



User Guide & Tutorial

Adobe Photoshop™

Limited Edition

Version 2.5 for Windows™

INTRODUCTION

Welcome to the Adobe Photoshop™ Limited Edition program—extraordinary photo retouching, image editing, and color painting software. Whether you are a novice or an expert in image editing, the program offers you the tools you need to get professional-quality results.

You'll find that Adobe Photoshop Limited Edition excels as an art production tool, whether you are an art director or electronic publisher who needs to merge and edit color images, a photographer who wants to retouch proofs, or a graphic designer who is creating original or composite artwork, collages, or photo montages. The software is equally useful to animators who want to colorize images and produce audio-visual materials quickly, and to artists who want to create new artwork using the latest media and tools.

This program offers a “limited” set of features from the full version of Adobe Photoshop. As an owner of this limited edition, you qualify for a special upgrade price to the full version. (See the package offer for more information.) The complete version offers more powerful features, including:

- CMYK mode
- Lab mode
- Duotones
- Trapping
- Paths
- Export
- Additional filters
- Channels
- Additional file formats

- Custom inks from the PANTONE MATCHING SYSTEM®, the TRUMATCH SWATCHING SYSTEM™, the FOCOLTONE® COLOUR SYSTEM, the TOYO 88 ColorFinder™ 1050 System, and the ANPA-COLOR™ system
- Faster performance with accelerator cards
- An increased limit for random-access memory (RAM)

Before beginning to use Adobe Photoshop, you should have a working knowledge of the PC and Microsoft® Windows™. You should know how to use the mouse and standard Windows menus and commands. You should also know how to open, save, and close files. If you need to review these techniques, see your Microsoft Windows documentation.

ABOUT THIS MANUAL

The *Adobe Photoshop LE User Guide and Tutorial* provides basic information about the Adobe Photoshop tools and commands. It is designed to be used as an overview of Adobe Photoshop.

Before using this manual, you need to install the program following the instructions in the section “Installing the Adobe Photoshop Program.” Be sure to read carefully through Chapter 1, “Basic Concepts” and to complete the tutorial in Chapters 2 and 3 to gain familiarity with the Photoshop tools. Descriptions of specific tools and procedures included in the tutorial chapters are not repeated in this manual.

GETTING STARTED WITH THE ADOBE PHOTOSHOP SOFTWARE PACKAGE

The Adobe Photoshop LE software package consists of three disks and the Adobe Photoshop documentation. The package includes

Introduction

- The software disks containing the Adobe Photoshop program, plug-in modules, the Adobe Photoshop tutorial files, and a number of sample files.
- The *Adobe Photoshop LE User Guide and Tutorial*
- Registration card

To use Adobe Photoshop, you need the following hardware and software:

- An Intel® 80386- or 80486-based or faster PC with at least 4 megabytes (MB) of application random-access memory (RAM)
- DOS 5.0 and Microsoft Windows® 3.1
- A color VGA display adapter and compatible monitor
- A mouse or other compatible pointing device

For optimal performance, Adobe Systems also recommends the following:

- An Intel® 80486 or faster processor
- 8 MB or more of RAM
- A 24-bit color display adapter and compatible color monitor
- A PC-compatible scanner
- A PostScript™ printer

REGISTRATION

We are confident that you will find that the Adobe Photoshop program greatly increases your productivity. So that we can continue to provide you with the highest quality software, offer technical support, and keep you informed about new Adobe Photoshop software developments, please return the enclosed warranty registration card.

INSTALLING ADOBE PHOTOSHOP

Before you begin using Adobe Photoshop, make a backup copy of the program disks to work with during installation. For instructions on how to copy disks, refer to your Windows user documentation.

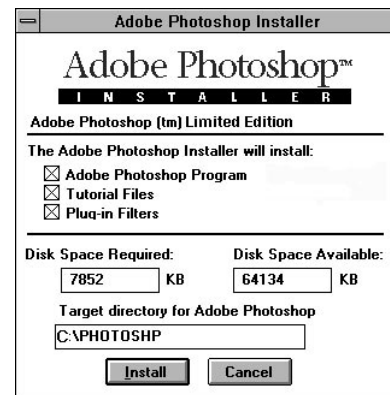
If you choose to install only some of the program files, you can repeat this procedure to install the remaining files later.

To install the Adobe Photoshop program:

- 1 Start Windows, if you have not already done so.
- 2 Insert the Adobe Photoshop Disk 1 into drive a: or b:.
- 3 From the Program Manager, choose Run from the File menu.

Note: If you are using a desktop manager other than Program Manager, first run the Program Manager application *PROGMAN.EXE*, and then follow step 3. Running the installer from other than the Program Manager may produce unexpected results.

- 4 Type **a:pssetup.exe** (where **a:** is the drive indicator) and click OK. The Adobe Photoshop Installer dialog box appears, displaying the amount of disk space required to install all program files and the amount of disk space available.



5 Deselect any file groups that you do not want to install.

6 Be sure to install the Plug-ins files. If you do not install these files, many of the Adobe Photoshop file formats and Adobe Photoshop filters will not be available.

7 Accept the default target drive and directory, or type a new drive and directory.

8 Click Install. Click OK at the request to complete the registration card.

9 Enter your name, organization (optional), and the serial number of the program. The serial number is located on Disk 1, and on the first page of the *Adobe Photoshop User Guide*.

10 Click OK. The Installer dialog box appears.

11 Click OK to begin the installation.

12 Follow the on-screen instructions, inserting additional disks and clicking OK as prompted.

When installation is complete, a message appears indicating that the installation was successful.

13 Click OK to return to the Program Manager.

To start Adobe Photoshop:

1 Start Windows, if it is not already running.

2 From the Program Manager, double-click the Adobe Photoshop LE program icon in the Adobe group.

The Adobe Photoshop window appears. You are ready to create or open a document and start working.

USING THE ON-LINE HELP SYSTEM

Help is a convenient, quick way to use your mouse or keyboard to look up information on-line, such as about a procedure you're trying to follow, a feature you want to know more about, or a command you want to use. You can get help through the Help menu. You can also get context-sensitive help for commands, tools, and dialog boxes.

If this is the first time you have used on-line Help, choose Using Help from the Help menu for a description of the type of assistance available and a brief tutorial called Help Basics. For more information about how to use the Help feature, see your Windows documentation.

CHAPTER 1: BASIC CONCEPTS

This chapter begins by introducing the concepts and terminology used when working with color images. If you're familiar with color models and image resolution, you can skip this section.

The second half of the chapter summarizes the Adobe Photoshop tools and presents some basic procedures for using the program effectively.

COLOR BASICS

The human eye perceives color according to the wavelength of the light that reaches it. Light that contains the full color spectrum appears as pure white light. In the absence of light, the eye perceives black. A large percentage of the visible spectrum can be represented by mixing three basic components of colored light in various proportions. These components are known as the primary *additive* colors: red, green, and blue (RGB). Additive colors combine to produce white light. Additive colors are used for lighting, video, film recorders, and monitors.

All colors can be described in terms of three fundamental characteristics: *hue* (the main attribute of the color that places it on the spectrum), *saturation* (the clarity or degree of hue in the color), and *brightness* (how light or dark the color appears).

COLOR MODES

A color mode in Adobe Photoshop is the color model you use to display and print Adobe Photoshop documents. The most commonly used modes are Grayscale, for displaying black-and-white documents, RGB, for displaying color documents on the screen. See Chapter 13, "Converting Images," for an explanation of the other modes in Adobe Photoshop.

Grayscale

Grayscale mode uses up to 256 shades of gray to represent the image. In Adobe Photoshop, every pixel of a grayscale image has a brightness value ranging from 0 (black) to 255 (white). The values in between correspond to the points on the grayscale spectrum. Images produced using black-and-white or grayscale scanners are typically displayed in Grayscale mode. You can use all the painting and editing tools in grayscale images.

RGB

In RGB color, various brightness values of red, green, and blue light combine to form the colors on the screen. The range of colors in the visible spectrum is represented by controlling the intensities of the individual RGB components.

In RGB mode, you have full access to the painting and editing capabilities of Adobe Photoshop. RGB color is the default mode for new documents.

Measuring color

For RGB color images, Photoshop assigns an intensity value to each pixel, ranging from 0 (black) to 255 (white) for each of the RGB components. For example, a bright red color might have an R value of 246, a G value of 20, and a B value of 50. When the values of all three components are equal, the result is a shade of gray. When the value of all three components is 255, the result is pure white; when all components have a value of 0, the result is pure black.

RESOLUTION

Several types of resolution are important when discussing the properties of digitized images: bit resolution, device resolution, screen resolution (or screen ruling), image resolution, and output resolution.

Each type of resolution is explained in greater detail where it first appears in the manual.

- *Bit resolution*, or bit depth, is a measurement of the number of bits of stored information per pixel. This resolution determines how much color information is allocated for each pixel in the image file. Common values for this resolution range from 1 to 32 bits per pixel.
- *Device resolution* defines the number of dots or pixels that are represented per unit length of output. It is commonly measured in dots per inch (dpi) or pixels per inch (ppi). The device resolution for PC monitor can vary from 60 to 120 dpi. It cannot be changed through the Adobe Photoshop software.
- *Screen resolution*, also known as *screen ruling* or *screen frequency*, refers to the number of dots per inch in the halftone screen used to print a grayscale image or color separation. Screen resolution is measured in lines per inch (lpi).
- *Image resolution* refers to the amount of information stored for an image, measured in pixels per inch (ppi). The image resolution and the document's dimensions determine the overall file size of the document. The higher the image resolution, the more space on disk the image requires and the more time it takes for printing and other operations.
- *Output resolution* refers to the number of dots per inch (dpi) that the output device (such as an imagesetter or laser printer) produces.

CREATING, OPENING, AND SAVING DOCUMENTS

You use the commands in the File menu to work with Adobe Photoshop documents. Choose New to open a blank, untitled window. When you choose this command, a dialog box appears so you can set the characteristics of the document. If an image is on the Clipboard, the size of the new document corresponds to the size of the Clipboard image, so that the image can be pasted without cropping.

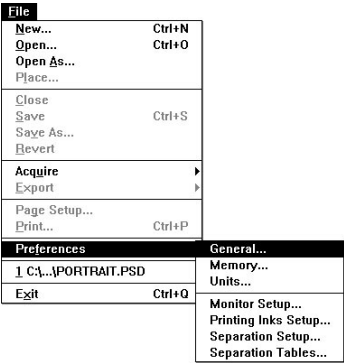
Open a document by highlighting the file name and clicking OK. To open an existing document in a different file format, choose Open As from the File menu. See Chapter 4, "Scanning, Importing, and Exporting Images," for more information on the Open and Open As commands.

To save a document, choose Save from the File menu. Choose Save As to give the document a different name or save the document in a different format. See Chapter 4, "Scanning, Importing, and Exporting Images," for more information on using different file formats.

You can have multiple documents open at one time, and each document can have several open windows. Use the New Window command in the Window menu to open additional windows. The bottom of the Window menu lists all open windows.

SETTING PREFERENCES

The settings stored in your preferences file include general display options, tool options, ruler units, and options for exporting information from the Clipboard. Most of these options are set in dialog boxes accessed through the Preferences submenu in the File menu.



Each option in the Preferences dialog boxes is explained later in this manual. To locate an explanation about a specific Preferences dialog box option, use the Index in this manual.

The following Preferences options apply to general use of the program.

Setting the position of palettes

Adobe Photoshop remembers the position of open palettes when you exit the program. If you want the program to open using the default palettes (that is, only the toolbox and Brushes palette are open), deselect the Restore Windows option in the General Preferences dialog box.

Changing the location of the scratch disk

A scratch disk (also called *virtual memory*) is temporary disk space used for storing data and performing computations on files during a work

session, when the random-access memory (RAM) is insufficient. By default, the Adobe Photoshop program uses your startup disk for virtual memory; however, you may wish to change the primary scratch disk or designate a secondary scratch disk. You will probably want to use your fastest hard disk, or the one with the most available space, as your primary scratch disk.

To change the scratch disk:

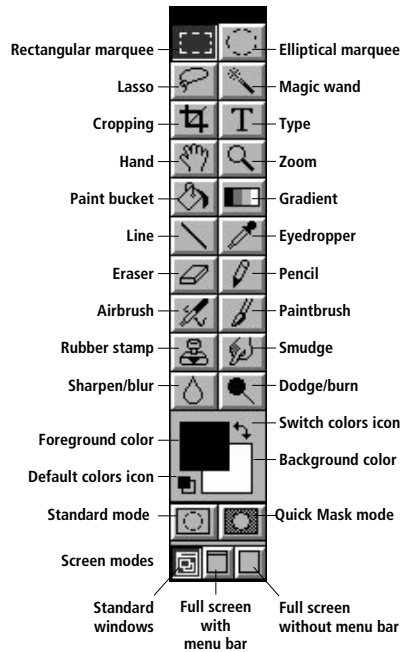
- 1 Choose Memory from the Preferences submenu. The Memory Preferences dialog box appears.
- 2 Select the disk you want to use from the drop-down list. You can also set the percentage of available RAM to be used by the Adobe Photoshop program. The new settings don't take effect until after you quit and then restart the program.

Indicating when a task is done

Selecting the Beep When Done option in the General Preferences dialog box tells Photoshop to sound a beep whenever the program finishes performing a task requiring a progress bar. When you hear the beep, you can continue working with the program.

USING THE ADOBE PHOTOSHOP TOOLS

The tools in the toolbox allow you to select, paint, edit, and view images. The toolbox also contains controls for choosing the foreground and background colors, switching to Quick Mask mode, and changing the screen display mode. Click a tool to select it.



Most tools are affected by the settings on the Brushes palette when you're painting or editing an image. Some tools also have specific options associated with them. Double-click a tool to see its options.

The toolbox

- Use the *rectangular* and *elliptical marquee tools* to make selections of different shapes.
- Use the *lasso tool* to make freehand selections.
- Use the *magic wand tool* to select images based on the color similarities of adjacent pixels. This tool is useful when you want to select part of an image (for example, a yellow flower) without tracing the outline with the lasso tool.
- Use the *cropping tool* to select part of an image and discard the remainder.
- Use the *type tool* to enter text on an image.
- Use the *hand tool* to scroll through an image that is too big to fit in the active window.
- Use the *zoom tool* to magnify an image when you are performing close, detailed work and to reduce an image when you want an overall view.
- Use the *paint bucket tool* to fill areas with the foreground color that are similar in color and adjacent to the point you click.
- Use the *gradient tool* to create a gradient fill, a gradual transition from the foreground to the background color.
- Use the *line tool* to paint straight line segments.
- Use the *eyedropper tool* to select the current foreground and background colors from colors in an image.
- Use the *eraser tool* to erase pixels and change them to the same color as the background color. In "magic eraser" mode, this tool lets you restore part of an image to the last saved version.
- Use the *pencil tool* to paint hard-edged free-hand or straight lines with the foreground color.
- Use the *airbrush tool* to lay down a diffused spray of the foreground color on an image.
- Use the *paintbrush tool* to paint soft-edged strokes using the foreground color.
- Use the *rubber stamp tool* to take a sample of part of an image and place an exact copy (or "clone") of that image elsewhere in the same image or in another image. You can also use this tool to create an "impressionist" effect.
- Use the *smudge tool* to simulate the effect of dragging a finger through wet paint.
- Use the *blur/sharpen tool* to blur or sharpen part of an image.
- Use the *dodge/burn tool* to lighten or darken part of an image.

Color controls

- Use the *foreground color selection box* to change the foreground color. This is the color you use to paint with many of the tools (for example, the paint bucket, line, pencil, airbrush, and paintbrush tools).
- Use the *background color selection box* to change the background color. This is the color that appears when you use the eraser or the gradient tool, or when a selection is moved.
- Use the *switch colors icon* to switch the foreground and background colors in the color selection boxes.
- Use the *default colors icon* to return to the black foreground and white background colors.

Mode controls

- Use the *Standard mode* to make selections and perform standard editing and painting tasks.
- Use *Quick Mask mode* to create and edit a temporary mask.

Window controls

The window controls at the bottom of the toolbox control the window display.

- Click the left window control to display an image in a normal-sized window, with a menu bar at the top and scroll bars on the sides. This is the default mode.
- Click the center window control to display the image in a full screen with a menu bar but without scroll bars.
- Click the right window control to display the image in a full screen but without a menu bar or scroll bars. Press the Tab key if you also want to hide any open palettes. (Press Tab again to show the palettes.) Note that in this setting you must scroll using the hand tool.

Using the tool pointers

When you click a tool in the toolbox and position the cursor on the image, the cursor changes into the icon of the tool you selected. Each of the cursors has a different “hot spot,” the point where a selection or action such as painting begins. When you want to edit or apply paint with real precision, you may want to change the cursor into a crosshair. The cross-hair cursor gives you greater accuracy because you can focus the “hot spot” of the crosshairs (the intersection of the crosshairs) on the area you want to paint or edit.

To use the cross-hair cursor while using another tool:

Press the Caps Lock key. To resume using the tool’s normal cursor, press the Caps Lock key again to release the key.

MAGNIFYING AND REDUCING THE VIEW OF AN IMAGE

The zoom tool in the toolbox and the Zoom commands in the Window menu allow you to magnify and reduce your view of a document. The document’s title bar displays the magnification factor at all times; for example, 2:1 for a magnification by a factor of 2, and 1:2 for a reduction by a factor of 2. You can magnify and reduce up to 16 times the original view of the document.

Keep in mind that the 1:1 view of a document displays an image based on the screen resolution and the image resolution, not on the actual document dimensions. Because images are displayed at the screen resolution, documents with a high image resolution appear larger on-screen than documents with a low resolution. When you use the zoom tool, you are not actually changing the size of a document, only your view of the image.

To use the zoom tool:

- 1 Click the zoom tool in the toolbox.
- 2 Position the pointer on the image, and click to zoom in; Alt+click to zoom out.

Each click magnifies or reduces by a factor of 2. If only part of the image can be displayed, it is centered around the point you click. When you reach the maximum magnification or reduction factor, the center of the zoom tool appears empty.

Shortcuts: To restore the 1:1 view of a document, double-click the zoom tool in the toolbox. To activate the zoom-in tool while using another tool, press Ctrl+spacebar. To activate the zoom-out tool while using another tool, press Alt+spacebar. When you're working in a very large file, double-click the hand tool to make the image fit in the window.

To use the Zoom commands:

Choose Zoom In from the Window menu to magnify by a factor of 2; choose Zoom Out to reduce by a factor of 2.

To magnify part of an image using a selection marquee:

- 1 Click the zoom tool in the toolbox.
- 2 Hold down the mouse button, and drag to select the part of the image you want to magnify.

This part of the image is displayed at the maximum magnification possible, up to a factor of 16. The magnification factor used is determined by the size of the area you select.



Selected area



Magnified view

USING RULERS

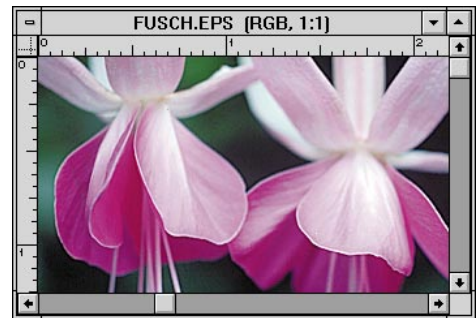
You can display rulers along the top and left side of the active window to measure on an image. When rulers are displayed and you move the cursor into the active window, markers appear on the rulers to indicate the cursor's current position.

To display the rulers:

Choose Show Rulers from the Window menu. To hide the rulers, choose Hide Rulers.

To change the ruler's zero origins:

- 1 Position the cursor in the upper left corner of the window, directly under the close box.



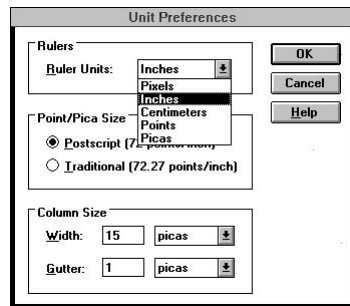
2 Hold down the mouse button and drag on the image. A set of crosshairs appears, marking the new origin on the rulers.

Changing the ruler origins allows you to measure from a specific point on the image.

Note: To reset the ruler origin to its default value, double-click the upper left corner of the rulers.

To change the ruler's units of measurement:

1 Choose Preferences from the File menu and Units from the submenu. The Unit Preferences dialog box appears.



2 Choose the units you want to use from the Ruler Units drop-down list.

3 Choose a point and pica size. Leave the setting at PostScript if you are printing to a PostScript device.

4 Indicate a column width. Column widths are used in some layout programs to specify the display of an image across columns. The setting in this option is used by the Image Size and Canvas Size commands. See Chapter 12, “Resizing Images,” for more information about these commands.

USING THE ADOBE PHOTOSHOP PALETTES

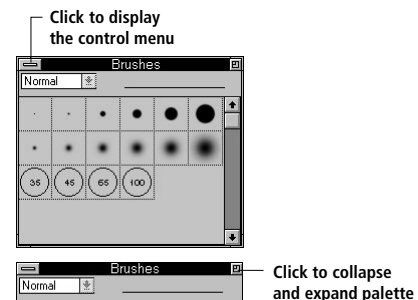
Adobe Photoshop includes several palettes that you use when painting and editing images. You use the commands in the Window menu to dis-

play these palettes. The palettes include the Colors palette, the Brushes palette, and the Info palette. Each palette is described in detail where it first appears in this manual.

Working efficiently with palettes

The following techniques can help you save time when you are working with palettes:

- Leave the palettes open on the desktop.
- Drag the palettes to a convenient place on your desktop. If the Restore Windows option is selected in the General Preferences dialog box, the palettes will appear in the same locations the next time you open Adobe Photoshop.
- To display the palette's commands, click the Control menu button in the upper left corner of the palette window. The commands appear in a Control menu.
- To increase your work space, click the minimize/maximize box at the far right of the title bar to collapse the palette. Submenus are still available when a palette is collapsed. Click the zoom box again to display the entire palette.



- To hide individual palettes, choose the appropriate Hide command from the Window menu, or double-click the palette's close box.
- Press Tab to hide or display all open palettes, including the toolbox.

Using the Info palette

The Show Info command in the Window menu displays the Info palette. This palette gives you information about the position of the pointer and the color values of pixels at any time during your work session. In effect, this palette is an on-screen densitometer.

Depending on the tool you are using, you can also use the Info palette to measure size, distance, and angle of rotation. When most of the tools are in use, the Info palette displays the *x* and *y* coordinates of the pointer's position in the document (using the current ruler units).

The color values are displayed for two color modes. You can choose to remove the position information, display a single mode, or change the two modes displayed on the Info palette.

To change the Info palette options:

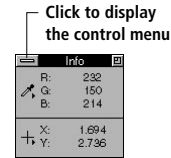
- 1 Choose Options in the Info palette's Control menu. The Info Options dialog box appears.
- 2 Select the number of color readouts you want to display. Deselect either of the Show Color Readout options to display only one color mode.
- 3 Choose the mode you want to display from the drop-down list for each readout.

The mode determines the numerical representation for the pixels that appears in the Info palette. The Actual Color mode displays the values in the current color mode of the document window. For example, if you are viewing the composite channel of an RGB image and have Actual Color chosen, the colors are defined using red, green, and blue values.

Choosing any other command from the Mode menu in the Info Options dialog box displays the values in the chosen mode.

- 4 Select the position options you want:

- Deselect the Show Mouse Coordinates option to turn off the display of the mouse position.
- Choose from the Ruler Units drop-down list to change the units of measurement.



Note: You can also display the Info palette options for measurement units and modes by clicking the cross-hair or eyedropper icon.

The Info palette also displays the following information:

- When the rectangular or elliptical marquee tool is in use, the Info palette displays the height (H) and width (W) of the marquee as you drag. This information is displayed as long as there is a selection in the image.
- When the line tool or gradient tool is in use, or when you are dragging a selection, the Info palette displays the *x* and *y* coordinates of your starting position, the angle (A), the distance (D), the change in *X* (ΔX) and the change in *Y* (ΔY) as you drag, and the height (H) and width (W) of the selected area. To use the line tool as a measuring tape, simply define a line width of 0 in the Line Tool Options dialog box.
- When the cropping tool is in use, the Info palette displays the height (H), width (W), and angle of rotation of the cropping marquee.
- When you're using the Scale command, the Info palette displays the height (H) and width (W) of the scaled selection, and the percentage change in height and width as you drag.
- When you're using the Rotate command, the Info palette displays the angle of rotation.

When you're using any of the color adjustment dialog boxes (such as Levels or Curves), the Info palette displays the before and after color values of the pixels. See Chapter 14, "Making Color Corrections," for complete information on how to use this feature.

CORRECTING A MISTAKE

You don't need to be overly concerned about making mistakes while using the Adobe Photoshop program. Many operations can be undone using the Undo command in the Edit menu. To correct a mistake, choose Undo immediately after performing the action. This command reverses only the last action that you performed.

If an operation can't be undone, the Undo choice is dimmed and reads "Can't Undo."

USING THE REVERT COMMAND

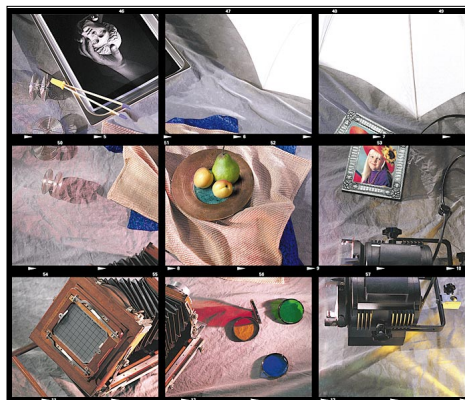
At times, you may want to undo a series of operations that you have performed. In this case, you use the Revert command in the File menu rather than the Undo command. When you choose Revert, you lose all changes made to the image since the last time it was saved.

You can also restore *part* of an image to its previously saved version using the From Saved option of the rubber stamp tool, described in Chapter 5, "Using the Painting and Editing Tool Options," as well as the "magic eraser," described in "Restore Part of the Image" in Chapter 2.

CHAPTER 2: LESSON 1—LEARNING THE BASICS

This lesson orients you to the Adobe Photoshop work area and tools, and explains basic concepts needed to use the program successfully.

In this first lesson, you will open the FRAMES image that you copied to your hard disk when you installed the Adobe Photoshop program. You will make different selections of the image, use the painting tools to paint the image, and add type to the image.



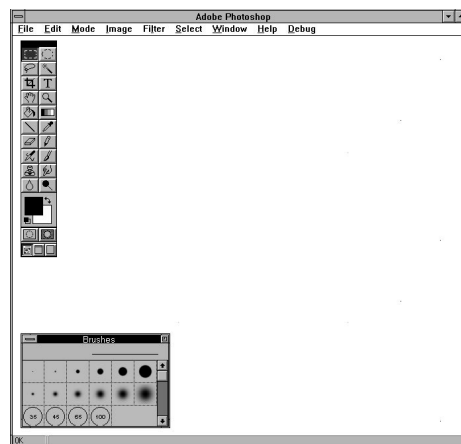
STARTING THE ADOBE PHOTOSHOP PROGRAM

Before beginning this tutorial, make sure that you installed the tutorial files when you installed the Adobe Photoshop program. Installing the tutorial files is an option at installation time. If you did not install them, launch the Photoshop installer, and select only the tutorial files from the installation screen. See the section “Installing the Adobe Photoshop Program” in the Introduction for instructions on installing the program.

1 Start Windows.

2 From the Program Manager, double-click the Adobe Photoshop program icon.

3 Click OK. The Adobe Photoshop parent window appears with the toolbox to the left, the Brushes palette at the bottom of the screen, and the status bar at the bottom of the window.



Adobe Photoshop for Windows automatically loads with the application window filling most of the screen. To expand the application window to full-screen, click the Maximize button in the upper right corner.

OPEN THE IMAGE

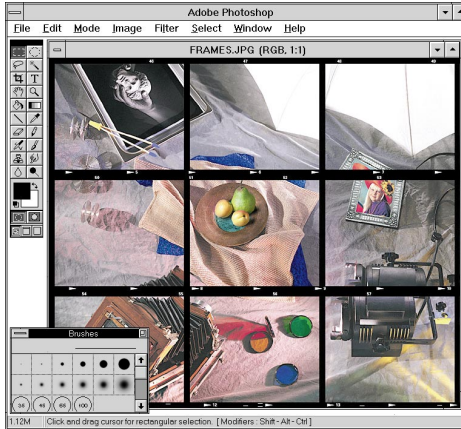
The Adobe Photoshop tutorial provides three sample images, including a nine-frame image called FRAMES.

You will first work with the nine-frame image, which was copied to your hard disk during installation.

1 Choose Open from the File menu.

Chapter 2

2 Select the FRAMES.JPG file, located in the TUTORIAL subdirectory, and click Open. The image appears on-screen.



The Adobe Photoshop default work area consists of the toolbox in the upper-left corner, the Brushes palette at the bottom of the screen, and any images you open to the right of the toolbox.

3 Drag the Brushes palette by its title bar to reposition the palette on the right side of the image so that you can see the status bar.

The status bar at the lower left of the image shows that the image is 1.12 megabytes (MB) in size. The title bar shows that the image appears on-screen at a 1:1 view if you have a graphics card with a resolution of 1024 pixels by 768 pixels or higher, or at a 1:2 view if you have a graphics card with a lower resolution.

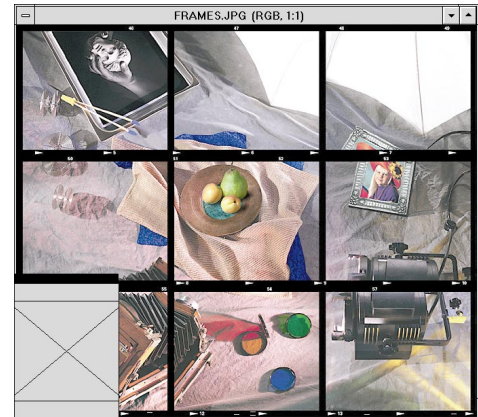
Preview the page size

To see how the FRAMES image will appear on a printed page, you use the Page Preview box. The page preview shows you the dimensions of the image in relationship to the current paper size in the Page Setup dialog box.

1 Position the pointer on the image size box in the lower left corner of the status bar.

2 Press the left mouse button to see the Page Preview box.

***Note:** Mouse button is used throughout the tutorial to refer to the left mouse button.*



The rectangle with an X through it indicates the image dimensions; the outside rectangle indicates the paper size. The white area represents the *imageable area* of the current paper size in the Page Setup dialog box. The imageable area is the total page size less a border used by the printer or imagesetter. You can see that the page overlaps the page boundary for the default letter page size.

3 To see how the paper size affects the preview, choose Page Setup from the File menu and Tabloid from the Paper Size drop-down list, and click OK. Repeat step 2 to preview the new page size.

The page size has been enlarged to represent the current Tabloid paper size, and the image now fits the paper size.

4 To return the paper size to the previous setting, either choose Page Setup from the File menu, click Letter paper size, and click OK; or choose Undo from the Edit menu (Ctrl+Z).

Changing the page orientation (portrait to landscape) in the Page Setup dialog box also updates the preview and always centers the image on the printed page.

Preview the image size

To see the image dimensions and resolution of the FRAMES image, you use the Size Preview box.

1 Position the pointer on the image size box in the lower left corner of the status bar.

2 Hold down the Alt key, and press the mouse button. The width, height, number of channels (colors), and resolution of the image are displayed.



You can also use the rulers to measure the dimensions of an image, or you can use the Image Size command in the Image menu to check or change the image dimensions and resolution.

3 When you have finished viewing the image dimensions, release the mouse button.

Show and hide palettes

You can display various windows and palettes as you work. All windows—the toolbox, image, and various palettes—can be repositioned on-screen by dragging the corresponding title bar. If you have a large screen, you may find that you work more efficiently by keeping several palettes open as you work.

If you have a small screen, you should display the palettes only as you need them. You can display a palette by choosing the appropriate command.

1 To display the corresponding window or palettes, choose the appropriate command from the Window menu:

- The Colors palette displays the default foreground and background colors available for painting. The palette also includes a scratch pad; options for saving, loading, and appending custom palettes and displaying other color modes; and sliders for changing colors.
- The Brushes palette, displayed by default, shows the default brush shape, size, modes, and options for the painting tools (paintbrush, pencil, airbrush, rubber stamp, smudge, blur/sharpen, and dodge/burn tools), type tool, and gradient tool. The palette can store generated brushes and custom brushes. How to use the Brushes palette is described later in this lesson in “Change the Brush Size and Paint Options.”
- The Info palette shows the *x* and *y* coordinates of the mouse position and gives color information about the pixel directly beneath the cursor. Depending on the tool you are using, the Info palette gives additional feedback, including dimensions, distance, percentage of scaling, and angle of rotation.

2 To hide a window or palette, choose the appropriate Hide command from the Window menu; the Hide and Show commands under the Window menu *toggles*, or switches, between the two options. You can also press the Tab key to hide or show the palettes.

If you are using a large monitor and want to keep all or some of the windows and palettes open, you can reposition them now.

3 To move a palette or the toolbox, drag it by its title bar to the desired position on-screen.

4 To resize a palette, drag the size box in the lower right corner of the palette.

To collapse a palette and increase your work space, click the Maximize button in the upper right corner of the title bar; to return the palette to the default size, click the Maximize button again.

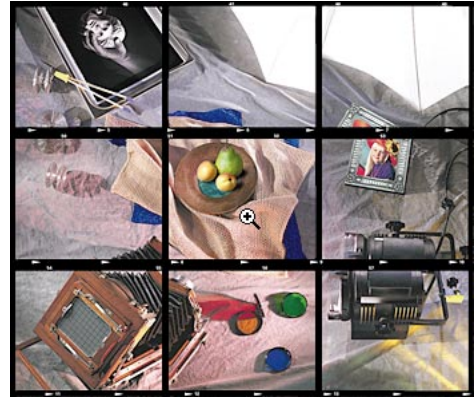
MAKE SIMPLE SELECTIONS

In Adobe Photoshop, you edit and manipulate part of an image by first making a *selection*. In this part of the lesson, you will zoom in on the FRAMES image, and then practice making selections.

If the FRAMES image is not displayed at a 1:1 view, you first will zoom in on the image.

1 Click the zoom tool in the toolbox.

2 Position the pointer on the center of your image. The pointer turns into a magnifying glass with a plus sign.



3 Click once. The image is enlarged by one order of magnification. Your image should now be at a 1:1 view. However, you may need to resize the window.

Images open at the largest view, up to a 1:1 view ratio (1 image pixel to 1 display pixel), that will fit on-screen. In Adobe Photoshop, the view ratio depends on the size of the opened image and the resolution of the graphics card that controls the monitor display. For example, the FRAMES image will open at a 1:1 view with a graphics card with a resolution of 1024 pixels by 768 pixels or higher, and will open at 1:2 view with a lower resolution graphics card. (The lowest recommended resolution of a graphics card for viewing Photoshop images is 640 pixels by 480 pixels.)

For example, an image with a resolution of 144 pixels per inch (ppi) would appear twice its actual size, and an image with 300-ppi resolution would appear four times its actual size on a 72-lpi monitor. If you are displaying the rulers, you will notice that the rulers also increase proportionately in size to show a high-resolution image's actual size when printed.

The images supplied with the tutorial are all at 72 lpi, the monitor resolution.

4 Click the Maximize button in the upper right corner of the window to resize the window to the maximum dimensions that will fit on your monitor.



5 If the image is displayed larger than a 1:1 view, zoom out a level of magnification by holding down the Alt key and clicking the zoom tool pointer in the center of the image.

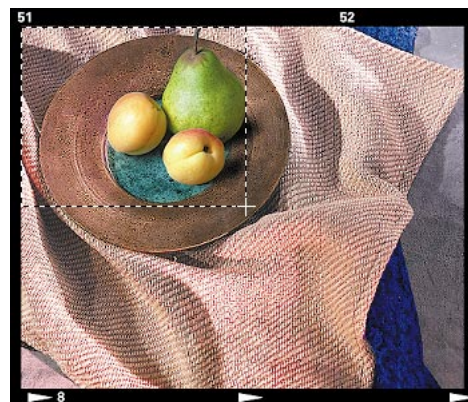
Make a rectangular selection

The selection tools in the Adobe Photoshop program let you make a variety of selections precisely and easily. Here you will practice making simple rectangular and elliptical selections using the rectangular marquee tool and elliptical marquee tool, and you will try out some simple editing commands.

1 Click the rectangular marquee tool in the toolbox.

2 Position the pointer above and to the left of the center frame in the nine-frame image, just inside the black border. A cross-hair pointer appears.

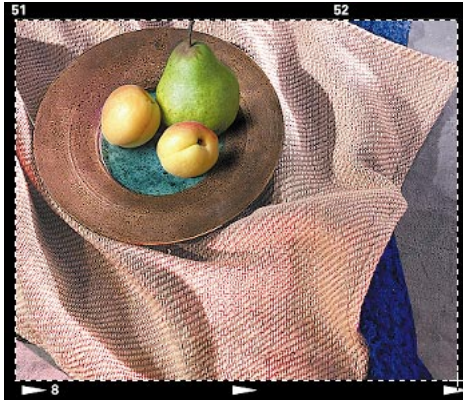
3 Hold down the mouse button, and begin dragging diagonally toward the lower right corner of the middle frame.



If you want to constrain the selection as you drag, you can choose one or both of these options:

- Press the Shift key. Notice how the selection is constrained to a square; release the Shift key, but don't release the mouse button. The marquee reverts to a rectangular selection.
- Press the Alt key. Notice how the selection now is made from the center, from the point where you began dragging; release the Alt key, but don't release the mouse button. The marquee reverts to a rectangular selection.

4 When the pointer is on the lower right corner of the frame, release the mouse button.



The pointer reverts to an arrow, and a dotted white line appears around the selection. This line is called a *selection border* or *marquee*.

Redraw the selection

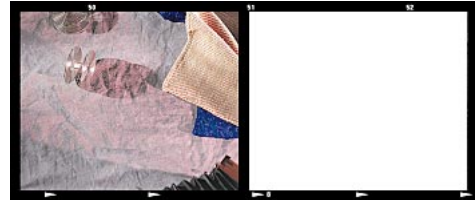
If a selection is not as desired, you can redraw it. Choose one of the following options:

- While the selection border is still displayed, click the mouse button away from the current selection to deselect everything, and then drag the marquee again, beginning in the upper-left corner of the center frame and dragging diagonally downward to the lower right corner of the frame.
- Deselect the selection by choosing None from the Select menu (Ctrl+D) and drag the marquee again, beginning in the upper left corner of the center frame and dragging diagonally downward to the lower right corner of the frame.

