Color Printing
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## COLORWISE PRINT OPTIONS

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This document explains how to manage color output on the Color Controller E-42B and provides information about calibration and color profiles.

This document is part of a set that includes documentation for users and system administrators. For a complete description of your Color Controller E-42B, see the other documents available at your site.

For more information about supported operating systems and system requirements, see Configuration and Setup.

About this document

This document is organized to supply you with key information about managing the color output of your Color Controller E-42B. To manage color in general, use Command WorkStation. You can also manage color for a specific job by setting print options in the printer driver or in Job Properties in Command WorkStation and Hot Folders.

This document covers the following topics.

• Setting values for ColorWise print options
• Managing color profiles and other color files
• Calibrating the Color Controller E-42B to achieve consistent color output
• Using the Spot-On spot color editor in Command WorkStation
• Using Image Enhance Visual Editor (IEVE) in Command WorkStation

NOTE: For more information about Fiery Graphic Arts Package, Premium Edition, see Fiery Graphic Arts Package.
Terminology and conventions

This document uses the following terminology and conventions.

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<th>Term or convention</th>
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<tr>
<td>Aero</td>
<td>E-42B (in illustrations and examples)</td>
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<tr>
<td>Copier/Printer</td>
<td>Pro C5100S</td>
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<tr>
<td>E-42B</td>
<td>Color Controller E-42B</td>
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<tr>
<td>Titles in italics</td>
<td>Documents in this set: <em>Color Printing, Configuration and Setup, Fiery Color Reference, Fiery Graphic Arts Package, Printing, Utilities, Variable Data Printing, Workflow Examples</em></td>
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A warning concerning operations that may lead to death or injury to persons if not performed correctly. To use the equipment safely, always pay attention to these warnings.

A caution concerning operations that may lead to injury to persons if not performed correctly. To use the equipment safely, always pay attention to these cautions.

Operational requirements and restrictions. Be sure to read these items carefully to operate the equipment correctly, and avoid damage to the equipment or property.

**NOTE:** The Glossary in *Fiery Color Reference* defines words in bold, for example, *output profile*, that appear throughout this document. Color terms and concepts, such as “color space,” “spot color,” “gamut,” and “source profile,” are used throughout this document. If you are new to desktop color, or if any terms are unfamiliar, see *Fiery Color Reference*. 
Key features of ColorWise

ColorWise is the color management system (CMS) built into the E-42B and designed to provide both casual and expert users with the best color output for a variety of purposes. The ColorWise default settings provide high-quality, out-of-box color from many Windows and Mac OS applications. This allows casual users to achieve quality output without knowing about or changing any color settings on the E-42B. ColorWise also allows expert users to obtain the best color output.

ColorWise features allow you to modify printing results. Depending on your particular needs, you can:

- Set the behavior of CMYK printing to emulate offset press standards.
- Match PANTONE and other spot colors for the best match when printing using four-color press conditions or presses with extra, custom plates.
- Select a rendering intent for RGB printing. Rendering intents allow for rich, saturated printing of presentation graphics, smooth, accurate printing of photographs, and relative or absolute colorimetric rendering for specialized needs.
- Define the source of incoming RGB color data for better color conversion of RGB data with no source information.
- Determine whether RGB data is converted into the full gamut of the copier/printer or is first converted into the gamut of another device, such as a press standard. This feature is useful for making one device behave like another for RGB data. It also allows you to evaluate the appearance of an RGB file under different printing conditions without having to convert the RGB file to CMYK first.

ColorWise color management (ColorWise) offers an open color architecture, allowing users to customize the E-42B to meet new printing needs as they arise. ColorWise supports ICC profiles, which are industry-standard color profiles that describe the color behavior of a device. Note that ICC specification version 4 profiles (profile version 4.2.0.0) are supported as well as version 2. Downloading ICC profiles to the E-42B enables the E-42B to simulate a custom press (or another copier/printer), as well as accurately print colors from a particular monitor or scanner. In addition, you can create customized ICC profiles for the copier/printer.
Color management in Command WorkStation

Designed to give flexible control of color printing, Command WorkStation includes the following color-management and color-related tools:

- **Color management**
  
  Command WorkStation allows you to set the default settings of the ColorWise print options for the E-42B. These default settings are applied to all print jobs sent to the E-42B, unless a user overrides them for an individual job by changing settings in the printer driver or in Job Properties.

