PC Paintbrush®

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In the Mill

The list of computers and printers supported by FRIEZE™ and PC Paintbrush™ continues to grow. Please contact us if your card or printer is not yet supported.

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1. Introduction

1.1 PC Paintbrush

PC Paintbrush™ is a free-hand drawing program for the IBM Personal Computer and compatibles. The program requires:

> 320K memory
> One disk drive
> A graphics display
> DOS 2.0 or above
> A mouse, joystick or digitizer

High resolution displays WILL require more memory.

This user's manual is divided into two sections. The first half of the manual describes how to install and run PC Paintbrush. The second half describes FRIEZE™, (pronounced "Freeze") the program used for printing PC Paintbrush pictures and for transferring pictures from other programs.

In the first part of the manual, Chapter 2 gives a step by step procedure to install PC Paintbrush for your combination of graphics display and printer. Read that chapter first and follow the instructions before trying the program. The subsequent chapters describe PC Paintbrush's capabilities.

The second half of the manual explains FRIEZE but these chapters can wait since Chapter 2 includes FRIEZE installation. If you are dissatisfied with your printed results, read the FRIEZE chapters to find out how to customize your printout.

Both FRIEZE™ and PC Paintbrush™ are included on your PC Paintbrush distribution disks.

1.2 Rules of the Game

Although PC Paintbrush supports a number of drawing

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devices such as mice, joysticks or digitizers for input, it is simplest to refer to your drawing device as a **mouse**. Please translate references to the mouse into your own terms.

Since constantly writing out "your right mouse button" gets a bit boring, we have replaced the words with some pictures. We have:

> your mouse - 👾

> press the left mouse button - 👾

> press the right mouse button - 👾

When PC Paintbrush and FRIEZE ask questions, the Esc key is special. It always stops the current action, and returns to the program or the next higher menu level. For example, press Esc whenever you make a serious typing error. You may also use the Esc key to stop graphics printouts.

Notes:

> * If you have a joystick, keep the stick straight up when PC Paintbrush begins. (Alignment takes place during the initial screen creation.)

> * If you have a three button mouse, only the outer two buttons are used by PC Paintbrush.

> * If you have a light pen or digitizer with one button or tip switch, each time you select a tool, the first press in the drawing area has the same effect as 👾. Following presses are treated as 👾

2. Installation

The PC Paintbrush installation procedure, PCINSTAL, explained in this chapter allows you to create working copies of PC Paintbrush. **This should be done first**. Find the appropriate installation process for a two drive PC, single drive PC, PCjr or hard disk and follow the instructions. Once the installation is completed, the original PC Paintbrush disks should be placed somewhere for safekeeping, and you should then use your working copies of PC Paintbrush.

2.1 Making the Working Copy

What you need in hand

PC Paintbrush master disks (1 and 2)
Mouse driver disk (possibly)
2 blank diskettes (unless you have a hard disk)
DOS system disk

Note: We supply a number of drivers for drawing devices on PC Paintbrush disk 2. However, if yours is not included in the list below, you need the driver disk provided with your drawing device.

Table 2.1

We provide drivers for:

Disc Instruments MicroLynx	Kurta Pen Mouse
GTCO Digipad	Logitech Mouse
Joystick	Summapad MM1201
Key Tronic KB5153 Keyboard	Summadpad MM961
Keyboard	

To use the keyboard as your drawing device with PC Paintbrush, see the file named MOUSEK.DOC on disk 1.

Note: In the following sections, it is important to note that some instructions are displayed in a different type style. For example, **COPY**. When you see this type style, make sure you type everything exactly as you see it, spaces included.

2.1a Getting Started - Two Drive PC

1. Turn on the computer and put the DOS disk in drive A and a blank disk in drive B. Answer the date and time questions, if asked.

2. At the A> prompt, type **FORMAT B:/ S** and press the Enter key. Press the Enter key when ready and the formatting begins. When the formatting is complete, type **Y** and insert your other blank disk in drive B. Press the Enter key when ready. When the formatting is complete type **N** to return to the A> prompt.

3. Remove the DOS disk from drive A and insert PC Paintbrush disk 1. Insert a formatted disk into drive B and type **COPY A:*.* B:** then press the Enter key. Wait for all files to be copied and when complete, insert PC Paintbrush disk 2 in drive A and the other formatted disk in drive B. Type **COPY A:*.* B:** and press the Enter key when ready. When the copying is complete, you are returned to the A> prompt.

4. Take the master disks and **put them somewhere safe.** Label your work-

ing copies of PC Paintbrush and from
now on, these copies are referred to as
disk 1 and disk 2. Insert disk 1 into drive
A. If needed, put your mouse disk or disk
2 into drive B.

Now you are ready for the installation procedure, PCINSTAL.
The instructions are found in Section 2.2.

2.1b Getting Started - Hard Disk

1. If your computer can boot from the
   hard disk, just turn it on and answer
   any questions. Otherwise, insert
   your boot disk in drive A, turn on the
   computer, then answer any ques-
   tions.

2. Make your hard disk the default
   drive. For example on an IBM PC-
   XT, type C: to make C the default.
   Now create a subdirectory for PC
   Paintbrush by typing:

   C:
   **C>CD **
   C>MD PBRUSH

3. Insert PC Paintbrush disk 1 in drive
   A and type:

   C>CD \PBRUSH
   C>COPY A:*.*

4. Insert PC Paintbrush disk 2 in drive
   A and repeat step 3.

5. If your mouse is not listed in Table
   2.1, insert your mouse disk, instead
   of PC Paintbrush disk 2, in drive A
   and follow the instructions.

Now you are ready for the installation procedure, PCINSTAL. The instructions are found in Section 2.

2.1c Getting Started - One Drive PC, PCjr

1. Turn on the computer and put the DOS disk in the drive. Answer the date and time questions, if asked.

2. At the A> prompt, type **FORMAT B:/ S** and press the Enter key. When prompted, place a blank disk in the drive and press the Enter key. When the formatting is complete, type **Y**, remove the disk and replace it with the other blank disk. Press any key when ready. When the formatting is complete, type **N** and press the Enter key and you are returned to the A> prompt.

3. Insert PC Paintbrush disk 1. Type **COPY A:*.* B:** followed by the Enter key. Your computer now refers to your blank disk in the drive as B, and the PC Paintbrush master disk 1 as A. Insert each disk as instructed. When copying is complete, remove disk 1 and replace it with PC Paintbrush disk 2 and type **COPY A:*.* B:** followed by the Enter key. Follow the same procedure but use your other blank disk. This process may take a while, so be patient. When the copying is complete, take the master disks and **put them somewhere safe.** From now on your working copies of PC Paintbrush are referred to as disk 1 and disk 2. Make sure you label them.

Now you are ready for the installation procedure, PCINSTAL.
The instructions are found in Section 2.

2.2 PCINSTAL

Once you have made either backup copies of PC Paintbrush or
copied PC Paintbrush to your hard disk, you are ready for
PCINSTAL.

1. At the DOS prompt, type **PCINSTAL**.
    Press the space bar at the opening
    screen and the PCINSTAL menu
    appears.

```
┌─────────────── PC Paintbrush Install Menu ───────────────┐
│                  (c) 1985, ZSoft Corporation             │
│                                                          │
│                                                          │
│ 1. Drawing Device   ..............   Joystick            │
│    Drawing Device Port                  GAME1            │
│                                                          │
│ 2. Display Adapter  ..............   IBM Color Card (2.8)│
│    Display Adapter Mode                  640x200 2 color │
│                                                          │
│ 3. Printer  .....................    Epson LQ-1500 Printer│
│    Printer Mode                          240 dpi         │
│                                                          │
│ 4. Printer Port ..................   LPT1                │
│                                                          │
│ 5. Save Current Settings / No More Changes               │
│                                                          │
│                                                          │
│ Please Enter Number to Change: ▌                         │
│                                                          │
└──────────────────────────────────────────────────────────┘
              Press Esc to quit (making no changes)
```

2. Select your:

    *   Drawing Device - choice 1. After
        pressing "1" a menu of drawing
        devices appears. Press the number
        or letter that corresponds to your
        drawing device, or press "0" to see

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another page of drawing devices. After
your choice is made, you are returned
to the main menu.

*   Display Adapter - choice 2. Follow
    the same procedure as you did for
    the drawing device.

*   Printer - choice 3. Follow the same
    procedure.

*   Printer Port - choice 4. Follow the
    same procedure.

3. When the main menu shows the cor-
    rect list of devices, select option 5 in
    order to save the setup to your disk.

4. You may be asked to place either
    your mouse disk or disk 2 in drive A.
    Place disk 1 in drive A if asked.

PCINSTAL does three things. First PCINSTAL customizes
FRIEZE for the printer you are using. If you have a single or
two drive PC, it transfers the mouse driver to your working
disk. If you have a hard disk, it transfers your mouse driver to
your PBRUSH subdirectory. Finally, it creates a batch pro-
gram named PAINT.BAT that automatically runs FRIEZE and
PC Paintbrush.

2.3 Running PC Paintbrush

If your display adapter card has a BIOS Emulator program,
such as GMBIOS for Tecmar or QCI for QuadColor, then you
must run this program **before** you run FRIEZE or PC
Paintbrush. You may choose to add this program into
PAINT.BAT so that it is run everytime before FRIEZE or PC
Paintbrush. Consult your display adapter hardware manual
and determine if you need to run this program.

If you have a two drive PC, follow these instructions to run PC Paintbrush:

1. If the computer is off, insert disk 1
    and turn on the power. Answer any
    questions, if asked, then type **PAINT**
    and press the Enter key.

2. If the computer is on, insert disk 1 in
    the default drive and type **PAINT** and
    press the Enter key.

If you have a hard disk, follow these instructions to run PC Paintbrush:

C>**C:**
C>**CD \PBRUSH**
C>**PAINT**

If you have a single drive or PCjr, follow these instructions to run PC Paintbrush:

1. If the computer is off, insert disk 1
    and answer any questions. Now type
    PAINT and press the Enter key.

2. If the computer is on, insert disk 1
    and type **PAINT** and press the Enter
    key.

2.4 Post-installation

Once you have installed PC Paintbrush for your hardware (printer and video display) you probably never need to reinstall it. You can then remove PCINSTAL.EXE file from your program disk. Do this by placing your working copy of PC Paintbrush in drive A and type:

A>**DEL PCINSTAL.EXE**

Deleting this file creates more room for pictures on the disk.

Note that disk 2 contains all the various fonts. You may want to use these fonts when running PC Paintbrush. See Section 6.4 on using the fonts on disk 2. Otherwise, use disk 1 to run PC Paintbrush.

Again, please keep your master copies of PC Paintbrush somewhere safe. If something happens to your working copies, repeat the installation procedure discussed in section 2.1 using your master copies. If you make any changes such as changing drawing devices or printers, you must rerun PCINSTAL to make the changes. See Chapter 8 for additional information.

3. Guided Tour

Here is your chance for a quick introduction to PC Paintbrush. Insert PC Paintbrush disk 1 in drive A> and type **PAINT**. The PC Paintbrush screen appears:
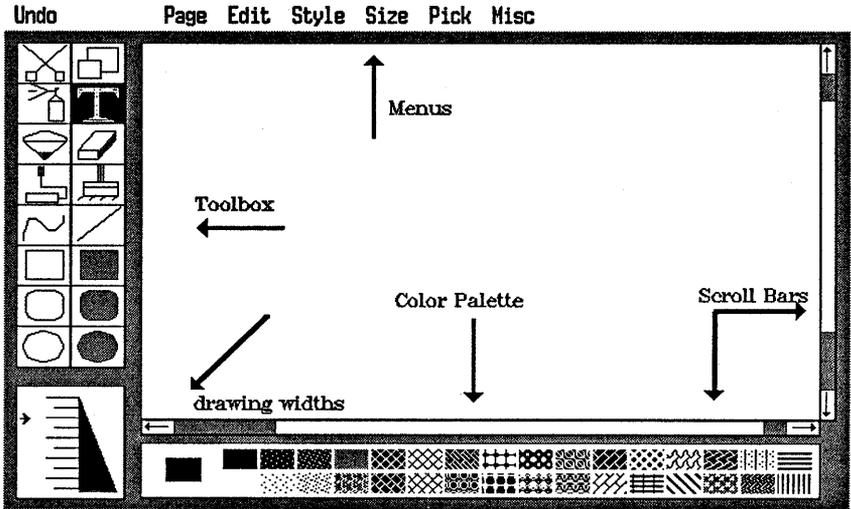
As you move ⊙, a mark, which is your cursor, moves across the screen. Your cursor varies, depending on the tool you are using and whether or not it is in the drawing area.

Note: Any time you make a mistake, select the Undo menu at the top of the screen by pressing ⊙. If you change your mind and do not want to undo your drawing, reselect the Undo menu. Whenever you change tools, only what you created with the current tool is erased.

3.1 Creating a Drawing

Let's draw a grandfather clock. Move your cursor to the sec-

tion in the bottom left hand corner of the screen. This section shows the various drawing widths, and the current drawing width is indicated by ▶. Change drawing widths by pressing ⊟ (the left button) on top of the first drawing width. The new drawing width is now indicated by ▶.

Now, change tools. Select the hollow circle by pressing ⊟ on top of the circle. The active tool is the one that is highlighted. Your cursor appears as a "+" in the drawing area. Move your cursor so that it is in the middle of the drawing area and press ⊟. This sets the center of the circle. Hold down the Shift key and slowly move your cursor away from the center. When the circle is about the size of the circle in figure 1, press ⊟ and your circle is drawn.

Next, go to the text tool which is the one that is a **T**. Press ⊟ on top of the tool to activate it. An open box appears in the screen. See figure 2.

Now move ⊟ to the top of the screen to the Size menu. Select this menu by pressing ⊟ on top of the menu name. A list of size selections appears. Select approximately a 17 point size - press ⊟ on this size option. The current size is indicated by √. See figure 3.

Move your cursor inside the circle and to the top of it and press ⊟. The open box moves to this point. Use your keyboard and type **12**. The text tool treats your keyboard just as a typewriter, so if you make a mistake, use the backspace key. Continue this procedure until you have typed in the 3, 6, 9 and 12, creating the face of the clock. See figure 4.

Select the line tool and move to the center of your circle. Press ⊟ and the line moves to this point. Move your cursor in the direction of the 12. Paste the line on the screen by pressing ⊟. Reposition the line so that you draw another line in the direction of the 3 - paste the line on the screen by pressing ⊟. You have now completed the hands of the clock. See figure 5.

Select the hollow box tool and move underneath the face of the clock. Press ⊖ to fix one corner of the box and press ⊖ to paste the box on the screen. This is shown in figure 6.

Reselect the line tool to outline the face of the clock and the hollow box. See figure 7.

Continue using the line tool and move to the top of the box that you just drew and press ⊖. Move to the original point and draw another diagonal line, this time in the opposite direction. See figure 8.

Pick the filled circle tool and move just under the end of one line. Press ⊖ under the line to move the center of the circle to this point. Barely move ⊖ and then press ⊖ to paste a small circle at the end of the line. Create another circle at the end of the other line, creating the pendulums. This is displayed in figure 9.

