

# Trident User Guide







# Trident User Guide

Version 3.0

Part Number HTM123

Revision B



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# Preface



**T**rident is a powerful scanning software package for your flatbed or drum scanner. With its many flexible features, Trident enables you to perform complex color corrections and to make professional CMYK color separations from your scanned images quickly and easily.

Because it manipulates 36-bit color data or 12 bits per color directly on the host computer, Trident gives you the opportunity to preview changes during the initial scanning process without additional prescanning. Trident also provides instant CMYK feedback on your image transformations, so you can see the results of your changes immediately.

Trident is available in two configurations:

- ◆ Photo Edition (PE) package.
- ◆ Separator Edition (SE) package.

Both packages are described this User Guide.

## Trident Photo Edition (PE)

Photo Edition (PE) is Trident's basic high-end scanning package. The color engine used in PE is based on density-to-reflectance calculations. Although the PE color space is intended for photographers, photo retouchers, and those who prefer working with RGB values, Trident PE provides extremely accurate RGB-to-CMYK conversion with the ColorSync feature. In addition, you can perform grayscale and line art scans with Trident PE.

Trident PE features include:

- ◆ Multiple, independent scan regions.
- ◆ Color, range, and gradation control for individual scan regions.
- ◆ Image manipulation tools, including rotation, cropping, and unsharp masking.

- ◆ Selective color.
- ◆ Eyedroppers.
- ◆ Flexibility in setting lpi, dpi, size, and scale for individual scan regions.
- ◆ Ability to open TIF files for corrections.
- ◆ Scanning to commonly used file formats.

## Trident Separator Edition (SE)

Separator Edition (SE) is the Trident high-end scanning software package based on a density-to-dot color engine. This software is intended for use by those who understand the concepts behind color separation and reproduction as they relate to offset printing.

The SE package offers sophisticated, advanced features for creating high-end color separations, including:

- ◆ Selective color correction.
- ◆ Adjustments for wanted and unwanted colors.
- ◆ Two operation modes for general production and expert work.
- ◆ Input/output three-color and four-color density range gradation control.
- ◆ Cast correction with diffused highlight and shadow settings.
- ◆ Gray Component Replacement (GCR), Undercolor Removal (UCR), and gradation control.
- ◆ User definable dot gain.
- ◆ User definable gray balance.

# About This User Guide

This guide explains how to install and work through the functions of the Trident software package. It contains all the information you need to begin using Trident PE or SE with your flatbed or drum scanner.

Once you have installed the software (as described in Chapter 1), this guide will help you understand the process and tools for scanning, color correction, and image manipulation.

Chapter 2 provides overview information. Trident PE is described primarily in Chapters 3 through 5. Additional information is detailed in Chapters 6 and 7 for Trident SE. Chapter 8 provides procedures for scanning to disk. Chapter 9 presents “tips and tricks” for using the Trident software.

## Typographical Conventions

The following typographical conventions are used throughout this guide.

- ◆ Screen dialogs or windows are the displayed forms on which you will enter information and select buttons to perform actions.
- ◆ The descriptive title of a window is shown within text with an uppercase letter: Preferences window.
- ◆ Fields are areas on a window where you enter information.
- ◆ Menus and menu options, window selections, on-screen messages, and keyboard keys appear within the text in bold: Manual Update, Preview, etc.
- ◆ Special notes are highlighted with this notation:

---

Note: Provides information about the current topic.

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## Related Documentation

This guide assumes that you are familiar with your scanner, computer operating system, and interface.

For detailed information about your computer, refer to your computer's installation guide. For details on using your flatbed or drum scanner, refer to the user guide provided with your specific model.



# Installation



This chapter describes the configuration requirements for Trident and guides you through the software installation process.

## Configuration Requirements

Before installing Trident, make sure your system meets the following minimum configuration requirements.

### Host Computer

In order to take full advantage of the Trident software, your host computer must include the following for either a Macintosh or PC system.

#### Macintosh Requirements

- ◆ Power Macintosh 8100 computer or better with floating point coprocessor installed.
- ◆ 24-bit color display adapter.
- ◆ 17" or larger high-resolution monitor (1024 x 768 dpi).
- ◆ 48 Mb RAM available (recommended: 64 Mb or more).
- ◆ System 7.5.3 or higher.
- ◆ Enough disk space to accommodate your scans.

#### PC Requirements

- ◆ 486 Personal Computer, 66 Mhz or better.
- ◆ 24-bit color display adapter.
- ◆ 17" or larger high-resolution monitor (1024 x 768 dpi).
- ◆ SCSI I or II host adapter.
- ◆ 48 MB RAM available (recommended: 64 Mb or more).
- ◆ Windows 95 or NT 4.0 or higher.
- ◆ 200 Mb disk space minimum.

## Scanner

Trident works with a variety of flatbed and drum scanners from Howtek. For details on connecting your scanner to your host computer, refer to your scanner's user guide.

## Setting Up and Installing Trident

Before beginning the installation process, make a copy of your Trident diskette. Store the original diskette in a safe place and use the copy for installation.

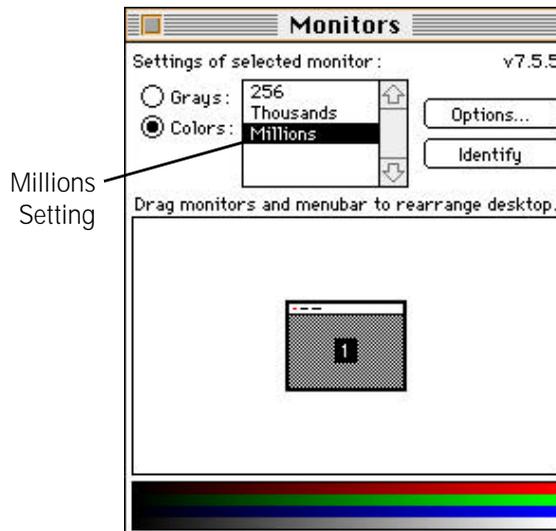
### Configuring Your Monitor for Trident

To configure your monitor for Trident, follow the steps below for either a Macintosh or PC system.

#### Macintosh Monitor Configuration

1. Open Control Panels on the Apple menu.
2. Open the Monitors control panel and set your monitor to millions of colors.

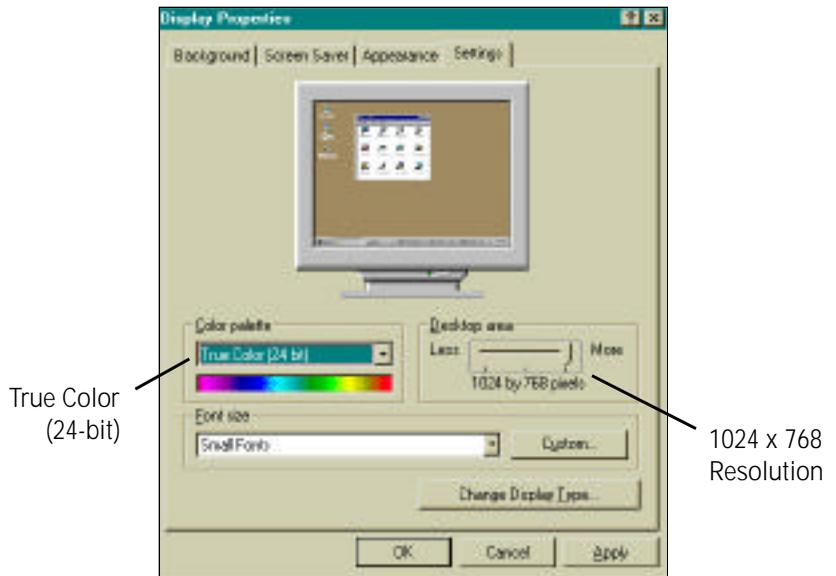
Figure 1-1  
Macintosh: Monitor  
Settings



## PC Monitor Configuration

1. Open Settings on the Start menu.
2. Open the Control Panel and select Display.
3. Select the Settings tab and set your monitor for True Color (24-bit) and your resolution as 1024 by 768 pixels.

Figure 1-2  
PC: Monitor Settings



## Installing the Software Access Key (Dongle)

To install the software access key (dongle):

1. Shut down your computer.
2. On a Macintosh, install the dongle between your keyboard and CPU.

On a PC, install the dongle to your printer port.

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Note: Trident can be used without the dongle, in Demo mode, but you will not be able to save final scans to disk. When the application starts up without a dongle, a message appears indicating that you are not authorized to use the software.

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3. Restart your computer.

Now you are ready to install the Trident software.

## Installing the Trident Software

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Note for Macintosh Users: If you are upgrading from a previous version of Trident, before launching the application delete the Trident Preferences file (located in the Preferences folder within the System Folder ). Trident will create a new preferences file the first time you launch it.

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Note for PC Users: If you are upgrading from a previous version of Trident, before launching the application uninstall the previous version.

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To install the Trident software:

1. Insert the Trident CD into your CD-ROM drive.

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Note for Macintosh Users: If you want to change the location in which Trident will be installed, follow these steps:

- ◆ Click on the Install Location pulldown menu.
  - ◆ Select Select Folder in the pull-down menu.
  - ◆ In the destination window that appears, select the destination disk and folder of your choice for Trident. Trident software requires at least 3 MB of hard disk space.
  - ◆ Highlight the folder where Trident will reside and click on Select.
- 

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Note for PC Users: If you want to change the location in which Trident will be installed, refer to Step 2 below.

---

2. On a Macintosh, double-click on the Installer icon.

On a PC, open the Start menu and select Run. In the Open field, enter the path (or Browse to locate) of the Setup.exe file on the CD. For example, if your CD drive is "D" enter:

D:\setup.exe

Click OK to initiate the installation program.

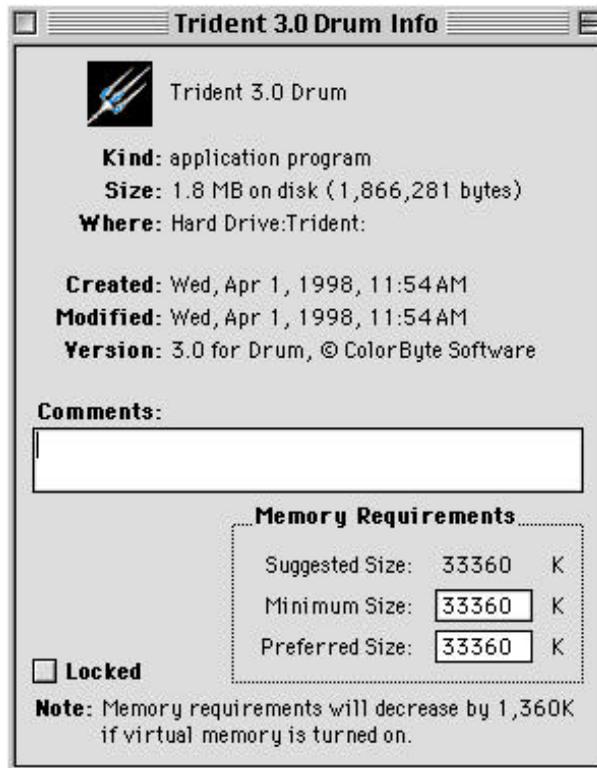
3. Complete the installation by following the instructions on your screen. Be sure to review the entire license agreement. You must agree with the license before proceeding.

## Macintosh Users Only: Assigning Memory to Trident

To increase the amount of memory assigned to Trident:

1. Select the Trident application icon in the Trident folder and choose Get Info from the File menu.

Figure 1-3  
Trident Get Info  
Window



2. In the Trident Info window that appears, under Memory Requirements make sure the Preferred size is set to at least 32 Mb. If possible, increase the RAM for Trident to 64 Mb.
3. Close the Trident Info window.



## Getting Started



**T**rident provides a powerful and flexible software interface between your computer and your flatbed or drum scanner. The software offers a wide array of professional scanning and image manipulation tools with all the convenience and user friendliness of your standard computer interface, including pull-down menus, multiple windows, point-and-click controls, and keyboard shortcuts.

## Launching Trident

To launch the application, double-click on the Trident icon. When the application opens, the menu bar, button bar, tools, blank Overview window, and Queue Manager are displayed.

### Menu Bar and Button Bar

You can access all Trident commands and functions through options on menus.

**File Edit Correction Tools Command Transform Settings**

Figure 2-1  
Trident Menu Bar

Figure 2-2  
Trident Button Bar

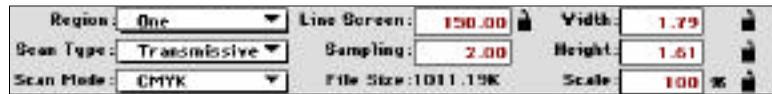


Buttons duplicate options available on menus and provide a convenient way to access most Trident features.

## Tools (Controls)

The tools provide information about parameters and settings.

Figure 2-3  
Trident Tools



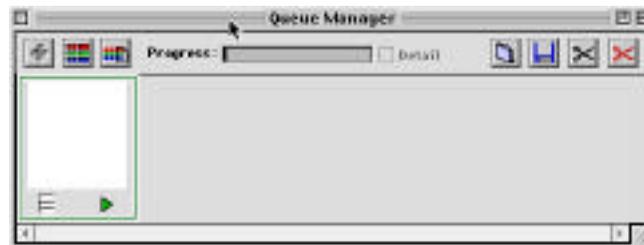
## Overview Window

The Overview window is the area in which you will preview images. This window adjusts in size automatically to match the drum that is mounted.

## Queue Manager

The Queue Manager is the area in which you will queue the Overview image and regions that you have defined.

Figure 2-4  
Queue Manager



The Queue Manager is a flexible tool designed to organize your work with regions. Use the Queue Manager to, activate a region, preview regions, rearrange the order of the regions, and scan regions to disk.

The Queue Manager is a multitasking tool. While a region is being previewed or final scanned, other regions can be added, deleted, or rearranged in the Queue Manager. Color correction work can also be performed on a region in the queue, whether or not scanning is in progress.

The Queue Manager window can be manipulated using standard computer-system window tools. (Refer to your operating system documentation, as necessary.)

# Setting Preferences

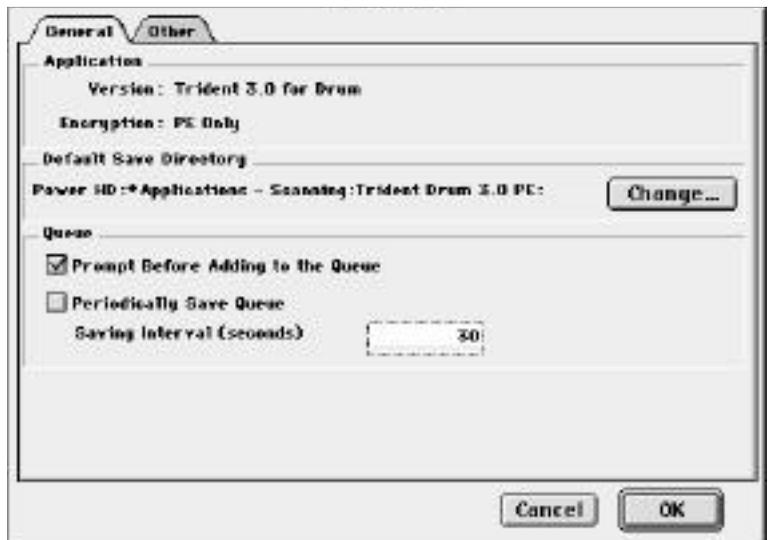
Before you begin scanning, check the Trident preferences to be sure the options you need will be available. Preferences are set on the Preferences window. To open this window, select Preferences on the Trident Edit menu. The Preferences window consists of two windows, accessed with the General and Other tabs.

Note: The preferences you select, as well as all window positions and contents, are saved by Trident when the application is closed. The next time you launch Trident, they will be restored.