Cut the selection

You will scroll to the fourth frame in the image so that you can see where you will cut and paste the selection. If you are using a large monitor and can already see all of the image, you can skip to step 4.

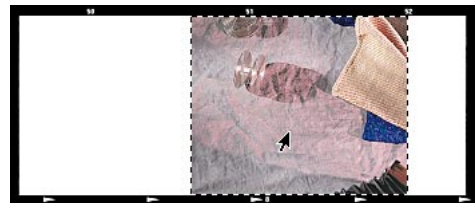
- 1 Click the hand tool in the toolbox. The pointer changes into a hand.
- 2 Position the hand on the image, and drag the hand to the right to move the image to the right within the window.
- 3 Release the mouse button when the fourth frame in the image (the frame to the left of the center frame) is fully in view.
- 4 Make sure that the center frame is still selected, and choose Cut from the Edit menu (Ctrl+X). The frame is cut and stored on the Clipboard; a white background (the background color) appears where the frame was cut.



Move and paste the selection

You will move a frame to fill the blank frame you just created.

- 1 Using the rectangular marquee tool, select the fourth frame.
- 2 Position the pointer within the selection, and press the mouse button.
- 3 Begin dragging the selection to the center frame, and then hold down the Shift key to constrain the movement horizontally.



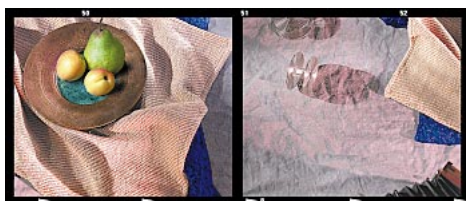
4 When the selection is centered in the center frame, release the mouse button and then the Shift key. Now the left frame is blank, and the background color appears.

5 Choose None from the Select menu (Ctrl+D) to deselect everything.

6 With nothing selected, choose Paste from the Edit menu (Ctrl+V) to paste the contents of the Clipboard into the center of the image.

The original center frame appears in the center of the screen; this is the default position when nothing is selected.

7 Position the pointer on the selection and drag the selection to the left frame.



You have switched the two frames by cutting and pasting.

8 Choose None from the Select menu (Ctrl+D) to deselect everything.

MAKE AN ELLIPTICAL SELECTION

Now you will make a circular selection on a filter at the bottom of the image.

Zoom in on the eighth frame of the image

To work with the filters in the image, you will zoom in on the eighth frame. You can zoom in on a selected area of an image by dragging the zoom tool. This technique is called *marquee-zooming*.

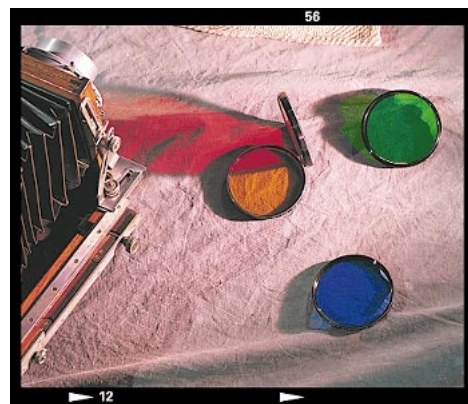
1 Click the zoom tool in the toolbox.

2 Position the zoom tool on the upper-left corner of the frame. The tool turns into a magnifying glass with a plus sign.

3 Click the mouse button, and begin dragging diagonally toward the lower right corner of the frame. The window will scroll automatically as you drag.



4 When you have selected the entire frame using the zoom tool, release the mouse button. The frame doubles in size to fill the screen.



You may have inadvertently released the mouse button before enlarging the entire frame, and thus enlarged too small an area. If you have enlarged too small an area of the image, hold down the Alt key to select the zoom-out tool, and click as many times as needed to reduce the view to 1:2. If necessary, you can repeat steps 3 and 4 to enlarge the desired area.

Chapter 2



TIP: YOU CAN RESIZE
THE WINDOW TO
DISPLAY THE IMAGE
AT A 1:1 VIEW
BY DOUBLE-CLICKING
THE ZOOM TOOL
IN THE TOOLBOX.

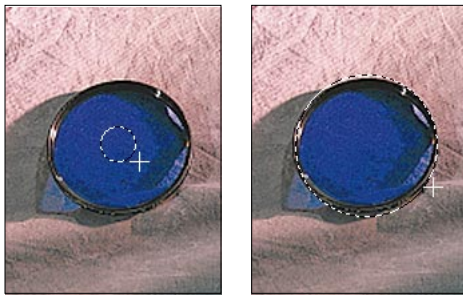
Use the elliptical marquee tool

The elliptical marquee tool works in a way similar to the rectangular marquee tool. You will use it here to make a selection from the center. You can use these same techniques with the rectangular marquee tool.

- 1** Click the elliptical marquee tool in the toolbox.
- 2** Position the pointer on the center of the blue filter in the filter image. A cross-hair pointer appears.
- 3** Hold down the mouse button, and begin dragging diagonally toward the lower right corner of the frame to enclose the selection. As you drag, the marquee encloses a selection from the center point of the filter to the lower right edge of the filter.
- 4** Without releasing the mouse button, hold down the Alt key to select from the center of the filter, and continue dragging. The marquee expands to select the filter from its center.

It is easier to make an accurate elliptical selection around a circular object from the center than from the edges of an object.

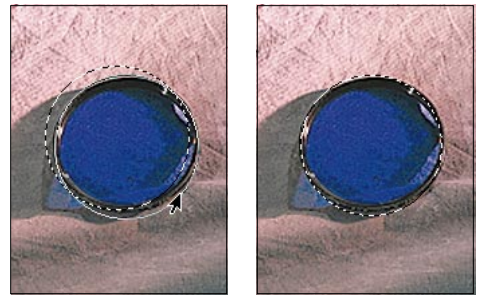
- 5** Hold down the Shift key to constrain the selection to a circle.
- 6** Release the mouse button and then the Shift and Alt keys. The blue filter is selected.



Move the selection border

It is difficult to get a perfect selection of the filter unless you select the filter's exact center. However, you can move any selection border without moving the image underneath.

- 1** Hold down the Control key and the Alt key.
- 2** Position the cursor on or inside the selection border.
- 3** Drag the selection border to encompass the blue filter.



Duplicate the selection

You can use the following technique with any selection and while using any selection tool.

- 1** Make sure that the blue filter is still selected.
- 2** Hold down the Alt key, and then position the pointer on the selection. Holding down the Alt key after you have made a selection, but before beginning to drag, makes a duplicate of the selection. If you hold down the Alt key after dragging, you will move, not copy, the selection.
- 3** Drag the selection onto the cloth, and release the mouse button and the Alt key. The blue filter is duplicated.



TIP: YOU CAN

RESIZE THE WINDOW

AS YOU ZOOM IN

OR OUT BY PRESSING

CONTROL+ TO ZOOM IN

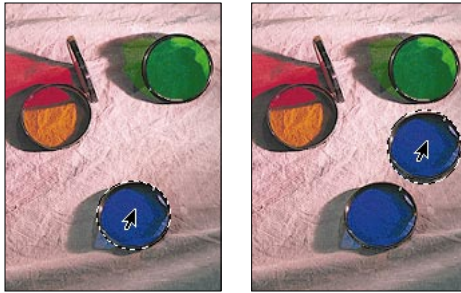
AND RESIZE THE WIN-

DOW, OR BY PRESSING

CONTROL- TO ZOOM

OUT AND RESIZE

THE WINDOW.



RESTORE PART OF THE IMAGE

Using the “magic eraser,” you can restore the image to the state it was in when you last saved the document. This tool is a variation of the eraser tool.

- 1 Choose None from the Select menu (Ctrl+D) to deselect everything.
- 2 Click the eraser tool in the toolbox.
- 3 Drag the eraser over a portion of the image to try out the tool. The eraser reveals the background color (white, by default) as it erases.
- 4 Position the eraser where you want to start restoring the image.
- 5 Hold down the Alt key and then the mouse button, and drag over the area that you just erased and over the copy of the blue filter. Instead of revealing the background color as you drag, the magic eraser reveals the last saved version of the document.



Eraser tool



Magic eraser tool

The first time you use this tool, the hourglass may appear, indicating that a copy of the image is being read from the disk; subsequent operations will be quicker.

The magic eraser tool is useful for erasing small, isolated areas of an image. If the area you need to restore covers most of the image, you should use the Revert command, described later in this lesson.

- 6 Continue to restore the image as needed by holding down the Alt key as you drag the eraser tool.

PAINT THE IMAGE

In this part of the lesson, you’ll try out the painting tools and learn about selecting colors.

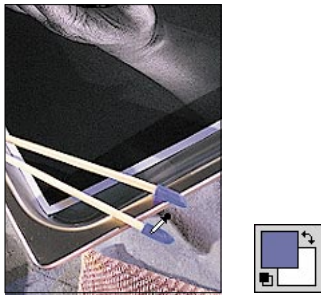
A basic principle of Adobe Photoshop is the use of foreground and background colors. The *foreground color* in Adobe Photoshop is the color that is applied when you use any painting tool (paint bucket, airbrush, paintbrush, pencil, and line tool), the type tool, and the default Fill command. The *background color* is the color that replaces part of an image when you use the eraser or when you cut, move, or delete a selection. The gradient tool creates a gradient between the foreground color and the background color.

Both the foreground and background colors appear in the toolbox. By default, the foreground color is black and the background color is white. You can select new colors using the eyedropper tool, the Colors palette, or the color picker. You can reset the foreground and background colors to their defaults by clicking the default colors icon in the toolbox.

Select the foreground color with the eyedropper tool

The eyedropper tool lets you select a color from anywhere in the image by taking a sample of that color. You can also open a second image and select a color from it using the eyedropper tool.

- 1 Double-click the zoom tool to reset the image to a 1:1 view, and drag the scroll bars all the way to the left and up to see the top three frames.
- 2 Click the eyedropper tool, and position the pointer on the image.
- 3 Drag through the image; watch the foreground color in the toolbox change. If the Info palette is open, it displays numeric values for the individual RGB colors as you drag the eyedropper tool.
- 4 Position the eyedropper on the blue tip of the tongs in the upper-left frame, and click the mouse button. The foreground color in the toolbox changes from black to the blue color of the tip of the tongs.



Select areas of similar colors

You will select the left umbrella using the magic wand tool and then fill the umbrella with the foreground color you just selected.

- 1 Click the magic wand tool, and position the pointer within the umbrella in the middle frame.

- 2 Click once to select all pixels of similar color. All of the umbrella is selected.



The magic wand tool, like the Grow and Similar commands discussed in Chapter 7, “Making Selections,” lets you select an area based on similar colors. You can control how much of an area is selected using the Tolerance setting in the Magic Wand Options dialog box.

Tolerance specifies the range of colors with similar values included in the selection. You can specify a color range from 0 to 255. For example, a tolerance of 32 applied to a pixel with a color value of 150 would select pixels with values ranging from 118 to 182. Each increment represents a change in color or tone.

Paint the selection by filling it

You will use the foreground color you selected from the blue tongs, and fill the left umbrella with color. Both the Fill command in the Edit menu and the paint bucket tool let you paint a selection by filling it with the foreground color.

- 1 Choose Fill from the Edit menu. The Fill dialog box appears.



TIP: YOU CAN SCROLL THROUGH AN IMAGE BY DRAGGING THE BOTTOM SCROLL BAR ALL THE WAY TO THE LEFT.

2 In the Fill dialog box, set the Opacity to 60 percent, and click OK to fill the selection with 60 percent of the foreground color.

The Fill dialog box lets you control the opacity of the fill and additional options, as described in “Using the Fill Tools” in Chapter 8.

3 To undo the fill, choose Undo from the Edit menu (Ctrl+Z).

You need not be overly concerned about making mistakes while using Adobe Photoshop. You can make adjustments as you touch up images. Often, operations can be undone, and operations that have been undone can be redone. You can easily correct most mistakes by using the Undo command.

4 Press Shift+Backspace to fill the selection with 100 percent of the foreground color. This is the shortcut for choosing Fill from the Edit menu, setting the opacity to 100 percent, and clicking OK.



Fill of 60% opacity



Fill of 100% opacity

5 Choose Undo from the Edit menu (Ctrl+Z). The umbrella reverts to white.

Select a background color and create a blend

Another way to fill selections is by creating a blend, or *gradient fill*, within the selection. A gradient fill creates a gradual transition from the foreground color to the background color.

The gradient tool creates a blend beginning where you start to drag, and ending where you release the mouse button. You can create a blend of colors along a straight line, called a *linear gradient fill*; or you can create a blend that radiates from a point, called a *radial gradient fill*. Here you will create a vertical linear blend.

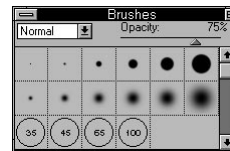
1 Click the eyedropper tool in the toolbox. You will use the eyedropper tool to select a background color for the blend.

2 Hold down the Alt key and position the eyedropper tool over the green pear in the center (fifth) frame; click the mouse button. The background color appears in the toolbox.

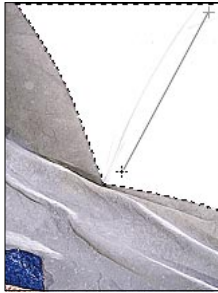


3 Click the gradient tool in the toolbox.

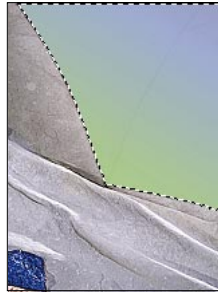
4 In the Brushes palette, set the Opacity to 75 percent to create a transparent blend that will reveal some of the image underneath. You use the Brushes palette to set the opacity of the blend.



5 With the umbrella still selected, drag from the upper right corner of the umbrella downward to the middle rib of the umbrella.



Setting blend at upper - right corner of umbrella



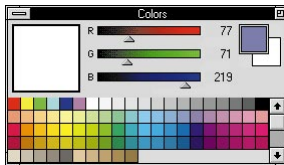
Blend applied

A gradient fill between the blue foreground and green background colors appears in the umbrella. The fill is partially transparent; you can see some of the image underneath. By default, the gradient tool creates a linear gradient fill, with the midpoint of the blend halfway between the two points you set with the gradient tool.

Store and select colors using the Colors palette

You will use the Colors palette to store the blue color of the tongs for reuse later, and to change the foreground color.

1 Choose Show Colors from the Window menu to display the Colors palette.



The color swatches in the lower portion of the Colors palette display a default set of foreground and background colors available to you for

painting. The selected colors appear in the foreground and background color selection boxes in the Colors palette and in the toolbox.

In addition, the Colors palette has a scratch pad for mixing colors, options for loading and saving custom palettes, and sliders for choosing colors from one of five color modes.

2 Drag the Colors palette by its title bar to position it in the lower left corner of your screen.

3 In the Colors palette, make sure that the foreground color selection box is active, indicated by a gray frame around the color box. If the box is not active, click it.

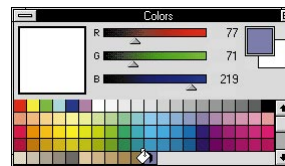
If you inadvertently click the foreground color when it is active, you will display the color picker.

4 Move the pointer over the color swatches; *do not* click the mouse button. The pointer turns into the eyedropper tool.

5 Move the eyedropper to the gray area in the last row of color swatches, where no color fills the swatches. The eyedropper turns into the paint bucket pointer.

The empty swatches let you add your own colors to the Colors palette. Adding a foreground or background color to the Colors palette lets you save the color when you change to a different color.

6 Click within the gray area containing blank swatches to add the foreground color to the Colors palette.

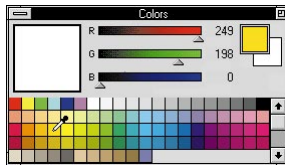


Change the foreground color using the Colors palette

Now that you have saved the color of the blue tongs, you will change the foreground color and use the new color to paint the right umbrella.

1 Move the pointer over a yellow-orange in the color swatches (the fourth color in the third row).

2 Click to select the color. The color you selected appears in the foreground color selection box.



Use the painting tools

Now you will select the third frame containing the right umbrella, and paint it using the paintbrush tool.

1 Using the rectangular marquee tool, select all of the third frame (the upper right frame). The left umbrella is deselected.

2 Click the paintbrush tool in the toolbox. The paintbrush tool creates soft-edged strokes.

3 Position the paintbrush tool outside the selection, hold down the mouse button, and paint by dragging the paintbrush inside the selected area and along the left bottom edge of the umbrella.

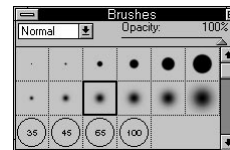


Notice that if you drag the tool outside the selected area, no color is applied. Paint is applied only within the selection. When nothing in an image is selected, you can paint anywhere on the image.

Change the brush size and paint options

Using the Brushes palette, you can change the size and shape of the brush you are using with any of the painting tools. You can also change the opacity, or pressure, of the paint.

1 Position the pointer on the title bar of the Brushes palette, and drag the window so that the upper frames of the image remain visible on-screen.



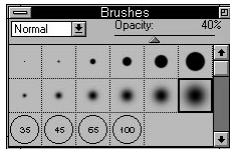
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The Brushes palette displays options and modes for the painting tools (paintbrush, pencil, airbrush, rubber stamp, smudge, blur/sharpen, and dodge/burn tools), as well as opacity controls for the type and gradient tools. The top row of the palette contains hard brushes; the second row of the palette contains soft-edged brushes. The palette can accommodate two kinds of brushes: brushes generated by specifying a size, and custom brushes generated by drawing a shape.

2 In the Brushes palette, click the rightmost brush in the second row.

A bounding box appears around the selected brush; this brush is used with the currently selected painting tool. Brushes too large to fit within the palette's grid appear as numbers within a circle representing the diameter of the brush in pixels; for example, the circle 35 brush is 35 pixels in diameter. If you select a new painting tool, the default brush for that tool will be selected.

3 Drag the Opacity slider to 40 percent or press 4 on the keyboard to change the paint's opacity and make it appear transparent.



4 Continue painting with the same color using the new brush and opacity.



Note: Hold down the Shift key and click (do not drag) at different points on the image to create straight line segments. Holding down the Shift key and clicking the mouse constrains the brush stroke to a straight line.

Change the foreground color as you paint

You will change the foreground color to purple using the eyedropper tool as you continue painting the umbrella. You can access the eyedropper tool at any time by holding down the Alt key.

1 Move the paintbrush tool to the girl's purple T-shirt in the silver frame.

2 Hold down the Alt key and click; release the Alt key. The foreground color changes to purple, and the pointer changes back to the painting tool you were using.



3 Try out the new color by painting the background cloth beneath the umbrella.

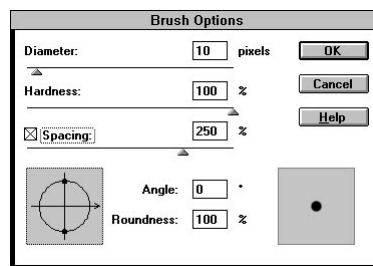


Modify the brush shape

Now you will modify the brush shape.

1 Choose Brush Options from the Control menu in the Brushes palette, or double-click a brush shape in the Brushes palette. The Brush Options dialog box appears.

2 Enter a diameter of 10 pixels, set Hardness to 100 percent, and set Spacing to 250 percent. A preview of the specified brush appears in the preview windows. Click OK.



3 Position the paintbrush at the top of the vertical spoke on the umbrella.

4 Drag along the edge of the umbrella. Because you increased the spacing, gaps appear when you apply paint, and a dotted line is drawn.



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TIP: YOU CAN SWITCH THE BACKGROUND AND FOREGROUND COLORS BY CLICKING THE DOUBLE-HEADED ARROW IN THE TOOLBOX (THE SWITCH COLORS ICON).

REVERT TO THE ORIGINAL IMAGE

When you want to undo all actions since you opened an image, you can revert to the last saved version of the image. You will do so here because you want to be able to use the original image in this lesson.

To revert to the original image, choose Revert from the File menu. The image appears as it was when you first opened it. If you had saved the image after opening it, the last saved version of the image would appear.

ADD TYPE TO THE IMAGE

In this part of the lesson, you will add type to the umbrella and fill it with color.

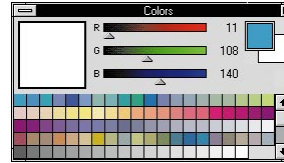
A fundamental concept of Adobe Photoshop is that any type you enter is bitmapped or pixel based. Unlike type generated in object-oriented applications such as Adobe Illustrator, bitmapped type is rendered at the resolution of the image. For example, if the image resolution is 100 pixels per inch, the resolution of the type will also be 100 pixels per inch. Also, type you create on an image can be modified only if it is still selected.

The following type procedure requires the Adobe Type Manager program to achieve the best results. If you do not have ATM installed, contact your Adobe dealer for the program at 1-800-64-ADOBE.

Specify a color from the palette and determine the type size

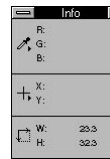
You need to choose the color you will use to fill the type before adding type to an image. You will also set the opacity of the fill.

1 Position the pointer over a teal blue color swatch in the palette, and click. The foreground color changes to a teal blue. You will use this color to fill the type.



Next, you'll measure the area where you plan to place the type so that the type fits the umbrella.

2 If the Info palette is not visible on-screen, choose Show Info from the Window menu (F8) to display it. Drag the palette by its title bar so that it does not hide the frames with the umbrella and does not obscure other palettes. You will use the Info palette to measure the type size in points.



3 Position the pointer on the + in the Info palette, and press the mouse button to display the units drop-down list. Choose points.

You can also set the units using the Ruler Units drop-down list in the Unit Preferences dialog box, under the Preferences command in the File menu. Changing the units in the Info palette updates the Ruler Units.

4 Double-click the line tool to display the Line Tool Options dialog box, and set the line width to 0 pixels; click OK. This lets you use the line tool to measure without drawing on the image.

5 Drag vertically within the umbrella to measure the height of the image (in points) where you will position the type. This measurement helps you choose the type's point size. You want the type to be about the same height as the umbrella.

6 Refer to the dY (changing height) field in the Info palette for a value in points; the measurement should be about 130 points.



TIP: TO DELETE A COLOR FROM THE SWATCHES IN THE COLORS PALETTE, HOLD DOWN THE CONTROL KEY; THE EYEDROPPER TOOL WILL TURN INTO THE SCISSORS ICON. CLICK THE SCISSORS ICON. TO OVERWRITE A COLOR IN A SWATCH IN THE COLORS PALETTE, HOLD DOWN THE ALT KEY TO SELECT THE PAINT BUCKET TOOL AND THEN CLICK THE MOUSE BUTTON.

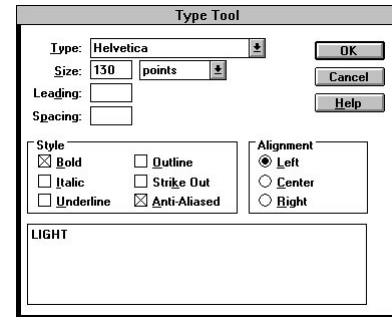
Create type

Now you will create the type to add to the image.

- 1** Click the type tool in the toolbox.
- 2** If the Brushes palette is not visible on-screen, choose Show Brushes from the Window menu (F5). Drag the palette so that it does not hide the frames containing the umbrella or the other palettes. To set the opacity of filled type, you use the Brushes palette.
- 3** Drag the Opacity slider to 100 percent or press 0 on the keyboard.
- 4** and Tabloid from the Paper Size drop-down list, Position the pointer on the middle frame containing the umbrella, and click the mouse button. The Type dialog box appears.

5 Change the font to Helvetica, and change the size to 130 points. Select Style Bold, and make sure that the Anti-aliased option is selected, so that you can smooth the edges of the type.

Click in the text box, and type *LIGHT* in capital letters.



Note: If you are running ATM and you receive an error message stating you are out of memory and you cannot create the type at 130 points, you must either specify a smaller point size or increase the size of your font cache. To increase the font cache, choose ATM Control Panel from the Main menu, open the ATM Control Panel, and increase the font cache size to 512K.

6 Click OK. The type appears as the current selection on the image. The selection is filled with the opacity set in the Brushes palette—in this case, 100 percent of the foreground color. Type is a *floating selection*. A floating selection is a selected area that has been pasted onto the image and floats above the underlying image; as long as the area remains selected, it can be modified.

7 In the Brushes palette, set the opacity to 65 percent.

The Brushes palette lets you adjust the opacity of a type fill while it is still a floating selection. Because type is a floating selection, you can adjust the opacity of the type when you first create the type and after you place it on an image.

Reposition the type

Now you will reposition the transparent type on the image.

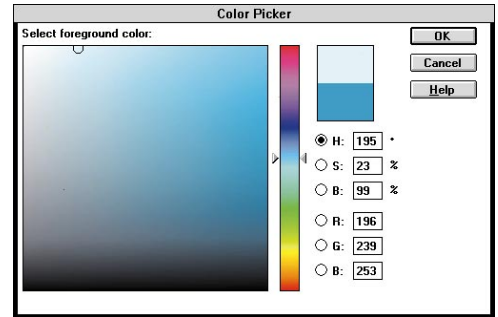
- 1** Position the pointer on one of the characters in the type block.
- 2** Hold down the mouse button, drag the partially transparent type around in the image, and then release the mouse button to see how different areas of the image show through the type.
- 3** Position the type so that it is centered within the two umbrella frames.
- 4** If the type does not fit entirely within the two upper right frames, position the pointer on one of the letters and drag to reposition the type.



Edit a color to create a highlight

You will complete this portion of the lesson by editing the blue foreground color using the color picker and then airbrushing a highlight across the tops of the capital letters.

- 1** In either the toolbox or in the Colors palette, click the foreground color selection box to display the color picker. The Color Picker dialog box appears.



Note: By default, the Adobe Photoshop color picker appears. However, you will see the Windows color picker if the Color Picker Preferences option was changed to Windows in the General Preferences dialog box under the File menu.

- 2** Choose a lighter hue of the blue color by dragging the hollow circle in the color field up and to the left toward the brightness portion of the color field.

If an alert triangle with an exclamation point appears next to the color selection boxes, you have selected a nonprintable color. Because monitor colors are based on the RGB (red, green, blue) color model, they are often much brighter than printable colors, which are based on the CMYK (cyan, magenta, yellow, and black) color model.

- 3** Click OK. The new foreground color appears in the toolbox and in the Colors palette.
- 4** Close the Colors palette either by clicking its close box or by choosing Hide Colors from the Window menu (F7).

Airbrush the selection

You will use the airbrush tool to airbrush the tops of the letters.

- 1** Click the airbrush tool in the toolbox.



TIP: PRESS NUMBERS 0 THROUGH 9 ON THE KEYBOARD TO SET THE OPACITY IN THE BRUSHES PALETTE IN 10-PERCENT INCREMENTS. ZERO EQUALS 100-PERCENT OPACITY, 1 EQUALS 10-PERCENT OPACITY, AND 9 EQUALS 90-PERCENT OPACITY.

2 Hold down the Shift key to constrain the brush stroke, and begin dragging across the tops of the letters to airbrush the type with the foreground color.

3 Release the mouse button and then the Shift key. A straight airbrushed line appears.



If you are not satisfied with the results, choose Undo from the Edit menu (Ctrl+Z) and repeat steps 2 and 3.

PASTE AND EDIT THE SELECTION

In the last part of this lesson, you will paste the still life in the center frame of the image into the camera's viewfinder. You then will alter the selection to replicate an image viewed through the camera's viewfinder.

Precisely select the still life and copy it

You will begin by making an exact selection of the still life in the center frame.

You will use the rectangular marquee and the Info palette for feedback to measure a selection that will fit within the viewfinder. This will enable you to scale your selection more accurately later.

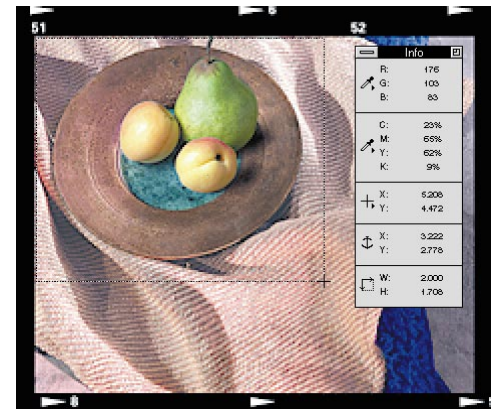
1 If the Info palette is not visible on-screen, choose Show Info from the Window menu. Drag the Info palette by its title bar to position the palette so that the center frame of the image is fully visible.

2 Reset the ruler units to inches by positioning the pointer on the + in the Info palette, pressing the mouse button, and using the drop-down list to choose inches.

3 Click the hand tool, and drag the image so that the center frame is fully visible on-screen. You can also use the scroll bars to reposition the image on-screen.

4 Click the rectangular marquee tool in the toolbox.

5 Drag the marquee from the upper left corner of the center frame diagonally downward to select the plate containing the fruit. Watch the two values at the bottom of the Info palette to measure the width and height of the selection, and make a selection measuring about 2 inches wide and 1.7 inches high.

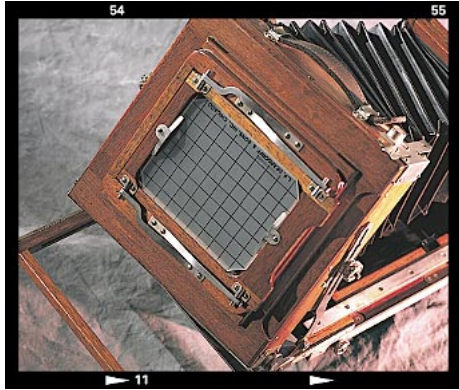


6 Choose Copy from the Edit menu (Ctrl+C) to copy the selection to the Clipboard.

7 Choose None from the Select menu (Ctrl+D) to deselect the still life selection.

8 Use the hand tool or scroll bars to reposition the image so that all of the seventh frame containing the camera is visible.

9 Click the zoom tool, and drag over the seventh frame containing the camera to enlarge the frame by marquee-zooming.



Select the viewfinder with the lasso tool

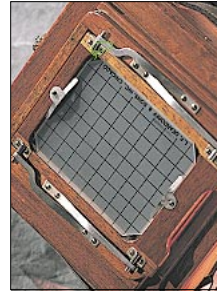
The lasso tool lets you make precise selections that combine straight and freehand line segments. Now you will use the lasso tool to select the camera viewfinder.

- 1** Click the lasso tool in the toolbox.
- 2** Position the lasso tool at the left edge of the viewfinder, near the silver clip.
- 3** Hold down the mouse button, and trace around the outline of the viewfinder until the entire viewfinder is selected. Release the mouse button.

If this is the first time you have made a selection with the lasso tool, your outline probably is imprecise. Now you will deselect the selection and then redo it using straight lines.

- 4** Choose None from the Select menu (Ctrl+D) to deselect everything.
- 5** Position the lasso pointer on the upper-left corner of the viewfinder.

6 Hold down the Alt key, and click the mouse button to define the starting point of the straight line segment. *Do not drag.*



Starting point of lasso selection



Second corner of straight-line lasso selection

Holding down the Alt key and clicking the mouse button instead of dragging lets you use the lasso to define straight line segments instead of freehand lines. You must continue to hold down the Alt key until you complete all four sides of the selection.

7 As you continue holding down the Alt key, click the remaining three corners of the viewfinder. A straight line appears between the starting point where you first clicked the mouse and the end point.

8 Click where you began the selection, and release the Alt key. A straight-edged selection border appears.



Fourth corner of straight-line lasso selection



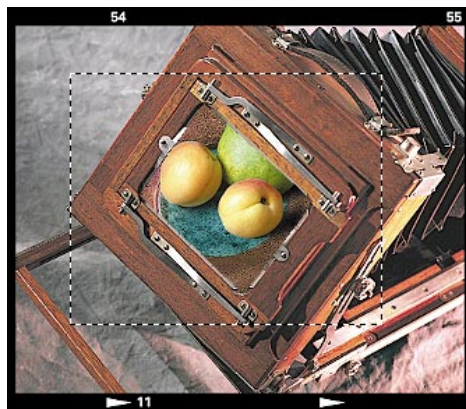
Return to starting point

Even if you did not click the exact point where you began the selection, the lasso tool will draw a line between the two points.

Paste and transform the still life selection in the viewfinder selection

Using the Paste Into command, you can paste a portion of an image that has been cut or copied inside another selection. Once you paste the selection, you will scale it and then rotate it. Although it's not necessary to follow a certain sequence, you will find it easier to scale your image before rotating it.

1 With the selection still active, choose Paste Into from the Edit menu to paste the still life selection into your lassoed selection.



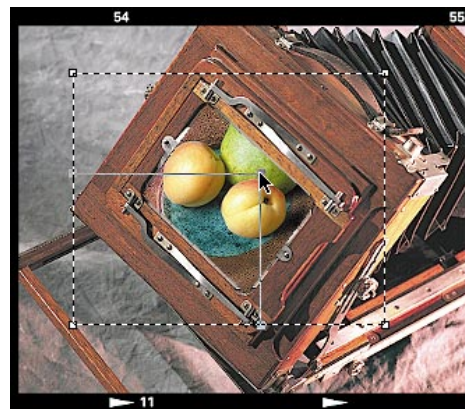
A rectangular dotted line appears, indicating the selection border of the pasted selection. Like the selected type you worked with earlier in this lesson, the selection is a *floating selection*. A floating selection is a selected area that has been pasted onto the image and is still active; as long as the area remains selected, it can be manipulated.

The still life selection is much larger than the viewfinder selection; all you see is what you pasted into the viewfinder selection. Now you will scale and rotate the selection so that it fits within the viewfinder.

2 Choose Effects from the Image menu and Scale from the submenu. Handles appear at the corners of the selection border. You use the handles to scale a selection.

3 Position the pointer on the upper right handle, and begin dragging downward and toward the center of the selection to scale it. Hold down the Shift key to constrain the scaling.

4 When the percentage in the Info palette reaches about 60 percent, release the mouse button, and then the Shift key. A preview of the scaling appears within the selection border.



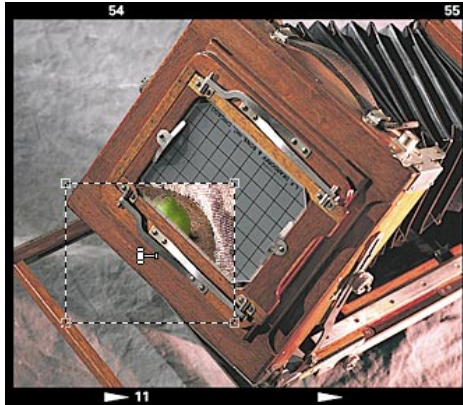
When you position the pointer within the selection, the pointer turns into a gavel icon to indicate that clicking will apply the scaling. When you position the pointer outside the selection, the pointer turns into an icon for the international "No" symbol to indicate that clicking will revert to the original pasted selection. These

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icons appear anytime you choose an Effects command or the Free Rotate command from the Image menu, or when you place an image.

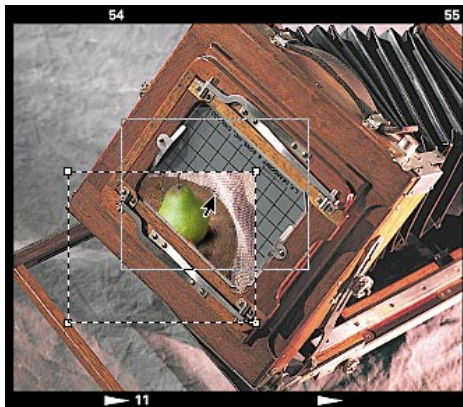
5 If you are not satisfied with the scaling, click the “No” icon, and drag the handles again.

6 When you are satisfied with the scaling, click the gavel icon to apply the scaling.



Because you scaled down the selection, it needs to be recentered within the viewfinder.

7 Position the pointer in the selection, and drag the selection to the center of the viewfinder.



8 Choose Rotate from the Image menu and Free from the submenu. Handles appear at the corners of the selection border.

9 Position the pointer on one of the handles and begin dragging clockwise to rotate the selection.



10 When the angle of rotation (A) in the Info palette is 40 degrees, release the mouse button. A preview of the rotation appears within the selection border.



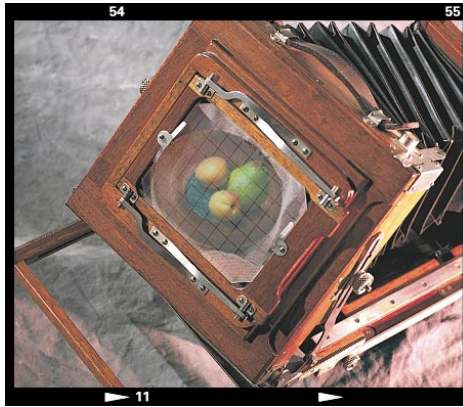
If you are not satisfied with the rotation, drag the handles again.

11 When you are satisfied with the rotation, click the gavel icon to apply the rotation.

Adjust the selection's opacity

Now you will make the selection semitransparent to match the appearance of an actual viewfinder.

1 In the Brushes palette, drag the Opacity slider to 50 percent, or press 5 on the keyboard. The selection appears transparent.



The Brushes palette lets you adjust the appearance of a floating selection (a pasted selection that can be moved over the background image). You can adjust the appearance of the underlying image using the Composite Controls command.

2 Click once on the image to deselect everything.

You have completed pasting the still life selection into the viewfinder selection. If you want to, you can zoom out to see your changes.

SAVE AND CLOSE THE DOCUMENT

You can use either the Save command or the Save As command to save documents in Adobe Photoshop.

- 1** Choose Save As from the File menu.
- 2** Use the File Format drop-down list to choose Photoshop 2.5.(.PSD)
- 3** Rename the file FRAMES1.PSD and click OK.
- 4** Choose either Close from the File menu or Close from the Control menu (Alt+F4). Your image is closed and disappears from the screen.

You can also close the file by clicking its close box. If you have not saved the file since making changes, you will be prompted to save your changes before closing the file.

CONCLUSION

You have completed the first lesson and have learned how to:

- make simple selections and move, copy, and paste selections
- select color in images using the eyedropper tool, Colors palette, and color picker
- use the painting tools, select different brushes, and change the opacity of the paint
- correct mistakes and restore your image using various techniques
- add type to an image and use the gradient tool
- rotate and scale a selection
- use the Info palette to manipulate an image precisely

CHAPTER 3: LESSON 2—RETOUCHING A SCANNED IMAGE

In this lesson, you will retouch several scanned photographs, making typical corrections to *rasterized*, or digitized, images.