Now that you have drawn your clock, you may fill in some of the areas. To do this, select the paint roller tool. Move to the bottom of the screen and select a different color. Press ⊖ on top of the desired color. Move to the area you wish to paint and press ⊖ in that area. See figure 10.
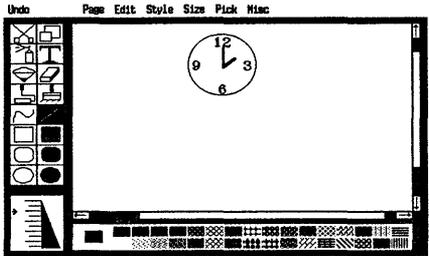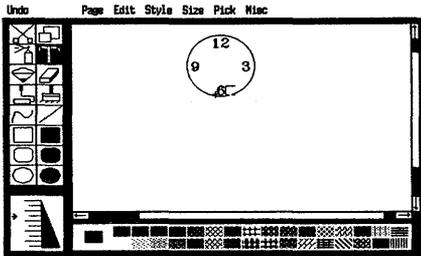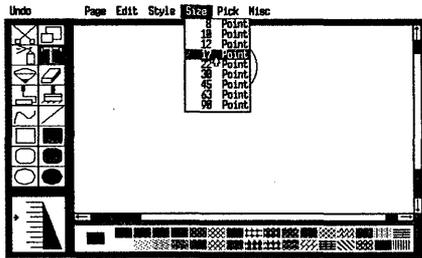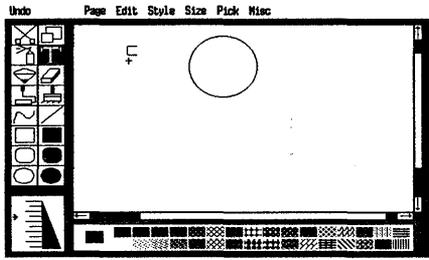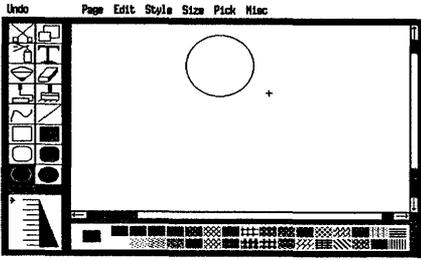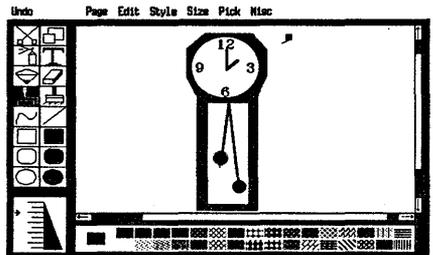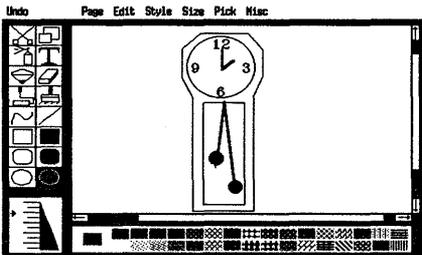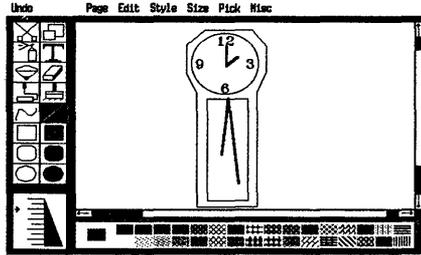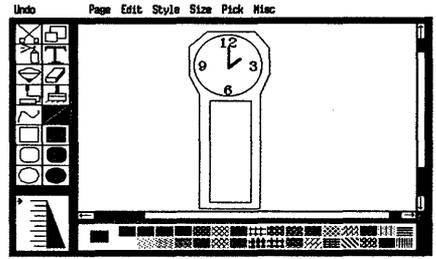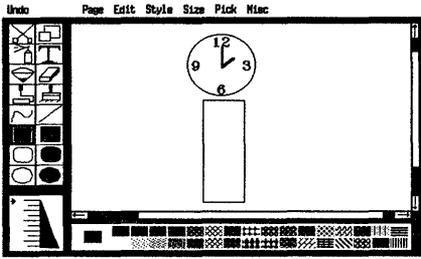
3.2 Printing Your Drawing

If you want to print your picture, move your cursor to the Page menu. Press ⊙ and seven different options appear. Highlight the Print option by pressing ⊙ over the name. If your printer is ready, select OK to get a copy of your picture.
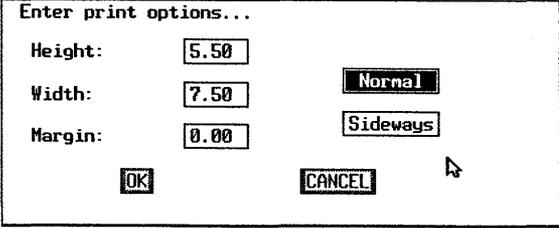
```
┌──────────────────────────────────────────┐
│ Enter print options...                    │
│                                           │
│  Height:      │5.50│                      │
│                          ┌────────┐       │
│  Width:       │7.50│     │ Normal │       │
│                          └────────┘       │
│                          │Sideways│       │
│  Margin:      │0.00│     └────────┘       │
│                                       ⊳   │
│           │OK│           │CANCEL│          │
│                                           │
└──────────────────────────────────────────┘
```

3.3 Saving Your Drawing

If you want to save your picture, move to the Page menu and press ⊙. This time, select the Save as... option and a list of names appears. Initially this list is empty. Move to the bottom of the list and select ??. When the Use File box appears, use your keyboard to type a name. For example, type in **CLOCK** and press the Enter key. For future editing, your picture is available through the Load from... option in the Page menu.

3.4 Clearing the Screen

If you are finished with your picture and are ready to continue with PC Paintbrush, move to the Page menu and select the Clear option. Select OK to clear your screen or select CANCEL if you change your mind.

3.5 Quitting PC Paintbrush

If you are finished drawing, select the Quit option in the Page menu. You are asked if you are sure, so select Yes if you wish to quit. You are then returned to DOS - the A> prompt.

3.6 Final Comments

This example is just the beginning to using PC Paintbrush. There are other tools to use as well as additional menu options. Chapters 4-7 give you more detailed information on using the tools and menus.

4. Objects on the Screen

4.1 The Cursor

The cursor is the object on the screen that moves as you move your mouse. The cursor appears differently in the drawing area depending on what drawing tool you choose. It always appears as an arrow outside the drawing area.

4.2 The Toolbox

To draw on the screen, use tools selected from the group of pictures on the left--the toolbox. The toolbox contains tools that draw, fill, airbrush, erase, set type, and rearrange the items on the screen. To select a tool from the toolbox, position your cursor on top of the tool's picture then press 🖰.
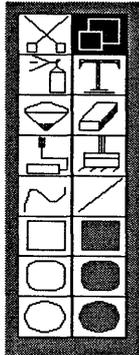
4.3 Drawing Widths

The available drawing widths are displayed in a box on the lower left corner of the screen. The current width is marked by an arrow - ▶. When you draw unfilled objects such as lines, boxes, circles or use the spray paint can, the width determines the thickness of the object. To select a specific width, place the cursor on top of the desired width and press 🖰.

4.4 Colors and Color Patterns

The colors and color patterns make the color palette and are diplayed along the bttom of the screen. These colors are used by nearly every drawing tool. To select a color or pattern, move the cursor onto one of the color samples and press ⊕.

The black box to the left of the color patterns is the foreground color. The area surrounding it is the background color. To change the foreground color, go to the desired color and press ⊕. To change the background color, press ⊕.

The background color is used by the Eraser, the Color Eraser, the Clear Screen function, and the Text tool. See Chapter 6 for a more detailed discussion of these icons and the background color.

4.5 Scroll Bars

Th actual drawing area is the entire screen. Scroll Bars allows you to draw in the areas covered by the toolbox, menus, drawing widths and color palette. See Section 5.1 for complete instructions.

Scroll Bars

Scroll Bars

4.6 Menus

The words at the top of the screen are various menus which allow you to change the way some tools operate. These menus are called **pull-down** or **drop-down** menus because of the way they work. To pick an item from the menu:

1. Move the cursor to the menu and press ⊕ then release the button.

2. Move ⊕ (your mouse) until the desired selection is highlighted.

3. Press ⊕.

Some of the handier menu options include:

*   Undo. It allows you to rectify your mistakes.

*   Quit. It is found in the Page menu. Use this option when you wish to quit PC Paintbrush. Select YES to quit, NO if you change your mind.

*   Clear. It is found in the Page menu.
    Clear clears your screen to the back-
    ground color.

The menus are discussed in Chapter 7.

Undo   Page Edit Style Size Pick Misc

5. Special Screen Features

5.1 Scroll Bars

Your picture area is at least as large as the screen. Your drawing area is just a window on the entire picture. Scroll bars lets you move around in the drawing area so that you can edit your entire picture.

Scroll bars are made of three different parts: the gray bar, the white area inside the gray bar and the arrows on each end.
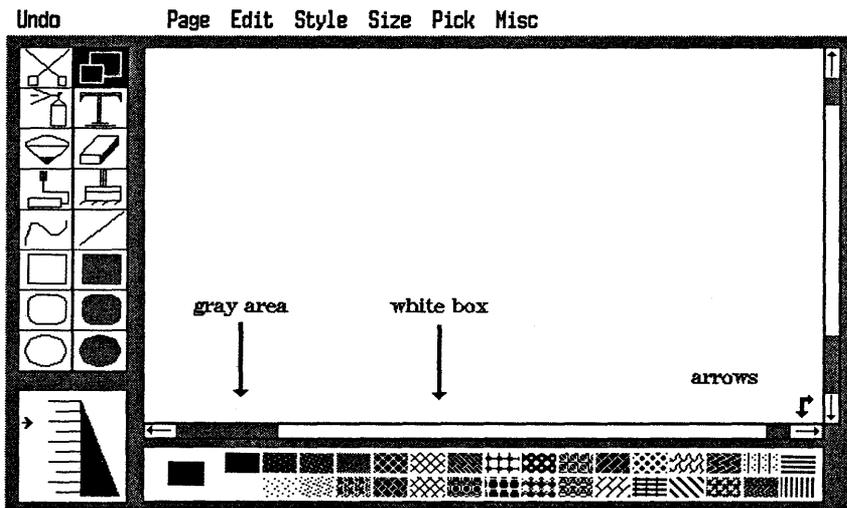
The gray area represents your entire picture. The white area inside represents the window or drawing area. It is sized proportionately with the gray area. Thus, if you have a small picture (about one screen), then your white area is large, taking more of the gray area. If your picture is larger, then the white area will be smaller since the drawing area represents a smaller piece of the screen.

5.1a Recommended Use for Scroll Bars

You can scroll through your picture three different ways. You can use the arrows on either Scroll bar. Move your cursor to an arrow and hold down ⊟ on top of the arrow. This pulls the white area in that direction, so if you selected the arrow pointing up, your picture moves, pulling the white area towards the up area, moving the window up.

You can also use the white box to scroll. Go to either white area and hold down ⊟. Now "drag" the white box - keep holding ⊟ and move the Scroll bar. Note how your picture moves. This method of moving is best for smaller pictures and when you are in Zoom mode. See Section 7.7b for information on zoom-in and ZOOM-in.

When you have a rather large picture, then it is best to use the gray area to scroll. Select a gray area and press ⊟. Your window moves in ½ page increments towards the cursor.

5.2 The Double Click Option

The double click option is actually a shortcut to some PC Paintbrush features. To use the double click option, press ⊟ twice quickly over the tool or color palette. Double click works with:

1. The pick tool. See Section 6.2.

2. The color eraser tool. See Section 6.5.

3. The eraser tool. See Section 6.6.

4. The paintbrush tool. See Section 6.7.

5. The color palette. See Section 7.7d.

6. The Tools

The tools are found to the left of the drawing area. To select a tool, place the cursor on top of a tool's picture and press ⊡. When you choose a tool, it becomes highlighted.

6.1 Introduction to the Scissors and Pick Tool

The scissors and pick tool work similarly. Both work with the Edit and Pick menus to let you:

1. Select any part of a picture and move it or copy it. See Section 6.2.

2. Save your cutout for future use, discussed in Section 6.2a.

3. Modify your cutout. For example, you can take a cutout out and enlarge it or you can rotate it 90 degrees. See Section 6.2b.

4. Section 6.2c gives you information on transparent and opaque paste.
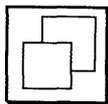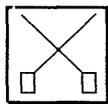
6.2 Using the Scissors and Pick Tool

The scissors and pick tool only differ from one another in how you define the cutout. The scissors tool uses freehand line to surround an area while the pick tool uses a rubber band box.

1. Select either the scissors or pick tool. When you move you cursor into the drawing area, your cursor appears as a plus for the scissors tool and a rubber band box for the pick tool.

2. For the scissors tool, press ⌐ and draw a line around the area you want to select. For the pick tool, press ⌐ to set the fixed point. Use the rubber band box to surround the rectangular area you wish to select.
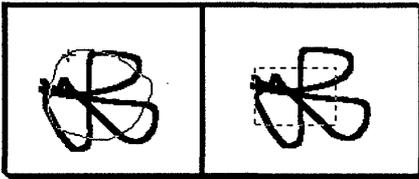
3. When you are finished surrounding your object with the scissors, press ⌐. Although you surrounded an object in a free hand manner, you see a box appear on your screen. Only the object that you defined and not the entire box gets moved. For the pick tool, press ⌐ to define the area.

---

* If you make a mistake defining the
  object, move your cursor outside of
  the box and then press ⊡.

* If you want to leave a copy of your
  cutout behind rather than moving
  it, hold down the Shift key and
  then press ⊡. When you move the
  cutout, a copy of the cutout stays
  behind and you also have a cutout
  to move. Once you have moved the
  cutout from the original position,
  release the Shift key.

Now you are able to place your cutout anywhere on the
screen. From here on, the pick and scissors tool work the
same way. Move your cursor (now an arrow) to the inside of
the box. Hold down ⊡ for a transparent paste and ⊡ for an
opaque paste (see Section 6.2c on transparent and opaque
paste) and push your object anywhere on the screen. Release
⊡.

To make multiple copies of the cutout, hold down the Shift key
and press ⊡ for a transparent copy and ⊡ for an opaque
copy. Then repeat the same procedure.

To brush your object on the screen, hold down the Ctrl key and
press ⊡ for a transparent brush and ⊡ for an opaque paste
and rub the object across the screen.

The scissors and pick tool can also be used with the Edit and
Pick menus. See the next section for complete instructions.
Keep in mind that every option available to the pick tool is
also available to the scissors tool, so any reference to the pick
tool also applies to the scissors tool.

6.2a Saving and Restoring Cutouts

If you want to save a cutout on disk for later:

1. First, select the Name is... option
    from the Edit menu. Move to the ??
    at the bottom of the menu.

2. When the Use file box appears, type
    in a valid DOS file name and press
    the Enter key.

    *   By default, each file name receives
        the .PCC extension, so if you do not
        specify an extension, your cutout
        receives .PCC. If you do not want
        your cutout to have an extension,
        then type "." at the end of your file
        name. For example, type HOUSE.
        and then press the Enter key.

3. Now select the pick tool and define
    the cutout you wish to save.
    Remember, you can use the options
    from the Pick menu to make altera-
    tions to your cutout before saving it.
    See the next section for information
    on using the Pick menu options.

4. Go to the Edit menu and select Cut or
    Copy.

    *   Cut removes your cutout from the
        screen and saves it to disk. Copy
        saves your cutout to disk but leaves
        it on your screen.

You have now saved your cutout. Note that you should specify
a new name for each cutout that you want to save. Otherwise,

when you select Cut or Copy, the new cutout gets saved to the name currently present in Name is...

When you want to use this cutout in the future:

1. Select Name is... from the Edit menu. Highlight the cutout you want and press ⊡.

2. Select Paste from the Edit menu. Note that the pick tool is now active. Your cutout should appear in the upper left corner of the drawing area.

3. Now you can place your cutout on the screen. Press ⊡ for a transparent paste and press ⊡ for an opaque paste. You can place it once on your screen or paste it continuously.

If you are using a single drive or two drive computer and you save many cutouts and pictures, you eventually run out of room on your disk. When this happens, you receive the error message:

ERROR
Write Error

If you have a single drive computer, replace the disk in the A> drive with another disk. Now repeat the same procedure as above to save your cutout.

If you have a two drive PC, you have two choices:

1. Replace the disk in the A> drive with another disk. Repeat the same procedure as above to save your cutout.

2. Insert a disk in the other drive.

Select the Name is... option in the Edit menu. The top line of the menu is: **A:_____**.Highlight this line and press ⊡.

3. When the Use file box appears, type in the drive location of the new disk and press the Enter key. For example, if the new disk is in drive B>, type **B:** and press the Enter key. Now repeat the above procedure to save your cutout.

Hint: If you are saving pictures on a hard disk, see the section on PBRUSH.CNF in Appendix A. This feature gives you advice on saving pictures in specific subdirectories for your convience. It can also be useful for users with a two drive computer.

Note: You may also save pictures using the Save as... and Load from options in the Page menu. See Section 7.2a on using these options. You may also save or restore the pictures using FRIEZE. See Chapter 9 for additional information.

6.2b Modifying Your Cutout

Using the options from the Pick menu you can do the follow-
ing to your cutout:

    1. Rotate
    2. Flip Horizontal
    3. Flip Vertical
    4. Inverse
    5. Shrink + Grow
    6. Tilt
    7. Clear

To use the scissors or pick tool and a Pick menu option:

    1. Select the pick tool by pressing ⌨
        on top of the tool.

    2. Define the area you want to manipu-
        late with the rubber band box. Press
        ⌨ to set the fixed point and ⌨ to set
        the defined area on the screen.

    3. Select the Pick menu and choose an
        option.

      * Rotate rotates the defined area 90
        degrees.
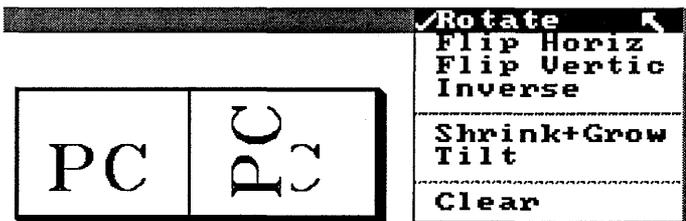
* Flip Horizontally/Vertically flips the defined area from side to side or top to bottom.

Rotate
Flip Horiz
Flip Vertic
Inverse

Shrink+Grow
Tilt

Clear
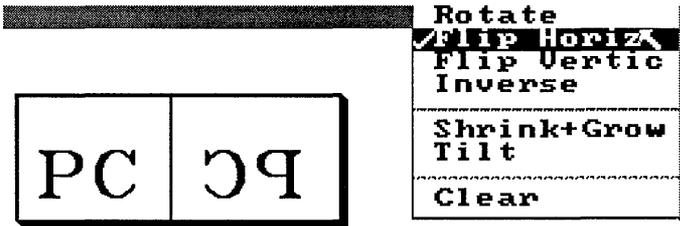
* Inverse causes the colors to invert. For example in monochrome, black becomes white and white becomes black.