## General Tab Settings

The General tab area of the Preferences window provides:

Figure 2-5  
Preferences Window:  
General Tab



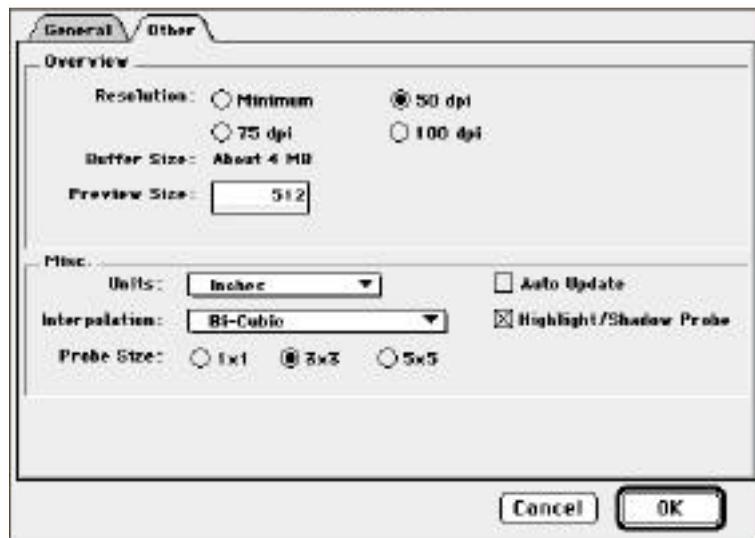
- ◆ Application  
Software revision number and type of encryption (if any). You cannot edit these fields.

- ◆ Default Save Directory     y  
Directory where final scans are stored. Click on the Change... button to define the desired location.
- ◆ Queue  
Options to prompt before files are added to the queue for final scan or to periodically save the queue. If you periodically save, enter a time interval (in seconds).

## Other Tab Settings

The Other tab area of the Preferences window provides:

Figure 2-6  
Preferences Window:  
Other Tab



- ◆ Overview  
Control of how images are viewed on screen during the scanning and color correction process.  
  
The Resolution setting defines the desired resolution of the Overview scan. The default value is 50 dpi. Higher resolutions provide greater detail in the image window, but also require considerably more time and RAM (as reflected in the non-editable Buffer Size field). If you have over 64 MB of RAM available for Trident, setting the resolution to 75 or 100 increases the default resolution in the region windows, which may save you from the need to perform a preview scan for each region.

The Preview Size setting defines the length and width of the image window. The default size is 512 pixels.

- ◆ Units  
Units of measure for the entire application. The available options are Pixels, Inches (default), Centimeters, Millimeters, and Points. Note that the Line Screen and Sampling tools are disabled (grayed) when Pixels is selected.
- ◆ Interpolation  
Method by which Trident determines how new pixels are added when a non-native resolution is used.  
  
Bi-Cubic: Weighted average of a region of pixels around the target pixel (default mode). This type of interpolation provides high quality for continuous tone images when scaled to a non-native resolution or to a resolution higher than the maximum optional resolution of the scanner.  
  
Bi-linear: Weighted average of adjacent pixels. This setting provides high quality with better performance than Bi-Cubic, but may cause unwanted patterns in some images.  
  
Nearest neighbor: Interpolation by pixel replication (should only be used for line art).
- ◆ Probe Size  
Size of the area sampled by the probe. 1x1 samples a single pixel; 3x3 samples the eight pixels surrounding the cursor location; 5x5 samples the 24 pixels surrounding the cursor location.
- ◆ Auto Update  
Control to automatically update images each time a change is made. If this option is not selected, you can update the image preview manually.
- ◆ Highlight/Shadow Probe  
Allows the pixel values window to be displayed when a cursor is placed over the Sticky Densitometers.

# Changing Screen Gamma

The Trident Monitor Setup option on the Edit menu enables you to specify the gamma values of your monitor. This will affect the way in which previewed images are displayed on your screen. The Monitor Setup window for Trident PE is shown in Figure 2-7. The window for Trident SE is shown in Figure 2-8.

Figure 2-7  
Trident PE: Monitor Setup Window

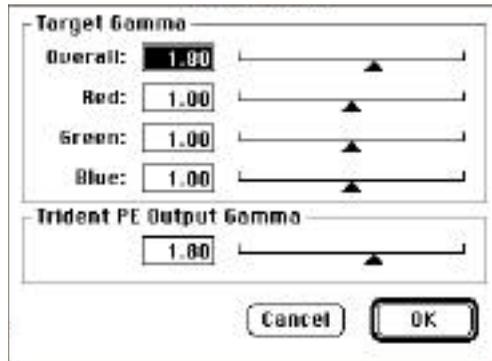
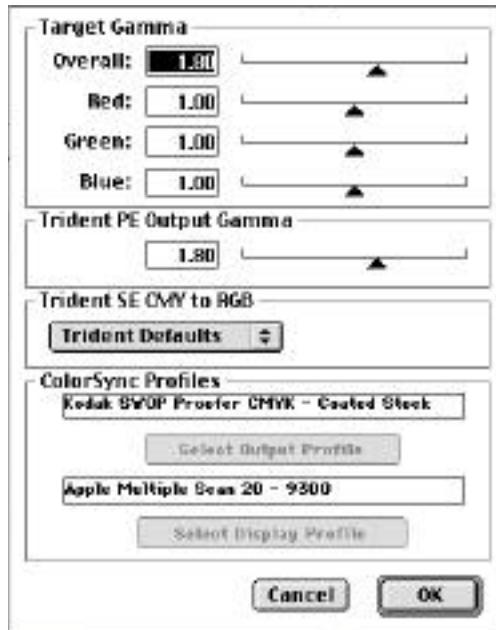


Figure 2-8  
Trident SE: Monitor Setup Window



By default, Trident assumes that your monitor is factory set to a screen gamma of 1.8. If you have changed your monitor's gamma, enter the new gamma value in the Monitor Setup window. Trident then adjusts its previews to look the same regardless of any monitor gamma (in the range of 0.2 to 5.0)

- ◆ Target Gamma  
Enables you to separately adjust each individual color channel for the display of the preview data.

---

Note: Trident does not adjust the gamma value of your monitor. It merely adjusts its previews to look the same regardless of different gamma settings.

---

- ◆ Trident PE Output Gamma  
Controls the gamma for the RGB data in the file.

With Trident SE, two options are provided to preview CMYK images on your RGB monitor:

- ◆ Trident SE CMY to RGB  
Provides a list of preset tables from which to choose. Your selection depends on your CMYK output press.
- ◆ ColorSync Profiles  
Enable you to set output and display profiles for ColorSync--a method used to calibrate the input device (scanner), display device (monitor) and output device (imagesetter, printer, film recorder, etc.) to the same independent color space for accurate display and output.

The ColorSync feature (available for Mac users only) enables you to view the prescanned image data on the monitor as calibrated data and scan an image into a different color space (such as RGB to CMYK conversion). This feature utilizes the Apple ColorSync Color Management Architecture which is based on the International Color Consortium (ICC) device independent profiles.

---

Note: You must have ColorSync 2.0 or later loaded in your Mac OS to use the ColorSync Menu in Trident. Generic profiles can be supplied by the device vendor or you can create custom profiles using many third party software packages. These device profiles must be installed into the ColorSync Profiles Folder, found in your Mac System folder, for Trident to find them.

---

Select Output Profile displays all the output device profiles that are loaded in your ColorSync Profiles Folder. If you select a CMYK Output Profile, Trident will generate a scanned image as a CMYK TIF file.

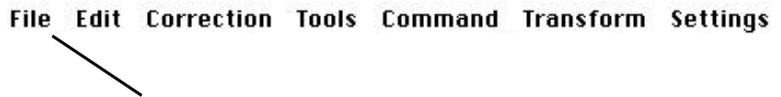
Select Display Profile displays all the output device profiles that are loaded in your ColorSync Profiles Folder.

Refer also to the description titled, ColorSync: Using the ColorSync Feature (Mac Only)in Chapter 4.

## Using Basic File Tools

Figure 2-9  
File Menu on the  
Trident Menu Bar

**File** Edit Correction Tools Command Transform Settings



Under the File menu, basic file tools are available:

- ◆ Open  
Opens an existing TIF file.
- ◆ Save  
Saves the currently open file. This opens the Save As window. However, this option is used only for naming, file location, and/or change file type.
- ◆ Save Queue  
Saves the scan queue to a file. The Overview window is not displayed when you select this option.
- ◆ Quit  
Ends your work with the Trident application.

The New, Close, Save As, Revert, Page Setup, and Print options are not applicable.

## Using Editing Tools

Figure 2-10  
Edit Menu on the  
Trident Menu Bar

**File** Edit Correction Tools Command Transform Settings



The Edit menu provides basic editing tools:

- ◆ Undo and Redo  
Reverses the last action. A “redo” reverses an “undo.” Trident enables you to perform multiple “undos” or “redos” by repeatedly selecting Undo or Redo.

The Cut, Copy, Paste, and Clear options are not applicable.

---

Note: All other menus and options are described in the remainder of this book.

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## Understanding Workflow



This chapter provides an overview of the scanning process.

## Overview of the Scanning Process

Preparing scans with Trident is a simple process with many tools for an efficient and organized workflow. Summarized below are the basic steps in the Trident process:

- ◆ Step 1:  
Generate an Overview scan (preview) of the entire scanning surface. This image will appear in your Overview window and as the first image in the Queue Manager.
- ◆ Step 2:  
Define regions as desired and add them to the Queue Manager.
- ◆ Step 3:  
Select an image from the Queue Manager and perform the desired image corrections while verifying the results visually and numerically on-screen.
- ◆ Step 4:  
Scan the final images to disk using the desired output and file formats.

With the exception of the procedures for correcting scanned images and scanning to disk, each step in the scanning process is described in this chapter.

For details on correcting scanned images with Trident PE, see Chapters 4 and 5. In addition, see Chapters 6 and 7 for Trident SE.

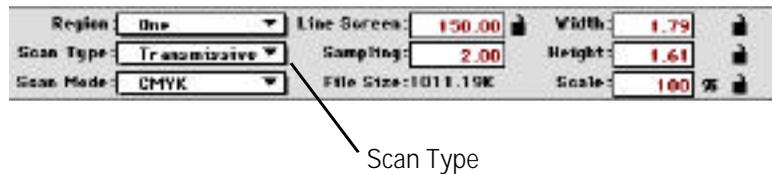
Procedures for scanning to disk are provided in Chapter 8.

## Step 1: Generate an Overview Scan

Before working with images, the contents of the scanning surface must be scanned into the Overview window.

1. Mount the original(s) on your scanner (see the scanner user guide for details on how to mount originals).
2. Select the Scan Type in the tools:

Figure 3-1  
Trident Tools



The available options are:

- ◆ Transmissive  
Color or black-and-white transparencies.
  - ◆ Transmissive (Negative)  
Color or black-and-white transparencies that will be viewed in the Overview window as negatives.
  - ◆ Reflective  
Color or black-and-white photographs, artwork, or prints.
3. Click on the Preview button (  ) below the blank Overview window in the Queue Manager.

Your scanner will produce a low-resolution Overview scan of the entire platen or drum surface. This will display in the Overview window.

---

Note for Mac Users Only:

To stop an Overview scan once the desired portion of the scanning surface has been scanned, press the Command and period keys.

---

## Checking Tool Parameters

As you scan, you may want to check the following parameters in the tools. Ultimately, you will want to make sure they match your final scan specifications.

The lock/unlock feature is available on several parameter settings. This enables you to lock (🔒) or unlock (🔓) the setting, unless noted otherwise in the descriptions below.

- ◆ Region  
Region with which you are currently working.
- ◆ Scan Type  
Original media type on the scanner: Transmissive (Positive), Transmissive (Negative), or Reflective.
- ◆ Scan Mode  
Output mode for the scanned image. The options are:  
  
CMYK: (Trident SE only) Standard Cyan, Magenta, Yellow, and Black.  
  
RGB: Standard Red, Green, and Blue.  
  
Gray Red/Green/Blue: Grayscale image from the Red, Green, or Blue color channel, respectively.  
  
Line Red/Green/Blue: Line art from the Red, Green, or Blue color channel, respectively.  
  

---

Note: You should use Gray Green or Line Green for most grayscale or line art. If your artwork is predominantly red or blue, you may see improved results by selecting the Red or Blue option.

---
- ◆ Line Screen  
Number of lines per inch in a halftone image. Along with Sampling (see below), the line screen is used to calculate the final scan output resolution.

You can click on the small black lock icon next to the Line Screen field to lock the scanner's resolution at the next highest native resolution. When locked, the scanner's native resolution is used; when unlocked, the final scan output resolution is based on the values in the Line Screen and Sampling fields. To unlock the resolution, click on the black lock icon again.

◆ Sampling

Refers to the theory of sampling ratio. This is the number of dots per pixel in the final scanned image. Most files for the printing industry are created as 1.5 to 2 times the line screen.

The Sampling value multiplied by the Line Screen value (see above) yields the dots per inch (dpi) resolution of the final image. For example, a Sampling value of 2 with a Line Screen of 150 results in a 300 dpi image.

---

Note: If sampling is set to 1.0, the value entered into the line screen will be the resolution (DPI) of the final scan.

---

◆ File Size

The amount of disk space the final scan requires. You cannot edit this field. As you adjust other scanning parameters (Line Screen, Sampling, Scale), the value in this field changes.

---

Note: The Mac has a 4 Gb file size limitation.

---

◆ Width and Height

Specific width or height for your final image. However, based on the cropped area, the width and height are proportional to each other. Any change in the Width value proportionally changes Height and vice versa.

You can click on the black lock icon next to the Width or Height field to lock the final file size width or height. If both locks are selected, the crop box is restricted to an aspect ratio defined by the values entered into the Width and Height fields.

- ◆ Scale  
Degree of enlargement (or reduction) of your final image. Remember that file size is directly proportional to the scale of your image.

---

Note: If you are scanning all the images in the queue using the same line screen, sampling, and scale values, set up the Overview with the desired values. All images subsequently added to the queue will reflect those changes.

---

---

Note: For the Overview scan, all parameters set in the tools and tool menu will carry into each new region defined. To improve consistency and workflow, it is recommended that you set up these parameters in the Overview scan and then add regions rather than setting them up for each region separately.

---

## Step 2: Define Regions

A region is an area of the Overview that you will define and use to preview, manipulate, and prepare as a final scan. When you create regions, they are placed in the Queue Manager which is a highly flexible tool designed to activate, preview, and organize your work with regions.

This section explains how to:

- ◆ Define a region.
- ◆ Add a region.
- ◆ Activate a region.
- ◆ Preview regions.
- ◆ Transform a region.
- ◆ View a region in detail.
- ◆ Rearrange regions in the Queue Manager.
- ◆ Delete a region.

## A Note About Images and Computer Memory (RAM)

You can define any number of regions. However, you may reach limitations based on the memory of your system (PC) or the memory allocated to Trident (Mac).

The amount of memory (RAM) required for a region varies depending on the Overview resolution (selected in the Preferences window) and the size of the region. (The default application RAM for Trident is 33 Mb.) If you exceed the amount of memory by defining too many regions, a warning appears. You can:

- ◆ Final scan the regions you have already created (as described later in this section) before creating additional regions and then delete these regions.
- ◆ Delete unneeded regions (as described later).
- ◆ Quit the Trident application and assign more RAM.

## Defining a Region

Once you have produced an Overview, Trident's image selection tools (located in the button bar and as corresponding options on the Command menu) enable you to define and work with regions.



### Probe Region

Used to select items and regions. This tool is also used to move the cursor around within a region to sample pixels for the probe readout.



### Crop Region

Used to define a portion of the image.



### Zoom +/-

Used to enlarge or reduce an image for more precise examination of a region. Click on the image with the Zoom tool to enlarge the image. If necessary, resize the image window to accommodate the new view. The magnification is shown at the bottom left corner of the image window.

---

Note: The point where the Zoom tool is clicked becomes the new center of the image in the window.

---

---

Note for Mac Users Only: To reduce the view again, hold down the Option key while clicking on the image with the Zoom tool.

---

Typically, you will use the Crop tool to define a region as a cropped portion of the Overview.

### Adding a Region

Click on the Add Region button () or select Add Region on the Command menu to assign the cropped area to a region. The region appears as a new image in the Queue Manager.

Figure 3-2  
Queue Manager



---

Note: You can only create new regions from the Overview, not from another region.

---

After the image area has been defined with the Crop tool, the region can be added to the Queue Manager in several ways. For example, you can simply double-click inside the cropped area. The following shows an Overview and two regions in a Queue Manager.