- **Profiles**
  
  Command WorkStation allows you to manage all of the ICC profiles used in E-42B workflows. You can also create custom profiles by editing existing CMYK source or output profiles and saving them as new profiles. The AutoGray feature allows you to adjust the gray balance of output profiles.

- **Calibrator**
  
  For consistent color, calibrate the E-42B on a regular basis. Command WorkStation includes an easy-to-use calibrator, which allows you to calibrate using either the scanning unit that is part of the copier/printer or a spectrophotometer (see “Calibration” on page 41).

  Command WorkStation also allows you to use any Status T densitometer by importing data in a standard file format. In this case, it is important to note that the quality of the instrument used determines the quality of the calibration.

- **Spot-On (spot colors)**
  
  Spot-On is a spot color (named color) manager. You can adjust and manage lists of spot colors and their CMYK equivalents. The matching lists of spot colors and CMYK values are known as spot color dictionaries. Spot-On allows you to edit spot color definitions on the E-42B and create custom spot color definitions and dictionaries.

- **Image Enhance Visual Editor (IEVE)**
  
  IEVE is an image-editing application that provides users with a visual workspace to adjust individual images in a job. With IEVE, you can see the effects of your adjustments and fine-tune the appearance of an image.

Installing and starting Command WorkStation on a Windows or Mac OS computer is described in *Utilities*. You can install Command WorkStation from the User Software DVD or from the E-42B over the network.
The ColorWise color-management system provides print options that affect the output of objects in various color spaces. By specifying the appropriate settings for each print option, you can obtain the expected results for your jobs.

### About this chapter

This chapter provides an overview of the ColorWise management system, which controls color on the E-42B (see page 12), and detailed explanations of each print option. For the location of each print option, see the following table.

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This chapter also provides information about PostScript printer drivers and instructions for setting the ColorWise print options for Windows and Mac OS computers. For information about printer drivers, see page 32.

Managing color on the E-42B

Applications allow you to generate color data for the E-42B in many different color spaces. The most common type of color data produced from office applications is RGB, while prepress applications generally produce CMYK data. Desktop applications also generate spot colors, such as PANTONE colors. To complicate matters, a single page may contain a mix of RGB, CMYK, and spot colors. The E-42B allows you to control the printing of mixed-color documents with features that apply specifically to RGB, CMYK, or spot color data.

The following diagram illustrates the print options in the E-42B color-management process that affect color data conversions. You can access these print options when you send a print job to the E-42B. Most of these options and settings are described in subsequent sections of this chapter.

RGB Source or Device Link is the only color option that applies strictly to RGB color data. The other options that affect RGB color also affect the more rarely used Lab, XYZ, and other calibrated color spaces.

NOTE: If a job contains calibrated CMYK (or CIEBasedDEFG) data, the CMYK processing options are not used. Instead, the RGB/Lab Rendering Intent print option, which normally affects only RGB data, is used to process the calibrated CMYK data. For more information, see “Use Embedded Profile When Present (RGB and CMYK)” on page 28.
Descriptions of ColorWise print options

The following sections provide detailed explanations of the ColorWise print options and how these options affect print jobs.

**NOTE:** For information about the following options, see *Fiery Graphic Arts Package*.

- 2-Color Print Mapping
- Halftone Simulation

**Auto Trapping**

Trapping is a technique where the size of objects is modified so that colors printed next to each other overlap slightly, to prevent white spaces between two colors. These white spaces, or “halos,” can be caused by factors such as misregistration, the physical properties of the toners, and the stiffness of the media. This illustration shows the same image with and without trapping.