Rotate
Flip Horiz
Flip Vertic
Inverse

Shrink+Grow
Tilt

Clear
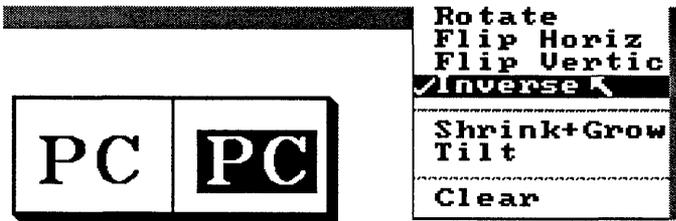
* Shrink + Grow creates another rubber band box. Move the second box around the screen with ⌨ until you are satisfied with the size. Press ⌨ to set the fixed point and press ⌨ to "shrink" or "grow" the defined area inside the second box.
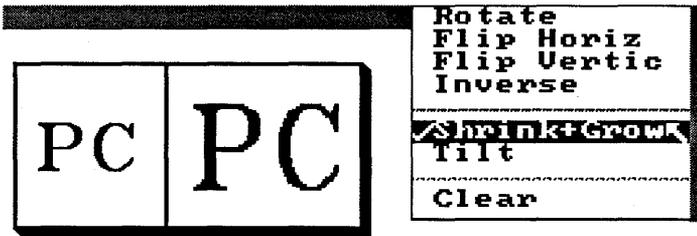
* Tilt creates a dotted parallelogram
  on the screen. Move ⊙ until you
  are satisfied with the amount of
  tilt. Press ⊙ to tilt the defined
  area.
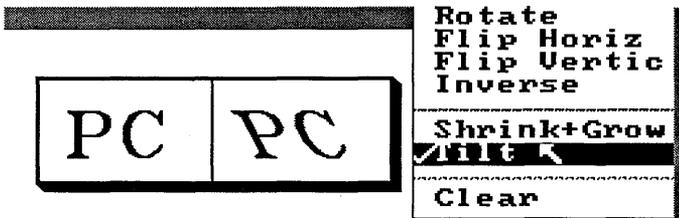
* Clear "clears" your original picked
  area. Using this option prevents
  the original object (the one you
  defined) from peeking out from
  behind the altered area.
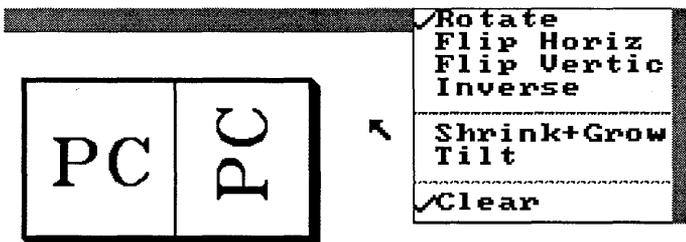
The Pick menu options Rotate, Flip Horizontal, Flip Vertical
and Inverse may each be active simultaneously.

The Shrink + Grow and Tilt options work singly; they can not
be used together nor with any other Pick menu options except
Clear. If you choose Shrink + Grow (or Tilt), your object
becomes fixed on the screen.

Clear may be used with any options. It is best to experiment
with different combinations.

6.2c Transparent and Opaque Paste

You have two ways to brush or move your cutout:

1. Transparent paste. With a transparent paste, **any** pieces of the saved cutout that have the same color as the **current** background color do not get placed onto the screen.

2. Opaque paste. An opaque paste treats your background color just as any other color.

If you followed the correct procedure to move or brush your cutout, you used a transparent paste. To use an opaque paste:

1. Define the cutout using the pick tool.

2. Move your cursor inside the rubber band box.

3. Now press ⊙ and not ⊙. Now hold down the Ctrl key and ⊙ and brush your cutout across the screen.

To get a better idea of the difference in transparent and opaque paste:

1. Create a simple drawing. Then define the area using the pick tool.

2. Move your cursor inside the box and press ⊙. Hold down the Ctrl key and ⊙ and brush your cutout across the screen.

3. Now, using the same cutout, press ⊙ inside the box. Brush it across the

screen, holding down the Ctrl key and
⌐. You should be able to tell the dif-
ference.
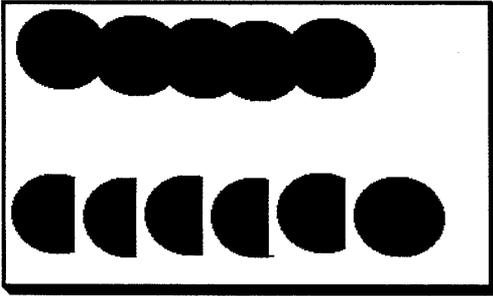
6.2d Double Click Option

The pick tool also has a double click option. When you double
click the pick tool, you see the full screen. Note that there is
no cursor present, allowing you to photograph or print your
screen (using FRIEZE - See Chapter 8) without printing your
cursor. To exit this mode, press the Esc key. This option is not
the same as the Show Screen option in the Page menu. See
Section 7.2c for complete instructions.

6.3 The Airbrush

The airbrush produces a random spray of dots on the screen. The spray continues as long as ⌨ is held. Select a larger width to produce a lighter spray on a larger area.
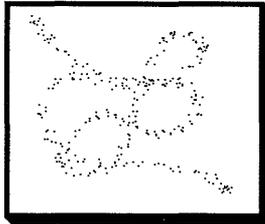
```
┌─────────┐
│    T    │
│   ───   │                        6.4 Text
└─────────┘
```

The text tool turns your screen and keyboard into a type-
writer. You may use this tool just as you do a typewriter. After
you select the text tool, the text cursor appears as an open box
in the drawing area. Place ⊕ cursor (a plus sign) at the point
you wish to type. Press ⊕ and the open box moves to that
point. Now, use your keyboard to type anything you want.

The default Style type is a Roman font. Fonts are either
stroke fonts or bit mapped fonts. A bit mapped font contains
the word "bit" while all others are stroke fonts. The default
size depends on your graphics card and what mode you run.
The choice of sizes depends on the font you choose. Bit fonts
have different size options than stroke fonts. On disk 1, there
are at least two different fonts: Roman (the default) font and
Bit8x8 font. The remaining fonts are on disk 2.

The text tool works with the Style and Size menus. To change
fonts and typeface, use the Style menu (See Section 6.4a). The
Size menu has various type sizes to use (See Section 6.4b).

Things to keep in mind while using the text tool:

    1.   You must be using the text tool to
        use any of the options from either
        the Style or Size menu.

    2.   Your ⊕ cursor must be in the draw-
        ing area to type.

    3.   If you change color, size, font or style,
        all your current type changes, too.

      *   If you change tools, reselect the
        text tool, select Undo twice, reposi-
        tion the open box (pressing ⊕) or
        scroll the screen, then your type is

"frozen." Subsequent changes to color, size, font or style does not affect that text.

4. Although you may activate more than one Style option, you may select only one option at a time. To activate more than one option, reselect the menu until all options you want are activated.

    *   When an option is activated, it is indicated by a check - √.

5. If you select a menu, but do not wish to make any changes, move your cursor off the menu and press ⊟ or select another menu.

6. **The current drawing width affects your text.** Smaller drawing widths are more appropriate with smaller text whereas a larger drawing width is more appropriate with larger text.

6.4a Text - Style Menu

The first option in the Style menu is Font selection. To change fonts, highlight this option and press ⊖. The available list of fonts appears. The remaining fonts are on disk 2 (unless you installed PC Paintbrush on a hard disk). If you have a one drive system:

1. Replace disk 1 with disk 2.

2. Select the Style menu and the various fonts on disk 2 are displayed.

3. Move your cursor until the font you want is highlighted. Then press ⊖. If you exit PC Paintbrush with disk 2 in the default drive, you may be instructed to insert a disk with a batch file. If this occurs, insert disk 1 and press any key and you are returned to DOS.

If you have a two drive system, you have two choices. You may replace disk 1 with disk 2 and follow the instructions for a one drive system. Or you can change directory locations. First place disk 2 in drive B. Then:

1. Select Font in the Style menu.

2. Select the top line (it probably reads: **A:**_____) and press the Enter key.

3. When the Enter search directory box appears, change to another drive. For example, type **B:** and press the Enter key to change to drive B. The menu of available fonts on disk 2 appears.

Not all the fonts options can be seen on the screen simultaneously. To see more fonts, press ⌨ on one of the arrows (▲) or (▼) that are to the right of the font selections. These arrows move the menu up or down.

The Style menu works differently, depending on what type of font you are using, stroke or bit mapped. If you are using a stroke font, your typing options are one of:

1. Light,
2. Medium or
3. Bold

    And any of:

1. Italic
2. Underline
3. Outline
4. Kerning
5. Shadow

You may use only one of the Light, Medium or Bold options at a time. Select the Style menu and move your cursor until one of the three is highlighted. Press ⌨ to choose one. The activated one is indicated by √.

The other five options may be used in any combination. You may either choose none, one or more. Selecting one of these options the first time activates it (indicated by √) and selecting it again deactivates it.

Selecting Italic italicizes your text while Underline simply underlines your text. Outline outlines your text - the background color is outlined by the foreground color. Kerning places your text closer together. Shadow is similar to Outline, but the background color lays slightly over one edge of the foreground color.

```
PC Paintbrush
PC Paintbrush  Italic
PC Paintbrush  Underline
PC Paintbrush  Outline
PC  Paintbrush  Kerning
PC Paintbrush  Shadow
```

If you choose a bit mapped font, your Style options are:

1. Proportional
2. Opaque

Proportional is similar to Kerning. The text is placed closer
together. However, Proportional does not work with all bit
mapped fonts. Opaque highlights the text characters with the
background color. If Opaque is not used, then the text is
placed over the picture immediately behind them.

6.4b Text - Size Menu

The Size menu gives you various sizes to type. If you are using a stroke font, the range of smallest to largest depends on your graphics card and what mode you are using. If you are using a bit mapped font, you actually have two options to change the size. You may change the height, width or both. The X options change the width of your text while the Y options change the height of your text. You may choose any combination.

```
Paintbrush Xx1,Yx3
Paintbrush  Xx2,Yx2
Paintbrush Xx3,Yx2
Paintbrush Xx2,Yx3
Paintbrush Xx3,Yx3
Paintbrush Xx3,Yx4
```
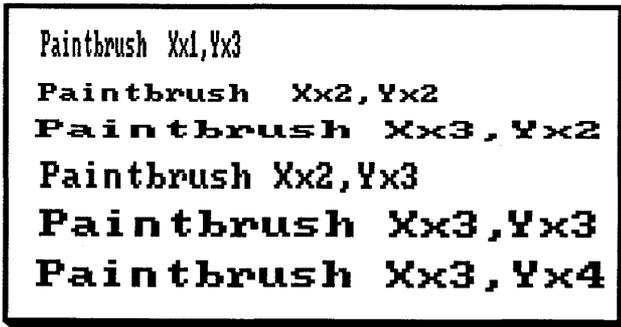
Note: With FRIEZE, you may change the height and width of printout, so the Size options may not correspond to printout size.

6.5 The Color Eraser

The color eraser is used to erase selected colors. The foreground color **only** is replaced by the background color. The color eraser is sensitive to width settings so you may change a small or large area. The cursor size in the drawing area reflects the width setting.
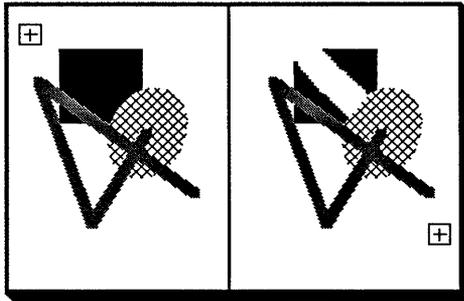
Hint: The color eraser is useful for changing one color to another without changing any other colors. For example, if you want to change blue to red:

1. Select blue as your foreground color and red as your background color.

   * Remember, to change the foreground color, place the cursor on the desired area and press ⊡. To change the background color, press ⊡.

   * Press ⊡ in the foreground area to return to changing the foreground color.

2. Move the color eraser over the area

you wish to change, holding down ⊟. In the above example, only blue changes to red. This technique is very useful when you have many small spots which need filling.

You can constrain the eraser to erase in a horizontal or vertical manner by holding down the Shift key as you erase.

If you want to change every occurrence on the screen of one color to another color, then you can use the double click option. Follow this procedure:

1. Select the color you wish to change as your foreground color and select the color you are changing to as your background color.

2. Press ⊟ over the color eraser twice (double click) and everything in the drawing area that is the foreground color is changed to the background color.

    *   In the above example, when you press ⊟ twice in a row over the color eraser, everything that is blue changes to red.
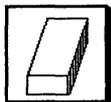
6.6 The Eraser

The eraser is used to erase more than one color at a time. Every spot the eraser touches is changed to the background color. Rub the eraser over an area while holding 🖰. The eraser is also sensitive to width settings, so the cursor reflects the various sizes in the drawing area.
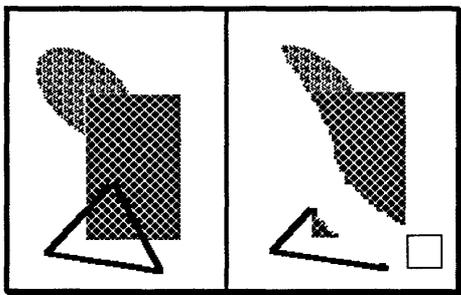
The eraser also has a double click option although it is different than the color eraser's. When you press 🖰 twice on top of the tool, a box appears in the screen. This double click option allows you to clear your screen, so select **OK** if you want to clear your screen, or **CANCEL** if you want to return to the drawing area without clearing your screen. This double click option is a short cut to **Clear** found in the **Page** menu. See Section 7.2d for additional information.

You can constrain the color eraser to erase in a horizontal or vertical manner by holding down the Shift key as you erase.
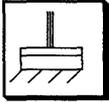
6.7 The Paintbrush

The paintbrush works similarly to a bristle paintbrush. Select a color and width. Hold down ⊞ and you may draw free hand shapes.

You can change the shape of the brush two different ways. One way to change brush shapes is to:

1. Select the Brush Shapes option in the Misc menu.

2. When the various options appear, select any stroke shape by pressing ⊞ over the desired shape.
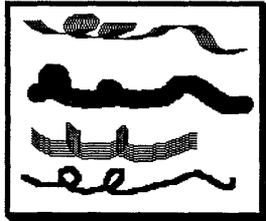
Your second option for changing brush shapes is to use the double click option:

1. Double click the paintbrush tool. The various brush shapes appear in the drawing area.

2. Select any shape by pressing ⊞ over the shape.

The different brush shapes allow you to vary your free hand

drawings. The default brush shape is the black square in the upper left corner of the box. The greater the drawing width, the longer the brush stroke. The cursor resembles the brush shape, so if the brush shape is a circle, for example, the cursor is a circle in the drawing area.

You can constrain the paintbrush to move in a horizontal or vertical manner by holding down the Shift key as you paint.
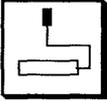
6.8 The Paint Roller

The paint roller is used to color in any shape. Place the cursor inside the area you wish to fill and press ⊙⊒. Your object is filled with the foreground color. For the paint roller, use ⊙⊒ only to cover patterned areas.
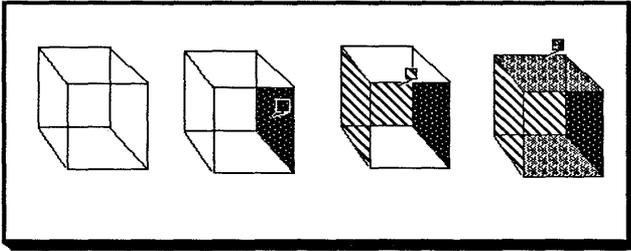
If your area has any openings, the paint leaks and fills the screen. In that case, either wait for the paint to stop leaking and use the Undo menu or press the Esc button to stop the filling and then use the Undo menu.

> * Any object that was just filled since selecting the paint roller is affected by selecting Undo. Therefore, if you are satisfied with an object you fill, reselect the paint roller to continue filling in more objects.

To fix your opening so that the paint does not leak again, use the Misc menu and choose one of the Zoom options. See Section 7.7 on The Misc Menu for additional information.

Hint: If you paint a shape with a color pattern and decide to change the color to either another pattern or a solid color, press ⊙⊒ and **not** ⊙⊒. Otherwise, you may find that only a few lines of the object are filled or that the colors blend together.

You may also find that after you fill an object, that some of the paint leaks out of the object but does not fill the entire screen. This occurs when the color pattern has one or more colors in common with the outline of the object that you wish to fill. To prevent this from happening, first fill the object with a color that neither the object nor the desired color pattern has. Then select the desired color pattern and fill the object by pressing ⊡.

6.9 The Curve

The curve tool allows you to draw curved lines as opposed to only straight lines. To draw curved lines:

1. Select the curved line tool. Your cursor appears as a plus in the drawing area.

2. Press ⊟ to set one end of the curve. You then see a rubber band line with a plus at your cursor spot.
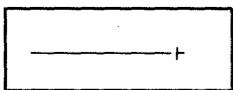
3. Move your cursor to another point and press ⊟. This sets the two endpoints of your curve. Note that an arrow now points to the first endpoint.

4. Move your cursor to set the angle of the curve into that first endpoint. When you are satisfied with angle, press ⊟. Note that the arrow moves to the second endpoint.
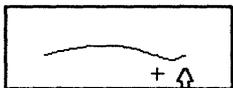
5. Now set the other angle and the entire curve. When curve and the angle are acceptable, press ⊙ and your curve is pasted on the screen.

* Pressing ⊙ backs you up one step at a time. Pressing ⊙ three times always lets you start over.