This lesson requires two images. BADSCAN1 is an unedited RGB (red, green, blue) scan of a girl. The skin tones in the uncorrected image have a greenish cast. You will use the Variations command to quickly correct the color. BADSCAN2 is an unedited RGB scan of a color transparency that requires more extensive retouching. The scan appears dark with little contrast, and the color is unbalanced. In addition, the scan contains flaws from the original image. BADSCAN2 requires editing and correction to the entire image and then additional corrections to parts of the image.

ABOUT SCANNED IMAGES

Scanned images are continuous-tone images, such as photographic prints and transparencies, that have been converted into digital images that can be manipulated on a computer.

When you scan an image, you *rasterize* it—that is, you convert it to an image described as digital data (pixels). Images created in drawing applications such as Adobe Illustrator are different. They are called *vector* images and are described mathematically by lines and curves. Vector images can be enlarged or reduced without affecting their output quality, while raster images are resolution-dependent and may display jagged edges or otherwise lose quality if enlarged too much beyond their scanned input. Image resolution is discussed in more detail later in this lesson and in Chapter 12, “Resizing Images.”

Because monitors display color and lightness differently, the appearance of an image may vary from monitor to monitor. If the effects described here differ significantly from what you see on your monitor, you may need to calibrate the monitor. For instructions, see the section on using gamma.

VISUALLY COLOR-CORRECT THE BADSCAN1 IMAGE

You can correct differences between the scanned image and how the image appears on-screen and in print by correcting the color. *Color correction* can include adjusting the brightness and contrast, gamma, color balance, hue, and saturation in an image.

First you will color-correct the BADSCAN1 image visually by using the Variations command. The Variations command lets you adjust the color balance, brightness and contrast, and saturation in an image by selecting color previews that represent different adjustments to the image.

You adjust the Shadows, Midtones, Highlights, and Saturation separately. In general, the sequence in which you make color corrections to any image when using the Variations command depends on what is wrong with the image. Because the image has a strong color cast, in this example, you will begin by correcting the color in the midtones and adjusting the skin tones. Once you have corrected the highlights and shadows, you may then need to fine-tune your midtone corrections to get exactly the results you want.

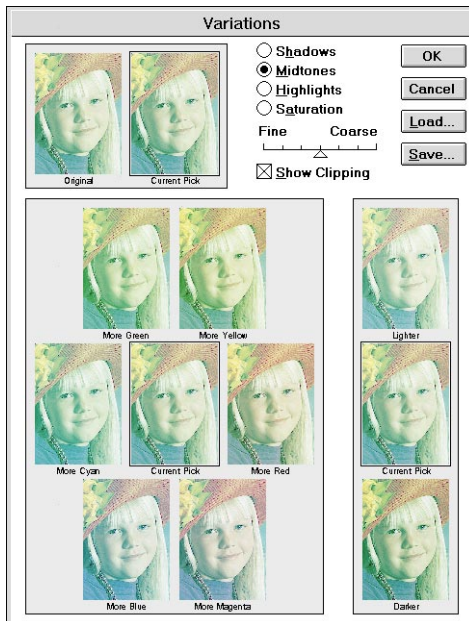
Adjust the midtones

By correcting the midtones first, you will be better able to see changes you make to the highlights and shadows.

- 1 Open the BADSCAN1.JPG image, located in the TUTORIAL subdirectory.



- 2 Choose Adjust from the Image menu and Variations from the submenu. The Variations dialog box appears.



The two previews at the top of the dialog box show the selection as it now appears (Original), and the image with its currently selected adjustments (Current Pick).

The lower left section of the dialog box shows the Current Pick preview surrounded by six thumbnails, or color previews, representing different adjustments to the color balance. The previews are positioned according to the position of the color they represent on a 360-degree color wheel, so that yellow is at 45 degrees, red at 90 degrees, and so on.

The lower right section of the dialog box shows the Current Pick preview between a lighter and darker preview.

- 3 Make sure that Midtones is selected.

- 4 Make sure that the Show Clipping check box is checked.

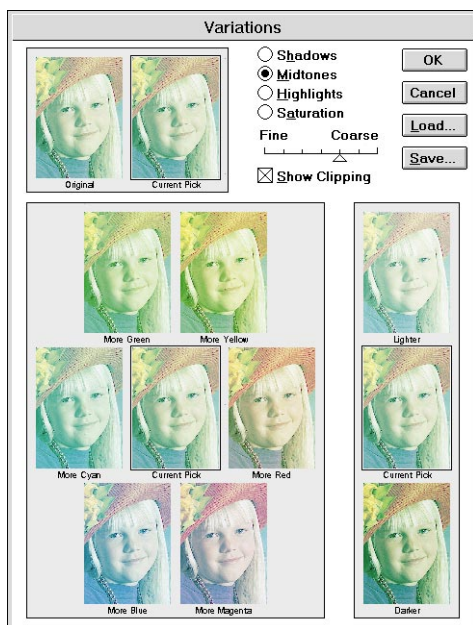
The Show Clipping option displays a neon highlight around areas of color that will be clipped, or lost, using the adjustment represented. Clipping occurs when a color value exceeds its maximum or minimum. For example, if you increase the contrast in an image too much, light grays will be converted to white and dark grays will be converted to black. Clipping may also occur when a color exceeds its maximum saturation.

- 5 Experiment with the Fine/Coarse slider, dragging the slider to the right and releasing the mouse button, and then dragging the slider to the left. (You must release the mouse button for the changes to take effect).

The Fine/Coarse slider determines the degree of change each color preview represents. Moving the slider one increment to the right doubles the effect; moving it one increment to the left decreases the effect by one half. For this image,

dragging the slider one increment to the right of the midpoint produces a preview (the More Red preview) that is closest to a color-corrected image.

6 Drag the Fine/Coarse slider one increment to the right of the midpoint, toward Coarse.



7 Click the More Red preview to select that adjustment. The More Red preview becomes the Current Pick, and each preview in the dialog box is updated to reflect the adjustment.

Remember that since you are adjusting the color *balance*, each click of a color preview affects the other color previews according to their positions on the color wheel. For example, clicking the More Red preview increases the red by one increment and increases the yellow and magenta by one-half increment. The color previews representing the opposite colors on the color wheel are conversely decreased: the cyan decreases by one increment and the green and blue decrease by one-half increment.

You can add or subtract green, yellow, cyan, red, blue, or magenta to the image by clicking the appropriate color thumbnail to add color; or by clicking the opposite color, located in the opposite position on the color wheel, to subtract a color. For example, to subtract cyan, click the red thumbnail.

8 Click the More Magenta preview to select that adjustment. Notice that adding magenta removes green.



9 Click Darker to darken the midtones.

If you add more of a color to the Current Pick than desired, you can undo the effect by clicking the opposite color an equal number of times. For example, if you add too much magenta, you can remove it by clicking More Green.

If you want to undo all changes you've made to the image, either click Original or hold down the Alt key and click Reset to restore the preview as the Current Pick.

Adjust the highlights and shadows

To increase the contrast in the image, you will darken the shadows and lighten the highlights. Because adjusting the highlights and shadows causes the midtones to shift, you may need to then readjust the midtones when you have finished.

1 Click Shadows.

Notice that certain areas of color are displayed in neon, indicating that they will be clipped. Deselect the Show Clipping option to examine the previews without the neon.

2 Drag the Fine/Coarse slider to its midpoint to decrease the adjustment increment.

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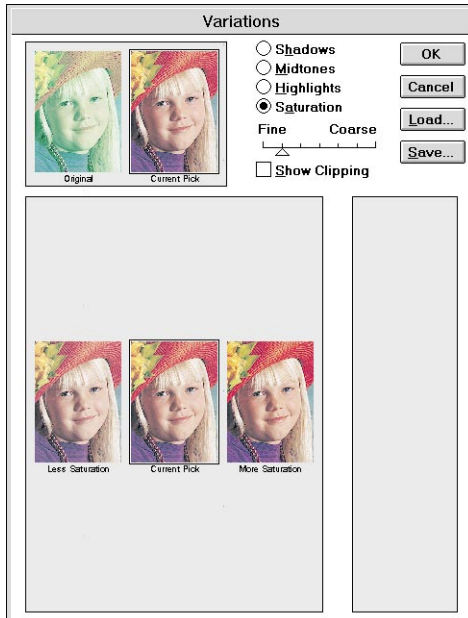
- 3 Click the Darker preview to darken the shadows.
- 4 Click Highlights and then click the Lighter preview to lighten the highlights.



Reduce the saturation

Although you have dramatically improved the appearance of the image, the colors look as if they contain too much ink. To correct this, you will reduce the saturation.

- 1 Click Saturation. A Less Saturated and More Saturated preview appear on each side of the Current Pick. The options are too extreme for the adjustment you want to make.
- 2 Drag the slider left toward Fine, to the second increment from the left.



- 3 Click the Less Saturated preview to decrease the saturation.
- 4 Click OK to apply the changes to the image.



If you are not satisfied with the results, hold down the Alt key as you choose Adjust from the Image menu and Variations from the submenu. The Variations dialog box appears, displaying the previous settings. Repeat the corrections and click OK. You can also choose the Revert command from the File menu to revert to the last saved version of the file.

You can save color corrections and apply them to the image or other images by clicking Save and naming the settings as a file with the suffix .PSV. To load adjustments you have saved as a file, click Load, locate the settings file with the .PSV extension, and click OK. The settings appear in the Variations dialog box.

- 5 Save your color corrections by choosing Save As from the File menu. The Save As dialog box appears.
- 6 Using the File Format drop-down list, choose Photoshop 2.5.
- 7 Rename the file GIRL.PSD, and click Save. The original tutorial file remains in an unchanged state so that others can use it. Close the file.



TIP: USE THE CURVES
COMMAND IF YOU
WANT TO ADJUST ANY
POINT ALONG THE
GRAYSCALE LEVELS OF
THE IMAGE. SEE
CHAPTER 14 OF THIS
MANUAL FOR MORE
INFORMATION.

PRECISELY COLOR-CORRECT THE BADSCAN2 IMAGE

Often you will want to make more precise color corrections than you can achieve visually using the Variations option. The Levels command lets you precisely correct color, using high-end color-correction techniques. As is typically done on high-end systems, you will first adjust the overall contrast by setting the white and black points in the image; then you will correct the color in the midtones.

Set the white and black points

To adjust the overall contrast in the BADSCAN2 image, you first set the *white point* and *black point* in the image—that is, you assign a value to the lightest and darkest points, respectively. In this example, you will assign the lightest point as white and the darkest point as black. This will redistribute the gray value of the intermediate pixels and give you the full range of gray values.

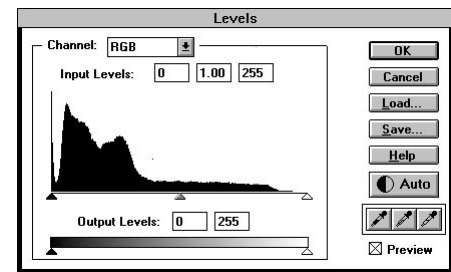
Often, scanning compresses the range of gray in an image, resulting in an image that appears flat and without contrast. Setting the white point and black point spreads the spectrum of gray throughout the image, and thus improves the dynamic range of the image and its quality when printed.

1 Open the BADSCAN2.JPG image, located in the TUTORIAL subdirectory.



2 Choose Show Info from the Window menu to display the Info palette. You will use this palette to read the color values of the pixels. Drag the palette by its title bar to position it at the upper right of the image.

3 Choose Adjust from the Image menu and Levels from the submenu (Ctrl+L) to display the Levels dialog box. Drag the Levels dialog box by its title bar so that both the image and the Info palette are visible.



The Levels command displays the brightness values of pixels and their distribution throughout the image in a graph called a *histogram*. The histogram shows the distribution of pixels and their color values, with the number of pixels of each color represented by the height of the histogram, and the range of levels per color represented by the width of the histogram. Color values range from 0 (black) to 255 (white).

In this image, the histogram shows that both the shadows and highlights are compressed. The darkest pixel falls short of black, and the brightest pixel isn't white.

4 Select the Preview check box so that you can view the changes as you make them.

5 Move the pointer over the image. The pointer turns into the eyedropper tool.

Notice how the eyedropper tool acts as a *densitometer*, an instrument that reads the percentage (density) of black in the pixel beneath the pointer. The top, RGB, section of the Info palette

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displays the color values of each pixel, where 255 is white and 0 is black. (The left numbers measure the image's current values, and the right numbers measure the values after adjustment.)

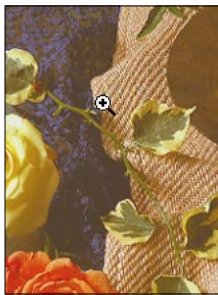
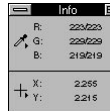
6 In the Levels dialog box, click the white point eyedropper button to define the white point.



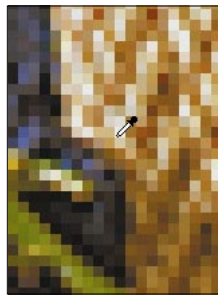
7 Use the keyboard shortcut to magnify the image: press the Control key and the spacebar, and click the mouse button several times to zoom in on the image so that you have an 8:1 view; press the spacebar to display the hand tool, and scroll so that you can see the cloth to the left of the plate.

8 Position the pointer on the image. The pointer turns into the eyedropper tool.

9 Position the eyedropper pointer on the white highlight in the cloth. Use the Info palette to check your selection; the RGB values should be about 224 each for red, green, and blue. Click the mouse button to define the highlight as the white point in the image.



Using keyboard shortcut to zoom in on image



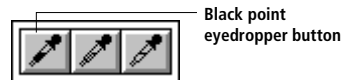
8:1 view, eyedropper tool on white of cloth

The pixel is reassigned an RGB value of 255, 255, and the histogram changes to show white extending the full range of highlight values.

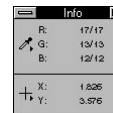
Note: If you accidentally click the wrong place in the image when setting the white point, hold down the Alt key to display the Reset button in the Levels dialog box, and click Reset. You can also set a new white point by using the white point eyedropper tool to click again on the desired white point.

10 Use the keyboard shortcut to zoom out of the image: press Alt+Ctrl+spacebar, and click the mouse button several times until the view is 2:1; press the spacebar to display the hand tool, and scroll so that you can see the shadow to the right of the yellow rose.

11 In the Levels dialog box, click the black point eyedropper button to define the black point.

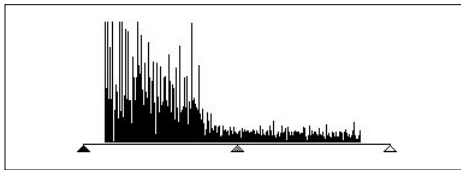


12 Move the eyedropper pointer over the black in the shadow of the yellow rose; when the RGB values measure as close to 0, 0, 0 as possible (and the K value in the Info palette measures about 85 percent), click the mouse button.

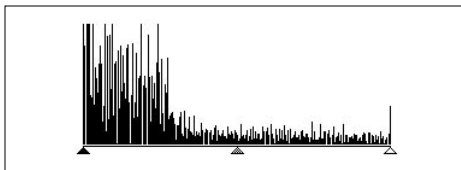


The pixel you click is reassigned an RGB value of 0, 0, 0, and the histogram changes to show black extending the full range of shadow values.

Note: If you accidentally set the black point on the wrong point, hold down the Alt key and click Reset. You will first need to repeat the procedure for setting the white point, beginning with step 5, and then set the black point again. You can also set a new black point by using the black point eyedropper tool to click again on the desired black point.



Histogram before adjusting black and white points



Histogram after adjusting black and white points

Lighten the image

Now you will lighten the image by adjusting the midtones, or gamma, values.

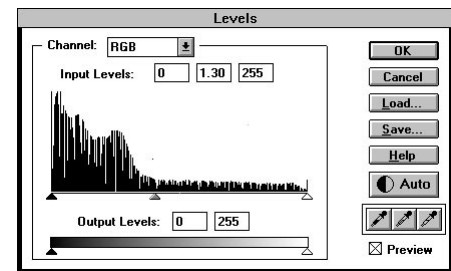
Adjusting the gamma lets you change the brightness values of the pixels in the midtones without dramatically changing the shadows (the very dark pixels represented by the black sliders) and the highlights (the very light pixels represented by the white sliders). To make the adjustment, you use the Input Levels sliders. The input levels increase the contrast in an image, and the output levels decrease the contrast in the image.

1 Press Alt+Ctrl+spacebar, and click the mouse button to zoom out of the image to a 1:1 view while the Levels dialog box remains open. You want the entire image in view as you adjust the gamma.

2 Using the Input Levels sliders, drag the gamma slider (gray triangle) left and then right to see the effect of lightening and darkening the image.

As you try to determine the appropriate gamma, watch the effect on the image, and make sure that you don't lose important detail.

3 Drag the gamma slider left until the center text box displays 1.30. (You can also enter 1.30 in the center text box.)



4 Click OK to apply the white point and black point settings and the gamma changes to the image.

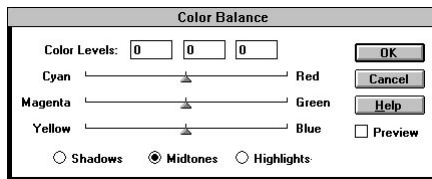


Lightening the midtones brings out the detail in the background while preserving the highlights in the fruit and flowers.

Adjust the overall color balance

The BADSCAN2 image has too much red and yellow in it. To compensate for the imbalance in the original scan, you will adjust the color balance in the midtones using the Color Balance command.

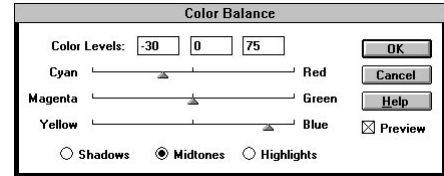
- 1 Choose Adjust from the Image menu and Color Balance from the submenu (Ctrl+Y). The Color Balance dialog box appears. By default, Midtones is selected.



The Color Balance dialog box lets you change the mix of colors in a color image to enhance or de-emphasize a color. You can adjust the mix of red, green, and blue values in an image as well as their complementary cyan, magenta, and yellow values. You can correct the balance separately in the shadows, midtones, and highlights.

- 2 Select the Preview check box so that you can view your changes as you make them.
- 3 Drag the sliders to the left and then to the right to see the effect of adding and subtracting colors from the midtones.
- 4 Subtract red and add cyan (red's complement) to the image either by entering -30 in the left text box or by dragging the Cyan/Red slider left to -30. Keep the Magenta/Green value at 0.

- 5 Subtract yellow and add blue (yellow's complement) to the image either by entering 75 in the right text box or by dragging the Yellow/Blue slider right to 75.



- 6 Click OK to apply the changes.



CROP THE IMAGE

Before continuing to edit the image, you will trim, or *crop*, unneeded areas of the image. Cropping the image decreases the file size and thus improves performance. Using the cropping tool, you will crop out the image's black border, which was scanned from the original transparency.

You can also use the Crop command in the Edit menu to crop images; unlike the cropping tool, however, the Crop command does not include options to specify the dimensions of a cropped area, or to rotate and resample the cropped area.

The cropping tool lets you zoom in on the image and adjust the cropping border precisely before you trim the image.

1 Click the cropping tool in the toolbox, and position the pointer on the image.

2 Hold down the mouse button, and begin dragging the marquee from the upper left corner of the image, just inside the black border, to the lower right corner. You don't have to be precise; you can edit a selection made with the cropping tool before cropping the image.



Dragging the cropping marquee

3 Release the mouse button. A selection border appears, with handles at the corners.



Selection border drawn with cropping tool

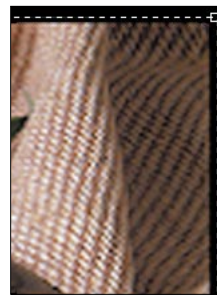
If you are dissatisfied with your selection, you can

- Click outside the cropping rectangle or click the cropping tool to cancel the selection, and then redraw the cropping marquee.
- Position the pointer on one of the handles on the cropping rectangle, and then drag the handle to adjust the size of the rectangle.
- Reposition the entire cropping rectangle by holding down the Control key as you drag one of the handles.

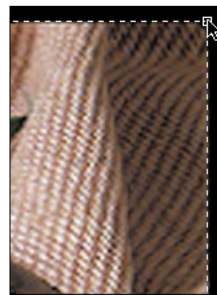
While the cropping selection border is still active, you cannot select the zoom tool in the toolbox without deselecting the cropping rectangle. However, you can use keyboard shortcuts to zoom in on your selection and use the handles to adjust the selection.

4 Press Ctrl+spacebar, and click twice on one of the corners of the image to zoom in on the selection.

5 Position the pointer on the handle, and drag the handle until it is just inside the black border. The cropping tool turns into the scissors pointer when you position the tool within the cropping border.



Before repositioning cropping handles



After repositioning cropping handles

6 Use the scroll bars to scroll to each corner of the image, and adjust the handles as necessary.

7 Press Alt+Ctrl+spacebar, and click as many times as needed to return to a 1:1 view so that the entire image is visible.

8 Move the scissors pointer into the center of the image and click to crop the image. Notice that the file size is reduced to about 560K from the original size of 596K.



SAVE AND RENAME THE IMAGE

As you continue to adjust the image, you should save interim corrections.

1 Choose Save As from the File menu. The Save As dialog box appears.

2 Using the File Format drop-down list, choose Photoshop 2.5.

3 Rename the file FRUIT.PSD, and click Save. The original tutorial file remains in an unchanged state so that others can use it.

ABOUT FILE SIZE AND IMAGE RESOLUTION

The overall file size of a document is determined by the dimensions of the image and the image resolution. Image resolution is the amount of information in an image, measured in pixels per inch (ppi); this unit can also be specified in centimeters (cm).

For speed and efficiency, this tutorial uses images with low resolution that approximate the screen display of about 72 lpi; as a result, their size is relatively small. The greater the file size, the more space on disk the image requires and the more time it takes to process or print. However, the higher the resolution (and the greater the file size), the better the quality of output.

It is common to change the resolution of a photograph, called resampling, after scanning. Decreasing resolution, called downsampling, discards pixels and decreases file size. Resampling up—which is not recommended—creates pixels between existing pixels (called interpolation), resulting in a larger file size and a loss of image quality.

For more information about changing the image resolution, see “Image Size and Resolution” in Chapter 12.

ADJUST THE IMAGE SIZE

Now you will decrease the file size by decreasing the image dimensions.

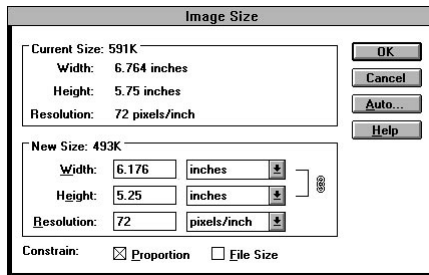
1 Choose Image Size from the Image menu. The Image Size dialog box appears.

The default Constrain Proportions option constrains the height-to-width ratio so that when you enter a value in either the height or width text box, the other value is automatically updated. The default Constrain File Size option automatically adjusts the width, height, or resolution so that no information is added to or deleted from the file when you enter a new value.

2 Deselect the File Size check box. You can decrease the dimensions of the image independently from the resolution, and thus decrease the file size.

3 In the Height text box, enter 5.25 inches. If the unit is not set to inches, use the Ctrl+S next to the Height and Width text boxes to change the unit to inches.

The width decreases proportionately to approximately 6.13 inches and the resolution remains at 72 ppi. The overall file size decreases to 490K.



4 Click OK. The progress bar may appear as the image is resized.

5 Save the image (Ctrl+S) before continuing the lesson.

RETOUCH FLAWS

Now you will retouch flaws in the image using the rubber stamp tool. The rubber stamp tool lets you pick up, or *sample*, an image, and “paint” in an exact duplicate of that image.

Remove the dust from the scanned image

You will use the default option of the rubber stamp tool to paint over some flecks of dust that were on the transparency when it was scanned.

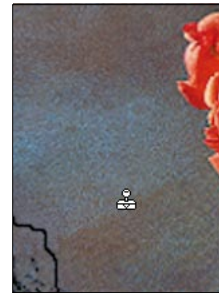
1 Using the zoom tool, zoom in once on the lower left corner of the image so that you have a 2:1 view. You can see some dust that was scanned in this area.

Note: If you accidentally zoom in on too small an area of the image, double-click the zoom tool to reset the image to a 1:1 view, and then zoom in again.

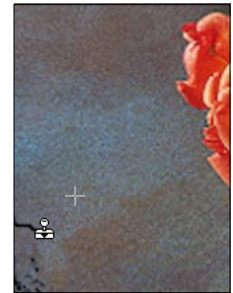
2 Click the rubber stamp tool in the toolbox. The pointer turns into the rubber stamp icon.

3 Position the pointer on the area of cloth above and to the right of the dust. You want to select this area as the sample you will use to “paint” over the dust.

4 Press the Alt key as you click the mouse button to set the origin of the cloned area of cloth.



Setting cloning origin



Rubber stamp painting over dust

5 Hold down the mouse button, and begin dragging to paint over the dust, replacing it with the cloned texture.

Each stroke of the tool paints on more of the sampled area, starting at the point from which you took the sample. As you paint, a cross hair appears, showing the part of the original sampled area that is currently being applied.

6 When you have finished painting over the dust, release the mouse button.

7 Double-click the zoom tool in the toolbox to reset the view to 1:1.

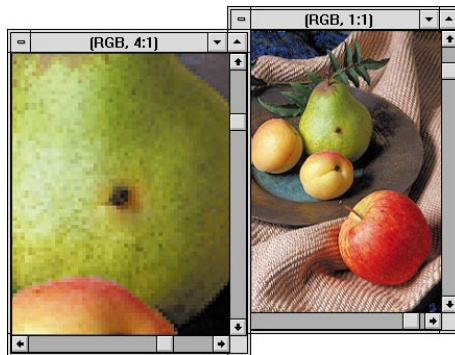
Retouch the color using a second window

You will remove the bruise on the pear using color from the surrounding skin. For the retouching, you will open a second window so that you can zoom in on a part of the image while viewing the effect of the changes on the

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entire image. You will continue to use the rubber stamp tool but will change its brush size for detail work.

- 1** Drag the image by its title bar to position the image at the far right of the monitor.
- 2** Choose New Window from the Window menu to open a second window.
- 3** Using the zoom tool, in the second window drag to enclose just the pear, and zoom in on it so that you have a 4:1 or 6:1 view.
- 4** Make sure that the pear is visible in both the zoomed-in window and the window with the 1:1 view. Resize the second window if needed so that the pear is visible in both windows. Now you can retouch the pear in the zoomed-in view and see the effect on the entire image.



4:1 view

1:1 view

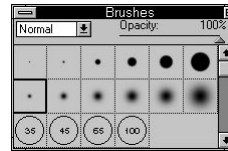
When you use two windows, the changes you make in one window are updated in the other window. You can close the second window at any time without saving the changes; however, you will be prompted to save changes on closing the main window.

- 5** Click the rubber stamp tool in the toolbox.

- 6** If the Brushes palette is not visible on-screen, choose Show Brushes from the Window menu (F5) to display it. Drag the palette by its title bar to reposition it at the bottom of the screen so that the entire image remains visible.

By default, the rubber stamp tool paints with the eleventh brush in the palette, 21 pixels in diameter. You need to work with a smaller brush.

- 7** Click the first brush in the second row of the palette. The smaller brush, with a diameter of 5 pixels, enables you to paint over smaller areas.



- 8** In the second, enlarged window, position the pointer just below and to the left of the bruise on the pear, and Alt+click. This sets the origin of the sample within the unbruised part of the pear.

- 9** Move the pointer over the bruised area, and begin dragging to paint over the bruise with the unbruised texture you just cloned. When you release the mouse button, the changes will appear in both windows.



Setting the sample origin



Cloned texture painted over bruise

If dissatisfied with your results, you have two options:

- If you want to keep the same cloning origin and repaint over the bruise, choose Undo from the Edit menu (Ctrl+Z), and repeat step 9.
- If you want to reset the origin of the cloning and repaint, choose Undo from the Edit menu (Ctrl+Z), and repeat steps 8 and 9.

10 Save the corrections you have made (Ctrl+S), and close the second window.

You have completed the overall adjustments to the image. The remaining adjustments are more subjective, and the results will vary. If you want to save your image after this point, you should use the Save As command in the File menu to save the image with a new name to preserve the final, corrected file.

DUPLICATE ELEMENTS

You can also use the rubber stamp tool to reproduce an entire object within an image. When doing so, you should duplicate the object onto a background that is similar to that of the original. You can also clone detail from one image to another when you have two files open at the same time.

In this part of the lesson, you will create a copy of the bougainvillea leaf at the bottom of the *fruit* image.

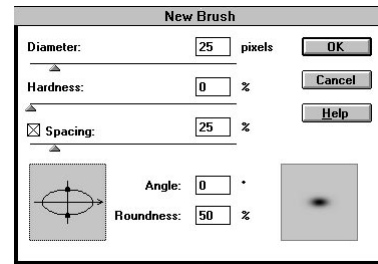
Clone the bougainvillea leaf

In this example, you will clone the entire bougainvillea leaf but avoid the cloth above it. A flat brush shape would help you isolate the leaf. You will use the Brushes palette to create a flat brush shape for this task.

1 If necessary, reposition the Brushes palette by dragging it by its title bar so that the leaf and area to the left of the leaf are clearly visible.

2 Choose New Brush from the Brushes palette Control menu. The New Brush dialog box appears.

3 In the Diameter text box, enter 25 pixels; in the Roundness text box, enter 50 percent. The angle and roundness show in the lower left preview window; the brush stroke shows in the lower right preview window.



4 Click OK. The new brush shape appears selected in the Brushes palette.

5 Position the rubber stamp pointer on the lower right edge of the leaf, and Alt+click the leaf to set the sample origin.



6 Move the rubber stamp pointer so that it is just below and to the left of the original leaf. Be sure to leave enough space for a whole new leaf.

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TIP: YOU CAN USE THE BRUSHES PALETTE TO CREATE A CUSTOM BRUSH FOR THE DODGE AND BURN TOOLS. SEE "USING BRUSHES" IN CHAPTER 5 OF THIS MANUAL FOR MORE INFORMATION ABOUT CREATING CUSTOM BRUSHES.

7 Press the mouse button and begin dragging to clone a copy of the leaf. As you paint, a crosshair shows which part of the sample you are using.



You can paint in sections, releasing the mouse button in between strokes; cloning will continue from the sample origin.

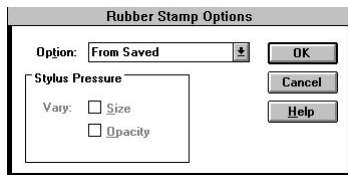
8 When you are satisfied with the results, release the mouse button.

Revert to the previously saved version

The From Saved option of the rubber stamp tool lets you restore an area on an image to its previously saved state. This option performs the same function as the eraser tool's magic eraser mode, except that it lets you specify a brush shape and size and opacity so that you can control the size of the area you are reverting.

1 Double-click the rubber stamp tool to display the Rubber Stamp Options dialog box.

2 Using the drop-down list, choose From Saved and click OK.



3 Paint over the copy of the leaf you just created. The area will be restored to the last saved version. It may take a few moments for the tool to start working while Adobe Photoshop reads in the image from the disk.



Lighten a shadow in the cloth using the dodge tool

In the next two procedures, you will lighten selected areas of the image using the dodge tool, and subdue highlights in part of the image using the burn tool.

Traditionally, dodging and burning techniques let photographers correct unbalanced tones in the image, caused either by underexposing or overexposing areas of a negative, to achieve a complete range of highlight and shadow details. In Adobe Photoshop, the dodge tool lets you lighten areas of the image; the burn tool lets you darken areas.

In Adobe Photoshop, the dodge tool decreases the density of pixels in an image to lighten the image. You will use it with the default brush shape and size of 65 pixels and an exposure of 50 percent.

1 Click the dodge/burn tool in the toolbox. The pointer turns into the dodge tool icon.

2 Position the pointer on the cloth in the upper right corner.



TIP: YOU CAN
ALT-CLICK
EITHER THE DODGE
TOOL OR THE BURN
TOOL TO CHOOSE
THE OTHER MODE.

3 Choose Zoom In from the Window menu (Ctrl +) to zoom in to a 2:1 view. If necessary, scroll so that the cloth in the upper right corner is visible.

4 Drag to lighten the shadow in the cloth in the upper right corner.



By default, the dodge tool lightens pixels by 50 percent of their original brightness value. You can lighten shadows, midtones, or highlights by choosing the corresponding mode from the Mode drop-down list in the Brushes palette.

5 If the Brushes palette is not visible, display it by choosing Show Brushes from the Window menu. Drag the palette by its title bar to reposition it at the bottom of the screen. Choose a smaller brush size by clicking the third brush in the second row of the palette (above the 65-pixel brush); the Exposure slider should be set to 50 percent.

6 Position the dodge pointer on the dark green leaves just above the plate, and drag to lighten the shadows and reveal a lighter green.

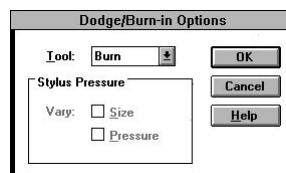


Subdue the highlights in the apricot using the burn tool

Using the burn tool, you can subdue highlights or areas in the image that appear too bright. The burn tool increases the density of pixels in an image to subdue highlights or to darken shadows or both.

1 Double-click the dodge tool to display the Dodge/Burn Options dialog box.

2 Using the drop-down list, choose Burn. Click OK. The burn tool icon replaces the dodge tool in the toolbox.



3 Either use the slider in the Brushes palette or press 2 on the keyboard to reduce the Exposure to 20 percent.

4 Position the burn pointer on the lower apricot, and drag along the crease of the apricot, using several strokes, for a controlled effect. Work around the edges of the apricot to increase the shadow areas. Darkening the shadows also helps define the shape more clearly.



Before: burn tool on lower apricot



After: shadows darkened

5 Save your corrected image, with any of the subjective retouching, as FRUIT1.PSD.

This completes your correction of the scanned image.

CONCLUSION

In this lesson, you retouched a scanned image and learned how to

- visually color-correct an image
- precisely adjust overall brightness and contrast, and adjust the color balance of an image
- crop an image and adjust image dimensions
- use the rubber stamp tool to retouch flaws and restore portions of an image
- duplicate elements
- use the dodge and burn tools to lighten and darken parts of an image

CHAPTER 4: SCANNING, IMPORTING, AND EXPORTING IMAGES

Images can be brought into the Adobe Photoshop program by scanning a photograph, a slide, or an image; by capturing images from video; or by importing electronic artwork created with a drawing program. You can import an image document in one format and export it in another, depending on your needs. As a result, you can easily transfer Adobe Photoshop documents to other applications and computer platforms.

SCANNING IMAGES

The Adobe Photoshop program, in conjunction with certain brands of scanners, allows you to control the process through which a photograph or a slide is converted into a digitized image. To scan images, you use the Acquire command in the File menu.

Adobe Photoshop software directly interfaces with any scanner that has an Adobe Photoshop-compatible plug-in module. To install the module, copy the manufacturer's file into the PLUGINS subdirectory, which is located in the Photoshop application subdirectory. All installed plug-in modules are loaded when Adobe Photoshop starts. If Adobe Photoshop is running when you install the plug-in module, you must quit and restart the program. The new scanner then appears in the Acquire submenu. See "Using Plug-in Modules to Import and Export Images" later in this chapter for more information about using and installing plug-in modules.

Adobe Photoshop also supports the TWAIN standard for image acquisition, to allow scanning from any device that supports the TWAIN

interface. If you are using a scanner that supports TWAIN, see "Acquiring a TWAIN Interface File" later in this chapter for instructions on installing and setting up the plug-in module.

If the scanner you are using does not have an Adobe Photoshop-compatible scanner driver, you can use the manufacturer's software to scan your images, and then save them as TIFF or BMP files and import them into Adobe Photoshop using the Open or Open As command in the File menu.

When you're scanning an image, you make several choices that affect the quality and usefulness of the resulting file. Before you scan an image, be sure to determine the correct resolution, decide on the optimal dynamic range, and develop a procedure for eliminating unwanted color casts.

Determining the scan resolution

The correct resolution for a scan is determined by the capability of your output device. For example, if the image will be used only as a screen display, the resolution need not be any greater than the resolution of the screen, typically 72 to 120 pixels per inch (ppi).

If the image resolution is too low, the PostScript language may use the color value of a single pixel to create several halftone dots. This results in *pixelization*, or very coarse-looking output.

If the resolution is too high, the file contains more information than the printer needs. The file size directly affects how long it takes Photoshop to process an image. The size of a file is proportional to its image resolution. For example,

the file size for an image with a resolution of 200 ppi is four times greater than an image of identical dimensions and a resolution of 100 ppi.

The scanning resolution you use for printed output depends on the quality of output that you need as well as on the resolution of your printer and the size of the original document compared to the scanned image.

As a general rule, to produce a high-quality image, the image resolution should be twice the lines-per-inch (lpi) value of the halftone screen used to print the image. For example, to print a high-quality image using a 133-lpi screen, you would need an image resolution of approximately 266 ppi. If you are unsure of the appropriate resolution for a resized image, you can have Adobe Photoshop calculate a recommended resolution. See Chapter 12, “Resizing Images,” for more information about this feature.

Note: *If your image resolution is more than 2-1/2 times the screen ruling, you will get an alert message. This means that the image resolution is higher than the printer can accommodate and is unnecessarily increasing the file size and print time. Use the Image Size command to lower the resolution, and save a copy of the high-resolution file if necessary. See Chapter 12, “Resizing Images,” for more information on the Image Size command.*

The size of the final image compared to the original image is also a consideration in setting scan resolution. If you are making the image larger, you need additional data to produce a final image with the correct image resolution. If the final image will be smaller than the original, you need less data.

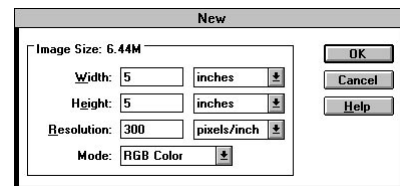
Scanning using the file size setting

The best way to ensure that you have all the data you need for your Photoshop image is to determine what the file size must be to contain the pixel information you need. To find this file size, you can create a dummy file in Photoshop.

To calculate the file size before scanning an image:

- 1 Open Photoshop, and choose New from the File menu. The New dialog box appears.
- 2 Select the correct unit of measurement from the drop-down lists.
- 3 Enter the width and height for your final printed image.
- 4 Enter a resolution. This value should be twice the screen frequency of the screen you will use to print.
- 5 Make sure that the RGB Color mode is selected.

The New dialog box displays the file size above the dimensions. For example, the dialog box below shows the values for a final image that is 4 inches wide and 5 inches high, printed with a 150-line screen using a 2 to 1 ratio (resolution is set at 300). The file size needs to be 5.15 megabytes.



To produce the scan, enter the resulting file size in your scanner settings (it does not matter what resolution or image dimensions appear in the scanner settings).