If you turn on the Auto Trapping option, trapping is applied to all of the objects in a job.

The E-42B has default trapping values that are optimized for a Fiery-driven print device using regular paper.

If the default trapping values do not provide the results necessary for the media that you use, you can modify the values to meet your requirements if you have Fiery Graphic Arts Package, Premium Edition. For more information, see *Fiery Graphic Arts Package*.

**NOTE:** Fiery Graphic Arts Package, Premium Edition is available as an option for the E-42B.
Black Detection

The Black Detection option allows you to specify whether or not to detect black-and-white pages before printing your job. To use this option, set Color Mode to CMYK.

- **Off**: Select Off if your job consists of black-and-white text pages combined with a significant number of color pages.
- **On**: Select On if you are printing a predominantly black-and-white job. Black-and-white only pages print with the proper billing information.

Black Overprint

The Black Overprint option allows you to specify whether or not black text or black text and graphics, defined as RGB=0, 0, 0, or as CMYK=0%, 0%, 0%, 100%, overprints colored backgrounds.

- **Text**: Black text overprints colored backgrounds, eliminating white gaps and reducing the halo effect or misregistration of colors. You can select this setting only if the Black Text and Graphics option is set to Pure Black On.
- **Text & Graphics**: Black text and graphics overprint colored backgrounds, eliminating white gaps and reducing halo effects or misregistration of colors. You can select this setting only if the Black Text and Graphics option is set to Pure Black On.
- **Off**: Black text or text/graphics knocks out colored backgrounds.

**NOTE**: Before sending the print job to the copier/printer, PostScript applications may perform their own black overprint conversions.

One example of how you might use this setting is a page that contains black text on a light blue background. The background blue is CMYK=40%, 30%, 0%, 0%. The black text is CMYK=0%, 0%, 0%, 100%.

- With Black Overprint set to Text or Text & Graphics, the final text or text/graphic portions of the page are overprinted, or combined with the underlying color. Black colors generated by applications (for example, RGB=0, 0, 0 or CMYK=0%, 0%, 0%, 100%) are printed using the black toner. This means that black text and line art does not exhibit halftone artifacts (as long as the copier/printer is calibrated correctly). No transition in cyan and magenta toners occurs. The quality of the output is improved, because it does not show artifacts near the edges of the black text.
- With Black Overprint Off, the border of the text or text/graphics is on an edge that has cyan and magenta toners on one side (outside the text) and black toner on the other side (inside the text). This transition may cause visible artifacts due to the practical limitations of the copier/printer.

**NOTE**: The reproduction of CMYK components is affected by the CMYK/Grayscale Source setting and calibration curve when CMYK is not 0%, 0%, 0%, 100%.
Black Text and Graphics

The Black Text and Graphics option affects black text and vector graphics. Under most circumstances, set this option to Pure Black On. When Black Text and Graphics is set to Pure Black On, black colors generated by applications (for example, RGB=0, 0, 0 or CMYK=0%, 0%, 0%, 100%) are printed using black toner only. The black text and line art do not exhibit halftone artifacts (as long as the copier/printer is calibrated correctly) and are not misregistered, since one toner is used. In addition, this setting eliminates blasting. This option must be set to Pure Black On if you want to set the Black Overprint option to Text or Text/Graphics.

For some jobs, it is preferable to set this option to Normal, for example, if the page includes gradient fills that use black. The following table describes the behavior of the Black Text and Graphics option with black data defined in different color spaces.
**NOTE:** Use the Black Text and Graphics option only when printing composites, not when printing separations.