6.10 The Line

The line tool is used to draw connected or separate lines. Press ⊡ to position the fixed point. Press ⊡ to paste the line on the screen. Although the rubber band line on the screen is always thin, the actual line thickness is determined by the drawing width.
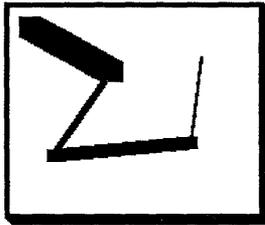
The F1 and F2 keys may be used with the line tool. F1 marks the point where your cursor is, and F2 remembers that marked point. This feature is useful for doing "sunburst" drawings. Let's say you want to draw a spider web. Using the F1 and F2 keys, you may create the web so that each line originates from the same point.

1. Begin in the middle of the drawing area and press ⊡ to set the point.

2. Then, press the F1 key to mark the point. Draw a line from the middle and press ⊡ to paste the line on the screen. Notice that the fixed point moves to the end of your line.

3. Press the F2 key and the fixed point of your line moves back to the one originally marked by F1. Continue until you have several lines begin-

ning from the middle. Remember to
press **F2** each time before drawing a line
from the middle.
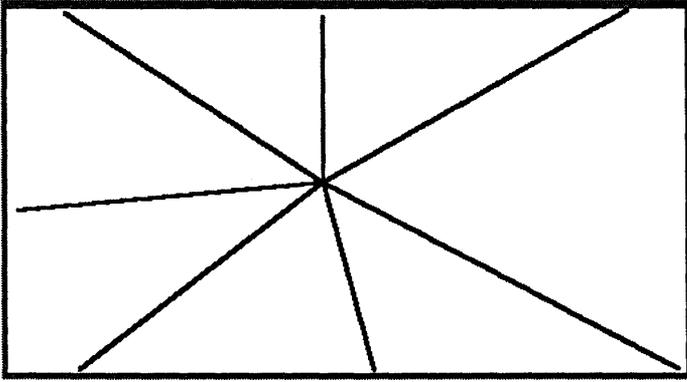
4. You may finish the spider web using
    the line or paintbrush tool.

You can constrain your line to move in a horizontal or vertical
manner by holding down the **Shift** key as you draw your line.
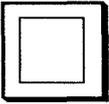
6.11 The Hollow Box

The hollow box is used to draw squares or rectangles on the screen. Pressing ⊙ moves the fixed point, while ⊙ pastes the box onto the screen. The drawing width affects the width of a box - the thicker the width, the thicker the sides of the box. However, the rubber band box which is the drawing area always appears as a thin box.
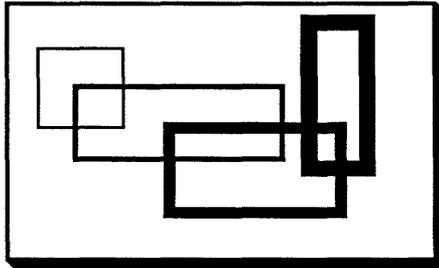
If you want to draw a square, hold down the Shift key as you move your cursor. Press ⊙ when you are satisfied with the size of your square.

Hint: If the Shift key does not make a perfect square, the default aspect ratio is probably wrong. See Section 7.7g for information on adjusting the aspect ratio.
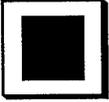
■ 6.12 The Filled Box

The filled box works similarly to the hollow box tool. However, when you paste down the box, by pressing ⊙, the box is filled with the foreground color. Remember that you can draw solid squares by holding down the Shift key.
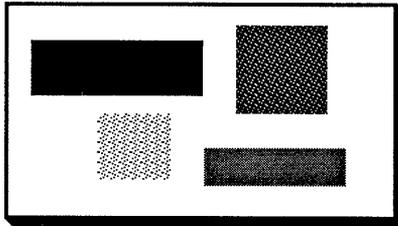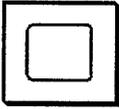
6.13 The Rounded Box

The rounded box is drawn in the same way the hollow and filled boxes are drawn. Press ⊖ to set the fixed point and press ⊖ to paste the rounded box on the screen.
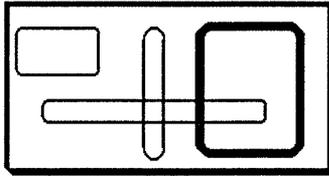
■ 6.14 The Rounded Filled Box

The rounded filled box is used just like the rounded box
except the box is filled with the foreground color when you
press ⊙●.
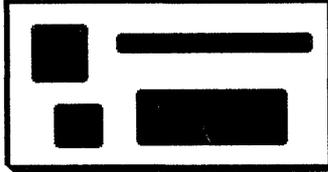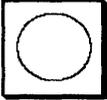
6.15 The Hollow Circle/Ellipse

When you move your cursor into the drawing area, it appears as a plus. To draw a circle or an ellipse:

1. Select the hollow circle. When you move your cursor into the drawing area, you see a rubber band circle.

2. Press ⌐ to set the center of your circle.

3. Stretch the rubber band circle or ellipse until it is the size you want.

4. Press ⌐ to paste your circle or ellipse on the screen.

The aspect ratio of your circle or ellipse depends on how you move your cursor. Hold down the Shift key to create perfect circles. Once you are satisfied with the size of the circle, press ⌐. If the Shift key does not produce perfect circles, see Section 7.7g to adjust the aspect ratio.

6.16 The Filled Circle/Ellipse

The filled circle works in the same manner as the hollow circle except that the circle/ellipse is filled with the foreground color. Hold down the Shift key to draw perfect filled circles.

7. The Menus

The menus are found across the top of the drawing area. Several of these are used with specific tools, such as the pick tool and the Edit menu. To select a menu, move your cursor until a menu is highlighted. Select an option and press ⊡ and the menu unfolds.

Any time you select a menu but decide not to use a menu option, move your cursor off the menu, or select another menu.

7.1 Undo

The Undo menu allows you to change your mind. The Undo menu "undoes" everything since selecting a new tool. For example, if you draw several squares but decide you do not want them, select the Undo menu. If you change your mind and decide to keep the squares, select the Undo menu again and your squares reappear.

Hint: If you are using the same tool for a period of time, reselect the tool every once in a while. Otherwise using the Undo menu deletes all your work. By reselecting the tool periodically, selecting the Undo menu deletes only your most recent work.

7.1a Local Undo

Local Undo turns your cursor into a selective eraser and lets you undo your latest work. To use Local Undo:

1. Press the Backspace key. Your cursor turns into a square with an "**X**" in it. The size of this square depends on the current drawing width.

2. Move your cursor over the area you

---

wish to undo and press ⊟. Rub the local
undo box on the screen just as you would
the eraser (Section 6.6).

3. When you are finished, release ⊟
    and you are returned to drawing
    with the same tool.

Local Undo only erases what you have drawn since selecting a
tool. So, if you used the hollow box tool then the hollow circle
tool, you would only be able to use the Local Undo on the
hollow circles.

Note: Local Undo does not work with the text tool.

Hint: We often use Local Undo to clean up slight mistakes. It
is particularly helpful in cleaning up stray dots made by the
airbrush.

7.2 Page

The Page menu has 7 options:

1. Save as...
2. Load from...
3. Merge Pic
4. Show Screen
5. Print
6. Clear
7. Quit

7.2a Save as/Load From

The Save as... and Load from... options save and restore your
pictures to and from disk. When you select Save as..., the
entire picture is saved to your disk. To save a picture using
this option:

1. Select the Page menu. Move your
    cursor until Save as... is highlighted.

Press ⊙.

2. A list of file names appears. Initially this list is empty. Move your cursor to ?? and press ⊙.

3. When the Use file box appears, type in a name and press the Enter key.

* If you do not specify an extension such as .PCX, then by default, your picture receives the .PCX extension.

* If you do not want your picture saved with an extension, type the name followed by ".". For example: **Graph.**

4. You may save pictures over previously saved pictures.

* Highlight the name of the file you wish to overwrite and press ⊙ to select it. You are then asked **Write over existing file?** Select **Yes** to overwrite the picture or **No** if you change your mind.

If you are using a single drive or two drive computer and you save many cutouts and pictures, you eventually run out of room on your disk. When this happens, you receive the error message:

ERROR
Write Error

If you have a single drive computer, replace the disk in the A> drive with another disk. Now repeat the same procedure as above to save your picture.

If you have a two drive computer, you have two choices:

1. Replace the disk in the A> drive with another disk. Repeat the same procedure as above to save your cutout.

2. Insert a disk in the other drive. Select the **Name is...** option in the Edit menu. The top line of the menu is: **A:**_____ if you have a single or two drive PC and is **C:\PBRUSH**_____ if you have a hard disk.

3. Highlight this line and press ◉. When the **Enter search directory** box appears, type in the drive location of the new disk. For example, if the new disk is in drive B>, type **B:** and then press the Enter key. Now repeat the above procedure to save your cutout.

You may choose to put all your pictures on the same disk. If so, follow the same procedure. If you exit PC Paintbrush with a disk in the default drive other than disk 1, you may be asked to insert a disk with a batch file. If this occurs, insert disk 1, press any key and you are returned to DOS.

Note: You may also save pictures using the scissors or pick tool with the **Edit** menu. See **Section 6.2** on using these options. You may also save or restore pictures using FRIEZE. See **Chapter 9** for additional information.

To restore a picture using the **Load from...** option:

1. Select the **Page** menu and move your cursor until **Load from...** is highlighted. Press ◉.

2. A list of previously saved pictures

appears on the screen. Move your cursor until the name of the file you wish to restore is highlighted and press ⊙.

3. If more than 7 pictures listed were saved, use ▲ and ▼ to the right to see more the file names.

4. If your picture was saved onto a different disk, make sure that the disk is in the default drive. Or, if your picture is on a different drive, select the line that initially reads: **A:_____** if you have a single or two drive PC. This line initially reads: **C:\PBRUSH_____** if you have a hard disk. When the Enter search directory box appears, change drives by typing in the drive name, such as: **B:** and then press the Enter key. Now you are able to select the picture you wish to restore.

Hint: If you are saving pictures on a hard disk, see the section on PBRUSH.CNF in Appendix A. This features gives you advice on saving pictures in specific subdirectories for your convenience. It can also be useful for users with a two drive computer.

7.2b Merge Pic

The Merge Pic feature is strictly for Lotus 1-2-3 and Symphony users. To use Merge Pic:

1. Run your spreadsheet and create then save a graph. You do not need to view the graph.

2. Run PC Paintbrush and select Merge Pic.

3. If the graph was saved in a different
directory, change directories via the
file box.

4. Select the graph you just saved. It
will show up on the screen after a
brief wait.

The background color of your graph is determined by PC
Paintbrush's background color. You can embed a graph in a
larger document. Just Clear the screen to the desired size,
then position the drawing area, using the Scroll bars. Do not
forget that Merge Pic uses one entire screenful for the graph.

7.2c Show Screen

Show Screen allows you to see the entire screen and not just
the drawing area. Press the Esc key to return to the drawing
area. Scroll bars allows you to draw in the areas covered by
the menus, tool, drawing widths and color palette. The Show
Screen option lets you see the complete screen. Remember, if
your picture is larger than one screen, you will only see one
screen and not the entire picture.

When you are in Show Screen mode, you can still draw with
the active tool. For example, this allows you to draw complete
circles that normally would be clipped if you were in the nor-
mal drawing area. The pick tool has a Show Screen double
click option that is slightly different. See Section 6.2 for addi-
tional information.

7.2d Print

You can print your screen by using the Print option. Select OK
to print or CANCEL if your printer is not ready. If the printout
is unsatisfactory, see Chapter 9 for information on using
FRIEZE.

The Print box lets you specify your height, width and left mar-
gin - measured in inches. It also lets you print your picture

sideways or normal. To change the height, width or left margin, point your cursor the present value and press ⏎. Then type in a new value. For example, if you want your picture to be eight inches high, type **8**. When you have made all the changes, select OK. If you make a mistake, select CANCEL.

7.2e Clear

When you want to clear your drawing area of everything, choose Clear. When asked if you are sure, select **OK** if you are sure and **CANCEL** if you do not want your screen cleared. Your screen is cleared to the background color, so if your current

The other Clear options allow you to clear your screen to a different height and width. This option lets you create and edit pictures larger than one screen. When you select a picture size, you can select pixels (PELS) or inches (IN) or millimeters (MM). The inches and mm settings refer to **printout size** when using a 1:1 screen to printer ratio. If you switch printers, then these sizes may no longer be accurate. When it comes time to print your picture, the Print box lets you adjust printout size. Again, be aware that your selection in Clear determines the optimal printout size.

Note that PC Paintbrush lets you create a large picture. For example, using a 16 color IBM EGA board, a picture of size 2000x3000 pixels will take up 3 million bytes of disk storage for the temporary file [(4x2000x3000)/8]. Therefore, this large image capability should be used with discretion and preferably a hard disk.

7.2f Quit

When you are ready to exit PC Paintbrush, select Quit. You are asked if you are sure, so select **Yes** if you do want to quit, **No** if you change your mind.

7.3 Edit

The Edit menu is used with the pick tool. The Edit menu has four options:

1. Cut
2. Copy
3. Paste
4. Name is...

You must be using the scissors or pick tool to use any Edit menu option. See Section 6.2 for a detailed discussion on using the Edit menu with these tools.

7.4 Style

The Style menu is used in conjunction with the text tool. The Style options vary, depending whether you are using a bit mapped font or a stroke font. See Section 6.4 for additional information.

7.5 Size

The Size menu is used with the text tool. The various options depend on the font you are using - a bit mapped font or a stroke font. See Section 6.4 for a more detailed explanation.

7.6 Pick

The Pick menu is used with the scissors and pick tool. The options are:

1. Rotate
2. Flip Horizontal
3. Flip Vertical
4. Inverse
5. Shrink + Grow
6. Tilt
7. Clear

menu folds up.

2. When you move your cursor into the
drawing area, your cursor appears as
a hollow box. Use this box to sur-
round the area you want to zoom-in.
Press ⊡ over the area. The upper
left hand corner of the drawing area
is converted to the area you zoomed-
in. The rest of the drawing area
becomes a blown up view of that
area.
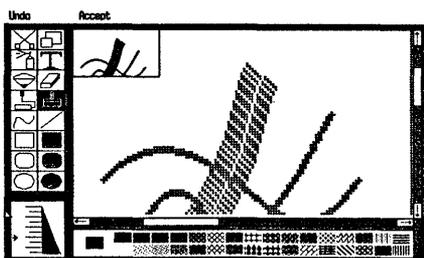
3. You may now alter your area. Press
⊡ to change one square at a time to
a different color. Pressing ⊡
changes the square to the current
background color while pressing ⊡
changes the square to the foreground
color. You may hold down either
mouse button and rub an area. You
may see how your area is being
changed by watching the upper left
hand corner of the drawing area.

4. If you want, pick different foreground
and background colors to make more
changes.

5. Once you are satisfied with your

changes, select Accept at the top of the
screen. If you make a mistake, select
Undo.

Scroll bars can be used with either zoom-in or Zoom-in.
Scroll bars let you scroll through your entire drawing area so
you do not have to select Accept and then reselect one of the
zoom options to make additional changes. Scroll bars work in
the usual manner, the white box indicates the size of the
zoomed-in area with respect to the entire drawing area. The
white box is small, indicating the zoomed area is a small por-
tion of the entire area. Remember, for best results, use the
white area of Scroll bars while in either zoom mode. See Sec-
tion 5.1a.

Note: Once you select Scroll bars, Undo will not delete your
previous changes, only your most recent work.

When you use the paint roller tool and the paint leaks, the
zoom options are useful to fix the areas where the paint
leaked. Also, use the zoom options to do delicate touch ups to
your drawings. The zoom-in and ZOOM-in options differ only
in the amount of magnification they provide.

7.7c Brush Shapes

The Brush Shapes option is used with the paintbrush tool.
Using this option allows you to create various free hand draw-
ings. See Section 6.7 for additional information.

7.7d Edit Pattern

Each color or pattern in the color palette is actually an 8X8
matrix. With the Edit Pattern option, you can change the
matrix, creating different patterns. If you want to create new
patterns:

   1. Select any solid color or pattern you
      wish to change from the color pal-
      ette. Make sure it is the foreground
      color.

2. Select the Edit Pattern option from the Misc menu. The pattern then appears on the screen in two ways. The individual squares (matrix) on the left are enlarged versions of the pattern. The right hand box shows the pattern how it will look in the picture.
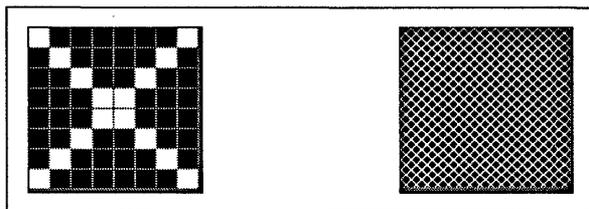
3. Select any combination of foreground and background colors. You can change only the pattern on the left. Press ⊡ to change a square to the background color and press ⊡ to change a square to the foreground color.

   * For best results, use solid colors as foreground and background colors when editing.

   * You can create patterns that appear to be different colors. For example, pick any pattern or color as the foreground color. Next, choose the Edit pattern option. Then select light cyan as your foreground color and yellow as your

background color. Alternate between cyan and yellow - in a checkerboard manner. When you are through, the new color appears to be a pastel green.

4. You can see the alterations by viewing the pattern on the right.

5. Once you are satisfied with your new pattern, reselect the Misc menu. The new pattern takes the place of the old pattern in the color palette.