Trident names regions by default according to the order in which they are created. The default name assigned to a region is based on the following scheme:

Region-X : scan####

where:

X = Region number in the order of its placement in the Queue Manager.

#### = Arbitrary sequential number.

Your regions may represent separate originals for different jobs, or different areas from within the same piece of art. When you prepare your final scans, it is helpful to follow a naming convention for your regions that makes sense in your production environment (for example, by job, client, date, etc.).

To change the name of a selected region, select Save on the File menu. Then, save the region with a different name.

---

Note: For more information about naming regions, see Naming Final Scans, in Chapter 8.

---

## Activating a Region

To activate a region, double-click on its image in the Queue Manager. The selected region is then framed in green, the region number is displayed in the title bar of the Overview window, and the image data is shown in the appropriate fields in the tools.

A 1:1 view of the image is displayed in the Overview window. Color correction work can be performed on the image, as described in Chapters 4 and 5 for Trident PE and, additionally, Chapters 6 and 7 for Trident SE.

---

Note: When a region is cropped, added to the Queue Manager, and activated, the resulting image is at a low resolution. Regions derived from small crop areas may appear blurry and out of focus. The image quality on the screen can be improved by previewing the region.

---

## Previewing Regions

Before manipulating and correcting regions, you should preview each image.

---

Note: Although previewing a region is not required, it improves the accuracy of the Probe values and provides a higher resolution image for image correction work. Without a preview scan, your Probe values may not be accurate due to the dithering of the low resolution image.

---

To preview a region, use one of the following tools, or select the corresponding option from the Command menu:



Preview

To preview a single region, click on the Preview button (  ) under the desired image in the Queue Manager.

Before a region has been previewed, the Preview button is white. While the region is being previewed, the Preview button is red, green, and blue. Once the preview is completed, the button changes to all red.



Preview All

To batch preview all the regions in the Queue Manager, click on the Preview All button. You would use this feature once you have defined and added multiple regions with the Trident tools. This can be done even if there are different types of originals in the scanning area (reflectives, positive transparencies, or negative transparencies).

The scanner will scan each region in succession.

To preview only certain regions in the Queue Manager, click on the white Preview button (  ) under each desired image. The regions are then scanned in order.

## Interrupting the Preview

You can interrupt the preview scanning by using the Active/Pause button (  or  ) on the right under the Overview in the Queue Manager. Click on this button to toggle the scanning process on ( , green) or off ( , red).

## Transforming a Region

To make your work with regions easier, Trident includes tools to transform images. Corresponding options are available on the Transform menu.

---

Note: The image transformation tools can be used only in a region, not in the Overview.

---



Transform Left

Rotates the image in a region 90° counterclockwise.



Transform Right

Rotates the image in a region 90° clockwise.



Flip Horizontally

Flips the image horizontally along the vertical axis.



Flip Vertically

Flips the image vertically along the horizontal axis.

## Viewing a Region in Detail

The Detail option on the Command menu is used to scan a small area of a region at the input scan resolution (line screen multiplied by sampling ratio multiplied by scale). This feature is helpful for examining an image in precise detail (for example, when checking unsharp masking or descreening).

1. Activate the region in which you want to perform a detail scan by double-clicking on it in the Queue Manager.

2. Click on the Pick Detail Point button (  ) or select Detail on the Command menu. Move the cursor over the image and it will become a crosshair.
3. Click on the center of the desired area of the image to be viewed in detail. The scanner performs a detail scan of predefined dimensions around the point you selected using the scanning parameters indicated in the fields in the tools (line screen, sampling, and scale).

Once the detail scan is completed, you can switch between the detail view (as indicated in the title bar of the Overview window) and normal preview by unchecking the Detail checkbox in the Queue Manager (to the right of the Progress indicator):

Figure 3-3  
Detail Checkbox



## Rearranging Regions in the Queue Manager

You can reorganize the regions in the Queue Manager at any time, even while scanning is in progress.

To rearrange the order of the regions in the Queue Manager, click and drag the region to the desired location.

## Deleting a Region

You can delete a region in the Queue Manager at any time, even while scanning is in progress. To delete a region, use one of the following tools, or select the corresponding option from the Command menu:



(black) Cut Region

To delete a single region from the queue, activate the region by double-clicking on it and then click on the black Cut Region button.



(red) Cut All Regions

To delete all regions from the queue (including the Overview), click on the red Cut All Regions button.

Refer to page 2-9 for a review of all Save features.

## Step 3: Perform Image Corrections

Once you preview your Overview and add/review regions, as desired, you are ready to select an image from the Queue Manager and perform the desired image corrections. You can do so while verifying the results visually and numerically on-screen.

A few commonly used image correction features are described on the following pages. All other image correction procedures are detailed in Chapters 4 and 5 for Trident PE and, additionally, Chapters 6 and 7 for Trident SE.

### Automatically Add Highlight and Shadow

Trident provides an Auto range feature to automatically detect highlight and shadow.

Click on the Auto Range button () on the button bar or in the PE RGB Control window. Highlight and shadow is automatically added.

If both the Highlight () and Shadow () buttons are selected on the button bar, markers will appear on your image indicating the points within the cropped area that have been selected automatically as the highlight and shadow. (Refer to Figure 3-4 on the next page.) These markers are known as “Sticky Densitometers.”

Figure 3-4  
"Sticky Densitometer"



When you select the probe tool, activate a region and move it over the Sticky Densitometer. A window will appear displaying the values for that point.

A Sticky Densitometer can be moved by the click-and-drag method using the Probe tool. As the Sticky Densitometer is moved, the values in the display window change. This can be helpful if you would like to override the automatic settings.

## Update Images

When you change a region or scanning parameters, the image can be updated in the Region window so you can visually gauge the effect of the changes. Image updating is performed in two ways: automatically and manually.

### Updating Automatically

If you want the Overview window to be updated automatically, select Auto Update On on the Command menu. The image is then updated every time you make a change. To turn off automatic updating, select Auto Update Off on the Command menu.

Automatic updating is helpful in visually tracking changes incrementally. However, it can add production time due to the time needed to refresh the screen image after every adjustment.

---

Note: Auto Update can be set to on in the Preferences menu.

---

## Updating Manually

With automatic updating off, click on the Manual Update button (  ) in any window where it appears to update the active region with all changes since the last update.

The manual update feature is particularly useful if you are a more experienced scanner operator and only need to check the Overview window from time to time.

---

Note: If you are using the manual update feature, the Overview window display is updated only when you click on the Manual Update button.

---

For further information on how the Update button and the PE Probe work, refer to Chapter 4.

## Step 4: Scan Final Images to Disk

Once you have completed color correction work on your images (see Chapters 4 and 5 for Trident PE and, additionally, Chapters 6 and 7 for Trident SE), they are ready to be scanned to disk. Refer to Chapter 8 for a description of how to check final settings and scan your corrected images to a file. Chapter 8 describes:

- ◆ Reviewing scan settings.
- ◆ Performing final scans.

# 4



## Correcting Images in the RGB Color Space



**T**rident offers many powerful features that allow you to correct your prescanned images before the final scan is made. For those who prefer to work in the RGB color space, Trident's Photo Edition (PE) package provides fast and efficient tools to make image corrections.

This chapter explains how to use the PE tools and describes how to use:

- ◆ PE Probe
- ◆ PE RGB Controls
- ◆ Grayscale Controls
- ◆ Line Art Controls

Trident's unsharp masking (USM), descreening, and L\*a\*b features are described in Chapter 5.

---

Note: Before making color corrections, make sure the region you want to work on is active: double-click on the region in the Queue Manager.

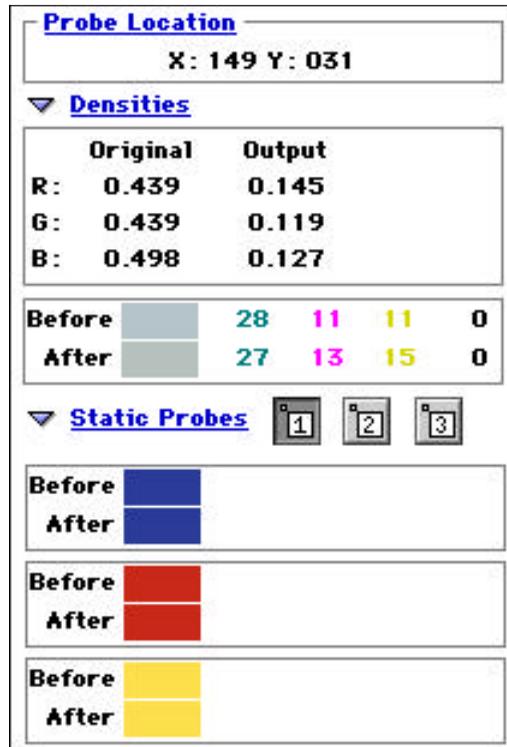
---

At any time, you can click on the Update button to view corrections.

# Using the PE Probe

The most important tool in correcting images is the PE Probe. This window tracks your corrections by displaying the RGB values. To view the Probe, select Probe on the Tools menu.

Figure 4-1  
PE Probe



As you pass your cursor over the Overview or a region window, the Probe shows the values for the pixel(s) at the current cursor position. The PE Probe window is divided into four sections:

- ◆ Probe Location  
Shows the X/Y coordinates of the current cursor position.

◆ Densities

Shows the original and output optical density values for the selected pixel(s).

The original density value is not affected by changes in the PE RGB controls. The output density is updated after each change in the PE RGB control.

◆ Before and After

When scanning in RGB mode, the PE Probe displays the RGB reflectance values (RGB Pixel Values) for the selected pixel(s).

If the image is in a grayscale scan mode (one of the Gray options), the PE Probe shows the reflectance value (Pixel) pixel both before and after correction.

When scanning line art (the Scan Mode is set to one of the Line options), the Line Art Pixel Value field in the PE Probe shows whether the selected pixel is black (0) or white (1) both before and after correction.

---

Note: When probing images in line art or grayscale mode, set the Probe Size in the Preferences window to 1x1 to avoid false readings.

---

◆ Static Probes

Shows the current status of the static probes that can be placed on an image. The before and after color corrections are indicated.

The location for each of the three static probes is set by selecting the probe number () and then placing the cursor over the pixel that you want to monitor in the image. The number icon is displayed on the screen.

---

Note: Click on the arrow to the left of the Densities or Static Probes heading if this portion of the window is not displayed.

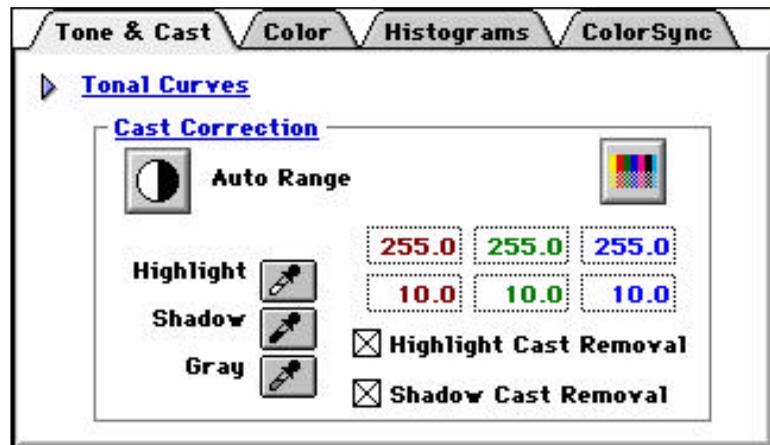
---

The values displayed in the “Before” are only updated after the screen has been updated, either manually or automatically. The values displayed in the “After” are updated when a change is made to a control in the PE RGB controls.

## Using the PE RGB Controls

All of the color correction tools for the RGB color space are found in the PE RGB Control window. To open this window, select any of the options on the Correction menu.

Figure 4-2  
PE RGB Control



The PE RGB Control window includes four tabs to access:

- ◆ Tone & Cast
- ◆ Color
- ◆ Histograms
- ◆ ColorSync

Click on a tab to select the corresponding option on the Correction menu. Each is described in the remainder of this chapter.

## Tone & Cast: Adjusting Tonal Range

One of the most important tasks in producing good quality scanned images is setting the tonal range. This can be done four different ways:

- ◆ Using Trident's Auto Range feature.
- ◆ Using the highlight and shadow eyedropper.
- ◆ Adjusting the tone curves manually.
- ◆ Manipulating the histograms (as described in the following section).

---

Note: Every original, film or print, has a specific density range which defines the points where the image data starts and ends. This density range is measured on an optical density scale of 0 (lowest) to 4 (highest).

---

### Setting the Tonal Range Automatically

The best way to set the initial tonal range of an image is to click on the Auto Range button () on the button bar or in the Tone & Cast section of the PE RGB Control window.

---

Note: When using the Auto Range feature, be sure to crop the image so that no film edge or clear drum/platen surface is included within the crop boundaries. These "non-image" pixels could distort the range.

---

The output value edit fields, located next to the Auto Range button, are used to define the RGB values in the final image data for highlight and shadow. Values entered in these fields will be used by the Auto Range and the highlight and shadow eyedroppers.

## Setting Cast Correction

Cast correction is the process by which unwanted color is removed from the desired neutral tones of an image. Trident provides automated and manual controls to target five points along the tonal range: highlights, quarter tones, midtones, three-quarter tones, and shadows.

Cast correction is important because the PE separator performs color correction separately on the hues and on the neutral areas. Casts are removed by adjusting the Red, Green, and Blue densities of a selected tonal region. By making the output densities equal or nearly equal, the result is a neutral value.

The “input range” defines where in the image the data starts and ends. By making a Cast Removal (Highlight or Shadow) selection at the bottom of the PE RGB Control window you can control where the endpoints of the curves are set:

- ◆ When a Cast Removal option is selected for highlight or shadow, color channels are treated individually, setting the endpoints based on individual histograms. Using this option automatically removes cast from the lightest and darkest points in the image.
- ◆ When a Cast Removal option is not selected, each channel’s endpoints are set to the density of the lightest and/or darkest points in the image.

---

Note: When scanning in RGB mode with Cast Removal turned off, you can only enter a Red value for Highlight and Shadow; the Green and Blue values are set to the same value as Red.

---

---

Note: Many images may not contain truly “neutral” points. For these images, it is best to perform the following procedure on a grayscale step wedge mounted next to the image instead of the image itself.

---

## Using the Eyedropper

To correct casts automatically in the highlights, shadows, or neutral grays:

1. Click on the appropriate eyedropper.
2. Move the cursor inside the image or step wedge and click on the point you want to define. After you select the point, the eyedropper tool is automatically deselected.
3. Check the new values using the Probe.

The gray eyedropper can neutralize any point that is selected with it.

---

Note: The gray eyedropper is unique in that it can set multiple points. Gray points are made up from the quarter tone, midtone, and three-quarter tone regions.

---

---

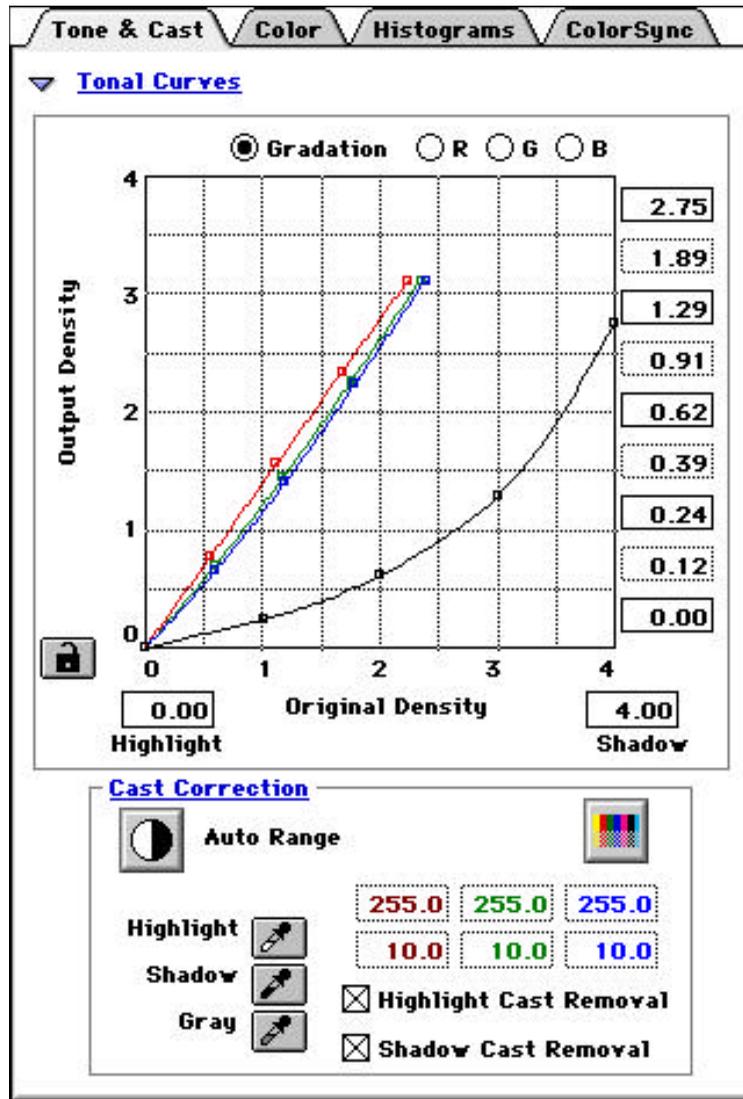
Note for Mac Users Only:  
To select multiple points, hold down the Option key while selecting each point. Before you select the last point, release the Option key and click on the last point. The tool is then deselected automatically.