<table>
<thead>
<tr>
<th>Color</th>
<th><strong>Black Text and Graphics = Normal</strong></th>
<th><strong>Black Text and Graphics = Pure Black On or Rich Black On</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>RGB=0.0,0.0</td>
<td>RGB=0.0,0.0 is printed according to the definition for RGB=0.0,0.0 in the output profile. This may be a rich black using all toners if the output profile specifies a rich black, or may be K-only if the output profile specifies K-only for RGB=0.0,0.0. The output is affected by the calibration curve.</td>
<td>RGB=0.0,0.0 is printed as K-only, using the black toner (Pure Black On) or 100% K plus 50% Cyan (Rich Black On) using black and cyan toners. All other RGB values are unaffected by the Black Text and Graphics setting.</td>
</tr>
<tr>
<td></td>
<td>(All other RGB values are unaffected by the Black Text and Graphics setting.)</td>
<td></td>
</tr>
<tr>
<td>CMYK=0%,0%,0%,100%</td>
<td>CMYK=0%,0%,0%,100% may be printed as K-only or as a rich black using all toners, depending on the CMYK/Grayscale Source setting.</td>
<td>CMYK=0%,0%,0%,100% is printed as K-only, using the black toner (Pure Black On) or 100% K plus 50% Cyan (Rich Black On) using black and cyan toners, regardless of the CMYK/Grayscale Source and CMYK/Grayscale Processing Method settings. All other CMYK values are unaffected by the Black Text and Graphics setting.</td>
</tr>
<tr>
<td></td>
<td>If CMYK/Grayscale Processing Method is Pure Primaries or if CMYK/Grayscale Source is Bypass Conversion, CMYK=0%,0%,0%,100% prints as 100% K and the amount of black toner is limited by the CMYK/Grayscale Source profile and the calibration curve.</td>
<td>Setting CMYK/Grayscale Source to ColorWise Off disables the CMYK source profile and the calibration curve. In this case, the black toner is not limited by the calibration curve.</td>
</tr>
<tr>
<td></td>
<td>If CMYK/Grayscale Processing Method is Full (Output GCR), CMYK=0%,0%,0%,100% is printed as a rich black using all toners according to the output profile. The output is affected by the calibration curve.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>If CMYK/Grayscale Processing Method is Full (Source GCR), CMYK=0%,0%,0%,100% is printed as a rich black using all toners according to the CMYK/Grayscale Source profile. The output is affected by the calibration curve.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Setting CMYK/Grayscale Source to ColorWise Off disables the CMYK Source profile and the calibration curve. In this case, the black toner is not limited by the calibration curve.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(All other CMYK values are unaffected by the Black Text and Graphics setting.)</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** PostScript applications, such as QuarkXPress, may convert elements defined as RGB=0, 0, 0 to four-color CMYK black before sending the job to the E-42B. These elements are not affected by the Black Text and Graphics option. For more information, see *Fiery Color Reference*. 
CMYK/Grayscale Processing Method

The CMYK/Grayscale Processing Method allows you to define your preferred CMYK-to-CMYK conversion technique.

- **Pure Primaries** prints primary colors in a job (C only, M only, or Y only) as primary colors, using only a single colorant. Secondary colors (M+Y, C+Y, and C+M) are printed as secondary colors, using only two colorants. The result is pure-looking primary and secondary colors, with minimal banding in gradients.

  Pure Primaries compromises overall color accuracy. Do not use Pure Primaries if color accuracy is important, such as when printing press proofs.

- **Full (Source GCR)** provides a complete and accurate simulation based on colorimetric transformations. Hues are preserved, even for primary colors. The Gray Component Replacement level specified in the original (source) document is preserved. Process black expressed in CMY is reproduced using CMY toners. Full (Source GCR) is recommended for the highest quality press proofing applications.

- **Full (Output GCR)** is a complete and accurate simulation method based on colorimetric transformations. Hues are preserved, even for primary colors. With this method, the Gray Component Replacement (GCR) level that was specified in the original document is not preserved. Instead, all CMYK data is reséparated using the GCR level specified by the output profile. This simulation technique is similar to traditional ICC color matching methods and is more appropriate than Full (Source GCR) for full-color printing designed for the press, but reproduced on your copier/printer.

