [ON] again and you will "lift" the pen, returning to the transparent arrow pointer. **Pen Mode** can draw either individual dots or a smoothly connected curve, dependant on the setting of the **Smooth** option. Click [OFF] for the **Main Menu**. As in most modes, your pointer position on the draw screen will be remembered, as will your last menu position as you go back and forth.

See also:

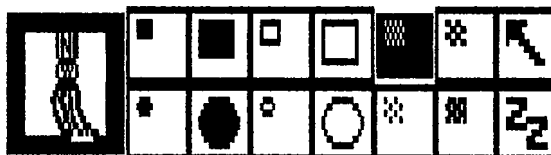
OPTIONS Over/Thru Grid/Cross Wide/Smooth/Micro Fields

DRAW MODE Draw/Erase/Patterns

PALETTE

BRUSH

When you click [ON] the **Brush** icon, you will be presented with the **Brush Menu**:



The current brush will be highlighted, and the pointer will change to that brush. Click [ON] a brush, and the pointer will change to your selected brush. Then click [OFF] and the **Brush Menu** will disappear, allowing you to select from other **Main Menu** items such as **Palette**, **Draw Mode**, **Options**, and **Clear** before moving on. With the **Brush Submenu** off, the pointer appears normal on the **Main Menu**. When you are ready, click [OFF] again to go to the **Draw** screen. As with **Pen**, your pointer does nothing until you click [ON] **Draw**, which puts you in **Draw Mode**. Click [ON] **Draw** again to "lift" the brush. Click [OFF] for the **Main Menu**. To select a different brush, click [ON] the **Brush** icon again.

See also:

OPTIONS Over/Thru Grid/Cross Fields

DRAW MODE Draw/Erase

PALETTE



SPRAY CAN

Click [ON] the **Spray Can** icon, and it will highlight. Then, when done in the **Main Menu**, click [OFF] to begin drawing. Like **Pen** and **Brush**, **Spray Can** drawing is toggled by the [ON] button. From the draw screen, click [OFF] for the **Main Menu**.

See also:

OPTIONS Over/Thru Grid Fields

DRAW MODE Draw/Erase



SHAPES

Clicking [ON] the **Shapes** icon on the **Main Menu** brings up the **Shapes Menu**.



SHADING

If you click [ON] the **Shading** icon on the far right, 3-D solid shading will switch between textured and halftone. Any **Shape** selection will bring you to the **Draw** screen.



LINE

Click [ON] the starting point for a **Line**. Move to the end point, stretching a line from the start point. Click [ON] to draw the line, or click [OFF] to choose a new start point. You will be in Line Mode until you click [OFF] (while the pointer is on screen) to get to the **Shapes Menu**.

See also:

OPTIONS Over/Thru Grid/Cross Wide Fields

DRAW MODE Draw/Erase Patterns

PALETTE



BOX

Click [ON] one corner of the box, then stretch out a box to the size and shape you want and click [ON], or click [OFF] to choose a new starting corner. You will be in Box Mode until you click [OFF] to get to the **Shapes Menu**.

See also:

OPTIONS Over/Thru Grid/Cross Wide Fields

DRAW MODE Draw/Erase

PALETTE



TRIANGLE

Click [ON] the first point of the triangle. Then a line will stretch out until you click [ON] the second point. Then stretch a triangle from the first two points and click [ON] the third point. At any point before selecting the third point, you can click [OFF] to eliminate your first & second points. You will be in Triangle Mode until you click [OFF] when the pointer is on screen to get to the **Shapes Menu**.

See also:

OPTIONS Over/Thru Grid/Cross Wide Fields

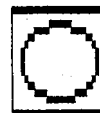
DRAW MODE Draw/Erase

PALETTE



CIRCLE

Click [ON] the center of the circle. Stretch a radius line and click [ON] the desired size, or click [OFF] to pick a new center. Once selected, a circle will be drawn and you will be returned to the **Shapes Menu** after drawing is complete.



Due to the way BASIC 8 handles scaling, circles drawn in **Wide** mode have different

proportions than circles in normal mode. You may wish to use this to your advantage if you have a hard time getting round circles on your printer.

See also:

OPTIONS Over/Thru Grid/Cross Wide Fields

DRAW MODE Draw/Erase

PALETTE

3-D SOLIDS

The complex nature of the 3-D solids (except the sphere) forces the sizing procedure to be a bit more involved. While similar to that for the line-draw shapes, they require a little practice to get used to. They are also easier to demonstrate than to describe. The dimensioning tool is comprised of a vertical and a horizontal line segment, starting from the center of the shape. The following shapes have their tools superimposed.



In each case, you click [ON] to set the center of the solid, then stretch the selection tool to set the dimensions and click [ON] again.

Solids rendering takes place on screen if **Wide** is selected under **Options**. **Color** will reflect both field's color settings. If **Wide** is not selected, there will be a pause while an off-screen workspace is prepared. An interlaced solid will be synthesized and placed on screen. This can take some time, and if you are in color mode, you may see color changes and other activity in the margins of the screen. The color of an interlaced solid and its background will be taken from field 1's settings, but can later be re-colored in the interlace mix of field 1 and field 2 colors.



SPHERE

Sphere works much the same as **Circle**. Click [ON] the center of the sphere. Stretch a radius line and click [ON] at the desired size, or click [OFF] to pick a new center. Once selected, a sphere will be drawn and you will be returned to the **Shapes Menu** when drawing is complete.



TOROIDS

Toroids are like an inner tube or a doughnut. You can select one of three views: top view, side view vertical, and side view horizontal. Note the 3-D Solids graphic to see how the toroid's dimensions are determined.



CYLINDERS

Cylinders can be selected in either vertical or horizontal orientations. Note the 3-D Solids graphic to see how the cylinder's dimensions are set.

SPOOLS

Spools may be most easily described as the "hole" to the **Toroid's** "doughnut". Or imagine a rope pulley. Horizontal and vertical orientations are provided. Dimensioning is actually the same as for the corresponding **Toroid**, as shown in the 3-D Solids graphic.

See also:

OPTIONS Grid/Cross Wide Fields

DRAW MODE Patterns

PALETTE



FILL

Fill allows you to "pour" into an empty, closed space using a pattern or the **Draw** and **Erase** Modes. The area to be filled must be fully enclosed for each drawfield to be filled, or the **Fill** will "leak" out uncontrollably; usually with disastrous results. So it is wisest to be sure the area is drawn in **Wide** (for shapes) or **Smooth** (for **Pen**) Mode, with **Over** or **With** selected. Refer to the "**OPTIONS**" section for more information on **Wide** and **Smooth**. If you are not sure about the integrity of the area you want to fill, it may be possible to draw a **Wide** box outside the suspect area before using **Fill**. This would act as a "dam" to contain the damage caused by a runaway fill. Also, be sure to take advantage of the **Safe** function (under **Areas**) to recover, should the area not be a perfectly closed space.



To use **Fill**, click [ON] its icon on the **Main Menu** bar. You will be transferred to the **Draw** screen. The word "**FILL**" will appear below the pointer to indicate that you are in **Fill** Mode rather than a freehand mode. Move the pointer to the interior of the shape you want to fill and click [ON] again. Using patterns and filling irregular shapes can take a while. When done, you can fill another area, or click [OFF] to bring up the menu. **Fill** respects the color selections made in the **Palette**, but in a special way. If the pattern used for **Fill** lacks a color of its own, (either it was made from a monochrome clip, or you are using **Draw**, **Erase**, or one of the system patterns), it will use the colors as set in **Palette**. If it was made from a color clip, however, it will use its own colors; but it will use only those that are flagged "on" in the **Palette**. For instance, you have a clip with red and blue **Ink** colors and green and white **Paper** colors. If you have no colors flagged, **Fill** will use the colors found in the area to be filled. If you have only **Ink** colors set, or just one **Ink** and one **Paper** color, or whatever, **Fill** will respect your choices, but using the pattern's colors.

Notes: if an area will not fill, it may only appear empty because of its color, but actually be a filled-in (foreground) space. You can check this by toggling to monochrome. **Fill** can be used in **Erase Mode**, with interesting results. It allows you to fill an empty irregular area with background color, leaving its bitmap data alone. Filling, especially with a complex pattern to follow, can take quite a while. Monochrome patterns fill faster than color ones; and monochrome mode fills are much faster than color mode. Turning color selections [OFF] in the **Palette** also speeds up fills.

See also:

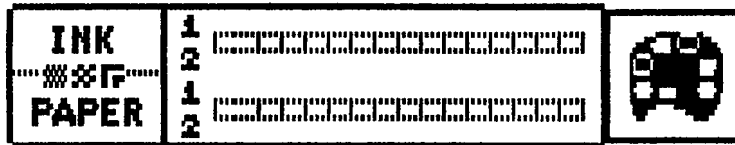
OPTIONS Fields Color/Monochrome DRAW MODE Draw/Erase/Patterns

PALETTE



PALETTE

When you click [ON] the **Palette** icon on the **Main Menu**, the **Palette Submenu** is called up:



Clicking [OFF] removes the **Palette Submenu**.

In **Color Mode**, **Ink** (foreground) and **Paper** (background) colors are initially selected for both fields of the interlace screen, and are "flagged" above or below the appropriate color in the color bar.

