EPSON®

EPSON PERFECTION™ 1240U

EPSON PERFECTION™ 1240U PHOTO

Color Image Scanner

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Introduction

Features

The CD-ROM that comes with your scanner contains the EPSON scanner software suite, including EPSON TWAIN. The software suite is the perfect companion for your EPSON scanner. Using your scanner and the software from the CD-ROM, you can scan images in color, grayscale, or black and white, and save them as files or print them out. Other software such as EPSON SMART PANEL for Scanner support the 3 Buttons (Start/ Copy/ Scan) feature to make scanning much easier.

- The software supports the following EPSON scanners: EPSON Perfection 1240U/Perfection 1240U Photo

- EPSON TWAIN directly controls all of the features of your EPSON scanner. This program is the standard cross-platform interface for other applications.

The CD-ROM also contains other applications that let you use your scanner in exciting new ways. For detailed information, refer to the supporting documentation.

- EPSON SMART PANEL for Scanner allows your scanner to access applications that supports the 3 Buttons (Start/ Copy/ Scan) feature.

- EPSON Screen Calibration utility allows you to calibrate your scanner and monitor to reproduce images identical to the originals.

About This Guide

The information in this guide is divided into ten chapters, with a glossary and index provided for your reference.

- ❏ Chapter 1 describes how to use the 3 buttons (Start/ Copy/ Scan) on your scanner.
- ❏ Chapter 2 explains the basic steps of scanning.
- ❏ Chapter 3 provides a complete description of EPSON TWAIN features. Refer to this chapter when modifying scanning settings.
- ❏ Chapter 4 covers how to calibrate your monitor to match your EPSON scanner. If you notice that colors on your screen or in your printout do not match the original image, see this chapter.
- ❏ Chapter 5 explains how to use the option.
- ❏ Chapter 6 contains maintenance and troubleshooting information. If your software does not operate properly or scanned images are not what you expect, see this chapter.
- ❏ Appendix A contains technical specifications information.
- ❏ Appendix B contains customer support information.

Notes *contain important information and useful tips about your scanner and software.*

To set up and use the scanner, see your scanner's *Startup Guide*. EPSON TWAIN Online Help can also provide you with information on modifying EPSON TWAIN settings.

Chapter 1

Using the Buttons

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The 3 Buttons Feature

The 3 Buttons (Start/Copy/Scan) feature allows you to scan and send data to a target application with a single press of one of the three buttons on the scanner.

Start button

Pressing the Start button on the scanner starts EPSON SMART PANEL for Scanner as default. You can assign a desired application to the Start button in the EPSON SMART PANEL window; pressing the Start button then starts the scanning process and sends data to the application. For more details, see "Assigning an application to the Start button" on page 1-12.

Copy button

You can use the Copy button to scan and copy images. The document is scanned and then printed automatically in high quality with a single press of the Copy button on the scanner. For more details, see "Using the Copy Button to Copy" on page 1-13.

Scan button

You can use the Scan button to scan an image and then transfer it to Adobe® PhotoDeluxe®. Pressing the Scan button on the scanner starts the scanning process and transfers the scanned image to PhotoDeluxe automatically. For more details, see "Using the Scan Button to Scan" on page 1-14.

Note for Windows users:
The 3 Buttons (Start/Copy/Scan) feature is supported by Windows 98 and 2000. You can assign a desired application to the button on the scanner. See "Assigning Another Application to the Buttons on Windows" on page 1-17 for details on setting up the three buttons.

EPSON SMART PANEL for Scanner

EPSON SMART PANEL for Scanner allows you to scan and send data directly to an assigned application with a single press of one of the three buttons (Start/Copy/Scan) on the scanner. You can also obtain photos and documents in digital form quickly and easily. When you install the scanner software, EPSON SMART PANEL for Scanner is also installed at the same time. For details, refer to the EPSON SMART PANEL for Scanner documentation.

Note:

- ❏ *For information on the EPSON SMART PANEL for Scanner installation, refer to the Startup Guide.*

- ❏ *If you plan to scan transparent materials using the optional Film Adapter from the EPSON SMART PANEL for Scanner application, refer to the EPSON SMART PANEL for Scanner documentation for details.*

There are two modes offered by Scan Assistant:

Photo Scan Assistant

Photo Scan Assistant helps you to achieve the best results in scanning color documents such as photos and magazines; this mode is used in applications such as Scan to E-mail, Scan to Application, and Scan for Creativity.

Document Scan Assistant

Document Scan Assistant helps you scan documents for processing by the Optical Character Recognition (OCR) software; this mode is used in Scan to OCR.

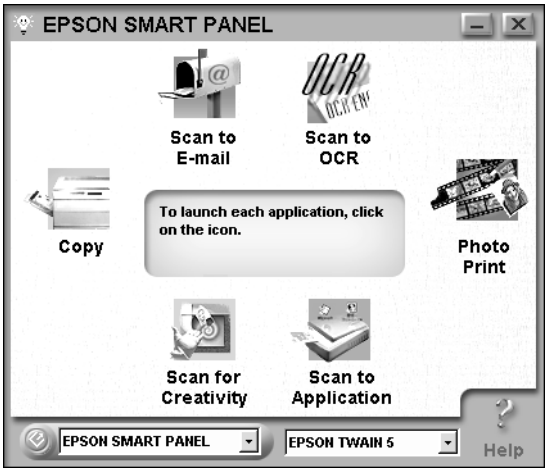
About applications in the EPSON SMART PANEL window

The EPSON SMART PANEL window contains the following applications:

- ❏ "Copy" on page 1-6
- ❏ "Scan to E-mail" on page 1-7
- ❏ "Scan to OCR" on page 1-8
- ❏ "Photo Print" on page 1-9
- ❏ "Scan to Application" on page 1-10
- ❏ "Scan for Creativity" on page 1-11

These applications can access your scanner, which means by clicking an applications icon, you can use the scanner to scan and then send data directly to the application.

In addition, you can assign any of the above applications to the ◈ Start button on the scanner. See "Assigning an application to the Start button" on page 1-12 for details. This makes scanning and then sending data to the assigned application even simpler. All you need to do is press the ◈ Start button.



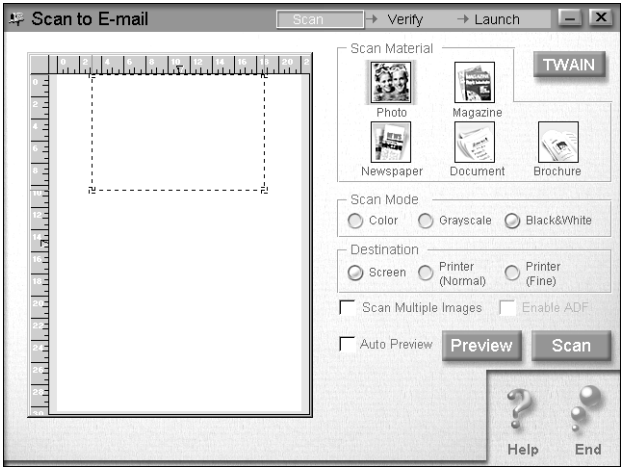
Copy

Use this application to turn your scanner into a digital copy machine. The application looks like a real copy machine, yet its functions are far more powerful and flexible than the conventional copy machines. For details, refer to the EPSON SMART PANEL for Scanner documentation.

Note:
This application has been assigned to the Copy button on the scanner. For details, see "Using the Copy Button to Copy" on page 1-13.

Scan to E-mail

Use this application to scan and save the result or send e-mails with your scanned image. When the following Photo Scan Assistant dialog box appears, you can change the settings. For details, refer to the EPSON SMART PANEL for Scanner documentation.



Scan to OCR

Use this application to scan and convert images to text. The converted text can be saved or sent to a word processing application. When the following Document Scan Assistant dialog box appears, you can change the settings. For details, refer to the EPSON SMART PANEL for Scanner documentation.

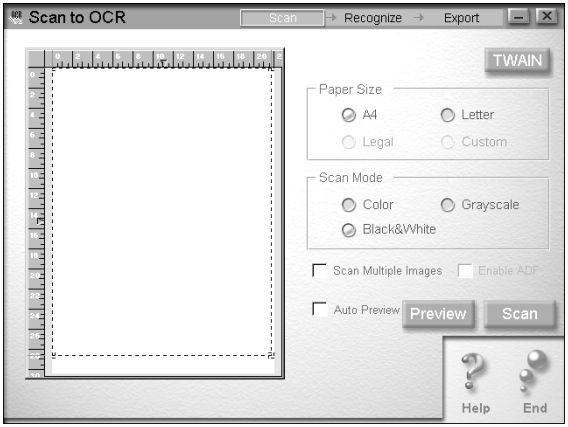
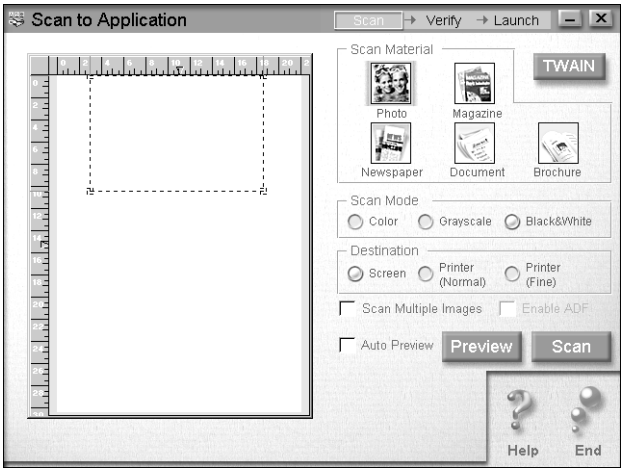


Photo Print

Use this application to scan and then print images as photos. You can print in various sizes, or place several photos on the same page. You can also create collages or print several versions of the same image easily. For details, refer to the EPSON SMART PANEL for Scanner documentation.

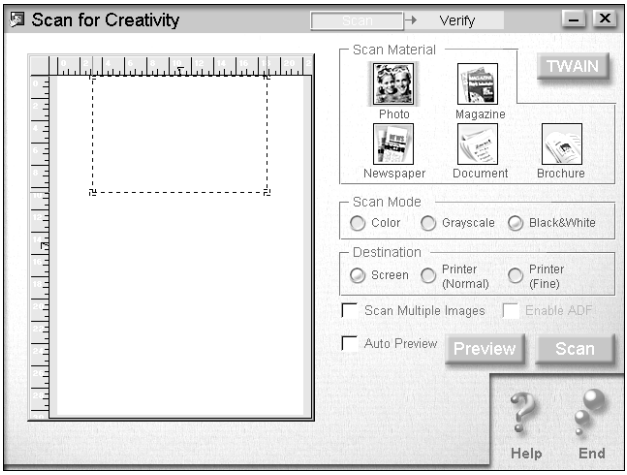
Scan to Application

Use this application to scan and send images to an application. When the following Photo Scan Assistant dialog box appears, you can change the settings. For details, refer to the EPSON SMART PANEL for Scanner documentation.



Scan for Creativity

This application can be used only if Adobe PhotoDeluxe is installed. When the following Photo Scan Assistant dialog box appears, you can change the settings. For details, refer to the EPSON SMART PANEL for Scanner documentation.



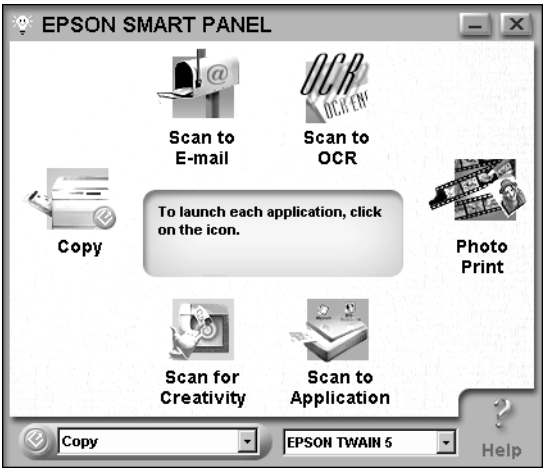
Note:
This application is assigned to the Scan button on the scanner. For details, see "Using the Scan Button to Scan" on page 1-14.

Assigning an application to the Start button

To assign an application in the EPSON SMART PANEL window to the ⇗ Start button on the scanner, follow the steps below.

1. Click the EPSON SMART PANEL for Scanner icon on the task bar to start EPSON SMART PANEL for Scanner.

2. Select an application from the EPSON SMART PANEL list box or press the Start button at the lower left corner to cycle through the applications (clockwise).



The selected application is assigned to the ⇗ Start button.

Note:

❏ *The application currently assigned to the ⇗ Start button on the Scanner has the Start button icon added to its application icon.*

❏ *Although the optional Film Adapter is installed on your scanner, a film is copied as a refractive document.*

Using the Copy Button to Copy

You can use the Copy button on the scanner (together with the Copy application in the EPSON SMART PANEL window) to make copies, as follows:

1. Press the Copy button on the scanner. The following window appears.

2. The document is scanned and then printed automatically in high quality.

Note:

❏ *To cancel the operation or change the setting, click the Cancel button on the Copy Utility window, and then change the setting.*

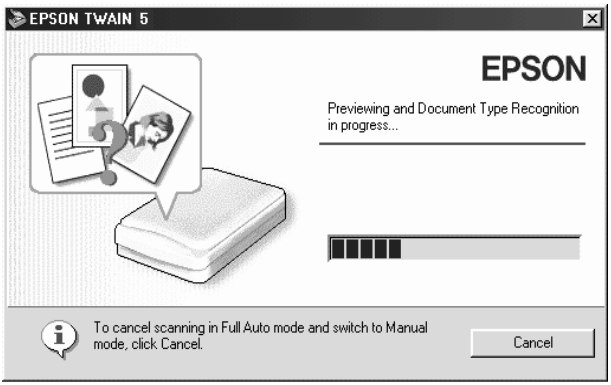
❏ *For details about the settings, refer to the EPSON SMART PANEL for Scanner documentation.*

❑ *Although the optional Film Adapter is installed on your scanner, a film is copied as a refractive document.*

Using the Scan Button to Scan

If Adobe PhotoDeluxe is installed, you can use the Scan button on the scanner to scan and send images to PhotoDeluxe.

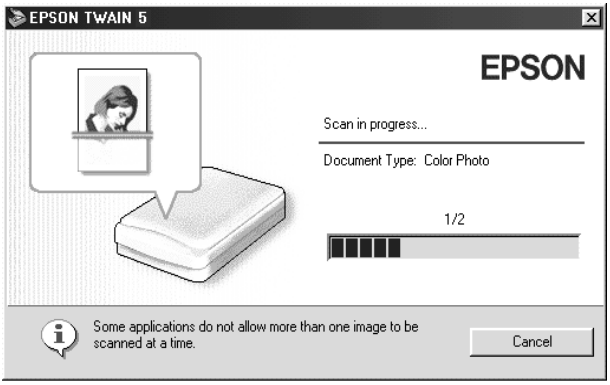
1. Press the Scan button on the scanner. The following window appears.



EPSON TWAIN automatically previews the images and recognizes the image type.

Note:
To cancel the operation, click Cancel *and then click* Close.

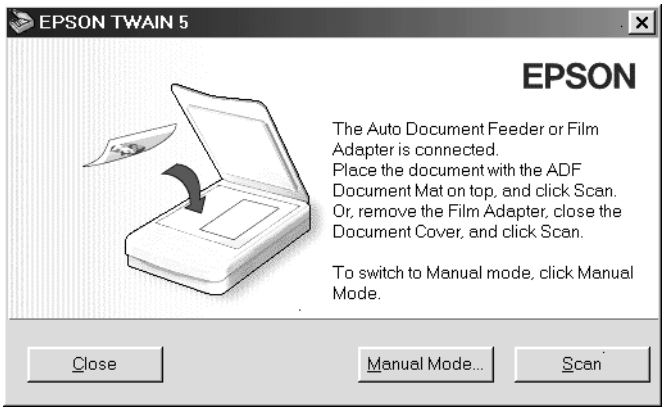
2. The following window appears with a progress bar to indicate the scanning progress. You can see the type of document being scanned. When scanning multiple photos, you can also see the number of scanned images.



Images are automatically optimized. You can scan easily and quickly without changing any complex settings. EPSON TWAIN automatically recognizes the image type, locates the target image, detects the skew of the target image, adjusts the exposure, and then starts scanning.

3. The scanned image is sent to PhotoDeluxe.

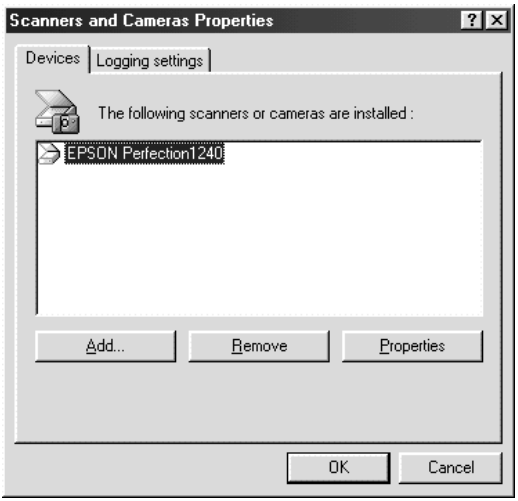
Note:
When you install the optional Film Adapter, the following window appears first. Follow the instructions displayed in the window.



Assigning Another Application to the Buttons on Windows

You can assign any application, other than EPSON SMART PANEL for Scanner, which supports "Scanner events" (for example, Microsoft Imaging for Windows, as long as it is installed) on Windows 98 or Windows 2000 to the button on the scanner. When you press the Start, Copy or Scan button, EPSON TWAIN's dialog box opens or scanning starts and the scanned image is automatically sent to the application (which does not need to be opened).

Once EPSON TWAIN is installed, the Scanners and Cameras icon appears in Control Panel, and your scanner is listed in the Scanners and Cameras Properties dialog box similar to the one shown below.