**NOTE:** When you specify Pure Black On for Black Text and Graphics and Full (Output GCR) or Full (Source GCR) for CMYK/Grayscale Processing Method, the black text and graphics in your document are printed with 100% black-only toner.
CMYK/Grayscale Source or Device Link

The CMYK/Grayscale Source or Device Link print option allows you to print press proofs or simulations. This setting specifies the offset press standard or other color printing device that you want to simulate. This option affects CMYK data only.

When you specify a setting other than Bypass Conversion or ColorWise Off for the CMYK/Grayscale Source, the E-42B overrides source color space definitions or profiles that other color-management systems may have specified. In cases where you do not want this setting to override another specified source color space, select Bypass Conversion.

If your document contains an embedded CMYK profile that you want to use, select the Use Embedded Profile When Present (CMYK) option (see “Use Embedded Profile When Present (RGB and CMYK)” on page 28. In this case, the CMYK/Grayscale Source setting is ignored and the embedded profile is used instead.

In the printer driver, you can view an unlimited number of custom Full simulations created with Command WorkStation. The number of custom simulations is limited by the available hard disk space on the E-42B.

The CMYK/Grayscale Source setting you specify depends on the press standard for which the CMYK data was separated.

- For images that were separated using a custom separation (such as a separation produced with an ICC profile), select the corresponding profile on the E-42B with the CMYK/Grayscale Source setting.
- For images that were separated for SWOP, select SWOP as the CMYK/Grayscale Source setting.

To properly simulate a printed image that was separated using an ICC profile, the same profile must be present on the E-42B. For more information about importing ICC profiles to the E-42B, see Command WorkStation Help.

The following settings are available if you do not want CMYK simulation:

- The Bypass Conversion setting sends your original CMYK data to the copier/printer with calibration applied, but without conversions to simulate another printer.

  The Bypass Conversion setting is recommended if you use another color-management system instead of ColorWise (for example, ColorSync or Adobe Photoshop). In this case, the E-42B is expecting to receive CMYK data already in the device color space of the E-42B. The E-42B will not convert the data, but it will apply calibration.

- The ColorWise Off setting sends your original CMYK data to the copier/printer without calibration applied and without conversions to simulate another printer. The CMYK data is still subject to maximum density constraints, however.

  The ColorWise Off setting is not available as a setting in Command WorkStation Color Setup or in Server Setup and cannot be the default CMYK/Grayscale Source setting. You select this setting for a specific job.
**NOTE:** When you print with the ColorWise Off setting, make sure that the options you select in your application do not cause the application to modify CMYK data. If you enable PostScript Color Management or include an embedded profile, the color data sent by the application is similar to Lab color. When you print with settings like Let Printer Determine Colors or Let Photoshop Determine Colors, the application either converts the CMYK data or tags it for color management. You must specify No Color Management in the application when you print with the ColorWise Off setting.

**Combine Separations**

The Combine Separations setting specifies how to print separated CMYK data. It supports: Cyan, Magenta, Yellow, Black, plus one or more spot colors.

- **Off** prints each separation individually.
- **On** combines separations as a single, composite-color document, and automatically sets the following print options: Color Mode (CMYK) and Black Overprint (Off).

The results of combining the multiple plates are predictable and accurate, regardless of the original application used. This feature also fully supports DCS 2.0 file formats when included in a PostScript print job from a page-layout application.

The following applications have been tested with Mac OS and Windows for compatibility with the Combine Separations option:

- Adobe Illustrator
- Adobe InDesign
- Adobe PageMaker
- QuarkXPress

For information about using the Combine Separations option with applications such as Adobe Photoshop, see *Fiery Color Reference*.

**NOTE:** You cannot use Combine Separations at the same time that you use the following features: Substitute Colors, Composite Overprint, Postflight, or Black Overprint. Constraints are set for these print options in the printer driver and in Job Properties.
**Composite Overprint**

When overlapping objects are printed, the foreground object can either overprint or knock out the background object. With overprinting, the color of the background object shows through the foreground object where they overlap, and the resulting color is a combination of the colors of the two objects. With a knockout, the foreground object hides the background object where they overlap.