Once you have scanned the image and imported it into Photoshop, use the Image Size command in the Image menu to enter the correct width and height for the image. Make sure that both the Proportion and File Size constraint options are selected in the Image Size dialog box.

Scanning using the resolution setting

If you cannot use file size as the determining factor in setting your scan resolution, you can calculate a scan resolution using the original and final image dimensions, and the screen frequency.

To estimate scan resolution:

1 Multiply the longest dimension of the final image size by the screen frequency; then multiply this value by the ratio of screen ruling (typically 2:1).

For example, suppose you are scanning an image that is 2 inches wide by 3 inches high. You want to produce a final image that is 4 inches wide by 5 inches high. You are using a screen frequency of 150.

Multiply 5 (the longest output dimension) by 150 (the screen frequency) to get 750 pixels. Then multiply 750 by 2 (the ratio to screen ruling). This equals a total of 1500 pixels needed.

2 Divide the total number of pixels needed by the longest dimension of the original image.

In this example, the longest dimension of the original image is 3 inches. Dividing 1500 by 3 yields a scan resolution of 500 dpi.

Different color separation procedures might require different pixel-to-line-screen ratios. It's a good idea to check with your service bureau or printer to finalize your requirement before you scan the image.

Optimizing the dynamic range of the scan

When scanning an image, keep in mind that the human eye can detect a wider tonal range than can be printed. If your scanner lets you define the black and white points, set the points to produce the best tonal range before scanning the file, to capture the widest dynamic range. After opening the file in Adobe Photoshop, use the color correction tools to set the white and black points for the digitized image. See Chapter 14, "Making Color Corrections," for more information about setting the black and white points for an image.

Eliminating unwanted color casts

If your original image has an unwanted color cast, or your scanner introduces an unwanted cast to your image, you might want to perform a simple test before scanning your image. To check for color casts, create a Photoshop file that contains an 11-step gray wedge and print the file. You can then sample the grays using the Info palette to see if they have any hue or color tint.

If you prefer, you can perform the test using an 18-percent neutral gray card and an 11-step gray wedge, available at photography stores.

Use the Levels command to create a setting or the Curves command to create a curve that eliminates the color cast. Then, when you scan an image, use the curve to eliminate the color cast before you make other color corrections. See Chapter 14, "Making Color Corrections," for more information on the Levels and Curves commands and making color corrections.

USING PLUG-IN MODULES TO IMPORT AND EXPORT IMAGES

Adobe Photoshop plug-in modules are software programs developed by third-party vendors in conjunction with Adobe Systems to extend the

standard Adobe Photoshop program. The Adobe Photoshop software includes several plug-in modules. You can also purchase plug-in modules that are distributed on floppy disks. The instructions for using the module are shipped with the disk.

Import modules (also known as acquire modules) allow you to control a scanner or video frame capture system, or import documents in a variety of formats. Export modules let you save an Adobe Photoshop document in a file format not supported by the standard Adobe Photoshop program, or export images to devices such as printers that are unavailable through the Print Manager.

For detailed instructions on using plug-in modules with Adobe Photoshop, refer to the appropriate documentation included with the module software disk. The Adobe Photoshop package also includes a booklet listing some vendors of third-party plug-in modules.

Installing plug-in modules

To use a plug-in module, you must copy it into the PLUGINS subdirectory. See “Installing the Adobe Photoshop Program” in the Introduction for information on installing plug-in modules. Once installed, the modules appear in the Acquire or Export menu, or as file formats in the Open, Open As Save, and Save As dialog boxes.

IMPORTING IMAGES

Adobe Photoshop allows you to open documents in many file formats, including Photoshop 2.5, BMP, EPS, Targa, and TIFF. You can also open and decompress files saved using the JPEG compression module.

Import choices appear in the Open and in the Open As dialog box Format Type drop-down lists or in the Acquire submenu under the File

menu. Photoshop 2.5, EPS, and TIFF. The other formats and the TWAIN interface are plug-in modules. If these modules do not appear in your menus, install them following the instructions in “Installing the Adobe Photoshop Program” in the Introduction.

Using the Open command

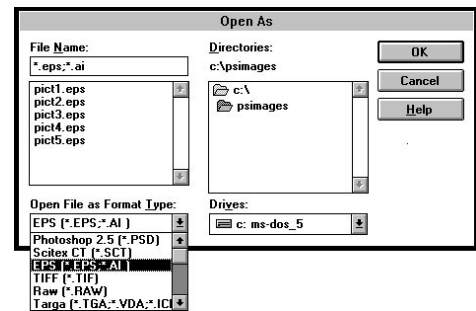
If the file extension can be recognized by Adobe Photoshop, you can use the Open command to open the document. The file appears in the Open dialog box and Adobe Photoshop automatically selects the correct file format.

Using the Open As command

Use the Open As command if you know that the file extension is missing or is incorrect or if the file does not appear in the Open dialog box.

To open a file using the Open As command:

- 1 Choose Open As from the File menu. The Open As dialog box appears.
- 2 Select a file type from the File Format drop-down list, and click OK.



The file opens in the selected format. For a detailed discussion of the file formats, see the specific file type in “Exporting Images” later in this chapter.

In some cases, a dialog box appears, allowing you to set the open options. The formats requiring an open dialog box are discussed in the following sections.

Opening PhotoCD files

You can open images stored in the Kodak® Photo CD format in Adobe Photoshop. In the Photo CD dialog box, enter a file format and a resolution for the image.

The Lab file format option preserves all the color information in the image. Use Lab if you will be using the image for color separations. The Gray file format removes the color information from the image. The RGB file format opens the image in the RGB color mode.

Choose a resolution for the image. The number of pixels in the image appears to the right of each resolution option.

Note: *You cannot save files in the PhotoCD format from Adobe Photoshop.*

Using the Acquire command

Adobe Photoshop includes plug-in modules for importing EPS JPEG files and files scanned using the TWAIN interface.

To use an import module:

- 1** Choose Acquire from the File menu; then select the import module from the submenu.
- 2** Select the module you want to use. A dialog box appears. The options for some import modules are discussed in the following sections.

Acquiring a TWAIN interface file

TWAIN is a cross-platform interface for acquiring images captured by certain scanners and frame grabbers. The device manufacturer of the TWAIN device must provide a Source Manager and TWAIN Data source for your device, or the module will not work.

The first time you use the TWAIN device, choose TWAIN Acquire and select the device you're using. You do not need to repeat this step for subsequent use of the TWAIN module unless you switch devices.

If more than one TWAIN device is connected to your system and you want to switch devices, use the TWAIN Select Source command to choose the device.

EXPORTING IMAGES

The Adobe Photoshop program allows you to save documents in many file formats, including Photoshop 2.5, BMP, EPS, PCX, Targa, and TIFF.

Export choices appear in either the drop-down list in the Save As dialog box or in the Export menu. Photoshop 2.5, and TIFF are built-in file formats. The other formats are plug-in modules. If these modules do not appear in your menus, make sure that you have installed them by following the instructions in the section "Installing the Adobe Photoshop Program" in the Introduction.

Using the Save and Save As commands

The Save command saves the document in its current file format. Use the Save As command when you want to save a file in a different format.

You can save Adobe Photoshop documents as EPS or TIFF documents, and then place these documents in page layout programs that support these file formats. You can also save Adobe Photoshop documents in formats that can be read by Macintosh computers and Scitex image-processing systems.

To save a document in another file format:

- 1** Choose Save As from the File menu. The Save As dialog box appears.
- 2** Choose a format from the File Format drop-down list. In some cases a dialog box appears. The formats and dialog box options are discussed in the following sections.
- 3** Type a file name with up to 8 character and choose a location for the file; then click Save.

Saving Photoshop 2.5 files

Photoshop 2.5 is the default file format for newly created images. This format is a simple, unencoded format and is the only format that supports all of the available Photoshop image modes (Bitmap, Grayscale, Indexed Color, and RGB). If, however, you need to compress your files to save disk space, you should use another format. If you're going to export the image to an illustration or page layout program that doesn't support Photoshop format, save the file in a different format. Save a file in Photoshop 2.0 if you will be opening the document in an earlier version of Adobe Photoshop on the Macintosh.

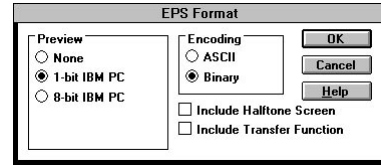
Saving BMP files

BMP is the standard MS-Windows™ raster format.

In the BMP Options dialog box, specify either Microsoft Windows or OS/2® format and a 1- to 24-bit depth for the image.

Saving EPS files

The Encapsulated PostScript file (EPS) format is supported by most illustration and page layout programs, and in most cases is the preferred format for these applications. Note that this is also the only file format that supports transparent whites in Bitmap mode.



Some graphics applications, such as Adobe Illustrator, let you display, or “preview,” a TIFF representation of a PostScript language image saved in the EPS format. The TIFF preview image gives you an idea of what the image will look like when it is printed and allows you to accurately place the image on the page. In the EPS Format dialog box, indicate the type of preview (if any) that you want to use.

The encoding options in the EPS Format dialog box control what type of information is saved in the document, either ASCII or binary. The Binary option results in a file that is about half the size of an image saved with the ASCII encoding option and takes half as long to transfer to the printer. However, some applications (such as Aldus PageMaker®) might not support binary EPS documents. For these applications, you should select the ASCII encoding option. In addition, some commercial print spooling and network printing software does not support binary encoding. If you experience printing errors, it may be that your print spooler requires ASCII encoding.

You can include the EPS file halftone screen information (including the frequencies and angles of the screens) and transfer function information when you save the file. If you include the halftone screen information and place it in another application, such as Adobe Separator, the PostScript interpreter overrides the application's own settings when the color separations are generated. The transfer informa-

tion overrides the printer's default functions if you have checked the Override Printer's Default Functions option in the Transfer dialog box.

In addition, when you save a bitmapped image in EPS format, you have the option of making the white areas in the document appear transparent.

Saving TIFF files

The Tagged-Image File Format (TIFF) is used to exchange documents between different applications and different computer platforms. The TIFF format supports LZW compression. LZW TIFF supports image types other than indexed color.

When you save an Adobe Photoshop image in TIFF format, you can choose to save in a format that can be read either by IBM PC-compatible or by Macintosh computers. You can also choose to compress the document to a smaller size automatically by clicking the LZW Compression check box.

Adobe Photoshop reads and saves captions in TIFF files. This feature is of particular use with the Associated Press Picture Desk system, which uses the same TIFF caption fields. To access the captions, click the Caption option in the Page Setup dialog box.

CHAPTER 5: USING THE PAINTING AND EDITING TOOL OPTIONS

This chapter describes the painting and editing tool options. The first part of the chapter discusses options that are common to more than one tool. They include selecting a tool brush shape, setting brush options, specifying the paint opacity, indicating a paint mode, and setting fade-out rates.

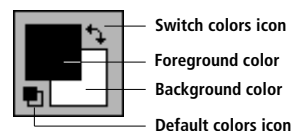
The second part of this chapter provides information on using the line, pencil, rubber stamp, smudge, and blur/sharpen tool options. For step-by-step instructions on using the cropping tool, the eraser, the airbrush tool, the paintbrush tool, and the dodge/burn tool, see the tutorial in Chapters 2 and 3.

USING THE PAINTING TOOLS

The painting tools in the toolbox let you add paint to a selected image or area. The painting tools include the line tool, the pencil tool, the airbrush tool, the paintbrush tool, and the rubber stamp tool. (The paint bucket and gradient fill tools are described in Chapter 8, “Using the Fill Tools.”)

The painting tools paint with the foreground color shown in the top color selection box in the toolbox. To change the foreground color while painting, hold down the Alt key. This temporarily turns the painting tool into the eyedropper tool. Click a color with the eyedropper to make it the new foreground color.

The background color, shown in the lower color selection box, is used for making gradient fills and for filling in areas of an image deleted using the eraser tool.



To switch the foreground and background colors, click the switch colors icon. To return to the default black foreground and white background colors, click the default colors icon. For more information about changing background and foreground colors, see Chapter 9, “Selecting Colors.”

USING THE EDITING TOOLS

The editing tools include the eraser tool, the cropping tool, the smudge tool, the blur/sharpen tool, and the dodge/burn tool. The eraser tool changes pixels to the background color as you drag through them. The cropping tool lets you select a rectangular area in the image and discard the rest. The smudge tool simulates the effect of dragging a finger through wet paint. The blur/sharpen tool blurs an image by diffusing the colors of pixels you drag through, or sharpens an image by increasing the contrast between the

pixels you drag through and the adjacent pixels. The dodge/burn tool lets you lighten or darken specific areas of an image.

Note: The smudge, blur/sharpen, and dodge/burn tools can't be used on bitmapped or indexed color images.

TOOL SHORTCUTS

The following techniques can help you save time when working with the painting and editing tools:

- Double-click any tool in the toolbox to display its options.
- Hold down the Alt key and click the blur/sharpen or dodge/burn tool to switch between the two modes of the tool.
- To draw a straight line with the painting tools or edit straight paths with the editing tools, choose the tool, and click a starting point. Hold down the Shift key, and click an end point. The tool is applied in a straight line between the two points.
- Hold down the Shift key as you paint with the line tool to constrain the angle of the line to a multiple of 45 degrees. To make the lines perfectly horizontal or vertical, click the line tool, and drag as you hold down the Shift key.
- Press a number from 1 through 0 to set the transparency for any tool. Press 1 to set the opacity to 10 percent, press 5 to set the opacity to 50 percent, and so on. Press zero to set 100-percent opacity.
- Leave the palettes you use with the painting and editing tools (Brushes palette Colors palette, and Info palette) on-screen while you work. Drag a palette to place it conveniently, or click

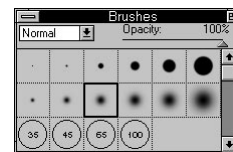
the minimize box to collapse the palette. Note that the palette Control menus are still available when a palette is collapsed.

USING BRUSHES

The brushes you use for the painting and editing tools appear in the Brushes palette. Round brush shapes for the painting and editing tools are available in several sizes. Adobe Photoshop retains the brush settings for the painting and editing tools, so you can select a different default brush for each tool. The Brushes palette also contains commands for creating and deleting brushes, defining brush options, and saving and loading sets of brushes.

To choose a brush shape:

- 1 Click the tool you want to use in the toolbox.
- 2 Choose Show Brushes from the Window menu. The Brushes palette appears; the brush for the current tool is selected.



- 3 Click the brush shape you want to use.

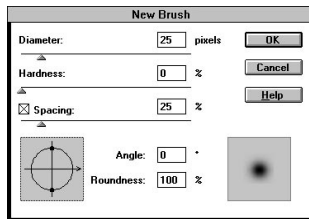
Brushes that are too large to fit in a square on the palette are shown as numbers inside a circle; the number indicates the diameter of the brush in pixels.

Creating and deleting brushes

If the Brushes palette does not contain the brush you need, you can create new brushes. New brushes are added at the bottom of the palette. If you find that you no longer use a brush, you can delete it from the Brushes palette.

To create a brush:

1 Choose New Brush from the Brushes palette Control menu. The New Brush dialog box appears.



The preview in the lower right corner shows the current brush stroke. The preview in the lower left corner shows the current brush angle and roundness. The previews change to reflect the new brush as you enter brush options.

2 Set the options for the brush:

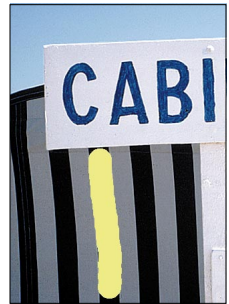
- The Diameter option controls the size of the brush. Type a number or use the slider to enter a value in pixels.
- The Hardness option is a measurement of the hard center of the brush. Type a number or use the slider to enter a value that is a percentage of the brush diameter.



Original image



Hardness: 25%

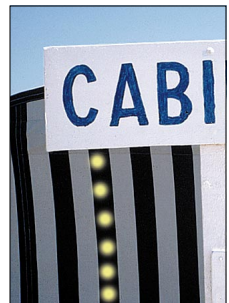


Hardness: 100%

- The Spacing option specifies the distance between the brush marks in a stroke. To change the spacing, type a number or use the slider to enter a value that is a percentage of the brush diameter. You can turn off the Spacing option by clicking the check box. When spacing is off, the brush is sensitive to the speed with which you drag the mouse. For example, dragging the mouse quickly makes the brush skip pixels.



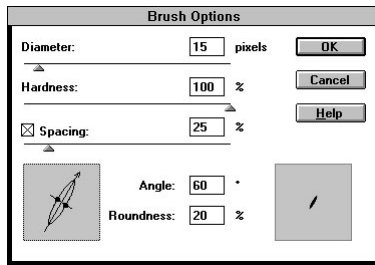
Spacing: 40%



Spacing: 100%

Chapter 5

- The Angle option sets the angle of a non-circular brush's major axis from horizontal. Type a value in degrees, or drag the axis in the preview to set a new angle.
- The Roundness option indicates whether the brush is a circle, an ellipse, or a straight line. A value of 100 percent indicates a circular brush. Type a number or drag the dots in the left preview to enter a value that is a percentage of a circle.



Roundness: 20%; Angle: 60%

To delete a brush:

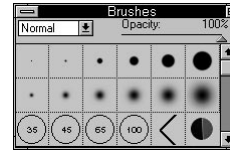
- 1 Click the brush you want to delete in the Brushes palette.
- 2 Choose Delete Brush from the Brushes palette Control menu.

Creating custom brushes

You can use part of an image to create a custom brush shape. To define brushes with soft edges, select brush shapes composed of pixels with gray values other than the extremes of 0 (black) and 255 (white).

To create a custom brush shape:

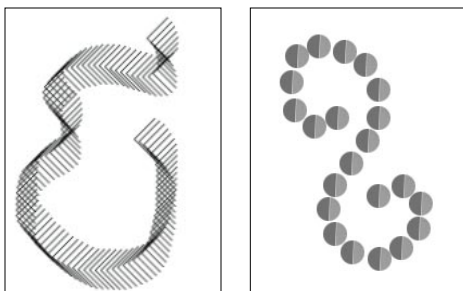
- 1 Click the rectangular marquee tool in the toolbox.
- 2 Drag the marquee to enclose the part of the image you want to use as a custom brush. The brush shape can be up to 999 pixels by 999 pixels in size. To be most effective, the shape should appear on a solid white background.
- 3 Choose Define Brush from the Brushes palette Control menu. The custom brush appears in the Brushes palette.



Custom brushes in the Brushes palette

- 4 Choose Brush Options from the Brushes palette Control menu to set options for the custom brush:

- Enter a value in the Spacing option that is a percentage of the brush diameter.
- Select the Anti-aliased option to make a smooth-edged brush. This option is not available for large brushes.



Painting with custom brushes

Setting brush options

You can define a number of options for the default brushes and any brushes you create. Only spacing can be changed for custom brushes.

To set brush options:

Click the brush you want to change, and choose Brush Options from the Control menu (or double-click the brush shape). The Brush Options dialog box appears.

The options in this dialog box are discussed in “Creating and Deleting Brushes” earlier in this chapter.

Saving, loading, and appending brushes

The Brushes palette can hold as many brushes as you want. However, to make the palette more manageable and to group related or special brushes, you might want to create your own sets of brushes.

To save and load brush sets, use the Save Brushes and Load Brushes commands in the Brushes palette Control menu. The Append Brushes command adds the brushes stored in a file to the current palette.

When you exit Adobe Photoshop, the current Brushes palette is saved in the preferences file.

SPECIFYING THE OPACITY, PRESSURE, OR EXPOSURE

When you’re using the pencil, paintbrush, and rubber stamp tools, you can specify an opacity for the paint. When you’re using the airbrush, smudge, and blur/sharpen tools, you can adjust the pressure applied by the tool. When you’re using the dodge/burn tool, you can adjust the amount of exposure for the tool.

To adjust the opacity, pressure, or exposure, drag the slider in the Brushes palette.

Opacity can range from 1 to 100 percent. To use transparent paint, specify a low percentage value. To use more opaque paint, specify a high value.



Opacity: 20%

Opacity: 40%

Pressure and exposure can range from 1 to 100 percent. To create a strong effect, specify a high percentage value. To create a weaker effect, specify a low value.

*Dodge exposure: 70%**Dodge exposure: 25%***SELECTING A PAINTING OR EDITING MODE**

You can control which pixels are affected by a painting or editing tool by choosing an option from the Mode control menu in the Brushes palette. The examples shown at the end of this section illustrate the different modes.

Normal mode

When Normal mode is active, each pixel you paint or edit is affected. This is the default.

Darken mode

When Darken mode is active, only pixels lighter than the foreground color are affected by a tool. Pixels darker than the foreground color do not change.

Lighten mode

When Lighten mode is active, only pixels darker than the foreground color are affected by a tool. Pixels lighter than the foreground color do not change.

Hue mode

When Hue mode is active, all the pixels you paint change to the foreground color, but their saturation and luminosity values do not change.

Saturation mode

When Saturation mode is active, only the saturation values of the pixels you paint change.

Color mode

When Color mode is active, all the pixels you paint change to the foreground color. Both the hue and saturation values of the pixels you paint change, but the luminosity is not affected. This preserves the gray levels in the image. This mode is useful for coloring monochrome images and for tinting color images.

Luminosity mode

Luminosity measures the brightness of a color. The value is computed by taking the weighted average of the pixel's RGB values using the following expression: $\text{Luminosity} = (.30 \times \text{Red}) + (.59 \times \text{Green}) + (.11 \times \text{Blue})$. When luminosity mode is active, only the lightness component of the pixels changes; the color values are not affected. This mode is the inverse of Color mode.

Multiply mode

When Multiply mode is active, painting over an area multiplies the color values and darkens the image. The effect is similar to that of drawing over the image with multiple magic markers.

Screen mode

When Screen mode is active, painting over an area bleaches the colors in the image and tints them toward the foreground color. This mode is the inverse of Multiply mode.

Dissolve mode

When Dissolve mode is active, painting color randomly replaces the original color based on the density of the paint at any pixel location. This mode works best when you're using the paintbrush or airbrush tool and are painting with a large brush.



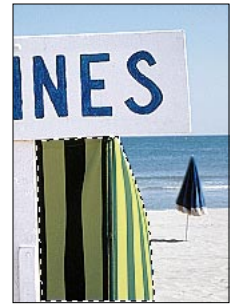
Selected area



Foreground color in toolbox



Luminosity mode; opacity: 50%



Multiply mode



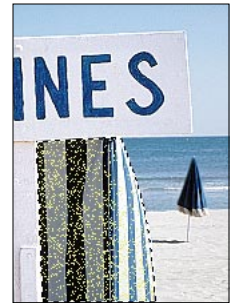
Normal mode; opacity: 40%



Darken mode



Screen mode; opacity: 75%



Dissolve mode



Lighten mode



Hue mode



Saturation mode



Color mode

Midtones, Shadows, and Highlights

When you're working with the dodge/burn tool, you're modifying only the lightness of the image. The modes in the control menu on the Brushes palette for this tool limit the changes to specific portions of the image. Choose Midtones to change only the middle range of colors, Shadows to alter the dark portions of the image, or Highlights to modify only the light pixels.

SPECIFYING THE PAINT FADE-OUT RATE

You can specify the rate at which the pencil, paintbrush, and airbrush strokes fade out to simulate actual brush strokes. The fade-out rate determines how many pixels are colored with each stroke before the paint fades out completely.

To specify a fade-out rate, double-click the pencil, paintbrush, or airbrush tool, and enter a value from 0 to 9999 in the Distance text box. The higher the fade-out value, the longer the paint flows before it fades out. Click a button to indicate if the paint should fade from the foreground color to transparent, or from the foreground color to the background color.



Foreground and background colors in toolbox



Fade-out rate: 25; fade to transparent



Fade-out rate: 100; fade to background

SPECIFYING STYLUS PRESSURE OPTIONS

Adobe Photoshop supports pressure-sensitive digitizing tablets with cordless pens that support the pen for the Windows interface, such as the Wacom® and Calcomp tablets. When the appropriate software drivers for the tablet is installed, you can set the stylus pressure for the Adobe Photoshop pencil, paintbrush, airbrush, rubber stamp, smudge, blur/sharpen, and dodge/burn tools.

To set the stylus pressure, open the tool's dialog box and click the options you want:

- Select **Size** if you want increasing pressure to result in a bigger brush stroke.
- Select **Color** if you want increasing pressure to paint with the foreground color. Light pressure paints with the background color. Medium pressure paints with an intermediate color.
- Select **Opacity** if you want increasing pressure to result in more opaque paint.

USING THE LINE TOOL

The line tool creates straight, anti-aliased lines on an image. To paint a line, click the line tool and drag. Hold down the Shift key as you drag to constrain the angle of the line to 45 degrees. Line tool options allow you to specify the width of lines and create lines with arrowheads.

To choose options for the line tool:

- 1 Double-click the line tool in the toolbox. The Line Tool Options dialog box appears.
- 2 Type the line width in pixels.

To specify the attributes for arrowheads in the Line Tool Options dialog box:

- 1 Specify where you want arrowheads to appear:
 - Select **At Start** to create lines with arrowheads at the starting points.
 - Select **At End** to create lines with arrowheads at the ending points.
 - Select both options to create lines with arrowheads on both ends.
- 2 Enter a value from 1 to 1500 pixels for the arrowhead width.
- 3 Enter a value from 1 to 1500 pixels for the arrowhead length.

4 Enter a value from 50 percent to – 50 percent for the concavity of the arrowhead.

The concavity value defines the amount of curvature on the widest part of the arrowhead, where the arrowhead meets the line.



Concavity: 20%



Concavity: 50%

USING THE PENCIL TOOL

The pencil tool creates hard-edged freehand lines. The Auto Erase option for this tool lets you paint the background color over areas containing the foreground color.

To use Auto Erase, open the pencil tool's dialog box and select Auto Erase. Drag through the foreground-colored area you want to erase. The area is painted with the background color. If the area where you first click the mouse doesn't contain the foreground color, the area is painted with the foreground color.

USING THE RUBBER STAMP TOOL

The rubber stamp tool lets you paint a copy, or a modified copy of an image or color, into the same image or into another image. By default, the rubber stamp tool *samples*, or picks up an image and paints an exact duplicate of that image. Other rubber stamp options let you paint with patterns or filters, or with an “impressionistic” copy of the image. You can also restore painted areas to their last-saved states.

To use the rubber stamp tool:

- 1** Double-click the rubber stamp tool in the toolbox. The Rubber Stamp Options dialog box appears.
- 2** Select an option from the Option drop-down list; then click OK. The options are discussed in the following sections.
- 3** If you are using one of the Clone options, position the pointer where you want to take a sample, and Alt-click. If you are using one of the other options, you don't have to sample the image.
- 4** Drag to paint with the sampled image.

The Clone options

The Clone options take a sample of the entire image, which you can then apply, or “paint,” over another image. Each stroke of the tool paints on more of the sampled image, starting at the point from which you took the sample.

The aligned Clone option applies a sampled image continuously, regardless of how many times you stop and resume painting. This option is useful if you want to use different sizes of brushes to paint an image. You can also use the aligned Clone option for painting two halves of an image on either side of another image.

In the following illustration, a large brush was used to apply the majority of the image; then a small brush was used to apply the detailed areas. The image is sampled using the umbrella in the background as the sampling point; the umbrella is then painted to the right of the orig-

inal. Note that the cross-hair marker shows the part of the original sampled image that is currently being applied.



Sampling point



Several applications of paint; aligned Clone

The nonaligned Clone option applies a sampled image from the initial sampling point each time you stop and resume painting. Because the rubber stamp tool samples the entire image, this option is useful for applying multiple copies of part of an image.

In the following illustration, the image is sampled using the umbrella in the background as the sampling point; multiple copies of the umbrella are then painted into the foreground.



Sampling point



Several applications of paint; nonaligned Clone

The From Saved option

The From Saved option for the rubber stamp tool lets you restore an area of an image to its previously saved state. This option performs the

same function as the eraser tool's magic eraser mode, except that it lets you specify a brush shape to create soft edges around the area you are restoring. The From Saved option also supports the transparency and painting modes set in the Brushes palette. See "Specifying the Opacity, Pressure, or Exposure" and "Selecting a Painting or Editing Mode" earlier in this chapter for information on these options.

When you use the From Saved option, Adobe Photoshop reads in the last-saved version of the image from disk and restores the portions of the image you drag the rubber stamp tool through. When you begin using this option, it may take a few moments for the tool to start working while the image is read in from disk.

The Impressionist option

The Impressionist option for the rubber stamp tool lets you create textured designs based on the last-saved version of a document. When you use the Impressionist option, the program reads in the pixels from the last-saved version of the area you drag through and "smears" the pixels together to create an impressionistic effect. As with the From Saved option, this rubber stamp tool option may take a few moments to start working while the image is read in from disk.



Impressionist option

USING THE SMUDGE TOOL

The smudge tool simulates the actions of dragging a finger through wet paint. The tool picks up color from where the stroke begins and pushes it in the direction in which you drag. By varying the pressure in the Brushes palette, you can change the force of the smudge.

To smudge using the foreground color at the beginning of each stroke, double-click the smudge tool and select the Finger Painting option in the Smudge Tool dialog box.



Smudging an image

USING THE BLUR/SHARPEN TOOL

The blur/sharpen tool lets you blur hard edges or areas in an image to reduce detail, or sharpen soft edges to increase clarity or focus. Applying the blur tool decreases the contrast between pixels and produces a smoother image. Applying the sharpen tool increases the contrast between pixels and sharpens the image.

To switch between blur and sharpen mode, Alt-click the tool in the toolbox, or double-click the tool and select a mode from the Tool drop-down list in the Blur/Sharpen Options dialog box. To increase the pressure of the blur/ sharpen tool, use the slider in the Brushes palette.



Blurring an image



Sharpening an image

CHAPTER 6: USING THE TYPE TOOL

The Adobe Photoshop program allows you to enter bitmapped type on an image using the type tool. This chapter describes how to select type options, including leading, type styles, and alignment.

Normally, large bitmapped characters appear jagged on the screen; however, if you use the Adobe Type Manager™ (ATM™) program, or if you are using TrueType™ fonts, characters appear almost as smooth and as well-defined as outline type.

Note that bitmapped type is different from the outline type generated in object-oriented applications such as Adobe Illustrator. In Adobe Photoshop, bitmapped type is rendered at the resolution of the image. For example, if the resolution of the image is 100 pixels per inch, the resolution of the type will also be 100 pixels per inch. You can't edit bitmapped type as text after you have placed it in the image.

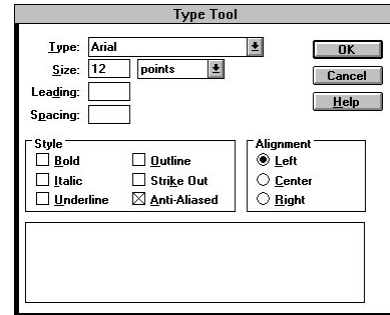
To produce high-quality type, it's best to import your Photoshop document into a page layout program and create PostScript type for the image.

ADDING TYPE TO AN IMAGE

You use the type tool in the toolbox to add type to an image.

To enter type:

- 1 Click the type tool in the toolbox.
- 2 Click where you want the type to appear. The Type Tool dialog box appears.



- 3 Select a font, and enter a size for the type.
- 4 Choose a unit of measurement from the size units drop-down list.
- 5 Enter values for the leading and spacing, and choose a style for the type. These options are described in the following sections.
- 6 Enter the text in the dialog box.

The type automatically wraps in the dialog box, but appears on a single line in the image unless you press Return. You can enter up to 255 characters. To scroll the type, click the text box and drag up or down.

- 7 Click OK.

Type appears in the image as a floating selection and in the foreground color.

While the type is floating, you can use the options in the Brushes palette to change the type's opacity, or choose a painting and editing mode for blending the type into the image. You can also move the type by dragging it, or delete some or all of the characters. Once you deselect the type, it becomes part of the image; you can change the type only by editing the pixels that make up the characters.

SETTING THE LEADING

You control the line spacing, called *leading*, using the Leading option in the Type Tool dialog box. Leading is measured from baseline to baseline. The leading parameter uses the same unit of measurement you specify for the font size (either points or pixels); by default, the leading built into the font is used. Values can range from 1 to 1000.

SETTING THE LETTER SPACING

You can control the spacing between letters, called *kerning*, using the Spacing option in the Type Tool dialog box. The Spacing parameter uses the same unit of measurement that is specified for the font size (either points or pixels). Enter positive values to increase the spacing; enter negative values to decrease the spacing. Spacing increments can be as small as tenths of a point or pixel (from -99.9 to 999.9).

SELECTING STYLE OPTIONS FOR TYPE

You can apply Style options to type so that it appears underlined, italicized, struckout, outlined, or bold.

The Anti-aliased option

Text, like all images in Adobe Photoshop, is composed of pixels, and its resolution is measured in pixels per inch (ppi). The Anti-aliased option in the Type Tool dialog box lets you minimize the pixel contrast at the edges of the text. When you select this option, the edges of the text appear smooth and blend into the background.

You'll probably want to use anti-aliased type in your images, unless you are working with type in small point sizes.



Anti-aliased type



Nonanti-aliased type

ALIGNING TYPE

You align type based on the last point you clicked with the type tool cursor. For example, if you want to align type so that it is centered on the image, select the type tool, click the center of the image, and then click Center in the Type Tool dialog box.

ADJUSTING INDIVIDUAL CHARACTERS

While a text block is selected on an image and the type tool is active, you can deselect individual characters and words in the text block. You can then move the characters that are still selected to another position on the image and adjust letterspacing.

To deselect characters in a floating text block:

Use one of the following methods:

- Hold down the Control key, and drag the lasso around the character or characters you do not want selected.
- Hold down the Shift and Control keys, and drag the lasso around the characters you want to remain selected (the type tool turns into the lasso once you've added type to an image).

Note: *Make sure that you encircle the entire character you want to select or deselect; any portion of a character outside the lasso is not changed.*

To adjust the letterspacing:

Place the cursor on one of the selected characters and use one of the following methods:

- With the arrow pointer displayed, hold down the mouse button and drag the characters to their new position. To constrain the movement to a straight line, hold down the Shift key.
- Use the arrow keys to move the selected characters in 1-pixel increments.

CHAPTER 7: MAKING SELECTIONS

The Adobe Photoshop program provides several tools for selecting parts of images: the marquee tools, the lasso tool, and the magic wand tool. These tools allow you to make selections in a variety of ways and with a range of precision. Once you select a portion of an image, you can modify it without affecting the rest of the image. For example, if you drag the eraser through a selection and continue dragging through a part of the image that isn't selected, the unselected portion of the image doesn't change. You can flip, rotate, and move selections as well as adjust their color characteristics.

This chapter provides an overview of each selection tool and describes its options. It also tells you how to deselect, edit, and extend selections, how to isolate sections of an image by creating quick masks, and how to save selection borders as masks. For step-by-step instructions on how to use each selection tool, see Chapter 2, "Lesson 1—Learning the Basics."

USING THE MARQUEE TOOL OPTIONS

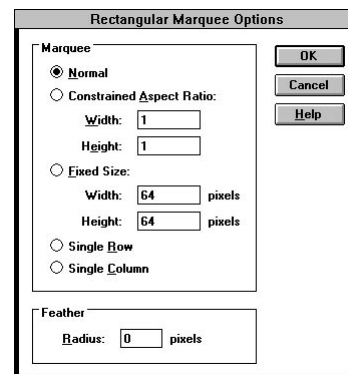
The rectangular and elliptical marquee tools let you select rectangular and elliptical areas by dragging a *marquee*, or *selection border*, on the image. To use either of these tools, click the tool in the toolbox; then drag over the area you want to select.

Note: By default, the marquee starts from a corner or edge. To start the marquee from the center of the selection, hold down the Alt key while you drag. Hold down the Shift key as you drag to constrain the rectangular marquee to a square or to constrain the elliptical marquee to a circle.

The options for the rectangular and elliptical marquee tools give you control over the size and precision of the marquee. The rectangular marquee tool also lets you select a single row or column of pixels on the image.

To use the marquee tool options:

1 Double-click the rectangular or elliptical marquee tool in the toolbox. The dialog box for the selected marquee tool appears.



2 Select the options you want:

- The Constrained Aspect Ratio option sets a height-to-width ratio for the marquee. For example, to draw a marquee that is twice as wide as it is high, enter 2 for the width and 1 for the height. You can use decimal values for the width and height.
- The Fixed Size option lets you specify set values for the marquee's height and width. Values are specified in pixels. The number of pixels needed to create 1 inch depends on the resolution of the image. For a file that has 72 pixels per inch, you need 72 pixels to make 1 inch. For a file that has 200 pixels per inch, you need a value of 200 to make 1 inch.

- The Single Row and Single Column options (available only for the rectangular marquee tool) allow you to define the marquee as a 1-pixel-wide row or column. Click near the row or column you want to select; then drag the pointer to locate the exact row or column.

USING THE LASSO TOOL

The lasso tool lets you draw a freehand outline around an area in the image. To use the lasso, click the tool in the toolbox and drag around the area you want to select.

USING THE MAGIC WAND TOOL

The magic wand tool allows you to select portions of images based on the color similarities of adjacent pixels. This tool can be useful for selecting part of an image (for example, a red flower) without having to trace the outline with the lasso tool. When you use the magic wand tool, Adobe Photoshop determines whether the adjacent pixels are within the color range, or “tolerance,” specified in the Magic Wand Options dialog box. All pixels within the range are selected.

The tolerance can range from 0 to 255. Enter a low tolerance value to select colors very similar in color value to that of the pixel you click. Enter a higher tolerance to select a broader range of colors. For step-by-step instructions on using the magic wand tool, see Chapter 2, “Lesson 1—Learning the Basics.”

SMOOTHING THE EDGES OF A SELECTION

In some cases, you might want to soften the effect of pasting or moving a selection by smoothing the hard edges of the selection. You can make the transition between the pixels in the selection and the surrounding pixels more gradual using the feather edge and anti-aliasing options.

The effect of softening the edges is apparent only when you modify a selection, such as by cutting, moving, pasting, or filling it. For example, if you paint on a soft-edged selection, the color of the paint blends with the color of the edge pixels. If you adjust the contrast of a soft-edged selection, the contrast change fades out toward the edge of the selected area.

Feathering blurs the edges of the selection by building a transition boundary between the selection and the surrounding pixels, gradually blending the edges of the selection. This smoothing can cause some loss of detail at the edge of the selection.

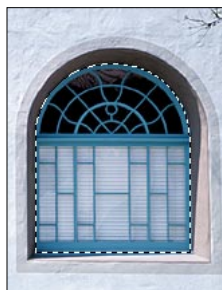
Anti-aliasing produces a smooth edge by partially filling the pixels at the edge of the selection. Since anti-aliasing removes jagged edges, it is especially useful when you’re creating composites by cutting and pasting. No detail is lost, since only the edge pixels change.