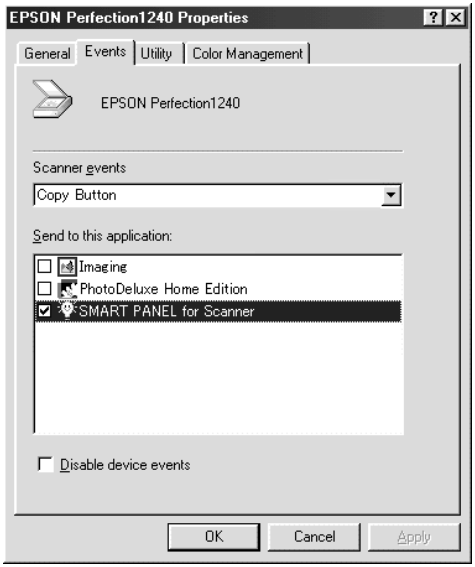
Note for Macintosh users:
On your Macintosh computer, you cannot assign any application other than EPSON SMART PANEL for Scanner to the buttons on the scanner.

Assigning an application to the buttons

Make sure the application supports "Scanner events" and then follow the steps below.

1. Double-click the Scanners and Cameras icon in Control Panel.

2. In the Scanners and Cameras Properties dialog box, select your scanner from the installed scanners and cameras list. Click Properties, and then select the Events tab.



3. Select a desired button from the Scanner events list and then select the check box of the desired application in the Send to this application list; clear the rest of the check boxes.

   Note:

   ❏ *If multiple applications are selected, when the button is pressed, a dialog box appears to prompt you to select just one from the list.*

- ❏ *Some applications do not support linkage to scanners and digital cameras. Only applications in the Send to this application list support linkage.*

4. Click Apply and then OK.

Disabling the buttons

If you need to disable "Scanner events," select the Disable device events check box in the EPSON Perfection 1240 Properties dialog box. When this check box is clear, Windows 98 or 2000 can detect if the Start, Copy or Scan button on the scanner is pressed and then launch the application you selected in the Send to this application list.

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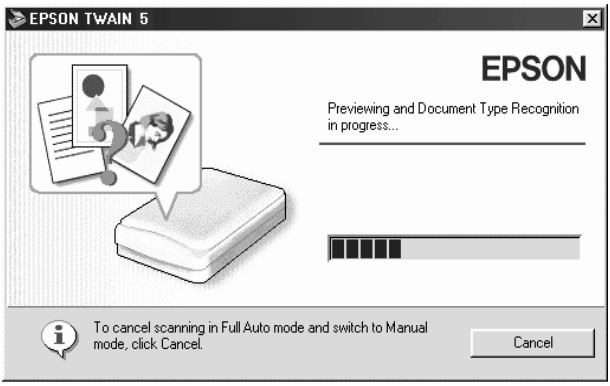
Selecting a Mode

EPSON TWAIN offers two modes for scanning: Full Auto mode and Manual mode.

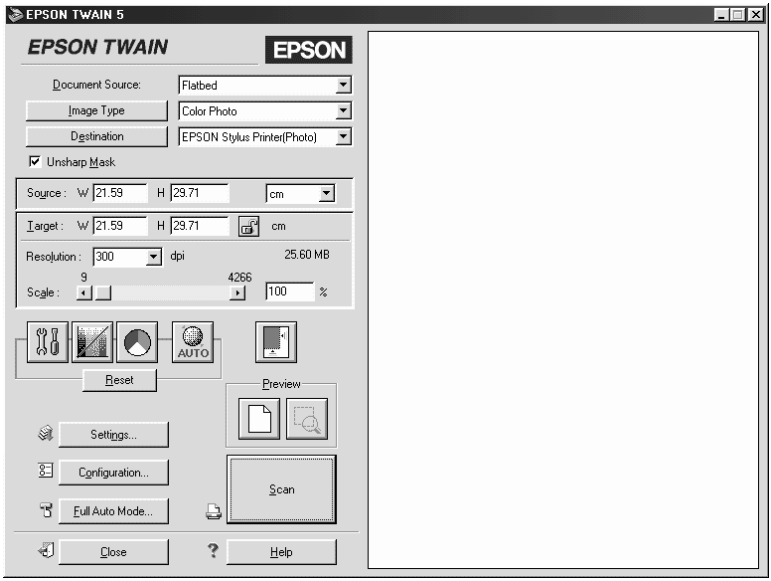
Full Auto mode



In the Full Auto mode, an image is automatically optimized. If you want to scan quickly and easily without changing any complex settings, select the Full Auto mode. To have more control over your scanning settings, click Cancel during previewing and Document Type Recognition and then click the Manual Mode button to open the Manual mode window.

Note:
Depending on the image you want to scan, you may not get the expected scanned image. In this case, scan the image in the Manual mode.

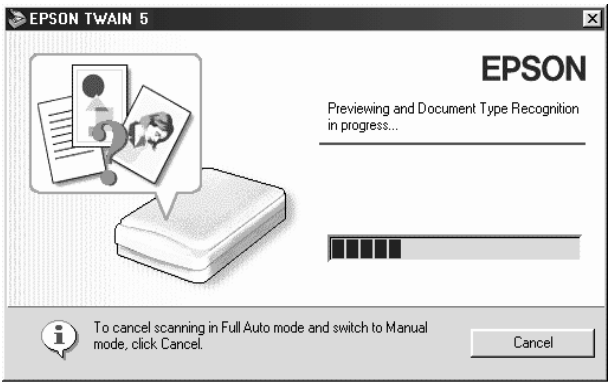
Manual mode



In the Manual mode, there are many more options available to give you greater control over your scanning. If you want to sharpen, correct, enhance or preview your images before scanning them, select the Manual mode. If you do not need all the options that the Manual mode provides, click the Full Auto Mode button to open the Full Auto mode window.

Scanning from the Full Auto Mode

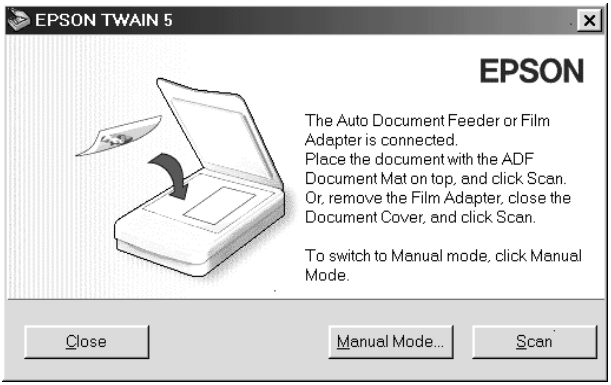
1. Start the TWAIN-compliant application and open EPSON TWAIN. The following window appears.



EPSON TWAIN automatically previews the image and recognizes the image type. See "Document Type Recognition setting" on page 2-6.

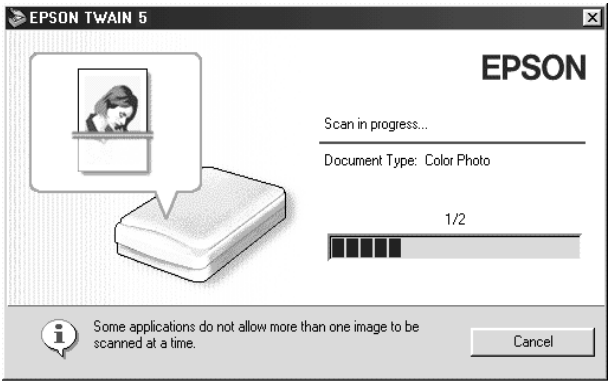
If you want to make more settings, click Cancel and then click the Manual Mode button to open the Manual mode window.

Note:
When you install the optional Film Adapter, the following window appears first.



If you want to scan from the document table on the scanner using the Full Auto Mode, remove the Film Adapter, replace and close the document cover and then click Scan. *If you want to scan from the Film Adapter, click the* Manual Mode *button.*

2. After EPSON TWAIN has previewed and recognized the image type, the following window appears. EPSON TWAIN automatically sets the "Image Location setting" on page 2-7 and "Exposure setting" on page 2-8, and then starts scanning. If you scan multiple photos, the number of scanned image will be indicated.



3. The scanned image(s) is sent to the application.

Note:

- ❏ *You cannot scan an image which exceeds the available memory or disk space. If you try to scan a very large image, an alert appears on the screen.*
- ❏ *Before scanning, be sure to calibrate your screen. For details, see "Calibrating Your Screen" on page 4-2.*
- ❏ *After an image is scanned, be sure to save or export it.*

Document Type Recognition setting

The image is automatically recognized as one of the following document type:

Color Photo: 24-bit color scanning

Black & White Photo:	8-bit gray scanning
Illustration:	24-bit color scanning with color smoothing
Text/Line Art:	Black and white scanning
Color Document:	24-bit color scanning with de-screening to remove moiré patterns
Black & White Document:	8-bit gray scanning with de-screening

Note:
A moiré is a cross-hatch pattern that appears on scanned images when scanning printed material. It is a result of interference that occurs due to the difference between the pitches of the scanning and the halftone screens.

Image Location setting

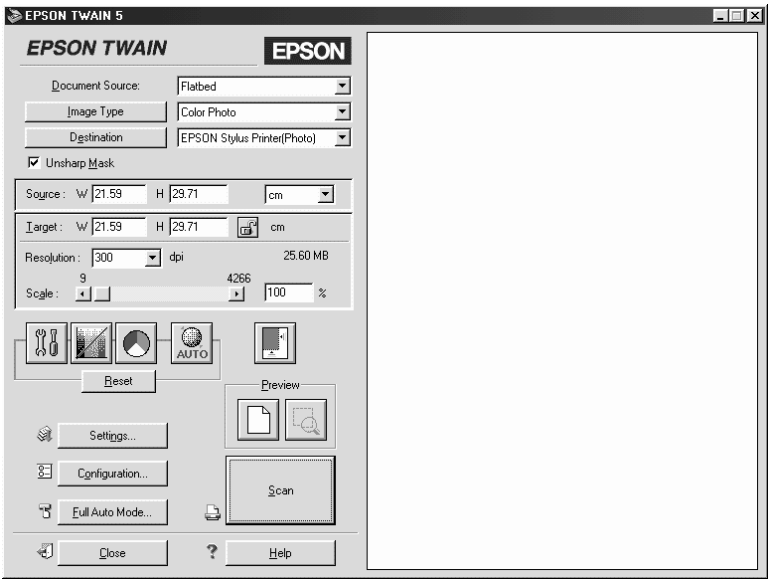
Auto Locate:	The scanner automatically locates and selects the target image. The image appears without white borders. (If the document type is document or Text/Line Art, a 2 mm margin is added around all edges of the location.) If the document type is photo, Auto Locate applies to each photo; otherwise it covers the whole area of the image.

Detect Skew Angle: The scanner automatically detects the skew of the target image. If the document type is photo, Detect Skew Angle applies to each photo. If the document type is Text/Line Art, it covers the whole area of the image.

Exposure setting

The scanner automatically optimizes the exposure of an image defined by Auto Locate. The Gamma, Highlight, and Shadow settings are automatically set.

Scanning from the Manual Mode



The Manual mode allows you to make detailed settings. You can set parameters for a setting or select special functions provided with EPSON TWAIN to attain the highest quality scanned images.

Note:

- ❏ *Online help also provides you with information on settings. Click* Help *to access the online help.*

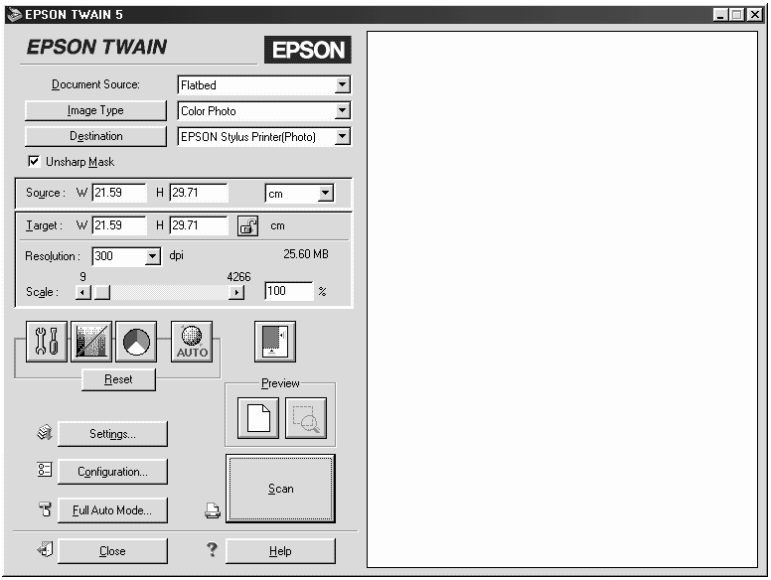
- ❏ *You cannot scan an image which exceeds the available memory or disk space. If you try to scan a very large image, an alert appears on the screen.*

- ❏ *Before scanning, be sure to calibrate your screen. For details, see "Calibrating Your Screen" on page 4-2.*

- ❏ *After an image is scanned, be sure to save or export it.*

Optimizing Image Scanning

EPSON TWAIN can automatically adjust and optimize the exposures and colors of scanned images during scanning. You can also make adjustments manually with the image quality adjustment tools in the Manual mode window. This section provides general information on optimizing images with these tools.



Manual mode window

Note for Macintosh users:
Most illustrations shown in this section are for Windows, so they may vary in appearance from what actually appears on your screen. The instructions are the same, except as noted.

Manually optimizing images

To optimize images manually, adjust the following EPSON TWAIN settings in the order specified below:

Adjust the brightness and contrast

1. Adjust the Highlight and Shadow settings in the Image Controls dialog box. See "Adjusting the Highlight Setting" on page 2-13 and "Adjusting the Shadow Setting" on page 2-14.

2. Adjust the Gamma setting in the Image Controls dialog box. See "Adjusting the Gamma Setting" on page 2-16.

3. Adjust the tone curve with a predefined tone correction setting in the Tone Correction dialog box. See "Applying a Preset Tone Curve" on page 2-17.

Make color adjustments

4. Adjust the Gray Balance Intensity setting in the Color Adjustment dialog box. See "Adjusting the Gray Balance Intensity Setting" on page 2-21.

5. Adjust the Saturation setting in the Color Adjustment dialog box. See "Adjusting the Saturation Setting" on page 2-22.

6. Manually adjust the tone curve for individual colors in the Tone Correction dialog box. See "Using the Tone Curve" on page 2-23.

To make the following adjustments in EPSON TWAIN, you need to display a preview image in the Preview window. See the following section for details.

Displaying a preview image

The Preview window on the right side of the Manual mode window shows you how your adjustments will affect the image as you make them. The Preview window is also the starting point for accessing the Image Controls, Color Adjustment, and Tone Correction dialog boxes that contain tools for optimizing your image.

Note:
See "Previewing Images" on page 3-3 for Preview window options, and "Configuration" on page 3-30 for information about how to control preview image quality.

1. After selecting the Document Source, Image Type, and Destination, click the Full Preview button to start prescanning. A preview image of the document appears on your screen. When the Automatic Preview check box in the Configuration dialog box is selected, a preview image is automatically displayed after EPSON TWAIN is started.

   Note:
   Make sure the Fast Preview *check box is cleared in the Configuration dialog box to ensure a high-quality preview.*

2. Click one of the buttons below to open the dialog box with the image optimization tools you need.

Image Controls button

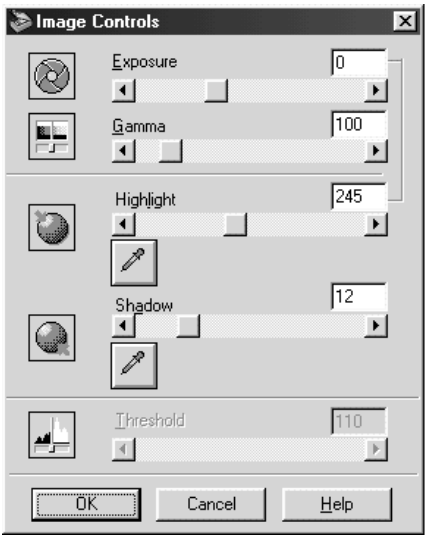
Tone Correction button

Color Adjustment button

Adjusting the Highlight Setting

Highlights are the brightest areas of an image.

1. In the Image Controls dialog box, click the eyedropper button under Highlight.



   The mouse pointer changes to an eyedropper, with movement restricted to within the Preview window.

2. Move the eyedropper to the location you want to select as the highlight point and click it.

   The brightness of the pixel at the point you click is set as the highlight level, and the other parts of the image are adjusted accordingly.

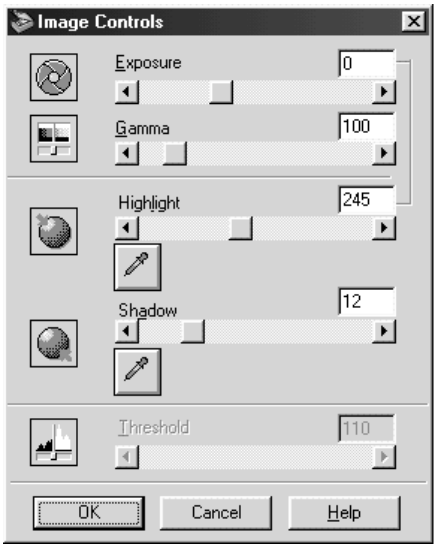
3. To change the highlight level (brightness) of the point you selected, move the Highlight slider left or right, or enter a value in the text box. You can enter a value between 61 and 490 for the highlight.

   Note:
   See "Image Controls" on page 3-19 for further information on adjusting the highlight level.

Adjusting the Shadow Setting

Shadows, the darkest areas of an image, are the opposite of highlights.

1. In the Image Controls dialog box, click the eyedropper button under Shadow.



   The mouse pointer changes to an eyedropper, with movement restricted to within the Preview window.

2. Move the eyedropper to the location you want to select as the shadow point, and then click.

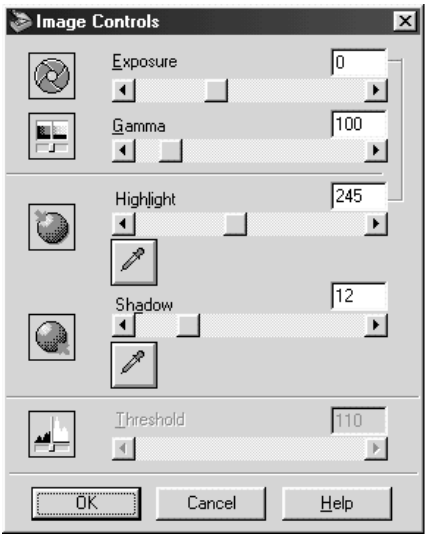
   The brightness of the pixel at the point you click is set as the shadow level, and the other parts of the image are adjusted accordingly.