The Composite Overprint print option allows you to print overprinted objects as specified in the source file. By default, the Composite Overprint print option is off and overlapping objects print as knockouts.

**NOTE:** The Composite Overprint option does not overprint the foreground object if it is an RGB object.

The Composite Overprint print option is supported for PostScript and PDF jobs produced by the following applications:

- Adobe Acrobat
- Adobe Illustrator
- Adobe InDesign
- QuarkXPress
- CorelDRAW

The 2-Color Print Mapping option is ignored when Composite Overprint is enabled. The 2-Color Print Mapping option is a feature of Fiery Graphic Arts Package, Premium Edition.

**NOTE:** Fiery Graphic Arts Package, Premium Edition is available as an option for the E-42B.

You cannot use Composite Overprint at the same time that you use the following features: Substitute Colors or Combine Separations. Constraints are set for these print options in the printer driver and in Job Properties.
Gray (RGB) and Gray (CMYK)

When Gray (RGB) is enabled, any RGB color where R=G=B is printed using only black toner instead of processed black. Similarly, when Gray (CMYK) is enabled, any CMYK color where C=M=Y=0 and K=any value is printed using only black toner instead of processed black.

You can choose to apply the Gray (RGB) or Gray (CMYK) option to either Text and Graphics or Text, Graphics, and Images.

The following limitations apply:

- The Gray (RGB) or Gray (CMYK) option has no effect on a job that is pre-separated.
- If CMYK/Grayscale Processing Method is set to Pure Primaries, the Gray (CMYK) setting does not affect the output.
- If Separate RGB/Lab to CMYK Source is turned on, the Gray (RGB) option is turned off. Likewise, if the Gray (RGB) option is turned on, you cannot turn on Separate RGB/Lab to CMYK Source.
- If Black Text and Graphics is set to Pure Black On or Rich Black On, it takes precedence over Gray (RGB) or Gray (CMYK) for 100% black text and graphics.
- If a gray is specified as a spot color, the Gray (RGB) or Gray (CMYK) option does not affect that gray.

Optimize RGB Transparency

The Optimize RGB Transparency option affects jobs with the following characteristics:

- The job is in PDF format (submitted to the E-42B as a PDF file, not submitted from an application through a printer driver).
- The job contains transparent RGB or Lab objects. They might be objects that you specified as transparent using an application that supports this capability, or they might be objects with a special effect, such as a drop shadow, that uses transparency to achieve the effect.
- The transparent objects overlap, creating an area of mixed color.

If you turn on Optimize RGB Transparency, the E-42B uses the correct RGB source profile and rendering intent when converting the overlapping RGB colors to CMYK during the PDF-to-PostScript conversion. If you turn off Optimize RGB Transparency, the area of overlapping colors might print with incorrect color or undesirable artifacts.

When Adobe PDF Print Engine Preferred is turned on, the E-42B does not convert the PDF job to PostScript when processing the job. In this case, the effect of Optimize RGB Transparency is to recognize blending color spaces in the job, which can improve output for some blend modes when RGB blending color spaces are used.

Optimize RGB Transparency can result in a longer processing time, especially for variable data printing (VDP) jobs that contain multiple individual PDF pages. We recommend that you enable Optimize RGB Transparency only when necessary to achieve correct color output.
You can specify Optimize RGB Transparency for a job in Job Properties in Command WorkStation, Hot Folders, or a virtual printer, but not when you print from the printer driver. The Optimize RGB Transparency option does not appear in the printer driver because jobs printed from the printer driver are always submitted to the E-42B as PostScript jobs, which are not affected by Optimize RGB Transparency.

**Output Profile**

Because the output profile is applied to all data in the print job, make sure that the profile you select is the right one for your job. The output profile is a profile for your copier/printer that describes its color characteristics and is associated with a **calibration target** that describes the expected behavior of the copier/printer.