---

## Adjusting the Tone Curves Manually

The density range of an image can be set manually. This is done by adjusting the gradation and/or RGB curves for the image. To access the tonal curve, click on the arrow to the left of the Tonal Curves heading. The tonal curve is displayed, as shown in Figure 4-3 on the next page.

Figure 4-3  
Tonal Curves



Note: The purpose of tone and gradation is to define neutral by removing unwanted casts and to specify tone compression and contrast using the gradation curve. Therefore, color correction should be performed only in the Selective Color window, where neutrals and hues are treated separately. To adjust neutral tones, use Tone & Cast; to correct hues, use Color.

The “output density range” is usually set to different values than the input range. The default output density value is 2.75, the maximum density monitors are capable of displaying. Knowing the density range of your intended output device and entering that value in the PE RGB Control window helps optimize the quality of the final image.

---

Note: If you are unsure of which value to use, keep the value 2.75. If your output device is a film recorder, values of 3.0 or higher may be advisable.

---

The gradation curve (black) defines how tone compression is handled. The horizontal axis shows the input density while the vertical axis displays the output density.

The points (called “anchor points”) are located, from left to right, at the following values: highlights, quarter tones, midtones, three-quarter tones, and shadows. By selecting an anchor point and dragging it up or down, you can alter the gradation value for that point.

The black lock icon at the bottom left-hand corner of the grid is open by default. By clicking on it, you can lock the anchor points on the curve. It also adds more points to work with. This allows you to move the points individually without affecting the others. Locking anchor points is useful for fine-tuning the gradation curve. With the points locked you are able to create a curve that has negative slopes.

---

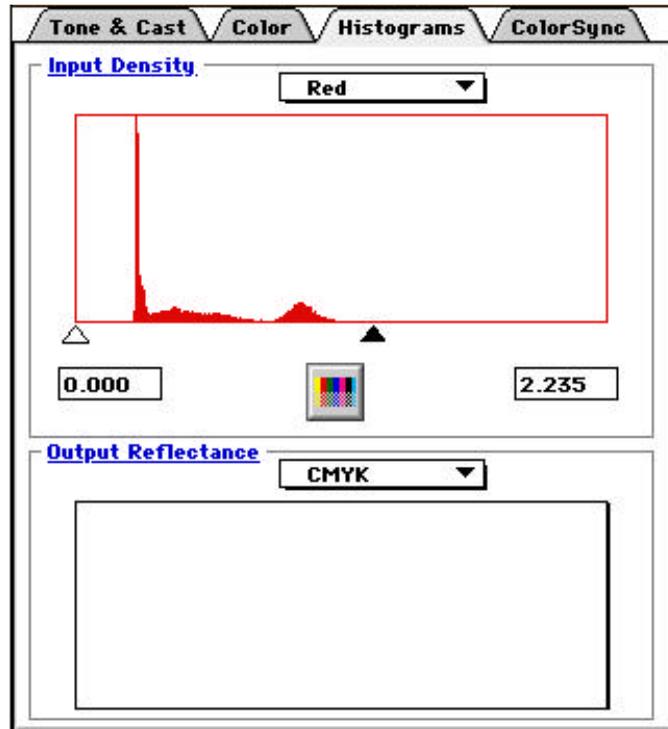
Note: Adjustments in the gradation curve change the input-to-output tonal compression. For example, moving the three-quarter tone point down expands the shadow area of the image by starting the three-quarter tone range at a lower optical density.

---

## Histograms: Manipulating the Histograms

Another way to set the tonal range is by manipulating the image's histograms. To do so, click on Histograms tab or select the Histograms option on the Correction menu.

Figure 4-4  
Histograms



The horizontal axis on the histogram represents the standard 0-to-4.0 density range. The Histograms window displays:

- ◆ **Input Density**  
This input histogram can be adjusted to show all three RGB channels together or each channel individually. To adjust the limits, slide the white slider (highlight) and/or black slider (shadow) to the desired position.
- ◆ **Output Reflectance**  
This is a static display that cannot be adjusted. It is designed to show how your adjustments will affect the image when output to a file.

---

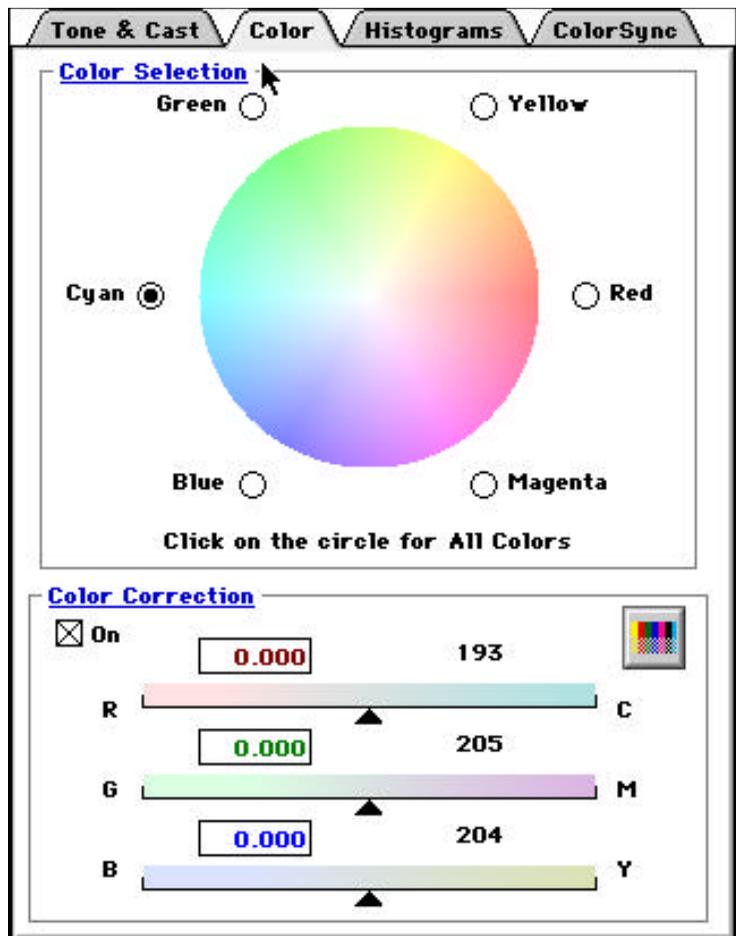
Note: Minor adjustments to histograms have strong results. Move the sliders in small increments to avoid distorting your range values excessively. (Remember to update the image regularly to view your changes.)

---

## Color: Adjusting Colors

The Color tab (Color option on the Correction menu) provides control over all levels of the chroma (saturated and pastels) or just the low chroma (pastel).

Figure 4-5  
Color



This will enable you to correct each of the primary and secondary colors independent of each other (as opposed to the Global corrections found in the Tone & Cast menu).

The Color Selection color wheel can be toggled between all chromas selection and a low chroma only selection. Simply click on the color wheel to toggle between the two.

### Correcting Colors

The checkbox in the Color Correction section of the PE RGB Control window toggles selective color on or off. The default mode is On.

---

Note: The Color Correction checkbox should always be checked.

---

The sliders in the Color Correction section allow you to perform color correction in the three separate color channels. To do so, proceed as follows:

1. Select the hue to adjust by clicking on the color wheel.
2. Click on the circular button of the desired color.

---

Note: Automatically select proper hue and color on the wheel by selecting a point in the image with the Probe tool (combining steps 1 and 2).

---

3. Adjust the sliders to add or remove color(s) in a channel. Remember that small movements in either direction can have strong effects.

---

Note: The boxes in each slider show arbitrary reference numbers for your convenience. The numbers to the right of the boxes show the RGB values after the change.

---

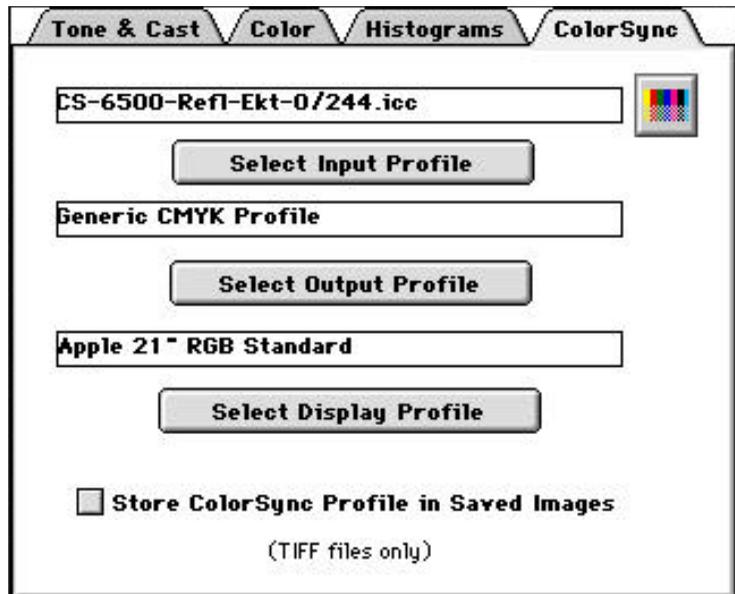
4. Click on the Manual Update button in the window to check the results of each change (or turn on automatic updating by clicking on the Auto Update On button in the tools).

The Before and After sections of the Probe provide real-time feedback for your changes.

## ColorSync: Using the ColorSync Feature (Mac Only)

The ColorSync window appears (as shown in Figure 4-6) when you click on the ColorSync tab or select the ColorSync option on the Correction menu.

Figure 4-6  
ColorSync



ColorSync is a method used to calibrate the input device (scanner), display device (monitor) and output device (imagesetter, printer, film recorder, etc.) to the same independent color space for accurate display and output.

---

Note: For the best results when performing an Auto Range with ColorSync, turn off Cast Removal on the Tone & Cast dialog.

---

The ColorSync feature enables you to view the prescanned image data on the monitor as calibrated data and scan an image into a different color space (such as RGB to CMYK conversion). This feature utilizes the Apple ColorSync

Color Management Architecture which is based on the International Color Consortium (ICC) device independent profiles. The Trident ColorSync feature enables you to pick an Input Profile, Output Profile, and Display Profile.

---

Note: You must have ColorSync 2.0 or later loaded in your Mac OS to use the ColorSync Menu in Trident.

Generic profiles can be supplied by the device vendor or you can create custom profiles using many third party software packages.

These device profiles must be installed into the ColorSync Profiles Folder, found in your Mac System folder, for Trident to find them.

---

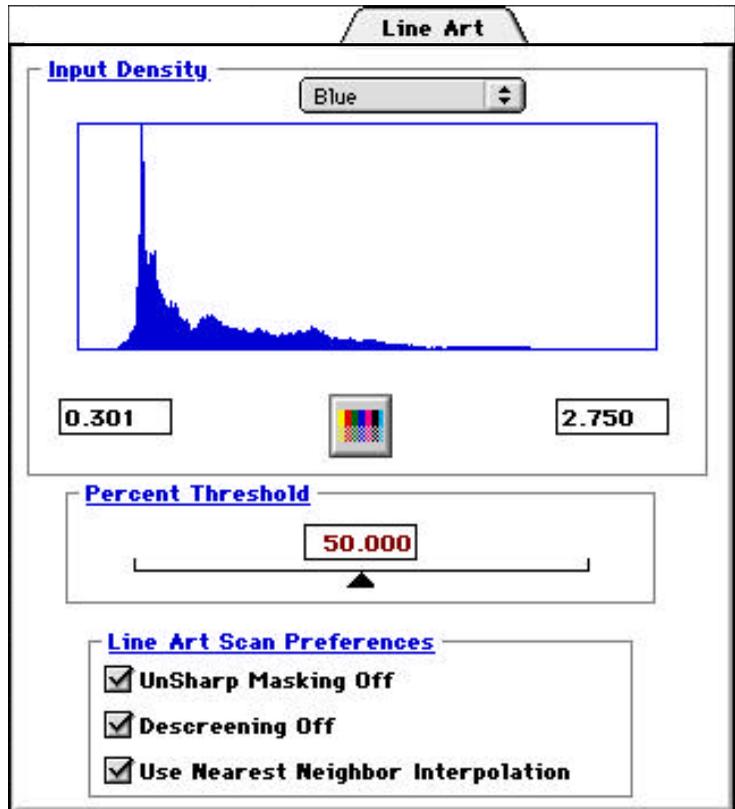
- ◆ **Select Input Profile**  
Displays all the input device profiles that are loaded in your ColorSync Profiles Folder. Several reflective and transmissive profiles for each scanner are available from Howtek. Pick the profile that you would like to apply to the image data.
- ◆ **Select Output Profile**  
Displays all the output device profiles that are loaded in your ColorSync Profiles Folder. If you select a CMYK Output Profile, Trident will generate a scanned image as a CMYK TIF file.
- ◆ **Select Display Profile**  
Displays all the output device profiles that are loaded in your ColorSync Profiles Folder.
- ◆ **Store ColorSync Profile in Saved Images**  
Embeds the profiles into the scanned image TIFF header. This will allow them to be read by other software applications later.

You can press the Update button to view the effects of each profile on the image data once it has been selected.

## Using Line Art Controls

All of the color correction tools for line art are found on the Line Art tab of the PE RGB Control window. To open this window, select the Line Art option on the Correction menu or pick one of the line art options on the Scan Mode pull-down menu (in the Trident tools).

Figure 4-7  
Line Art



The Line Art window is divided into three sections:

- ◆ **Input Density**  
Displays an input density histogram for the line art. The input density will display the histogram for the color channel that you selected on the Scan Mode pull-down menu (in the Trident tools).  
  
To adjust the limits, slide the white slider (highlight) and/or black slider (shadow) to the desired position.

- ◆ Percent Threshold
 

Sets the percentage threshold for the line art. By moving the slider, you can adjust the percentage. The threshold determines which pixel values will be white (255) or black (0).
- ◆ Line Art Scan Preferences
 

Sets preferences for line art. Note that unsharp masking and descreening are described in Chapter 5.

## Saving and Recalling Settings

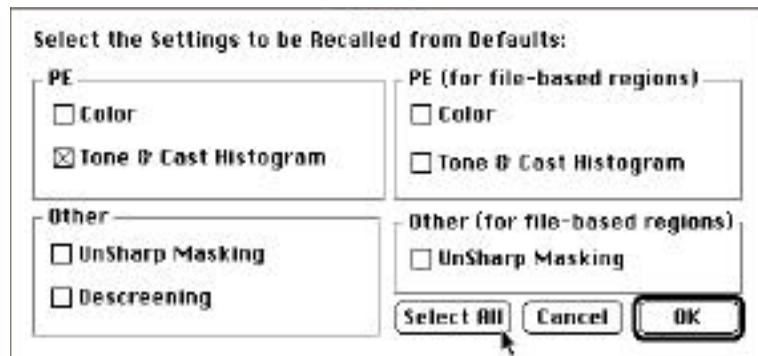
During your color correction work, you may decide to save the changes you have made for future applications. You may also wish to use other predefined settings, or even start over. Trident gives you the option of saving and recalling default or previously saved settings for one or all of the parameters you have changed.