Defining a feather edge for a selection

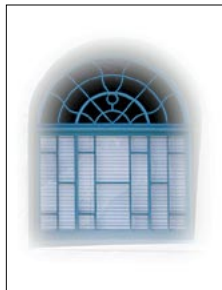
Use the Feather Radius option in the marquee and lasso tool dialog boxes to specify how far inside *and* outside the selection border the feather edge extends. For example, a Feather Radius value of 5 creates a feather edge with a 10-pixel width. A feather radius can range in width from 1 to 64 pixels.

Use the Feather Radius option to define a feather edge before you make the selection. To define a feather edge for a floating selection, choose Feather from the Select menu and enter a value in the Feather Selection dialog box.

The following illustration shows a feather radius value applied to a selection that was then pasted into another image.



Selected area



Feather radius: 10 pixels

Using the Anti-aliased option

Use the Anti-aliased option when you want to make a subtle transition between the edges of a selection and the surrounding pixels. Anti-aliasing partially fills edge pixels so that they are semitransparent. The following illustration shows a selection pasted into another image with and without anti-aliasing.



Anti-aliased option on



Anti-aliased option off

EXTENDING AND REDUCING SELECTIONS

Adobe Photoshop provides many ways for you to extend and reduce your selections. You can extend the selection based on color similarity, or you can extend and reduce selections by adjusting the selection borders. You can also select more than one area of an image at a time, select the entire image, or select all the unselected parts of an image.

To add to a selection or make additional selections:

- 1 Make your first selection; then click any selection tool.
- 2 Hold down the Shift key, and select the area you want to add to the selection, or select an additional area.



Original selection



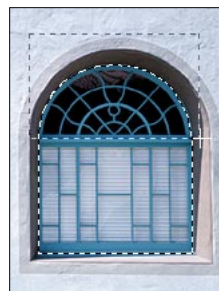
Extended selection

To subtract from a selection:

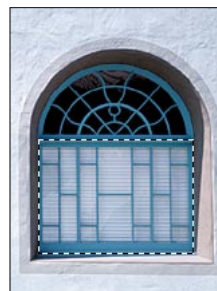
- 1 Make a selection; then click any selection tool.



Original selection



Area to be subtracted



Resulting selection

2 Hold down the Control key, and select the area you want to subtract from the selection.

Note: You can use the type tool as a selection tool to subtract from a floating selection. When you hold down the Control key and select the type tool, the lasso pointer appears as you move over the floating selection. The area you select with the type tool is removed from the floating selection and becomes part of the image. Using any other selection tool deletes the contents of the selection.

Selecting the intersection of selections

You can use any selection tool to select the intersection of two or more overlapping selection borders.

To select the intersection of two or more selection borders:

- 1** Click a selection tool.
 - 2** Hold down the Control and Shift keys, and drag to define the area of intersection.
- The intersecting area of the selection borders is selected.

Extending a selection based on color

The Grow and Similar commands allow you to expand a selection to include parts of the image that are similar in color to that of the current selection. These commands use the tolerance specified in the Magic Wand Options dialog box to define the color range of pixels to be included in the expanded selection.

To extend a color-based selection:

- Choose Grow from the Select menu to include pixels adjacent to the selection that fall within the specified tolerance range.
- Choose Similar from the Select menu to include pixels throughout the image, not just the ones next to the selection, that fall within the specified range.

Choose either command repeatedly to increase the selection in increments.

Note: You cannot use the Grow or Similar commands on bitmapped images.

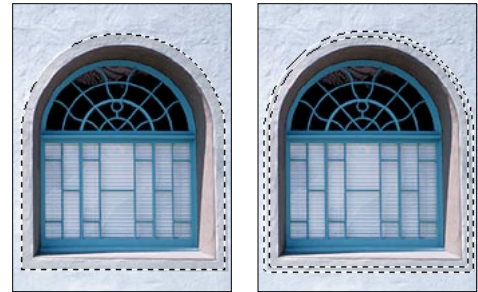
Selecting an area surrounding a selection border

You can define a selection border and then select an area of a specified width outlining the border, using the Border command. Note that the Border command works only on a selection. When the entire image is selected, the option is dimmed.

To select an area around a selection border:

- 1** Choose Border from the Select menu. The Border dialog box appears.
- 2** Enter the width in pixels for the border area; then click OK.

The original selection border is surrounded by two new borders. The area between the two selection borders is selected.



Original selection

Border: 5 pixels

Selecting an entire image

When you want to cut, copy, fill, or edit an entire image, use the All command in the Select menu. When you select All, the selection border surrounds the entire image.

Deselecting a selection

You can deselect all the currently selected areas by using the None command in the Select menu or by clicking outside a selected area on the image with any selection tool (except the magic wand tool).

Selecting the unselected parts of an image

Sometimes it is more convenient to select large parts of an image by first selecting the parts you don't want to modify, and then automatically selecting the remaining portions of the image.



Original selection

Inverse command applied

To select the part of the image that is not currently selected, choose Inverse from the Select menu. The remaining, unselected portion of the image is selected. The originally selected part of the image is deselected. Choose the command again to return to the original selection.

MOVING A SELECTION

You drag a selection to move it around in an image. When the status bar is open on your desktop, you can track the exact distance that you are moving a selection.

As you drag, an outline of the selection remains visible. Once you release the mouse button, the selection covers up the part of the image beneath it. If the selection is nonfloating, the area left by the selection is filled with the current background color.

If the selection is floating, dragging does not affect the original location of the selection. Use the composite controls to specify the effect on the underlying image when you paste the floating selection. See Chapter 10, “Pasting Selections,” for information about using composite controls.

To move a selection:

- 1 Click a selection tool; or, if you have another tool selected, hold down the Control key. The pointer changes to an arrowhead when you move it inside the selection.
- 2 Drag the selection to the position you want.

To constrain the movement to a 45-degree angle, hold down the Shift key as you drag. To move the selection in 1-pixel increments, use the arrow keys on the keyboard. The selection moves in the direction of the arrow.

Note: If multiple areas are selected, all the selected areas move as you drag.

Duplicating a selection as you move it

You can use the Alt key to make a copy of a selection as you drag it. You can drag the selection or press an arrow key to duplicate it.

To make a duplicate of a selection:

- 1 Click a selection tool.
- 2 Hold down the Alt key, and drag the duplicate to the position you want.

*Selected area**Duplicated selection*

To create multiple duplicates of a selection using the arrow keys:

- 1** Hold down the Alt key.
- 2** Press the arrow key that points in the direction in which you want to project the duplicates from the selection.

Each time you press the arrow key, a duplicate of the selection is created and offset by 1 pixel from the last duplicate.

MOVING AND HIDING SELECTION BORDERS

You can use the selection tools to edit the borders of selected areas. In addition to extending and reducing selection borders, you can move selection borders without affecting the image and hide selection borders from view.

Moving selection borders

After a selection is defined, you can move the selection border around the image without moving the pixels inside the selection border. This feature allows you to reposition a selection border on another part of the image.

To move a selection border:

- 1** Click a selection tool in the toolbox; then position the cursor inside the selection border. The cursor changes to the arrowhead.
- 2** Hold down the Control and Alt keys, and drag the selection border to the position you want.

To move the selection border in 1-pixel increments, hold down the Control and Alt keys, and use the arrow keys on the keyboard.

Hiding selection borders

If you find the flashing black-and-white selection border distracting, or if the border obscures changes that affect the edges of selections, use the Hide Edges command in the Select menu to temporarily hide the selection border. Any changes you specify, such as fills or color adjustments, are still applied to the current selection, but the border remains hidden.

The Hide Edges command affects the current selection only. The selection border reappears when you make another selection, and new selection borders appear around any additional selections.

To redisplay the selection border around the current selection, choose Show Edges from the Select menu.

USING MASKS

You create and use a mask when you want to isolate part of an image and apply color changes, filters, or other effects to just that section. You

can also use a mask to isolate an area that you want to protect from change. For example, you might create a mask that isolates a boat sailing on an ocean so that you could change the color and texture of the boat's cabin and sails. Conversely, you might use the mask to retain the original boat while you change the ocean and clouds surrounding it.

You can use any selection tool to create a mask, and you can use the painting and editing tools to modify a mask after it's created.

To make a mask, use Quick Mask mode to create and view a single mask for an image. Temporary masks are useful when you don't want to save the mask for later use.

Working in Quick Mask mode

Quick Mask mode lets you view a mask and the image simultaneously. A mask distinguishes two areas in an image: a protected area and an unprotected area. In Quick Mask mode, you can use color to indicate either one of these areas.

By default, Quick Mask mode colors all of the protected area in the image (everything except the selected area) using a red, 50-percent opaque overlay. Quick Mask options allow you to color the unprotected (or selected) area instead, and change the color and opacity of the overlay.

To create a quick mask:

1 Select the part of the image you want to change.

2 Click the Quick Mask mode control in the toolbox.



Selected area



Quick Mask mode applied

A red overlay (similar to a piece of rubylith) covers all of the image except the selected area. All red areas are protected from change.

3 Edit the mask; then click the Normal mode tool to return to your original image.

The unprotected area appears as a selection border.

4 Apply the changes to the image. The changes affect only the selected area.



Edited mask



Color changes applied

To change the Quick Mask options:

1 Double-click the Quick Mask mode control in the toolbox. The Mask Options dialog box appears.

2 Select what the colored area of the mask indicates:

- The Masked Areas option colors all of the image except the selection. All colored areas are protected from change.
- The Selected Areas option colors only the selection. All colored areas are affected by changes.

Note: *Alt+click the Quick Mask mode control to automatically switch between the Masked Areas and Selected Areas options.*

- 3 Click the color swatch to display the color picker; then choose a mask color.
- 4 Enter an Opacity value. Values can range from 0 to 100 percent. Use this setting to reveal more or less of the underlying image; the opacity of the mask is not affected.

To edit a quick mask:

- 1 Make a selection, and view the image in Quick Mask mode.
- 2 Select a tool from the toolbox, and paint on the mask.

The effect of the tool on the mask depends on the tool settings. When you switch to Quick Mask mode, the foreground and background colors return to their default black and white settings. Painting with black (which paints in the image using the mask color) adds to the mask. Painting with white erases the mask and reveals the underlying image. Painting with gray or another color creates a partial mask.

CHAPTER 8: USING THE FILL TOOLS

This chapter describes how to fill selections using the paint bucket tool, the gradient tool, and the Fill command. The paint bucket tool and the Fill command fill a selection with the current foreground color or a pattern. The gradient tool creates a gradient fill or gradual transition from the foreground color to the background color. The current settings in the Brushes palette control the opacity and painting mode used for the paint bucket and gradient tools.

The default foreground color is black, and the default background color is white. See Chapter 9, “Selecting Colors,” for information on choosing foreground and background colors.

To fill a selection using the foreground and background colors:

- Press Shift+Backspace to fill a selection with the foreground color.
- Press Shift+Delete to fill a nonfloating selection with the background color. You cannot use this shortcut with floating selections because they are deleted when you press the Delete key.

USING THE PAINT BUCKET TOOL

The paint bucket tool uses the foreground color to fill adjacent pixels that are similar in color value to the pixel you click. The paint bucket tool options allow you to specify how similar the colors of pixels must be to be filled (tolerance) when you fill a selection with a pattern and create smooth edges for the filled selection.

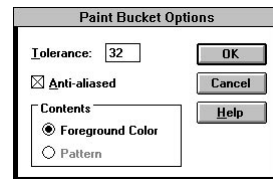
To use the paint bucket tool:

- 1 Click the paint bucket tool in the toolbox.
- 2 Click the part of the image whose color you want to change.

All adjacent pixels within the tolerance specified in the Paint Bucket Options dialog box are filled with the foreground color.

To change the paint bucket options:

- 1 Double-click the paint bucket tool in the toolbox. The Paint Bucket Options dialog box appears.



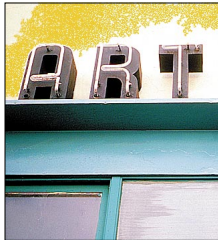
- 2 Select the options for the fill:

- The Tolerance option defines how similar a pixel must be to be filled. Values can range from 0 to 255. A low tolerance fills pixels that have color values very similar to that of the pixel you click. A high tolerance fills pixels within a broader range of colors.
- The Anti-aliased option smooths the edges of the filled selection.

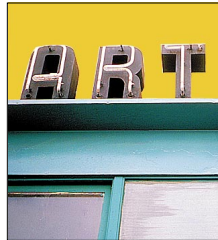
The following illustrations show examples of the paint bucket tool options:



Selected area



Tolerance value: 15



Tolerance value: 150



*Tolerance value: 32;
Anti-aliased option off*



*Tolerance value: 32;
Anti-aliased option on*

USING THE GRADIENT TOOL

The gradient tool lets you create a gradient fill. A gradient fill displays a gradual transition from the foreground color to the background color. If you haven't selected a specific part of the image, the gradient tool applies the fill to the entire image.

Options for the gradient fill include a linear or radial direction, midpoint skew, an image color or spectrum-based transition of colors, and an offset value for a radial fill.

Creating a gradient fill

A gradient fill can be applied either as a radial or linear fill. A linear fill creates a gradient from one point to another in a straight line. A radial fill creates a gradient from the center point outward in all directions.

When you create a gradient fill, the gradient begins at the point where you start to drag and ends at the point where you release the mouse button. The portion of the image or selection before the starting point is filled with solid foreground color; the portion after the ending point is filled with solid background color.

If you don't select options for the gradient tool, Adobe Photoshop uses the default settings for the gradient fill: a linear fill with 100-percent opacity and 50-percent midpoint skew using the same color space as the image (for example, a gradient fill in an RGB image uses the RGB color space).

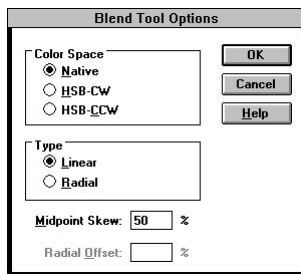
To create a linear or radial gradient fill:

1 Select the part of the image you want to fill.



Selected area

2 Double-click the gradient tool in the toolbox. The Gradient Tool Options dialog box appears.



3 Click either Linear or Radial, and then specify a style, midpoint skew, and radial offset (for radial gradient fills). Choose an opacity and a painting mode for the gradient fill from the Brushes palette. These options are discussed in the following sections.

4 Click OK.

5 Position the gradient pointer where you want the fill to start, and drag to define the length of the gradient.

- For a linear fill, drag a line indicating the starting point and direction for the gradient. To constrain the line to a 45-degree angle, hold down the Shift key as you drag.

- For a radial fill, drag to indicate the center point and radius for the gradient.

6 Release the mouse button where you want the gradient fill to end.

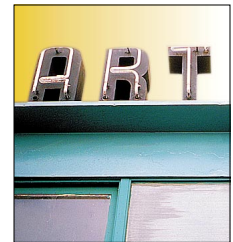
If the line you drag falls completely within the selected area, solid background and foreground colors fill the selection on either side of the gradient.



Foreground and background colors in toolbox



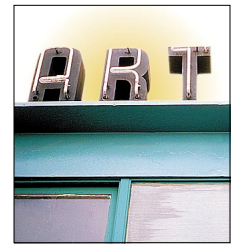
Gradient definition line



Linear fill



Gradient definition line

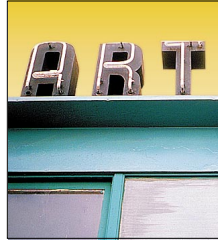


Radial fill

If the line you drag extends outside the selected area, only the part of the gradient that falls within the selection appears.



Gradient definition line extended beyond selection



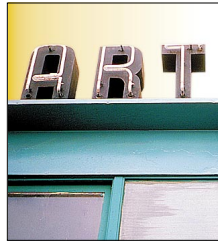
Resulting gradient fill

Specifying the midpoint of a gradient fill

In the Gradient Tool Options dialog box, you can define the midpoint (or “skew”) of the gradient fill, which is the point at which the color is an even mix of the foreground and background colors. For example, enter a value of 25 percent to make the midpoint appear near the beginning of the fill (one-quarter of the way across the fill).



Gradient definition line



Midpoint skew value: 25%

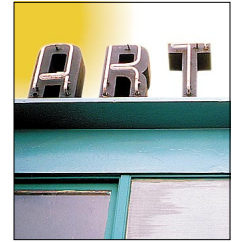
Specifying a radial offset value

For a radial fill, you can also specify an offset value in the Gradient Tool Options dialog box. The offset value defines the point at which the radial fill displays the foreground color without any gradations. You enter this value as a percentage of the total distance from the starting point to the ending point of the line you drag when you create the gradient fill. For example, a radial

offset value of 50 percent makes the foreground color appear as a solid color without gradations halfway between the starting and ending points of the fill.



Gradient definition line



Radial offset value: 50%

Selecting a Style option

Select one of the three Style options in the Gradient Tool Options dialog box to define how the fill makes the transition from the foreground color to the background color:

- The Normal option makes the transition using the intermediate gray levels between the two colors in the same color space as the image.
- The Clockwise Spectrum option makes the transition using the intermediate hues that lie between the two colors, when moving clockwise around the color wheel.
- The Counterclockwise Spectrum option makes the transition using the intermediate hues that lie between the two colors as you move counterclockwise around the color wheel.

Specifying the opacity of a gradient fill

The opacity of the gradient fill indicates how transparent the pixels in the fill are. To change the opacity of the gradient fill, select the gradient tool and drag the slider in the Brushes palette. To make the gradient fill more transparent, use a low percentage value. A setting of 100 percent makes the gradient fill fully opaque.

Specifying a mode

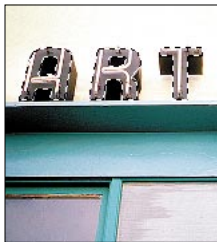
The painting mode determines how the gradient fill affects the underlying pixels in the selection. To choose a mode, select the gradient tool and choose an option from the Mode control menu in the Brushes palette. For more information and examples of using each mode, see “Selecting a Painting or Editing Mode” in Chapter 5.

FILLING AND STROKING A SELECTION

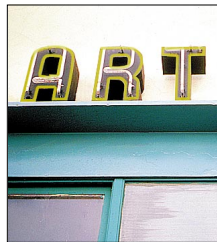
The Fill command in the Edit menu allows you to fill a selection with the current foreground color. The Stroke command allows you to fill a border around the selection. For both commands, you can specify the opacity of the fill and the painting mode to be used.

To fill or stroke a selection:

- 1 Select the part of the image you want to fill.
- 2 Choose Fill or Stroke from the Edit menu to fill the selection. A dialog box appears.
- 3 Select Fill or Stroke options:
 - If you’re using the Stroke command, specify the width and location of the border. Values for the width can range from 1 to 16 pixels.

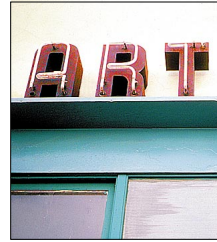


Selected area

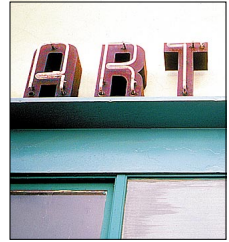


*Stroked: 4 pixels wide;
Inside location; opacity:
75%; Normal mode*

- Specify the opacity. To make the fill or stroke more transparent, use a low percentage value. A setting of 100 percent makes the fill or stroke fully opaque.



*Opacity: 100%;
Saturation mode*

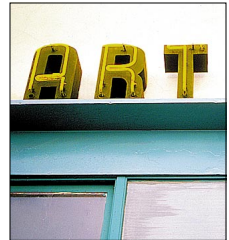


*Opacity: 50%;
Saturation mode*

- Select a mode for the fill or stroke. You can choose from ten painting modes. For more information and examples of using each mode, see “Selecting a Painting or Editing Mode” in Chapter 5.



Selected area



*Filled: foreground color;
opacity: 100%; Darken mode*

CHAPTER 9: SELECTING COLORS

Adobe Photoshop uses the foreground color to paint, to fill selections, and as the beginning color for gradient fills. The background color is used when you erase, when you move a nonfloating selection, and as the ending color for gradient fills.

You can select the foreground and background colors in several ways:

- Use the eyedropper tool to sample any existing color in an open document.
- Use the Colors palette to choose from a predefined set of colors or to create new colors.
- Use the Adobe Photoshop color picker or the Windows Color Picker to select colors from a color spectrum or to specify a mixture of colors from the RGB, or HSB color model.
- The default background color is white and the default foreground color is black. To return to the default settings, click the default colors icon in the toolbox (the small rectangles at the lower left corner of the color selection boxes).

USING THE EYEDROPPER TOOL

The eyedropper tool lets you sample color from an area of an image to designate a new background or foreground color. You can sample from the current image or open another image. The eyedropper tool also lets you select colors from the Colors palette.

Using the eyedropper tool, you can determine the color values for any pixel in an image. When you pass the eyedropper over a pixel, the Info palette displays the values for that pixel. This information is useful when you're making color corrections based on color values, such as when you're using the Adjust commands in the Image

menu or the Composite Controls command in the Edit menu. By default, the eyedropper tool reads the color value of the pixel underneath it. You can modify the sample size the eyedropper tool reads.

To select the current foreground or background color with the eyedropper tool:

- 1** Click the eyedropper tool.
- 2** To select the foreground color from the image, click the color you want. To select the background color, hold down the Alt key as you click.

The new colors appear in the color selection boxes in the toolbox.

***Note:** To access the eyedropper tool while you're using any painting tool, hold down the Alt key. The pointer turns into the eyedropper. The color you click becomes the new foreground color.*

To change the sample size of the eyedropper:

- 1** Double-click the eyedropper tool. The Eyedropper Options dialog box appears.
- 2** Select the option you want from the Sample Size drop-down list:
 - The Point Sample option reads the precise value of the pixel you click.
 - The 3 by 3 Average option reads the average value of a 3-pixel by 3-pixel area.
 - The 5 by 5 Average option reads the average value of a 5-pixel by 5-pixel area.

To display color information about a pixel in the Info palette:

- 1** Select the eyedropper tool.
- 2** Position the tip of the eyedropper tool on the pixel whose color values you want to display.

Note: To use this feature, you must have the *Point Sample* option chosen in the *Sample Size* drop-down list in the *Eyedropper Options* dialog box.

The Info palette can display color values in several color models. For more information on setting the Info palette options, see “Using the Info Palette” in Chapter 1.

USING THE COLORS PALETTE

The Colors palette lets you select the foreground and background colors from the Grayscale, RGB (red, green, and blue), and HSB (hue, saturation, and brightness) color models. The palette also includes a scratch pad for mixing colors to create your own colors.

See “Color Modes” in Chapter 1 for a description of the Grayscale and RGB color modes.

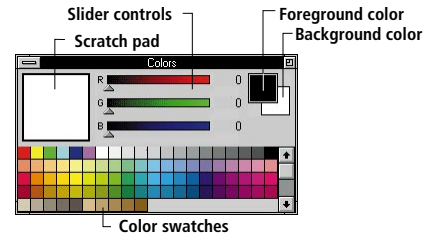
To display information about a pixel in the Colors palette:

- 1 Choose Show Colors from the Window menu. The Colors palette appears.
- 2 Select the eyedropper tool in the toolbox.
- 3 Click the pixel whose color values you want to display.

The pixel you click becomes the new foreground color or background color (depending on which color selection box is outlined in the Colors palette). The pixel values appear in the Colors palette and in the Info palette.

To select a foreground or background color from the Colors palette:

- 1 Choose Show Colors from the Window menu. The Colors palette appears.

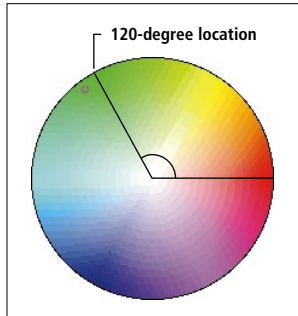


- 2 Click the foreground or background color selection box to indicate the color you want to change (the currently selected box is outlined).

- 3 Choose the color model you want to use from the Colors palette Control menu:

- Grayscale lets you choose a color from 0- to 100-percent gray.
- RGB lets you choose a color with red, green, or blue values ranging from 0 to 255.
- HSB lets you choose a color with a hue from 0 degrees to 360 degrees, and saturation and brightness values from 0 to 100 percent. The angle for hue is defined as an angle relative to the pure red color on a color wheel, where red is considered 0 degrees and is located at the 3 o'clock on the wheel; violet is 90 degrees clockwise from red; cyan is 180 degrees clockwise from red; and green is 240 degrees clockwise or 120 degrees counterclockwise from red.

For example, if you set the saturation and brightness levels to 100 percent and drag the hue slider until green is displayed, the hue value is 120 degrees, because green is 120 degrees counterclockwise from red on the color wheel.



- 4 Click a color swatch or drag the sliders to specify the new background or foreground color.

The colors you click or set with the sliders appear in the foreground or background color selection boxes in the Colors palette and in the toolbox.

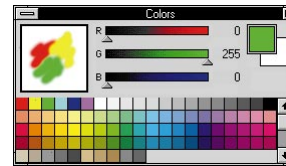
Using the scratch pad to mix colors

The scratch pad on the left side of the Colors palette lets you mix colors and select them as the foreground or background color. You can use all the painting tools to paint on the scratch pad. You can also use the zoom and hand tools to change your view within the scratch pad area.

The scratch pad is also a convenient place to define a custom brush shape (see Chapter 5, “Using the Painting and Editing Tool Options”). Similarly, you can use custom brush shapes within the scratch pad.

To use the scratch pad to mix a foreground or background color:

- 1 Click a painting tool in the toolbox. The tools paint by using their current settings on the Brushes palette.
- 2 Select a color from the color swatches, use the sliders, or sample a color from the image to specify a beginning color (the color appears in the foreground color selection box).
- 3 Paint the color inside the scratch pad area. Continue to select colors and paint until you have the color you want.



To mix colors, apply two different overlapping colors (be sure to set the opacity on the Brushes palette to less than 100 percent). You can also paint two colors on the scratch pad and use the smudge tool to mix them. Use the eraser tool to erase in the scratch pad.

- 4 Click the foreground or background color selection box to indicate the color you want to change.
- 5 Select the eyedropper; then click the color in the scratch pad.

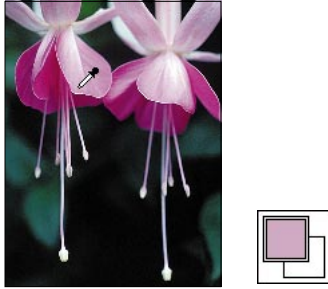
ADDING OR DELETING COLORS IN THE COLORS PALETTE

You can add new colors to the Colors palette. The Colors palette contains blank swatches for new colors, but new colors can also be placed in any of the color swatches. You can also delete colors from the Colors palette.

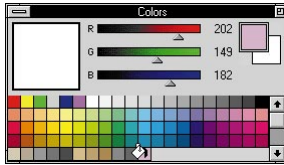
To add a color to the Colors palette:

1 Use the eyedropper tool or the color picker to select the color you want to add.

The color appears in the color selection box in the Colors palette.



2 Move the pointer over an empty space in the bottom row of the palette (it turns into the paint bucket tool), and click to add the color.

**To replace or insert a color in the Colors palette:**

Hold down the Alt key (the pointer turns into the paint bucket tool), and click to replace an existing swatch. Hold down the Shift and Alt keys, and click to insert a new color.

To delete a color from the Colors palette:

Hold down the Control key to turn the pointer into the scissors; then click a swatch. The remaining swatches move to the left to eliminate the emptied square in the swatch row.

SAVING, LOADING, AND APPENDING COLORS PALETTES

The Colors palette can hold as many colors as you want. However, to make the palette more manageable and to group related or special colors, you might want to create your own Colors palettes.

To save and load Colors palettes, use the commands in the Colors palette control menu. The Save Colors command saves the current palette in a file (*.ACO extension). The Load Colors command replaces the contents of the Colors palette with the stored palette. The Append Colors command adds the colors stored in a saved palette to the current Colors palette.

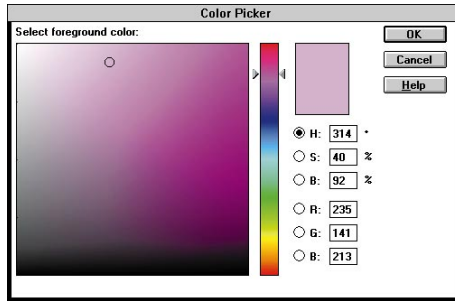
When you exit Adobe Photoshop, the current Colors palette is saved in the Preferences file (-PHOTOSHP.PSP), which is located in the Windows directory.

USING THE ADOBE PHOTOSHOP COLOR PICKER

The Adobe Photoshop color picker allows you to select the foreground or background color from a color spectrum or to numerically define color components for a color.

To use the Adobe Photoshop color picker, you must have the Photoshop option selected in the Color Picker drop-down list in the General Preferences dialog box. To open this dialog box, choose Preferences from the File menu and General from the submenu.

To display the color picker, click the foreground or background color selection box in the toolbox, or click the outlined color selection box in the Colors palette.



Specifying a color using the color field and color slider

With the HSB and RGB color models, you can use the color field and the color slider in the Color Picker dialog box to select a color. The color slider displays the range of color levels available for the selected color component (for example R, G, or B). The color field displays the range for the remaining two components—one on the horizontal axis and one on the vertical axis.

For example, if you click the red component (R) using the RGB color model, the color slider displays the range of color for red (0 is at the bottom of the slider and 255 is at the top). The color field displays the values for blue along its horizontal axis and the values for green along its vertical axis. To adjust the color, you can drag the white triangles along the slider, or you can click inside the color field. When you click in the color field, a circular marker indicates the color's position in the field.

As you adjust the color using the color field and color slider, the numerical values change to reflect the new color. The color rectangle to the

right of the color slider displays the new color in the top section of the rectangle. The original color appears in the bottom of the rectangle.

Specifying a color using numerical values

In the Adobe Photoshop color picker, you can select a color in any of the two color models by specifying numerical values for each color component. You specify the values as follows:

- In the RGB color model (this is the model your monitor uses), specify component values from 0 to 255, where 0 is black and 255 is the pure color.
- In the HSB color model, specify saturation and brightness as percentages; specify hue as an angle from +/- 180 degrees that corresponds to a location on the color wheel. (Pure red on a color wheel is defined as the 0-degree point, located at 3 o'clock on the wheel; yellow is considered +60, at 60 degrees counterclockwise from red; green is +120, at 120 degrees counterclockwise from red; cyan is 180, opposite red on the color wheel; and so on.)

USING THE WINDOWS COLOR PICKER

You can also use the Windows Color Picker to change the foreground or background color. The Windows Color Picker lets you select colors from an array of basic colors or define up to 16 custom colors based on the HSB or the RGB color models. Unlike the Adobe Photoshop color picker, however, the Windows Color Picker does not alert you to nonprintable colors.

This section briefly describes using the Windows Color Picker. For a detailed description, see your Windows documentation.

To use the Windows Color Picker:

- 1** Choose Preferences from the File menu, and then choose General from the submenu. The General Preferences dialog box appears.
- 2** Choose Windows from the Color Picker menu, and click OK.
- 3** Click the foreground or background color selection box in the toolbox. The Windows Color Picker dialog box appears.
- 4** In the Basic Colors palette, click the color you want.
- 5** To specify a custom color, click the Define Custom Colors button to bring up the Custom Color Selector. This dialog box functions similarly to the Adobe Photoshop Color Picker. Specify a color by using the color field and color slider, or by entering numerical values for each color component.

6 The new color is displayed on the left side of the Color/Solid box. The right side of this box displays the solid color closest to the color you have specified (you can choose the displayed solid color by double-clicking the right side of the box).

7 When you are satisfied with the color, click the Add to Custom Colors button to add it to the Custom Colors Palette.

To choose a custom color from the Windows Color Picker, click the color you want.

CHAPTER 10: PASTING SELECTIONS

Adobe Photoshop contains many tools and features that allow you to edit an image. A selection in an image can be cut, copied, pasted, cropped, resized, or deleted. You can change the perspective of an image or transform it by skewing, distorting, stretching, rotating, and flipping. This chapter describes how to edit an image by cutting, copying, and pasting selections. See Chapter 7, “Making Selections,” for information about using the Adobe Photoshop selection tools.

FLOATING SELECTIONS

An important concept in image editing is the difference between a *floating* and a *nonfloating* selection. When you select part of an image using a selection tool, that selection is nonfloating. That is, when you move or delete the selection, the pixels in the underlying image are affected by the change.

A floating selection is a selection that you’ve moved or pasted into an image, but have not yet deselected. Newly created text also appears as a floating selection. The selection is “floating” because it sits on a plane above the underlying image. You can paint and edit floating selections. The pixels in the floating selection don’t replace the pixels in the underlying image until you deselect the floating selection. If you cut or delete a floating selection, only the pixels in the floating selection are affected; the underlying image does not change.

To float or “defloat” a selection:

Choose Float or Defloat from the Select menu.

You can also use this command to find out the status of the current selection. If Float appears in the menu, the selection is nonfloating. If Defloat appears, the selection is floating.

DELETING SELECTIONS

To delete a selection, use the Clear command in the Edit menu or press Backspace. A floating selection is deleted and the underlying image remains intact. A nonfloating selection disappears and is replaced by the current background color.

CUTTING SELECTIONS

When you use the Cut command in the Edit menu, Adobe Photoshop removes the current selection from the image and places it on the Clipboard. A floating selection is deleted, and the underlying image remains intact. A nonfloating selection disappears and is replaced by the current background color.

COPYING SELECTIONS

The Copy command in the Edit menu creates a copy of the current selection and places it on the Clipboard. You can paste the copy elsewhere in the image or into other Adobe Photoshop documents.

Copying selections between applications

A cut or copied selection remains on the Clipboard until you copy or cut another selection. When you quit Adobe Photoshop, or switch to another application, the contents of the Clipboard are converted to bitmap format. This conversion lets you paste the Clipboard’s contents into a document created in another application.

To save time, you can disable placing bitmaps on the Clipboard if you don’t intend to paste the Clipboard contents. The automatic conversion does not affect the pasting of selections between Adobe Photoshop documents.

Adobe Photoshop also allows you to paste PostScript artwork copied to the Clipboard from applications such as Adobe Illustrator (version 4.0 and higher) and Adobe Type Align™. The copied artwork is *rasterized* as it is pasted; that is, the artwork is converted from the mathematically defined lines and curves of the vector images drawn in Adobe Illustrator to the points (or pixels) displayed on a grid in Adobe Photoshop. (Placed images are also rasterized when you open them in Adobe Photoshop.)

To change the Clipboard preferences:

- 1 Choose Preferences from the File menu and General from the submenu. The General Preferences dialog box appears.
- 2 Choose one of two options:
 - To save the contents of the Clipboard when you exit Adobe Photoshop, select the Export Clipboard option.
 - To delete the contents of the Clipboard when you switch applications or leave the program, deselect the Export Clipboard option.

PASTING SELECTIONS

Adobe Photoshop offers a range of pasting options that control how the pasted selection appears in the image. You use the Paste command in the Edit menu to paste a selection into another part of an image or into another document. When you choose the Paste command,

the last selection you cut or copied appears in the center of the active window and becomes the current selection. If there's already a selection in the image, the pasted selection appears on top of it. Pasted selections are floating until they're deselected.

Pasting into another selection

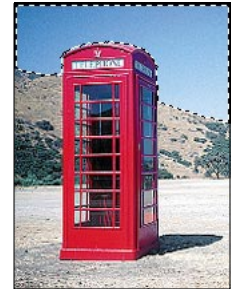
You can paste a cut or copied selection (referred to here as the *source selection*) inside another selection in the image (referred to here as the *target selection*).

To paste one selection into another:

- 1 Cut or copy the part of the image you want to use as the source selection.
- 2 Use a selection tool to select the part of the image you want to paste the selection into.



Source selection



Target selection

- 3 Choose Paste Into from the Edit menu.

The source selection appears as the current selection and is masked by the target selection.

4 Drag the source selection until the part you want to see is in the target selection; then deselect the selection.



Source selection pasted into target selection



Resulting image

You can use the Paste Into command to replace a selection that was cut or to place a copied selection exactly on top of itself.

Pasting behind another selection

Instead of pasting part of an image inside the target selection, you might want to paste it behind a selected area, so that the target selection covers part of the source selection. For example, you might use this command to place a background behind a set of selected objects.

To paste one image behind another:

- 1** Cut or copy the part of the image you want to use as the source selection.
- 2** Select the part of the image behind which you want to paste the source selection.
- 3** Choose Paste Behind from the Edit menu. The source selection appears as the current selection behind the target selection.

4 Drag the source selection to reveal the part of it that you want to display; then deselect the selection.



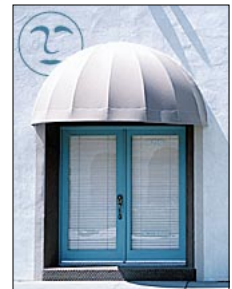
Source selection



Target selection



Source selection pasted behind target selection



Selection repositioned

USING COMPOSITE CONTROLS

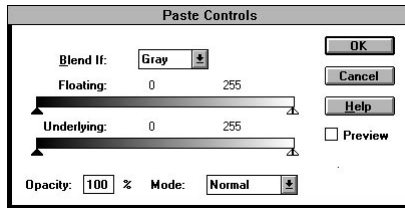
The Composite Controls command in the Edit menu determines how the floating selection is composited (or blended) with the underlying image. By default, every pixel in the floating selection is visible when you paste the selection. Using the Composite Controls command, you can specify which pixels in a floating selection will replace the pixels in the underlying image. You can also make a floating selection opaque or transparent and blend the selection using a specific painting mode.

To select composite options for a floating selection:

1 Paste a selection into an image, or use the Float command to make a nonfloating selection a floating selection.

2 Choose Composite Controls from the Edit menu. The Composite Controls dialog box appears.

Note: If you hold down the Alt key as you choose a Paste command, the Composite Controls dialog box appears automatically.



3 Select the Preview option to see the effect of your adjustments as you make them.

4 Select the ranges, opacity, and mode for the paste operation. These options are described in the following sections.

5 When you have the effect you want, click OK. The options apply only to the current selection. Once a selection is deselected, the options in the Composite Controls dialog box revert to their default settings.

Specifying a color range for compositing

The sliders in the Composite Controls dialog box allow you to define which pixels are composited by indicating a range of color values for the replacement pixels. You can specify these

values based on the floating selection or based on the underlying image. Color values are measured on a scale from 0 (black) to 255 (white).