A short cut to selecting Edit Pattern is a double click option. To use the double click option:

1. Go to the color or color pattern you wish to edit. Your cursor appears as an arrow in the color palette.

2. Press ⊡ twice over the desired color pattern. The 8x8 matrix of the color or color pattern appears.

3. Edit your pattern as you would if you had picked Edit pattern.

You may use your new color patterns as long as you are running PC Paintbrush, or until you change palettes (see the next section on changing palettes). The next time you run PC Paintbrush, the color palette is set to the original (default) color palette. You may save any new color patterns so that they are available the next time you run PC Paintbrush. See the next section for saving your changes.

7.7e Get Pattern and Save Pattern

The Get Pattern option is composed of a list of various sets of color patterns. Originally the list is made of three options:

1. DEF2

---

2. DEF4

3. DEF16

One of these patterns choices is the default depending on your graphics card. All options may not be available, this is also dependent upon your graphics card. For example, if you installed PC Paintbrush for two colors, you should not select a palette that has four or sixteen colors. If you choose one that can not be used with your card, you may receive the error message:

ERROR
Not found

Press ⏎ and no harm is done. More than likely, the pattern will look wrong. If so, reselect your correct default setting.

Once you select from the list, your color pattern setting changes. If you select an option, and you receive neither an error message nor a change in pattern setting, then you reselected the current setting. If this occurs when you first choose Get Pattern, then you selected the default palette. Remember your default setting in case you make any alterations (through the Edit Pattern option) and want them saved to your default setting.

You may switch between sets of patterns. Any change does not affect anything in the drawing area. This allows you to use more than one setting in a single picture.

You may create new patterns with the Edit Pattern option. Once you create a pattern that you want to keep, select the Save Pattern option. To use the Save Pattern option:

1. Select Save Pattern from the Misc menu.

2. A list of previously saved pattern settings appears on your screen. Initially, this list is only the original list of settings that are found in Get Pat-

tern.

3. To overwrite a previously saved pat-
    tern setting, simply select that set-
    ting name. When you wish to
    retrieve the setting, select Get Pat-
    tern and select the name.

4. To save your pattern setting under a
    different name, select ?? at the bot-
    tom of the list. When the Use file box
    appears, type in a name and press
    the Enter key.

7.7f Adj. Palette

The adjust palette option lets you adjust the current color pal-
ette. Depending upon your graphics card, you get one of two
possible options. One option consists of two boxes, initially the
box on the left is black and the one on the right is white. The
other option consists of three boxes, labeled red, green and
blue.

With the foreground/background option, you can change the
background color or the screen colors. Press inside the fore-
ground box to change the intensity of the screen colors. This
box allows you three different palettes of two intensity levels
for a total of six options. Press ⊟ to set the palette to zero.
Press inside the background box to alter the color that is usu-
ally black. This box allows you sixteen different changes. You
may select various combinations of colors and intensity levels.
Once you are satisfied with a palette, select OK. If you are not
satisfied with any options and want the original palette, press
CANCEL.

With the Red/Green/Blue option, you can change the appear-
ance of one color at a time. You can make a color anywhere in
the screen a different shade or color. Follow this procedure:

1. Select the Adj. Palette option in the
    Misc menu.

---

2. Before pressing ⌘, move your cursor to a color anywhere on the screen that you wish to alter. Press ⌘ on that color. If you pick the color black, everything that is black changes.

3. Go to the red, green and blue boxes. Press ⌘ in any box to make a change. Each time you press ⌘, you increment one intensity level of color. If you press ⌘ while in a square, it resets that color to zero. For instance, decide to change white by pressing ⌘ on top of a white spot. Go to the blue box and press ⌘. This resets the level of blue to zero. Now, go to the green box and press ⌘ and then ⌘. Do the same for the red box. This mixes equal parts of green and red and no parts of blue, producing a low intensity shade of yellow. Increase red and green (by pressing ⌘!) in equal parts to produce a higher intensity of yellow. Note that some boards have more selections than others.

4. Once you are satisfied with the shade of yellow, reselect the Misc menu. Experiment with other colors by using different parts of red, blue and green.

Hint: When changing a color, do not try changing a dither or pattern. Dithers and patterns are made of two or more colors, so when you select one of these to change, you actually only select one of the colors in that dither or pattern.

7.7g Adj. Aspect

The aspect ratio of a screen or printer is the ratio of the height of one pixel to the width of one pixel. Thus, an aspect ratio of 1 means your dots are square (most laser printers have a 1:1 aspect ratio). An aspect ratio of 2 would imply tall and skinny pixels such as an IBM color card in 640x200.

Aspect ratio is used to determine:

1.   The ratio of height and width for stroke characters.

2.   The ratio of height and width for fat box sides.

3.   The shape of circles and squares.

To change the aspect ratio:

1.   Place your cursor at the upper right inside the aspect ratio box.

```
┌─────────────────────────────────────┐
│ Make a Square                        │
│  ┌───────────────────────┐           │
│  │                        │           │
│  │              ▷          │           │
│  │                        │           │
│  │     1.062              │           │
│  │                        │           │
│  │                        │           │
│  │                        │           │
│  │ [OK]          [CANCEL] │           │
│  └───────────────────────┘           │
└─────────────────────────────────────┘
```
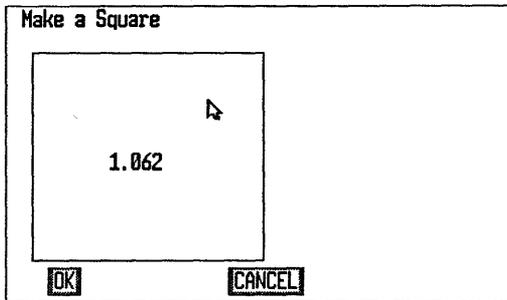
2.   Press ⊡ and pull the the box left or right. You should see the box move and the aspect ratio setting change.

3. Press OK to accept the new ratio,
    CANCEL to return the old value.

To check your aspect ratio, try drawing a circle. Be sure to
hold down the Shift key while drawing your circle on the
screen. If you get an elliptical shape, reset the aspect ratio
and try again until you get a perfect circle.

7.8 The Function Keys

The function keys, F1, F2, F5-F8 can be used with PC
Paintbrush.

1. The F1 and F2 keys are primarily
    used with the line tool. F1 marks the
    spot while F2 remembers the point
    marked by F1. These two keys are
    useful for doing "sunburst" drawings.
    See Section 6.10 on the line tool for
    more information.

2. The F5 and F6 keys each place a grid
    on the screen, F5 places a more
    closely spaced grid than F6. Press F5
    (or F6) to place a grid in the drawing
    area. Press F5 (or F6) again to
    remove the grid. You can use both
    simultaneously.

    Your foreground and screen colors
    affect your grid. For best results, use
    identical foreground and screen col-
    ors. (Do not use black.) Then when
    you press F5 or F6 to draw a grid, it
    appears as black on your screen. If
    your screen is black and your fore-
    ground color is another color, the
    grid usually appears as the fore-
    ground color. See Table 7.1 below for
    some examples on how the grid is

affected by the foreground and screen
colors.

When you want to remove the grid
from the screen, make sure that your
foreground color is the same color
that you used when you first invoked
the grid. Otherwise, you get another
grid invoked by the new foreground
color. To remedy this situation, press
F5 (or F6) again, to release that grid,
then select the original foreground
color and press F5 (or F6) to release
the original grid.

If you draw over some of the grid
points while it is on your screen,
when you remove the grid, those
points may remain in your drawing.
If you wish to remove them, select
one of the zoom options in the Misc
menu and change the grid points to
a desired color or use the colored
eraser.

Table 7.1

Screen Color	Foreground Color	Grid Color
White	Light Green Dark Blue Light Red White	Light Magenta Yellow Dark Cyan Black
Black	Light Green Light Blue White	Light Green Light Blue White
Light Blue	Black Light Red Light Blue	---------- Dark Magenta Black

This table represents only a few of the different combinations. Experiment to find which foreground and screen colors work best for you. You may find some combinations do not work well. For best results, we recommend that you set the screen and the foreground colors the same. After implementing the grid, you can change the foreground color and continue drawing.

3. The F7 and F8 keys limit your cursor movement so that you can draw only between invisible grid points. These keys are useful with the F5 and F6 keys so that you can draw diagonal lines between grid points. Also, use these keys to aid in drawing three dimensional frame drawings. F7 gives you narrow movement while F8 is for wide movement. To implement either grid snap, press F7 (or F8). To release the grid snaps, press F7 (or F8) again.

7.8a Constraining

You can limit your cursor movement so that it is easier to do certain drawings.

1. The F7 and F8 keys limit your movement between grid points. See the previous section for more information.

2. The Shift key contains movement

---

with most tools. For example, you can draw perfect squares and circles by holding down the Shift key. You can also constrain your movement in a horizontal or vertical direction with the paintbrush tool, line, color eraser and eraser. To constrain movement, hold down the Shift key and then move in either a horizontal or vertical direction. Even your slightest movement locks you into one direction. If so, release the Shift key and start again. See Chapter 6 for complete information.

You may use the Shift key with either of the grid snaps, F7 or F8. These constraints are helpful when you need to make specific drawings.

8. FRIEZE Printer Driver

FRIEZE is a self-contained program for printing PC Paintbrush pictures and for importing pictures from other programs for enhancement. Pictures can be stored and later retrieved for editing with PC Paintbrush or used in slide shows. With FRIEZE you can:

1. Print any PC Paintbrush screen or a subsection of any screen:

    *   normal or sideways,

    *   reduced or enlarged from 1 inch by 1 inch to 2 feet by 300 feet and

    *   with a left margin that you specify.

2. Save the screen or a piece of the screen to disk.

3. Restore a previously saved picture from the disk to the screen.

FRIEZE attaches itself to the PC-DOS operating system, so you can use it for printing or saving pictures from most other graphics programs.

8.1 A Quick Introduction to FRIEZE

Here is your chance to see what FRIEZE can do.

1. Run PC Paintbrush. This ensures that FRIEZE is loaded in memory. Select the Show Screen option in the Page menu.

2. Invoke FRIEZE by pressing the Shift

and PrtSc/* keys together. The FRIEZE
menu appears at the top of the screen:

FRIEZE - H,M,P,R,S,W,V:

3. Then select either:

    *   S to save a picture on the screen.
        Next, type any valid DOS file name
        and then press the Enter key and
        your picture is saved.

    *   R to restore a saved picture on the
        screen. Type the name of the file
        and then press the Enter key to
        restore a picture. Remember to
        include any extensions if you are
        restoring a picture from PC
        Paintbrush.

4. Select P to print the screen. In the
    Print option, select:

    *   C to print in character mode.

    *   N to print in normal or portrait
        mode.

    *   S to print in sideways or landscape
        mode.

You can press the Esc key to back out of FRIEZE. See Chapter
9 for a more detailed discussion of using FRIEZE.

8.2 Changing Printers

You customized FRIEZE for your printer through the
PCINSTAL procedure in Chapter 2. However, if you change
from one printer or plotter to another, you need to rerun
PCINSTAL and follow the same procedure but change only

---

option 3. Then make sure you choose option 5 to save the setup to your disk.

Once you complete PCINSTAL, you must "reboot" your computer by inserting your DOS disk and press the Ctrl/Alt/Del keys. Rebooting eliminates the resident copy of FRIEZE. Rerunning FRIEZE (by typing **PAINT**) then loads a new resident copy of FRIEZE. Remember, PCINSTAL customizes FRIEZE for your printer.

9. Using the FRIEZE Options

FRIEZE works independently of PC Paintbrush to let you print and save any piece of the screen.

You invoke FRIEZE by pressing the Shift and PrtSc/* keys simultaneously. The top of the screen then shows the FRIEZE menu:

FRIEZE - H,M,P,R,S,W,V:

Each character in the prompt line stands for a FRIEZE command:

H...Height
M...Margin
P...Print
R...Restore
S...Save
W...Width
V...Viewport

These menu options are described in the next three sections. It is helpful to remember that the Esc key lets you change your mind before any changes to FRIEZE are saved.

9.1 Setting the Viewport - V

With FRIEZE's viewport, you can restrict attention to a subsection of the screen. For example, you can isolate a specific detail of a picture and print an enlarged or reduced version of it by moving the viewport. By default, FRIEZE works on the entire screen.

First, make sure your display is showing graphics. Then to set the viewport, follow these steps:

1. Call FRIEZE by pressing the Shift

and PrtSc/* keys together. The FRIEZE
prompt line appears across the top of the
screen.

2. Press V. FRIEZE displays the view-
    port as a box. Initially, the viewport
    covers the entire screen.

3. To move the upper left corner of the
    viewport, use the cursor direction
    keys. (◀ ▶ ▲ ▼)

    *   To move the the cursor faster, hold
        down the Shift key as you press a
        cursor direction key.

    *   To move the cursor even faster, hold
        down the Ctrl key as you press a
        cursor direction key.
        Note: Ctrl ▲ and Ctrl ▼ are not
        available.

4. To move the lower right corner of the
    viewport, first tap the space bar, then
    use the cursor direction keys. If you
    want to return to moving the upper
    left corner, tap the space bar. (Tap-
    ping the space bar toggles you
    between moving the upper left corner
    and the lower right corner of the
    viewport.)

5. Once you are satisfied with the size
    of the viewport, press the Enter key
    and FRIEZE defines the area you
    specified as the viewport.

    *   If you change your mind, press the
        Esc key instead of the Enter key
        and you are returned to the
        FRIEZE menu. Press the Esc key

again to return to the main program.

Until you change the viewport again or reboot, all further
FRIEZE commands operate on the area previously defined by
the viewport.

9.2 Saving and Restoring Pictures

FRIEZE lets you save and restore pictures to and from disk,
in PC Paintbrush format. This feature allows you to save a
picture from another program (using FRIEZE) and then load
the picture while running PC Paintbrush. With PC
Paintbrush features, you can edit the picture and save it to
disk using the Save as... option in the Page menu. The Load
from... option in the Page menu allows you to retrieve
FRIEZE pictures.

When you save a picture, only the portion of the screen in the
viewport is saved. When you restore a picture, the picture is
placed on the screen in the upper left corner of the viewport.
See Section 9.1 on Setting the Viewport.

9.2a S - Save

The Save command saves pictures in FRIEZE format. To save
a picture:

1. Call FRIEZE by pressing the Shift
    and PrtSc/* keys together.

2. Type **S** and the line appears:

    FRIEZE - Save to =

3. Type a valid DOS file name to save
    the picture. Then press the Enter key.

    *   The area inside the viewport is the
        only portion of the picture saved.
        See Section 9.1 on Setting the
        Viewport.

9.2b R - Restore

The Restore command allows you to restore screen and cut-outs saved by PC Paintbrush as well as other pictures saved by FRIEZE. To restore a picture:

1. Call FRIEZE by pressing the Shift and PrtSc/* keys together.

2. Type **R** and the line appears:

    FRIEZE - Restore from =

3. Type the name of the picture you wish to restore.

    *   Any valid DOS file name is accepted, including those with path names. Make sure you include the extension if you are restoring a PC Paintbrush picture.

    *   The picture is placed on the screen inside the viewport. See Section 9.1 on Setting the Viewport.

FRIEZE beeps a few times if the file does not contain a picture in FRIEZE format or your picture can not be found. If this occurs, check to see if the disk containing your picture is in the proper drive.

9.3 Printout

Once you have a picture, use the P option to print it. The H and W options let you specify the height and width of your picture, while the M options allows you to specify the left margin.

9.3a P - Print

Screens can be printed in three ways:

* Characters - Use this option if your "picture" is actually a screen of text characters. This option calls the standard DOS print-screen routine.

* Normal - Used for printing graphics. Also known as portrait mode.

* Sideways - Used for printing graphics. Also known as landscape mode. This option yields the most efficient use of paper.

You can expect strange results if you call for a character printout in graphics mode and vice versa.

To print a picture:

1. Call FRIEZE by pressing the Shift and PrtSc/* keys together.

2. Type **P** and the line appears:

   FRIEZE C,N,S =

3. After selecting C, N or S, press the Enter key and FRIEZE accepts the choice and begins printing.

   * If you wish to stop printing for any reason, press the Esc key.

9.3b H, W - Height and Width

Each printed screen is 51/2 inches wide by 7½ inches high unless ·you reset the height and width values. You may enlarge or reduce the printed image in ¼ inch increments by resetting FRIEZE's height and width values before printing.

To reset the height and width values, follow these steps:

1. Call FRIEZE by pressing the Shift and PrtSc/* keys together.

2. Press H to set the height or W to set the width. One of these prompts appears:

    FRIEZE - Print height (¼") =
        or
    FRIEZE - Print width (¼") =

3. Type the number of quarter inches you want for the height or width of your printed picture.

    *   For example, if you want the printed image to be 5 inches high, type **H**, then type a height value of **20** (20x¼ inch = 5 inches.)

4. Press the Enter key and FRIEZE accepts the values.

Unless you change the default values, each time you load FRIEZE, the height and width values are reset to 22 and 30 respectively (5½ by 7½ inches). You can change these default settings by following the steps described in Chapter 10 on Setting and Saving FRIEZE Defaults.

Note: Since you never want a printout that is 1.5" high or wide, values for height and width between 1 and 6 provide integer pixel zoom (i.e. 1:1, 2:1, 3:1,...). These integer values are often preferred for most attractive results when pictures contain a lot of text. For example, if your picture is 320x200 dots, specifying a height and width of 2 produces a printout with 640x400 dots on the paper. For graphics pictures, non-integer values are recommended. See Chapter 13 for further information.