To use this feature, select one of the options on the Settings menu:

- ◆ Save
 

Saves custom correction settings. In the Settings window, check off the settings you want to save.

Figure 4-8  
Settings



Then, name the settings file and choose where it will be stored. The settings now can be recalled any time using the Recall feature (see next page).

---

Note: Only the settings you check off are saved.

---

- ◆ Recall  
Recalls a previously saved settings file. You may recall a settings file you created. After you initiate the recall procedure, a standard file window appears for you to select the settings file to be recalled.
- ◆ Save Default  
Stores your own custom default settings.

---

Note: The Save Default option overwrites Trident's default settings. Once Trident's defaults have been overwritten, they cannot be recalled. If you use certain settings regularly, save those settings in a separate file and recall them as needed. See Save and Recall above for more information about these options.

---

When you select Save Default, a window similar to the one shown in Figure 4-8 appears where you can check off the settings to be saved as defaults.

---

Note: Only the settings you check off are saved as defaults.

---



Recall Default

Enables you to select the specific default settings to be recalled by clicking on the appropriate checkboxes in the Settings window. Click on OK to recall the settings. You can quickly get to this window by clicking on the Recall Default button, shown above, the is found at the bottom of the button bar.

- ◆ Reset to Factory Defaults  
Resets any or all correction values to the factory settings. This option is useful if you have made too many corrections to your image and wish to start again. These settings cannot be edited.

---

Note: In some cases, Trident grays out settings in the Settings window when the Recall Default and Reset to Factory Defaults options are selected. The grayed out items are values which have not been saved.

---



Unsharp Masking,  
Descreening, and  
 $L^*a^*b$  Correction



Trident offers many powerful features that allow you to correct your prescanned images before final scanning. This chapter describes Trident's:

- ◆ Unsharp Masking (USM)
- ◆ Descreening
- ◆ L\*a\*b Correction

## Applying Unsharp Masking

Unsharp masking (USM) represents a way of adjusting the contrast of edge detail in an image.

To use the UnSharp Masking feature, select the USM option on the Tools menu. Additional options are provided:

- ◆ Light
- ◆ Moderate
- ◆ Heavy
- ◆ Custom

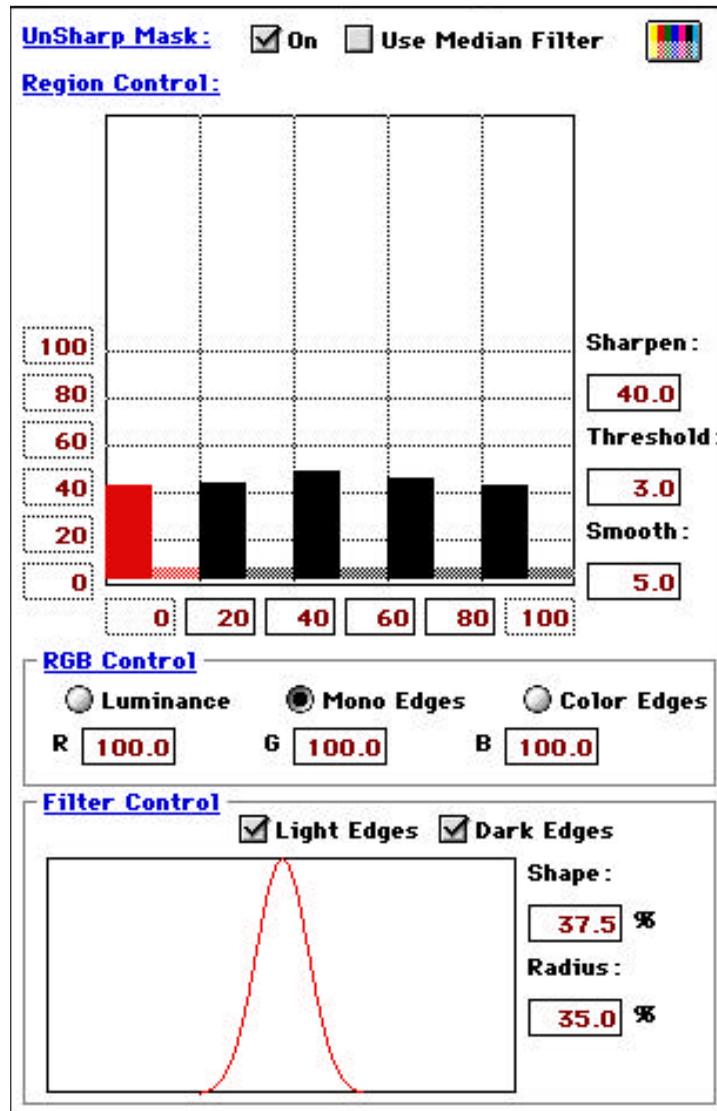
If you select Light, Moderate, or Heavy, Trident automatically adjusts the contrast of edge detail to the degree indicated by the option name.

The Custom option opens the UnSharp Masking window (shown in Figure 5-1) which contains extensive tools for fine-tuning the sharpness of your images.

You can toggle Unsharp Masking on or off by clicking on the On box next to UnSharp Mask at the top of the UnSharp Masking window.

Note: Unsharp Masking is set to On by default.

Figure 5-1  
Unsharp Masking



As with all of Trident's image correction features, USM allows you to recall previously saved settings, apply defaults, or save new tables. All of these functions are found in the Settings menu, as described in Chapter 4.

## Using the Median Filter

The Median Filter is included to assist the USM function. It helps to smooth out or reduce noise in the image. When the Median Filter is selected, Trident will smooth out the noise in the image before it applies the USM selections to the image.

This can be very helpful with some images such as high speed grainy film or mat-finish reflective prints.

---

Note: This smoothing of the noise will appear to make the image look softer.

---

## Controlling USM in Tonal Regions

Trident's USM controls allow you to regulate the amount of unsharp masking applied to each of your image's tonal regions. The Region Control chart in the UnSharp Masking window shows the five tonal regions in the image from left to right: highlights, quarter tones, midtones, three-quarter tones, and shadows.

---

Note: The values used in the UnSharp Masking window are arbitrary numbers for relative reference only.

---

The vertical axis of the Region Control chart is composed of non-editable percentages of sharpening to be applied. The horizontal axis represents the 0-to-4.0 density range. It contains five editable fields to define the percentage at which each tonal region begins.

---

Note: The currently active region in the chart is indicated in red.

---

Various fields in the USM window determine how the tonal regions are handled. These are defined as follows:

- ◆ Sharpen  
Governs the amount of sharpening applied to the selected tonal region. To define a desired sharpening value for a region, click on the region's bar in the chart (it turns red) and enter the value in this field.
- ◆ Threshold  
Refers to the minimum difference between dark and light areas that must exist before unsharp masking is applied. The lower the threshold value, the smaller the difference between the pixel values needs to be to apply USM. As you raise or lower the value in this field, the active bar is shifted up or down in the chart to reflect the higher or lower starting point for USM. Areas below the threshold are smoothed (see below); areas above it are sharpened.
- ◆ Smooth  
Evens out differences between tonal regions in an image. This option is helpful, for example, in reducing the effect of film grain (typically in the shadows or three-quarter tones) when an image is magnified. A higher Smooth value helps to diminish the film graininess.  
  
Smoothing is represented in the Region Control chart by the lighter colored bar to the right of each dark bar. As you increase the Smooth value, the lighter bar gets longer, graphically representing the smoothing effect between two adjacent regions.

---

Note: Only those areas below the threshold are smoothed.

---

## Manually Adjusting the Region Control Bars

In addition to entering numerical values to adjust the region control bars, you can manipulate the bars directly:

- ◆ To adjust sharpening in a tonal region:  
Click and drag the desired bar up or down.
- ◆ To adjust sharpening in all tonal regions:  
Hold down the Option (Mac) or Alt (PC) key and click and drag any bar to the desired point. The region control bars move together.
- ◆ To adjust smoothing in a tonal region:  
Hold down the Shift key and drag the desired bar up or down.
- ◆ To adjust smoothing in all tonal regions:  
While holding down the Option (Mac) or Alt (PC) key and the Shift key, drag any bar up or down. The smoothing bars move together.
- ◆ To adjust the threshold of a tonal region:  
Hold down the Control key and drag the desired bar up or down.
- ◆ To adjust the threshold of all tonal regions:  
Hold down the Control key and Option (Mac) or Alt (PC) key and drag any bar up or down. The bars move together, maintaining their relative sharpening and smoothing positions.

## Controlling Edges Between Tonal Regions

Trident's unsharp masking also allows you to choose luminance, monocolored edges, or colored edges to sharpen.

- ◆ Luminance  
The lightness and darkness detail in the image.
- ◆ Mono Edges  
Edges made up of a single color, mixed in the ratio you define in the R, G, and B fields.

- ◆ Color Edges

Edges which are a composite of the surrounding colors.

The edge setting is a matter of individual preference. Some images tend to look better with mono edges (also called “halos”). The goal is to achieve the right amount of edge sharpening without overaccentuating the halos.

### Controlling Sharpening in Light and Dark Edge Areas

The Filter Control section in the UnSharp Masking window allows you to select or deselect sharpening in light edge and dark edge areas. Trident’s default is “on” for both settings.

Deselecting Light Edges tends to bring out dark edges and detail and vice versa.

### Using the Unsharp Masking Curve

The curve at the bottom of the UnSharp Masking window graphically depicts the transition from gray to white in unsharp masking.

- ◆ Shape

Governs how quickly the colors ramp from gray to white.

- ◆ Radius

Measures how many pixels will be modified or how wide the halo effect is at the edges of the tonal regions.

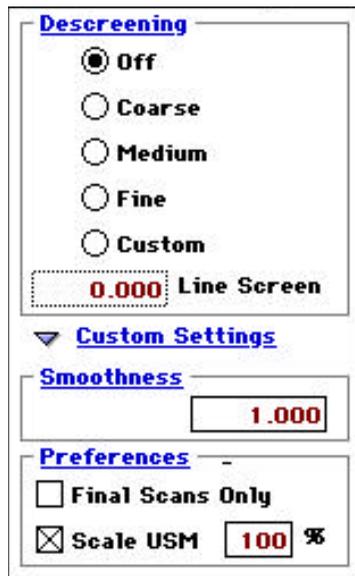
As you change these values, the curve at the left changes shape.

# Applying Descreening

Descreening represents a method of eliminating the moiré patterns that can result when printed halftone images are scanned. The Descreening function can also be useful in eliminating other artifacts, such as film grain.

To access Trident's descreening function, select the Descreening option on the Tools menu. The Descreening window is displayed, as shown in Figure 5-2.

Figure 5-2  
Descreening



## Descreening Options

The type of descreening to be applied is selected in the top half of the Descreening window. The available options are defined as follows:

- ◆ Off  
No descreening is used (default).
- ◆ Coarse  
The image is substantially descreened. Scanning in this is generally used for material printed at a line screen of 100 or lower.

- ◆ Medium  
Some descreening takes place. Scanning in this is generally used for material printed at a line screen of 133 to 150.
- ◆ Fine  
Only a small amount of descreening occurs. Scanning in this is generally used for material printed at a line screen of 175 or higher.
- ◆ Custom  
This is used to set a specific line screen. Enter the lpi value in the Line Screen field.

## Customizing the Descreening Function

The arrow to the left of the Custom Settings heading opens an additional area of the Descreening window (as shown in Figure 5-2). This is used for customizing Trident's descreening function. The options for customization are:

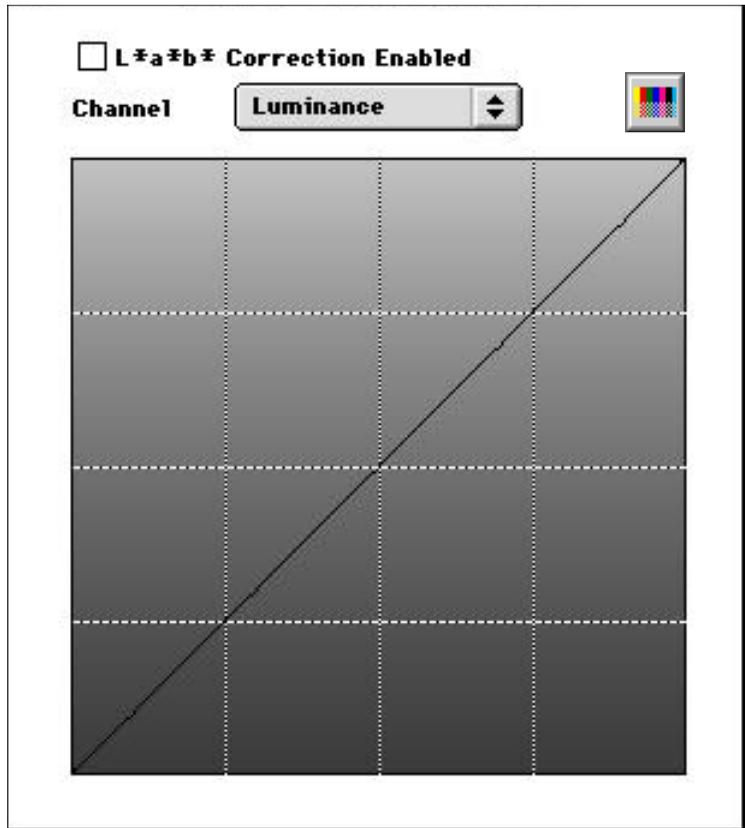
- ◆ Smoothness  
Performs the same function as the Smooth field in the UnSharp Masking window (see above). The value entered in this field is reflected in the USM window.
- ◆ Final Scans Only  
Applies descreening only to the final image to be scanned, but not to any prescans.
- ◆ Scale USM  
Limits the degree of unsharp masking applied to the final image. To use the option, click on the checkbox next to Scale USM and enter the percentage by which you want USM reduced.

Since descreening "softens" the focus of an image, the Scale USM option is helpful because it helps to avoid "oversharpening" the image again by applying an excessive amount of unsharp masking.

# Applying L\*a\*b Correction

L\*a\*b offers a different color space in which you can work. It is a device-independent color space that enables you to define color in 3-D space.

Figure 5-3  
L\*a\*b Color Correction



- ◆ “L” stands for “Luminance” (brightness) and is equivalent to the Z-direction in 3-D color space. It indicates lightness and darkness. The curve control can adjust lightness, darkness, and contrast in the luminance channel of an image.
- ◆ “a” and “b” are chrominance (color) information and are equivalent to the X- and Y-directions in 3-D space. They define color and enable you to shift the hue of the entire image. 0,0 is neutral.

The “a” channel ranges from green to magenta.  
The “b” channel ranges from blue to yellow.

To access the L\*a\*b correction feature, select the L\*a\*b Correction option on the Tools menu. The L\*a\*b Color Correction window is displayed, as shown in Figure 5-3. From the Channel pull-down, choose the Luminance, a, or b channel to correct.

When the L\*a\*b Correction Enabled box is checked, the data will be displayed and applied to the image data. To view the corrections made in the L\*a\*b color menu, check this box, make your change, and then select the Update button () on the L\*a\*b Color Correction dialog.

---

Note: The Auto Update feature does not apply to this menu.

---



## Color Correction in the CMYK Color Space: Production Mode



**T** Trident's SE package offers two color control modes for image correction work in the CMYK color space:

- ◆ Production Mode, as described in this chapter.
- ◆ Expert Mode, as described in Chapter 7.

This chapter explains how to use Production mode and covers the following topics:

- ◆ Understanding the SE Probe
- ◆ Using Production Color Controls
- ◆ Making Selective Color Corrections

## Accessing the Production Mode

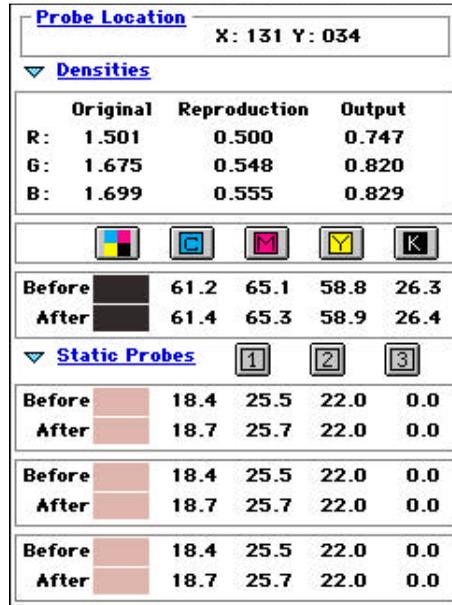
To access the Production mode:

1. Select Preferences on the Edit menu. The Preferences window is displayed (as described in Chapter 2).
2. Select Production as the SE Separator Mode on the Preferences window.