3. To change the shadow level (darkness) of the point you selected, move the Shadow slider left or right, or enter a value in the text box. You can enter a value between 0 and 60 for the shadow.

   Note:
   See "Image Controls" on page 3-19 for further information on adjusting the shadow level.

Adjusting the Gamma Setting

Gamma is the difference in contrast between the light tones and dark tones of an image. Any change you make in the gamma level only affects the mid-tones of the image.



To change the gamma level of the image, move the Gamma slider left or right, or enter a value in the text box.

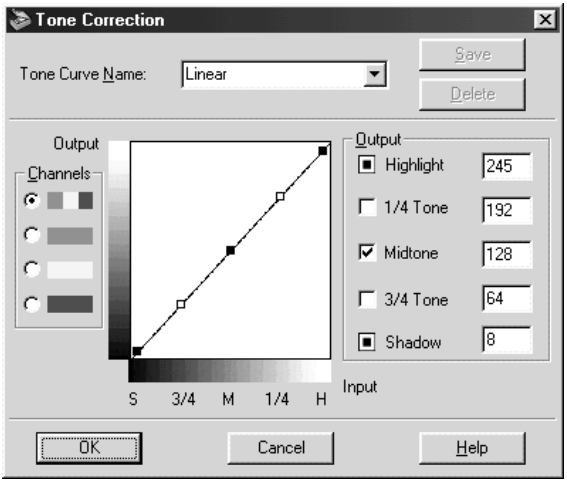
You can enter a value between 50 and 500 for the gamma.

Note:
See "Image Controls" on page 3-19 for further information on adjusting the gamma level.

Applying a Preset Tone Curve

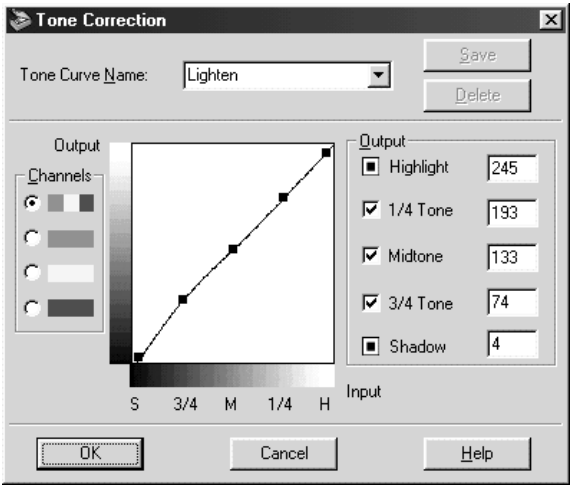
You can finely adjust the contrast within an image by applying one of the preset tone curves. This allows more control over the image when used in conjunction with the Auto Exposure settings in the Manual mode window. The Tone Curve Name list in the Tone Correction dialog box provides the six most common tone correction curves, described below.

Linear



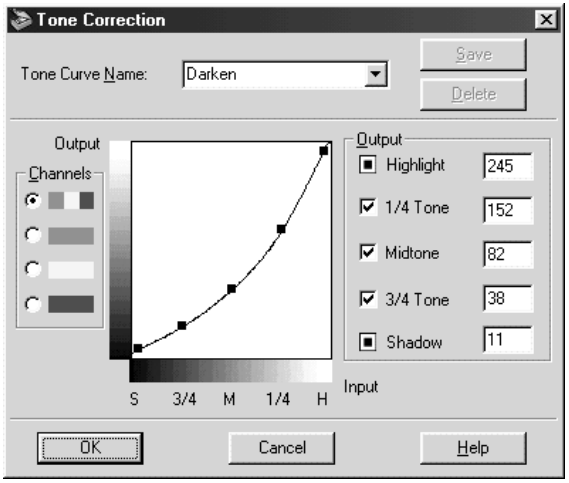
A linear tone curve has no tone correction. Use this setting if you are satisfied with the tone of the preview image.

Lighten



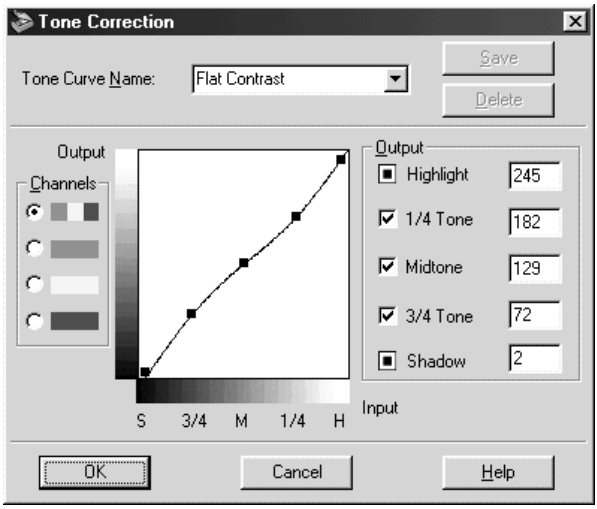
Adjusts darker images (like underexposed film) to make them slightly brighter.

Darken



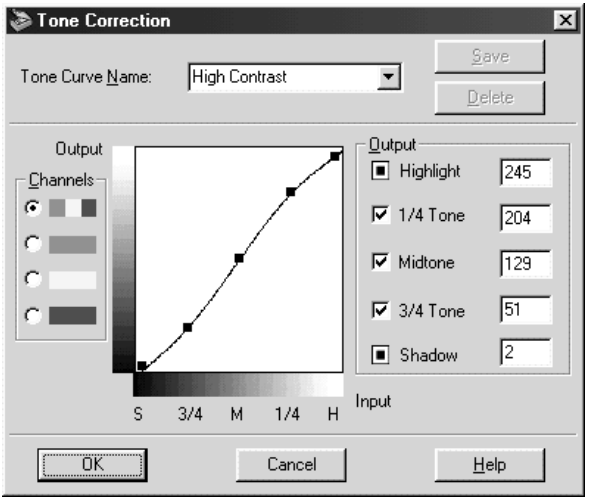
Adjusts brighter images (like overexposed film) to make them slightly darker.

Flat Contrast



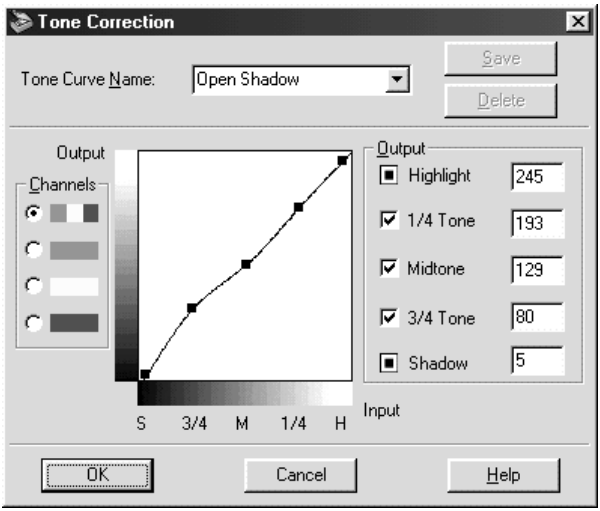
Flattens high contrast images to make them look more natural.

High Contrast



Increases the contrast of dull images.

Open Shadow



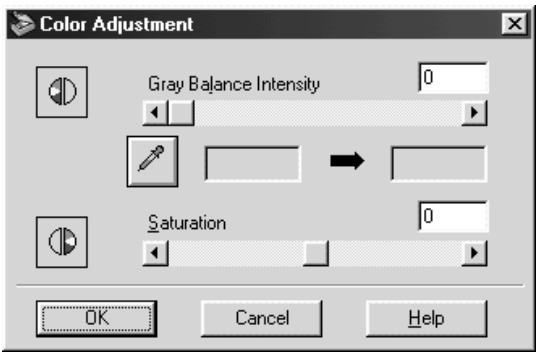
Improves details in the dark areas of images.

Note:
See "Using the Tone Curve" on page 2-23 and "Tone Correction" on page 3-22 for more information on tone correction.

Adjusting the Gray Balance Intensity Setting

Gray balance makes it possible to remove a cast (tint) from a specific color.

1. In the Color Adjustment dialog box, click the eyedropper button under Gray Balance Intensity.



   The mouse pointer changes to an eyedropper, with movement restricted to within the Preview window.

2. Move the eyedropper to a location where you want to adjust its gray balance intensity, and then click the color.

   The color you selected appears in the two boxes below the Gray Balance Intensity slider.

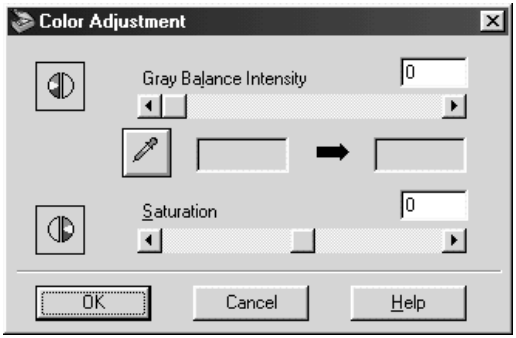
3. Move the slider left or right, or enter a value in the text box to change the gray balance intensity level of the color.

You can enter a value between 0 and 100. Changing the value causes the color in the right hand box to change accordingly. The changes are also reflected in the image in the Preview window.

Note:
See "Color Adjustment" on page 3-25 for more information on adjusting the gray balance intensity level.

Adjusting the Saturation Setting

Saturation is the density of a color. Higher saturation makes the color appear richer, while lower saturation makes it appear paler.



To change the saturation level of the image, move the Saturation slider left or right, or input a value in the text box.

You can enter a value between -100 (lowest color density) and 100 (highest color density).

Note:
See "Color Adjustment" on page 3-25 for more information on adjusting the saturation level.

Using the Tone Curve

The tone curve provides you with a versatile means for adjusting the intensity of the colors of the image being scanned. You can adjust the shadow, mid-tone, and highlight values, which helps to ensure well-balanced coloring of the image.

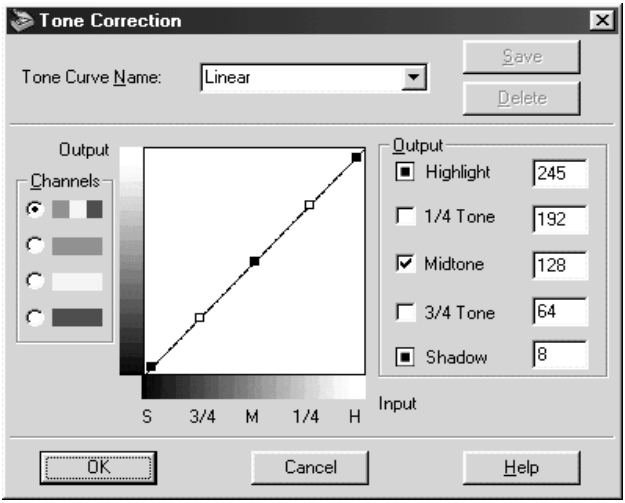
Note:

- ❏ *Use of the tone curve is recommended for fine adjustments after you have previewed the image and adjusted the highlights and the shadows using Auto Exposure and the Image Controls dialog box. Use of the tone curve to make initial settings is not recommended.*

- ❏ *The Tone Correction button appears dimmed and is not available when Pixel Depth is set to* Black & White *and Halftone is set to* None, *or B/W Option is set to* Text Enhancement Technology *in the Image Type dialog box.*

The tone curve is located in the Tone Correction dialog box, which appears when you click the Tone Correction button in the Manual mode window. The following section describes how to use each of the controls in the Tone Correction dialog box.

Tone Correction button



Tone Correction dialog box

Tone Curve Name list

Use this list box to select a preset tone curve. There are six preset tone curves available as shown below, and you can add your own curves to the list using the procedure in the next section, "Saving your own tone curve" on page 2-26.

Curve Name	Highlight	1/4 Tone	Midtone	3/4 Tone	Shadow	Description
Linear	245	192	128	64	8	Default curve
Lighten	245	193	133	74	4	Lightens dark image
Darken	245	152	82	38	11	Darkens bright image
Flat Contrast	245	182	129	72	2	Reduces contrast
High Contrast	245	204	129	51	2	Increases contrast

Curve Name	Highlight	1/4 Tone	Midtone	3/4 Tone	Shadow	Description
Open Shadow	245	193	129	80	5	Lightens dark shadows

When you select a curve from the Tone Curve Name list, the settings in the Tone Correction dialog box change accordingly.

Channels

Click an option button under channels to select the color whose tone curve you want to adjust. When the master channel at the top is selected, your adjustments affect all three colors. Selecting one of the other channels allows you to adjust red, green, or blue only.

Tone curve editor

Moving the mouse pointer into the tone curve editor causes it to change to a finger. Use this pointer to drag any of the five points in the curve and change its shape. The x-axis of the curve is the brightness of the original (input values) while the y-axis is the brightness of the scanned image (output values).

To change the tone curve back to its default, select Linear from the Tone Curve Name list.

Output values

These are the current values for output data in accordance with the current locations of the points inside the tone curve editor. These values change when you drag points in the tone curve editor, or you can enter values here to change the shape of the tone curve. Each value can be adjusted within the range of 0 to 255.

Note:

- ❏ *Each output value name has a check box to the left of it. Highlight and Shadow are always selected, but you can select or clear 1/4 Tone, Midtone, and 3/4 Tone by clicking their check boxes.*

- ❏ *When a value's check box is clear, its point on the tone curve editor automatically shifts to smooth out the tone curve when one of the other points is moved.*

- ❏ *When a value's check box is selected, it means that its point is fixed and it will not shift when other points are moved.*

Saving your own tone curve

Use the following procedure to assign a name to a tone curve you have customized and want to save for later use:

1. Modify the tone curve settings as desired. This causes the name shown in the Tone Curve Name list to change to User Defined.

2. After customizing the tone curve, enter a name for the new curve (up to 32 characters) in the list box.

3. Click Save to save your new tone curve settings under the name you specified.

Deleting a customized tone curve

Use the following procedure to delete a custom tone curve. You cannot, however, delete the six preset tone patterns.

1. Use the Tone Curve Name list to select the custom tone curve you want to delete.

2. Click Delete.

3. When a dialog box appears, click Yes to delete the curve.

Closing the Tone Correction dialog box

You can close the Tone Correction dialog box by clicking either OK or Cancel.

- ❏ Clicking OK applies the current Tone Correction dialog box settings and closes the dialog box. Clicking the close button in the upper right corner of the dialog box has the same affect as clicking OK.
- ❏ Clicking Cancel closes the dialog box without applying the current dialog box settings.

Optimizing OCR Scanning

This section gives you suggestions and recommended settings in order to improve OCR (Optical Character Recognition) scanning results.

Scanning Text

Make sure you select Text (Background Removal) for Image Type and OCR for Destination in the Manual mode window.

If the recognition rate is not satisfactory with the default settings, follow these steps to change the settings:

Improving Character Recognition

1. In the Manual mode window, make sure Text (Background Removal) is selected in the Image Type list box and OCR is selected in the Destination list box. Then click the Image Type button. The Image Type dialog box appears.

2. In the Image Type dialog box, select None for B/W Option, and then click OK.

3. In the Manual mode window, click the Full Preview button. Then click the Image Controls button to display the Image Controls dialog box.

Image Controls button

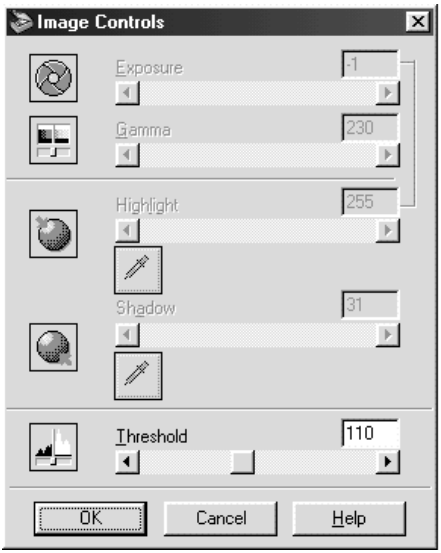


Image Controls dialog box

4. Use the Threshold slider to change the threshold value, monitoring the results of your changes in the Preview window. Adjusting the threshold value can make it easier for OCR to recognize characters.

If you still have problems...

1. In the Manual mode window, increase the Resolution value to 400. Remember that scanning at higher resolution takes longer and may not increase the recognition rate much.

2. If you still have problems, try using the enhancement tools in your OCR software to make adjustments.

Potential Text Recognition Problems

The quality of the text in your original document greatly effects OCR results.

The following types of originals can make recognition difficult and should be avoided if possible:

- ❏ Items that have been copied from other copies
- ❏ Faxes
- ❏ Text with tightly-spaced characters or line pitch
- ❏ Text that is in tables or underlined
- ❏ Cursive or italic fonts, and font sizes less than 8 points

Remember that OCR software cannot recognize handwritten characters.

Chapter 3

Understanding EPSON TWAIN Features

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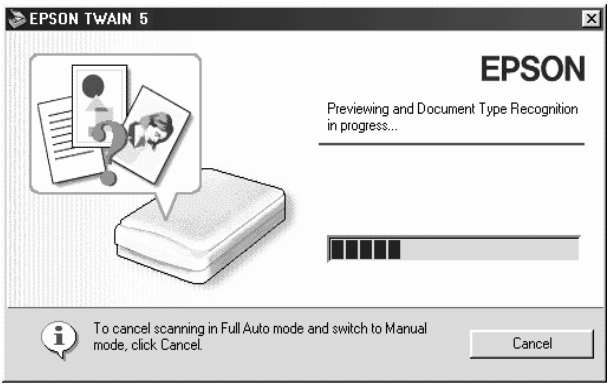
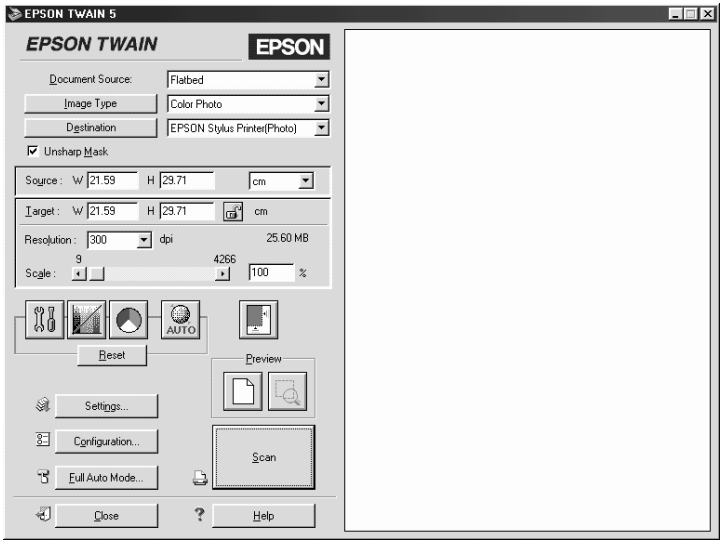
Overview

When you start EPSON TWAIN through a TWAIN-compliant application, one of the following windows appears on the screen:

Note for Macintosh users:
Most illustrations shown in this section are for Windows, so they may vary in appearance from what actually appears on your screen. The instructions should be the same, except as noted.