The upper color bar shows the **Ink** selections, the lower bar the **Paper** color. In each case, clicking [ON] just above the **Ink** or **Paper** color bar affects the corresponding field 1 color, and below the bar changes the field 2 value. As you change these selections, the resulting colors are displayed in the **Ink/Paper** icon area. If no flag is present for a given field's **Ink** or **Paper** color, that selection is "off", and I Paint will use the color already present in the affected location when drawing.

In **Monochrome**, the color bars do not, indeed cannot, display the colors available. Instead, the selected colors are flagged at the position of each color in color mode; that is, from left to right, black, dark grey, light grey, white, dark blue, light blue, dark green, light green, dark cyan, light cyan, dark red, light red, dark purple, light purple, brown, and yellow. Field 1 and field 2 values are the same, so both fields' flags are set. To change color selections, click [ON], just above, or just below the **Ink** or **Paper** color bar. The entire screen changes color immediately. It is impossible to select the same value for **Ink** and **Paper**, so you are never left blind.

The **Ink**, **Paper**, and **Palette** (with the submenu showing) icons are active only in **Color Mode**.



PALETTE (COLOR WASH MODE)

Clicking [ON] the **Palette** tool after bringing up the **Palette Submenu** chooses **Color Wash Mode**, which allows you to change colors without affecting bitmap data. You will be dropped onto the draw screen, where you select the size area for "washing". A box will be displayed with the pointer. If it is the size you want for re-coloring areas, click [OFF] once, and that size area is selected. If it is not the size you want, click [ON]. The upper right corner of the box will remain stationary, and the pointer will "carry" the lower right corner of the box. Click [ON] when you have stretched the size and shape box you want. The box will now move around the screen. Clicking [ON] now changes the color inside the box to your new colors. Click [OFF] to return to the **Palette Submenu**.

INK AND PAPER

These tools are particularly powerful, and therefore somewhat complex. They determine where the colors for drawing will be taken from. The effects that can be generated using various combinations of coloring are well worth a little experimentation. If both **Ink** and **Paper** colors are chosen for each field, (four "flags" are displayed), the **Ink/Paper** area will display this color combination. If any of the flags are turned "off" as detailed below, that component of the color combination comes from the corresponding color currently under the **Draw** screen pointer (where you last left it before returning to the **Menu**).



Clicking [ON] **Ink** while both fields' colors are flagged turns off the flags. If any **Paper** colors were flagged, they, too, will be turned off, as it is not possible to **Draw** using a **Paper** color only. The **Ink/Paper** icon will change to the colors under the last pointer position on the screen. **I Paint** will now use the colors it finds rather than specific colors. This can be useful where several colors are close to one another on screen and you don't want them to change. Clicking [ON] **Ink** now will make the current icon foreground colors the selected **Ink** colors, but it will leave the **Paper** colors alone. You can instead make a selection of either an **Ink** or **Paper** color, as explained below; after which clicking **Ink** would flag the remaining **Ink** color from that in the icon.

Clicking [ON] **Paper** either turns off the flags for **Paper** color (if both fields' **Paper** colors were flagged "on") or flags "on" whichever **Paper** color was off. As with **Ink**, the color flagged back on is that which is currently under the draw pointer. The corresponding **Ink** colors will be flagged back on if they were off.

When some colors are not flagged "on", selecting one of those un-flagged will select that color. You may specify **Ink** color and not **Paper** color, but not the other way around. If you select a **Paper** color when the **Ink** color for that field is "off", the icon's **Ink** color (for that field) becomes selected and flagged. Again, this is because it isn't possible to draw in a **Paper** color only. Any unselected colors will be taken from the screen on subsequent drawing. Many interesting color combinations result from leaving some selections "off" while drawing.

Note: You can pick your colors from those existing on the screen. Just position your pointer on the color you want next before clicking [OFF] to the **Main Menu**. Bring up the **Palette Menu**, then click [ON] the **Ink** icon until all color flags are "off". Then, turn colors back on, using **Ink** if you only wanted the **Ink** colors under your pointer, or **Paper** for all.

MAGNIFY

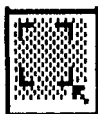
Note: If you are not using expansion RAM for **I Paint**, both **Safe** and **Clip** areas will be destroyed if you magnify an area. Also if an especially large custom pattern has been made, **Magnify** cannot take place. A tone will sound and you will be returned to the menu without further action. You will need to clip a small area and make a custom pattern from that in order to magnify. This applies to non-expanded systems only.



Clicking [ON] **Magnify** on the **Main Menu** returns you to the **Draw** screen, with a rectangle

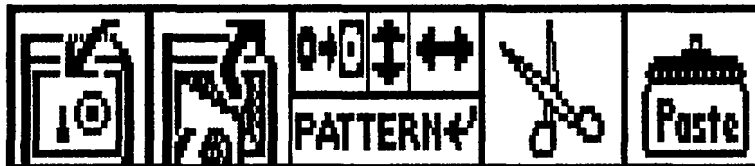
showing the area to be magnified. Move around and click [ON] the area of interest, or click [OFF] to exit to the **Main Menu**.

After selection, there will be a pause and color data may appear off the top of the draw screen, then the **Magnify** work area will appear. If instead you are returned to the **Menu** see the note on non-expanded operation above. The work area will be on either the right or left, to avoid covering the normal view of the area magnified. Grid lines are superimposed on the magnified image to define the edges of 8 x 8 color cells. This can be very helpful in smoothing the edges of a color boundary. All changes made in **Magnify** are automatically registered on the normal screen, so you can better visualize the effect on your work. You can move the pointer anywhere within the **Magnify** workspace. Clicking [ON] enters draw mode. You will see a flash and hear an up-sweeping sound. The effect of draw mode is determined by the state of the magnified pixel under the pointer. If the pixel was set on (**Ink** color), it will be reset off; and moving around will reset to off any pixels it finds on. If the initial pixel was off (**Paper** color), it will be turned on and the pointer will only turn on those pixels it finds off. Click [ON] to return to pointer only. Clicking [ON] the **Undo** icon will return the present area to its original condition and redraw the **Magnify** workspace. Clicking [OFF], or clicking [ON] the **Exit** icon, will return to the draw screen to select a new area to magnify. Clicking [OFF] again at this point will return to the **Main Menu** (after a pause to reconfigure the workspace).



AREAS

Areas concerns rectangular areas of the screen. When the **Areas** icon on the **Main Menu** is clicked [ON], the **Areas Submenu** appears:



Note: If you are not using expansion RAM for I Paint, the **Safe**, **Clip**, and **Pattern** areas must be shared. The size of the clip that can be made is determined by the amount of memory used by the custom pattern and the **Safe** area. You cannot make a **Safe** area or a **Clip** as large as the entire screen. Creating a **Safe** area will cancel (wipe-out) a **Clip**. Creating a **Pattern** from a clip will cancel the **Clip** and any **Safe** area. If you create a fairly large **Safe** area, or a **Pattern** from a large clip, you may not be able to clip as large as you want. Magnifying an area will cancel **Safe** and **Clip** (without RAM Expansion), which may give you the room you need. However **Magnify** will not work if the custom pattern is especially large. You may make a new **Pattern** from a very small clip (especially, working in monochrome) to free up space. Again, these concerns are only for users with no RAM expansion.

SAFE



Any area of the screen can be declared **Safe**, so that any changes concerning that area can be un-done. Click [ON] the **Safe** icon and you will have control of a box with the pointer in the

upper left. Click [ON] when you have positioned that corner where you want it. The pointer will move to the lower right; click [OFF] to set a different upper left corner, or stretch the box to the dimensions you want and click [ON]. You will be limited in the size of this area if you are not using RAM expansion. The area will be put into the **Safe**, the **Areas Menu** will return, with the **Safe** icon reversed.

OPEN SAFE

Clicking [ON] the **Open Safe** icon will restore the **Area** previously made **Safe**. It is non-destructive; that is, you can restore the area as often as you like (except on unexpanded 128's as noted above).



CLIP

Clip works exactly like **Safe**. If an area has been clipped successfully, the **Clip** icon (scissors) will be reversed. The defined area can be acted on before and during its eventual return to the screen. Read on.



PASTE

To return a **Clip** to the screen, you **Paste** it. If there is no clip, nothing will happen. Click [ON] **Paste** and you will be presented with a box on the draw screen. Its size is the same as the clip. Just move where you want, and click [ON] to **Paste**, or [OFF] to the **Areas Menu**. The box may be partially off screen. Several controls under **Options: Over, With, Thru, Mask** and **Fields 1-2** affect the way the **Paste** interacts with what's already on screen at that point. Please refer to the **Options** Section.



REVERSE

Clicking [ON] this reverses the bitmap of the **Clip**. This may be very useful for a number of reasons. One is to get correct output from your printer, with black printing black, etc. Another might be to create a darker or lighter version of a pattern. The **Reverse** icon remains highlighted until you re-reverse, cut, or load a clip, to indicate that you have reversed the bitmap of the clip.



FLIP

Clicking [ON] **Flip** reverses the top and bottom of a **Clip**. Left-to-right orientation is unaffected. The **Flip** icon remains highlighted until you re-flip the clip, or cut or load another clip; indicating that you have flipped the clip.



REFLECT

Works like **Flip**, but the resulting **Clip** is left-to-right reversed, like looking in a bathroom mirror. The **Reflect** icon remains highlighted until you re-reflect the clip, or cut or load another clip; indicating that you have reflected the clip.