9.3c M - Left Margin

You can use FRIEZE's M command to set the left margin of
your printed pictures in ¼ inch increments. To set the left
margin:

1. Call FRIEZE by pressing the Shift
    and PrtSc/* keys together.

2. Press M and the line appears.

    FRIEZE - Left Margin (¼″) =

3. Type the number of quarter inches
    that you want for the left margin.

    *   For example, if you want the left
        margin to be 3 inches, type **12** (12x
        ¼ inch = 3 inches).

4. Press the Enter key and FRIEZE
    accepts the values.

Until you change the margin value or reboot, all printed
screens reflect the last margin value set.

---

10. Changing FRIEZE Defaults

When you first run PC Paintbrush, the printout height, width, colors and patterns are set to default values through FRIEZE. However, you can change the default values through a program in FRIEZE named Setcolor.

10.1 Running Setcolor

To make any changes to the default values, follow this procedure to use Setcolor:

1. At A> prompt, type **FRIEZE** and press the Enter key. This ensures that FRIEZE is loaded in memory. You can not use Setcolor unless FRIEZE is in memory.

2. Type **SETCOLOR** and press the Enter key. The Setcolor menu appears:

```
                   Setcolor (C)1984 ZSoft Corp.
              ┌──────────────────────────────┐
              │      Default    Selection     │
              └──────────────────────────────┘

       A. Set new sizes
       B. Set new color correspondence
       C. Save settings as default
     Pick one:█

                          Color Map
       Ø       1       2       3       4      5       6       7
     -->Black  Blue    Green   Cyan    Magenta Red     Brown   DarkGrey
       15      1       2       3       4       5       6       7


       8       9       1Ø      11      12      13      14      15
     -->LtGrey LtBlue  LtGreen LtCyan  LtMag   LtRed   Yellow  White
       8       9       1Ø      11      12      13      14      Ø

        ──Current sizes: H= 22  W= 3Ø ──

                       Press Esc to Exit
```

---

* Option A allows you to change the
  default height and width values,
  discussed in Section 10.2.

* Option B allows you to change your
  color map, discussed in Section
  10.3.

* Option C saves your changes, so
  the next time you run FRIEZE, the
  new values are your default values.

FRIEZE stays in memory until you reboot, so once you load
FRIEZE either by typing **FRIEZE** or running PC Paintbrush,
it is not necessary to reload FRIEZE everytime before using
Setcolor.

Note: If you are using a plotter instead of a printer, please see
Section 11.1 on Special Notes for Plotters. Using FRIEZE
yields slightly different results.

10.2 Setting the Height and Width Defaults

The default height and width values are measured in units of
quarter inches. The default height value is 22 or 5½ inches
and the default width value is 30 or 7½ inches. You may
change the height and width any time through FRIEZE (see
Section 9.3b) or you may change FRIEZE's default values
using Setcolor.

Once the Setcolor menu appears, you are ready to change the
default values. To change the height and width values:

1. Run Setcolor, then select A - Set
   new sizes. Setcolor asks for a new
   height value. Type in a value and
   press the Enter key.

* For example, if you want your picture to be 8 inches high, type **32** (32x¼ = 8").

* If you do not want to change the height value, type the old value and press the Enter key.

2. Now Setcolor asks for a new **width** value. Type in a value and press the Enter key.

* If you want your picture to be 10 inches wide, type **40** (20x¼ = 10").

* If you do not want to change the width value, enter the old value and press the Enter key.

3. To save the new default values, press C and the new values are saved to disk.

* If, for any reason, you decide not to save the values you just set, press the Esc key instead of pressing C and you return to DOS.

10.3 Color Map Settings

If you have a color printer, FRIEZE takes each screen color and translates it into a similar printer color. If you have a black and white printer, FRIEZE converts each screen color into a black and white pattern. If you are not satisfied with the FRIEZE translations, you can use Setcolor to change the color or pattern setting. This section shows you how to change the color map in the Setcolor menu. For color printer users, the next section shows you how your printer interprets printer color codes, so you can select exactly what printer color you

want matched with each screen color.

The number of printer colors or printer patterns that can be used at one time is limited to the number of screen colors in PC Paintbrush. For example, if you have installed a 4 color card (4 screen colors) then you can use only four printer colors or four printer patterns.

10.3a Mapping Textures for a Black and White Printer

When FRIEZE prints any picture on a black and white printer, it prints each **screen** color as a pattern. For example, light red is printed as pattern 13 and dark blue is printed as pattern 1, by default. The patterns, numbered from 0 to 15, are shown in Table 10.1. Remember, if you are using a two or four color card, your printer prints only two or four patterns at a time.

Table 10.1

As you can see, pattern 13 is a diagonal pattern. Pattern 1 is composed of diagonal lines while pattern 0 is white, meaning no printing. You may change the default color map so that you may assign any pattern to any color. Once you run Setcolor, you are ready to change the color map setting.

1. When you run Setcolor, the menu appears (see Section 10.1). The bottom half of the menu is the color map, consisting of three different parts. The top two rows of each section are the screen color codes. The middle rows of each section are the screen colors and the bottom rows are the printer color codes. Printer color codes correspond to the pattern numbers found in Table 10.1.

2. Use the pattern diagrams in Table 10.1 to determine which printer pattern you want to assign to each screen color.

   * In the example below, cyan, which is screen code 3, is printed as a fine vertical line, which is pattern 5.

3. Press B - Set new color correspondence to make color map changes. Setcolor asks for the screen color number to change.

   * Press 3, for example, to change cyan. Then press the Enter key.

4. Setcolor asks for the number corresponding to a pattern.

   * To make cyan a fine vertical line,

press 5 followed by the Enter key.

* If you want to change more pat-
terns, select B again and repeat the
same procedure.

5. To save these changes to disk, select
option C of Setcolor.

* If you decide not to save the values
selected, press the Esc key instead
of C and you return to DOS.

If you installed a 2 or 4 color card, those 2 or 4 screen colors
are the only colors that have any effect on the printer color
codes.

10.3b Color Map for Color Printers

When you print with a color printer, FRIEZE automatically
maps the screen colors so that the printed colors are similar to
those displayed on the screen. You may assign new printer
colors to the screen colors throgh Setcolor. This section
should be used in conjunction with Section 10.4 to get the
printout you want.

1. Run Setcolor and the menu appears.
(See Section 10.1). The bottom half of
the menu is the color map, consisting
of three different parts. The top two
rows of each section are the screen
color codes. The middle rows of each
section are the screen colors and the
bottom rows are the printer color
codes.

* Printer color codes are hex-
adecimal numbers, meaning the
first sixteen numbers (0-15) are
represented by single digits, 1-9
and A-F. (See table below.) For

---

example, the number 11 is B and 14 is E in a hexadecimal system. Each of the sixteen screen colors is represented by one of these hexadecimal digits. However, FRIEZE uses two digits rather than only one digit when printing. This allows you to put any two digits together. Putting two different digits together can appear to the human eye as a different color. For instance, an IBM Color Printer interprets printer color code 1 as yellow and printer color code 4 as red. Therefore, 11 prints as solid yellow and 44 prints as solid red. A color code of 14 (or 41) alternates yellow and red, thus appearing as orange.

Table 10.2

Decimal	Hexadecimal	Decimal	Hexadecimal
0	0	8	8
1	1	9	9
2	2	10	A
3	3	11	B
4	4	12	C
5	5	13	D
6	6	14	E
7	7	15	F

Note: Not all printers interpret printer color codes the same. Section 10.4 determines how your printer interprets printer color codes.

*   Another example, an IBM Color

Printer interprets 0 as white and 8 as
black. 00 prints as solid white and 88
prints as solid black while 80 (or 08)
appears to print as gray. This tech-
nique of putting two colors together to
make another "color" is called dither-
ing. Dithering is also used in PC
Paintbrush so that it seems that you
have more screen colors.

Note: Dithering an already dithered screen color may cause
unsatisfactory results such as stripes or other interference in
patterns in the final printed color. For best results, use only
solid screen colors to dither with one another. You must put
two digits together, otherwise a single digit is interpreted by
FRIEZE as the single digit and a 0.

2. Now that you know about the Set-
   color menu, it is time to make some
   changes. Select B - Set new color
   correspondence.

3. Setcolor asks for a screen color
   number (from the top rows of the
   Setcolor menu), so if you want to
   change cyan for example, type **3** and
   press the Enter key.

4. Now Setcolor asks for a color
   number which is a combination of
   two hexadecimal digits (from the bot-
   tom rows of the Setcolor menu). Typ-
   ing the same two digits produces a
   solid color while two different digits
   produces a dither. (Section 10.4
   shows you the way to determine how
   the printed colors and printer color
   codes are related.) Type in two hex-
   adecimal digits and press the Enter
   key.

5. If you want to change any more col-
ors, select B again and repeat the
same procedure. Once you are
finished making changes, select C to
save your changes to disk.

* If you decide not to save the values
selected, press the Esc key instead
of C and you are returned to DOS.

10.4 Making a Color Chart for Your Printer

The last section explains how to change your color map in the
Setcolor menu. This sections explains how your printer inter-
prets those printer color codes (hexadecimal digits). To do this,
it is necessary to make a color chart with PC Paintbrush and
change your color map in Setcolor. Determine if you have a
16 color card, 4 color card or monochrome card in your com-
puter and follow the instructions.

Note: If you are using a serial printer, see Section 11.2 for
additional information on making a color chart.

Hint: If you are unhappy with the changes you make in Set-
color, you may return to the original default map. Rerun
PCINSTAL and reselect your printer which is option 3. Don't
forget to select option 5. Next, reboot your computer by insert-
ing your DOS disk and pressing Ctrl/Alt/Del. Reinsert PC
Paintbrush disk 1 and rerun PC Paintbrush. You may then
change the printer color codes through Setcolor or leave them
unchanged.

10.4a 16 Color Cards

If you have a 16 color card:

1. Run Setcolor and then select option
B of the Setcolor menu - Set new
color correspondence. Setcolor
asks for a screen color number (from

the top rows of the Setcolor menu). Start with screen color 0 and press the Enter key.

2.   Setcolor now asks for a color number which is from the bottom row of the Setcolor menu. Type in **00** and press the Enter key.

3.   Repeat this procedure, this time selecting screen color 1 and mapping it with printer number 11. Continue until all sixteen screen colors are mapped with the hexadecimal digits. Remember when you get to screen color 10, it should be mapped with AA. When you are finished, your Setcolor menu should look like the one below.

```
                    Setcolor (C)1984 ZSoft Corp.
                 ┌──────────────────────────────┐
                 │     Default    Selection      │
                 └──────────────────────────────┘

        A. Set new sizes
        B. Set new color correspondence
        C. Save settings as default
        Pick one:█


                            Color Map
         0       1       2       3       4      5      6        7
     -->Black   Blue    Green   Cyan   Magenta Red    Brown    DarkGrey
        14      11      22      33      44      55     66       77


         8       9      10      11      12      13     14       15
     -->LtGrey  LtBlue  LtGreen LtCyan  LtMag   LtRed  Yellow   White
        88      99      AA      BB      CC      DD     EE       FF
        Current sizes: H= 22  W= 30
```

Press Esc to Exit

4.   When you have mapped all sixteen screen colors, select option C so that the changes are saved to disk.

5.   Now run PC Paintbrush by typing

PAINT at the A> prompt. Use the filled
box tool to create sixteen boxes, each
filled with one of the sixteen screen col-
ors. Do not select dithers!

6. When your printer is ready, select
    Print from the Page menu.

You now have a copy of how your printer interprets the
printer color codes. For example, let's say your printer printed
the screen color black (screen color 0) as red. Then you know
that your printer thinks that the printer number 00 is red. If
your printer printed the screen color green as yellow, then you
know that your printer thinks that the printer color code 22 is
yellow. You can print any screen color as any color you want
by resetting the color map in the Setcolor menu. Once you
know the various color mappings, you can also create dithers.
In this example, selecting 0 and 2 together would appear as
orange.

10.4b 4 Color Cards

If you have a 4 color card, you need to do four experiments in
order to determine how your printer interprets printer color
codes. The four screen colors used by PC Paintbrush are:

1. Black - screen color code 0
2. Light Cyan - screen color code 11
3. Light Magenta - screen color code 12
4. White - screen color code 15

These are the only colors that have any effect on the printed
colors. To make one color map using these four possibilities:

1. Run Setcolor and then select option
    B of the Setcolor menu - Set new
    color correspondence. Setcolor asks
    for a screen color number, begin with
    black (screen color code 0) and map it
    with color number 00.

---

2. Continue this procedure until all four screen colors are mapped; 12 is mapped with printer color code 11, color 13 with code 22 and color 15 with code 33.

   * Select **C** to save these changes to disk.

3. At the A> prompt type **PAINT** to run PC Paintbrush. Use the filled box tool to create 4 boxes using the 4 screen colors.

4. When your printer is ready to print, select Print from the Page menu.

Now you have one color map, so you should be able to determine what printer color codes 0, 1, 2 and 3 mean to your printer. Repeat this procedure three more times to cover the other twelve possibilities. Your four experiments of mapping screen colors 0, 12, 13 and 15 to printer color codes are:

1. 00, 11, 22 and 33
2. 44, 55, 66 and 77
3. 88, 99, AA and BB
4. CC, DD, EE and FF

Once you complete the four color maps you have four copies of how your printer interprets printer color codes, covering all sixteen possibilities. Using these color maps and your dither knowledge, you should be able to produce satisfactory printouts.

10.4c 2 Color Cards

Monochrome cards make it difficult when determining how your printer interprets printer color codes. If you feel industrious, you may create eight experiments to cover all sixteen printer color codes. Your other option is to just be satisfied with your printed results.

With a monochrome card, your have only two colors, black, which is screen color code 0 and white, which is screen color code 15. These two screen colors are the only ones that have any effect on the printed colors. Therefore, it is necessary to make eight color maps to determine printer color code interpretations. So, for the diligent:

1. Run Setcolor and then select option B of the Setcolor menu - Set new color correspondence. Setcolor asks for a screen color number, map screen color 0 with 00 and screen color 15 with 11.

   * Select C to save your color map to disk.

2. At the A> prompt type **PAINT** to run PC Paintbrush. Use the filled box tool to create 2 boxes using the 2 screen colors.

3. When your printer is ready to print, select Print from the Page menu.

Now you have one color map, so you should be able to determine what printer color codes 0 and 1 mean to your printer. Repeat this procedure seven more times to cover the other fourteen possibilities. Your eight experiments of mapping screen colors 0 and 15 to printer color codes are:

1. 00 and 11
2. 22 and 33
3. 44 and 55
4. 66 and 77
5. 88 and 99
6. AA and BB
7. CC and DD
8. EE and FF

Use your eight color maps to make satisfactory printouts.

11. Notes for Special Hardware

11.1 Notes for Plotters

Plotters are fairly easy to get running if you follow some simple steps and diagnostics. This discussion assumes that you have a serial plotter; parallel plotter owners can ignore the cabling, handshaking and baud rate discussions.

Make sure that your cable is a full RS-232 spec cable (not a three-wire connection), and also make sure that it has Xon-Xoff handshaking enabled on the dip switches. Finally, run the MODE command to set the appropriate serial speed before running PC Paintbrush.

11.2 Running Setcolor

When you first run FRIEZE, the printout height, width and colors are initially set to default values. However, changing these default values when a plotter is installed yields different results than installing a printer. The default values are changed through a program in FRIEZE named Setcolor. Follow this procedure to use Setcolor:

1. At the A> prompt, type **FRIEZE** and press the Enter key. This ensures that FRIEZE is loaded in memory.

2. Type **SETCOLOR** and press the Enter key. The Setcolor menu appears:

```
                  Setcolor (C)1984 ZSoft Corp.

               ┌──────────────────────────────┐
               │    Default    Selection       │
               └──────────────────────────────┘

        A. Set new sizes
        B. Set new color correspondence
        C. Save settings as default
      Pick one:█


                              Color Map
        0      1      2      3      4      5      6      7
    -->Black  Blue   Green  Cyan   Magenta Red   Brown  DarkGrey
        0      1      2      3      4      5      6      1


        8      9      10     11     12     13     14     15
    -->LtGrey LtBlue LtGreen LtCyan LtMag  LtRed  Yellow White
        2      3      4      5      6      1      2      3

    ────────Current sizes: H= 22  W= 30 ──────────────────────
```

Press Esc to Exit

* Option A allows you to change the
   default height value, discussed in
   Section 11.2a.

* Option B allows you to change your
   color map, discussed in **Section**
   11.2b.

* Option C saves your changes, so
   the next time you run FRIEZE, the
   new values are your default values.

Note that FRIEZE remains in memory until you reboot your
system. Therefore, once you run FRIEZE, simply type **SET-**
COLOR at the A> prompt without rerunning FRIEZE. If, for
any reason, you reboot, you must reload FRIEZE by running
PC Paintbrush or FRIEZE.

11.2a Altering the Height and Width

Unlike printers, the height and width of printout is set by the
plotter. For the HP7475 plotter, the height and width is set
using the P1 and P2 buttons on the plotter. Changing the
width, W with FRIEZE has no effect on printout. However,
changing the height, H with FRIEZE alters the density of the
picture. To alter the density, you may change the height value
any time through FRIEZE (see Section 9.3b) or you may
change FRIEZE's default value for the height using Setcolor.

To alter the density:

1. Run Setcolor. Once the menu appears, select option A - Set new sizes.

2. Setcolor asks for a new height value. Type in a value and press the Enter key.

   * A value of 1 produces widely spaced lines. This is good for checking color mapping, for example.