Full Auto mode



Manual mode

The following sections describe the features of EPSON TWAIN.

Note:
Some settings may appear dimmed depending on your choice of settings and the features supported by your scanner.

Previewing Images

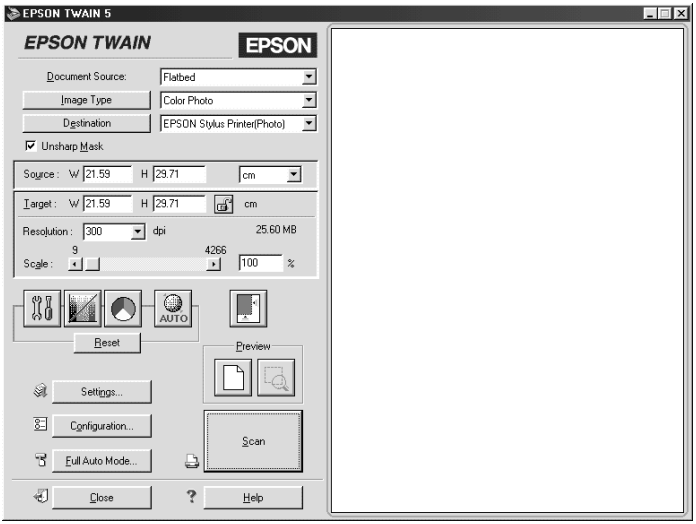
Before you scan and save an image, you can preview it in the Preview window located on the right side of the Manual mode window. Use the preview feature to check the results of your settings.

Full Preview button

Zoom Preview button

❏ To preview the entire image, click the Full Preview button.

❏ To preview a part of the image that is already in the Preview window, click and drag the mouse over the area you want to see in detail, and click the Zoom Preview button.

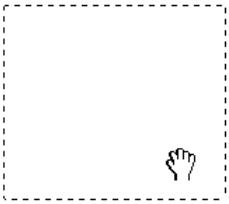


preview window

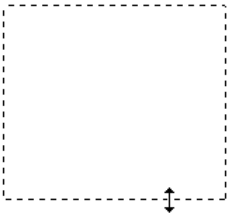
Note:

❏ *When the mouse pointer is placed in the Preview window, it changes to a cross-hairs. Drag the cross-hairs over any area of the image, and a frame appears. The point where you first clicked is anchored, but the rest of the frame is sizable and movable.*

❏ *When the mouse pointer is placed within the marquee (the frame of the selected image area), it changes to a hand. You can click and drag the marquee anywhere in the Preview window. If you drag a hand while pressing the* Shift *key, the marquee will be limited to vertical or horizontal movement.*



❏ *When the mouse pointer is placed on the edge of the marquee, it changes to an arrow allowing you to re-size the marquee. If you drag an arrow while pressing the* Shift *key, the marquee will be resized proportionally.*



❏ *To remove or delete a marquee, double-click the preview window.*

Modifying the preview image

You can see the effects of the following settings in the preview image.

❏ Unsharp Mask in the Manual mode window

❏ Pixel Depth, Dropout, and Halftone in the Image Type dialog box

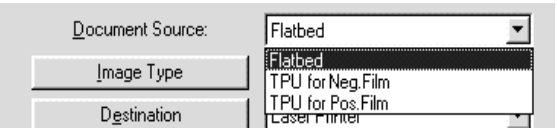
- ❏ Exposure, Gamma, Highlight, Shadow, and Threshold in the Image Controls dialog box
- ❏ Tone Correction in the Tone Correction dialog box
- ❏ Gray Balance Intensity, and Saturation in the Color Adjustment dialog box
- ❏ Auto Exposure

Note:
Although the image in the Preview window changes as you make settings, the settings do not affect the actual image until you scan or re-scan the image.

Document Source

When using the document table on the scanner, leave Document Source set to Flatbed. Other selections are available depending on what is installed. They are the optional TPU for Neg. Film and TPU for Pos. Film (for the Film Adaptor which is optional with the Perfection 1240U but included with the Perfection 1240U Photo).

Note:
Uninstalled options are not displayed.



Flatbed:

Choose this setting to use the document table of the scanner.

TPU for Neg. Film, TPU for Pos. Film:

Select one of these settings when using the Film Adapter. If you are scanning negative film, select TPU for Neg. Film, and if you are scanning positive film (or slides), select the TPU for Pos. Film setting.

Image Types

Use the Image Type list or button to select the type of image to be scanned.

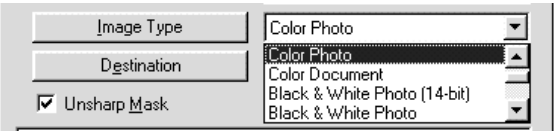


Image Type list

The Image Type list provides the following predefined settings. EPSON recommends you use the predefined settings first, then later improve the quality of the scanned image manually by making the detailed settings described in the following pages, if necessary. Click the arrows on the right to view all of the available settings.

Color Photo (42-bit):

42-bit color, best quality

This setting is useful when scanning positive or negative film for further editing.

Color Photo:

24-bit color, best quality

This setting is useful when scanning color photo.

Color Document:

24-bit Color and best quality with de-screening to remove moiré patterns

This setting is useful when scanning magazines or catalog in color.

Note:
A moiré is a cross-hatch pattern that appears on scanned images when scanning printed material. It is a result of interference that occurs due to the difference between the pitches of the scanning and the halftone screens.

Black & White Photo(14-bit):

14-bit gray, best quality

This setting is useful when scanning positive or negative film for further editing.

Black & White Photo:

8-bit gray, best quality

This setting is useful when scanning black and white photo.

Black & White Document:

8-bit gray, best quality with de-screening to remove moiré patterns

This setting is useful when scanning magazines or catalog in monochrome.

Illustration:

24-bit color, best quality with color smoothing

This setting is useful when scanning large area of solid colors (for example, logos, illustrations, and charts).

Text/Line Art:

Black and white, draft quality

This setting is useful when scanning characters-only documents or line drawings without coloring.

Text (Background Removal):

Black and white, best quality, Text Enhancement Technology

This setting is for OCR (Optical Character Recognition).

Copy & Fax:

Black and white, hard halftone, draft quality, Auto Area Segmentation

Image Type button

The Image Type button allows you to customize the Image Type settings. If you want to make many detailed settings manually, use this feature.

Click the Image Type button. The following dialog box appears.

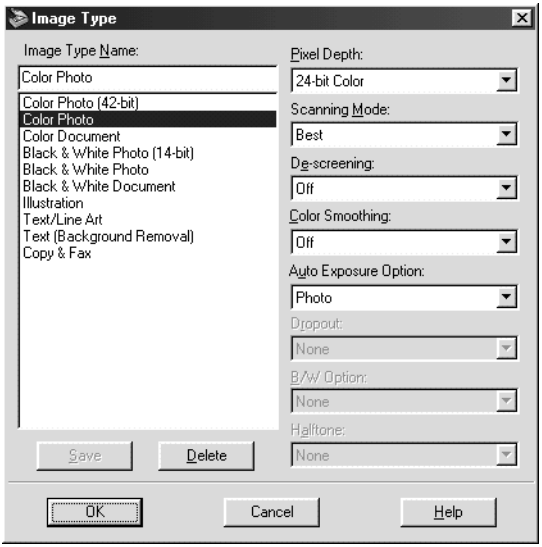


Image Type Name:

The names of predefined settings and any custom settings you have saved appear in the Image Type Name list.

Pixel Depth:

Select scanning colors from:

42-bit Color
24-bit Color
14-bit Gray
8-bit Gray
Black & White

Scanning Mode:

Select either Best or Draft scanning quality. Select Best when quality is more important than speed.

De-screening:

Select either On or Off. When On is selected, moiré patterns are automatically removed from scanned images, but scanning takes longer.

Note:

- ❏ *A moiré is a cross-hatch pattern that appears on scanned images when scanning printed material. It is a result of interference that occurs due to the difference between the pitches of the scanning and the halftone screens.*

- ❏ *De-screening appears dimmed and is not available when Pixel Depth is set to* Black & White*.*

Color Smoothing

Select either On or Off. When On is selected, colors in an image are related to limited number of index colors. This is useful when scanning large areas of solid colors (for example, logos, illustrations, and charts).

Note:

- ❏ *The pixel depth of output image is 24-bit color.*

- ❏ *Color Smoothing is available only when Pixel Depth is set to* 24-bit color*.*

Auto Exposure Option:

Select either Photo or Document. You can see the effects of the Auto Exposure Option setting in the Preview window when you click the Auto Exposure button.

Dropout:

Select a color to subtract from a black and white scan of a colored original. Proper use of dropout can improve the quality of your black and white scans. Available dropout options are: None, Red, Green, and Blue.

Note:

- ❏ *Dropout is available only when Pixel Depth is set to* 14-bit Gray, 8-bit Gray, *or* Black & White.

- ❏ *Depending on the image you scan, you may need to adjust the Threshold setting in the Image Controls dialog box to enable this feature.*

B/W Option:

Select from:
Text Enhancement Technology, Auto Area Segmentation, or None.

Text Enhancement Technology (TET)
To improve recognition accuracy during OCR (Optical Character Recognition) scanning, select this option. This function eliminates the document background from scans.

Auto Area Segmentation (AAS)
To make grayscale images clearer and text recognition more accurate, select this option. This function separates text from graphics.

Note:

- ❏ *B/W Option is available only when Pixel Depth is set to* Black & White.

- ❏ *When you need neither TET nor AAS, select* None.

Halftone:

Select a halftone or dither setting to reproduce images using special dot patterns:

Mode A (Hard Tone)
Mode B (Soft Tone)
Mode C (Net Screen)
Dither A (4 ¥ 4 Bayer)
Dither B (4 ¥ 4 Spiral)
Dither C (4 ¥ 4 Net Screen)
Dither D (8 ¥ 4 Net Screen)
None

Note:
Halftone is available only when Pixel Depth is set to Black & White.

To save the settings you made as a group of custom settings, type a new name in the Image Type Name box, then click Save.

To delete an Image Type setting, select the setting name to be deleted in the Image Type Name menu, then click Delete.

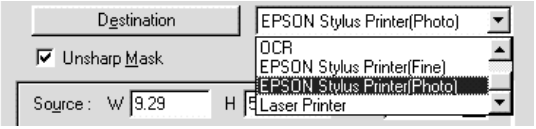
To apply the settings you made, click OK. The Preview window displays the effects of the current settings except for De-screening, Text Enhancement Technology (TET) and Auto Area Segmentation (AAS) settings.

To cancel the settings, click Cancel.

To access the online help, click Help.

Destination

Select the destination, or output device, where the scanned image is to be printed or displayed using the Destination list or button.



Destination list

The Destination list contains the following predefined settings and any custom settings you have saved in the Destination dialog box. Click the arrows on the right to view all the available settings.

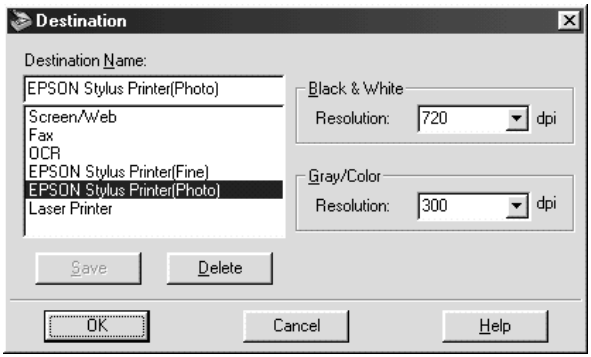
Destination name	Resolution	
	Black & White	Gray/Color
Screen/Web	96 dpi (for Windows) 72 dpi (for Macintosh)	96 dpi (for Windows) 72 dpi (for Macintosh)
Fax	200 dpi	200 dpi
OCR	300 dpi	300 dpi
EPSON Stylus Printer (Fine)	360 dpi	150 dpi
EPSON Stylus Printer (Photo)	720 dpi	300 dpi
Laser Printer	600 dpi	200 dpi

If you are using an EPSON Stylus printer and are printing scanned images with the Economy, Normal, or Fine Print Quality settings in your printer software, selecting EPSON Stylus Printer (Fine) is recommended. If you are printing with the SuperFine or Photo Print Quality settings, select EPSON Stylus Printer (Photo).

Note:
The effects of the Destination settings cannot be viewed in the Preview window.

Destination button

The Destination button allows you to customize the Destination settings. To make your own settings, such as scanning resolution, click this button. The following dialog box appears.



Destination Name:

Predefined and custom setting names appear in the Destination menu.

Resolution:

Select a scanning resolution for Black & White or Gray/Color.

Note:

- ❏ *When the Pixel Depth setting in the Image Type dialog box is set to* Black & White*, the Black & White setting takes effect and the Gray/Color setting becomes irrelevant. For other Pixel Depth settings, the Gray/Color setting takes effect and the Black & White setting becomes irrelevant.*

- ❏ *To print your scanned document when Resolution is set to* Black & White*, select the same resolution setting from the list as you select in the printer driver. To print your scanned document when Resolution is set to* Gray/Color*, select a resolution between 150 and 300 dpi. If you select a higher resolution, the* Gray/Color *setting requires longer to print, but does not improve the output quality.*

- ❏ *The Resolution setting is closely related to the Image Size and Scale settings. If you change them arbitrarily, the resulting image may not be what you expected.*

- ❏ *The range of resolution values depends on your scanner.*

To save the settings you made, type a new name in the Destination Name box, and then click Save.

To delete a Destination setting, select the target setting name to be deleted in the Destination Name menu, then click Delete.

To apply the settings you made, click OK. To cancel the settings, click Cancel.

To access the online help, click Help.

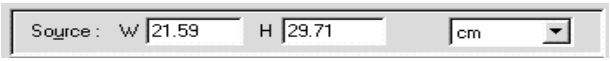
Unsharp Mask

You can select or deselect the Unsharp Mask setting. Selecting this check box improves image sharpness.

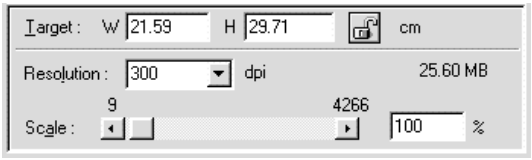
Note:
If Pixel Depth is set to Black & White *or Color smoothing is set to* On *in the Image Type dialog box, this check box appears dimmed and cannot be selected.*

Source and Target Image Sizes

The Source fields indicate the size of the image that is displayed or selected in the Preview window.



The Target fields indicate what size the image will be when it is output.



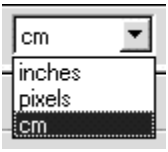
Note:
The image size setting is closely related to the Resolution. If you change either setting arbitrarily, the resulting image may not be what you expect.

Width and Height menu:

The width and height of an image are indicated in the selected unit of measure. You can type new values directly in the indicator fields, or you can change the image area in the Preview window by creating a marquee, or frame. Do this by dragging the mouse over the desired area. See "Previewing Images" on page 3-3 for more information on marquees.

Units menu:

Select a unit of measurement. You can select either inches, pixels, or cm.



Storage size indicator:

The storage size of an image is indicated in KB or MB. As you change the image area in the Preview window, this value also changes.

Lock button:

The current size of width-to-height of the target image can be locked, allowing the ratio of width-to-height of the Source image to change according to the scale value, or the scale value to change according to the ratio of width-to-height of the Source image. This is especially useful in cases where the size of an image does not fit the size of the paper on which you want to print the image, but you want to keep the image's original proportions. Enter the size of the paper in the Width and Height fields of the Target box and then click the Lock button. The scale value is automatically changed, maintaining the current ratio of width-to-height to fit the paper.

Resolution:

The resolution for the current scanning operation can be changed by selecting a resolution or typing in the value. This setting overrides the resolution setting you make in the Destination dialog box.

Scale slider:

An image can be reduced or enlarged by moving the Scale slider. You can also click the left or right arrow to change the image size in 1% increments.

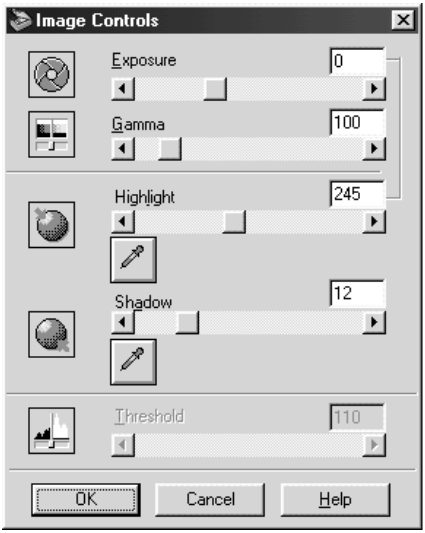
The range of possible reduction or enlargement varies depending on the current resolution setting.

Scale indicator:

The percentage of enlargement or reduction is shown in the Scale indicator field. You can type a new value directly into this field, or use the Scale slider to determine the value.

Image Controls

Click the Image Controls button on the Manual mode window to view the following dialog box.