MAKE PATTERN

Any area that can be clipped can, within memory constraints, be made into a **Pattern**, which can then be used as a template for drawing and fills. Click [ON] the **Make Pattern** icon to begin. It will reverse, and there will be a pause while the **Pattern** and its icon for the **Draw**

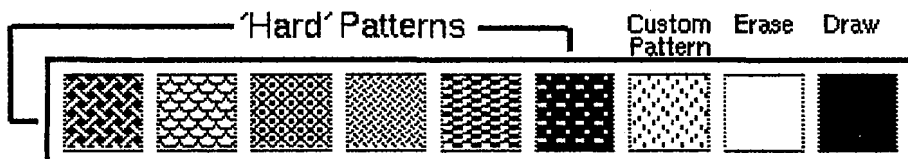


Mode Menu are created. When done, a portion of the **Pattern** will be visible in the **Draw Mode** icon, signaling that it is now the working **Pattern**. Only one custom **Pattern** is possible at a time. If you are working without RAM expansion, the source clip will be used up. If you are using RAM expansion, the clip may be larger than the space available for a pattern. In this case, no pattern is created.



DRAW MODE (& PATTERNS)

Clicking [ON] the **Draw Mode** icon on the **Main Menu** brings up the **Draw Mode Submenu**:

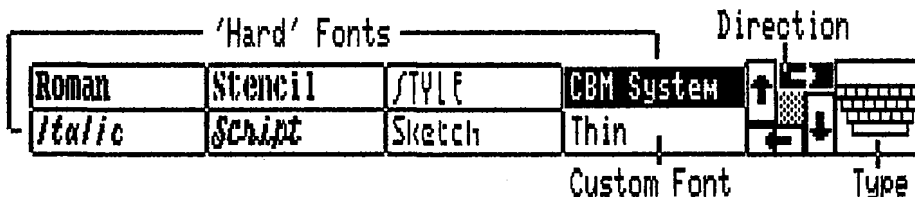


Clicking [ON] an icon from the **Draw Mode Submenu** causes most subsequent drawing to conform to the **Pattern** or **Draw/Erase Mode** selected. Click [OFF] to return to the **Main Menu**.



TEXT

Click [ON] the **Type** icon on the **Main Menu** and the **Text Submenu** appears:



There are six "hard" fonts, the system font, and one loadable "custom" font. Refer to the **File** section for information on loading a font to the custom slot. Make the choices you wish as far as desired font and text direction, then click [ON] **Type** again to commence placing text on the screen. If you click [OFF], you will return to the **Main Menu**. If you have used large-sized text, there may be a pause before the **Main Menu** and pointer control return.

You can begin typing on the draw screen right away, at the position of the pointer, and text size will be as you last used it (or 8 x 8). Clicking [OFF] from the draw screen returns to the **Text Submenu**.

TEXT DIRECTION

Text will advance in the direction of the selected direction arrow. The cursor keys will work, except that they will be oriented to the selected direction. In other words, a cursor right will move in the direction of text, cursor down will advance to the next line, etc. Text direction can be changed without returning to the submenu by pressing [ALT] and one of the **ARROW** keys (the group of four cursor keys above the main keys).



TEXT SIZE

Size of characters is chosen by clicking [ON] while on the draw screen. A box will appear, showing the current size of text. Click [ON] to set the upper left corner, then click [ON] again after stretching the box to the desired size. You may reposition your pointer if necessary.

OPTIONS IN TEXT MODE

Text rendering can be modified with several options.

PRIORITY (Over, With, Thru, and Mask)

Your text's priority - how it is drawn with respect to what's underneath it - can be changed to one of these four modes. **Over** ([CTRL]-o) replaces the data at the pointer position with the text character. **With** ([CTRL]-w) places text without disturbing what's underneath. **Thru** ([CTRL]-h) changes the bits it encounters: those on are turned off and vice versa. **Mask** ([CTRL]-a) only draws where it finds on bits already. **Thru** is also known as "XOR", for exclusive-or; **Mask** is called "AND". If you desire further information about this type of bit manipulation, refer to the Commodore 128 Programmer's Reference Guide or numerous other books on programming. These modes are discussed further in the **Options** section. Text starts in the draw mode selected in **Options**, but can be changed without exiting with the keyboard [CTRL] commands.

PATTERN

Text also can be rendered in a **Pattern Mode**, where its data is derived from, but not identical to, the selected **Pattern**. **Pattern** selection in the **Main Menu** has no effect, however. You must select (or de-select) **Pattern** in **Text Mode** by typing [CTRL]-p.

UNDERLINING

Underlining is toggled with [CTRL]-u.

ORIENTATION (Flip Reflect Rotate Unrotate)

The orientation of text with respect to normal can be changed with [CTRL]-f (**Flip** upside down), [CTRL]-z (**Reflect** left-to-right), [CTRL]-j (**Rotate** 90 degrees left), [CTRL]-k (**Rotate** 90 degrees right), and [CTRL]-y (**Unrotate**). **Pattern**, **Underline**, **Flip**, **Reflect**, and **Rotate** will be set off by returning to the **Text Menu**. So if you change fonts or text direction, you will need to reinstate any of those options that you want.

COLOR AND REVERSE

Color as well as reverse characters can be chosen using the standard [CTRL] and [C=] combinations as displayed on the keys. Background color can be selected using [ALT] with the [CTRL] or [C=] combination, but must be re-selected after foreground color is selected. Pressing [CTRL]-c cancels color, using the color under the text.

SYSTEM CHARACTER SETS

Pressing [SHIFT] and [C=] together toggles between Upper/Lowercase and Uppercase/Graphics character sets in the system font, the same as under normal conditions.

All graphic symbols on the keys can be accessed in one or the other sets using [SHIFT] or [C=] and the appropriate key.

KEYBOARD CONTROLS

Many features of **Text Mode** can be accessed through keyboard commands. These are active only when actually on the draw screen in **Text Mode**. In addition, the default "ipaint.keys" file has been pre-defined with some of the keyboard commands. You may find that you prefer a different setup for your function keys; just redefine them as you see fit. Any combination, with the exception of [ALT] keys and [C=] [SHIFT], may be performed by the function keys. A discussion of how to redefine the function keys follows below.

Here is a summary of keyboard controls and the default function key equivalents:

[CTRL]	[C=]	[ALT]	FKEY	Selects...
	[SHIFT]			Upper/Lowercase or Graphics
1-8	1-8			Ink Color
1-8	1-8	1-8		Paper Color ([ALT] + [CTRL] or [C=])
9,0				Reverse On/Off
n				No Color
o				Over
a			f1	mAsk (logical AND)
w			f3	With (logical OR)
h			f5	tHru (logical XOR)
p			f7	Pattern On/Off
u				Underline On/Off
				Text direction and orientation
f		Arrows		Flip top-to-bottom
z			F2	Reflect left-to-right
j			F4	Rotate left 90 degrees
k			F6	Rotate right 90 degrees
y			F8	Reset upright (un-rotate)

FUNCTION KEY MACROS FOR TEXT MODE

If you wish, you can redefine the function key macros to suit your needs. Maybe you would like to pre-set some text that you will be retyping many times; or you might want to assign a specific color combination, or other text effect, to a particular key. Any controls that can be accessed from the keyboard can be assigned to a function key, except those that use the [ALT] key or the [C=] [SHIFT] combination. In fact, the [SHIFT-RUN] key and [HELP] key are also definable function keys, but they cannot be changed with the BASIC KEY command. Their treatment is beyond the scope of this manual. Defining function keys takes place in BASIC, before you boot I Paint. If you want to use the default keys as a starting point, you may load the definitions first by typing: (do not use upper case)

```
load"ipaint.key*",p4096
```

Now, you can redefine a key with the BASIC 7 KEY command. For example, to assign underline ([CTRL]-u) to function key 1, you would type, in lower case:

```
key 1,"(control-u)"
```

Defining a key to include color information is a bit more complicated. You use the [CTRL] and [C=] keys as usual for the appropriate screen colors. The first code in the macro should be the foreground color, followed by the background color. If you define a key with just one color, the background color will be unaffected as text is typed. Often, this is exactly what you want; a colored letter on the existing background. You can even mix text and color or style codes in the same macro. Some examples:

```
key 3,"[CTRL]-3" = red text.
```

```
key 5,"[C=]-7 [CTRL]-8" = light blue text on a yellow background.
```

```
key 6,"[C=]-7 lt.blue [C=]-7 [C=]-6 on [CTRL]-u lt.green" = underlined.
```

To save your function keys for use by I Paint, type (lower case):

```
bsave "ipaint.key-----", b0, p4096 to p4352, u(drive#)
```

FILE

The File Submenu appears when the File icon on the Main Menu is clicked [ON]:



File operations are quite extensive. I Paint recognizes drives 8 to 15, plus Commodore's RAMDrive (using RAMDOS 128), but will not select a drive that is not present.

We have allowed unfettered use of a drive's command channel, so you can access all features

of any Commodore compatible drive (such as partitions on the 1581 or CMD hard drive, "side" commands with a 1571), including hard drives.

Note: Always use different names for your disks. I Paint reads a disk's directory once, then checks the disk's name against the current disk. If the names are the same, I Paint assumes the same disk and files are present (even on a different drive). This could cause trouble with subsequent loads & saves. Though sending a disk command or saving a file forces I Paint to read the true directory, it is best to create different names for disks.