If the color values of the pixels in the floating selection are inside the range specified on the Floating slider, they are composited into the image. For example, if you set the Floating slider to 0 and 235, the pixels in the floating selection with a value of 235 to 255 are not composited and do not appear in the final image. Excluding pixels in the floating selection from compositing is a good way to eliminate a white background when you paste the floating selection.

If the color values of the pixels in the underlying image are outside the color range specified by the Underlying slider, they are protected from compositing. For example, if you set the Underlying slider to 19 and 255, pixels in the underlying image with a value between 0 and 19 appear in the final image. The pixels in the floating selection that overlay pixels with a value of 0 to 19 are not composited.

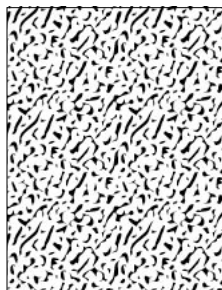
To define a color range for the compositing operation:

1 Choose an option from the Blend If dropdown list in the Composite Controls dialog box:

- The Gray option sets the range of values for all the pixels in the image.
- The individual colors set the range for red, green, and blue values for RGB images.

2 Drag the Floating or Underlying slider to set the color range. Drag the white triangle to set the high value of the range; drag the black triangle to set the low value of the range.

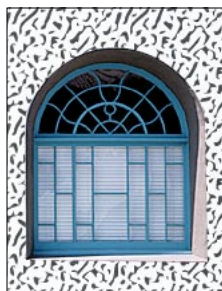
Note: To create a smooth transition between composited and noncomposited areas, you can define a range of pixels that are only partially composited. If you hold down the Alt key as you drag a triangle, half of the triangle moves in the direction you drag. Two values appear above the slider. The pixels between these two values appear with only part of their original color.



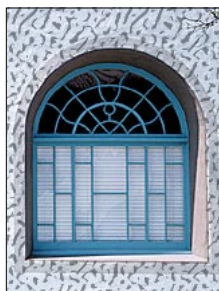
Source image



Target selection



Source image pasted into target selection



Floating selection slider (white) set to 175

Using painting modes when pasting

Choose an option from the Mode drop-down list in the Composite Controls dialog box to determine which pixels in the floating selection will replace the underlying pixels, based on a comparison of the pixels. For example, Normal mode blends all the pixels in the floating selection, Darken mode blends only pixels that are darker than the pixels being replaced in the image, and Lighten mode blends only pixels that are lighter than those being replaced.

The first ten modes in the Mode drop-down list are the same as the painting modes found on the Brushes palette. See “Selecting a Painting or Editing Mode” in Chapter 5 for more information and examples of using these modes.

Two additional modes are used for compositing soft-edged images:

- Black Matte mode removes the remnants (ghosting) of black around the edges of images created on black backgrounds.
- White Matte mode eliminates the remnants (ghosting) of white around the edges of images created on white backgrounds.

Controlling the opacity of a floating selection

Using the Opacity option in the Composite Controls dialog box, you can control how much the underlying image shows through a floating selection. Specify a high percentage to make the floating selection opaque. Specify a low percentage to make the floating selection transparent.

Note: If a selection tool is active, you can also select a painting mode or control the opacity of a floating selection using the slider in the Brushes palette.



Opacity: 100%



Opacity: 50%

CHAPTER 11: MANIPULATING IMAGES



Adobe Photoshop lets you manipulate selections to create special effects and to accurately position parts of an image. You can flip and rotate a selection, and apply effects such as skew and perspective. To manipulate selections, you use the commands in the Image menu.

To calculate the color values of pixels that are added or deleted during manipulations, Adobe Photoshop uses the *interpolation* method selected in the General Preferences dialog box. The interpolation method has a direct effect on the speed and quality of the manipulation. The default Bicubic interpolation is the slowest method, but it yields the best results. For more information on selecting an interpolation method, see Chapter 12, “Resizing Images.”

Unless noted, all the manipulations start from a point of origin that you specify. Adobe Photoshop applies the chosen manipulation or special effect to the current selection. If nothing is selected, the effect is applied to the entire image.

PREVIEWING AND APPLYING EFFECTS

When you scale, skew, distort, apply perspective, or rotate an image using the Free option, Adobe Photoshop displays a preview of the effect. To apply the effect, move the pointer inside the selection (the pointer turns into a gavel), and

click. If you don't want to apply the effect, move the pointer anywhere outside the selection (the pointer turns into the No symbol), and click.

ROTATING A SELECTION

The Rotate command lets you make gradual or dramatic adjustments to all or part of an image.

To rotate a selection:

- 1 Select the part of the image you want to rotate.
- 2 Choose Rotate from the Image menu and a command from the submenu:
 - The 180°, 90° CW (clockwise), and 90° CCW (counterclockwise) options turn the image to the specified angle.
 - The Arbitrary option specifies an angle for the rotation. When you choose this option, the Arbitrary Rotate dialog box appears so that you can enter the angle. This value can range from -359.99 to +359.99 degrees. You must also indicate a clockwise or counterclockwise direction for the arbitrary rotation.
 - The Free option allows you to rotate the selection to a new orientation. When you choose this option, four handles appear around the selection. Drag one of the handles to change the selection's position.

If you're rotating by using a degree option or the Arbitrary option, the image is rotated. If you're using the Free option, a preview of the rotation appears. Click inside the selection to apply the free rotation.



Selected area



Selection rotated using Free option

Rotating an entire image

It's best not to make any selection when you want to rotate an entire image (and the document size is the size of the actual image). If you select the entire image using the All command in the Select menu and apply an arbitrary or 90-degree rotation, the resulting image is cropped. If there is no selection, both the image and the document are rotated and there is no cropping. When necessary, Adobe Photoshop makes the document area larger to accommodate the rotated image.

FLIPPING A SELECTION

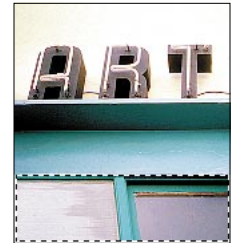
You can flip a selection horizontally or vertically.

To flip a selection:

- 1 Select the part of the image you want to flip.
- 2 Choose Flip from the Image menu and a direction from the submenu:
 - The Horizontal option flips the selection horizontally, along the vertical axis.



Selected area

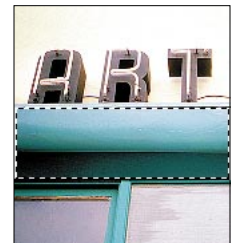


Selection flipped horizontally

- The Vertical option flips the selection vertically, along the horizontal axis.



Selected area



Selection flipped vertically

USING SPECIAL EFFECTS

You can create special effects by stretching, skewing, and distorting an image, and creating a sense of perspective. Special effects are controlled by the Effects commands in the Image menu. You manipulate the selection by dragging the handles around the selection.

Each time you drag a handle and pause, Adobe Photoshop shows a preview of the effect, allowing you to make incremental adjustments until you achieve the desired effect. The effect is not applied until you click inside the selection.

Scaling a selection

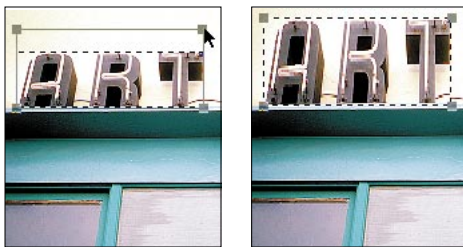
The Scale command lets you extend or shrink the length or width of a selection. You can also constrain the selection's height-to-width ratio to prevent distortion.

To scale a selection:

- 1 Select the part of the image you want to scale.
- 2 Choose Effects from the Image menu and Scale from the submenu. Four handles appear around the selection.
- 3 Drag a handle to alter the selection. A preview of the scaled image appears.

To maintain the selection's height-to-width ratio and prevent the image from becoming distorted, hold down the Shift key as you drag.

- 4 Click anywhere inside the selection to apply the scaling, or outside the selection to cancel the scaling.



Skewing a selection

Skewing slants a selection vertically or horizontally along the edge of a selection. To slant a selection in one direction, you use the Skew command. You can also use the Skew command to create a perspective effect.

To skew a selection:

- 1 Select the part of the image you want to skew.
- 2 Choose Effects from the Image menu and Skew from the submenu.
- 3 Drag a handle in the direction you want the selection to slant. A preview of the skewed selection appears.



If you skew an object, release the mouse button, and then drag another handle; the second handle moves independently. This technique lets you create a perspective effect. To retain the skewing effect, hold down the Shift key as you drag.

- 4 Click inside the selection to apply the skewing, or outside the selection to cancel the skewing.

Creating perspective

The Perspective command allows you to create a three-dimensional effect by moving two handles in opposite directions at the same time.

To use the Perspective command:

- 1 Select the part of the image you want to appear in perspective.
- 2 Choose Effects from the Image menu and Perspective from the submenu.
- 3 Drag a handle up or down, and inward or outward, depending on the effect you want to create. A preview of the altered selection appears.

- 4** Click inside the selection to apply the perspective, or outside the selection to cancel the perspective change.



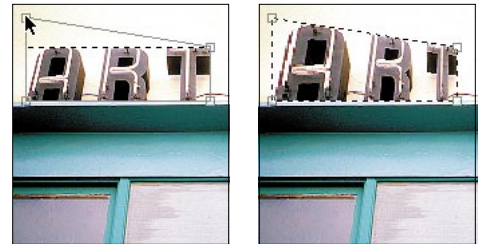
Note: To create a perspective effect with a vanishing point at an angle other than 90 degrees, use the *Distort* command.

Distorting a selection

The *Distort* command allows you to drag each handle independently.

To distort a selection:

- 1** Select the part of the image you want to distort.
- 2** Choose **Effects** from the **Image** menu and **Distort** from the submenu.
- 3** Drag each handle to indicate the distorted shape you want. A preview of the distorted selection appears.
- 4** Click anywhere inside the selection to apply the distortion, or outside the selection to cancel the distortion.



CHAPTER 12: RESIZING IMAGES

This chapter explains how to resize and resample images using the cropping features, the Image Size command, and the Canvas Size command. This chapter also discusses the process of interpolation used to determine color values for pixels that are added or deleted by resizing or manipulations.

The concept of resolution is central to understanding the process of resizing and resampling. For an explanation of the four types of resolution used in Adobe Photoshop (bit resolution, screen resolution, device resolution, and image resolution), see Chapter 1, “Basic Concepts.”

IMAGE SIZE AND RESOLUTION

Image resolution represents the density of information within a given file and is expressed in pixels per inch (ppi). The image resolution and the dimensions of the image determine the file size of the document, which is expressed in kilobytes (K) or megabytes (MB).

The resolution of an image is a critical factor in determining the quality of printed output. If you are working with scanned images, you should scan your images in the highest resolution that can be used by your printer. If the resolution is too low, the PostScript language uses a single pixel's color values to create more than one halftone dot. This results in *pixelization*, or very coarse-looking output. If the resolution is too high, your file contains more information than your printer needs, and printing time is increased.

Adjusting image resolution

Changing an image's resolution is called *resampling*. If you need to change the resolution after an image has been scanned, you can use the

Image Size command in the Image menu. See Chapter 4, “Scanning, Importing, and Exporting Images,” for information on determining the best resolution for printed output. If you are unsure of the appropriate resolution for a resized image, you can have Adobe Photoshop suggest a resolution.

When altering the resolution, keep in mind that the size of a file is proportional to the square of its resolution. Increasing an image's resolution without decreasing its dimensions proportionately, or increasing an image's dimensions without decreasing its resolution proportionately, results in a larger file size. For example, the file for an image with a resolution of 200 pixels per inch is four times the size of the file for the same image with the same dimensions and a resolution of 100 pixels per inch. It's best to keep your files as small as possible, since larger files take up more disk space and require longer processing time.

When you *resample down* (or decrease the resolution), the program deletes information from the image to achieve the desired resolution. When you *resample up* (or increase the resolution), Adobe Photoshop creates new pixel information based on the existing color values.

Important: *Increasing the image resolution does not usually produce a higher quality image, because Adobe Photoshop must create new pixels to achieve the higher resolution. The added pixels can make the image appear blurry or out of focus.*

Resampling down and then resampling up to the original resolution causes a deterioration in the quality of the image. This is because once an image is resampled down, the original color information is lost as pixels are deleted. During

the resampling up process, Adobe Photoshop attempts to reconstruct the original file on the basis of the current color information. However, the new image is only an approximation and will not be as sharp as the original.

Selecting an interpolation method

When you increase or decrease the file size of an image (by resampling, rotating an image at an arbitrary angle, or using special effects such as skew or perspective), new color values are created for the added pixels. Adobe Photoshop determines the color of added or deleted pixels using the process of interpolation.

To select an interpolation method:

- 1** Choose Preferences from the File menu and General from the submenu. The General Preferences dialog box appears.
- 2** Select the option you want from the Interpolation drop-down list:
 - The Bicubic option offers the most precise form of interpolation; however, it is significantly slower than Bilinear interpolation.
 - The Nearest Neighbor option is the fastest method, but it is also the least precise. This lack of precision is evident in the jagged appearance of modified selections, especially when you're distorting or resizing an image, or performing multiple manipulations on a selection.
 - The Bilinear option produces medium quality that is between the other two options.

PREVIEWING THE PAGE SIZE AND LAYOUT

Before you change the size of an image, you might want to preview how the image will appear on the printed page. To do this, you display a page preview box.

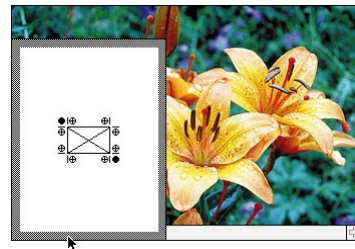
To preview a page:

- 1** Position the pointer on the page preview box in the lower left corner of the document window, where the document size is displayed.



- 2** Hold down the mouse button. The page preview box appears.

The dimensions of the page shown in the page preview box correspond to the page size selected in the Page Setup dialog box. Options selected in the Page Setup dialog box, including registration marks, calibration bars, labels, and captions, appear as gray boxes.



You can also display size preview information, which tells you the dimensions, resolution, and number of channels in the image.

To display size preview information:

- 1 Position the pointer on the page preview box.
- 2 Hold down the Alt key and the mouse button. The size preview box appears.

The size preview box displays the height and width of the image, both in pixels and in the units of measurement currently selected for the rulers.

CROPPING IMAGES

In many cases, you may want to select only part of an image and discard the rest. This process, called *cropping*, can be done by using the Crop command in the Edit menu or the cropping tool in the toolbox.

When you use the Crop command, you define the area you want to save with the rectangular marquee tool. When you crop using the cropping tool, you can rotate and resample the area as you crop.

To crop an image using the Crop command:

- 1 Click the rectangular marquee tool, and select the part of the image you want to use.
- 2 Choose Crop from the Edit menu.



Original selection



Cropped image

Using the cropping tool

The cropping tool includes options that allow you to define the height-to-width ratio for the cropping marquee and the resolution of the cropped image. In addition, you can rotate and adjust the size of the cropping marquee before you crop the image.

To use the cropping tool:

- 1 Click the cropping tool in the toolbox.
- 2 Select the part of the image you want to use.



When you release the mouse button, the selected area appears with four handles. You can drag these handles to redefine the area to be cropped. A preview of the cropped area appears.

- 3 Move the pointer inside the selected area. The pointer turns into the scissors.

- 4 Click the mouse button. To cancel the cropping operation once it has started, press and hold the Esc key



Defining the size and resolution of the cropped area

You use the cropping tool options to define the size and resolution of the rectangular area you're cropping. The values you enter for height and width determine the height-to-width ratio of the cropping tool marquee. For example, if you specify a width of 2 inches and a height of 1 inch, the width of the cropping tool marquee is twice its height.

To specify the size and resolution of the cropped area:

- 1 Double-click the cropping tool in the toolbox. The Cropping Tool Options dialog box appears.
- 2 Choose the units of measurement you want from the drop-down list. Note that the Columns option for Width uses the width and gutter sizes specified in the Units Preferences dialog box.
- 3 Enter values for height, width, and resolution; then click OK.

If you specify a size but not a resolution, Adobe Photoshop changes the image resolution to compensate for the size change. For example, suppose you have a 1-inch by 1-inch image with an image resolution of 100 pixels per inch. You specify a size of 2 inches by 2 inches and do not specify a resolution. The cropped area becomes a 2-inch by 2-inch image with a reduced resolution of 50 pixels per inch.

If you specify a resolution but not a size, Adobe Photoshop changes the size to compensate for the change in resolution. So, if you specify an image resolution of 50 and no size values for a 1-inch by 1-inch image with a resolution of 100, the cropped area also becomes a 2-inch by 2-inch image with a resolution of 50 pixels per inch. For more information about changing the image resolution, see "Adjusting Image Resolution" and "Using the Image Size Command" in this chapter.

- 4 Select the area to be cropped; then click inside the selection.

Adjusting and rotating the cropping tool marquee

In some cases, you might want to adjust the cropping tool marquee or rotate a selection before you crop the image.

To resize and move the cropping tool marquee:

- 1 Click the cropping tool in the toolbox, and select the area to be cropped.
- 2 Position the cropping tool on one of the handles on the marquee. The pointer changes to an arrowhead.
- 3 Drag until the marquee is the size you want.



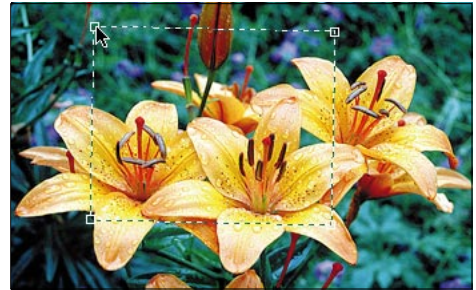
Original crop area



Resized crop area

To move the marquee to another position on the image:

Hold down the Control key as you drag the handle.



Original crop marquee



Moved crop marquee

To rotate the cropped selection:

Hold down the Alt key, and drag the handle in a clockwise or counterclockwise direction.



Rotating the selection



Cropping the image



Resulting cropped image

Note: You can't rotate the cropping tool marquee in a bitmapped image.

USING THE IMAGE SIZE COMMAND

The Image Size command allows you to resize an image while controlling the image resolution. When you change the resolution of an image, you change the amount of information contained in the image. Changing image resolution does not affect the screen display of the image, which is normally 72 dpi, but it does affect the image when it's printed.

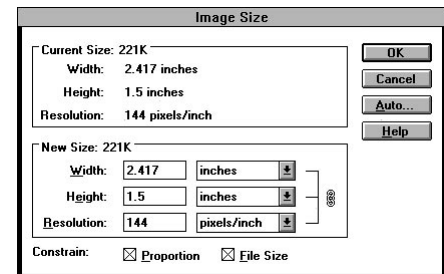
For more information about changing the image resolution, see "Image Size and Resolution," earlier in this chapter.

Maintaining the image proportions or file size

When you change the size of an image, you can choose to change the image dimensions without changing the height-to-width ratio, or you can change the dimensions or resolution of the image without changing the file size.

To change the size of an image:

1 Choose Image Size from the Image menu. The Image Size dialog box appears.



2 Choose the units of measurement you want from the drop-down lists. Note that the Columns option for Width uses the width and gutter sizes specified in the Units Preferences dialog box.

3 Select the Constrain options:

- The Proportion option changes the image dimensions without changing the height-to-width ratio. When you enter a new value for the height or width, the program automatically adjusts the other value to maintain the image proportions.
- The File Size option changes the dimensions or resolution of the image without changing the file size. When you enter new dimensions or a new resolution, the program automatically adjusts the other parameter so that no information is added to or deleted from the image file. When this option is selected, Photoshop does not resample the image.

4 Enter the new values for width, height, and resolution.

Each time you change a value, Adobe Photoshop updates the other values to maintain the image's proportions, file size, or both (depending on the constraints you have selected). Keep track of the new file size shown above the text boxes to be sure you have enough disk space to hold the resized image.

5 Click OK when you have set the dimensions you want.

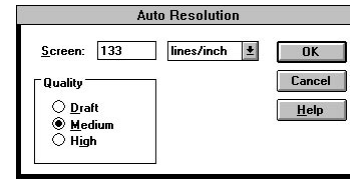
Determining the resolution automatically

To have Photoshop determine the resolution for an image, you can use the Auto button in the Image Size dialog box. The suggested resolution is based on the screen ruling frequency used for printed output.

To determine a suggested resolution for an image:

1 Choose Image Size from the Image menu. The Image Size dialog box appears.

2 Click Auto. The Auto Resolution dialog box appears.



3 Enter the ruling for the output screen in the Screen text box. Note that this value is used only to calculate the image resolution.

Important: To specify the halftone screen ruling for printing, you must use the Halftone Screens dialog box, accessed through the Page Setup dialog box. For more information on defining screen rulings, see “Selecting Halftone Screen Attributes” in Chapter 14.

4 Select a quality option for the output:

- Draft produces a resolution that is one times the screen frequency (no higher than 72 pixels per inch).
- Good produces a resolution that is one and one-half times the screen frequency.
- Best produces a resolution that is two times the screen frequency.

The recommended resolution is entered automatically in the Image Size dialog box, and the file size is updated.

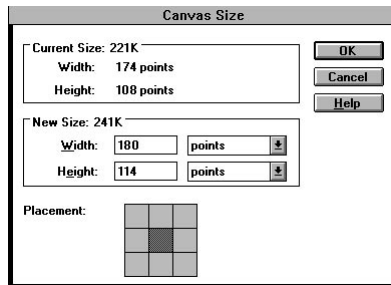
USING THE CANVAS SIZE COMMAND

The Canvas Size command allows you to add work space, or extra canvas area, around an existing image without changing the dimensions of the image. You increase the canvas area by specifying the height and width you want the canvas to be.

You can use the Canvas Size command to crop an image; however, if you want to adjust the size and resolution of an image, you should use the Image Size command or the cropping tool. If you use the Canvas Size command to crop an image, you might inadvertently lose important image information that you cannot recover.

To use the Canvas Size command:

- 1** Choose Canvas Size from the Image menu. The Canvas Size dialog box appears.
- 2** Choose the units of measurement you want from the drop-down lists. Note that the Columns option for Width uses the width and gutter sizes specified in the Units Preferences dialog box.
- 3** Enter the dimensions in the Height and Width boxes. The value above the text boxes changes to reflect the new file size.



- 4** Click a square in the Placement box to indicate where you want the image to be positioned in the new canvas area.

- 5** Click OK.



Image resized using Canvas Size command; Width: 180 points; Height: 114 points; Placement: center

CHAPTER 13: CONVERTING IMAGES

Adobe Photoshop supports a variety of image types, including bitmapped, grayscale, indexed color, and RGB.

This chapter discusses image types and how images are converted from one type to another.

Every Adobe Photoshop image contains one or more *channels* that represent information about the color elements in the image. By default, bitmapped, grayscale, and indexed color images have one channel; RGB images contain three channels. The RGB image type lets you display and edit a composite of the various image channels.

COLOR DISPLAY OPTIONS

Each image type in Adobe Photoshop uses a different *color lookup table*, or *color palette*, to store the colors used in the image. When you're working with a display system that supports 8-bit color (or less), the video card displays only 256 different colors at one time. For example, the palette for a grayscale document consists of 256 shades of gray, while the palette for an image that contains mostly shades of blue is weighted toward the color blue. Adobe Photoshop uses a technique called *dithering* to simulate the display of colors that are not in the current color palette.

Choosing a diffusion option

By default, Adobe Photoshop uses pattern dithering, which can result in a distinctive pattern of darker or lighter areas in the image. You can choose to use diffusion dithering instead. Diffusion dithering spreads out the inaccuracy in representing a pixel's color to the surrounding pixels, and eliminates distinctive patterning. Diffusion dithering, however, can cause visual

inconsistencies by showing the boundaries when only part of a screen is redrawn (for example, when you scroll, edit, or paint).

To use diffusion dithering:

- 1 Choose Preferences from the File menu and General from the submenu. The General Preferences dialog box appears.
- 2 Select the Use Diffusion Dither option.

Choosing a display palette

To optimize the display for each image, the program stores a different palette for each open file and displays the active document by using its associated palette. This tends to make the colors in inactive documents look inaccurate. To make the colors in inactive documents appear closer to their actual colors, you can choose to display all open documents using a common color palette (rather than using the document's individual palette). Using this option, however, makes the colors in the active document less accurate than when the document's custom palette is used.

To use the System color palette:

- 1 Choose Preferences from the File menu and General from the submenu. The General Preferences dialog box appears.
- 2 Select the Use Common Palette option.

ABOUT CONVERTING IMAGES

You convert one type of image to another using the commands in the Mode menu.

Because different color spaces comprise different colors, converting an image between modes may permanently change the color values in the image. For this reason, you should always save

IMAGE TYPES AND CHANNELS



Bitmap 4K

Bitmapped images are made up of one bit of color (black or white) per pixel and require the least amount of memory. Because few editing options are available in Bitmap mode, it is usually best to convert the image to Grayscale mode and then back to Bitmap mode if necessary for export.



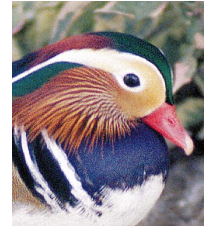
Grayscale 22K

Grayscale images are made up of 8 bits of information per pixel and use 0–255 shades of gray to simulate gradations in color. Grayscale mode is used for converting high-quality black-and-white images to and from color images.



Indexed color 18K

Indexed color images are single-channel images (8 bits per pixel) that use a color lookup table containing 256 colors. These images are useful for editing the color table or creating a limited palette for export, for example, to multimedia applications. Limited editing is available in this mode; for extensive editing you should convert temporarily to RGB mode.



RGB color 64K



RGB images use three colors to reproduce up to 16.7 million colors on-screen. RGB mode is used for most color images and by most scanners, and is



generally the mode used for color editing and painting. RGB images are three-channel images, so they contain 24 (8 x 3) bits per pixel.

an image before converting it. For more information on how conversions are performed, see the section in this chapter describing that conversion. For information on how color values are measured, see Chapter 1, “Basic Concepts,” and Chapter 14, “Making Color Corrections.”

With the exception of converting a color image to an indexed color image, the procedures for converting an image to color are similar: simply choose the new image type from the Mode menu. You may then be prompted to enter dialog box options. The following sections describe the different conversions and their options.

Note: Certain image types cannot be converted directly to other image types. Image types not available for the active document appear dimmed in the Mode menu.

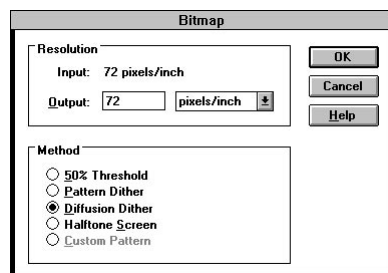
CONVERTING TO BITMAP MODE

A grayscale image consists of various levels of gray. Depending on the number of bits of information saved when the image was scanned, a grayscale image can contain up to 256 levels of gray. Gray levels can range from 0 (black) to 255 (white).

Note: To convert a color image to a bitmapped image, you must first convert it to a grayscale image. This removes the hue and saturation information from the pixels and leaves the brightness values.

To convert a grayscale image to a bitmapped image:

1 Open the grayscale image; then choose Bitmap from the Mode menu. The Bitmap dialog box appears.



2 Choose the units of measurement you want from the drop-down list.

3 Enter a value for the output resolution of the bitmapped image. By default, the current image resolution appears as both the input and the output resolution.

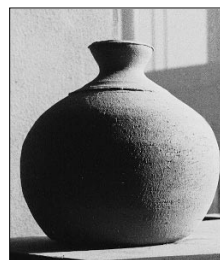
4 Select a conversion method; then click OK. Conversion methods are described in the following section.

Selecting a bitmapped conversion method

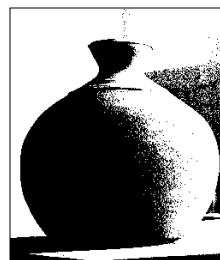
There are four methods to choose from when you are converting a grayscale image to a bitmapped image. The options determine the quality of the new bitmapped image, ranging from a high-contrast, black-and-white image to a textured or halftone screen for output on non-PostScript printers.

The 50% Threshold option

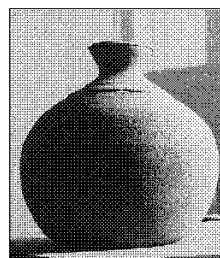
The 50% Threshold option converts pixels with a gray value above the middle gray level (128) to white, and pixels below the middle gray level to black. The result is a high-contrast, black-and-white representation of the image.



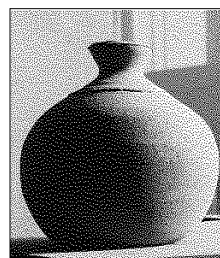
Original grayscale image



50% Threshold conversion method



Pattern Dither conversion method



Diffusion Dither conversion method

The Pattern Dither option

The Pattern Dither option converts an image by organizing the gray levels into geometric configurations of black-and-white dots.

The Diffusion Dither option

The Diffusion Dither option uses an error-diffusion process to convert the image. The program starts at the pixel in the upper left corner of the image and evaluates its gray-level value. If the value is above middle gray (128), the pixel is changed to white. If the value is below 128, the pixel is changed to black. There is some error in the conversion because the original pixel is usually not pure between black and white, and the conversion changes it to either a black or white value. The amount of error is transferred to surrounding pixels before they are converted. In this way, the error is diffused throughout the

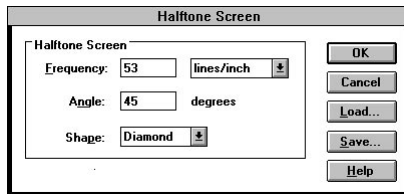
image. The result is a grainy, film-like texture. This option is useful for viewing images on a black-and-white screen.

The Halftone Screen option

The Halftone Screen option simulates the effect of printing a grayscale image through a halftone screen.

To specify the halftone screen for a bitmapped image:

- 1** Choose Bitmap from the Mode menu. The Bitmap dialog box appears.
- 2** Click Halftone Screen; then click OK. The Halftone Screen dialog box appears.



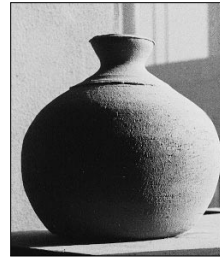
- 3** Choose the units of measurement you want from the drop-down list.
- 4** Enter a value for the screen frequency. Values can range from 1 to 999 for lines per inch, and .400 to 400 for lines per centimeter. You can enter decimal values.

The screen frequency is the ruling of the halftone screen. The frequency depends on the paper stock and type of press used for printing. Newspapers commonly use an 85-line screen. Magazines use higher resolution screens, such as 133 and 150. Check with your print shop for the correct screen frequency to use.

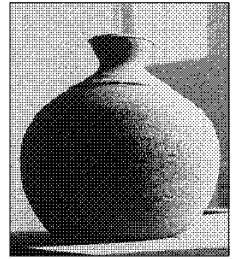
- 5** Enter a value for the screen angle in degrees. Values can range from -180 to +180.

The screen angle refers to the orientation of the screen. Continuous-tone and black-and-white halftone screens commonly use a 45-degree angle.

- 6** Choose the dot shape you want from the Shape drop-down list; then click OK.



Original grayscale image



*Halftone screen conversion:
53 lpi, 45-degree angle,
round dot*

You can save the halftone screen settings and reuse them with other documents using the Save and Load buttons in this dialog box.

CONVERTING TO GRAYSCALE

You can convert both bitmapped and color images to grayscale images.

Converting a bitmapped image to a grayscale image

A bitmapped image converted to a grayscale image consists of one gray level (black). Since few editing options are available in Bitmap mode, you might convert a bitmapped image to a grayscale image for editing, and then convert it back to a bitmapped image for export.

To convert a bitmapped image to a grayscale image:

- 1** Choose Grayscale from the Mode menu. The Grayscale dialog box appears.
- 2** Enter a value for the size ratio.

The size ratio is the factor by which you want to scale down the size of the image. For example, to reduce the size of the grayscale image by 50 percent, enter 2 for the size ratio. If a number greater than 1 is entered, multiple pixels in the bitmapped image are averaged to produce a single pixel in the grayscale image. This allows you to create a grayscale image from an image scanned on a 1-bit scanner.

Converting a color image to a grayscale image

When Adobe Photoshop converts a color image to grayscale, it discards all color information in the original image. When you convert from an RGB image, the gray levels of the converted pixels represent the luminosity of the pixels.

CONVERTING GRAYSCALE TO COLOR

When you convert a grayscale image to a color image, the color values for each pixel are assigned that pixel's previous gray value.

CONVERTING TO INDEXED COLOR

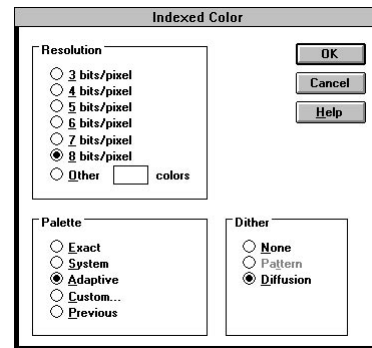
At times, you might want to convert an RGB image to an indexed color image to edit an image's color table or to export an image to an application that supports only 8-bit color. This is useful, for example, for multimedia animation applications.

When you convert an RGB image to an indexed color image, a color table is built for the indexed color image. The color table stores the colors used in the document and holds the maximum number of colors that can be displayed at once. While an RGB image can contain millions of colors, an indexed color image can directly reference only 256 colors. If the RGB color is not present in the color table, the program matches

the requested color to the closest color in the color table or simulates the requested color using the available colors.

To convert an RGB image to an indexed color image:

- 1 Choose Indexed Color from the Mode menu. The Indexed Color dialog box appears.



- 2 Select the resolution, palette, and dither method for the conversion. These options are described in the following sections.

Specifying the resolution

You can specify the *bit resolution*, or the number of bits of color information per pixel, for the indexed color image. The resolution you choose determines the number of colors that can be displayed at one time. For example, if you select 4 bits per pixel, 16 colors can be displayed at a time; if you select 8 bits per pixel, 256 colors can be displayed at one time. In addition, you can click Other to specify the exact number of colors to be displayed (up to 256). The Other option is useful for applications such as silkscreening in which only a specific number of inks are used.

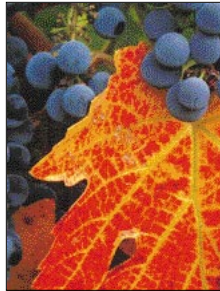
Specifying a color table option

Five palette types are available for the indexed color image. Use the Color Table command in the Mode menu to view the results of each color table option:

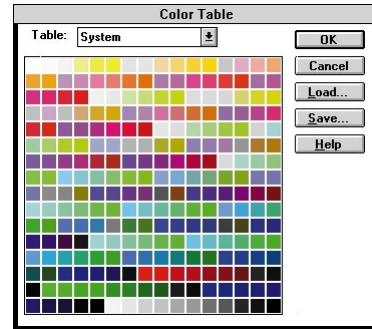
- The Exact palette option is available only if 256 or fewer colors are used in the RGB image. When you select the Exact option, Adobe Photoshop uses the exact same colors for the color table as those that appear in the RGB image. Since all the colors in the image are present in the document's color table, there is no dithering.
- The System palette option uses the Window's default 8-bit color table. This color table is based on a uniform sampling of RGB colors. This option is labeled Uniform if the resolution is set to lower than 8 bits per pixel. With this option, you specify a dithering option.



Original RGB image



*Indexed color image:
System palette option,
Diffusion dithering option*



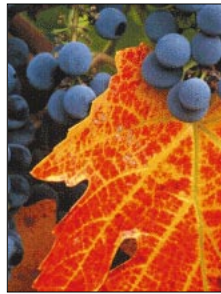
Resulting system color table, System palette option

- The Adaptive palette option creates a color table by sampling colors from the more commonly used areas of the color spectrum that appears in the image. For example, if you have an RGB image that has only the colors green and blue, the resulting color table is made up of primarily green and blue colors. Because the colors in most images are concentrated in particular areas of the spectrum, this table can be very useful. With this option, you also specify a dithering option.

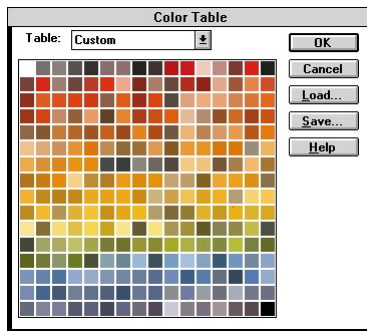
To more precisely control how the Adaptive color table is built, select a part of the image that contains the colors you want to use in the table before you make the conversion. When you have an active selection in the image, Adobe Photoshop weights the conversion toward the colors in the selection.



Original RGB image



Indexed color image:
Adaptive palette option,
Diffusion dithering option



Resulting color table: Adaptive palette option

- The Custom palette option lets you create your own color table. When you select this option, the program displays the Color Table dialog box. You can then edit the color table and save it for later use, or use the Load button to load a previously created color table. Editing a color table is described in “Manipulating the Color Table of an Indexed Color Image,” later in this chapter.
- The Previous palette option is only available once you have converted an image using the Custom or Adaptive option. Selecting the Previous palette option converts the image using the custom palette used in the previous conversion. This option makes it easy to convert a number of images using the same custom palette.

Specifying dithering options

Unless you’re using the Exact color table option, the color table may not contain all the colors used in the image. To simulate colors not in the color table, you can choose to *dither* the colors. Dithering mixes the pixels of the available colors to simulate the missing colors. There are three dithering options:

- The None dithering option does not dither colors. Instead, the color closest to the missing color is used. This tends to result in sharp transitions between shades of color in the image.
- The Pattern dithering option (available only when you’re using the System palette) adds random pixels in patterns to simulate the colors that are not in the color table.
- The Diffusion dithering option uses a less structured method than the Pattern option to dither colors.



Indexed color image:
System palette option,
Pattern dithering option



Indexed color image:
System palette option,
None dithering option

MANIPULATING THE COLOR TABLE OF AN INDEXED COLOR IMAGE

When you convert an RGB image to an indexed color image, or if you are working in an original indexed color image, you might want to change one or more colors in the table. You can also choose to structure a color table according to a predefined color table. Each indexed color image has its own color table, and the tables can be saved and reused with other indexed color images.

There are two types of indexed color images: ones that have a limited number of colors (fewer than 256) and pseudocolor images (grayscale images that display variations in gray levels with color, rather than shades of gray). Pseudocolor images are often used in scientific and medical applications. The color table editing features discussed in the following sections are most useful with pseudocolor indexed color images. These features can also be used to produce special effects with indexed color images that have a limited number of colors.