   * You can type in any value, but a value of between 2 and 6 is recommended as one of these values produce higher quality pictures.

5. Setcolor then asks for a new width value. Type in any value and press the Enter key, since the width value has no effect on printout.

6. To save the new default value, press C and the new value is saved to disk.

   * If, for any reason, you decide not to save the value you just set, press the Esc key instead of pressing C and you are returned to DOS.

11.2b Pen Colors

Plotters have a simple color correspondence. You should use Setcolor so that the pen color correspond to your screen colors.

1. When you run Setcolor, the menu appears (see Section 11.1). The bot-

---

tom half of the menu is the color map, consisting of three different parts. The top two rows of each section are the screen color codes. The middle rows of each section are the screen colors and the bottom rows are the pen colors. The number of colors you may print with is limited to the number of pen colors that your plotter has.

2. Select option B - Set new color correspondence. Setcolor asks for a screen color number - from the top row. Type in a number from 0 to 15 and press the Enter key. For example, if you want to change the pen color used for cyan, type in **3** and press the Enter key.

3. Setcolor now asks for a pen color. Select the pen number (single digit) you want matched with cyan. Typing in **1** means cyan is printed with pen 1.

    *   If you type **0**, your plotter does not use any pen. This is equivalent to printing with the color white.

    *   You may map more than one screen color to one pen color.

4. Select option B again to make more changes.

5. To save these changes to disk, select option C of Setcolor.

    *   If you decide not to save the values selected, press the Esc key instead of C and you are returned to DOS.

11.3 Notes for PrintaColor Printers

PrintaColor printers have 128 different colors. To determine what screen color is printed with each printer color, run the PrintaColor test pattern. Since the printer color codes used in Setcolor are hexadecimal, you need to translate the printer color codes into base 10 numbers.

11.4 Notes for Serial Printers

When using a serial printer, FRIEZE uses standard DOS printer outputs for printing. You need to first set the baud rate used by the serial communications interface using the DOS MODE program.

1. For example, if your printer is con-
    nected to COM1 (set in option 4 of
    PCINSTAL) and requires 9600 baud
    with no parity and eight data bits,
    you need to type:

    A>MODE COM1:9600,N,8

For additional information, see your DOS manual on MODE commands.

Once you set the baud rate, you can run PC Paintbrush. You need to set only the baud rate each time you reboot the system.

12. FRIEZE - Special Notes

12.1 Using FRIEZE with SuperCalc3

SuperCalc3 suffers from the dreaded two beep problem. This may happen when you try saving or restoring pictures from SuperCalc3. If you get two beeps, either your picture is not saved to disk or you are unable to restore your picture.

This problem lies entirely in PC-DOS. The problem occurs when SuperCalc3 is performing a DOS command when you try saving or restoring a picture. Since DOS is running, serious damage results if FRIEZE calls DOS again.

To prevent the two beep problem from occurring:

1. At the A> prompt, type **FRIEZE** and press the Enter key. This ensures that FRIEZE is loaded in memory.

2. Run SuperCalc3. Now, wait until the picture is just finished being drawn on the screen. Then press the Shift and PrtSc/* keys. Timing is important for best results. Select either a save or restore command and type the name of the file you wish to save or restore.

FRIEZE stops SuperCalc3 as soon as you press the Shift and PrtSc/* keys, so if you do not have a complete picture, press the Esc key and allow SuperCalc3 to finish. Then press the Shift and PrtSc/* keys again. If necessary, repeat this until you have a complete picture.

12.2 FRIEZE Technical Information

FRIEZE uses a different number of beeps to indicate errors. If an error occurs that you can not explain, please make a note of the number of beeps that occur so that you can inform someone from our support group.

In general, you should be able to realize a problem has occurred by the fact that FRIEZE has beeped. Two things to keep in mind:

1. Beeps from FRIEZE imply that the error is not the fault of FRIEZE, but your hardware. The most common problem is a bad printer cable. If you get 4 beeps and no printer activity, check your cable.

2. The most common error message is 2 beeps. This is a DOS conflict problem. This occurs when you tried saving or restoring a picture while your program is talking with DOS. Try saving or restoring again at a different program juncture.

12.3 FRIEZE Slide Shows and Multiple Printouts

FRIEZE is controlled by a unused interrupt vector in the PC. You can thus call FRIEZE and invoke any of the FRIEZE functions under program control, rather than from the keyboard. FRIEZE uses interrupt 16 (decimal). Invoke FRIEZE by placing 75 in AH, the function number in CL and the arguments in AL and ES:BX. The most common calls are:

1. 0 - Print a screen. Set AL = 0, 1 or 2.

---

2. 1 - Restore a picture. Set AL = 1, set
    ES:BX pointing to the file name.

3. 2 - Save a picture. Set AL = 2, set
    ES:BX pointing to the file name.

    *   For example, to print a picture:

        MOV AH,75
        MOV CL,0
        MOV AL,1
        INT 16

13. Improving Your Printout

We get a large number of questions from customers interested in improving the printout from PC Paintbrush. In particular, PC Paintbrush supports so much different hardware and FRIEZE is capable of so many print variations that it is difficult to deliver a default printout that is exemplary for every printer and display. We believe our default printout is acceptable, for beautiful results you will need to do a little work.

Let's examine how to optimize printout in stages, based on common questions:

13.1 Coloring

Q1. The colors on my printout are different from the colors on my screen.

A1. If you have a color printer and display this can often happen. Particularly if your display has an extensively changeable palette such as the 64 shade IBM EGA board. To get best color correspondence, use the Setcolor program provided with PC Paintbrush and FRIEZE. Setcolor lets you adjust the color correspondence - which printer color is used for which screen color.

Please read the Setcolor section before continuing.

Note that color printers have approximately 32 different shadings available with the Setcolor dither capability. You might want to try all 32 different values to see how your printer responds to each dither combination.

Further note: We have found that PC Paintbrush and FRIEZE can interfere with each other when it comes to printing patterns. If you have a color printer we suggest you use one of two techniques:

1. Restrict your drawing to solid colors only, and use whatever dithers you like for printout through Setcolor.

2. Use any patterns you like for drawing, but via Setcolor, set FRIEZE so it only prints solids for each on-screen color (this means use double digits - no dithers). This may restrict you to only seven different color choices for your printer. You can make up the difference by using the Edit Pattern abilities of Paintbrush to change on-screen appearance.

Q2. I don't like the shading patterns used for some colors on my black and white printer.

A2. The best we can do here is offer a suggestion. Note that FRIEZE supports 16 different shading patterns. If you want different ones, run Setcolor and select the desired patterns. Hopefully, you are not using all 16 already.

Q3. I am missing lines on my printout.

A4. This is usually caused by one of two things.

1. You may have set print width or height too small. In that case, when FRIEZE shrinks the picture for printout it can lose line information. Try Shrink + Grow to see how this works. Often just increasing print size will solve this problem. One way to check this is pull down the Clear from the Page and switch from pixels to inches. If your picture size in inches is greater than your selected print size, you have found the problem.

2. You may instead have a color mapped to a very light shading pattern, in which case so little of the color shows up on the printout that it seems to have dropped off some information. Try running Setcolor and setting all colors (except white) to shading pattern 0, which is solid black, then reprinting to see if that might be your problem.

13.2 Sizing

Q1. Circles on the screen turn into ovals (ellipses) on the printout.

A1. This means that your printout aspect ratio is incorrect. You can change that aspect ratio by changing the print dimensions. Usually you want to increase the print dimensions for large images and decrease them for normal screen-size pictures. Since large images are printed out by default at 1:1 ratio this can often cause aspect ratio distortion. Note that if you decrease the print size of a large image (beyond the default print size) you are almost certainly dropping off some picture information.

Q2. Although pictures look pretty good, the text looks irregular and uneven.

A2. This is usually caused by poor choice of print sizes. For text modes we generally recommend that you select integral multiplication factors (see below) and ignore the fact that the aspect ratio is slightly off (see above).

You can select integral multiplication factors in one of two ways.

1. Using FRIEZE manually, you can set print height and width to a number-between 1 and 6. This causes an

---

expansion ratio of 1:1 to 6:1. In all cases
no information will be lost and text
should look attractive. To print the
screen from within FRIEZE double click
the pick tool to see the entire screen and
then invoke FRIEZE manually with the
Shift and PrtSc/* keys. (see the FRIEZE
sections).

2.   Using the options in the Clear option.
     See the next question.

Q3.   What are the best print sizes to pick for a specific pic-
      ture?

A3.   This depends on your combination of printer and picture
      resolution. With the Clear box you can determine
      printer resolution easily. The numbers in inches and
      millimeters in the clear dialog box tell you what a 1:1
      ratio would be (1 dot printed for each dot on the screen).
      Thus, set your clear display to inches and sizes to 1.0
      inches in both dimensions then see what the vertical
      and horizontal printer resolutions are by switching to
      PELS (don't actually clear the screen).

      Let's call these PrinterVert and PrinterHoriz.

      Now suppose your picture has size in pixels of Vres and
      Hres (vertical and horizontal resolution).

      The larger your printout, the better its appearance to
      within certain limits.

Suppose you are printing a single screen. This has the advan-
tage that you can print it normal (portrait) or sideways (land-
scape). Sideways generally takes better advantage of the
paper since monitors are shaped like sideways paper. If you
print sideways, we suggest making the print width a multiple
of the number of vertical dots. Thus:

1. Best Print Width = (Vres/PrinterHoriz) * int(PrinterHoriz * PaperWidth / Vres).

2. Best Print Height = Best Print Width / Monitor Aspect Ratio.

The Monitor Aspect Ratio is the ratio of the height of the monitor screen to the width of the monitor screen. You can determine this just by measuring the screen with the PC Paintbrush menus on it.

Let's take an example. Suppose you have an Epson MX-80 printer and an IBM color monitor you are using at 640x200 resolution. The Epson printer prints at 72 dots per inch vertically and 120 horizontally and has 8 inch wide paper. An IBM color monitor has a height/width ratio of approximately 3:4 or .75. Note that yours may vary from this number.

Thus the best print situation in this case would be:

1. Print Sideways.

2. Best Print Width = (200 / 120) * int (120 * 8 / 200) = (200 / 120) * 4 = 6.67 inches.

3. Best Print Height = 6.67 / .75 = 8.9 inches.

Note: If you call FRIEZE manually, you could just set the print width to 4 which implies an integer multiplier of 4 as we found in the print width calculations.

If you optimize the size horizontally instead of vertically the calculations become:

1. Best Print Height = (Hres/PrinterVert) * int(PrinterVert * PaperLength / Hres).

2. Best Print Width = BestPrintHeight
   * Monitor Aspect Ratio.

If you are printing a large image, or want to print a screen-sized image in normal rather than sideways:

1. Best Print Width = (Hres/
   PrinterHoriz) * int(PrinterHoriz *
   PaperWidth / Hres).

2. Best Print Height = BestPrintWidth
   * Monitor Aspect Ratio.

Assume we want to print an 800 by 1000 image on this same Epson printer and we are looking at the same IBM color monitor. Then,

1. Best Print Width = (800 / 120) * int(
   120 * 8 / 800) = 800 / 120 * 1 = 6.67
   inches.

2. Best Print Height = 6.67 * .75 = 5
   inches.

Suppose this calculation gives you an integer multiplier of 0. Then you do not have enough printer resolution to print each dot of the entire picture. In this case you can either shrink the picture proportionately (make the vertical resolution an integer multiple) or print the picture in multiple passes, using FRIEZE manually. We advise shrinking the picture, but do notice that some information will be lost if you do so.

14. Common Questions and Problems

There are several problems that may occur when using PC Paintbrush and FRIEZE. This chapter helps you deal with those problems.

14.1 Tablets

Q1. My cursor does not move on the screen.

A1. There are many possible causes for no cursor movement.

A) If the program was installed incorrectly, the cursor will not move. Reinstall the program through PCINSTAL, the instructions are found in Chapter 2. Note that there are four choices for Summagraphics tablets and four choices for GTCO tablets.

B) If you are using a tablet, it is possible that the BAUD rate was not reset by the program. In order to solve this situation, turn off the power on your tablet and unplug the tablet. Plug in the tablet and now try using your cursor.

C) It is possible that your tablet driver was not run before using PC Paintbrush. Your tablet driver was loaded into the PAINT.BAT program through the installation procedure, PCINSTAL. When you type **PAINT** to start PC Paintbrush, your tablet driver is loaded at this time. If you entered PC Paintbrush in some other manner, your tablet driver is not run. Reboot and rerun PC Paintbrush by typing **PAINT** at the A> prompt. This loads both FRIEZE and your tablet driver.

D) Check all connections to see if your tablet is plugged in properly. If that tablet is not plugged in properly, turn off the power and unplug the tablet. Then plug it

back in and retry using your cursor.

Q2.   My cursor moves correctly in the horizontal (or vertical) direction, but moves in opposite directions in the vertical (or horizontal) direction.

A2.   If your tablet was installed as a 12x12 tablet, for example, but is a 6x9 tablet, your movement can be limited in either the vertical or horizontal direction. Rerun PCINSTAL and reinstall the proper drawing device, including the right size.

Q3.   My tablet does not work with the PCjr.

A3.   The BAUD rate for the PCjr on a serial port is at most 4800. PC Paintbrush requires that the BAUD rate be set at 9600. At this time, there is not a solution, so a tablet does not work with the PCjr. In the near future, a driver will be available from ZSoft to solve this situation.

14.2 Mice

Q1.   I move my mouse, but the cursor does not respond.

A1.   There are three possible situations that may cause your cursor to not move.

A)   If you installed the mouse to the wrong port, your cursor will not move. Rerun PCINSTAL and check which port you installed your mouse, if necessary, reinstall the proper port.

B)   Check PCINSTAL and make sure you installed the proper drawing device. Reinstall, if necessary.

C)   You may have installed your mouse on a port that is not active on your computer. Check your port.

Note: In any of these situations, you can check your PAINT.BAT program to see what mouse was loaded. In

order to find out, at the A> prompt, type **TYPE PAINT.BAT** and press the Enter key. The program contents are displayed on your screen. If you find the wrong mouse loaded, repeat PCINSTAL in Chapter 2 to load the correct mouse. You may need to reboot if you ran the wrong mouse driver.

Q2. My serial mouse does not work with the Corona PC.

A2. The Corona serial port is not set correctly at the factory for input devices. To solve this, reset the jumpers inside the computer to allow for input devices. Consult your Corona manual for proper and complete instructions.

Q3. My serial mouse does not plug into my IBM AT.

A3. Most serial mice use a stanard 25 pin serial connector while the IBM AT has a 9 pin serial connector. You can purchase an adapter from local IBM dealers.

14.3 Plotters

Q1. My computer beeps four times when I attempt to plot with FRIEZE.

A1. Your plotter cables are either nonstandard plotter cables or they are loose. Make sure your cable in securely connected. You should use a standard IBM to Hewlett Packard cable.

Note: Instead of an error message, FRIEZE beeps when a problem occurs. The number of beeps indicates different problems. See Chapter 12 for additional information.

Q2. The plotter does not even pick up a pen. The error light starts blinking before anything happens.

A2. This is certainly caused by either an improper cable or the wrong speed (baud rate) for your serial port. Check your cable carefully, and rerun the MODE command to

set the baud rate for your port. Note that some mouse drivers have a tendency to reset the baud rate on all the serial ports when they begin. Also, you might want to check PCINSTAL and make sure you selected the correct communications port for your plotter (only if the error light did not start blinking).

Q3. The plotter picks up a pen, sometimes draws and then stops moving; the error light begins blinking.

A3. This is caused by the plotter not responding to Xon/Xoff protocol. Make sure the dip switch in (the back of) the plotter is set appropriately to allow Xon/Xoff.

Q4. The plotter picks up a pen and then very slowly begins moving it, possibly without printing anything.

A4. Reset your print height to a number between 1 and 6. For fastest results, use a height of 1. You can get this simply by following this procedure:

   1. Press the Shift-PrtSc/* keys. This invokes FRIEZE.

   2. Select H - set height. Then type 1 followed by the Enter key.

Q5. The plotter is using the wrong colors for printout, or no colors at all, even though it picks up the pens and moves each of them down the page.

A5. Run Setcolor and recheck your color correspondence. The factory settings are arbitrary and probably incorrect for your pen colors. Read the section in the manual about Setcolor and plotters. Note that you do not need to reboot after running Setcolor, just start PC Paintbrush up again and check the new color settings.

Q6. There are white lines running horizontally across the paper.

A6. This is caused by having too small a height setting (or

---

your pens have totally dried out). Try a setting closer to 4 or 5
(versus recommended 2-3) if your pens are getting a bit old, or
if you are using thin pens.

14.4 Printers

Q1. My Okidata printer does not work with PC Paintbrush.

A1. Two possibilities may cause this to happen.

 A) It is possible that you installed the wrong printer.

 B) If you have a Model 84 Okidata, it may not be able to
     handle graphics output. You need to upgrade your
     printer. Your Okidata dealer has graphics Eprom's in
     order to upgrade your printer.

Q2. When printing, my Epson, IBM Graphics or Okidata
     printers insert a blank line between every line of graph-
     ics.

A2. Your automatic line feed switch on your printer is on.
     Turn off this switch. Another possibility is that your line
     width is too large for the paper. Reset the value to
     accommodate the width of your paper.

14.5 PCjr

Q1. Often times I get an insufficient memory message with
     my PCjr.