DEVICE

Click [ON] **Device** to change the current drive to the next higher numbered unit. Devices 8-15 are supported, plus RAMDOS. After the highest physical device, RAM is selected (if present), otherwise the process starts over with drive 8.

DIRECTORY

Displays a disk directory, six entries at a time. To see more files, click [ON] the **Down Arrow**; back up with the **Up Arrow**. Click [OFF] to remove the directory from the menu. If a problem occurs with a disk, the disk drive's error message will be displayed, and clicking [OFF] will remove the message.

COMMAND

When you click [ON] **Command**, a disk command window will appear in the **File Menu**, with a flashing cursor. To read the disk error channel, just press [RETURN] or click [ON]. The message will appear in the window. Click [OFF] to resume. To send a command, enter the DOS command. Consult the manual that came with your drive for available commands and syntax. You can format disks, scratch files, validate, change 1581 subdirectories, etc. Double quotes and \$ are not allowed, but full pattern matching may be used with the "?", "*", and "." characters. After a command, the drive's message is displayed. Click [OFF] to resume.

LOAD

To load a file, click [ON] **Load**, then click [ON] the type of file: **Picture**, **Clip**, **Pattern**, **Font**, or **Printer Driver**. Then follow the appropriate section below.

Picture

A box will appear and you must select which type of picture file. I Paint will recognize three types of picture files: I Paint's native format, BASIC 8, and Lacemaker. I Paint and BASIC 8 "brus" formats are essentially compatible, although I Paint files have a shorter prefix (ip.). See "FILE COMPATIBILITY" for more details. If you choose BASIC 8, you must then answer whether to look for files with the prefix "pict." or "brus.". Lacemaker files are a format created by Lacemaker, a graphics converter package that creates interlace graphics from a clipping it gets from many standard file formats. At this point, a menu displaying the available files is displayed. Click [ON] the **Down** or **Up** arrows to see next or previous pages. Click [ON] the file you want. The file, assuming it is actually the right type and not just named wrong, will replace whatever is on the screen. If the file is only part of a screen, it will be loaded starting at the upper left. When loading finishes, the **File Menu** will return.

Note: If it is a monochrome picture, color from the old picture will not be cleared. You can do this by clearing the screen first (with color on), or do it after loading by re-coloring the entire screen from the **Palette Menu**. If you are in monochrome, the color data from a color picture file will not be loaded. Switch to color mode if you wish to use the picture in color.

See also:

OPTIONS Color/Monochrome

Clip

Clicking [ON] **Clip** will bring up a page of eight names, the same as picture loading. Click [OFF] to exit, or make your choice and the clip will be loaded. Any previous clip is replaced.

Note: Clips as large as the full screen may be made with RAM expansion. If RAM expansion is nonexistent or de-selected, larger clips may not load into I Paint's **Clip Buffer**. This is especially possible if a complex **Pattern** is in memory or a sizable **Safe** area has been defined. You can try to fit the clip into the buffer by magnifying an area (which eliminates the current **Safe** and **Clip** with no expansion), or by creating a simple **Pattern** from a smaller **Clip**. The smallest possible clip for a **Pattern** would be an 8 x 2 monochrome clear area. RAMDOS cannot load a clip into the expansion **Clip** area. The error message "Can't Load from RAMDOS" will appear.

See also:

AREAS Clip

RAM EXPANSION

Pattern

Clicking [ON] **Pattern** also brings up a page of eight names. Your choice is loaded into the **Pattern Area**. It will take a moment to create an icon based on the pattern, then the **File Menu** will return. The **Pattern** is not automatically selected by this process, as it is in **Make Pattern**. However, the new pattern's icon will replace the **Custom Pattern** within the **Draw Mode Menu**.

See also:

AREAS Make Pattern

DRAWMODE

Font

Click [ON] **Font**, then click [ON] the desired font from the names menu. The font will be loaded. If all goes well, no message will be shown; but the new font will take its place in the **Custom Font** slot in the **Type Submenu**.

See also:

TEXT

Printer Drivers

I Paint recognizes two kinds of printer drivers: I Paint and BASIC 8. I Paint drivers are designed to work faster and more efficiently with the interlace image, while the BASIC 8 drivers are accommodated - for reasons of their diversity and availability - through a fair amount of bitmap gymnastics. The picture must be dissected and reconstructed in a way that the BASIC 8 drivers can understand, then reconstituted into its interlaced form. I Paint

drivers have the prefix "p.lp-" and BASIC 8 drivers use "p.hc-". On bootup, I Paint defaults to the Epson I Paint driver. When you click [ON] **Printer Driver**, you have the choice of these two formats, followed by the names menu of available printer drivers. The chosen driver will be loaded, and its name will be displayed in the **Print Menu**. If all goes well, no error will be reported.

See also:

PRINT

SAVE

To save a file, click [ON] **SAVE**, then the appropriate file type. You can save **Picture**, **Clip**, and **Pattern** files. Follow the appropriate section below for each.

Picture

You will be presented with the choice of saving in I Paint or Lacemaker formats. Both are format-compatible with BASIC 8, but will produce very different results if displayed on standard BASIC 8 screens. Lacemaker format is provided mainly for owners of "Lacemaker 128 - The Interlace Utilities Workshop", and will be of little concern to others. Whichever format you select, you may choose compressed or uncompressed storage. Much disk space and load time can be saved by using compressed format; but you may elect uncompressed in order to make conversion to other formats simpler. Next you will be asked to enter a name. The last name accessed, if there is one, will be the suggested response. You must change the name somewhat, because I Paint will not overwrite the previous file. However, different file types may share a name, because the prefix (not shown) is different. Press [RETURN] or click [ON] when the name is correct; or [OFF] to exit. If you clicked [ON] **I Paint** format, you will now be asked to decide to save the **Whole** screen or a **Part**. Click [ON] **Whole** and the save begins; click [ON] **Part** and you must define the area in the same manner as with a **Clip**, after which the save will begin. If there is an error, it will be reported on the **File Menu**; click [OFF] to continue.

Note: if saved from monochrome mode, the saved picture will have no color information saved with it. Conversely, a monochrome image, if saved from color mode, will have the color data attached to it.

Clip

Click [ON] **Clip** and you will be prompted for a name. Click [OFF] to exit, or enter a name and press [RETURN] or click [ON]. The clip will be saved, unless you receive an error message.

Note: If you have RAM expansion, and the RAM Drive is selected, you will get the message: "Can't Save To RAMDOS". Click [OFF]. I Paint cannot save clips to the RAM drive. Select a physical drive in this case. See the note below **Pattern** for information about **Color** and **Clips**.

Pattern

Only the **Custom Pattern** may be saved. Due to differences in the operation of the RAM

drive, patterns cannot be saved to RAM disk. You will get the message "Can't Save to RAMDOS". Select a physical drive for saving patterns. Click [ON] **Pattern** and you will be prompted for a name. Click [OFF] to exit, or enter a name and press [RETURN] or click [ON]. The pattern is saved unless there is an error message. See the note below for information about color.

Note: unlike pictures, the state of color/monochrome does not affect saving of clips and patterns. They are saved in the mode they were created.

See also:

OPTIONS Color/Monochrome

RAM EXPANSION

PRINT

Click [ON] the **PRINT** icon on the Main Menu to bring up the Print Submenu:



Printer: epson	sec.addr: 5	density: 5	
	height: 1	mode: a	

The current printer driver is displayed. If an I Paint driver is installed, its name will be reversed video. Four options - **Secondary Address**, **Density**, **Height**, and **Mode** - are available to customize output to your printer, interface, and desired effect. See the section on printer drivers for additional specific information. Click [OFF] to remove the menu.

SECONDARY ADDRESS

The Secondary Address can have many effects depending on the printer and interface combination. Clicking [ON] **sec.addr** allows you to type in any value from 0 to 99; followed by [RETURN]. Sometimes, a secondary address of 4 or 5 commands the interface to be "transparent", sending all data without any conversion (usually, ASCII-PETASCII conversion). With a XETEC Super Graphix, for example, 5 sends the data as it is and 4 adds a linefeed to every carriage return. Sometimes, there may be a secondary address specifically to emulate a Commodore printer. If there is not a specific driver for your printer, this may be a good option to try. Consult the manuals for your printer and interface.

DENSITY

Allows you to specify print densities, as defined by your printer and your printer driver. In combination with the **Height** setting, this allows output in many varied sizes and horizontal/vertical aspect ratios. Density values from 1 to 7 can be sent to the printer. Clicking [ON] **Density** cycles through the possible values.

HEIGHT

Height can be specified from 1 to 4, with 1 being the smallest and 4 the largest. This is dependent on the capabilities of your printer and printer driver. Click [ON] to cycle through the possible values.

MODE (formerly ROTATE)

Substitute **Mode a/b** wherever **Rotate n/y** is mentioned in a driver's 'info' file.

I Paint drivers may use **Mode** for printer-specific options outlined in their 'info' files.

Many drivers use this option to print Normal (mode=a) or Rotated 90 degrees (mode=b).

Some printers cannot print 640 dots per horizontal line; and changing **Mode** has no effect.

Click [ON] to change **Mode**.