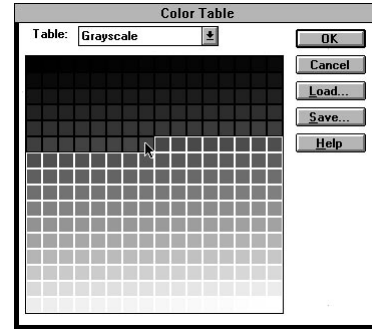
Note: If you just want to change the colors in an image, choose *Map* or *Adjust* from the *Image* menu, and use the color correction commands in the submenus. Chapter 14, “Making Color Corrections,” describes these commands.

Editing colors in the indexed color table

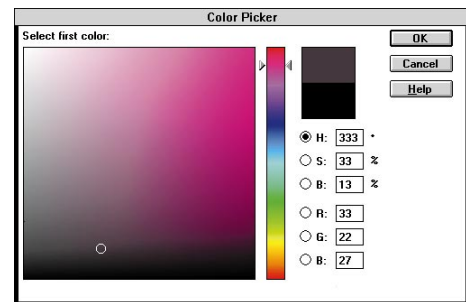
The following example shows the editing of the indexed color table of a pseudocolor image. You follow the same steps for color images.

To edit colors in the color table:

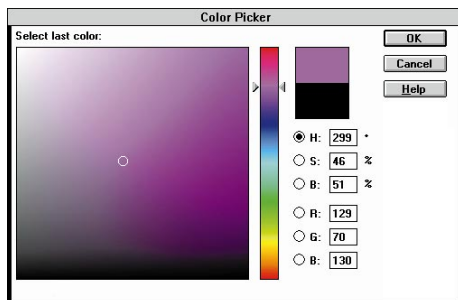
- 1 Open the indexed color image.
- 2 Choose *Color Table* from the *Mode* menu. The *Color Table* dialog box appears.



- 3 Click or drag in the table to choose the color or range of colors you want to change. The *Color Picker* dialog box appears.
- 4 Use the controls in the color picker to select the color you want; then click *OK*.



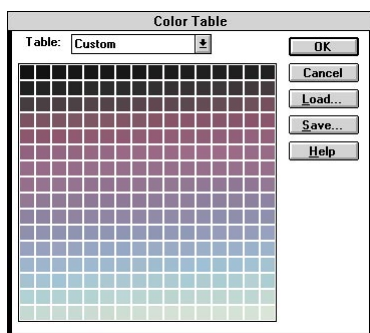
If you are changing a range of colors, Adobe Photoshop creates a gradient in the color table between the starting and ending colors. The first color you choose in the color picker is the beginning color for the range. When you click OK, the color picker reappears so that you can choose the last color in the range.



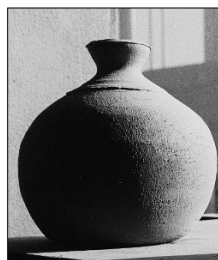
5 Click OK in the color picker to return to the Color Table dialog box, and continue modifying the colors.

6 When you have finished editing colors in the table, click OK.

The colors in the image that reference the colors you've edited are changed to the new colors.



Final edited color table (multiple gradients)



Original indexed image



Edited color table applied

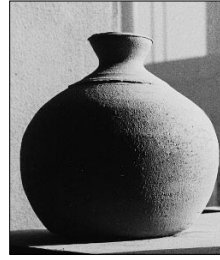
Structuring the color table

The indexed color table can be structured according to one of five predefined color tables. The color table then displays a uniform transition of colors based on this predefined table. You choose a predefined color table from the Table drop-down list:

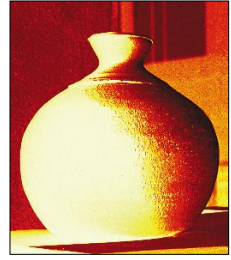
- The Custom table option is used whenever the table is not one of Adobe Photoshop's built-in color tables.
- The Black Body option displays a transition of colors based on the different colors a blackbody radiator emits as it is heated: from black to red, orange, yellow, and white.
- The Grayscale option displays a smooth transition from black to white in 256 levels of gray.
- The Spectrum option displays a smooth transition between the colors that result when white light passes through a prism: violet, blue, green, yellow, orange, and red.
- The System option displays the standard Windows 256-color palette.

Saving and loading a color table

You use the Save and Load buttons in the Color Table dialog box to save your indexed color tables for use with other Adobe Photoshop documents. Once you load a color table into a document, the colors in the document are changed to reflect the color positions they reference in the new color table.



Original image



New color table applied

Note: You can also load saved color tables into the Colors palette. See “Saving, Loading, and Appending Colors Palettes” in Chapter 9 for more information.

CHAPTER 14: MAKING COLOR CORRECTIONS



olor correction allows you to address differences between the original or scanned image and the image as it appears on the screen and in print. For example, you might want to correct a color cast or change the overall contrast of a scanned image. Color correction also allows you to compensate for problems inherent in four-color reproduction, including the varying contrast between paper and ink, the degradation of the original continuous-tone image as it is converted to a halftone, and the deficiencies of process inks and their inability to match theoretical performance.

For your color corrections to be accurate, your system must be calibrated properly. See Chapter 17, “Calibrating Your System,” for more information about calibration.

The color corrections you make affect the color values of the pixels. For more information on the RGB color system and on how color values are measured, see Chapter 1, “Basic Concepts.”

This chapter discusses how to make color corrections to images and to the channels that make up the images. It also describes how to adjust the brightness, contrast, gamma, hue, and saturation in an image; how to invert colors; and how to colorize pixels, which allows you to tint pixels to a specific solid color.

With the exception of the Equalize command, all the changes you specify using the color correction commands are applied to the current selection. If you have not made a selection, the changes are applied to the entire image. The Equalize command allows you to specify whether you want the changes applied to the selected area or to the entire image.

DEVisING A COLOR CORRECTION STRATEGY

The key to good color reproduction is to produce an image with proper *tonal balance* (correct brightness, saturation, contrast, and density range) and no color deficiencies. Making your color corrections in a specific order can help you achieve this goal.

The following is a suggested procedure for making color corrections. With the exception of the Unsharp Mask filter, all of the adjustments discussed in this procedure are described later in this chapter. As you make adjustments, use the Histogram command to track the tonal balance in your image. This graphic illustration of darkness and brightness levels can help you see the overall contrast in the image.

To color-correct an image:

- 1 Set the highlight (white) and shadow (black) points in the image. You can have Adobe Photoshop do this for you, or you can use the eyedropper tool in the Levels or Curves dialog box to set these values.
- 2 Make adjustments to the middle tones (three-quarter, midtones, and quarter tones) using the gamma adjustments in the Levels and Curves dialog boxes. A good range of overall density in an image makes individual color adjustments much easier.
- 3 Correct for overall color imbalance, such as a color cast in skin tones. The gray eyedropper option in the Levels and Curves dialog boxes can remove a color cast. You can also use the Color Balance command to make color corrections to an entire image.

4 Make selective color corrections. For example, you might want to make a sky bluer or take some yellow tone out of a landscape of trees. The Hue/Saturation command is useful for making color corrections to specific selections or color ranges. In some cases you might want to add color to an image. The Colorize option in the Hue/Saturation dialog box lets you add tints to a selection or image. Of course, you can always use the painting and editing tools to make fine color adjustments to your images.

5 Apply the Unsharp Mask filter. See Chapter 15, “Using Filters to Modify Images,” for more information about unsharp masking.

PREVIEWING CHANGES

When you make color changes to a selection, Adobe Photoshop displays the changes throughout the entire screen if you have installed the color table animation extension supplied by your video card manufacturer in the PLUGINS directory. The extension must reside in the PLUGINS directory, and the Preview option in the appropriate dialog box must be deselected for the third-party extension to take effect.

The process of dynamically displaying color changes is called *color table animation*; the program is modifying the monitor’s color lookup table dynamically in response to the changes you specify. When you use the Preview feature, you turn off the color table animation; only the selected area is shown with the color correction. This allows you to see the effect of the color correction much more exactly.

Preview is available for all the commands in the Map and Adjust submenus in the Image menu, except the Invert command.

To turn on previewing, select the Preview option in the color correction dialog box. The color table animation is deactivated, and Adobe Photoshop displays the effects of the changes on the current selection only.

To turn off previewing and return to color table animation, deselect the Preview option.

To cancel color adjustments without closing the color correction dialog box, hold down the Alt key to change the Cancel button to a Reset button. Click Reset to return the adjustment settings to their defaults.

While you use the color adjustment controls, the eyedropper tool is automatically active outside the dialog box; however, you still have access to the scroll controls and the hand and zoom tools when using the keyboard.

Previewing color values

You can use the Colors palette and the Info palette to preview the color values of pixels affected by the color adjustments that you make.

When you are working with one of the color adjustment dialog boxes, the Info palette displays two values: the value in the left column is the original pixel’s color value; the value in the right column is the color value after the adjustment is made.

To use the Info palette to preview color changes:

1 Choose Show Info from the Window menu to display the Info palette. See Chapter 1, “Basic Concepts,” for information on the Info palette display options.

2 Move the pointer over an area of the image you want to examine. The eyedropper reads values for a single pixel for a 3-by-3 area or a

5-by-5 area, depending on the sample size option you have chosen in the Eyedropper Options dialog box.

The Info palette displays the before and after color values at the location under the pointer.

Info	
R:	37/65
G:	31/57
B:	30/95
X:	25.0
Y:	70.0

To use the Colors palette to preview color values:

- 1 Choose Show Colors from the Window menu to display the Colors palette.
- 2 Click the pixel you want to preview. The color values of the pixel after the adjustment has been made are shown in the Colors palette.

INVERTING COLORS

The Invert command creates a negative of an image. You might use this command to turn a positive into a negative or to create a positive image from a scanned negative.

When you invert an image, the brightness value of each pixel in the channels is converted to the inverse value on the 256-step color values scale. For example, a pixel in a positive image with a value of 255 is changed to 0, and a pixel with a value of 5 is changed to 250.

To invert an image:

Choose Map from the Image menu and Invert from the submenu.



Original image



Inverted image

SPECIFYING THE NUMBER OF GRAY LEVELS IN AN IMAGE

The Posterize command lets you specify the number of gray levels (or brightness values) for an image and then maps pixels to the level that is the closest match. This is useful for creating special effects, such as large, flat areas in a photograph. The effects of this command are most evident when you reduce the number of gray levels in a grayscale image; however, you can also use this command to produce some interesting effects in color images.

To specify the number of levels in an image:

- 1 Choose Map from the Image menu and Posterize from the submenu. The Posterize dialog box appears.

2 Enter the number of levels you want; then click OK.



Original image: 256 levels



Posterize command applied: 4 gray levels

EQUALIZING BRIGHTNESS VALUES

The Equalize command redistributes the brightness values of the pixels in an image so that they more evenly represent the entire range of brightness levels. When you choose this command, Adobe Photoshop finds the brightest and darkest values in the image, and averages all the brightness values so that the darkest value represents black (or as close to it as possible) and the brightest value represents white. This usually increases the contrast and balance in an image, since it redistributes pixels from the middle brightness levels into the high and low brightness levels.

You might use this command when a scanned image appears darker than the original and you want to balance the values to produce a lighter image.

To equalize the brightness values of pixels:

1 Choose Map from the Image menu and Equalize from the submenu.

If you have an area of the image selected, the Equalize dialog box appears.

- Click Selected Area Only to equalize only the pixels in the selection.

- Click Entire Image Based on Area to equalize the pixels in the entire image based on the pixels in the selected area.

2 Click OK to equalize the image or the selection.



Original image



Equalize command applied

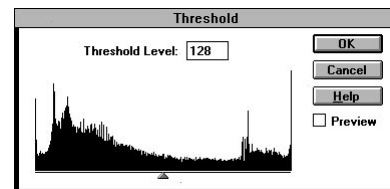
CONVERTING AN IMAGE TO BLACK AND WHITE

Use the Threshold command to convert gray-scale or color images to high-contrast black-and-white images. This command allows you to specify a certain level as a threshold. All pixels lighter than the threshold are converted to white. All pixels darker than the threshold are converted to black.

To use the Threshold command:

1 Choose Map from the Image menu and Threshold from the submenu.

The Threshold dialog box appears, displaying a histogram of the luminance levels of the pixels in the current selection.



2 Drag the slider below the histogram until the threshold level you want appears at the top of the dialog box. As you drag, the image changes to reflect the new threshold setting.

3 When you've finished making adjustments, click OK.



Original image



Threshold command applied

ADJUSTING THE BRIGHTNESS, CONTRAST, AND GAMMA

You can adjust the brightness and contrast of a selection or the entire image using the Brightness/Contrast dialog box, the Levels dialog box, or the Curves dialog box. These three dialog boxes allow you to adjust the brightness and contrast of an image with increasing degrees of precision. The Curves dialog box offers the most precision.

If you are working on an RGB image, you can adjust the composite channel or each channel individually by choosing an option from the Channel drop-down list in the Levels or Curves dialog box.

To use the Brightness/Contrast dialog box:

- 1** Choose Adjust from the Image menu and Brightness/Contrast from the submenu. The Brightness/Contrast dialog box appears.
- 2** Drag the sliders to adjust the brightness and contrast.

Drag to the left to decrease the level; drag to the right to increase it. The number at the right of each slider value displays the brightness or contrast value. Values can range from ± 100 .

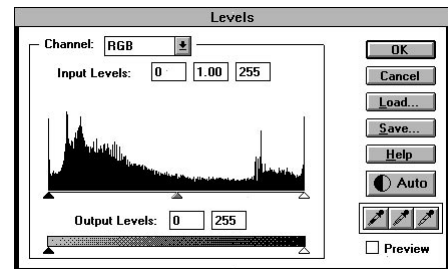
3 When you've finished making adjustments, click OK.

Using the Levels dialog box

Like the Brightness/Contrast command, the Levels command allows you to adjust the brightness and contrast in an image. In addition, the Levels command lets you adjust the *gamma* in the image. Gamma measures the contrast that affects the midlevel grays (midtones) of an image. Adjusting the gamma lets you change the brightness values of the middle range of gray tones without dramatically changing the shadows (very dark pixels) and highlights (very light pixels).

To use the Levels dialog box:

1 Choose Adjust from the Image menu and Levels from the submenu. The Levels dialog box appears.



This dialog box displays a histogram of the image. The histogram plots the brightness values versus the number of pixels at each level. The darkest pixels appear at the left; the brightest pixels appear at the right.

2 Choose the channel you want to adjust from the Channel drop-down list.

3 Adjust the contrast:

- Use the slider controls directly below the histogram (Input Levels) to increase the contrast in the image. The black triangle controls the shadows, the gray triangle controls the gamma, and the white triangle controls the highlights. You can also enter the values directly into the Input Levels text boxes.
- Use the slider controls at the bottom of the Levels dialog box (Output Levels) to reduce the contrast in the image. The black triangle controls the shadows, and the white triangle controls the highlights. You can also enter the values directly into the Output Levels text boxes.

For example, suppose your image contains pixels that cover the entire 0-to-255 scale and you want to lower the contrast in the image. If you drag the Output Levels black triangle to 64, pixels with brightness values of 0 are mapped to 64, and pixels with higher brightness values are raised to corresponding, lighter values. This lightens the image and decreases the contrast of the shadow areas.

On the other hand, if you drag the Output Levels white triangle to 128, a pixel with a brightness value of 255 is remapped to 128, and pixels with brightness values of less than 255 are lowered to corresponding darker values. This darkens the image and decreases the contrast of the highlight areas.

For step-by-step instructions on adjusting the gamma and contrast using the Levels dialog box, see the “Precisely Color-Correct the Image” in Chapter 3.

Using Threshold mode to adjust the brightness levels

You can use the Levels dialog box in Threshold mode to preview what areas will be compressed (that is, will contain pure white and pure black

when you change the Levels controls) in RGB and grayscale images. This makes it easier to see exactly where you are adding or subtracting a color component. This feature is also useful when you’re adjusting individual channels.

Note: *The Preview option in the Levels dialog box must be deselected for you to be able to use the Threshold mode.*

To use Threshold mode:

- 1** Locate an area of the image that you want to be pure white and an area that you want to be pure black.
- 2** Choose Adjust from the Image menu and Levels from the submenu.
- 3** Deselect the Preview check box.
- 4** In the Levels dialog box, choose a channel from the Channel drop-down list.
- 5** Hold down the Alt key, and click the white Input Levels triangle.
- 6** Slide the white triangle until the area you want to be pure white is the color of the channel.



Original image



High-contrast preview:
Red channel

7 Hold down the Alt key and slide the black Input Level triangle until the area you want to be pure black is pure black.

8 *Still holding the Alt key*, repeat steps 3 through 5 for the other two channels in an RGB image, until the white and black areas for each color are approximately the same.



Original image



Adjusted image

Defining the black and white points

The Levels dialog box includes options that allow you to indicate the pixels in the image that you want to represent the darkest and brightest points (or the end points of the color value scale). Setting the black point (shadow) and the white point (highlight) redistributes the pixels in the image and ensures a good tonal balance. You can have Adobe Photoshop set the black and white points automatically, or you can set the points by clicking a pixel in the image or using the color picker.

To set the black and white points automatically:

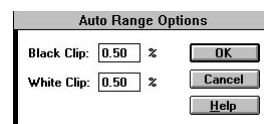
Click the Auto button in the Levels dialog box.

The Auto button corrects the color automatically, using the same technique as in Threshold mode; that is, it defines the lightest and darkest pixels in each channel as white and black, and then adjusts the colors in between. You might want to use the Auto button and then fine-tune the color corrections using Threshold mode.

By default, the Auto feature “clips” the white and black values by .5 percent. This ensures that the program bases its white and black values on more than a single value in the image.

To change the amount that the white and black values are clipped:

1 Alt+click the Auto button. The Auto Range Options dialog box appears.



2 Enter the values you want in the dialog box; then click OK.

To set the white or black point manually:

1 Click the white or black eyedropper button in the Levels dialog box.



2 Click the point in the image you want to define as black or white.

The pixel at that point becomes the upper or lower point in the color value scale (true black has a gray value of 0 and an RGB value of 0, 0, and 0; true white has a gray value of 255 and an RGB value of 255, 255, and 255). The other pixels in the image are redistributed to reflect the adjustment. Prior to setting the points, use the Info palette to see the before and after values so you can gauge how much clipping will take place.

To select a black or white from the color picker, double-click the black or white eyedropper button, and select a color. You can, for example, define a white point that is not quite a pure white to maintain some tint in the highlights.

Setting a neutral tone

The Levels dialog box also lets you set a neutral gray value for an image. This is a quick way to remove a color cast from an image. The overall gamma of the image is not changed.

To set a neutral gray:

- 1 Click the gray eyedropper button in the Levels dialog box.
- 2 Click the point in the image you want to define as neutral gray.

This shifts the hue and saturation of the pixel toward neutral gray while keeping the same luminosity.

To select a neutral gray from the color picker, double-click the gray eyedropper button, and select a color.

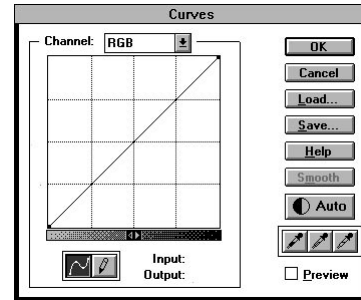
You can save and reuse the color corrections you make to input and output levels, and to black and white points, using the Save and Load buttons in the Levels dialog box.

Using the Curves dialog box

Like the Levels dialog box, the Curves dialog box lets you adjust the brightness, contrast, and gamma of an image. However, instead of making the adjustments using just three variables (highlights, shadows, and gamma), you can adjust any point along the gray-level scale.

To use the Curves dialog box:

- 1 Choose Adjust from the Image menu and Curves from the submenu. The Curves dialog box appears.



Gamma is commonly used to describe the relationship of the output density to the original density (changes in brightness) across the mid-tones. The x-axis of the graph represents the original brightness values of the pixels, from 0 to 255 (input levels); the y-axis represents the new brightness values (output levels). Each tick mark represents approximately 64 steps on the scale. The diagonal line that appears by default shows the current relationship; every pixel has the same input and output value.

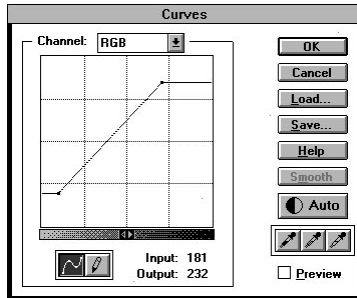
The grayscale moves from black on the left (0) to white on the right (255). To reverse the direction of the grayscale and display the values in percentages, click the arrows in the bar under the graph.

- 2 Click a pixel in the image to find its brightness value on the graph.

A circle appears, marking the pixel's position on the graph, and the output and input values are displayed at the bottom of the dialog box.

- 3 Define the black and white points for the image using one of the following methods:

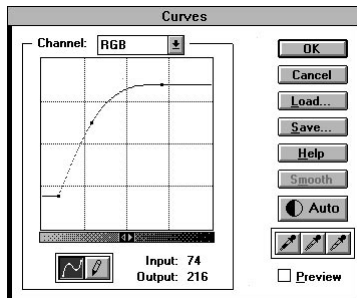
- Use the white and black eyedropper buttons to set the white and black points. See “Defining the Black and White Points” earlier in this chapter for information on using the eyedropper buttons.
- Drag the end points of the graph until the values are as you want them.



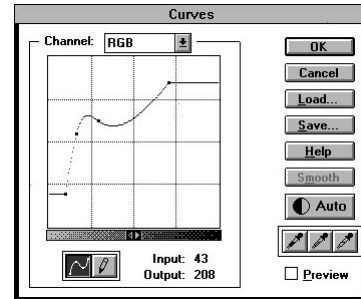
Adjusting highlights and shadows

Note that when you click any point on the curve, a control point appears to mark your position. To remove a control point, drag it off the graph.

4 Define the midpoint pixels using the gray eyedropper, or manually adjust the midpoint pixels and then the quarter tones. Continue adjusting until the colors are as you want them; then click OK.

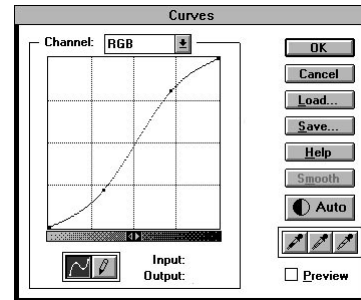


Adjusting midpoints



Adjusting quarter tones

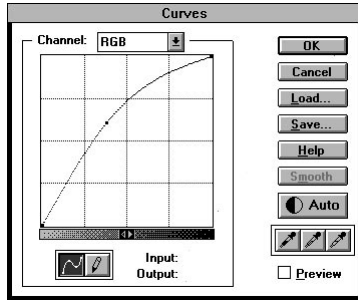
One of the most common tonal adjustments results in an S-curve. This curve produces an output with higher contrast than in the original. The middle tones gain some detail, and the transition is more dramatic in the highlights and shadows. An S-curve can give “snap” to a dull original.



Increasing contrast

Another common adjustment is that made to the curve of an overexposed original where the detail in the highlights and quarter tones is lost.

The change made to this curve darkens the image overall and allocates a wider range of tones to the highlights.



Decreasing brightness

Instead of manually adjusting the curve, you can use the Auto button in the Curves dialog box to adjust the tonal range automatically by setting black and white points. This button functions exactly like the Auto button in the Levels dialog box, described earlier in this chapter.

Use the Save and Load buttons in the Curves dialog box to save curves and use them with other Adobe Photoshop documents.

Using the Arbitrary Map option

The Arbitrary Map option allows you to precisely define the curve in the Curves dialog box.

To use the Arbitrary Map option:

- 1 Choose Adjust from the Image menu and Curves from the submenu. The Curves dialog box appears.
- 2 Click the pencil icon at the bottom of the Curves dialog box.
- 3 Adjust the gamma curve using the pencil pointer.

The pencil pointer appears automatically when you move into the graph. To constrain the curve to a straight line, hold down the Shift key and click to define the end points of the curve.

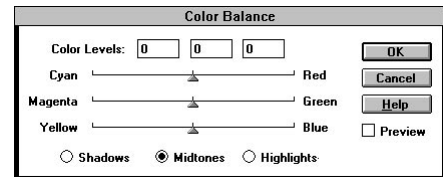
- 4 Click the Smooth button to smooth the curve you've drawn.

ADJUSTING THE COLOR LEVELS USING THE COLOR BALANCE COMMAND

The Color Balance command allows you to change the mixture of colors in a color image. Use this command to delete unwanted colors from an image or to enhance a dull or muted color. You can focus the color balance changes on the shadows, midtones, or highlights.

To adjust the levels of a particular color in an image:

- 1 Choose Adjust from the Image menu and Color Balance from the submenu. The Color Balance dialog box appears.



- 2 Click Shadows, Midtones, or Highlights to select the part of the selection on which you want to focus the changes.

- 3 Drag a triangle toward a color if you want to make it more prominent in the image; drag away from the color if you want to reduce the level of that color.

The values at the top of the Color Balance dialog box show the color changes for the red, green, and blue channels, respectively. Values can range from 100 to -100.

The following illustrations show the effects of adjusting the cyan/red level in the midtones.



Color level: +45 cyan



Color level: -45 cyan

ADJUSTING HUE, SATURATION, AND LIGHTNESS

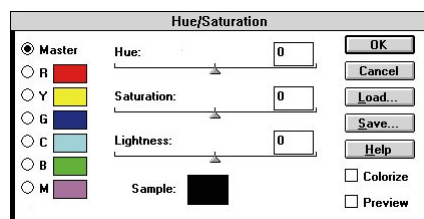
The Hue/Saturation command lets you adjust the hue and saturation of color images.

Hue is color; saturation is the purity of the color. Using this command, you can change the overall color of the image, or of objects in the image. For

example, by adjusting the hue, you can compensate for shifts in color that occur in an NTSC image (a television or video image) that is acquired using a video frame grabber. The Colorize option in the Hue/Saturation dialog box lets you adjust the hue and saturation to a fixed level.

To use the Hue/Saturation dialog box:

- 1 Choose Adjust from the Image menu and Hue/Saturation from the submenu. The Hue/Saturation dialog box appears.



Along the left side of the dialog box are six color swatches of the additive and subtractive colors in the order in which they appear on the color wheel: red, yellow, green, cyan, blue, and magenta. Lab images have four swatches: yellow, green, blue, and magenta.

The Sample swatch at the bottom of the dialog box shows the current foreground color. To see how the changes you make will affect a specific color in the image, use the eyedropper to sample the color.

- 2 Click the button next to the color to adjust it, or click Master to adjust all the colors at once.

The color swatches (including the Sample swatch) change as you make color adjustments.

- 3 Drag the Hue slider until the colors appear the way you want them. You can also type a value into the Hue text box.



Original image



Hue: +90

When you change the hue, the effect is analogous to selecting a color from a color wheel. The values displayed in the text box reflect the number of degrees of rotation around the wheel from the pixel's original color: a positive value indicates a clockwise rotation; a negative value indicates a counterclockwise rotation. Notice that when you select an individual color channel in the Hue/Saturation dialog box, the letters on either side of the Hue slider change to represent the adjacent colors on the color wheel.

4 Drag the Saturation triangle to the right to increase the saturation; drag to the left to decrease the saturation.

This shifts the color away from or toward the center of the color wheel. Saturation values can range from ± 100 . (See the following section for a complete explanation of this process.)

Remember that the change is relative to the beginning color values of the selected pixels. By adjusting the saturation, you can create pastel tones from brightly saturated colors.



Saturation: +75



Saturation: -75

5 Drag the Lightness slider to the right to increase the lightness; drag to the left to decrease the lightness. Values can range from ± 100 .

Use the Save and Load buttons in the Hue/Saturation dialog box to save your color correction settings and use them with other Adobe Photoshop documents.

Using the Hue/Saturation command for selective color correction

High-end scanners and separation programs have controls to perform a technique known as selective color correction. With this technique, a user is presented with a table similar to the one shown below:

SELECTIVE COLOR CORRECTION						
	Red	Yellow	Green	Cyan	Blue	Magenta
Cyan	0%	0%	95%	95%	99%	26%
Magenta	8%	0%	0%	0%	76%	63%
Yellow	55%	100%	100%	0%	5%	0%
Black	0%	0%	0%	0%	0%	0%

The colors along the top of the table are the additive and subtractive primary colors; the colors along the left of the table represent process color inks. The table displays the percentage of each process color ink used to create each primary. You could, for example, increase the amount of cyan ink used to make the color green by changing the number 95 (in the top row beneath green) to a higher value. Similarly, you could remove magenta from blue by decreasing the ink percentage from 76 percent. This kind of control is available with the Hue/Saturation command, although the procedure used is quite different.

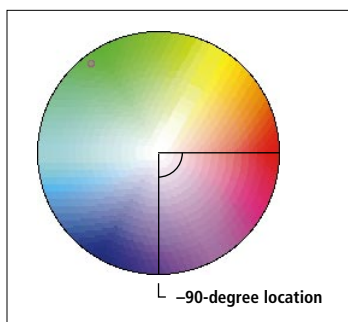
To remove cyan from green using the Hue/Saturation dialog box, select the green radio button, and shift the Hue slider away from cyan, toward yellow. (Note that green lies between cyan and yellow on the 360-degree color wheel; on the color wheel, green-yellow is located at the top of the wheel, at 0 or 360 degrees; yellow is located at 45 degrees; pure red is located at 90 degrees; violet is located at 135 degrees; cyan is located at 270 degrees, and green is located at 315 degrees.) To shift a color toward or away from an opposite

color on the color wheel, change the saturation. For example, to add magenta to green (note that magenta lies opposite green on the color wheel), decrease the saturation. To add black to any color, increase the lightness; to subtract black, decrease the lightness.

Using the Colorize option

The Colorize option in the Hue/Saturation dialog box allows you to tint an image or part of an image to a specified solid shade. This process differs from the standard operation in which the hue and saturation changes are based on the existing values of the pixels.

When the Colorize option is active, red is treated as the 0 degree on the color wheel, and the rotation value you specify using the hue slider is measured from that point of origin. For example, if you drag the hue triangle until -90 degrees is displayed, the image takes on a purple cast, because this is the color located 90 degrees in the clockwise direction from red.



Color wheel, with red at 0 degrees (the 3 o'clock position); violet at -90 degrees (90 degrees clockwise from red)



Original image



Hue: -90

Note: Because the Colorize option preserves the lightness value of each pixel, pure black and pure white are not colored, while the middle gray pixels are colored completely. If you want to color the black and white pixels, you must first adjust the lightness slider.

To use the Colorize option:

- 1 Choose Adjust from the Image menu and Hue/Saturation from the submenu. The Hue/Saturation dialog box appears.
- 2 Click Colorize. The image appears as red, the starting point for the hue adjustment.
- 3 Use the Hue slider to select the new color.
- 4 Use the Saturation and Lightness sliders to adjust the saturation and lightness of the pixels; then click OK.

CORRECTING COLOR VISUALLY USING THE VARIATIONS COMMAND

The Variations command allows you to visually adjust the color balance, contrast, and saturation of an image or selection. You can use this command to focus the color correction on the dark areas, the middle tones, or the light areas of the image. You can also correct the saturation of the colors.

For step-by-step instructions on using the Variations option, see “Visually Color-Correct the BADSCAN1 Image” in Chapter 3.

Note: *If the Variations command does not appear in the Adjust submenu, the Variations plug-in module has not been installed. See “Installing the Adobe Photoshop Program” in the Introduction for information about installing plug-in modules.*

APPLYING COLOR CORRECTIONS TO MULTIPLE IMAGES

In a production environment, you might need to scan a large number of images and apply the same set of color corrections to all of them. You can do this using a keyboard enhancement program or using the Save and Load buttons in the Adobe Photoshop color correction dialog boxes.

Keyboard enhancement programs, such as QuicKeys™, allow you to record the keystrokes for your first set of corrections and play the keystrokes back for subsequent images. The playback depends on the sophistication of the keyboard enhancement program.

The Save and Load buttons in the Levels, Curves, and Hue/Saturation, and Variations dialog boxes let you save the color corrections you make using those dialog boxes and apply the corrections to other images.

To apply color corrections to other images:

1 Save your color corrections using the Save button in the Levels, Curves, Hue/Saturation, or Variations dialog box.

When you choose Save, a dialog box appears for naming the file.

2 Close the color correction dialog box.

3 Open the image to which you want to apply the corrections.

4 Open the color correction dialog box you used in step 1.

5 Use the Load button to locate and load the appropriate color correction file.

6 Click OK to apply the corrections to the image.

CHAPTER 15: USING FILTERS TO MODIFY IMAGES

The filters that are built into Adobe Photoshop let you apply special effects such as blurring, sharpening, and geometric distortions to your images. With filters, you can give a selection an impressionistic or mosaic effect, or add and reduce *noise* (pixels with randomly distributed color values) in an image. You can even create your own special effects with the Custom filter, and then save and reuse these unique filters on other images.

Adobe Photoshop also supports plug-in filters. If you are interested in creating Adobe Photoshop-compatible plug-in modules, please contact Adobe Systems Technical Support.

USING FILTERS

To use a filter, choose the appropriate submenu command from the Filter menu. The last filter chosen appears at the top of the menu.

Note: *You can't use filters on bitmapped or indexed color images.*

To apply a filter:

- 1 Select the part of the image you want to apply the filter to. If you have not made a selection, the filter is applied to the entire image.
- 2 Choose a filter from the submenus in the Filter menu. In some cases, a dialog box appears.
- 3 If necessary, enter values in the dialog box, and click OK. The following sections describe the dialog box options.

When the filter takes a while to apply, Adobe Photoshop displays a progress bar so that you can gauge the time remaining until the filter is applied.

Examples of the filters, organized according to the Filter submenus, are found in the table at the end of this chapter.

Filter shortcuts

The following techniques can help you save time when working with filters:

- To cancel a filter as it is being applied, press and hold Esc.
- To undo a filter, press Ctrl+Z.
- To reapply the same filter and its values, press Ctrl+F.
- To display the dialog box for the last filter you applied, press Ctrl+Alt+F.

THE BLUR FILTERS

The four blur filters provide a softening effect and are useful for retouching images.

The Blur and Blur More filters

The Blur and Blur More filters eliminate noise in the parts of the image where significant color transitions occur. Blur filters smooth transitions by lightening the pixels next to the hard edges of defined lines and shaded areas. The Blur More filter produces an effect three or four times stronger than that of the Blur filter.

The Gaussian Blur filter

The Gaussian Blur filter quickly blurs a selection by an adjustable amount. “Gaussian” refers to the bell-shaped curve that is generated when Adobe Photoshop maps the color values of the affected pixels. This filter can produce a hazy effect.

To use the Gaussian Blur filter:

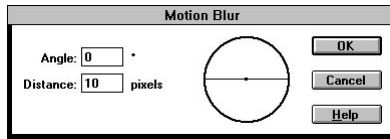
- 1 Choose Blur from the Filter menu and Gaussian Blur from the submenu. The Gaussian Blur dialog box appears.
- 2 Enter a value in the Radius box from 0.1 to 100.0 to determine the degree of blurring. The higher the value, the stronger the blurring effect.

The Motion Blur filter

The Motion Blur filter produces a blur effect in a particular direction and of a specific intensity. The effect of this filter is analogous to taking a picture of a moving object with a fixed exposure time.

To use the Motion Blur filter:

- 1 Choose Blur from the Filter menu and Motion Blur from the submenu. The Motion Blur dialog box appears.



- 2 Indicate the direction in which the object should appear to be moving:
 - Enter an Angle value from -90 degrees to $+90$ degrees; or
 - Drag the line within the circle (0 degrees is located at 3 o'clock). Drag clockwise for a positive angle; drag counterclockwise for a negative angle.
- 3 Enter a value from 1 to 999 in the Distance box to determine the intensity of the blur.

THE DISTORT FILTERS

The Distort filters produce a geometrical distortion of the image.

The Pinch filter

The Pinch filter in the Distort submenu squeezes a selection. To shift a selection toward its center, enter a positive value in the Pinch dialog box. To shift a selection outward, enter a negative value from 100 percent to -100 percent.

If the selection is rectangular, the filter blends the selection into the background. If the selection is an arbitrary shape, use feathering to help it blend into the surrounding pixels. When feathering is applied, the magnitude of the distortion fades out at the edges of the selection.

The Shear filter

The Shear filter distorts an image along a curve you specify.

To use the Shear filter:

- 1 Choose Distort from the Filter menu and Shear from the submenu. The Shear dialog box appears.
- 2 Drag the band in the middle of the dialog box to form a curve that indicates how you want the image to be distorted. You can adjust any point along the curve.
- 3 Select an option to determine how areas of the image left undefined by the shear are treated:
 - The Wrap Around option wraps the image to fill the undefined space, so that the area is filled with content from the opposite side of the image.
 - The Repeat Edge Pixels option extends the colors of the pixels along the edge of the image in the direction specified. This can create a banding effect if the edge pixels are different colors.

The Spherize filter

The Spherize filter wraps a selection around a spherical shape and is useful for giving objects and text a three-dimensional effect. The image is distorted as it is stretched to fit the curve you have selected.

To use the Spherize filter:

1 Choose Distort from the Filter menu and Spherize from the submenu. The Spherize dialog box appears.

2 Enter a value in the Amount box to determine the strength of the filter.

Values can range from 100 to –100. Negative values undo the effects of a previous Spherize filter.

3 Click Normal, Horizontal only, or Vertical only to set a direction for the filter.

If the selected area is rectangular, the effect applies only to a circular area inside the selection. If the selection is an arbitrary shape (like one made using the lasso or magic wand tool), you can use feathering to blend the selection into the background.

The Twirl filter

The Twirl filter in the Distort submenu rotates a selection more sharply in the center than at the edges. To use the filter, enter an Angle value in the Twirl Filter dialog box. Values can range from 999 to –999.

The Zigzag filter

The Zigzag filter distorts a selection radially, depending on the radius of the pixels in your selection.

To use the Zigzag filter:

1 Choose Distort from the Filter menu and Zigzag from the submenu. The Zigzag dialog box appears.

2 Enter a value in the Amount box for the magnitude of the distortion. Values can range from 999 to –999.

3 Enter a value in the Ridges box to set the number of direction reversals of the zigzag, from the center of the selection to its edge. Values can range from 1 to 999.

4 Select how to displace the pixels:

- The Pond Ripples option displaces pixels to the upper left or lower right.
- The Out From Center option displaces pixels toward or away from the center of the selection.
- The Around Center option rotates pixels around the center.

THE NOISE FILTERS

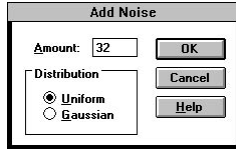
Noise in an image is represented by pixels with randomly distributed color levels. The Noise filters subtly blur a selection by adding pixels to make the selection blend into the surrounding pixels. You can also use the Noise filters to create unusual textures, such as those used as backgrounds behind title text.