# Understanding the SE Probe

Open the SE Probe window by selecting Probe on the Tools menu. (Mac users can press the Command and P keys).

Figure 6-1  
SE Probe Window



The Probe is a static display of numerical information used as a guide in making color correction changes. It is a valuable tool and should always be used in conjunction with the screen display. This section explains how to understand and use the Probe's parts.

## Probe Location

This section of the SE Probe window shows the cursor's X/Y coordinates at the current location.

## Displaying Density Values

The Densities table can be toggled open or closed with the blue triangle. It displays the RGB densities as read from the scanner (Original), after color correction (Reproduction), and when output after tone compression (Output).

## Displaying Color Plates

The Probe allows you to select the color separations or combination of separations you would like to view in the image window as follows:

- ◆ The Four Plates button () shows all four process colors together in the image window. (Mac users can press the Command and 0 keys).
- ◆ The Cyan button () shows only the Cyan plate in the image window. (Mac users can press the Command and 1 keys).
- ◆ The Magenta button () shows only the Magenta plate in the image window. (Mac users can press the Command and 2 keys).
- ◆ The Yellow button () shows only the Yellow plate in the image window. (Mac users can press the Command and 3 keys).
- ◆ The Black button () shows only the Black plate in the image window. (Mac users can press the Command and 4 keys).

## CMYK Values Before and After Corrections

The section below the Color Plates shows the CMYK values of the current cursor location before and after changes, both in color swatches and in terms of dot percentages.

---

Note: As you sample the image, you can click your mouse to "mark" a location for image correction. The CMYK values for that location are then entered in the SE Selective Color window (see below for details) and remain there until you click on another location in the image window. After a location is marked, the cursor can still be used to sample other parts of the image.

---

## Selecting Fixed Reference Points

The Static Probes section at the bottom of the SE Probe can be toggled open or closed by clicking on the blue triangle. This enables you to select up to three fixed points in the image which you can use to monitor important tonal ranges as you correct the image.

To select a point, click on the 1, 2, or 3 button and click on the desired location in the image. The location is flagged with the number, and the colors and dot percentage values for that point before and after any changes are displayed in the Probe.

---

Note: New static points can be selected at any time using the above procedure, but the points cannot be moved or deleted.

---

## Using Production Color Controls

Trident SE Production mode is designed to combine the most common tools for color correction work in a single dialog window. This enables you to work more efficiently, gain a better overview of all adjustments, and use window space economically. For more detailed and precise color controls in the CMYK color space, or to build custom tables, use the Expert mode (see Chapter 7).

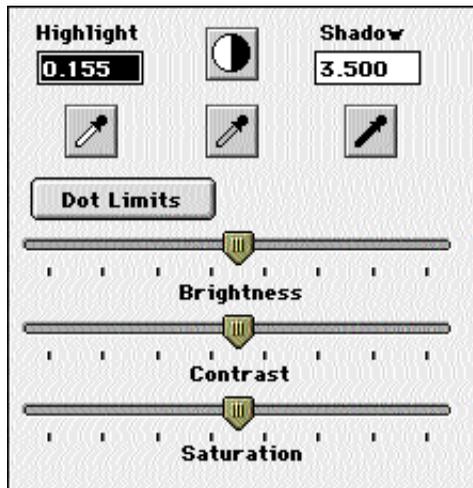
---

Note: Changes made in Production mode are reflected in the individual controls in Expert mode and vice versa.

---

Open the Production Controls window by selecting Production Controls on the Correction menu.

Figure 6-2  
Production Controls  
Window



## Setting Highlight and Shadow Limits

Setting highlight and shadow values accurately is one of the most important steps in correcting scanned images. The task can be performed manually or using Trident's Auto Range feature (see below and on the next page).

---

Note: The "sticky densitometer" shows high-light and shadow on the image.

---

- ◆ Highlight  
This number is the original density for specular high-light (whitest white) or diffused highlight (0=clear, 4=maximum density).
- ◆  Auto Range  
This button sets the white point (highlight) and black point (shadow) automatically.
- ◆ Shadow  
This number is the original shadow density.

## Manually Setting Highlights and Shadows

Use the Highlight and Shadow boxes at the top of the window to set the original (input) density of the scanned image. The density values, which range from 0.0 (Specular Highlight) to 4.0 (Shadow), instruct Trident as to when to start and stop recording image data. To set a specular highlight and shadow limit manually, enter the desired values in these boxes. (For more information on specular highlights, see the section Specular vs. Diffused Highlights on the next page.)

## Automatically Setting Highlights and Shadows

An image's input range can also be adjusted automatically using the Auto Range button (). Click on this button to apply a histogram of the density values in the cropped area to set the highlight and shadow density limits.

## Using the Eyedroppers to Correct Color Casts

Cast correction is the process by which unwanted color is removed from the neutral tones of an image. Trident provides automated and manual controls to target five points along the tonal range: highlights, quarter tones, midtones, three-quarter tones, and shadows.

Changes occur based on settings in the Expert Mode, as described in Chapter 7 (refer to the section titled, Using Tone & Cast Control).

Cast correction is important because the SE Separator performs color correction separately on the hues and on the neutral areas. Casts are removed by adjusting the Red, Green, and Blue densities of a selected tonal region. By making the output densities equal or nearly equal, the result is a neutral value. This neutral density value is passed through Trident's gray balance table where the appropriate dot values are applied.

---

Note: Many images may not contain truly “neutral” points. For these images, it is best to perform the following procedure on a grayscale step wedge mounted next to the image instead of the image itself.

---

To correct casts automatically in the highlights, shadows, or neutral grays:

1. Click on the appropriate eyedropper: Highlight (on the left), Gray (in the middle), or Shadow (on the right).
2. Move the cursor inside the image or step wedge and click on the point you wish to define. After you select the point, the eyedropper tool is automatically deselected.
3. Check the new values using the Probe.

### Specular vs. Diffused Highlights

There are two types of highlights:

- ◆ “Specular” highlights are areas that contain no dot percentage of any ink.
- ◆ “Diffused” highlights contain a minimum dot percentage.

All densities less than the diffused highlight slope to a 0% dot at a 45° angle. This angle is often referred to as “catch light” (as described in Chapter 7).

The values that will be set by the eyedroppers can be modified on the Expert Tone & Cast window as described in Chapter 7.

To set a specular highlight:

In order for a point to be “specular,” the C, M, and Y input boxes next to the highlight eyedropper (on the Expert Tone & Cast window) must contain 0 for each ink. Refer to Chapter 7.

To set a diffused highlight:

The factory defaults for Cyan, Magenta, and Yellow are 5%, 3%, and 3%, respectively. If you need to change these values, use the Expert Tone & Cast window (described in Chapter 7). In the Cyan box next to the Highlight eyedropper, enter the Cyan dot value from the Probe. The Magenta and Yellow value are automatically filled in. These values are generated from Trident's gray balance table.

## Removing Color Casts

Some images are intentionally photographed through color filters, which, while adding artistic effects, also add a color cast to the image. The human eye is extraordinarily sensitive to shifts in colors in the neutral areas, so cast removal from the highlights and shadows is of paramount importance.

This is accomplished with the Cast Removal pull-down menu in the Tone & Cast section of the SE Production Controls window. Refer to Correcting Color Casts in Chapter 7 for a complete description.

## Using the Gray Eyedropper

Gray points are made up from the quarter tone, midtone, and three-quarter tone regions. Gray is important for negatives. The gray eyedropper is unique in that it can set multiple points.

---

Note for Mac Users Only:

To select multiple points, hold down the Option key down while selecting each point. Before you select the last point, release the Option key and click on the point. The tool is then deselected automatically.

---

## Setting Dot Limits

Click the Dot Limits button on the Production Controls window. The Dot Limits window is displayed. It is used to control how inks will be output on a press.

Figure 6-3  
Dot Limits Window



The screenshot shows a window titled 'Dot Limits' with two radio buttons at the top: 'GCR' (selected) and 'UCR'. Below the buttons are four input fields with their values: 'Total Ink: 320 %', 'Start GCR: 55 %', 'Max Black: 97 %', and 'Start Black: 73 %'.

The dot limit fields are defined as follows:

- ◆ GCR (Gray Component Replacement)  
UCR (Undercolor Removal)  
Replace CMY inks with Black in the neutral areas to reduce total ink on the press. GCR%/UCR% is the percentage of ink replaced, while Start% defines the cyan dot percentage at which GCR/UCR begins.
- ◆ Total Ink  
Represents the maximum dot percentage the press can accommodate and equals the sum of the CMYK ink percentages. This number is generally between 260% and 340%.
- ◆ Start GCR  
Replaces CMY inks with Black in the neutral areas to reduce total ink on the press. Start% defines the cyan dot percentage at which GCR/UCR begins.
- ◆ Max Black  
Sets the maximum dot percentage for Black.
- ◆ Start Black  
Defines the Cyan dot percentage at which Black begins to be added.

---

Note: It is always advisable to consult with your press operator when adjusting ink controls.

---

## Adjusting Brightness, Contrast, and Saturation

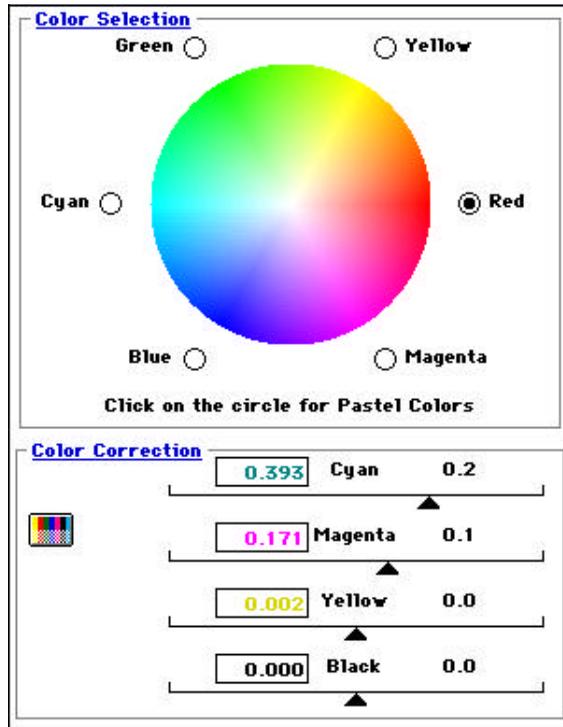
Brightness, Contrast, and Saturation sliders are available on the Production Controls window.

- ◆ **Brightness**  
Sets the relative lightness or darkness of the color. The Brightness slider represents the percentage of brightness from 0% (black, at the leftmost register of the slider) to 100% (white, at the rightmost slider register).
- ◆ **Contrast**  
Sets the tonal range of the image (highlights, shadows, and midtones) at the same time. The leftmost slider register represents the lowest contrast while the rightmost register is the highest contrast.
- ◆ **Saturation**  
Sets the strength or purity of the color. The Saturation slider represents the amount of gray in proportion to the hue and is measured as a percentage from 0% (gray, at the leftmost slider register) to 100% (fully saturated, at the rightmost slider register).

# Making Selective Color Corrections

The SE Selective Color window (see Figure 6-4) provides control over high chroma (saturated) and low chroma (pastel) in all primary and secondary colors independently. To open the window, select Selective Color from the Correction menu.

Figure 6-4  
SE Selective Color  
Window



## Selecting Colors to be Corrected

Use the Color Selection color wheel to select the individual color to be corrected. You can also click on any area of the image and Trident automatically detects the selected pixel's high value and whether it is a pastel or saturated color. To toggle between the high and low chroma colors, click on the color wheel. This toggle feature allows you to make changes in the darker or lighter colors without affecting each other.

## Using the Sliders to Correct Individual Colors

The sliders in the Color Correction section allow you to perform detailed color correction. Follow this procedure:

1. Select the color to adjust by clicking the appropriate radio button around the Color Selection color wheel. Clicking on a point in the image automatically selects the proper hue.
2. Adjust the sliders in the desired color(s) to add or remove CMYK inks for that color. Remember that small movements in either direction can have substantial effects.

---

Note: The boxes in each slider contain arbitrary reference numbers for your convenience.

---

3. Click on the Manual Update button in the window to check the results of each change (or turn on automatic updating by clicking the Auto Update On button in the tools).
4. Check the Before and After swatches in the Probe to evaluate the effect of the color change.



## Color Correction in the CMYK Color Space: Expert Mode



Trident's SE package offers two color control modes for your image correction work in the CMYK color space: Production and Expert. The Production color control mode was discussed in Chapter 6.

This chapter explains how to use Expert mode and covers the following topics:

- ◆ Calibrating Trident SE
- ◆ Setting up the gray balance
- ◆ Controlling dot gain
- ◆ Using gradation controls
- ◆ Using tone controls

For information on how to use the SE Probe, see Understanding the SE Probe in Chapter 6.

## Accessing the Expert Mode

To access the Expert mode:

1. Select Preferences on the Edit menu. The Preferences window is displayed (as described in Chapter 2).
2. Select Expert as the SE Separator Mode on the Preferences window.

# Calibrating Trident SE

---

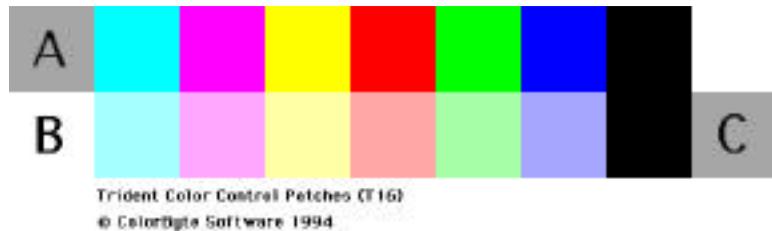
CAUTION: Trident SE should be set up and calibrated only using the procedure in this section. Do not make any adjustments in the SE Setup window.

---

## Understanding Calibration

Trident incorporates a user-friendly method of calibrating the SE Separator for specific output devices, such as inkjet printers, conventional proof printers, and printing presses. The software includes a file called Trident 16, which contains patches for saturated and pastel colors, as well as a three-color and four-color Black patch (see Figure 7-1). The markers A, B, and C outside the color patches identify the orientation of the target and the location of the patches.

Figure 7-1  
Trident 16 Target File



---

Note: Trident calibration is only used with printed targets, not film-based targets (e.g. Q60). This calibration method characterizes output devices, not films.

---

By characterizing the output device, Trident can automatically remove unwanted contaminants found in inks (a process sometimes referred to as “wanted” and “unwanted” calibration). It also allows Trident to set the proper thresholds between the saturated and pastel colors.

The three-color Black patch sets the maximum three-color density. This value is automatically entered into Trident's gray balance table and determines the endpoint of the Grad 3 gradation curve. Similarly, the four-color Black patch sets the maximum four-color density and determines the endpoint of the Grad 4 curve.

---

Note: The Grad 3 and 4 curves can be viewed only in SE Expert mode.

---

## Preparing the Target for Output

Trident 16 is a CMYK file in TIFF format. In order to characterize your output device properly, the file must be processed exactly as a real job, so that all transforms and screens are identical to actual production work.

To prepare the target file for output, follow these steps:

1. Output the Trident 16 file on film.
2. Produce a match print using your standard production process.

---

Note: Make sure the match print is free of any artifacts, such as scratches, ink spots, or fingerprints.

---

3. Mount the print on the drum or platen surface of your scanner.
4. Produce an Overview scan and preview scan a region containing the print. (For information on producing Overview scans and working with regions, see Chapter 3).

---

Note: The Scan Type must be set to Reflective.

---

5. On the Edit menu, select Selective Calibration. The Selective Calibration window appears:

Figure 7-2  
Selective Calibration  
Window



6. Make sure the selected Target is Trident 16. If not, select Trident 16 from the pulldown menu.

Note: Although it is possible to use customized targets, it is strongly recommended that you use the file supplied with Trident.