PRINT

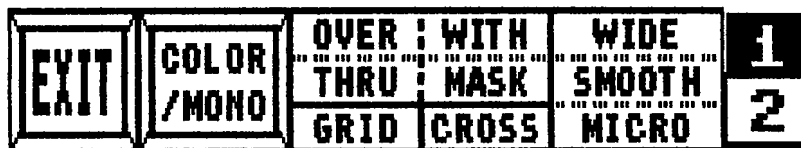
Clicking [ON] the **Printer** icon (with the **Print Submenu** displayed) will reverse the icon. If you really want to print, click [ON] the icon again to commence printing. Otherwise, click [OFF] or move the pointer off the **Print** icon, returning to normal within the **Print Menu**. I

Paint expects the printer to be device #4. If no printer is present, or if the printer (or the interface, if used) is turned off, there will be an error tone. Check your printer, cable, and interface and try again. If you are using a standard BASIC 8 printer driver, there will be a pause while the data is reconfigured for the driver. When ready, the screen will display only one field of the graphic, and the message 'Printing..' will be displayed. When printing is complete, there will be a wait again while the draw screen and menus are reconstructed, and you will be returned to the **Print Submenu**. With an I Paint driver, printing begins almost instantaneously. The screen does not have to be reconfigured before and after printer output.

Options

OPTIONS

Clicking [ON] the **Options** icon from the **Main Menu** brings up the **Options Submenu**:



Clicking [OFF] removes the menu. The current settings are highlighted.

EXIT

Clicking [ON] the **Exit** icon highlights the icon. To actually exit I Paint, you must click [ON] again. Any pictures, clips, patterns, etc. that are not saved will be lost! Also, RAMDOS will be de-activated; and the system will do a complete reset. Files saved to the RAM disk can be accessed after exiting by installing RAMDOS without initializing. See the **RAM EXPANSION** section for more details. If you do not wish to exit, simply move the pointer off the **Exit** icon, or click [OFF]. You can then continue normally.

COLOR/MONO

Clicking [ON] the **Color/Mono** icon will switch between Color and Monochrome Modes. On many monitors, such as the 1902A, the display is much sharper in monochrome. Flicker may also be reduced. Monochrome Mode can be helpful in many ways. First, you can better see what your printed output will look like. Clips made in monochrome have no color



information, so they can be superimposed over images without affecting the colors found there. Since there is no color information, they are not limited to cutting and pasting on the color cell border, so fine repositioning can be done. They also take up less memory, which can be at a premium with larger **Clip** and **Safe Areas** and no RAM Expansion. Also, color clips will ignore their color information when pasted in monochrome. Fills, especially pattern fills, will take place much faster in monochrome. Patterns made from monochrome clips will take up less memory and will work faster in color mode. Clearing the screen can be done in monochrome without disturbing the current (Color Mode) colors. This can be helpful in seeing how halftones can modify a current screen color combination.

Notes: **Clips**, **Patterns** and **Safe Areas** defined in monochrome, and **Pictures** saved in monochrome, will not preserve the color information. Pictures loaded in Monochrome Mode will ignore their color data. Conversely, **Pictures** saved in monochrome will not affect current colors when loaded in color mode. Use the **Palette** option to re-color, or **Clear** the screen in Color Mode before loading.

OVER/WITH/THRU/MASK

These options determine how clips and drawn objects interact with the data underneath them. Selecting one will replace the last selected one. **Over** replaces the current image with that of the clip. **With** just places the clip image on top of the current image. **Thru** "toggles" the bits it encounters. Those which were on will be turned off, and vice versa. The effect is like looking through a semi-transparent object and seeing something behind it. One side benefit of **Thru** mode is that if you don't move your pointer, pasting again will eliminate the effect of your clip (except color information). This can be handy to determine the exact positioning you want. **Mask** mode will only write new data where an on bit is found. The result is a sort of marriage of the two images. For example, Pasting in **Mask** mode to a halftone screen will result in the halftoning of the resulting image.

In the **Freehand** modes and **Shapes** draw modes, **Over** and **Thru** work like they do in **Paste** (**Thru** has no affect on 3-D solids). But **With** and **Mask** have no affect, and act just like **Over**.

GRID

If **Grid** is on, the pointer will only position itself in the upper left hand corner of the nearest color cell. This is useful in ensuring that a clip made in monochrome is the exact size it would be if clipped in color (see **Clip** section), for example, or positioning things so that they correspond to that color cells.

CROSS

Selects **Crosshairs** instead of the pointer. May be helpful in aligning new drawing horizontally or vertically with some other screen information.

WIDE

Wide Mode draws the same information to both interlace fields in **Pen** and **Object** draw modes. The result is a faster draw, and in the case of a non-smooth **Pen**, it assures that the

foreground colors for both fields are represented, since a dot is then drawn to each field. When drawing for the purpose of filling, it is wise to use Wide mode. For a fill, both fields are considered separately to determine the boundaries of an area. If there is a break in the integrity of an area, in either field, that field's fill will bleed into areas you didn't want filled. (Remember to define a **Safe Area** whenever possible to recover from problems with **Fill**.)

SMOOTH

In **Pen** mode, selecting **Smooth** will produce a trail; maintaining connection between all the points you draw. This is ideal for eventual filling. **Smooth** mode overrides the **Wide** and **Micro** settings (for **Pen** only), as it is automatically a **Wide** and connected draw. If **Smooth** is off, **Pen** plots individual dots which will be rendered to both fields if **Wide** is on.

MICRO

Micro mode affects only **Pen** drawing. It inhibits the **Pen** from moving more than one pixel at a time (while actually drawing). It can be used when trying to work a very tight area, without going into **Magnify**.

FIELDS 1-2

It is possible, by clicking [ON] the 1-2 icon in the **Options** submenu, to limit drawing to only one or the other field. This allows you, for example, to superimpose a **Paste** leaving half of the original image untouched; or to do sensitive shading using **Spray Can** on one field only; or many other effects. Field selection affects **Pen**, **Brush**, **Spray Can**, **Objects** and **Solids** (**Wide** mode only), **Fill**, and **Paste**. Field selection is sequential; from both, to field 1, to field 2, to both, etc.

CLEAR

Clicking [ON] the **Clear** icon on the **Main Menu** bar brings up the **Clear Submenu**:



The **Clear** icon will be reversed. Clicking [ON] at this point will clear the screen to the current halftone and color values, subject to the notes under **Clear** below. To change other selections, move the pointer off the **Clear** icon and it will return to normal. Click [OFF] to remove the submenu.

HALFTONES

Select one of the halftone values for **Clear**.

WINDOW

Click [ON] the **Window** icon to define an area (presumably, smaller than the whole screen, but the whole screen can be selected) to **Clear**. You will be transferred to the draw screen. Click [ON] the upper left-hand corner of the region you want to clear. Stretch out the box

until it is the size and shape you want, and click [ON] again; or click [OFF] to reset the upper left corner. When you have the area defined, you will be transferred back to the **Clear Submenu**, with the pointer over **Clear**. The **Window** icon will be reversed. To clear, see below. You may select a different halftone before clearing, or after clearing (before removing the window), if you don't like what you get. The box remains until you either remove the submenu or select a new **Window**. To select a new window, click [ON] the **Window** icon. It will return to normal, and the box on the draw screen will disappear. Then click [ON] it again to start the process over (or just clear the whole screen).

CLEAR

To clear the screen, click [ON] the **Clear** icon (with the submenu up). It will reverse. Then click [ON] again to reaffirm that you want to clear. The screen or area will clear to the halftone value and (in color mode) colors selected.

Notes: in color mode, clear will not affect a field for which both colors are not selected. This means you can clear just one field if you want, with very interesting results. For example, you could clear one field to a certain halftone value, and the other to a different one by selecting one field's colors "off" before each clear. In monochrome, color information from Color Mode is unaffected. This means you can change an area's halftone value without having to select the proper colors. Just go to Monochrome Mode and make the clear. The **Fields** selection in **Options** has no effect.

RAM EXPANSION

I Paint supports the Commodore 1700, 1764, and 1750 RAM Expansion Units (REU's) and their equivalents. It is not compatible with geoRAM, although they should coexist with no problem.

Unlike most other programs which support a RAM Expansion, I Paint does not automatically destroy what you already have in expansion RAM. It gives you the power to decide whether to retain data from another source, adapting to what you feel are your needs.

I Paint can use two methods to capitalize on extra memory: a RAM disk using Commodore's RAMDOS 128, and an expansion of I Paint's **Clip** and **Safe Areas (I PAINT+)**. A RAM disk treats the REU just like a physical disk drive - all the normal DOS commands (scratch, rename, copy, etc.) work. However, Lacemaker format pictures and I Paint clips and patterns can't be saved to RAM disk, and clips cannot be loaded into the expanded I Paint clip area. As of this writing, RAMDOS does not support partitions and subdirectories. For the RAM disk option to be available, the RAMDOS file must be present, named "ramdos128.bin", and must be a version number 4.0 or higher.

I Paint normally creates a buffer of about 27K to be shared by **Clips**, **Patterns**, **Safe Areas**, and **Magnify** workspace. A color screen is 40,000 bytes. This means that without RAM

expansion a **Safe Area** can never be as large as the screen, and a **Clip** can only be as large as the current **Safe** and **Pattern** will allow; also, using **Magnify** or creating a **Pattern** will cancel any **Safe** or **Clip Area**. With an REU, I Paint can use the top two 64K banks of expansion RAM for **Clip** and **Safe Buffers**. This allows a **Safe Area** as large as the entire screen, plus a full-screen clip and a two-thirds screen pattern. You could theoretically have almost three screens' worth of information in waiting, with a fourth screen on view; retrieving the other screens as needed (using **Fill** to recover the **Pattern**)! **Magnify** and **Make Pattern** no longer need to cancel the **Safe** and **Clip Areas**.