Note:

- ❏ *The Image Controls button appears dimmed and is not available when B/W Option is set to* Text Enhancement Technology *in the Image Type dialog box.*
- ❏ *The Image Controls settings are optimized automatically when you scan from the Full Auto mode.*
- ❏ *If Pixel Depth is set to* Black & White *and Halftone is set to* None *in the Image Type dialog box, all the settings except Threshold appear dimmed and cannot be selected.*
- ❏ *You can see the effects of the Image Controls settings in the Preview window.*

Exposure:

The Exposure setting lightens or darkens an image. You can select from -10 (darkest) to 20 (brightest) by moving (clicking and dragging) the slider.

The Exposure and Highlight controls are related. When the Exposure setting is changed, the Highlight value is automatically set.

Gamma:

The Gamma control allows you to adjust the mid-tones in an image. You can select from 50 (darkest) to 500 (brightest) by moving the slider.

Highlight:

The Highlight control allows you to adjust the brightness level of the brightest parts of an image. You can select from 61 to 490 by moving the slider.

Click the eyedropper button beneath the slider, and the mouse pointer changes to an eyedropper. Move the eyedropper over the preview image, and click a bright area. The eyedropper "picks up" the color from that area, and uses it as the highlight for the entire image. This effect shows up immediately in the preview image. Click Cancel to restore the original image.

Shadow:

The Shadow control allows you to adjust the darkness level of the darkest parts of an image. You can select from 0 to 60 by moving the slider.

Click the eyedropper button beneath the slider, and the mouse pointer changes to an eyedropper. Move the eyedropper over the preview image, and click a dark area. The eyedropper "picks up" the color from that area, and uses it as the shadow for the entire image. This effect shows up immediately in the preview image. Click Cancel to restore the original image.

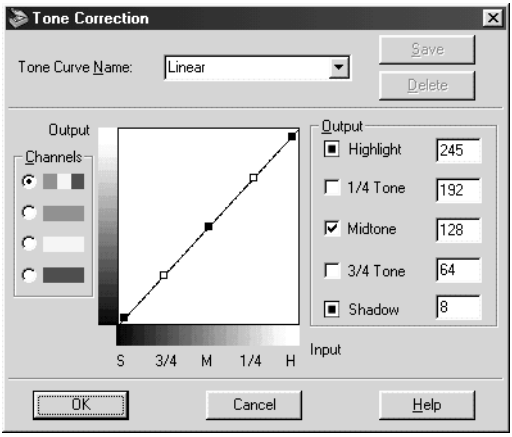
Threshold:

Available only when Pixel Depth is set to Black & White and Halftone is set to None in the Image Type dialog box. The scanner scans gray shades as either black or white using this setting.

You can select from 0 (lightest) to 255 (darkest) by moving the slider.

Tone Correction

Click the Tone Correction button on the Manual mode window to view the following dialog box.



Note:

- ❏ *The default setting is the Linear.*
- ❏ *The Tone Correction button appears dimmed and is not available when Pixel Depth is set to* Black & White *and Halftone is set to* None*, or B/W Option is set to* Text Enhancement Technology *in the Image Type dialog box.*
- ❏ *You can see the effects of the Tone Correction settings in the Preview window.*

The tone value represents the contrast in the tonal relationship between an original image and its reproduction on a monitor or printer.

Tone Curve Name list:

Select a tone correction setting from this list. The custom settings you have saved appear in this list.

Tone curve editor:

The editor allows you to customize tone correction. Drag points on the tone curve to adjust the tone value. You can edit up to five tonal elements.

Output options:

If you select the check box for a specific point, such as 1/4 Tone or Midtone, you can move that point and it remains where you leave it; it is not affected by the movement of other points on the curve. If the check box is cleared, the point becomes affected by the movement of other points.

Channels options:

You can select the combined red, green, and blue (RGB) channel to modify all colors, or select these colors separately.

Note:
If Pixel Depth is set to Black & White, 14-bit Gray, *or* 8-bit Gray *in the Image Type dialog box, you can only select the combined RGB channel option.*

Save/Delete/OK/Cancel/Help buttons:

After you correct tone, type a name for your custom settings in the tone correction list and click Save.

To delete a setting, select the name of the setting you want to delete in the tone correction list and click Delete.

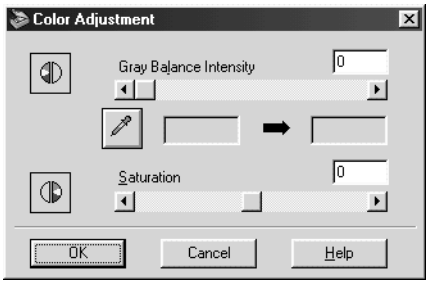
To accept the defining Tone Correction or close the dialog box, click OK.

To cancel the operation, click Cancel.

To access the online help, click Help.

Color Adjustment

Click the Color Adjustment button on the Manual mode window to view the following dialog box.



Note:

- ❏ *The Color Adjustment button appears dimmed and these settings cannot be selected when Pixel Depth is set to* 14-bit Gray, 8-bit Gray, *or* Black & White.

- ❏ *You can see the effects of the Color Adjustment settings in the Preview window.*

Gray Balance Intensity:

Gray Balance Intensity removes unwanted color casts and tints by balancing color saturation.

Click the eyedropper button beneath the slider. The mouse pointer changes to an eyedropper. Then click the color you want to be gray. The eyedropper "picks up" the color and displays it in the box beside the eyedropper button. You can then correct the cast level for that color from 0 to 100 by moving the slider. The corrected color appears in the box on the right, and the effect shows up immediately in the preview image. Click Cancel to restore the original image.

Saturation:

Saturation is the property that defines color depth. Select the saturation level for color from -100 (less color) to 100 (more color) by moving the slider.

Auto Exposure

Click the Auto Exposure button on the Manual mode window to automatically optimize the exposure for an image. The Gamma, Highlight and Shadow settings in the Image Controls dialog box are automatically set.

Note:

- ❏ *The Auto Exposure button appears dimmed and is not available when Pixel Depth is set to* Black & White *and* Auto Area Segmentation *is not selected in the Image Type dialog box.*

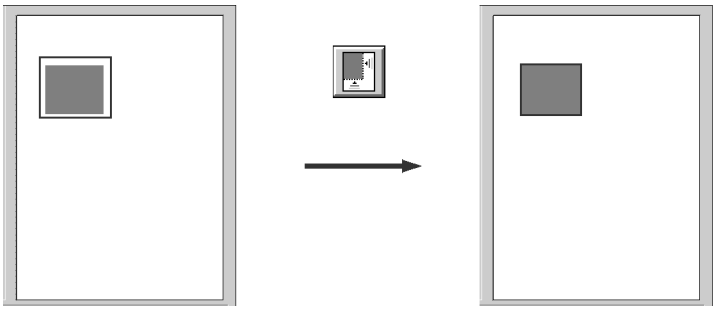
- ❏ *The Auto Exposure feature is automatically activated when scanning from the Full Auto mode.*

Reset Button

Click the Reset button to return any image control settings you made back to their default settings. If you did not alter any image control settings, this button appears dimmed and is not available.

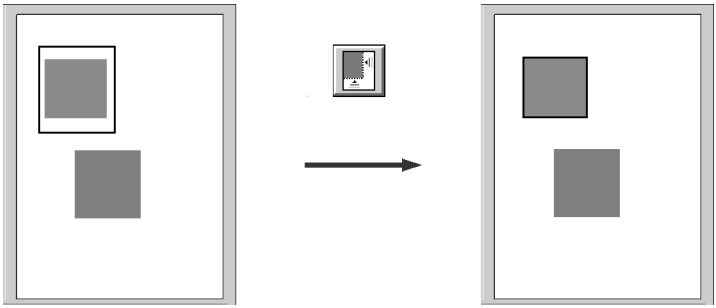
Auto Locate

Click the Auto Locate button on the Manual mode window to cause the scanner to automatically locate and select the target image. The image appears without white borders in the Preview window.



entire preview area located image

If a document contains more than one image, select a target image by creating a marquee on the image and clicking the Auto Locate button. The selected target image is located automatically.



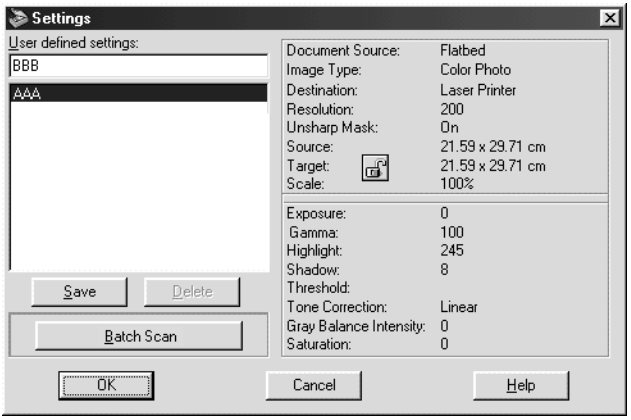
target image and other image

located and
non-located images

Note:
Create a marquee only on the target image. If the marquee covers other images as well, the Auto Locate feature does not work as expected.

Settings

Click the Settings button on the Manual mode window to view the following dialog box. You can view all the settings for the current preview image in this dialog box. Also, you can apply any custom settings you have saved.



To save the currently selected settings, type a new name in the User defined settings field, then click Save.

To delete a setting, select the setting name in the list, then click Delete.

To scan a single image with several different settings, make and save each group of settings as described above. Then hold down the Shift key while clicking the custom settings you want to select in the User defined settings list. After selecting all the settings you want to use when scanning, click Batch Scan. The scanner scans the image once for each group of settings you have selected.

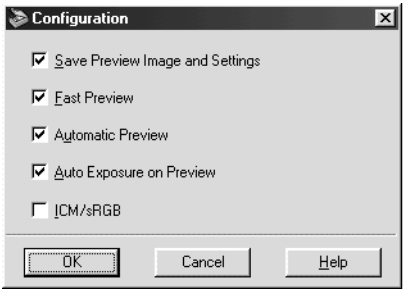
To apply saved settings, select a setting name from the list, then click OK. The preview image will reflect the settings you saved.

To restore the previous settings, click Cancel.

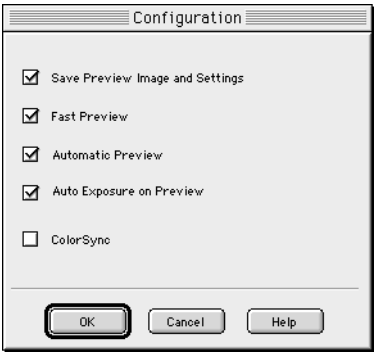
To access the online help, click Help.

Configuration

Click the Configuration button on the Manual mode window to view the following dialog box. You can make settings that affect the Preview window.



Windows



Macintosh

Save Preview Image and Settings:

Select this check box to automatically save the preview image and all the image settings when you exit EPSON TWAIN (quit scanning). The next time you restart EPSON TWAIN, the image and settings will reappear.

The Image Type, Destination, Tone curve settings you made are automatically saved whether this check box is on or off.

Fast Preview:

Enables high-speed loading of the preview image. If this is selected, the preview image is scanned in the Draft mode. If this is not selected, the preview image is scanned in the Best mode, and you can get accurate values for the Highlight, Shadow, and Gray Balance Intensity by sampling with the eyedropper in the preview image.

Do not use this feature (do not select the check box) when quality is more important than speed.

Automatic Preview:

Preview automatically starts when EPSON TWAIN is launched.

Auto Exposure on Preview:

Displays the preview image with automatically optimized exposure settings. The result is the same as if you clicked the Auto Exposure button.

Note:
This check box appears dimmed and is not available when the ICM/sRGB *check box is selected.*

ICM/sRGB (for Windows)

Depending on the version of Windows installed on your computer, this setting may be unavailable or have a different caption.

Select this check box to reproduce the colors in your image using the Windows ICM color management system. This setting appears only with Windows.

Note:

- ❏ *If your printer and monitor do not support ICM, be sure this check box is cleared.*
- ❏ *This check box is available only when Pixel Depth is set to* 42-bit Color *or* 24-bit Color *in the Image Type dialog box.*
- ❏ *See "Using ICM/sRGB (For Windows Users)" on page 4-6 for more details.*

ColorSync (for Macintosh)

Select this check box to reproduce the colors in your image using the ColorSync color management system. This setting appears only with Macintosh.

Note:

- ❏ *If your printer and monitor do not support ColorSync, leave this check box clear.*
- ❏ *This check box is available only when Pixel Depth is set to* 42-bit Color *or* 24-bit Color *in the Image Type dialog box.*
- ❏ *See "Using ColorSync (For Macintosh Users)" on page 4-7 for more details.*

Scan Button

Clicking the Scan button scans the image or active marquee in the Preview window. The scanned image is transferred to the application software you used to open EPSON TWAIN so that you can work with the image from within that application.

While scanning, a progress indicator appears. If necessary, click the Cancel button to cancel the operation.

Note:

- ❏ *You cannot scan an image which exceeds the available memory or disk space. If you try to scan a very large image, an alert appears on the screen.*
- ❏ *Before scanning, be sure to calibrate your screen. For details, see "Calibrating Your Screen" on page 4-2.*
- ❏ *After an image is scanned, be sure to save it.*

Tool Tip (for Windows users)

When you place the mouse pointer on a button or a list box in the Manual mode window, a Tool Tip appears to give you explanation of the function.

Chapter 4

Calibrating Your System

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Calibrating Your Screen 4-2
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Using ICM/sRGB (For Windows Users) 4-6

Using ColorSync (For Macintosh Users) 4-7

Overview

When you install EPSON TWAIN, the EPSON Screen Calibration utility is automatically installed.

EPSON Screen Calibration calibrates your monitor to ensure the tone and contrast on your screen match the original image. Be sure to calibrate your screen before using your scanner.

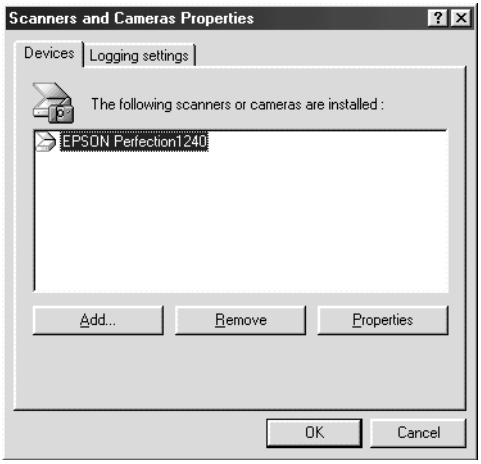
For more information regarding color and output device calibration, see the *Color Guide*.

Calibrating Your Screen

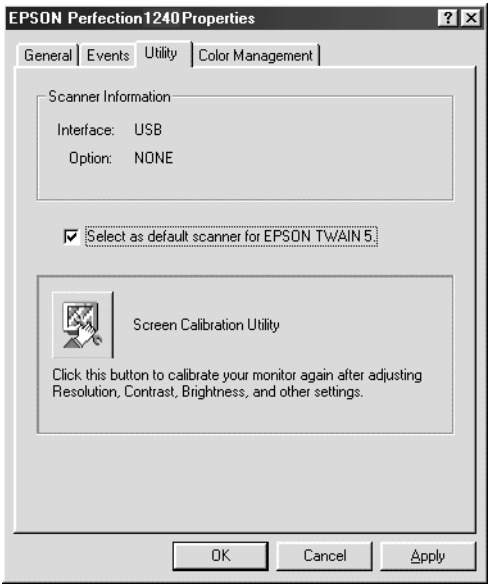
You need to calibrate your screen when you first install the scanner software, and anytime you switch to a different monitor.

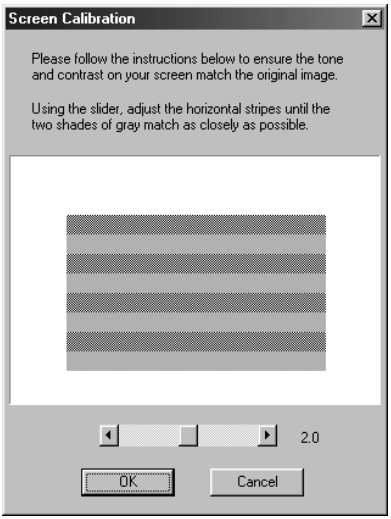
For Windows 98 and 2000 users

1. Double-click the Scanners and Cameras icon in Control Panel. The Scanners and Cameras Properties dialog box appears. Click the Properties button.



2. Click the Utility tab, then click the Screen Calibration Utility icon. The Screen Calibration dialog box appears.





3. Look at the screen and move the slider to the right or left until the two shades of the gray horizontal stripes match.

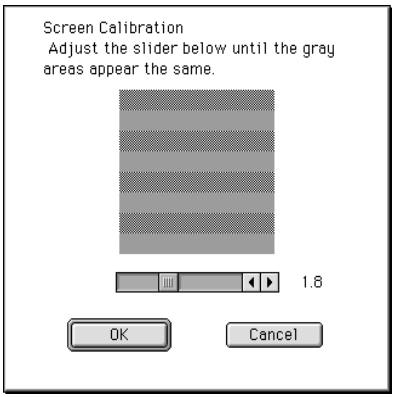
   Note:
   View the screen from a short distance. While the gray stripes do not blend perfectly well, try to adjust until the different tones match as closely as possible.

4. Click OK to finish calibrating your scanner and monitor.

The setting is automatically saved as the Screen profile in the Calibration list in EPSON TWAIN's Destination dialog box. The screen profile contains calibration information for the preview image as well as the scanned image.

For Macintosh users

1. Click the EPSON Screen Calibration icon in the EPSON Scanner folder to view the Screen Calibration dialog box.



2. Look at the screen and move the slider to the right or left until the two shade of the gray horizontal stripes match.

Note:
View the screen from a short distance. While the gray stripes do not blend perfectly well, try to adjust until the different tones match as closely as possible.

3. Click OK to finish calibrating your scanner and monitor.

The setting is automatically saved as the Screen profile in the Calibration list in EPSON TWAIN's Destination dialog box. The screen profile contains calibration information for the preview image as well as the scanned image.

Using ICM/sRGB (For Windows Users)

If you use Windows 98 or 2000 and your output devices (printer and monitor) support the ICM color management system, you can use the ICM calibration method.

Note:
If your output devices do not support sRGB, leave the check box empty.