7. Click on Start. The Point A radial button becomes active.
8. Move the cursor over the A patch on the target image. The cursor changes to look like this: .
9. Click once on the A patch. The Found box for A is now checked and the Point B radial button becomes active.
10. Place the box over patch B and click once. The Found box for B is checked and the Point C radial button becomes active.

11. Place the box over patch C and click once. The Found box for C is checked.
12. Click on the Calibrate button. The calibration takes less than one second. The Selective Calibration window then returns to its original state (no points found).
13. Save the calibration settings to a file. In the Save Settings window, check off SE Color & Setup and SE Gray Balance (for more information on saving settings, see Chapter 2).

---

Note: Before saving settings as defaults, use the settings and verify that they produce the expected results. It is also advisable to save existing defaults before defining new ones.

---

## Setting Up the Gray Balance

Trident's Gray Balance table should be adjusted for each press environment you intend to use. Trident provides a number of easy-to-use tools for customizing tables for different ink or printing conditions. To bring up the SE Gray Balance window (see Figure 7-3) select Gray Balance on the Correction menu.

The gray balance table shows the corresponding Magenta and Yellow values for Cyan dot percentages in increments of 5%. Depending on specific press characteristics, you might, for example, want to make sure that at a 50% Cyan dot, the Magenta channel is not too strong. This table could be used to reduce the Magenta value to, for example, 39% by typing 39 in the Magenta field at Cyan 50%.

---

Note: SE Gray Balance affects only the reproduction of the neutral areas. It does not affect the reproduction of hues.

---

Figure 7-3  
SE Gray Balance  
Window

	Cyan	Magenta	Yellow
0 %	0.0	0.0	0.0
5 %	3.0	3.0	3.0
10 %	6.2	6.2	6.2
15 %	9.5	9.5	9.5
20 %	13.1	13.1	13.1
25 %	16.8	16.8	16.8
30 %	20.7	20.7	20.7
35 %	24.8	24.8	24.8
40 %	29.0	29.0	29.0
45 %	33.4	33.4	33.4
50 %	38.0	38.0	38.0
55 %	42.7	42.7	42.7
60 %	47.6	47.6	47.6
65 %	52.6	52.6	52.6
70 %	57.8	57.8	57.8
75 %	63.0	63.0	63.0
80 %	68.3	68.3	68.3
85 %	73.7	73.7	73.7
90 %	79.1	79.1	79.1
95 %	84.5	84.5	84.5
100 %	90.0	90.0	90.0

**Points**

Fewer

More

**Interpolate**

(1) Select Fewer Points.

(2) Type in Dot Values for 5%, 50% and 100%.

(3) Click Interpolate to generate all other values automatically.

The default gray balance values for Trident are those for SWOP inks and may vary with different ink manufacturers. Ink values correspond to a given density, which is used by Trident to determine the ink values to be used.

Trident's Save and Recall features are very useful in the SE Gray Balance controls, allowing you to store and reuse different gray balance tables.

## Editing the Gray Balance Table

The Gray Balance table can be edited by entering the desired values in the fields. This can be done using the two different settings in the Points section as follows:

- ◆ Fewer  
By selecting this mode, you can enter the desired values only in the 5%, 50%, and 100% fields for Magenta and Yellow. After entering the values, click on the Interpolate, and Trident calculates all the values in between those fields.
- ◆ More  
By selecting this mode, you can enter values in all of the fields in the table.

## Controlling Dot Gain

Trident's dot gain controls are accessed by selecting Dot Gain on the Correction menu. The Dot Gain window that appears (see Figure 7-4) contains a table of values with dot percentages for the Cyan, Magenta, Yellow, and Black inks.

### Setting Dot Gain

Presses vary widely in terms of the dot percentages at which they experience maximum dot gain. The four color plates also tend to gain differently from each other. Trident's SE Dot Gain window allows you to take a given press's gain characteristics into account in preparing your image for output.

The Dot Gain table shows dot percentages in increments of 5% with editable fields to set the gain at those percentages in each of the four color channels. Dot percentages are determined by the dot gain value a particular press

experiences. This value is best determined in consultation with your press operator.

Figure 7-4  
SE Dot Gain Window

<b>Dot</b>	<b>Cyan</b>	<b>Magenta</b>	<b>Yellow</b>	<b>Black</b>
0 %	0.0	0.0	0.0	0.0
5 %	11.4	11.4	11.4	11.4
10 %	21.6	21.6	21.6	21.6
15 %	30.8	30.8	30.8	30.8
20 %	39.0	39.0	39.0	39.0
25 %	46.3	46.3	46.3	46.3
30 %	52.9	52.9	52.9	52.9
35 %	58.7	58.7	58.7	58.7
40 %	64.0	64.0	64.0	64.0
45 %	68.8	68.8	68.8	68.8
50 %	73.0	73.0	73.0	73.0
55 %	76.9	76.9	76.9	76.9
60 %	80.5	80.5	80.5	80.5
65 %	83.7	83.7	83.7	83.7
70 %	86.6	86.6	86.6	86.6
75 %	89.3	89.3	89.3	89.3
80 %	91.8	91.8	91.8	91.8
85 %	94.1	94.1	94.1	94.1
90 %	96.2	96.2	96.2	96.2
95 %	98.2	98.2	98.2	98.2
100 %	100.0	100.0	100.0	100.0
<b>Density</b>	1.30	1.30	1.00	1.90
<b>Position</b>	40.0	40.0	40.0	40.0
<b>Gain</b>	24.0	24.0	24.0	24.0

View as:  Dots  Densities

The Dot Gain table fields function as follows:

- ◆ Density  
Defines the maximum density for each ink.

- ◆ Position  
Defines the dot percentage at which the press experiences maximum dot gain.
- ◆ Gain  
Sets the amount of dot gain at the dot percentage indicated under Position.

---

Note: For greater ease of customization, you can enter precise values in any of the fields.

---

After entering values in the Position and Gain fields, the Dot Gain table adjusts to reflect these values, ramping down on both sides of the Position percentage. To understand how to use Trident's SE Dot Gain feature, see the following example.

#### An Industry Example

The press operator indicates that the press in your shop gains 20% at a peak of 40% for Cyan. In the Dot Gain window, proceed as follows:

1. Click on the Cyan Position field.
2. Enter 40.0.
3. Press Tab to move to the Cyan Gain field.
4. Enter 20.0 and press Return.

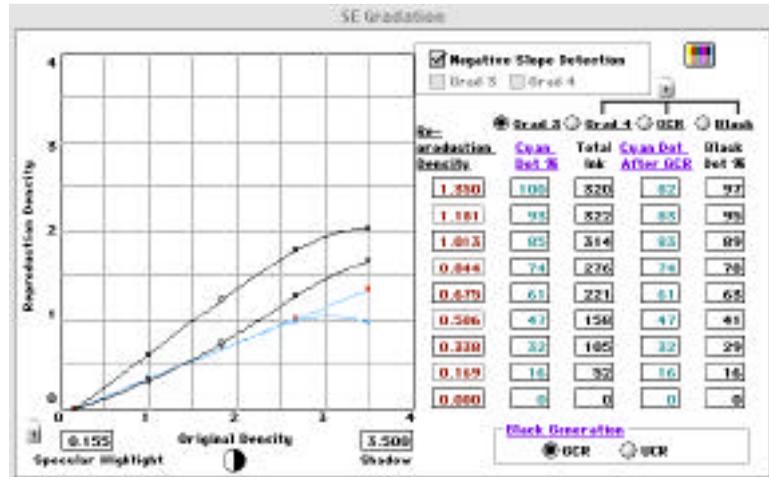
Repeat this procedure for the other plates, adjusting the numbers based on the information from your press operator.

Trident's powerful features allow you to customize and save different tables for different presses. This is particularly useful for trade shops that run a variety of presses for different types of work. By recalling the desired tables with Trident's Recall feature, you can apply previously calculated dot gains to all your new images without reentering data.

# Using Gradation Controls

Trident's gradation is controlled in the SE Gradation window (see Figure 7-5). To open this window select Gradation on the Correction menu.

Figure 7-5  
SE Gradation Window



When making gradation corrections in your image always keep the SE Probe window open to monitor the changes in numerical values (for more information, see Understanding the SE Probe in Chapter 6).

## Understanding Gradation

In a general sense, gradation governs how quickly colors ramp from highlight to shadow. In the SE Tone & Cast window (see the Using Tone Control later in this chapter), highlight and shadow values are defined independently for Cyan, Magenta, Yellow, and Black. In the SE Gradation window, however, highlight and shadow are set for groups of colors globally.

The SE Gradation window consists of a curve grid and a table of editable fields (see Working with the Gradation Table later in this section). You may notice that only Cyan appears to be represented in the table. Cyan is the most

representative of the colors which make up “Grad 3,” a term designating the CMY curve. However, gradation changes affect all colors.

Above the table is a set of four radio buttons (see Figure 7-5) to select the gradation curve to work on. The buttons are defined as follows:

- ◆ Grad 3  
Activates the three-color (CMY) density curve, shown as the uppermost blue curve in the graph. This curve determines the shape of the three-color density gradation curve and sets both the three-color input and output range (see Setting the Input Rangelater in this section).

---

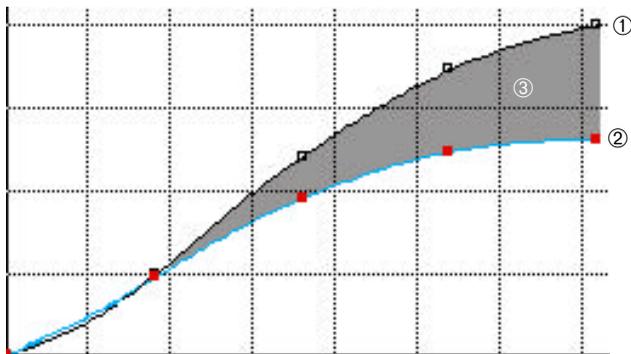
Note: The endpoints of the Grad 3 curve represent the CMY reproduction density. This value is set automatically during SE selective calibration (see the section earlier in this chapter). Do not modify this value unless you intend to limit the Cyan dot. This value should never be increased beyond the maximum three-color density.

---

- ◆ Grad 4  
Represents the increased density that can be achieved by adding Black to CMY (also referred to as the “skeletal Black”). The shape of the curve reflects where Black begins and ends and the slope of its ramp in between. The endpoint of the Grad 4 curve represents the total reproduction density of all four inks (generally  $\pm 2.0$  for coated stock). The area in between Grad 4 and Grad 3 curves represents the skeletal Black. Refer to Figure 7-6.

Figure 7-6  
Skeletal Black Area.

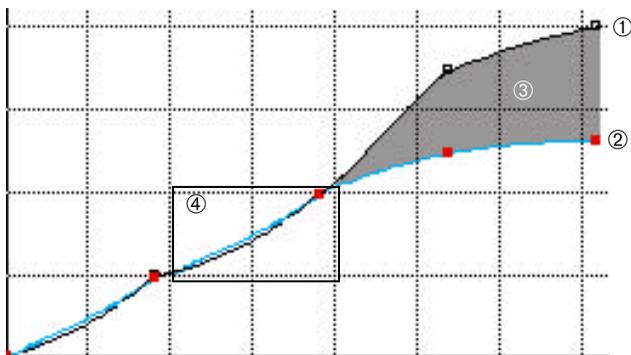
- ①-Grad 4 curve.
- ②-Grad 3 curve.
- ③-Skeletal Black.



By pulling the nodes of Grad 4 down to meet Grad 3, the Black is eliminated in the density range where the curves meet:

Figure 7-7  
Skeletal Black Area.

- ①-Grad 4 curve.
- ②-Grad 3 curve.
- ③-Skeletal Black.
- ④-Black eliminated.



- ◆ **Black Generation: UCR/GCR**  
Activates the UCR (Undercolor Removal)/GCR (Gray Component Replacement) curve. This curve allows you to specify how much Cyan, Magenta, and Yellow is replaced with Black in the neutral areas. The higher the UCR/GCR percentage, the less total ink is used on the press.
- ◆ **Black**  
Activates the Black density curve, with which you can directly adjust the amount of Black ink to be used along the tonal range of the image. This curve is automatically set from the Grad 4 and UCR/GCR curves, and does not need to be adjusted.

## Setting the Input Range

The horizontal axis of the graph in the SE Gradation window shows the original densities as read by the scanner from the original image. The vertical axis represents reproduction densities (those that will actually be printed on the press).

To optimize the data from your input image, it is important to set the input density range properly. Setting the range too narrowly will cause “clipping” (conversion of tones to white or black), while setting it too wide can make the image appear washed out. Use the Probe to determine the current range limits of your image.

The input range is represented as a range of 0–4 on the horizontal axis of the SE Gradation graph. The Specular Highlight and Shadow boxes under the graph show the current range limits. New limit values can be set by entering them directly in the boxes or by dragging the endpoints of the three-color curve horizontally.

The image’s input range can also be adjusted automatically using Trident’s Auto Range feature. To do so, click on the Auto Range button () at the bottom of the SE Gradation window. This immediately adjusts the input range limits to the values found in the currently cropped area.

---

Note: Always crop the image before using Auto Range. Because this function always works with the data inside the crop boundary, any film edge or drum/platen surface that is included affects its accuracy.

---

## Working with Gradation Curves

The points on the curves (called “anchor points”) can be moved up or down to change the gradation value at any point. The anchor points of the currently active curve are shown in red. To activate a different curve, click on the desired radio button above the table to the right of the graph (Grad 3, Grad 4, UCR/GCR, or Black).

The black lock icon at the bottom left-hand corner of the grid is open by default. By clicking on it, anchor points on the curve are locked into position so you can move each of the points individually without affecting the position of the others. Locking the curve also creates additional anchor points allowing you to fine-tune the curve further.

---

Note: Changes in one gradation curve affect its relationship to the other curves.

---

To illustrate how to work with gradation curves, consider this example: Suppose your goal were to reduce the CMY values in the quarter tones. You would proceed as follows:

1. Select the Grad 3 radio button.
2. Click on the quarter tone anchor point of the Grad 3 curve.
3. Drag the anchor point down and monitor the numerical values in the table.

---

Note: Very small changes in a gradation curve shape can have dramatic effects.

---

4. Update your image using the button at the top of the SE Gradation window (or turn on automatic updating).
5. Measure the density values in the image window using the SE Probe.
6. Repeat steps 2 through 5 until you achieve the desired result.

## Using Negative Slope Detection

At the top of the SE Gradation window is a section called Negative Slope Detection. This feature is designed to limit the movement of the anchor points for the Grad 3 and Grad 4 curves, preventing you from creating an invalid curve with a negative slope (which occurs when a point on the curve goes above an anchor point).

Setting the desired curve shape may involve moving multiple anchor points. If a point has reached its maximum or minimum slope and no longer moves, negative slope detection is at work. It may then be necessary to adjust another point on the curve so that the curve will move freely again.

The default setting for negative slope detection is on (checkbox checked). If the function is off, all anchor points move freely, but if a negative slope is detected in the Grad 3 or Grad 4 curve, the appropriate box is checked in the Negative Slope Detection section. The image cannot be updated or final scanned until the negative slope situation is corrected.

## Working with the Gradation Table

The gradation table in the SE Gradation window represents ink coverage on the press in numerical terms. The rows go from shadow values at the top to highlights at the bottom. The columns performs the following function:

- ◆ Reproduction Density  
Shows the input density for the shadow point (top) and highlight point (bottom) in increments of 1/8 tonal point.
- ◆ Cyan Dot %  
Shows the dot percentage for Cyan ink at each tonal step. Since Cyan is the densest ink, this value is, in effect, the maximum dot size.

- ◆ Total Ink  
Shows the total dot percentage at each tonal step. Total ink coverage is determined by Grad 4 and UCR/GCR.

---

Note: Adjusting the UCR/GCR curve is a powerful means of controlling the total dot percentage.

---

- ◆ Cyan Dot After UCR/GCR  
Shows the maximum Cyan dot percentage after the current UCR/GCR curve is applied. This column is useful in determining how UCR/GCR affects ink usage.
- ◆ Black Dot %  
Shows the dot percentage of the Black ink at the various tonal steps. These values are affected by adjustments in UCR/GCR, as well as changes in the shape of the four-color or Black ink curves.