With a 1700 (128K) REU, only one of the two methods may be used. But with a 1764 (256K) or 1750 (512K), you may choose to have both. I Paint allocates the REU so that RAMDOS doesn't "see" the highest two banks. This must be done from I Paint, and the RAM disk formatted at least once in this configuration, for the two to coexist! See the **Setup** section for more information on selecting your configuration.

PRE-LOADING THE RAM DISK

If you would like to pre-load the RAM disk using a file copier before booting I Paint, you may do so. I Paint may be used to install RAMDOS, or you can use the BASIC program that comes with RAMDOS to install. However, if you want to use RAMDOS with I Paint Expansion, you must use I Paint to reserve its area and install RAMDOS. Boot I Paint, then at the first menu, press **f5 -- Install RAMDOS and exit to BASIC**. When asked for a page for RAMDOS, you need to select a page that doesn't conflict with the file copier you will be using; this may require some testing. For many simple copiers, such as Filecopy from your drive's Test/Demo disk, page 14 works well. Next, you will be asked for the Disk unit. Input a number (or accept the default unit 9). If the REU has no RAMDOS formatted data, or you plan to use I Paint Expansion with the RAM Disk, answer "y" to the "Format Ram Disk" question. To use RAMDOS and I Paint expansion, answer "y" to the "Reserve part for I Paint" question. After all this, the installation will be completed and you will be returned to BASIC.

After you have finished copying files to the RAM Drive, press the **RESET** button on the computer or type "sys65341" [RETURN] before attempting to boot I Paint.

Note: I Paint cannot be booted with RAMDOS already activated; it must activate RAMDOS itself. Also I Paint cannot be booted from RAM disk. Then, follow the instructions in "BOOTING I PAINT". In this case, select either **RAMDOS** or **Both**; the same as you chose when installing RAMDOS for file copying. If you have information in RAMDOS format in the REU, but you didn't specify **RAMDOS plus I Paint Expansion** when installing RAMDOS, you must not now choose both. I Paint will not de-allocate the space formatted by RAMDOS, and could overwrite "disk" data and vice versa. When asked whether to initialize the RAM Disk, you will answer "No". I Paint will respond by displaying the directory followed by "Ram Expander Contents Untouched", then "Bootting I Paint...". Follow the rest of the process in the "BOOTING I PAINT" section.

SAVING FILES FROM RAM DISK

You may exit I Paint and copy files from the RAM Disk using a RAMDOS-compatible copier (such as FILECOPY, on the utilities disk for your drive) to move the files to a permanent disk. You must install RAMDOS and exit to BASIC in the manner outlined above for pre-loading the RAM Disk, answering "No" to the Format question. Then boot the RAMDOS-compatible copier and save your files.

BOOTING I PAINT

When I Paint is run, it looks for a few (optional) special files, which allow you to customize I Paint to your system and your liking. These files are the **Setup**, **Printer Driver**, and **Key** files. See the section on System files for more information.

To start I Paint on a bootable disk, type:

```
BOOT [RETURN]
or
BOOT u9 [RETURN]
```

Of course, the "u9" can be replaced by another appropriate unit number.

On a non-boot disk, type:

```
RUN "run.ipaint"
or
RUN "run.ipaint",u9 (u10...etc.) [RETURN]
```

In a moment, the Startup Menu appears:

f 1 - Start I Paint: This is the quickest way to get under way. If no **Setup** file is found, you will be presented with a different menu depending on how much memory is present. See **MEMORY** below. If a setup file is found, it will be read. If RAMDOS is specified in the setup file or by the Memory Menu, you will see "Format Ram Disk? (all data will be LOST)". Answer "y" if RAMDOS hasn't been previously installed or has become corrupted; or if you wish to use I Paint Expansion, but RAMDOS was formatted outside of I Paint. The program will now load.

f 3 - Setup I Paint: Allows you to change defaults for configuration, operating modes, colors, etc. If the system is expanded, see **MEMORY** below. If RAMDOS is specified in the setup file or by the Memory Menu, you will see "Format Ram Disk? (all data will be LOST!)". Answer "y" if RAMDOS hasn't been previously installed or has become corrupted; or if you wish to use I Paint Expansion, but RAMDOS was formatted outside of I Paint. Booting then continues. After a pause on the Title Screen, the Setup Menu appears. See **SETUP** below.

f 5 - Install RAMDOS and exit to BASIC: Available only with RAM Expansion Unit. See "PRE-LOADING RAM DISK" above.

F 8 - Exit: Returns to BASIC.

MEMORY

The Expansion RAM menu displays the amount of added RAM and presents these configuration options:

f 1 - RAMDOS only: If you choose this option, I Paint expansion cannot be selected on the Setup Menu.

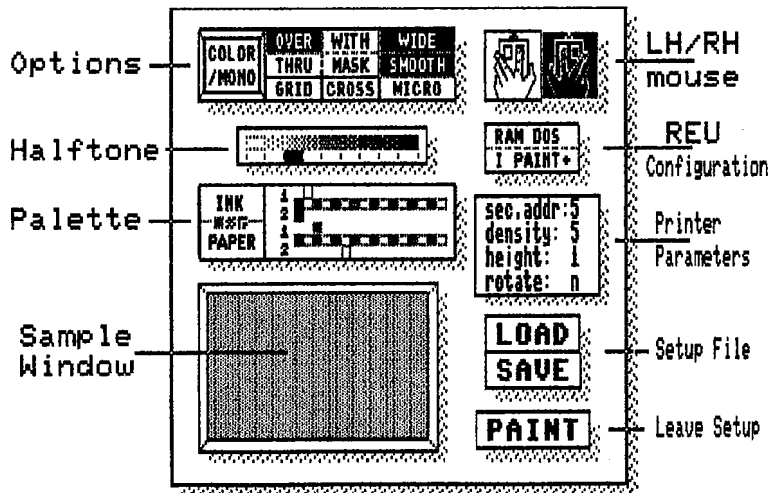
f 3 - I Paint Expansion only: RAMDOS cannot be selected on the Setup Menu.

f 5 - Both (1764, 1750 only): Either can be accessed in the Setup Menu.

f 7 - Ignore REU: This can be used to protect data from another source; i.e., GEOS, Pocket Series, etc. Neither can be selected in **Setup**.

F 8 - Exit: returns to BASIC - what else?

SETUP



The Setup Menu allows you to customize I Paint to your liking. It is presented on the Title

Screen after selecting **f 3 - Setup I Paint** and answering the prompts that follow. You have control over defaults for draw modes, startup in color or monochrome, left- or right-hand mouse, REU configuration, Halftone value, color in both color and monochrome modes, and printer controls. The options in the Setup Menu are best explained in their respective headings above (**Halftone** is covered in **Clear**), except for the following:

MOUSE

Clicking [ON] this icon switches back and forth between right-handed and left-handed mouse. The default is right-handed. The purpose of this tool is to decide which button is [ON] and which is [OFF]. The "natural" expectation is for [ON] to fall under the index finger. The index finger in the double icon is over the [ON] button. The chosen mode is the one that is reversed.

REU CONFIGURATION

Determines how I Paint uses RAM expansion. Clicking [ON] either option toggles that method of RAM use. However, this will not entirely override the configuration set by the Memory Menu on startup. All combinations are available if you chose the **Both** option. If you have chosen to ignore the REU, no change can be made. If **RAMDOS Only** was selected, you cannot now choose to add I Paint Expansion (**I Paint+**). Similarly, if **I Paint Expansion Only** was chosen, **RAMDOS** cannot be added at this point. Changes to the **RAMDOS** setting will not actually select or de-select **RAMDOS**, but if you save the setup (see below), **RAMDOS** will be automatically initialized or bypassed on the next startup. I Paint Expansion can be left de-selected and the result will be in effect during the current session; you don't need to reboot. However, **RAMDOS**, if present, will still be its smaller partitioned size.

PRINTER PARAMETERS

Changes the default settings for printout. After setting these, you may never really need to change them within I Paint; although you probably will want to experiment before coming up with "permanent" settings. The parameters are discussed in the **PRINT** section. There are a couple of differences in making selections between the **Setup** screen and the **Print Menu**. **Secondary Address** is changed by repeated clicks of the mouse, rather than entering a value from the keyboard. For all the numeric choices **IN SETUP ONLY**, clicking [ON] increases the value (within its limits) and clicking [OFF] decreases.

SAMPLE WINDOW

This window presents a sample based on the current colors and halftone settings. The Ink/Paper window is not an icon on the Setup Menu screen; its purpose is to show the color combinations selected, but without the halftoning effect.

LOAD

Loads the Setup File on the boot drive. This is the lazy way of returning to your last settings without having to reset them individually. Click [ON] and the icon reverses. Click [ON] again to load the setup file, or move the pointer off the icon if you don't want to load.

SAVE

Saves the configuration as shown to the Setup File. Replaces old Setup File. As with **Load**, Click [ON], then click [ON] again to confirm the save; or move off the icon to cancel.