Follow the steps below:

1. Run TWAIN-compliant application and select Acquire or a similar command from the File menu to start EPSON TWAIN.

2. Click Configuration. Select ICM/sRGB in the Configuration dialog box.

3. Make any other settings you want.

4. Click Scan.

The scanner scans an image using the sRGB profiles.

Using ColorSync (For Macintosh Users)

If your output devices (printer and monitor) support the Apple ColorSync color management system, you can use the ColorSync calibration method.

Note:

- ❏ *If your output devices do not support ColorSync, leave the check box empty.*
- ❏ *Before scanning, be sure to make the appropriate System Profile settings in the ColorSync control panel for optimal color matching. For more information, see your Macintosh documentation.*

Follow the basic steps below:

1. Run TWAIN-compliant application and select Acquire or a similar command to start EPSON TWAIN.
2. Click Configuration. Select ColorSync in the Configuration dialog box.
3. Make any other settings you want.
4. Click Scan.

The scanner scans images using the system profile selected in the ColorSync control panel.

Chapter 5

Option

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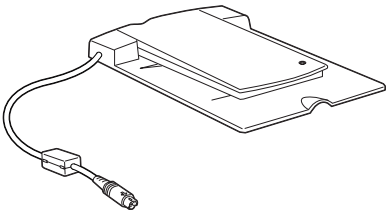
Using the Film Adapter

The Film Adapter (B81317*) enables you to scan of negative film strips and slides simply by installing the unit on your scanner. The Film Adapter is compact so it can be attached or removed easily when you alternate scanning between transparent materials and normal reflective (paper) documents.

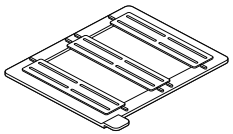
Unpacking the Film Adapter

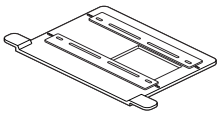
When you first open the package, make sure that all the following items are included. If any items are missing or damaged, contact your EPSON dealer immediately. Do not throw away the package after unpacking the Film Adapter as it can be used again for storage when you are not scanning transparencies.

Film Adapter

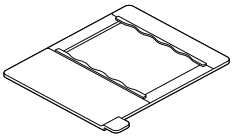


Film holders



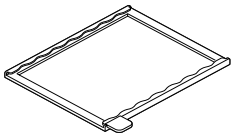


35mm strip film



120/220 (6cm × 9cm film)

35mm strip film (to be scanned from EPSON Photo Print)



4 × 5 inch film

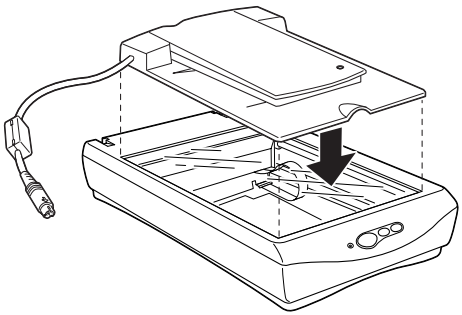
Installing the Film Adapter

Follow the steps below to install the Film Adapter on the scanner.

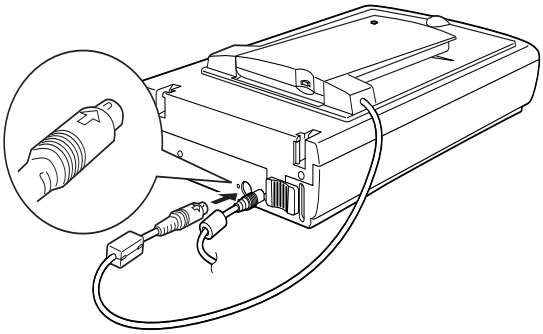
1. Make sure the scanner is turned off.

2. Remove the document cover from the scanner by opening it and pulling it straight up. (See "Removing the Cover for Thick or Large Documents" on page 6-5)

3. Place the Film Adapter on the document table so that the hinges face the rear of the scanner and it fits on the table.

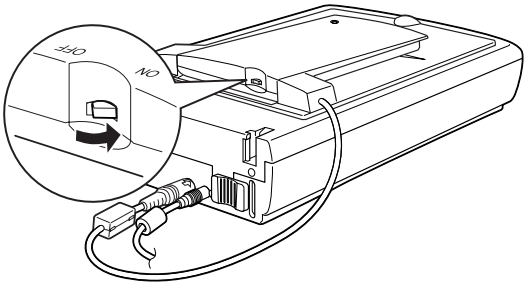


4. Connect the Film Adapter connector to the scanner's option connector.



5. Turn on the scanner.

6. Turn on the Film Adapter.



Scanning Transparent Materials

By attaching the Film Adapter, you can scan transparent materials such as positive or negative film, by passing light through the material. The following sections explain how to scan transparent materials.

Note:
If you plan to scan transparent materials from the EPSON SMART PANEL for Scanner application, refer to the EPSON SMART PANEL for Scanner documentation for details.

Film Holders

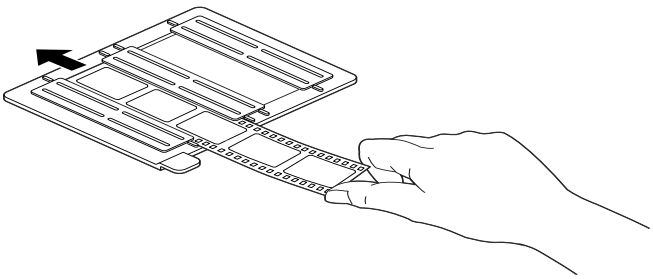
Four film holders are included with this unit. To scan film, see the instructions below.

Caution:
Hold the film at the edges, or else use gloves. Touching the film surface with bare hands can leave fingerprints or other traces on the film.

Note:
The base side of the film is the side which the film maker's name and film ID numbers are shown.

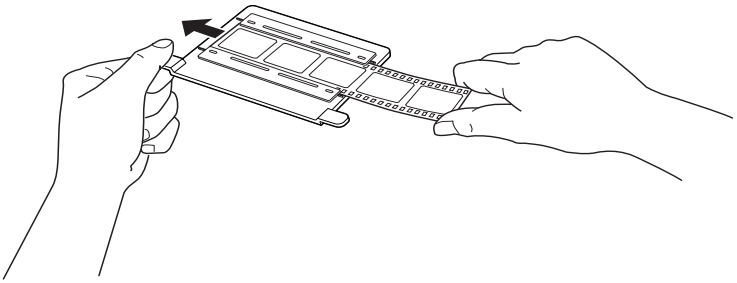
35 mm strip film

Insert a strip of film in the 35 mm film holder, base side facing down.



35 mm strip film (to be scanned from EPSON Photo Print)

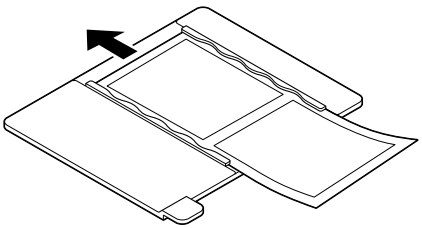
Insert a strip of film in the 35 mm film holder for use with EPSON Photo Print, base side facing down. Slide the strip until all of the frame you wish to scan is positioned inside the film holder opening.



Note:
If you plan to scan transparent materials from EPSON Photo Print utility, refer to the EPSON Photo Print documentation for details.

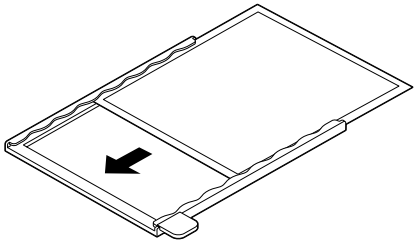
120/220 (6 cm x 9 cm) film

Insert film in the 120/220 (6 cm × 9 cm) size film holder, base side facing down.



4 x 5 inch film

Insert film in the 4 × 5 inch film holder, base side facing down.



Loading Slides and Film

You can scan slides and film strip in the 4 × 5 inch (101.6 × 127 mm) scanning area of the Film Adapter.

Note:

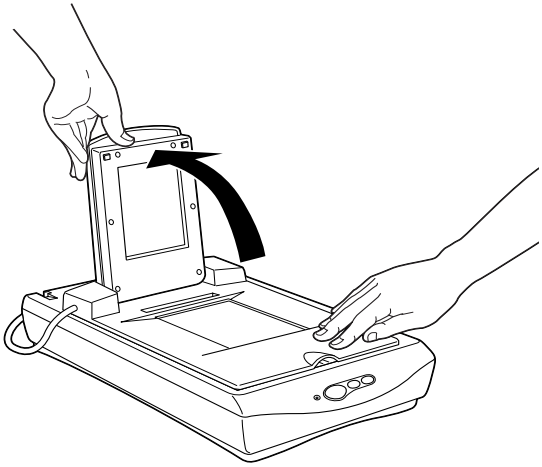
- ❏ *Wipe the inside of the Film Adapter cover, the scanner's document table, and the narrow window near the hinges before scanning transparencies.*

- ❏ *You need to select* TPU for Neg. Film *or* TPU for Pos. Film *in the Document Source settings in the Manual mode window depending on the type of film (negative or positive) you are scanning. The scanner software automatically controls the operation of the Film Adapter.*

Follow the steps below to load film or slides.

Caution:
Hold the film at the edges, or else use gloves. Touching the film surface with bare hands can leave fingerprints or other traces on the film.

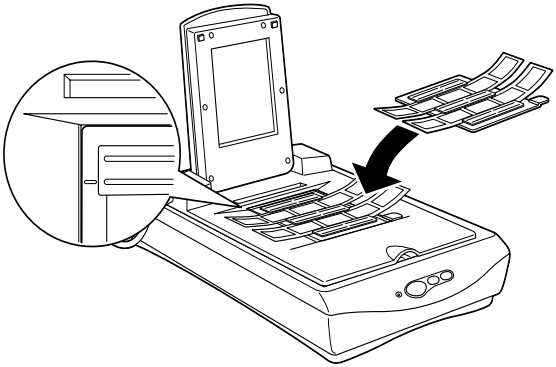
1. Open the top of the Film Adapter, holding the base down.



2. Load the transparency to be scanned face down on the scanner's document table in the window of the Film Adapter as shown below.

Loading 35 mm strip film

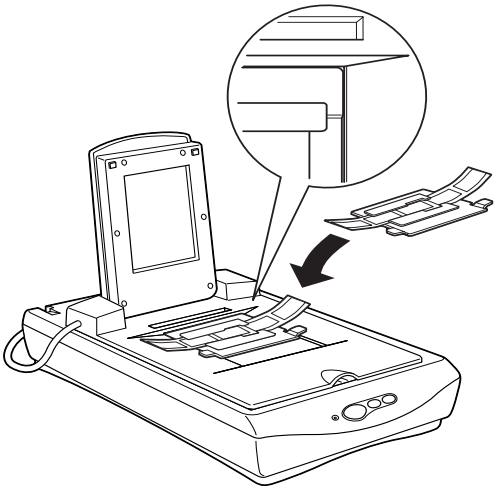
If you are scanning 35 mm strip film, use the 35 mm film holder to set the film.



Note:
Place the film holder on the document table in alignment with the upper left-hand corner of the Film Adapter.

Loading 35 mm strip film (to be scanned from EPSON Photo Print)

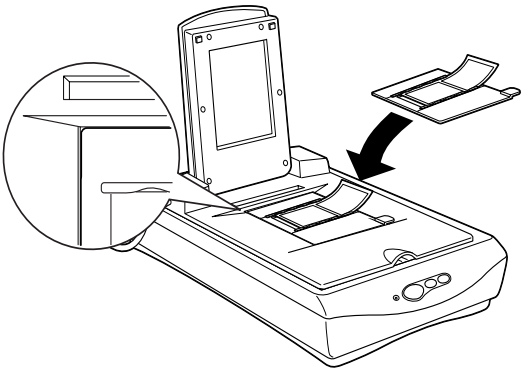
If you are scanning 35 mm strip film using EPSON Photo Print, use the 35 mm film holder for use with EPSON Photo Print to set the film.



Note:
Place the film holder on the document table in alignment with the upper right-hand corner of the Film Adapter.

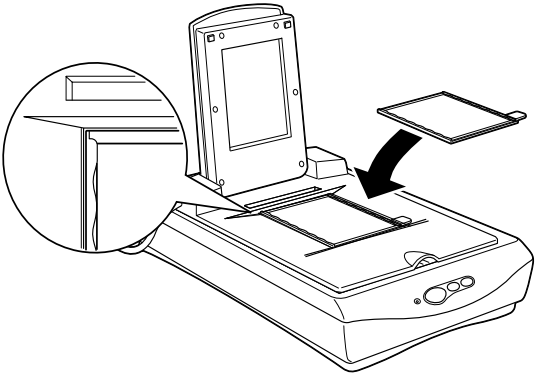
Loading 120/220 (6 cm x 9 cm) film

When scanning 120/220 (6 cm × 9 cm) or similar film, use the film holder as shown below.



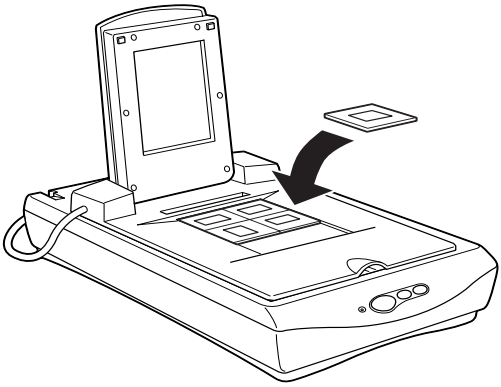
Loading 4 x 5 inch film

If the film size is 4″ × 5″ or similar, use the film holder as shown below.



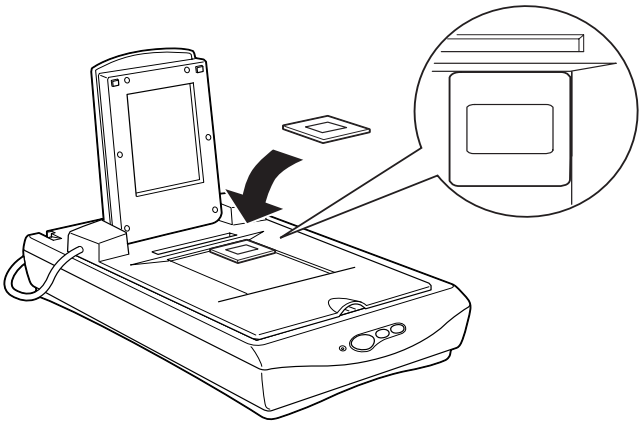
Loading slides

If you are scanning slides or transparencies which will not fit in the film holders, place them directly on the document table.



Loading slides (to be scanned from EPSON Photo Print)

If you are scanning slides or transparencies using EPSON Photo Print, place them one at a time directly on the document table in alignment with the upper right-hand corner of the Film Adapter.



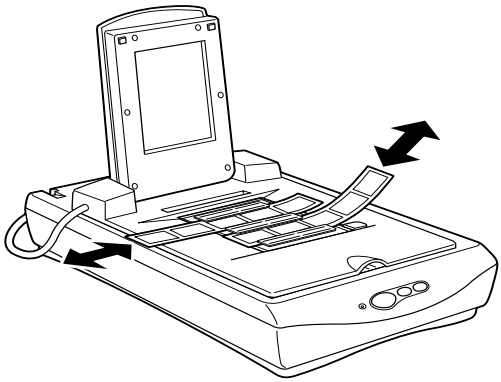
3. Close the unit.

Note:

❏ *Make sure the unit is completely closed, otherwise you cannot attain proper colored images.*

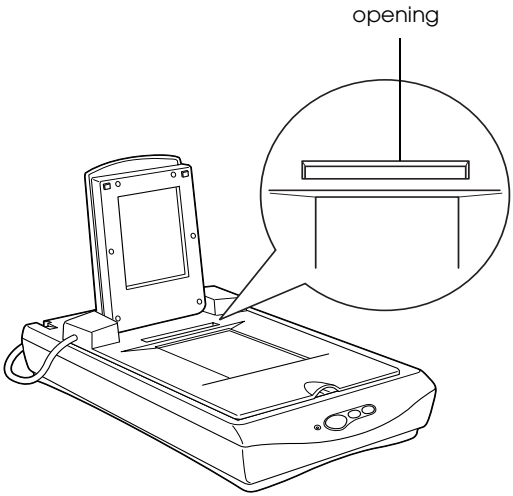
❏ *When previewing images on EPSON TWAIN of negatives scanned using a film holder, the color may appear odd as the frame of the film holder is perceived as white, causing your scans to appear darker. To see the correct color, click and drag the mouse over an area, then click the* Zoom Preview *button.*

❏ *You can move and adjust the position of 35mm film by sliding the strips in the film holder so the frames you want to scan are positioned in the window.*



❏ *To remove a film holder from the document table, slide it left or right then take it out of the window.*

❏ *Leave the opening shown below uncovered, otherwise the colors in your scans will be affected.*



Scanning Normal (Reflective) Documents

When you return to scanning normal reflective documents, you can simply turn off the Film Adapter, then place documents between it and the document table. If you will not scan transparencies for a long time, you can remove the Film Adapter and store it in the original package.

Remove the Film Adapter in reverse order as described on "Installing the Film Adapter" on page 5-3.

Note:

❏ *Before scanning in the Full Auto mode, remove the Film Adapter and replace the document cover.*

❏ *When scanning thin documents, you may see an impression of the underside of the Film Adapter in your scans. If so, change to using the document cover instead of the Film Adapter.*

❏ *When you use EPSON SMART PANEL for Scanner to scan and print reflective documents, such as photos, first remove the Film Adapter and replace the document cover.*

Chapter 6

Maintenance and Troubleshooting

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Maintenance

Cleaning the scanner

To keep your scanner operating at its best, you should clean it periodically, as described below.

1. Unplug the power cord.

2. Clean the outer case with a cloth dampened with mild detergent and water.

3. If the glass of the document table gets dirty, clean it with a soft dry cloth. If the glass is stained with grease or some other hard-to-remove material, use a small amount of glass cleaner and a soft cloth to remove it. Wipe off all remaining liquid.

Be sure that there is no dust on the glass of the document table. Dust can cause white spots in your scanned image.