To understand the table read across a row. For example, for the table shown in Figure 7-8, the top row (shadow) indicates that at a reproduction density of 1.308, and a total ink coverage of 320%, a 100% Cyan dot is reduced by GCR to 80% and the maximum Black dot is at 100%.

The Gradation table is useful for entering values specific to your requirements or production needs.

---

Note: Changes made in the SE Gradation window in Expert mode are reflected in the Production Controls window in Production mode.

---

Figure 7-8  
Gradation Table

	<b>Cyan Dot %</b>	<b>Total Ink</b>	<b>Cyan Dot After GCR</b>	<b>Black Dot %</b>
	100	320	82	97
	93	322	83	95
	85	314	83	89
	74	276	74	78
	61	221	61	63
	47	158	47	41
	32	105	32	29
	16	52	16	16
	0	0	0	0

## Determining Black Generation

The method of Black generation can be set to UCR or GCR by selecting the desired radial button at the bottom right of the SE Gradation window. Which method is used is a matter of individual preference, but the shape of the curves can vary considerably between the two, with the corresponding different effects on the image.

---

Note: Always refer to the Probe as well as a standard gray step wedge to verify that you are getting the desired results.

---

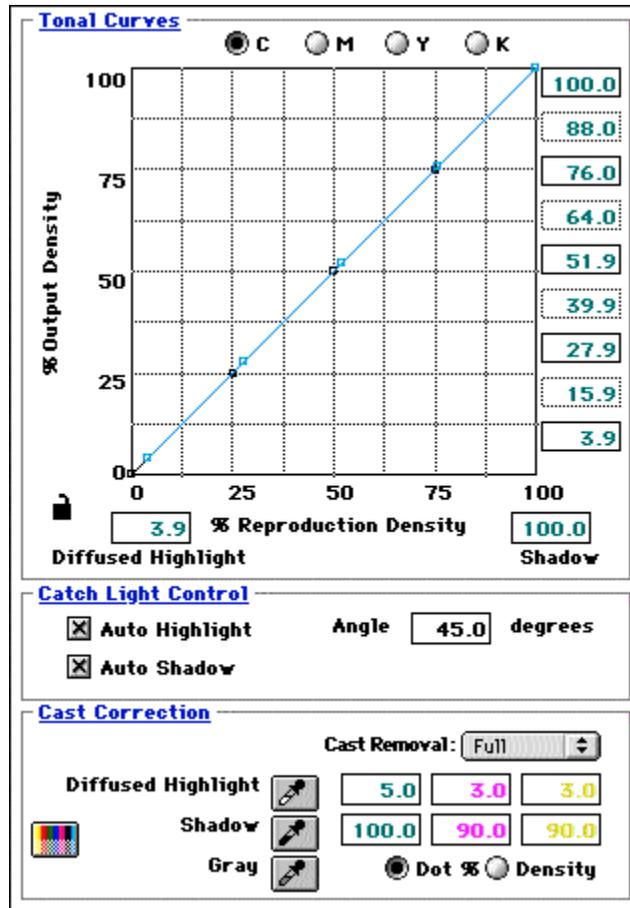
## Using the Gradation Lock feature

The lock button located in the upper right hand side of the Gradation menu locks the Grad 4, GCR or UCR and Black Dot % together. With the lock ON the Total Ink value can be set and the software will calculate the other two columns.

# Using Tone & Cast Controls

Trident's tone controls in Expert mode are accessed by selecting Tone & Cast on the Correction menu. The SE Tone & Cast window (see Figure 7-9) provides a highly flexible tool to correct color casts in your image.

Figure 7-9  
SE Tone & Cast  
Window



When making tone corrections in your image always keep the SE Probe open to monitor the changes in numerical values (for more information, see Understanding the SE Probe in Chapter 6).

## Tone Curves

The primary tools in the SE Tone & Cast window are the tone curves. They are a powerful way of correcting casts in very specific tonal regions of your image. The C M Y K radio buttons above the curves activate the Cyan, Magenta, Yellow, or Black curve in the graph, respectively.

The horizontal axis of the graph shows the percentage of reproduction density (the density that will actually be printed on the press). The vertical axis represents the percentage of output density.

The points on the curve (called “anchor points”) are, from left to right, located at the following values: highlights, quarter tones, midtones, three-quarter tones and shadows. By selecting an anchor point and dragging it up or down, you can alter the amount of the selected color in that tonal region.

---

Note: For more precise work, you can enter density values for each anchor point on the selected curve in the numerical fields to the right of the graph.

---

The black lock icon at the bottom left-hand corner of the grid is open by default. By clicking on it, the anchor points on the curve are locked into position so you can move each of the points individually without affecting the position of the others. Locking the curve also creates additional anchor points allowing you to fine-tune the curve further.

## Correcting Color Casts

Cast correction is the process by which unwanted color is removed from the neutral tones of an image. Trident provides automated and manual controls to target five points along the tonal range: highlights, quarter tones, midtones, three-quarter tones, and shadows.

Cast correction is important because the SE separator keeps hues and neutrals separate so that color correction can be performed on the hues without affecting the neutral areas. Casts are removed by adjusting the Red, Green, and Blue densities of a selected tonal region. By making the output densities equal or nearly equal, the result is a neutral value. This neutral density value is passed through Trident's gray balance table where the appropriate dot values are applied.

---

Note: Many images may not contain truly "neutral" points. For these images, it is best to perform the following procedure on a grayscale step wedge mounted next to the image instead of the image itself.

---

To correct casts automatically in the highlights, shadows or neutral grays, proceed as follows:

1. Click on the appropriate eyedropper.
2. Move the cursor inside the image or step wedge and click on the point you wish to define. After you select the point, the eyedropper tool is automatically deselected.
3. Check the new values using the Probe.

## Specular vs. Diffused Highlights

There are two types of highlights: "Specular" highlights are areas that contain no dot percentage of any ink, while "diffused" highlights contain a minimum dot percentage. All densities less than the diffused highlight slope to a 0% dot at a 45° angle. This angle is often referred to as "catch light." (For more information on catch lights, see the section Controlling Catch Lights below).

To set a specular highlight:

1. Select the highlight eyedropper.
2. Move the pointer around the image or step wedge to find a specular highlight point with the mouse.

---

Note: In order for a point to be "specular," the C, M, and Y input boxes next to the highlight eyedropper must contain 0 for each ink.

---

3. Click on the desired point to set the specular highlight.

To set a diffused highlight:

1. Probe the image or step wedge to find the desired point.
2. Select the Diffused Highlight eyedropper.
3. Move the eyedropper around the image or step wedge to locate the desired highlight.
4. Click on the selected point.
5. In the Cyan box next to the Diffused Highlight eyedropper, enter the Cyan dot value from the Probe. The Magenta and Yellow values are automatically filled in. These values are generated from Trident's gray balance table.

## Controlling Catch Lights

The SE Tone & Cast window contains a section for controlling the treatment of catch lights. With catch light control, the tone curves are scaled to the proper percentage of the input range.

---

Note: When the Cast Correction eyedroppers are used, the catch light control function is automatically deactivated.

---

If the Auto Highlight and/or Auto Shadow option are selected, the highlight and shadow values (to the right of the eyedroppers) are used as defined.

If the Auto Highlight and/or Auto Shadow option are not selected, the highlight is set to 0% and the shadow is set to maximum range (100%).

The Catch Light Control section also enables you to define the angle between the diffused highlight and the specular highlight. The default setting for Angle is 45°.

## Removing Color Casts

Some images are intentionally photographed through color filters, which, while adding artistic effects, also add a color cast to the image. The human eye is extraordinarily sensitive to shifts in colors in the neutral areas, so cast removal from the highlights and shadows is of paramount importance.

---

Note: Removing too much of a cast from a heavily casted image may cause undesirable effects.

---

The Cast Removal pull-down menu at the bottom of the SE Tone & Cast window allows you to set automatic cast removal for the highlights and shadows as follows: Full, Half, Manual, or None. By selecting Manual cast removal,

you can define the density values or dot percentages for highlight and shadow on the Cyan, Magenta, and Yellow plates in the appropriate editable field or by selecting the curve you wish to edit and moving the highlight or shadow anchor point up or down.

---

Note: Click on the Dot % or Density radio button to display values in those units.

---

## Using the Gray Eyedropper

The Gray eyedropper is unique in that it can set multiple points. Gray points are made up from the quarter tone, midtone, and three-quarter tone regions.

---

Note for Mac Users Only:  
To select multiple points, hold down the Option key down while selecting each point. Before you select the last point, release the Option key and click on the point. The tool is then deselected automatically.

---

## Using the Setup Option

When working in Expert Mode, the Setup option is available on the Correction menu. This option opens the SE Setup window which is used to define RGB to CMY conversion, ink impurities, and maximum ink densities. This table has been set up for SWAP standards. They will be modified automatically when performing SE Selective Calibration (from the Edit menu).

---

WARNING: These controls are very sensitive and should be used only by an individual with in-depth knowledge of color separation and inks.

---

The Max Density field at the bottom of the SE Setup window represents the maximum three-color neutral density. This value should be obtained from your press operator or by performing a Selective Calibration using the Trident 16 target (described earlier in this chapter).

---

Note: Many software functions use the Max Density value in the SE Setup window. It is important in characterizing the print media (e.g., coated, uncoated, newsprint, etc.).

---



# Scanning Images to Disk



Once you have completed color correction work on your images, they are ready to be scanned to disk. This chapter describes how to check final settings and scan your corrected images to a file. This includes:

- ◆ Reviewing scan settings.
- ◆ Performing final scans.

## Reviewing Scan Settings

Before final scanning, review your scanning parameters to make sure you have made all necessary adjustments.

---

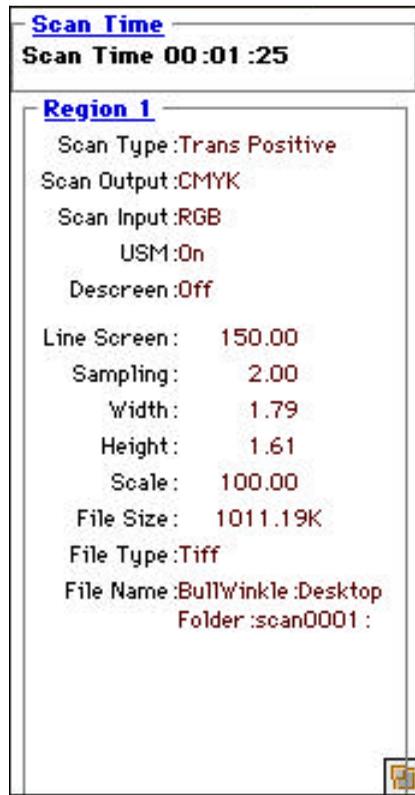
Note: Review the parameters for each region individually. Make sure the desired region is selected in the Queue Manager, as indicated by the red frame around it.

---

Trident provides an overview of all scanning parameters for a given region in the Scan Info window (select the Scan Info option on the Tools menu). Figure 8-1 shows an example of a Scan Info window.

The Scan Info window is a static display of the scanning parameters. To make any changes before final scanning, select the desired parameter options in the menu bar and tools.

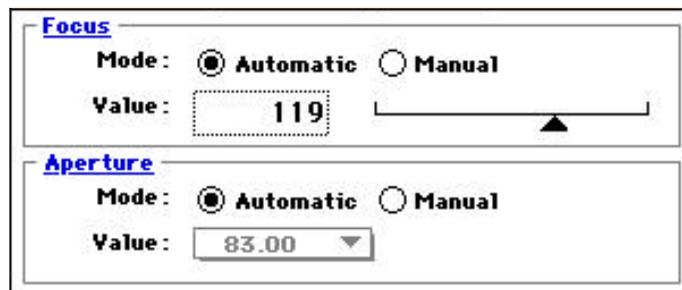
Figure 8-1  
Scan Info



### Checking Focus and Aperture (Drum Scanners Only)

If you are using a drum scanner, the Focus & Aperture option on the Tools menu allows you to adjust the focus and aperture settings of your scanner automatically or manually.

Figure 8-2  
Focus & Aperture



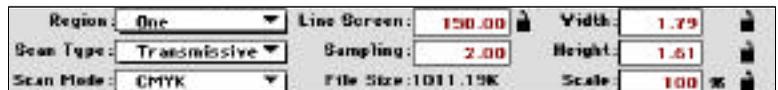
The options work as follows:

- ◆ Focus  
Default setting for the focus is Automatic. To set the focus manually, select Manual and move the Value slider to the desired value. The last value picked by the Automatic setting will remain.
- ◆ Aperture  
Default setting for aperture is Automatic. Click on Manual to select an aperture size from the Value pop-up menu.

## Checking Tool Parameters

Check the parameters in the tools to make sure they match your final scan specifications.

Figure 8-3  
Toolbar Parameters



## Naming Final Scans

Final scan files are named using the default region name. If you want to name the scans differently, before performing the final scan, proceed as follows:

1. Select the region in the Queue Manager by double-clicking on it.
2. Select Save on the File menu.
3. In the standard file window that appears, enter the name for the scan and click on Save.
4. Perform the final scan as outlined below.

---

Note: Final scan file icons in Trident are automatically set to be opened in Adobe Photoshop™ when double-clicked. This feature is convenient for performing further image manipulations on your final scans.

---

# Performing Final Scans

Once you have checked all your parameters and adjusted your settings in a region, you are ready to final scan your images.

## Scanning Images Individually

To scan a single region to disk, click on the Scan button () under that region in the Queue Manager (or select the Scan option on the Command menu). While the scan is in progress, the button appears red, green, and blue. After the region has been scanned, the Scan button turns all red.

## Batch Scanning All Images

Trident's Queue Manager allows you to "final scan" all regions in the Queue Manager in succession. To do so, click on the Scan All button () on the Queue Manager or select the Scan All option on the Command menu.

---

Note: Regions are scanned in the order they appear in the queue. While scanning is in progress, you may add regions, delete regions, or rearrange the order of unscanned regions.

---

## Pausing or Stopping the Scanning Process: Mac Users Only

Once scanning has begun, you can stop the scan by pressing the Command and period keys. Pressing these keys during batch scanning will stop the scan for the current image only. To interrupt the queue, click on the green triangle under the Overview image in the Queue Manager. The triangle will change to a red square.

To start the batch scan again, click on the red square (which will then change to a green triangle).





# Tips and Tricks

Figure 8-1  
SE Setup Window

<input checked="" type="radio"/> C <input type="radio"/> M <input type="radio"/> Y <input type="radio"/> K		
<b>Unwanted Color</b>	<input type="text" value="0.056"/>	
<b>Wanted Color</b>	<input type="text" value="0.498"/>	
<b>Unwanted Balance</b>	<input type="text" value="1.000"/>	
<b>Wanted Balance</b>	<input type="text" value="0.311"/>	
<hr/>		
<b>Gray Spread</b>	<input type="text" value="0.800"/>	
<b>Black Spread</b>	<input type="text" value="0.300"/>	
<hr/>		
<b>Max Production Density</b>	<input type="text" value="1.350"/>	

This chapter offers some practical tips and hints for your work with Trident.

For additional information on trouble shooting be sure to look at the FAQ section of the Howtek Web page at: <http://www.Howtek.com>

## Tips and Tricks

- ◆ To hide the tools temporarily, select the Hide Toolbar option on the Tools menu. To bring the tools back, select the Show Toolbar option.
- ◆ You can make the tools area into a floating window to customize your use of monitor space. To do so, select Unanchor Toolbar on the Tools menu. (To replace the tools in its default position, select Anchor Toolbar.)
- ◆ When adding regions, always define them in the Overview window, not in another region.
- ◆ To resize a region, change the Preview Size in the Preferences window. This setting defines the dimensions of the Overview window in pixels. Resizing the Overview window itself does not change the region's dimensions.
- ◆ Follow a rational naming scheme for your final scans (by client, project, date, etc.). Otherwise, your hard disk can quickly become cluttered with indecipherable file names.
- ◆ If you develop a group of settings that you use often (for example in tone or gradation), save them as tables using the Save option on the Settings menu to speed up your work next time. See Chapter 3 for more information.



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