PAINT

Exits Setup and moves on to I Paint. Click [ON] the icon and it reverses. Click [ON] again (or just continue holding the button down) to advance to I Paint; or move off the icon to remain on the Setup Menu.

SYSTEM FILES

I Paint looks for three user customizable files for information about your system and desired setup. This allows I Paint to be tailored to your needs. The files are the Setup file, the Key file, and the Printer Driver file(s).

SETUP FILE

The Setup file holds information about your system and preferences, and is created when you choose **Setup** (and **Save**, within **Setup**) during the loading process. Its directory name is "ipaint.setup".

PRINTER DRIVER FILE

The Printer Driver file is actually program that is designed for a specific printer or family of printers. Printer Driver files are named for the printer concerned, with the prefix "p.lp-" for I Paint drivers or "p.hc-" for BASIC 8 drivers. The printer file that occurs earliest will be loaded, so select the best driver for your needs and put it ahead of all others on the work disk (or scratch the others).

If no Printer File is found, I Paint defaults to an Epson I Paint driver. However, this driver does not support rotated output. If you want rotated output from your Epson compatible printer, load the BASIC 8 Epson driver (p.hc-epson).

If the wrong driver is loaded, or if you have more than one printer, you can still load the correct one by way of the **File Menu**. Note that in most cases the printer files assume a device number of 4 for the printer. Connecting two printers is likely to require a switch box, unless you have the programming ability to modify a printer file.

KEY FILE

Key files are function key definitions. Again, the first one found is loaded. Key files are named "ipaint.key"; with additional characters left to you. This is so you could develop different function key definitions for different uses. For instance, you might want to use the keys for actual text instead of text commands. You can create your own Key file by using the BASIC 7 KEY command. From BASIC, you can BLOAD the Key file as a template for

your definitions if you want; then use the BASIC KEY command to define the keys as you wish. When you are through, save the definitions with this command:

BSAVE "ipaint.key-----" ,b0, p(4096) to p(4352), u(8)

Do not include the hyphens in the filename; they just indicate that you have 5 characters left to uniquely identify the Key File. If no function key file is found, I Paint leaves the definitions alone; so you could manually define them before booting.

ADDITIONAL FILES

Additional font and printer driver files have been included in a special file called "fonts & printers". This file will create the extra font and printer files directly to disk. Never use the original disk for this operation! Use a spare disk with at least 160 blocks free on it; or preferably, format a disk specifically for this use.

The "ivs" program (I Paint Viewing System) has been included to make it possible to view I Paint creations without booting I Paint. It will find and list any I Paint pictures present on a disk. The program is self-explanatory, and unlike I Paint itself, may be freely distributed (you want to show off, don't you?).

Several files on the original disk are accessible only if you have a 1571 or equivalent double-sided drive. They are mainly graphics included as a sample of drawing and coloring techniques to try with I Paint. If you have only a 1541 type drive, you may need to get access to a 1571 through a friend or a friendly dealer to copy those files to a 1541 disk; otherwise, write to Living Proof, Ltd. for information about getting a 1541 format disk.

FILE COMPATIBILITY

PICTURE FILES

I Paint can load both I Paint pictures and BASIC 8 "pict." and "brus." files. BASIC 8 files will work best if they are 8 x 4 color cell size, and no more than 640 x 400 pixels. Larger vertical pictures will not bring in their color information properly; but they can be colored using I Paint's color Wash feature. Even in the best case, 8 x 4 color cell, the color information will need some sweetening; but you planned to make use of I Paint's thousands of colors anyway, didn't you? In the other direction, I Paint native picture files may be directly loaded into BASIC 8 - based graphics programs. The filename probably will have to be changed, so that the prefix "pict." or "brus." is attached. Best results will be obtained from an 8 x 4 configuration. Here, field 2's color will occupy the first 4 pixel color row, field 1 the next, and alternating after that. The effect isn't perfect, but there is no way that conventional graphics programs can adequately handle I Paint's color capabilities!

CLIP AND PATTERN FILES

I Paint Clip and Pattern files are incompatible with BASIC 8. If you wish to "port" them to a different graphics program, paste the **Clip** or fill the **Pattern** to the draw screen and save as

a picture file. Similarly, BASIC 8 patterns must be saved from a drawn screen to be used by I Paint.

FONT FILES

Font files from any BASIC 8 source may be used.

ABOUT PRINTER DRIVERS

GENERAL

The following information is provided to help you select and get the best output from the available printer drivers. Some drivers use the 4 parameters - Secondary Address, Density, Height, and Mode - to convey other things; sometimes, a parameter is ignored because of the particular printer's capabilities or lack of them. The parameters are described further in the PRINT section of the manual. The individual drivers discussed will comment only on how they differ from those descriptions. If your printer driver is not discussed, it probably responds to all parameters as normal. Consult your printer and interface manuals for more information.

Getting the optimum output from your particular printer and interface combination may take some experimenting. You may even find that the eventual best setup has a "ripple effect" through your other software. For example, you may be best served by changing a DIP switch setting (for auto linefeeds, emulation, etc.) on the printer, interface, or both; then changing a parameter in your word processor or other software to reflect the change. Often, no change will be necessary. But sometimes, a little extra effort will go a long way in all your applications.

I PAINT DRIVERS

I Paint printer drivers have the prefix "p.lp-". They are specifically designed for I Paint, and therefore work faster than the BASIC 8 drivers. If you are a machine language programmer, you may wish to create an appropriate I Paint driver for your particular printer. If so, write to Living Proof, Ltd. for the necessary specifications.

Epson

The Epson I Paint printer driver supports all seven density settings and the four height settings. Rotate (Mode B) is not supported.

It works with Epson FX-80, Panasonic 1091, Star NX-10 and others that can emulate Epson, such as the Hewlett-Packard Deskjet with Epson emulator.

NX-10

Same as Epson driver, except linefeeds are optimized for the Star NX-10. May work better with some 24-pin printers in their 9-pin emulation modes.

HP DeskJet

This printer supports 4 densities. A density of 1, 2, 3, or 4 selects 75, 100, 150, or 300 pixels per inch resolution. Densities 5, 6, and 7 are the same as 1, 2, and 3. Rotate (Mode B) is not supported by this driver.

The Height setting is then used to position the printed output horizontally on the page. Heights of 2, 3, or 4 select edge-left, centered, or edge-right positioning, respectively. A Height of 1 turns positioning off. Horizontal position from any previous screen print will be retained; if none, the left margin is used. This setting may also allow you to fine-tune the position of the printout using the printer's Escape codes before booting I Paint.

Any HP-laser compatible printer should be able to use this driver, although some may not respond to the positioning. In this case, use position (Height) 2.

BASIC 8 DRIVERS

Information on BASIC 8 drivers comes from the BASIC 8 graphics development package, courtesy of Lou Wallace and Dave Darus.

Epson FX-80 Panasonic 1091 Star NX-10

The Epson driver supports all seven Density settings and the four Height settings. Rotated (Mode B) output is supported by this driver. Many printers can respond well to this driver, if they are not specifically represented.

Olivetti PR 2300

Only 1 Density is supported; changing settings has no effect. All four Heights are supported; as well as Rotate (Mode B).

Star NX-10C/Mannesmann Tally Spirit 80

Two Densities (1 and 2), all four Heights, and Rotate (Mode B) are supported.

Gemini II

Two Heights (1-2) and two Densities (1-2) supported only; also, image is always printed Rotated to print the full 640 pixel width.

MPS 801/Seikosha 1000/Gemini 10X

Heights 1 & 2 only; one Density only. Image is always Rotated to print the full 640 pixels.

Canon PJ-1080A

This is a color printer; but it will not properly handle I Paint's color system. Full range of Heights (1-4) is supported, but only 1 Density. Rotate (Mode B) is not supported.

TROUBLESHOOTING

PROGRAM WON'T RESPOND WHEN I CLICK

I Paint doesn't use a quick "double-click" action like some other programs. Instead, click the button for a moment and release. If a confirmation click is needed, such as when printing or exiting from I Paint, there must be a definite release of the button before the second click will register. In the case of an area being defined, such as for a **Clip, Safe Area, or Window Clear**, I Paint completes the box outlining the area before checking for a button press. Therefore, you must hold the button for a moment until the outline is drawn and erased.

One other possibility: be sure you are pressing the appropriate button! If you have purposely or accidentally selected left-hand mouse, the buttons are reversed from what you normally expect. Boot I Paint and select **Setup**, then check the mouse setting on the **Setup Menu**.

POINTER OR INDICATOR LINES & BOXES DISAPPEAR

This is an effect that is due to the way colors are handled by the 8563 RGB video controller, and is normally attributable to foreground and background colors being the same or nearly the same value. On some screens, this may be unavoidable; on others, you may be able to select Monochrome Mode to work in the area of the screen which causes your tools to disappear. Also, avoid selecting black on black, etc. when coloring to minimize this effect.

WON'T DRAW IN THE COLORS CHOSEN OR DRAWING IS SKETCHY

Check if **Pattern Draw** selected in the **Pattern/Draw Mode Menu**. If a color Pattern is selected, it overrides the colors set by the **Palette**. Also, Pattern Draw may account for "sketchy" lines; as I Paint tries to conform to the Pattern. Select **Normal Draw** (the dark box, far right) to regain normal operation.

NO DRAWING OCCURS

Check for **Erase Mode** selected in the **Pattern/Draw Mode Menu**. With **Paste**, check for **Mask** mode selected in the **Options Menu**. Mask only allows the **Paste** where there has already been drawing; select **Over, With, or Thru**.