The Add Noise filter

The Add Noise filter applies random pixels to an image, simulating the effect of shooting pictures on high-speed film. The filter can be used with the painting tools to make painted areas less apparent. The painting tools apply paint that is free of noise. If you apply paint to an area that contains some noise, you might then want to select the area and apply the Add Noise filter to blend the painted area into the image.

To use the Add Noise filter:

1 Choose Noise from the Filter menu and Add Noise from the submenu. The Add Noise dialog box appears.



2 Enter a value in the Amount box to indicate the amount of noise you want to add. Values can range from 1 to 999. The value you specify is used as the standard deviation of the color values of the noise.

3 Select the distribution method for the noise:

- The Uniform option distributes color values of noise by calculating random numbers between 0 and plus or minus the specified value.
- The Gaussian option distributes color values of noise along a bell-shaped curve.

The Despeckle filter

The Despeckle filter in the Noise submenu detects the edges in an image (the areas where significant color changes occur) and blurs all of the selection except those edges.

THE SHARPEN FILTERS

The Sharpen filters sharpen blurry images by increasing the contrast of adjacent pixels.

The Sharpen and Sharpen More filters

The Sharpen and Sharpen More filters focus a selection and improve its clarity. The Sharpen More filter applies a stronger sharpening effect than the Sharpen filter.

The Sharpen Edges and Unsharp Mask filters

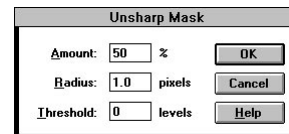
Both the Sharpen Edges and Unsharp Mask filters find the areas in the image where significant color changes occur and sharpen them.

The Sharpen Edges filter provides more definition to blurry images by applying sharpening only when an edge is found. (Essentially, sharpening is applied at all the areas identified by the Find Edges filter.) The Sharpen Edges filter preserves the overall smoothness of the image and changes only the edges. Use this filter to apply edge sharpening without having to specify the edge parameters.

The Unsharp Mask filter adjusts the contrast of edge detail, creating the illusion of more image sharpness. This filter can be useful for refocusing an image that has become blurry from interpolation or scanning. This filter produces the same effect as the conventional method used to sharpen images on film. In this method, a blurred positive film is sandwiched with a sharp negative file, and the result is shot on high-contrast photographic paper. The filter produces a lighter and darker line on each side of an edge, giving the edge added emphasis.

To use the Unsharp Mask filter:

1 Choose Sharpen from the Filter menu and Unsharp Mask from the submenu. The Unsharp Mask dialog box appears.



2 Enter a value in the Amount box to specify the percentage of the filter's effect, from 1 to 500. The higher the percentage, the stronger the effect of the filter.

3 Enter the Radius value in pixels.

The radius determines the depth of pixels that will be affected at the edge. The values can range from 0.1 to 100.0. If you specify a high value, more of the pixels surrounding the edge pixels are sharpened. If you specify a low value, only the edges are sharpened. For low-resolution files, use a lower radius; for example, use a radius of 1 pixel for a 72-dpi file. For high-resolution images, use a higher value. This prevents a “key-line” effect when the filter is applied.

4 Enter a value in the Threshold box to specify the level of brightness to be used for differentiation.

This option allows you to specify a tolerance range to prevent overall sharpening that might generate noise or cause other unexpected results. The Threshold defines the required range of contrast between adjacent pixels before sharpening is applied to an edge. Values can range from 0 to 255. A lower value produces a more pronounced effect. To find the value that produces the desired effect in the entire image, make a selection (for example, select an area with flesh tones) and experiment with different values before applying the filter to the entire image.

THE STYLIZE FILTERS

The Stylize filters produce a painterly or impressionistic effect on a selection by displacing pixels, and by finding and heightening contrast in an image.

The Crystallize, Facet, and Mosaic filters

The Crystallize, Facet, and Mosaic filters create sharp definition in a selection by clumping pixels of similar color values in cells. The cell size is the width of a cell in pixels.

The Crystallize filter in the Stylize submenu clumps pixels into a solid color in a polygon shape. Enter a cell size from 3 to 999 pixels in the Crystallize dialog box.

The Facet filter in the Stylize submenu clumps pixels into blocks of like-colored pixels. This filter analyzes an image, determines the major areas of solid or similar colors, and then emphasizes those areas. Use this filter to make a scanned image look hand-painted. Applying this filter several times makes a realistic image resemble an abstract painting.

The Mosaic filter in the Stylize submenu lets you clump pixels into square blocks. Enter a cell size from 2 to 64 pixels in the Mosaic dialog box.

The pixels in a given block are the same color, and the colors of the blocks represent the colors in the selection.

The Diffuse filter

The Diffuse filter in the Stylize submenu shuffles pixels in a selection to make the selection look less focused. Choose a diffusion mode in the Diffuse dialog box:

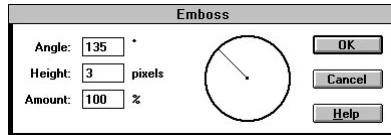
- The Normal option moves pixels at random, regardless of their color values.
- The Darken Only option moves pixels, replacing light pixels with darker pixels.
- The Lighten Only option moves pixels, replacing dark pixels with lighter pixels.

The Emboss filter

The Emboss filter makes a selection appear raised or stamped by suppressing the color within the selection and tracing its edges with black.

To use the Emboss filter:

1 Choose Stylize from the Filter menu and Emboss from the submenu. The Emboss dialog box appears.



2 Indicate the angle for embossing. Enter a value of 360 degrees to –360 degrees in the Angle text box; or drag the line in the circle to indicate the angle.

To raise the surface, enter a positive value, or drag the line clockwise. To lower (stamp) the surface, enter a negative value, or drag the line counterclockwise.

3 Enter a value from 1 to 10 pixels for the height of the embossing.

4 Enter a percentage in the Amount box from 1 to 500; 1 percent produces the least amount of color within the selection and 500 percent retains color values at the edges.

The Find Edges and Trace Contour filters

The Find Edges and Trace Contour filters in the Stylize submenu outline the edges of an image with dark lines (the outlined edges appear on a white background). Use the Invert command if you want to see the edges of a color image outlined with colored lines, or the edges of a gray-scale image outlined with white lines.

The Find Edges filter identifies the areas of the image that have significant transitions and emphasizes the edges automatically. The Trace Contour filter finds areas of major brightness transitions and draws thin lines around them (for each color channel). These filters are useful for creating a border around an image.

To use the Trace Contour filter:

1 Choose Stylize from the Filter menu and Trace Contour from the submenu. The Trace Contour dialog box appears.

2 Enter a value in the Level box to specify a threshold for evaluating color values.

This level refers to the tonal level of a color value. Values can range from 0 to 255. You can experiment to see what values bring out the best detail in the image. Use the Info palette to identify a color value that you want traced; then enter the value in this text box.

3 Select an Edge option for outlining the areas in the selection:

- The Lower option outlines where the color values of pixels fall below the specified level.
- The Upper option outlines where the color values of pixels are above the specified level.

The Fragment filter

The Fragment filter in the Stylize submenu creates four copies of the pixels in the selection, averages them, and offsets them from each other.

The Pointillize filter

The Pointillize filter in the Stylize submenu breaks up the color in an image into randomly placed dots, as in a pointillist painting, and uses the background color as a canvas area between the dots. To use the filter, enter a cell width size from 3 to 999 pixels in the Pointillize dialog box.

The Solarize filter

The Solarize filter in the Stylize submenu creates a blend between a negative and positive image. This effect is analogous to briefly exposing a print to light during the developing phase.

The Tiles filter

The Tiles filter breaks up an image into a series of tiles.

To use the Tiles filter:

- 1** Choose Stylize from the Filter menu and Tiles from the submenu. The Tiles dialog box appears.
- 2** Enter the minimum number of tiles you want in any direction for the Number of Tiles value.
- 3** Enter the maximum distance you want a tile to be offset from its original position for the Maximum Offset value.
- 4** Select how you want to fill the area between the tiles.

You can fill this area with the background color, with the foreground color, with a reversed-out version of the image, or with an unaltered version of the image. The unaltered option places the tiled version of the image on top of the original. Portions of the original image are visible beneath the tiled edges.

The Wind filter

The Wind filter creates tiny horizontal lines in the image to simulate a wind effect.

To use the Wind filter:

- 1** Choose Stylize from the Filter menu and Wind from the submenu. The Wind dialog box appears.
- 2** Select an option:
 - The Wind option produces a wind effect.
 - The Blast option produces a more dramatic wind effect.
 - The Stagger option offsets the wind lines in the image.
- 3** Click Left or Right to indicate a direction for the wind.

Chapter 15

ADOBE
PHOTOSHOP
FILTERS



Original

BLUR



Motion; Distance: 20 pixels



Blur More



Gaussian

NOISE



Original



Add Noise: Uniform

SHARPEN



Original

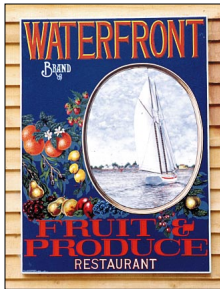


Sharpen Edges

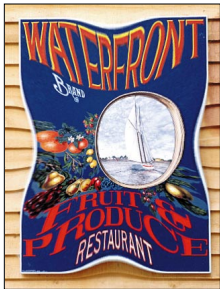


Unsharp Mask

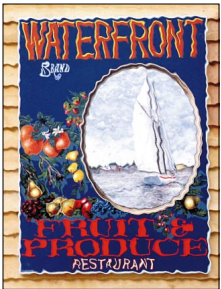
DISTORT



Original



Pinch; Amount: 100



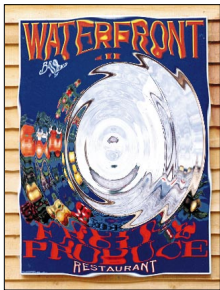
Ripple



Spherize



Twirl; Angle: 50



Zigzag; Out from center

STYLIZE



Original



Diffuse



Emboss



Find Edges



Fragment



Trace Contour

STYLIZE



Original



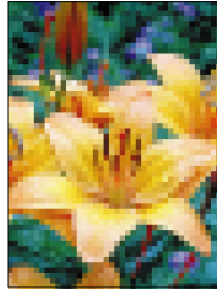
Color Halftone; Radius: 6 pixels



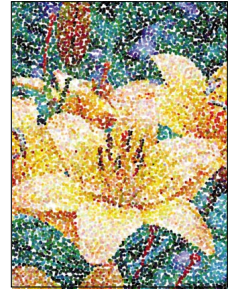
Crystallize

Extrude; Pyramids; Size: 10 pixels;
Depth: 10; Level-based

Facet



Mosaic; Cell Size: 8 pixels square



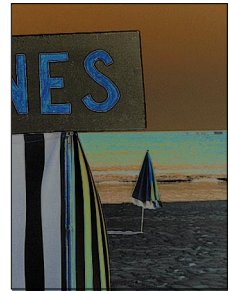
Pointillize



Original



Lens Flare; Brightness:150



Solarize

CHAPTER 16: PRINTING

This chapter provides an overview of the basic concepts of printing and describes how to print using the Adobe Photoshop program, including how to select screen attributes for halftones. In most instances, the default settings in Adobe Photoshop produce excellent results. The chapter also discusses how to adjust the way plates are generated when printing grayscale images.

PRINTING: AN OVERVIEW

The most common way to output images is to produce a positive or negative image on paper or film and then transfer the image to a printing plate to be run on a press.

To print continuous-tone images, the image must be broken down into a series of dots. These dots are created when you apply a *halftone screen* to the image. The dots in a halftone screen control how much ink is deposited at a specific location. Varying the size and density of the dots creates the optical illusion of variations of gray or continuous color in the image.

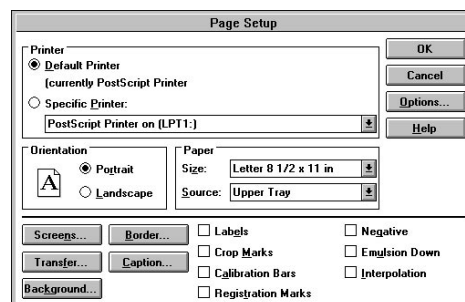
In conventional graphics, a halftone is produced by placing a halftone screen between a piece of film and the image, and exposing the film. In Adobe Photoshop, you specify the attributes for the halftone screen prior to producing the film or paper output. To achieve the best results, the output device you use, such as a PostScript imagesetter, should be set to the correct density limit, and the processor should be properly calibrated. If these factors are inconsistent, the results might be unpredictable.

To print any type of image in Adobe Photoshop, you first select the printing options you want, and then specify settings for the particular image type.

GENERAL PRINTING OPTIONS

For any type of image you print, you can choose to print the document name, along with crop marks, registration marks, and a caption. You can print a negative of the image, specify an emulsion side for your film processor, and select a background color for the image.

The various printing options appear in the Page Setup dialog box that appears when you choose Page Setup from the File menu. The exact appearance of this dialog box varies depending on your printer. Not all options are available for all printers. For example, if you are printing to a non-PostScript printer, the Calibration Bars option is not available, and only some registration mark options may be available. To preview the results of your printing options, click the page preview box in the lower left corner of the document. See Chapter 12, “Resizing Images,” for more information on the page preview feature.



Selecting a printer

In the top half of the Page Setup dialog box, select the name of the printer you will use to print, either the default or a specific printer. The Specific Printer drop-down list includes all currently active printers. You can use the Windows Control Panel to add or delete printers.

Selecting paper and page orientation

The Page Setup dialog box lets you select the page orientation you want. The default orientation is Portrait, a vertical orientation. The other page orientation option is Landscape, a horizontal orientation.

From the Paper Size drop-down list select the paper you are using. Select the paper source from the Paper Source drop-down list. The default source is Upper Tray.

Note: Adobe Systems recommends that, rather than using Landscape orientation, you rotate the image 90 degrees using the Rotate command in the Image menu, and print using Portrait orientation. Printing a page with the Portrait setting is much faster than printing with the Landscape setting.

Setting additional printing options

Click Options in the Page Setup dialog box to set specific options for the printer you have selected. For more information on using the printing options, please see your Windows documentation.

Printing labels

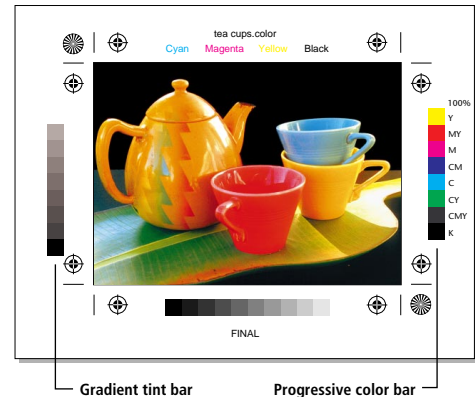
The Labels option in the Page Setup dialog box prints the document and channel name on the image.

Printing crop marks

The Crop Marks option in the Page Setup dialog box prints crop marks near the edges of the image. The crop marks indicate where the image is to be trimmed.

Printing calibration bars

The Calibration Bars option in the Page Setup dialog box prints an 11-step grayscale. The steps represent a transition in density from 0 to 100 percent in 10-percent increments.



Printing registration marks

The Registration Marks option in the Page Setup dialog box prints registration marks on the image, including bull's-eyes and star targets, to help you register multiple plates.

Printing a negative

The Negative option in the Page Setup dialog box prints an inverted version of the image. Unlike the Invert command in the Image menu, the Negative option converts only the output to a negative (not the on-screen image). If you are printing directly to film, you will probably want a negative, although in many countries it is common to print film positives. Check with your print shop to find out if it requires a film positive or negative. If you are printing to paper, print a positive.

Specifying an emulsion side

Emulsion refers to the photosensitive layer on a piece of film or photographic paper. By default, the emulsion is up (right-reading); type in the

image is readable when the photosensitive layer is facing you. When you select the Emulsion Down option (also right-reading), type is readable when the photosensitive layer is facing away from you. Normally, images printed on paper should be printed emulsion up.

To determine the emulsion side of a piece of film, examine the film under a bright light after it has been developed. The dull side is the emulsion; the shiny side is the base. Check with your print shop to see whether it requires film as a positive emulsion up, negative emulsion up, positive emulsion down, or negative emulsion down.

Using interpolation

Some PostScript Level 2 printers can reduce the jagged appearance of a low-resolution image by automatically resampling up an image while it is printing. If your printer does not have this capability, this option has no effect.

Printing a border

You can specify the width of a border you want to have appear around an image using the Border button. The border is printed in black.

To specify the width of a border:

- 1 Click Border in the Page Setup dialog box. The Border dialog box appears.
- 2 Select the unit of measurement you want from the drop-down list
- 3 Enter a value between 0 and 10 for the width of the border; then click OK. You can specify decimal values for the width.

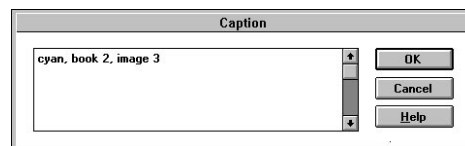
Printing a caption

Using the Caption button lets you enter text that will appear below an image. The caption is saved with the Adobe Photoshop document. You can print up to six lines of text as a caption; addi-

tional text is not printed. Caption text is printed as 9-point Helvetica plain. This font cannot be changed.

To define a caption:

- 1 Click Caption in the Page Setup dialog box. The Caption dialog box appears.
- 2 Type the caption text; then click OK.



Selecting a background color

The Background button in the Page Setup dialog box lets you select a background color to be printed on the page outside the image area. This option is especially useful if you are printing slides to a film recorder, since a black or colored background is often desirable for slides. To use this option, click Background; then select a color from the Color Picker dialog box. The Background option is a *printing* option only and does not affect the image area itself.

Displaying the transfer functions

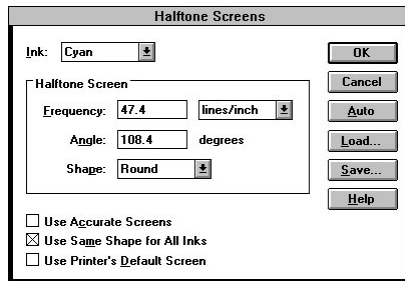
The Transfer button in the Page Setup dialog box lets you adjust the transfer functions that Adobe Photoshop uses to print the image. Transfer functions are traditionally used to compensate for dot gain or dot loss that may occur when an image is transferred to film. For information on setting the transfer functions, see “Calibrating the Output for Grayscale Images” later in this chapter.

SELECTING HALFTONE SCREEN ATTRIBUTES

Halftone screen attributes include the screen frequency and dot shape for each screen used in the printing process. Check with your print shop for the preferred frequency, angle, and dot settings before creating your halftone screens.

To define the screen attributes:

- 1 Click Screens in the Page Setup dialog box. The Halftone Screens dialog box appears.



- 2 Set the screen frequency and angle for each screen. The screen frequencies and angles for grayscale and color halftones are discussed in the following sections.

Note: To use the default halftone screen built into the printer, select the Use Printer's Default Screens option. The specifications from this dialog box are then ignored when the halftone screens are generated.

- 3 Select the dot shape you want from the Shape drop-down list. If you want all four screens to have the same dot shape, click the Use Same Shape for All Inks option.

Selecting Custom from the Shape drop-down list displays a dialog box for defining your own dot shapes using PostScript commands. The Custom feature is useful for printing with non-standard halftone algorithms, such as the Flamenoco technology by The Color Group in Richmond, California. For information about using

PostScript commands, see the *PostScript Language Reference Manual* published by Addison-Wesley, or consult the imagesetter's manufacturer.

For optimal printing, the image resolution should be twice the halftone screen frequency. If the resolution is more than 2.5 times the screen frequency, Adobe Photoshop displays an alert message. See "Determining the Scan Resolution" in Chapter 4 for more information.

Printing a grayscale halftone

For a grayscale image, enter a screen frequency from 1 to 999.999 in the Frequency text box; then choose the unit of measurement you want from the drop-down list.

Enter a screen angle from 180 degrees to -180 degrees in the Angle text box.

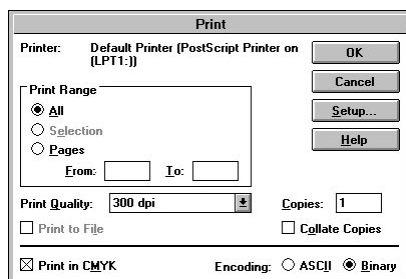
Saving and loading halftone screen settings

You can save your halftone screen settings to use with other Adobe Photoshop documents by using the Save and Load buttons in the Halftone Screens dialog box. To save the new settings as the default, hold down the Alt key and click the —> Default button. To return to the original default settings, hold down the Alt key and press <—Default.

ADDITIONAL PRINTING OPTIONS

You can also set printing options using the Print dialog box that appears when you choose Print from the File menu. These options let you print only a selected area of an image, transfer image data to the output device in ASCII format, and

print a color-corrected composite image on a color printer. The appearance of this dialog box varies depending on your printer.



Printing a selected area

You can print a selected part of an image if the selection is a rectangle and 100 percent of all pixels within the rectangle are selected.

To print a selected part of an image:

- 1 Use the rectangular marquee tool to select the part of an image you want to print (this is the only selection tool you can use).
- 2 Choose Print from the File menu. The Print dialog box appears.
- 3 In the Print Range options, click Selection; click OK.

Printing with print spoolers and across networks

By default, Adobe Photoshop transfers binary information to printers. However, some print spooler programs and computer networks don't support files that are binary encoded. In these situations, you can choose to transfer the document in ASCII format. Files that are encoded in ASCII format require about twice as much time to transfer as binary files, because they contain about twice as many characters.

To select the ASCII encoding option, click ASCII in the Print dialog box.

CALIBRATING THE OUTPUT FOR GRAY-SCALE IMAGES

The quality of output can vary quite a bit, depending on your imagesetting equipment, the strength and mixture of your chemicals, the batch of film you are using, and the press you use. The Transfer option allows you to calibrate and adjust the screen process in order to ensure more consistent densities.

When you print an image, the Adobe Photoshop program evaluates the density of each pixel in an image and classifies it according to five levels. The levels are the highlights, 1/4 tones, mid-tones, 3/4 tones, and shadows. The classification is based on the gray-scale values of the pixel, which are evaluated on a 256-step scale. White pixels have a value of 355 and are classified as highlights; black pixels have a value of 0 and are classified as shadows. Pixels with intermediate values are classified as 1/4 tones, midtones, or 3/4 tones, depending on their values.

The Adobe Photoshop program uses the density specifications in the Transfer Function dialog box to output the pixels at each level at the specified density. For example, if you specify a value of 10 for the Highlights in the Transfer Function dialog box and print an image that contains highlight pixels, these pixels will print out at a density of 10 percent.

Based on visual examination, you can also adjust the values for the 1/4 tones, midtones, and 3/4 tones. If the image is too dark, you should lower the values in these areas; if the image is too light, you should increase the values.

To adjust the overall density range of the printed image, you should first consult your printer to find out the density range of the press you will

use. The density range is the range from the smallest highlight dot the press can print to the largest shadow dot it can print. On a given printing press, a very small highlight dot might be too small to hold ink, and beyond a certain density level, the shadow dots might fill into solid black, thereby removing all of the detail in the shadow area.

COMPENSATING FOR DOT GAIN WHEN THE IMAGE GOES TO FILM

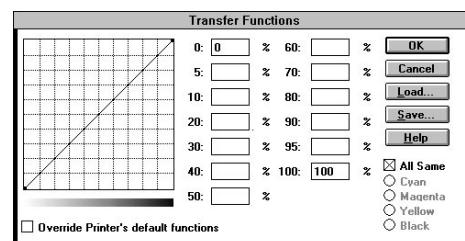
Transfer functions are used to compensate for dot gain or loss that can occur when the image goes to film. The Adobe Photoshop transfer function is designed to compensate for dot gain due to a miscalibrated imagesetter. For example, if your imagesetter is miscalibrated, a dot that you specified as a 50-percent screen might actually print at a value of 58 percent. To compensate for this dot gain, you use the Transfer Function dialog box to specify a different output density for each level of pixels.

Note: Adobe Systems strongly recommends that you calibrate your imagesetter using the manufacturer's calibration software or a third-party imagesetter calibration device, such as Precision Color by Kodak. If you are using a service bureau, verify that the imagesetter is not off by more than one percentage point.

To adjust the transfer function values:

- 1 Use a transmissive densitometer to record the density values at the appropriate steps in your image on film.
- 2 Choose Page Setup from the File menu. The Page Setup dialog box appears.

- 3 Click the Transfer button. The Transfer Functions dialog box appears.



- 4 Calculate the required adjustment, and enter the values (as percentages) in the Transfer Functions dialog box.

For example, if you have specified a 50-percent dot, and your imagesetter is printing it at 58 percent, you know that you have an 8-percent dot gain in your midtones. To compensate for this gain, enter 42 percent (50 percent – 8 percent) in the 50-percent text box of the Transfer Functions dialog box. The imagesetter then prints the 50-percent dot that you want.

When entering transfer function values, keep in mind the density range of your imagesetter. On a given imagesetter, a very small highlight dot might be too small to hold ink; beyond a certain density level, the shadow dots might fill into solid black, removing all the detail in shadow areas.

Saving and loading transfer function settings

Use the Save and Load buttons in the Transfer Functions dialog box to use transfer function settings with other Adobe Photoshop documents. To save the current transfer function settings as the default, hold down the Alt key (the Save button changes to —> Defaults), and click. To load the default settings, hold down the Alt key (the Load button changes to <— Defaults), and click.

APPENDIX: TIPS AND TROUBLESHOOTING

This appendix contains tips for using the Adobe Photoshop program most efficiently and solutions to problems you may encounter when using the program. The appendix includes tips about color and resolution, memory and installation, working with placed images, and using Adobe Photoshop with a Scitex system and with film recorders.

PROBLEMS WITH IMAGE APPEARANCE

Type appears jagged or disappears

Problem: Type appears jagged or disappears, even though you are using anti-aliasing and ATM.

Cause: Sometimes Photoshop will cause text to be jagged or disappear; it looks as if ATM isn't working. This usually happens when the text causes the ATM font cache to fill up.

Solution: To correct the problem, increase the ATM font cache and restart your machine.

Painting tools don't work

Problem: Painting tools don't apply any paint on the image.

Cause: Painting tools only work inside areas that are part of the current selection or when no part of the image is selected.

Solution: Check to make sure that you are not painting outside a selected area. If you are painting outside a selected area, choose None from the Select menu, or use the Inverse command from the Select menu to switch the selected and unselected areas.

SPEED AND INSTALLATION PROBLEMS

Printing is unusually slow

Problem: The printer is taking an unusually long time to print.

Cause: The resolution of your image may be too high for the resolution of your printer.

Solution: Make sure that you have properly sampled down your image to comply with the resolution at which you are printing. Before printing the image, save your file; then use the Image Size command in the Image menu to adjust the resolution of your image (see Chapter 12, "Resizing Images"). For example, if you are printing proofs to a 300-dpi printer, you might want to create a low-resolution version of the image (no more than 100 dpi). Use this image to print the comps quickly.

Remember to use the Revert command in the File menu to restore the image to the version you saved before the resampling. This will retain all of the information in the image in case you later want to print to a higher resolution device.

You may also want to print directly to the printer, rather than use the Print Manager spooler that Windows provides. To disable the Print Manager, open the Control Panel in the Main menu of the Program Manager, and double-click Printers. Select the printer you plan to use and deselect the Use Print Manager button. Click Close, and close the Control Panel.

Space on hard disk appears lost

Problem: A system error occurred, and now it appears that a large segment of the hard disk is missing or in use.

Cause: When a system error occurs, the directory entries used to locate files on your hard disk can be damaged. If a Photoshop file is open when a system error occurs, the space occupied by the scratch file may become lost to the system.

The scratch file is a special file created by Adobe Photoshop to contain information about open images. Scratch files let you work on images of nearly any size using a hard disk instead of RAM to hold information. The scratch file is normally deleted when you quit the program.

Solution: To restore the lost space on your hard disk, throw away any temporary (.TMP) files located in the TMP or root directory and run the CHDKSK utility to find and fix any lost files. For more information, see your Windows documentation.

Virtual memory program doesn't speed processing

Problem: A permanent swap file has been added or increased in size to speed up processing, but it doesn't seem to have an effect on the Adobe Photoshop program. If anything, it seems to slow down the program.

Cause: The Adobe Photoshop program's implementation of virtual memory (scratch disks) is highly optimized for its particular architecture. No additional virtual memory program is required for optimal system performance when you use the Adobe Photoshop program, including a permanent swap file.

Virtual memory uses the hard disk to hold information when there is not enough RAM in your computer. Because the access speed of a hard disk is much less than that of memory chips, large images that must be swapped to and from disk will slow processing noticeably.

For both color and black-and-white images, the Adobe Photoshop program requires between three and five times the file size in RAM, or it must use the hard disk. Thus, to work on a 10-megabyte color image efficiently, you will need at least 30 megabytes of free RAM. The amount of free RAM refers to the amount of extended memory available after Windows and Photoshop are running; it does not include any virtual RAM added by a Windows permanent swap file. The amount of free RAM appears in the Memory Preferences dialog box as the difference between Available RAM and Photoshop RAM.

Solution: You will get the best performance if you use an empty hard drive (or drive partition) as the Adobe Photoshop program's scratch disk. An empty drive contains contiguous disk space, allowing the scratch file to be stored in one large piece rather than in fragments throughout the hard drive. The scratch file contains the program's scratch disk information and is automatically set up on the drive indicated in the Memory Preferences dialog box under the File menu.

Message states "disk is full" or "scratch disk is full," or the program is unusually slow

Problem: The program seems to be taking an unusually long time to execute commands, or the screen continually displays a message stating that operations can't be performed because the disk is full.

Cause: Your virtual memory may be assigned to a disk that doesn't have enough free disk space for your image.

Solution: Make sure that your Adobe Photoshop scratch disk or disks are on a volume or hard disk with free disk space equal to three to five times the size of the file. The file size is displayed in the lower left corner of the document window. Use the Memory Preferences dialog box

under the File menu to reassign the scratch disk. You must restart Adobe Photoshop for this change to take effect.

Installed plug-in modules don't appear in the program

Problem: After additional plug-in modules have been installed in the same folder as the Adobe Photoshop program, the additional features still are not accessible in the program.

Cause: The plug-in modules are not in the directory specified in the PHOTOSHP.INI file, located in your Windows directory.

Solution: Move the plug-in modules to the directory specified in the PHOTOSHP.INI file. To check the directory name or location, open the PHOTOSHP.INI file in a text editor, and enter the correct pathname for the PLUGINS directory; the PLUGINS directory is a subdirectory of the PHOTOSHP directory. For more information, see “Changing the Location of Plug-In Modules” in Chapter 1. Some of the plug-in modules may appear as filters in the Filter menu. Other plug-in modules may appear as import and export modules in the Acquire and Export submenus in the File menu.

WORKING WITH FILM RECORDERS

The optimum image resolution for 8000-line and 4000-line 32-bit film recorders that shoot 100 ASA Ektachrome film depends on the quality of the film recorder. High-quality film recorders have small *spot sizes*—that is, smaller sized pixels on the face of the recorders' CRTs. Some examples of such film recorders are the Solitaire, Matrix, Masterpiece, and Lasergraphics.

A 4000-line film recorder, for example, writes output using 4000 scan lines. The spot size on a lower quality recorder may be as large as several scan lines; it is usually at least as large as two scan lines. Because recorders often use the same spot size at both resolution settings, there is usually no improvement in image quality at the higher resolution setting.

For high-quality film recorders, improvement in image quality usually tapers off at an image resolution between 150 and 200 pixels per inch (based on a slide “size” of 8 by 10 inches). The only way to determine conclusively the optimum image resolution for your film recorder is to generate slides at various image resolutions. This also applies to Adobe Photoshop images reproduced as 4-by-5-inch film transparencies.

In addition, for the best results, you should calibrate your system for the film recorder. A quick and simple way to do this is to print a slide and use the Gamma adjustment (described in Chapter 17, “Calibrating Your System”) to make the screen look like the slide. The gamma adjustment should improve the image quality by calibrating for overall lightness and darkness.

GLOSSARY

ADDITIVE PRIMARY COLORS • Red, green, and blue, which are the three colors used to create all other colors when direct, or transmitted, light is used (for example, on a computer monitor). They are called additive primaries because when pure red, green, and blue are superimposed on one another they create white.

ANTI-ALIASING • Smoothing edges created with painting, selection, or type tools.

ARBITRARY MAP • An option in the Curves dialog box that allows you to precisely define a gamma curve.

ASCII • An acronym for American Standard Code for Information Interchange. A standard that assigns a unique binary number to each text character and control character.

ASPECT RATIO • The height-to-width ratio of a selection or an image.

BITMAPPED IMAGE • A single-channel image with 1 bit of color information per pixel. The only colors displayed in a bitmapped image are black and white.

BLACK AND WHITE POINTS • The end points for the tonal range in an image. You can set these points in the Curves and Levels dialog boxes.

BRIGHTNESS • One of the three dimensions of color; the other two are hue and saturation. The term is used to describe differences in the intensity of light reflected from or transmitted through an image independent of its hue and saturation.

BULL'S-EYES (REGISTRATION MARKS) • Marks that appear on a printed image, generally for color separations, to help in aligning the various printing plates.

CALIBRATION BARS • The printed 11-step grayscale wedge that appears on printed output. On a color image, this refers to the color swatches printed at the sides of the image.

CAPTION • Text that appears below a printed image.

CHANNEL • Analogous to a plate in the printing process, a channel is the foundation of an image. Some image types have only one channel, while other types, such as RGB, have several channels. An image can have up to 16 channels.

CMYK • The four process colors used in printing: cyan, magenta, yellow, and black.

COLOR CORRECTION • The process of changing the colors of pixels in an image—including adjusting brightness, contrast, midlevel grays, hue, and saturation—to achieve optimum printed results.

CONTINUOUS-TONE IMAGE • An image containing gradient tones from black to white.

CONTRAST • The tonal gradation between the highlights, midtones, and shadows in an image.

CROP • To select part of an image and discard the unselected areas.

CROP MARKS • The marks that are printed near the edges of an image to indicate where the image is to be trimmed.

DENSITOMETER • An instrument used to measure the density of printed halftones. A densitometer is used to measure the density levels on the printed calibration bars.

DENSITY • The ability of an object to stop or absorb light. The less the light is reflected or transmitted by an object, the higher its density.

DENSITY RANGE • The range from the smallest highlight dot a press can print to the largest shadow dot it can print.

DITHERING • The technique of making adjacent pixels different colors to give the illusion of a third color. Dithering can produce the effect of shades of gray on a black-and-white display, or of more colors on an 8-bit color display.

DOT GAIN • A defect in printing that causes dots to print larger than they should and creates darker tones or colors. Dot gain is reflected in an increase in the density of light reflected by an image.

DPI • Dots per inch; a measure of resolution.

EMULSION • The photosensitive layer on a piece of film or paper.

FADE-OUT RATE • The rate at which the paintbrush and airbrush tools fade out as you paint with them to simulate an actual brush stroke.

FEATHER EDGE • The area along the border of a selection that is partially affected by changes you make to the selection.

FILL • To paint a selected area with a gray shade, a color, or a pattern.

FLOATING SELECTION • A selection that has been moved or pasted on an image or converted to a floating selection using the Float command in the Select menu. It floats above the pixels in the underlying image until it is deselected and can be moved without affecting the underlying image.

GAMMA • A measure of contrast that affects the midlevel grays (midtones) of an image.

GRADIENT FILL • A fill that displays a gradual transition from the foreground color to the background color. Gradient fills are made with the gradient tool.

GRAYSCALE IMAGE • A single-channel image consisting of up to 256 levels of gray, with 8 bits of color information per pixel.

HALFTONE • The reproduction of a continuous-tone image, which is made by using a screen that breaks the image into various sizes of dots.

HIGHLIGHT • The lightest part of an image, represented in a halftone by the smallest dots or the absence of dots.

HISTOGRAM • A graphic representation of the number of pixels with given color values. A histogram shows the breakdown of colors in an image.

HUE • The main attribute of a color that distinguishes it from other colors.

INDEXED COLOR IMAGE • A single-channel image, with 8 bits of color information per pixel. The index is a color lookup table containing up to 256 colors.

KERN • To adjust the character spacing in type.

LABELS • A printing option that prints the document and channel name on the image.

LEADING • The line spacing for type, measured from baseline to baseline.

LINEAR FILL • A fill that is projected from one point to another in a straight line.

LPI • Lines per inch; a measurement of resolution.

MIDTONE • The tonal value of a dot, located approximately halfway between the highlight value and the shadow value.

NOISE • In an image, pixels with randomly distributed color values.

PIXEL • A single dot on a computer display or in a digital image.

PLUG-IN MODULE • Software developed by a third-party vendor that lets you use a function that is not available in the standard Adobe Photoshop application.

PROCESS COLOR • The four color pigments—cyan, magenta, yellow, and black—used in color printing.

1/4 TONE • Tonal value of a dot, located approximately halfway between the highlight and midtone.

RADIAL FILL • A fill that is projected from a center point outward in all directions.

RANDOM ACCESS MEMORY (RAM) • The part of the computer's memory that stores information temporarily while you're working on it.

REGISTRATION MARKS (BULL'S-EYES) • Marks that appear on a printed image to help you align the various printing plates.

RESAMPLE • To change the resolution of an image. Resampling down discards pixel information in an image; resampling up adds pixel information through interpolation.

RESOLUTION • The number of pixels per inch in an image or the number of dots per inch used by an output device. Resolution can also refer to the number of bits per pixel.

RGB IMAGE • A three-channel image containing a red, green, and blue channel.

SATURATION • The amount of gray in a color. More gray in a color means lower saturation; less gray in a color means higher saturation.

SCANNER • An electronic device that digitizes and converts photographs, slides, paper images, or other two-dimensional images into bitmapped images. A video camera is a scanner that converts three-dimensional objects into digital, bitmapped images.

SCREEN ANGLES • The angles at which the halftone screens are placed in relation to one another.

SCREEN FREQUENCY • The density of dots on the halftone screen, commonly measured in lines per inch. Also known as screen ruling.

SHADOW • The darkest part of an image, represented in a halftone by the largest dots.

SPACING • The distance between the brush tips for brushes used by each painting and editing tool.

STAR TARGETS • The printed pinwheels, used primarily in printing color separations, to align the different plates and measure dot doubling, grain, and slurring during printing.

TOLERANCE • A parameter of the magic wand and paint bucket tools that specifies the color range of the pixels to be selected.

TOOLBOX • The Adobe Photoshop set of tools, normally displayed to the left of an image. The toolbox is a floating palette that you can move or hide.

VIRTUAL MEMORY • The memory space that is separate from the main memory (physical random access memory) in a computer, such as hard disk space. Virtual memory allows you to work on large documents without requiring you to have large amounts of RAM.

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