Caution:

- ❏ *Be careful not to scratch or damage the glass of the document table, and do not use a hard or abrasive brush to clean it. A damaged glass surface can decrease the scanning quality.*
- ❏ *Never use alcohol, thinner, or corrosive solvent to clean the scanner. These chemicals can damage the scanner components as well as the case.*
- ❏ *Be careful not to spill liquid into the scanner mechanism or electronic components. This could permanently damage the mechanism and circuitry.*
- ❏ *Do not spray lubricants inside the scanner.*
- ❏ *Never open the scanner case.*

Replacing the fluorescent lamp

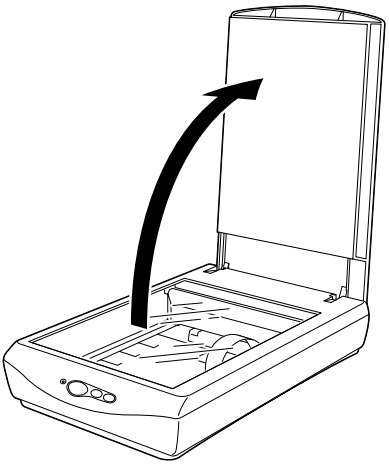
The luminosity of the fluorescent lamp declines over time. If the lamp breaks or becomes too dim to operate normally, the scanner stops working and the indicator light rapidly flashes red. When this happens, the lamp assembly must be replaced. For details, contact your dealer.

Caution:
Never open the case of the scanner. If you think repairs or adjustments are necessary, consult your dealer.

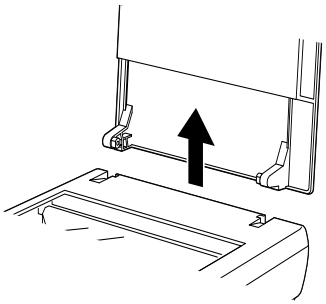
Removing the Cover for Thick or Large Documents

For thick materials or documents that are larger than the document table, remove the document cover.

1. Open the document cover.



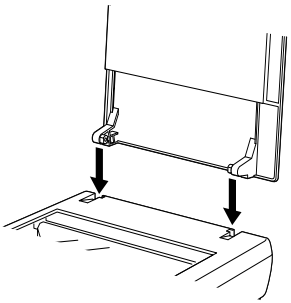
2. Pull the cover straight up.



Note:

- ❏ *When scanning with the cover removed, do not leave any area of the document table exposed to prevent interference from external light.*

- ❏ *When you are finished scanning, reattach the document cover in the reverse order that you removed it.*



Transporting the Scanner

Before transporting the scanner over a long distance or storing it for an extended period, you need to lock the scanner's carriage to prevent damage. Follow the steps below.

1. Plug in the scanner and wait until the carriage moves to the home position (position nearest the cover hinges). While the carriage lamp remains on, unplug the power cord.

2. Disconnect the AC adapter from the DC inlet, and then slide the transportation lock to the left.

Note:
If you are using the Film Adapter and it is switched on, the carriage will not move to the home position. Remove the Film Adapter first, then perform the steps above.

Problems and Solutions

Most of the problems you will encounter while operating your scanner and software have simple solutions. This section divides scanner problems into six categories:

Error Indicator . . . . . page 6-8
Operating Problems . . . . . page 6-9
Quality Problems . . . . . page 6-10
Software Setup Problems . . . . . page 6-15
Software Operation Problems . . . . . page 6-15
Scanning Problems . . . . . page 6-16

See the table in "Error Indicator" on page 6-8 first. If this does not help you solve your problem, go to the category for the type of problem you have, then look for the problem description.

The online Color Guide also provides versatile tips and other information helpful for problem-solving.

Note:
If some settings appear dimmed in EPSON TWAIN, they cannot be selected because of the capability of your scanner or your choice of other settings.

If you cannot solve a problem after reading and following the information in this section, contact your dealer or a qualified customer support person for assistance.

Error Indicator

If an error occurs, the scanner stops and the indicator light shows of error.

Color of light	Pattern of light	Error type
Red	On	"Command error" on page 6-8
	Flashing	"Interface error" on page 6-8
	Flashing	"Fatal error" on page 6-8

Command error

The scanner has received incorrect commands from your scanning software.

When this error occurs, try to rescan the document. The scanner returns to normal when it receives correct commands. Normally you do not need to reset the scanner when this type of error occurs.

Interface error

The interface setup is wrong or the scanner is not properly connected to the computer.

When this error occurs, unplug the scanner and USB connector, and then plug them back in.

Fatal error

This type of error indicates one or the following problems:

- ❏ The fluorescent lamp needs to be replaced.
- ❏ The scanner is malfunctioning.

Consult your dealer. After problems are clear, unplug the scanner and USB connector, and then plug them back in.

Operating Problems

Problems you may have while using the scanner often involve the operation of your software and computer. Operation problems usually occur because of:

- ❏ Incorrect setup of the interface (see your *Startup Guide*).
- ❏ Incorrect setup of your computer or software (see your *Startup Guide*).
- ❏ Incorrect operation of your software (see your software documentation).

Also see the documentation that came with your computer and scanner for possible solutions.

The fluorescent lamp does not come on.

- ❏ Make sure the power cord is connected to the scanner and plugged into an electrical outlet.
- ❏ If the scanner does not receive any commands after 15 minutes, it turns off the lamp. The lamp will turn back on when you scan.

The scanner does not scan.

- ❏ Wait until the indicator light stays on in green (ready for scanning).
- ❏ Try connecting the scanner directly to the computer's USB port, or use an EPSON USB cable.

The scanner software does not work properly.

❏ Make sure your software is installed correctly.

For Windows users:
Check if your scanner is listed more than once in the Scanners and Cameras Properties dialog box. To view the dialog box, double-click the Scanners and Cameras icon in Control Panel. Remove your scanner every place it appears in the dialog box, then reinstall EPSON TWAIN following the instructions in your *Startup Guide*.

Note:
When reinstalling the scanner software, if a dialog box does not appear and a message box and followed by a dialog box requesting the EPSON Scanners Driver Disk appears instead, insert the Scanner Software CD in the CD-ROM drive. Make sure to specify the correct drive letter, the EPSON *folder, the folder of your preferred language, and the* Win98 *(for Windows 98 users) or* Win2000 *(for Windows 2000 users) folder as the location.*

❏ Make sure your computer meets the memory and other system requirements specified for the software you are using.

❏ Make sure the computer has enough memory for your software. If the computer does not have enough memory available, see your software and computer documentation for details.

Quality Problems

The entire image is distorted or blurred.

❏ Make sure the document is flat against the document table.

- ❏ Make sure you do not accidentally move the document during scanning.
- ❏ Make sure the scanner is on a flat, stable surface.

Part of the image is distorted or blurred.

Make sure the document is uniformly flat against the document table. A document that is wrinkled or warped may not scan well.

Caution:
Do not place heavy objects on the document table.

Edges of the document are not scanned.

Position the document so that the area you want to scan is at least 5 mm from the edge guides of the document table.

Colors are patchy or distorted at the edges of the image.

- ❏ A document that is very thick or warped at the edges can cause discoloration. Cover the edges of the document with paper to block outside light.
- ❏ Make sure the document is flat against the document table.

The image is faint or out of focus.

- ❏ Make sure the document is flat against the document table.
- ❏ Adjust your software's Exposure setting. See "Image Controls" on page 3-19.

- ❏ Adjust your software's Gamma setting. See "Adjusting the Gamma Setting" on page 2-16.

The image is too dark.

- ❏ Check your software's Brightness setting. See "Adjusting the Highlight Setting" on page 2-13.
- ❏ Check the brightness and contrast settings of your computer display.

Straight lines in the image come out jagged.

Make sure the document orientation is perfectly straight on the document table. Align vertical and horizontal lines with the scales at the top and side of the document table.

The image does not look the same as the original.

- ❏ Try different image setting combinations on your scanner software.
- ❏ Your software may not have sufficient color matching and color management features, or these components may not be installed correctly. See the documentation that comes with your software and computer.
- ❏ If you are importing an image file, make sure the file format is one your software can read. Also, make sure the image settings of your software are appropriate for the type of image you want to scan.

A line of dots is always missing from the scanned image.

- ❏ Print head malfunction is indicated when a line is missing on printouts only. See your printer manual.
- ❏ Scanner sensor malfunction is indicated when a line is missing on both screen images and printouts. Contact your dealer.

When scanning printed matter, textured patterns of dots appear inside particular areas of the image.

This condition is normal. The scanner automatically minimizes the problem if Image Type setting is Color Document or Black & White Document in the Manual mode window.

Colors on your monitor are different from those in the original image.

- ❏ Check the image settings of your scanner software, especially data format (bits, pixel, color), gamma correction, and color correction. Try different combinations of these settings.
- ❏ Check the color matching and color management capabilities of your computer, display adapter, and software. Some computers can change the color palette to adjust the colors on your screen. See your software and hardware manuals for details.
- ❏ Exact color matching is very difficult. Check your software and monitor documentation for information on color matching and calibration. Also see your *Color Guide*.

Printed colors are different from those in the original image.

Exact color matching is very difficult. Check your software or contact your printer company for information on color matching and calibration.

The printed image is larger or smaller than the original.

The image size settings of your software determine the size of the printed image. Do not use the size of the monitor image to judge the printed size.

Scanned images cannot be printed or come out garbled when printed.

- ❏ Make sure your printer is properly connected to the computer, correctly set up, and maintained. See your printer manual for details.
- ❏ Check that your software is properly installed and set up for your printer. See your software manual.

The colors of negative film preview images look strange.

- ❏ Make sure Document Source is set to TPU for Neg. Film in the Manual mode window.
- ❏ The dark area around the film, such as the frame of the film holder, is perceived as white, which alters the exposure of the scanning area and causes scans to appear darker. See the correct color by clicking and dragging the mouse pointer over an area, and then clicking the Zoom Preview button.

Software Setup Problems

You cannot install EPSON TWAIN.

- ❏ Check if your computer and operating system meets the system requirements.
- ❏ Make sure your computer has enough memory to run the application.

Software Operation Problems

You cannot start EPSON TWAIN.

- ❏ Plug in the scanner and then turn on the computer.
- ❏ Unplug the scanner and turn off the computer. Then check the connection between the scanner and the computer.
- ❏ Make sure that EPSON TWAIN is selected in your application software.
- ❏ Make sure your software is installed correctly.

  For Windows users:
  In the Device Manager menu, make sure your scanner's name appears under Imaging Device hardware type without a question (?) or an exclamation (!) mark. If the scanner appears with a question (?) or an exclamation (!) mark, or as an Unknown devices hardware type, click Remove to remove it while the scanner is still connected and turned on. Then reinstall EPSON TWAIN. See "Recovering from Scanner Software Installation Problems on Windows" on page 6-20.

Note:
If the EPSON Scanners Driver Disk is requested during the EPSON TWAIN reinstallation, insert the Scanner Software CD in the CD-ROM drive. Be sure to specify the correct drive letter, the EPSON *folder, the folder of your preferred language, and the* Win98 *(for Windows 98 users) or* Win2000 *(for Windows 2000 users) folder as the location.*

You can't select optional equipment (Film Adapter).

Make sure the optional equipment is installed correctly. See "Installing the Film Adapter" on page 5-3.

Scanning Problems

Image is dark, with little or no detail.

- ❏ Calibrate the screen as described in "Calibrating Your Screen" on page 4-2.
- ❏ Change the Destination setting. Select Screen/Web as the "Destination" on page 3-13. Selecting a printer may cause on-screen colors to be different from the colors of the original, however colors will be reproduced correctly when it is printed.

You cannot scan an image or you only get a few dots for the scanned image.

- ❏ Make sure a document is placed on the document table of the scanner.

- ❏ Change the Threshold setting in the Image Control dialog box. When Text (Background Removal) is selected as the Image Type, change Text Enhancement Technology to None from the B/W Option in the Image Type dialog box. Then change the Threshold setting in the Image Controls dialog box. Or change Text (Background Removal) to Text/Line Art, then change the Threshold setting in the Image Control dialog box. See "Image Controls" on page 3-19.

Moiré (cross-hatch) patterns appear in the scanned image

- ❏ Make sure Image Type is set to Color Document or Black & White Document in the Manual mode window.
- ❏ Change the Image Type settings. Turn the De-screening setting On in the Image Type dialog box.
- ❏ Place a transparent sheet such as an overhead projector sheet, between the document and the document table.
- ❏ Reposition the document slightly.
- ❏ Make the image size slightly smaller.

Colors differ from the original.

- ❏ Calibrate the screen. See "Calibrating Your Screen" on page 4-2.
- ❏ Change the Image Type setting. See "Image Types" on page 3-7 to make sure your settings are correct.
- ❏ Printed colors do not exactly match the colors on your monitor, since printers and monitors use different color systems: monitors use RGB (red, green, and blue), while printers typically use CMYK (cyan, magenta, yellow, and black).

Poor character recognition during OCR scanning.

- ❏ Change the Image Type setting. Select Text (Background Removal) as "Image Types" on page 3-7.
- ❏ Try adjusting the Threshold setting in the Image Controls dialog box.
- ❏ Select Text Enhancement Technology from B/W Option in the Image Type dialog box to eliminate background noise.
- ❏ See "Optimizing OCR Scanning" on page 2-27 for more information.

Pressing the button on the scanner does not start scanning.

- ❏ Make sure EPSON SMART PANEL for Scanner is installing and the EPSON SMART PANEL's Launch Application path is set correctly.
- ❏ **For Windows users:**
  Click the Events tab in your scanner's Properties dialog box and make sure the Disable device events check box is clear. Also, make sure the desired button is selected as the Scanner events, and at least one scanner event recognizable application in the Send to this application list is selected.

Scanned image by using the button is missing.

Make sure desired application is assigned to the button.

Upgrading from Windows 98 to Windows 2000

If EPSON TWAIN is already installed, you need to uninstall it, upgrade the system to Windows 2000, and then re-install it, as follows:

1. Uninstall EPSON TWAIN. See "Uninstalling EPSON TWAIN" on page 6-19.
2. After uninstalling EPSON TWAIN, turn off the computer and unplug the scanner, and then disconnect the scanner from the computer.
3. Turn on the computer and install Windows 2000.
4. Connect the scanner and install EPSON TWAIN following the instructions in your *Startup Guide*.

Uninstalling EPSON TWAIN

1. Connect the scanner to the computer. Plug in the scanner then turn on the computer.
2. Click Start and point to Settings, then select Control Panel.
3. Double-click the Scanners and Cameras icon.
4. Select your scanner from the installed devices list, then click Remove.
5. Click OK to close the dialog box.

During Windows 2000 installation

If a dialog box like the one shown below appears and asks for the updated files for your scanner while you are installing Windows 2000, click Next and continue installation. Do not click Provide Files....

Note:
If you insert the Scanner Software CD and click Provide Files*..., an error message may appear. Replace the scanner software CD with the Windows 2000 CD-ROM and continue installing Windows 2000. After finishing the Windows 2000 installation, you need to uninstall your scanner from the Device Manager and reinstall EPSON TWAIN. Follow the instructions "Recovering from Scanner Software Installation Problems on Windows" on page 6-20 to uninstall EPSON TWAIN.*

Recovering from Scanner Software

Installation Problems on Windows

If you cancelled the plug-and play driver installation before the procedure was completed, or if you do not follow the installation instructions for EPSON TWAIN for Windows 2000, EPSON TWAIN will not be properly installed on your computer. To correct this problem, first uninstall your scanner in the Device Manager menu following the instructions below, and then reinstall EPSON TWAIN following the instructions in your *Startup Guide*.

Follow the steps below to check the installation.

1. Plug the interface cable into your scanner and the computer. Plug in your scanner and then turn on the computer.

2. Right-click the My Computer icon on your desktop, and then click Properties.

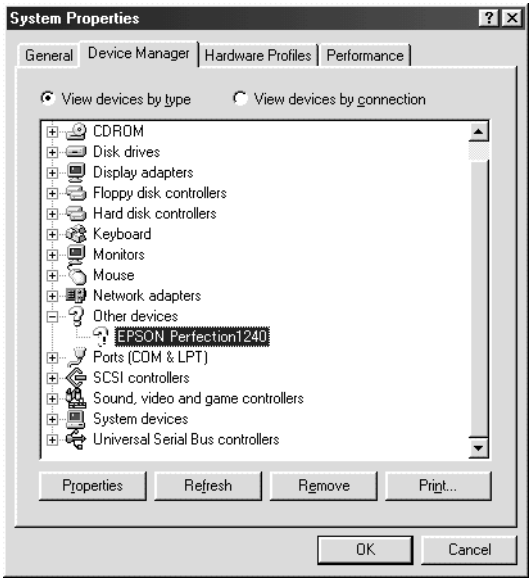
   For Windows 98 users:
   Click the Device Manager tab.

   For Windows 2000 users:
   In the System Properties dialog box, select the Hardware tab and then click Device Manager.

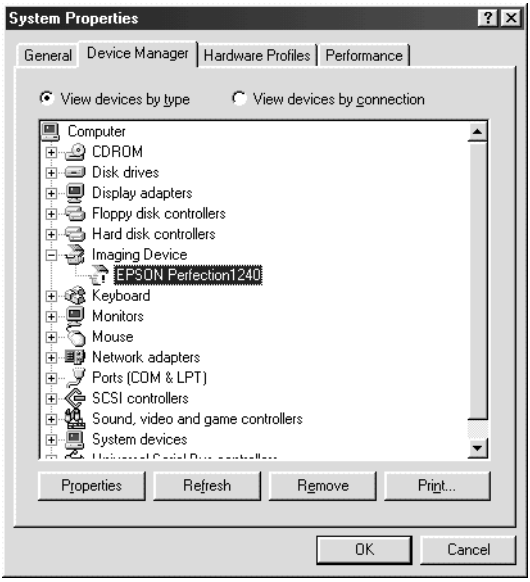
3. If your EPSON TWAIN is correctly installed, EPSON Perfection 1240 should appear under Imaging Device when you click the plus (+) sign next to Imaging Device.

   If EPSON Perfection 1240 appears under Other devices with a question (?) mark or under Imaging Device with an exclamation (!) mark, the EPSON TWAIN file is not installed correctly. Follow the instructions below to reinstall the driver.

EPSON Perfection 1240 *appearing under Other devices with a question (?) mark:*



EPSON Perfection 1240 *appearing under Imaging Device with an exclamation (!) mark:*



Note:
Screen shots of Windows 98 are used here for illustration.