DRAW, ERASE, PASTE, FILL, ETC. SEEM TRANSPARENT; SOME THINGS UNAFFECTED

Check **Fields 1-2** selection in the **Options Menu**; if only one number is highlighted, then only that field will be affected by **Draw, Erase, Paste, Fill, etc.**

FILL "LEAKS" OUT OF INTENDED AREA

Be sure to use **Wide Mode** in **Options** when drawing an area to be filled! This is necessary even if you plan on using just one draw field. Also, If you plan on filling both fields, be sure both fields are selected when you draw the lines enclosing the area!

Be sure you are in **Draw Over Mode** (**Options Menu**) and not **Thru** mode when drawing

lines or **Smooth** curves to define fillable areas. The **Pen** pauses momentarily while drawing, and in **Thru** mode, it in effect leaves a small pinhole in your lines during the pause.

FILL DOESN'T WORK AT ALL

One possibility is that the area is not really clear, but looks clear because of color selection. Check this by going to Monochrome Mode. **Fill** will not take place on an area that is already foreground.

Another possibility is that **Erase Mode** may be selected from the **Pattern/Draw Mode** Menu. A fill may have taken place, but nothing will have changed! (unless you selected different colors, in which case the new colors would fill the empty space.)

FILL STOPS WORKING BEFORE IT IS DONE

This can occur when an especially complex area (for instance, an area that contains a pattern, or a semitone value, etc.) is filled. An area of memory is set aside as a buffer for the filling process, and the complexity of the area has exhausted the Fill Buffer. This buffer is constant and not affected by clips, etc., but its limit can be reached. It is always best to create a **Safe Area**, or **Save** the picture, before filling on an otherwise unrecoverable picture!

MAGNIFY WILL NOT WORK

The memory needed for **Magnify** is occupied by a very large custom **Pattern**. **Magnify** will not automatically destroy that **Pattern**; you must create a smaller pattern from a small clip before you can **Magnify**.

SAFE OR CLIP AREAS NOT BIG ENOUGH

Without RAM Expansion, it is not possible to create a **Safe Area** or a **Clip** as large as the entire screen. Also, the **Pattern** and **Safe Area** sizes affect how large a clip you may cut. To maximize clip size either create a very small **Pattern** from a clip of a small area (if a large **Pattern** is present) or replace a large **Safe Area** with a smaller one, or just **Magnify** to eliminate the **Safe Area**.

CLIP OR PATTERN WON'T SAVE OR LOAD

This can occur if you are trying to access the RAM Disk. You can't save a clip or pattern to RAM Disk; nor can you load a clip from RAM Disk into the expanded Clip Buffer. You can load a pattern from RAM Disk, or load Clips from RAM Disk into the non-I **Paint+** Clip buffer; so depending on your RAM configuration, you may wish to pre-load patterns and/or clips to RAM Disk.

CAN'T MAKE A PATTERN FROM A CLIP

In Ram-Expanded systems, it is possible to clip an area that is too large for the **Pattern** Buffer. Select a smaller **Clip** to make a **Pattern** from.

CLIP DOESN'T LOOK THE SAME WHEN PASTED

Check the **Over/With/Thru/Mask** and **Field 1-2** settings (in **Options**). Pasting **Over** or **With**

will essentially duplicate the clip, either blanking what is underneath (**Over**), or simply adding the clip to the present screen (**With**). Pasting **Thru** will preserve what is underneath by reversing the bits at any intersection; the underlying image is never covered over. In fact, pasting **Thru** in the same spot will in effect restore the bitmap image to the way it was (although color data is not recovered). Pasting with **Mask** means that only on bits in the current image will accept the incoming clip; this can be an interesting effect, for instance, when pasting to a semitone area.

CLIP LOADED FROM DISK IS CORRUPTED OR INCOMPLETE

A Clip created with Expansion in use may be too large to fit into the unexpanded Clip Buffer.

TEXT DOESN'T SHOW UP

Be sure you are in **Over** ([CTRL]-o), **With** ([CTRL]-w), or **Thru** ([CTRL]-h) modes for most typing.

ONLY LOWER CASE CHARACTERS APPEAR CORRECTLY

Some fonts do not define the entire possible character set. The system font "STYLE" is one such font. You'll have to stick with lower case with such a font.

SCREEN WON'T CLEAR

When in Color Mode, both the foreground and the background colors for a given field must have valid selections (they cannot be "off"), or Clear will ignore that field. This means you can choose to clear just one field. Simply click [ON] **Ink** or **Paper** (in **Palette**) to un-flag a color in the desired field. Now clearing will only happen on the field that has both colors selected (flagged). This works semitone and window clears, so you could conceivably choose to clear, say, field 1 to 75% and field 2 to 12.5% semitones; giving some very interesting results!

PRINTER WON'T RESPOND

I Paint looks for a printer as device #4. Be sure your printer or interface is set to respond to device #4. Also, check that your printer is turned on. If you have an interface, be sure it has power. Some printer codes from the wrong printer driver may set your printer "off line". If so, you may be able to recover by resetting the printer. If this doesn't work, you may have no recourse but to reboot.

Index

- 1-2 icon 26
- 3-D solids 10
- Areas 14
- Areas Menu 15
- Areas Submenu 14
- Backing up I Paint 5
- BASIC 8 brus. files 33
- BASIC 8 brus. format 20
- BASIC 8 pict. files 33
- BASIC 8 pictures 20
- Box 9
- Box Mode 9
- Brush 3, 7, 8, 26
- Brush Submenu 8
- Cancel 2
- Circle 9, 10
- Clear 2, 5, 8, 25-27, 38
- Clip 13-15, 20-22, 25, 27, 36-38
- Color 10
- Color cells 4, 14
- Color/Mono 24
- Crosshairs 3, 25
- Custom Pattern 21, 22
- Cylinders 10
- Darus, Dave 35
- Density 23
- Device 20
- Disk command 20
- Disk directory 20
- Disk drives 20
- Disk names 20
- DOS commands 20
- Draw 2, 8, 11, 13, 16
- Draw Mode 8, 15, 16, 21, 36
- Draw Mode Submenu 16
- Erase 11, 16, 36, 37
- Erase Mode 11
- Exit 14, 24
- Fields 1-2, 26, 27, 36, 37
- File 16, 19-22, 32
- Fill 3, 11, 26, 36, 37
- Flicker 4
 - How to reduce 4
- Flip 15, 17
- Font 20, 21, 34, 38
- Format Ram Disk 28, 29

- Freehand drawing 3, 7
- Function keys 3, 19
- Grid 25
- Halftones 26, 27, 31
- Hard drives 20
- Height (printer) 23
- I Paint Viewing System 33
- I PAINT+ 27, 31, 37
- Icons, quick guide to 7
- Ink and Paper 12, 13
- Interlace, What is 3
- IVS program 33
- Key file 32
- Key files 29
- Lacemaker 20, 22, 27
- Line 9
- Load 20
- Macros 19
- Magnify 13, 26, 28, 37
- Main Menu 6, 7
- Make Pattern 15, 21, 28
- Mask 17, 25, 36, 37
- Micro 26
- Mode (printers) 23, 24
- Monitors
 - adjustments to 4
 - used with I Paint 4
- Mouse 31, 36
 - buttons 2
 - double-click 2
 - Setup 3
 - types supported 2
- Open Safe 15
- Options 8, 10, 15, 24, 26, 27, 36
- Over 17, 25, 36-38
- Palette 3, 4, 8, 11, 12, 21, 25, 36, 38
- Palette Submenu 12
- Part (or Whole Screen) 22
- Partitions, disk drive 6
- Paste 15, 26, 33, 36
 - and Options 15
- Pattern 14-17, 20-23, 25, 36, 37
- Pen 3, 6, 7, 25, 26, 37
- Pen Mode 6, 8
- Picture 20, 22, 25
- Pointer 3, 36

Print 3,22-24,31
Printer Drivers 5, 20, 21, 29, 32, 34
Printer Interface 23
Printers 38
RAM Expansion Units 27, 31, 37
RAMDOS 5, 19, 20, 23, 27-31
Reflect 15, 17
Reverse 15
Rotate 17
Rotate (printers) 23, 24
Safe 11, 13-15, 21, 25, 27-28, 36-37
Sample Window 31
Save 22
Scissors Icon (see also Clip) 15
Secondary Address 23, 31
Setup 2, 28-30, 32, 36
Setup file 32
Setup Menu 30
Shading 9
Shapes 3, 8
Shapes Menu 9, 10
Smooth 11, 26, 37
Smooth option 8
Sphere 10
Spools 11
Spray Can 3, 7, 8, 26
Text 16, 21, 38
 and character sets 17
 and Pattern Mode 17
 Color & Reverse 17
 keyboard commands 18
 Option in Text Mode 17
 Orientation 17
 Priority 17
 size 17
Thru 17, 25, 36-38
Toroids 10
Triangle Mode 9
Troubleshooting 36
Type 16
Type icon (see also Text) 16
Typographic Conventions 3
Underline 17
Underlining 17
Undo 14
Unrotate 17
Viewer program 33

Wallace, Lou 35
Wash 33
Whole screen (or Part) 22
Wide 9-11, 25, 26, 36
Window 26, 36
With 17, 25, 37, 38