A1. This happens if the additional memory was not loaded
     correctly. Follow the steps in the back of your manual
     for proper installation.
Note: If you are using IBM's add-on memory option of 256K,
     you can not run the latest version of PC Paintbrush in
     the 16 color mode if FRIEZE is loaded. In fact, you
     may need more than 256K memory to run the latest
     version of PC Paintbrush with your PCjr. If you want
     to runPC Paintbrush without loading FRIEZE, do not

type **PAINT**. Instead, type the first and third lines of PAINT.BAT. To determine what these lines are, at the A> prompt, type **TYPE PAINT.BAT** and press the Enter key. The contents of PAINT.BAT are displayed on your screen.

Q2. When trying to use the 320x200, 16 color mode, the screen flashes.

A2. The program was not installed with at least 32K RAM to video display. Reinstall and allocate at least 32K RAM for video display. Follow the directions at the back of your PCjr manual.

14.6 General Problems

Q1. I installed PC Paintbrush on a hard disk. When I try retrieving pictures, fonts, cutouts or palettes, I receive a **Not Found** message.

A1. PC Paintbrush searches for your picture on the main directory of the hard disk and not the subdirectory. For example, you want to retrieve a picture named GRAPH that you saved while in the PBRUSH subdirectory. Select the top line of the Page menu that reads: **A:**_____ or another drive or subdirectory location. When the New search directory box appears, type in **C:\PBRUSH** and press the Enter key. Now your picture should be available through the Load from... option in the Page menu.

Q2. When copying PC Paintbrush disk 1 in the installation procedure, not all PC Paintbrush files fit on my disk. (I get an insufficient disk space message.)

A2. Delete any files that have either a PCX or BAS extension. The PCX files are picture files and the BAS files are slide show files and are not needed to run PC Paintbrush. At the A> prompt type, **DEL *.BAS** and press the Enter key to delete the BAS files. Type **DEL *.PCX** and press the Enter key to delete the picture

files.

Q3. When I invoke FRIEZE, either it does not appear or if it does appear, it locks up the program.

A3. It is possible that FRIEZE and one or more graphics programs are in memory. Remember, once you run FRIEZE it stays in memory until you reboot. If more than FRIEZE is present in memory, it may overlap with one of the programs and can not run. Insert DOS and reboot your system (by pressing the Ctrl/Alt/Del keys) and rerun FRIEZE (by typing **FRIEZE**).

Q4. I want to move files from PC Paintbrush into another graphics program and vice versa.

A4. You can not move files from one graphics program into another unless the program specifically supports the other. You can export files from another program into PC Paintbrush. Preferably, they should have the same number of colors.

Appendix A - File Extensions

Basically, there are six file extensions that should become familiar to you. These extensions are created by default, depending on the file contents.

1. .PCX. This file extension is used when you save a screen through the Save as... option in the Page menu.

2. .PCC. This extension is created when you Cut or Copy a cutout with the scissors or pick tool and save it to disk.

3. .FNT. The fonts, included mostly on disk 2, have the .FNT extension.

4. .PAL. When you retrieve a palette or create a new palette through the Save Pattern option in the Misc menu, the palette is saved with the .PAL extension.

5. .PIC. This extension is for Lotus pictures loaded from Merge Pic in the Page menu.

6. .CNF. This extension is for the optional PBRUSH.CNF file. This file gives you the ability to specify default subdirectories for your PC Paintbrush operations. For example, you can put for your fonts in one subdirectory, saved cutouts created through the pick or scissors tool in another subdirectory and pictures saved in Save as... in the Page menu in yet another subdirectory. To take advantage of this file, PBRUSH.CNF should be placed in your PBRUSH subdirectory if you have a hard disk or on your default drive if you have a floppy based system. PBRUSH.CNF contains lines of text, each line indicates while files are the subject followed by an equals sign and thn the drive or subdirectory choices. Possible file sets are:

   1. FONT = subdir default font subdirectory.

   2. PIX = subdir default PCX subdirectory.

---

3. CUTOUT = subdir default cut-paste subdirectory.

4. TEMP = subdir default temporary file subdirectory.

For example, we use the following setup:

```
P=\SSHOW
F=\PBRUSH\FONTS
TEMP = B:
```

This file lets us use the \SSHOW directory for pictures, \PBRUSH\FONTS for font information and floppies for temp files. (Since we share a network.) We store cutouts in the default, PBRUSH, directory. Note the mixing of full names and abbreviations in this list. Also note that a drive with no subdirectory name refers to the root, \, directory.

If you have a floppy based system, we would suggest something like:

1. If you plan on manipulating images bigger than one screenful:

```
Font=A:
Pix=A:
Cutout=A:
Temp=B:
```

This lets the possible large temp files to have all of drive B and let the pictures, fonts and cutouts coexist of A.

2. Or,

```
Font=A:
Pix=B:
Cutout=B:
Temp=B:
```

This lets you put a data disk in drive B and the PC Paintbrush disk in drive A.

Appendix B - Saving and Restoring Pictures

There are three ways to save and restore pictures:

1. The scissors and pick tool and Edit menu. First select the Name is... option in the Edit menu. Next select ?? at the bottom. When the Use file box appears, type in a file name and press the Enter key. Now define the cutout that you want to save using either tool. Then select either the Cut or Copy option in the Edit menu and choose the scissors or pick tool. To restore the picture, choose Paste from the Edit menu. Select the name of the file you wish to restore from Name is... in the Edit menu. Next select the scissors or pick tool and your picture becomes available to paste. This procedure is discussed in Section 6.2a.

2. The Save as... and Load from... options in the Page menu. Once you have completed the picture that you want to save, select Save as... then select ?? at the bottom. Type in the name of the file and press the Enter key when the Use file box appears. The entire screen, including the menus, tools, drawing widths and color palette is saved, along with your picture. To restore a picture, select the Load from... option and choose the name of the file you wish to restore.

3. FRIEZE gives you access to save and restore pictures. To implement FRIEZE, press the Shift and PrtSc/* keys together. The FRIEZE menu appears at the top of your screen.

    FRIEZE - H,M,P,R,S,W,V:

To save your picture, press S and the line appears:

    FRIEZE - Save to =

Type in the name of the picture and press the Enter key. To restore a picture, press the Shift and PrtSc/* keys together. Press R and type in the name of the picture you wish to restore. If you restore a picture from PC Paintbrush, be sure to include the extension.

Appendix C - Special Menu Options

These items appear in the menu options.

1. ??. This option lets you specify a name for your picture, cutout and color palette.

2. Use file box. When you select ??, this box appears on your screen. Type in the name for your picture, cutout, or color palette. For example, type **BOX.PCX** to save a picture. Press the Enter key and your picture is saved to disk.

3. **A:**_____ or **C:\PBRUSH**_____. This option tells you what drive you are using and lets you change drive locations. If you want to access a picture from drive B>, for example, select this option.

4. Enter search directory. This box appears when you select **A:**_____. Type in the drive location, so if your picture is on disk in drive B>, type **B:** and press the Enter key. Until you change drives again, this line will then read **B:**_____. If you have a hard disk, this line remains in the same subdirectory until you change it again.

5. ◆ and ◆. These arrows appear on the side of some menu options. If the menu has more than seven files saved, not all can be listed on the screen at the same time. These arrows let you see the additional names. Press ⊙ on top of either arrow to move you through the file names.

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PC PAINTBRUSH II FOR MINDSET II
MANUAL ADDENDUM

    The reference manual for PC PAINTBRUSH II
is included and provides all of the
instructions for using this program. The
directions contained in these few pages,
however, supersede ALL of the startup and
installation instructions in that manual,
especially pages 2-1 through 2-8.

Introduction

    The use of the PC PAINTBRUSH II disk
is described below. With it you can
run PC PAINTBRUSH II, make copies of
data diskettes (including making a
backup of PC PAINTBRUSH II), or prepare
new diskettes for use with your MINDSET
system. Additionally, some new, unique
features have been added to make this
version of PC PAINTBRUSH II especially
suited to video applications.

Input Devices

    PC PAINTBRUSH II can be used with the
MINDSET Mouse or a MINDSET-compatible
digitizing tablet.

    WHEN USING THE TABLET AS YOUR
POINTING DEVICE: pressing the pen on the
tablet is the same as pressing the LEFT
mouse button. Pressing the pen on the
tablet while simultaneously holding down
the ALT key on the keyboard is the same
as pressing the RIGHT key on the mouse.

Starting the Program

To begin, place the Program Diskette in the left diskette drive (drive A) and turn down the latch. If the power to your MINDSET is off, turn it on using the switch at the rear of the keyboard. If power is already on, press the ALT key and hold it down while you press the RESET key. In either case, the computer will load programs from the Program Diskette and begin to operate.

When the startup programs are loaded, the screen will show a menu of choices. These are:

MENU

1. Execute PC PAINTBRUSH II
2. Change the PC PAINTBRUSH II defaults
3. Create a new Data Diskette
4. Copy a Diskette
5. Exit to DOS
6. Display Document Updates

Press a number and then RETURN:

Backing up your Program Diskette

It is important to make a backup copy of your PC PAINTBRUSH II Program Diskette before doing anything else. To do this,

start the program as described above and
choose option 4, "Copy a Diskette."

The program will ask you to place the
"source" diskette in drive A and the
"destination" diskette in drive B. The
source diskette is the one you wish to
copy. The source diskette in this case
is your PC PAINTBRUSH II Disk 1 Program
Diskette and is already in drive A.
Place a blank diskette in drive B. When
you are ready, press any key. The
program will copy your Program Diskette
to the blank disk.

When it is done the program will ask you
if you wish to copy another diskette.

Type "Y". The program will ask you again
to place the source diskette in drive A and
the destination diskette in drive B.
Remove the PC Paintbrush II Disk 1 from
drive A as well as the copied diskette
from drive B.

Place PC Paintbrush II Disk 2 in drive A
and turn down the latch. Place a second
blank formatted disk in drive B and turn
down the latch. Press a key.

When you are done, answer "N" when the
program asks you to if you wish to copy
another diskette.

Remove the diskettes from the drives.
Label your copied diskettes as your working
copies. Place the original diskettes in a
safe place so that you can make additional
copies if your working diskette is damaged.

Place your working PC Paintbrush II Disk

1 in drive A and follow the instructions
for "Starting the Program," above.

Selecting the Program Options

PC PAINTBRUSH II can use all of the
MINDSET graphics modes. The default mode
is 640x400 with 4 colors. If you wish to
change the graphics mode, select option 2.
It will allow you to change not only screen
mode, but to select the input device and
printer type.

Option 2 is used to run the PCINSTAL
program, so you may ignore the directions
for starting PCINSTAL on page 2-5 of the
manual.

Remember, you must use your working
diskettes to make any configuration changes.
Your original diskettes cannot be changed.

PC PAINTBRUSH II comes ready to use with
the MINDSET Mouse and the Quadjet printer.
If you have a different printer or wish to
use the MINDSET tablet as an input device,
you should use option 2 to change these
defaults. The system will prompt you to
re-boot the system after changing the
defaults.

To prepare a data diskette for use with
the computer, press 3 followed by the
RETURN key. Then just follow the
instructions presented on the screen.

To copy a data diskette, press 4 and
then the RETURN key. Just follow the
instructions presented on the screen.

When you are through with the

operation you requested, the menu will be displayed so you can make your next choice.

Installing PC PAINTBRUSH II on your Hard Disk

You may use PC PAINTBRUSH II from your MINDSET hard disk if you have one. To install it, use the following directions.

1. Boot your system from the hard disk by pressing ALT-RESET.

2. At the C> prompt, place your PC PAINTBRUSH II Program Disk 1 in drive A.

3. Type A: and press RETURN.

4. At the A> prompt, type HDINSTAL followed by the RETURN key.

5. The program will copy the proper files to your hard disk and tell you when it is done.

6. At the A> prompt, type C: followed by the RETURN key.

7. At the C> prompt, type CD\PBRUSH, followed by the RETURN key.

8. At the C> prompt type: COPY CON PBRUSH.CNF, followed by the RETURN key. Then type the following lines, each line followed by the RETURN key:

    FONT=C:\PBRUSH
    PIX=C:\PBRUSH
    CUTOUT=C:\PBRUSH

TEMP=C:\PBRUSH

. Now press the F6 function key, then press the RETURN key

Running PC PAINTBRUSH II from your Hard Disk

1. Boot your system from the hard disk.

2. At the C> prompt, type CD\PBRUSH followed by the RETURN key.

3. At the C> prompt, type PAINT followed by the RETURN key.

4. PC PAINTBRUSH II will load and execute.

NOTE: To change the PC PAINTBRUSH II defaults for color mode, printer, or input device once you have installed PC PAINTBRUSH II to your hard disk: follow steps 1 and 2 above, then at the C> type PCINSTAL followed by the RETURN key.

New Features

Several new features have been added to PC PAINTBRUSH II to make it more useful in video applications. The first is the ability to adjust the color palette entries so that any of the 512 MINDSET colors can be used. In addition to setting the colors, any or all of them can be set as "keyed" colors, allowing background video to show through. These options are explained in the following pages.

PC PAINTBRUSH II ADDENDUM

Adj. Palette

The ADJ. PALETTE (ADJUST PALETTE) feature allows you to change the default colors present in the color palette at the bottom of the screen. ADJ. PALETTE is found in the MISC. MENU.

The MINDSET has the capability to display 512 different colors (four or sixteen at a time) on the PC PAINTBRUSH II screen, depending on which mode is selected (see page 8 of this addendum for screen modes and colors supported on the Mindset). When the ADJ. PALETTE submenu is selected, the following menu appears:

```
        KEY BIT   ON          OFF
        RED       GRN         BLU
        OK        CANCEL
```

```
Where:  RED   =   The red color component
        GRN   =   " green   "          "
        BLU   =   " blue    "          "
        KEY   =   Indicator for whether this
                  color is "keyed"
```

Move the point of the arrow cursor to whichever basic (solid) color you wish to change. The hot spot is the point of the arrow. Click the mouse button once. Now move the cursor up and position it over the RED, GRN or BLU boxes.

Click the left mouse button to gradually reduce the designated component (red, green, or blue) in the color selected for adjustment.

Click the right mouse button to
gradually increase the designated
component.

If you are using a tablet, select the
basic color to be modified by pointing to it
and pressing the pen. Then move the cursor
over the RED, GRN, or BLU boxes.

Press the pen to gradually reduce the
designated component (red, green, or blue)
in the selected color.

Hold the ALT key and press the pen to
gradually increase the designated component.

Move the cursor to the KEY box.
Click the left mouse button to toggle the
setting of the KEY attribute for the color
(see "Keyed", below, for an explanation of
what keying does).

Click the OK box to retain palette
changes, CANCEL to reset the previous
palette settings.

NOTE: There are eight available graphic
display modes for the MINDSET (below):

SCREEN MODE	RESOLUTION	COLORS
1	640 * 200	2
2	640 * 400	2
3	320 * 200	4
4	320 * 400	4
5	640 * 200	4
6	640 * 400	4
7	320 * 200	16
8	320 * 400	16

VIDEO SIGNAL CONTROL:

Keyed

This option is only valid when your MINDSET is connected to the Video Production Module.

When this option is selected (as indicated by the ON box being high-lighted to the the right of the item), the MINDSET allows the background video signal to show through those colors for which the "key" attribute is enabled (see "Adj. Palette", on page 7).

As an example, suppose you create a screenful of text over a black back-ground. The text can be any color, type, size, etc., allowed. If you have selected the "key" attribute for the black color, then selecting "Genlock On" in the "Screen Type" option in the "Page" menu, will make it appear that your text has been created over whatever incoming video signal you supply.

As many or as few colors as you wish can be keyed simultaneously.

Avoid keying the two colors at the far left of the 32 color choices at the bottom of the screen (these are black (top) and white (bottom) by default). These are the two colors used to draw most of the menus. If either of these colors are keyed, ·the menus may be hard to read.

Screen Type

"Screen Type" is a submenu found under the Page Menu. This submenu allows you to modify the way the image is displayed. There are four options on this submenu which can be selected "ON" or "OFF":

INTERLACE: When ON, the computer image is output to the monitor in interlaced fields; that is, first, all of the even-numbered scan lines are displayed, then all of the odd-numbered scan lines. If you are intending to videotape the image, you should select interlace ON. When interlace is ON, it is normal for the image to flicker a bit.

Those screen modes (2,4,6,8) which have 400 scan lines must have interlace ON in order to display the entire image. Interlace is ON by default whenever you start PC Paintbrush II in any of these modes, HOWEVER THE INTERLACE OPTION WILL INDICATE "OFF" (this is a bug in the program). Selecting interlace ON or OFF will still work correctly in these modes, and once selected manually, the option will display the correct ON/OFF indication.

GENLOCK: When ON, you will be able to see the external video signal "through" any colors which are keyed (see the "Adj. Palette" feature above). When OFF, you will never see the external video signal, even if you have selected certain colors to be keyed.

B/W ONLY: When ON, only a black and white image is displayed. When OFF, a color image is displayed.

FIXED PHASE: Certain patterns of color may flicker strongly on a composite monitor. Setting fixed phase ON may reduce the flicker, however, it will affect the way thin vertical lines are displayed (it will make them jagged).

Miscellaneous

When in a 16-color mode, patterns are only 4 pixels wide by 8 pixels tall rather than the 8x8 matrix used in the other modes. Therefore, when you are editing a pattern while in a 16-color mode, you will only be able to modify the leftmost 4 pixels of the matrix.