For Windows 98 users

If EPSON Perfection 1240 appears under Other devices with a ? mark

Note:
Make sure your scanner is plugged in and connected to your computer. If your scanner is unplugged or not connected to your computer, you cannot reinstall the driver properly.

1. Click ? EPSON Perfection 1240, and then click Remove and OK.

2. Click Close to close the System Properties window.

3. Shut down your computer and unplug your scanner. Then turn on your scanner and computer.

4. The following dialog box appears. To install the driver again, follow the instructions in your *Startup Guide*.

If EPSON Perfection 1240 appears under Imaging Device with an ! mark

Note:
Make sure your scanner is plugged in and connected to your computer. If your scanner is unplugged or not connected to your computer, you cannot reinstall the driver properly.

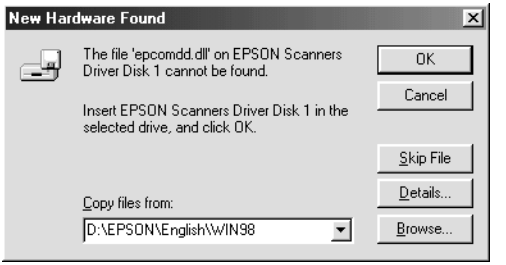
1. Click ! EPSON Perfection 1240, and then click Remove and OK.

2. Click Close to close the System Properties window.

3. Shut down your computer and turn off your scanner. Then turn on your scanner and computer.

4. When a message appears to prompt you to insert the scanner software CD, insert the CD in the CD-ROM drive, and then click OK.

If the following dialog appears, click ▼, then browse and select or type in the CD-ROM drive letter, the EPSON folder, the folder of your preferred language, and the Win98 folder as the location as shown below. Finally, click OK.



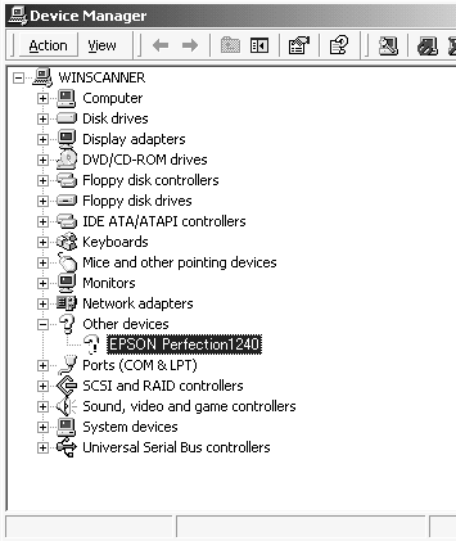
5. The Screen Calibration window appears. Follow the instructions described in your *Startup Guide*.

For Windows 2000 users

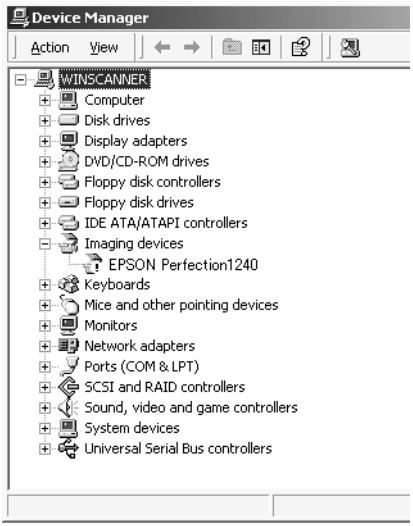
Note:
Make sure your scanner is plugged in and connected to your computer. If your scanner is unplugged or not connected to your computer, you cannot reinstall the driver properly.

1. If EPSON Perfection 1240 appears under Other devices with a question (?) mark or under Imaging devices with an exclamation (!) mark, right-click ? EPSON Perfection 1240 or ! EPSON Perfection 1240 and select Uninstall....

EPSON Perfection 1240 *appearing under Other devices with a question (?) mark:*



EPSON Perfection 1240 *appearing under Imaging Device with an exclamation (!) mark:*



2. Follow the instructions on the screen.

3. Shut down your computer and unplug your scanner. Then turn on your computer and plug back your scanner.

4. Install EPSON TWAIN following the instructions in your *Startup Guide*.

Sizing up Your System

Your scanner is sufficient for most scanning needs, but if you are not satisfied with the quality of the images on your monitor or with the speed of image processing, read this section. While it does not contain specific recommendations, it describes various possibilities for improving your scanning system. For further information, seek advice from your dealer or an experienced scanner user.

RAM and hard disk size

Scanned images use much more memory than text files, so you may need more RAM (Random Access Memory) in your computer and a larger hard disk than you have used previously.

Accelerator boards

In addition to memory, processing speed is important because large files take longer to process than small ones. Therefore, you may want to add an accelerator board to your computer.

Video cards

A video card that is sufficient for text may not be good enough for displaying graphic images, especially in color. If all your scanned images look coarse on your monitor, you may want to upgrade your video card. You will need 24-bit color, also called true color or millions of colors, to make the highest quality image reproductions.

Monitors

The resolution of your monitor affects the quality of the image you see. Consider a high resolution monitor if you do precise color work, but also be sure you have a high quality video card.

File compression software

Many different programs are available to make image files smaller for storage or transmission. For example, some compression software can store a 3MB image file on a 1.44 MB floppy disk, and compress images and restore them with no loss of data or quality; others compress images more, but the restored file is not exactly the same as the original. The difference between the original and restored files is, however, almost unnoticeable.

Appendix A

Technical Specifications

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System Requirements

Before installing the scanner software, make sure that your system meets the following requirements.

For PCs

System	Microsoft® Windows® 98 pre installed, Windows® 2000 pre installed or upgraded from Windows 98 pre installed model
Interface	The computer's USB port (TYPE A receptacle)
Display	VGA or higher resolution monitor 640 × 480 screen resolution (800 × 600 or higher recommended), and 256 color (65,000 color or higher recommended) ***Note:*** *Color and tone reproduction are subject to the display capability of your computer system, including the video card, display monitor, and software. See the product documentation for details.*

For Macintosh computers

System	USB-equipped Macintosh® with Mac OS® 8.1 or later
Interface	Macintosh USB
Display	Color Monitor, 640 × 480 screen resolution (or higher recommended), and 256 color (32,000 color or higher recommended) ***Note:*** *Color and tone reproduction are subject to the display capability of your computer system, including the video card, display monitor, and software. See the product documentation for details.*

Scanning

Scanner type	Flatbed, color
Photoelectric device	Color CCD line sensor
Effective pixels	10200 × 14040 pixels at 1200 dpi, 100%
Document size	216 mm × 297 mm (8.5 inches × 11.7 inches) A4 or US letter size (The reading area can be specified from your software.)
Scanning resolution	1200 dpi (main scan) 2400 dpi with Micro Step (sub scan)
Output resolution	50 dpi to 9600 dpi (50 to 4800 dpi in 1 dpi increments, 7200 dpi, and 9600 dpi. 7200 dpi and 9600 dpi performed with zoom function)
Color separation	RGB color filters on CCD
Zoom	50% to 200% in 1% increments
Image data	14 bits per pixel per color internal 14 bits per pixel per color external
Brightness	7 levels (In EPSON TWAIN, Gamma correction controls Brightness)
Line Art settings	Fixed threshold Text Enhancement Technology (enable/disable selectable)
Halftoning process	AAS (Auto Area Segmentation) Enable/disable selectable 3 halftoning modes (A, B, and C) and 4 dither patterns (A, B, C, and D) for bi-level and quad-level data (2 downloadable dither patterns)
Gamma correction	2 types for CRT display 3 types for printer 1 type for user-defined

Color correction	1 type for CRT display 3 types for printer output 1 type for user-defined (Only user-defined Color correction is available in EPSON TWAIN)
Interface	USB (Type B Receptacle Connector)
Light source	White cold cathode fluorescent lamp
Reliability	30,000 cycles of carriage movements (main unit MCBF)
Dimensions	Width: 269 mm (10.6 inches) Depth: 435 mm (17.1 inches) Height: 93 mm (3.7 inches)
Weight	Approx. 2.8 kg (6.2 lb)

Electrical

Input voltage range	DC 24 V
Rated current	0.8 A
Power consumption	Approx. 20 W

Note:
Check the label on the back of the scanner for voltage information.

AC Adapter

Model A110B:

Manufacturer	SEIKO EPSON CORPORATION
Input	AC 100 - 120 V, 50-60 Hz
Output	DC 24 V, 0.8 A
Temperature	5 to 35°C (41 to 95°F)
Dimensions	58 × 108 × 34 mm
Weight	Approx. 250 g (without AC plug)

Model A110E:

Manufacturer	SEIKO EPSON CORPORATION
Input	AC 220 - 240 V, 50-60 Hz
Output	DC 24 V, 0.8 A
Temperature	5 to 35°C (41 to 95°F)
Dimensions	58 × 108 × 34 mm
Weight	Approx. 250 g (without AC plug)

Environmental

Temperature:	
Operation	5 to 35° C (41 to 95° F)
Storage	-25 to 60° C (-13 to 140° F)
Humidity:	
Operation	10 to 80%, without condensation
Storage	10 to 85%, without condensation
Operating conditions:	Ordinary office or home conditions. Extreme dust should be avoided. Operation under direct sunlight or near a strong light source should be avoided.

Note:
Specifications are subject to change without notice.

Safety Approvals (Scanner)

120V model:

EMC	FCC part 15 Subpart B Class B CSA C108.8 Class B

230V model:

EMC	EN 55022 (CISPR Pub 22) Class B AS/NZS 3548 Class B

Safety Approvals (AC Adapter)

120V model:

Safety standards	UL 1950 CSA C22.2 No. 950
EMC	FCC part 15 Subpart B Class B CSA C108.8 Class B

230V model:

Safety standards	EN 60950
EMC	EN 55022 (CISPR Pub 22) Class B AS/NZS 3548 Class B

CE Marking (Scanner)

230 V model:

EMC Directive 89/336/EEC	EN 55022 Class B EN 50082-1 IEC 60801-2 IEC 60801-3 IEC 60801-4

CE Marking (AC Adapter)

230 V model:

Low Voltage Directive 73/23/EEC EMC Directive 89/336/EEC	EN 60950 EN 55022 Class B EN 61000-3-2 EN 61000-3-3 EN 50082-1 IEC 60801-2 IEC 60801-3 IEC 60801-4

USB Interface

Interface type: Universal Serial Bus Specification Revision 1.1

Electrical standard: Full Speed mode(12 Mbit/s) of Universal Serial Bus Specification Revision 1.1.

Connector type: One receptacle (Type B)

Configuration:

Element	Description
Device	Full Speed mode (12 Mbit/s) Class: Vendor-specific Vendor ID: 0x04B8 (Seiko Epson Corp.) Product ID: 0x010B
Configuration	Characteristics: Self-powered. Remote wake up feature is not supported. Maximum power consumption from VBUS: 2 mA (5 V)
Interface	No alternate setting Number of endpoints used by this interface (excluding endpoint 0): 2 Class: Vendor specific
Endpoint 1	Bulk IN transfer Maximum data transfer size: 64 byte
Endpoint 2	Bulk OUT transfer Maximum data transfer size: 64 byte
String Descriptor	Language ID: US English 1: Manufacturer: "EPSON" 2: Product: "Perfection1240"

Initialization Methods

The scanner can be initialized (returned to a fixed set of conditions) in the following ways:

Hardware initialization	The scanner is plugged in. The USB cable is unplugged from the USB port on the scanner.
Software initialization	Software sends the ESC @ (initialize the scanner) command. The scanner receives a Bus Reset from the USB interface.

Film Adapter

Electrical Specifications:

Supplied Voltage:	DC 21.6 to 26.4 V
Rated current:	0.5 A

Environmental Conditions:

Temperature	Operation: 5° C to 35° C (41° F to 95° F) Storage: -25° C to 60° C (-13° F to 140° F)
Humidity	Operation: 10% to 80%, without condensation Storage: 10% to 85%, without condensation

Reliability:

Light Source:	10,000 hours for light source MCBF

Document:

Transparencies up to	4 × 5 inches film 35 mm strip film 35 mm slide 120/220 size (6 cm × 9 cm) strip film 4 × 5 inches film
Manuscript:	Up to 4 × 5 inches film size
Readable area:	93 × 118 mm
Dimensions:	Width: 222 mm (8.7 inches) Depth: 305 mm (12.0 inches) Height: 36 mm (1.4 inches)
Weight:	Approx. 700 g (1.5 lb)

Appendix B

Contacting Customer Support

Overview B-2

Overview

If your EPSON product is not operating properly and you cannot solve the problem using the troubleshooting information in your product documentation, contact customer support services for assistance.

Customer support will be able to help you much more quickly if you give them the following information.

- ❏ Product serial number
  (The serial number label is usually on the back of the product.)
- ❏ Product model
- ❏ Product software version
  (Click About, Version Info, or similar button in the product software.)
- ❏ Brand and model of your computer
- ❏ Your computer operating system name and version
- ❏ Names and versions of the software applications you normally use with your product

Glossary

additive primary colors
The colors of red, green and blue (RGB) - which give the perception of white when combined equally. These are the colors of the color system used by monitors and scanners.

bi-level data
Image data that is composed of 1 bit per pixel. A pixel is represented by a single bit of digital data that can be expressed as only 1 (light) or 0 (dark).

bit
Short for binary digit. The smallest unit of data in computer processing. A bit can represent one of two values: on, represented by a 1, or off, represented by a 0.

bit/pixel
The unit that indicates the number of bits allocated for a pixel. The larger the bit value, the more detail of a pixel will be reproduced.

brightness
A scanner function to lighten or darken the output image data.

byte
A unit of information consisting of eight bits. A byte can represent a control code or character.

carriage
A component of the scanner that contains the optical sensor and light source for scanning.

color correction
A method of adjusting the color image data for a particular type of device so that the reproduction results are as close as possible to the original colors.

color separation
A process of converting full-color images into a limited number of primary colors. Additive primary colors (red, green, and blue) are used by the scanner, and the subtractive primary colors (cyan, magenta, and yellow) plus black are used for printing press separation.

ColorSync
Color management system for Macintosh that is designed to help you get WYSIWYG (what you see is what you get) color output. This software displays colors on your screen as they are on the scanned documents, or prints colors as you see them on your screen.

default
A set of values used when no other selections have been made. These are sometimes called factory defaults if the original values have not been changed since the scanner left the factory.

document
The item, such as a sheet of paper or a book, that is placed on the document table for the scanner to read.

dpi
Short for dots per inch. A unit of measurement for resolution. The higher the value, the higher the resolution.

dropout color
A color the scanner does not recognize and ignores. You can select and deselect dropout colors in the scanner software.

ESC/I
Abbreviation for EPSON Standard Code for Image scanners. A system of commands that allows you to control image scanners from your software.

ESC/P
Abbreviation for EPSON Standard Code for Printers. A system of commands that allows you to control printers from your software.

exposure
A scanner function that lightens or darkens the scanned image data.

gamma
Gamma is a value that expresses the relationship between the input and output of a device. By adjusting the gamma, the brightness of the mid-tones of an image can be changed without affecting the shadows and highlights.

grayscale
Images represented with various shades of gray in addition to black and white.

halftoning
A method of reproducing images with patterns of dots to improve the quality of the output.

home position
The position at the rear (nearest the cover hinge position) of the scanner where the carriage rests before a scanning operation.

ICM
Image Color Matching. Windows color management system designed to help you get WYSIWYG (what you see is what you get) color output. This software displays colors on your screen as they exist on the scanned documents, or prints colors as you see them on your screen.

imagesetter
A device that uses computer files to produce high-resolution text and graphics output on film or paper. These are usually found in service bureaus and printing companies.

impact dot printer
A printer that transfers ink onto the paper by striking an ink ribbon with a number of small pins.

ink jet printer
A printer that transfers ink onto the paper by spraying the ink through a number of small nozzles.

interface
A piece of hardware, a method, or a standard used for connection between or among computer devices.

line sequence
A type of color scanning that separates primary colors line by line. The carriage makes only one pass.

marquee
A moveable and adjustable frame that marks the area of an image that will be previewed or scanned.

moiré
A moiré is a cross-hatch pattern that appears on scanned images when scanning printed material. It is a result of interference that occurs due to the difference between the pitches of the scanning and the halftone screens.

monochrome
Black and white images, or images represented only by the intensity of luminosity.

OCR
Optical Character Recognition
The technology that allows computers to "read" text from physical objects. OCR requires a graphical representation of text to interpret, which usually comes from a scanned image.

page sequence
The type of color scanning in which the entire image is scanned once for each separate color.

pixel
Short for picture element. Each image is composed of a number of pixels. Pixels are also counted in units of dots.

plain bi-level
Bi-level image data without the halftoning process.

port
An interface channel through which data is transmitted between devices.

primary colors
Basic colors. See *additive primary colors* and *subtractive primary colors*.

resolution
Indication of how finely an image is resolved into pixels. Can be measured in dots per inch (dpi), pixels per inch (ppi), or samples per inch (spi).

scan
An operation performed by the sensor and the carriage. The image is divided into pixels by scanning.

scanning area
The physical size of the image that can be scanned by the scanner.

sRGB
A standard color space used as the default color space within the Windows 98 color management system (ICM 2.0).

subtractive primary colors
The colors of cyan, magenta, and yellow (CMY) which produce black when mixed in certain amounts. In printing, black is often added to give more definition as mixing of actual inks cannot produce pure black.

threshold
A reference point that is used to determine whether data will be processed as "on" or "off". In the case of color image data, "on" means that a certain color will appear in a pixel or dot, and "off" means that color will not appear there.

tone correction
A method of adjusting the tone curve so that the reproduction results on different types of output devices have gradations similar to the original image.

tone curve
The graph that shows the contrast ratio between the input (original image) and output (image data) in image processing.

unsharp mask
Originally a photographic process in which a sharply focussed and a slightly out-of-focus image are combined to produce a sharper image. This process is simulated by software to produce the same effect.

USB
A Universal Serial Bus. A hardware interface for connecting low-speed peripherals such as a keyboard, mouse, scanner, or printer to the computer.

USB hub
A device that normally provides four TYPE A sockets to increase the number of USB ports on a PC.