Use Command WorkStation to import your own output profile to the E-42B. You can associate the output profile with a calibration setting when you import it.

Select the Use Media Defined Profile setting to automatically apply the output profile associated with the media type used in a print job, rather than setting a specific output profile. For more information, see Command WorkStation Help.

**Paper Simulation**

The Paper Simulation option gives you the benefit of the absolute colorimetric rendering that renders the white point of the source color space as a visible color in the output profile color space.

If the default white point values do not provide the results that you require, you can customize the paper simulation by editing the white point values with Command WorkStation, if you have Fiery Graphic Arts Package, Premium Edition. For more information, see **Fiery Graphic Arts Package**.

**NOTE:** Fiery Graphic Arts Package, Premium Edition is available as an option for the E-42B.

You can print a job with Paper Simulation from the printer driver without customizing the white point. Many jobs may print satisfactorily with the default white point setting.

The Paper Simulation option has the following settings:

- **Enabled** performs Absolute Colorimetric rendering.
- **Disabled (Default)** performs Relative Colorimetric rendering.
PDF/X Output Intent

PDF/X is a subset of the PDF specification. PDF files can contain a variety of elements (text, graphics, even animations) and it is not always obvious how these elements should be displayed or printed. PDF/X was designed with a focus on high-quality printing. It excludes the use of PDF features that are not appropriate for graphic arts and adds features that prevent ambiguities related to printing. A PDF/X compliant document contains embedded information about the intended printing conditions for the document.

The PDF/X Output Intent option, when enabled for a PDF/X job, specifies that the E-42B use the PDF/X output intent embedded in the PDF/X document. Typically, whether you use this option depends on whether you are using the E-42B for proofing or production (final) printing.

Prints for proofing are expected to look exactly like the output of the final production device, regardless of the capabilities of the E-42B or copier/printer. For instance, when proofing Newsprint, you want the color gamut of the copier/printer to be very limited compared to its capabilities. In production, you usually want to maximize the use of the copier/printer gamut by applying specific color features of the E-42B or copier/printer. Even in production, however, you might choose to limit the color gamut in order to achieve consistency in the color produced by different devices.

The PDF/X Output Intent option only affects PDF/X files (conforming to the PDF/X3 or PDF/X-1a standard). It has no effect on non-PDF files or PDF files that are not PDF/X compliant. Profiles specified by PDF/X files must be embedded in the files, not referenced from an external locations.

**NOTE:** With Fiery Graphic Arts Package, Premium Edition, you can use a Hot Folders filter to determine if a PDF file is PDF/X compliant. For information about this Hot Folders filter, see Hot Folders Help.

**NOTE:** Fiery Graphic Arts Package, Premium Edition is available as an option for the E-42B.

When PDF/X Output Intent is enabled and no other setting conflicts, the E-42B processes a PDF/X compliant file in a way that produces results defined by the intents and source color spaces embedded in the file. The E-42B ignores the CMYK/Grayscale Processing Method and CMYK/Grayscale Source options. The rendering intents in the PDF/X file are used and the printed output is limited to the color gamut specified by the output profile embedded in the file.

When PDF/X Output Intent is disabled, the E-42B ignores the PDF/X output intent.

You can specify the PDF/X Output Intent print option for a job in Job Properties in Command WorkStation, but not when you print from the printer driver. PDF/X files can be imported directly to the E-42B using Command WorkStation or Hot Folders, but printer drivers always convert PDF before sending a job to the E-42B. The PDF/X Output Intent option does not appear in the printer driver.
When you enable PDF/X Output Intent, you must set select the Use Embedded Profile When Present (RGB) option so that the rendering intent embedded in the PDF/X file is used. The PDF/X Output Intent and Use Embedded Profile When Present (RGB) options are accessible from Expert Settings in the Color window of Job Properties.

**RGB/Lab Rendering Intent**

The RGB/Lab Rendering Intent option specifies a rendering intent for color conversions. To control the appearance of images, such as prints from office applications or RGB photographs from Adobe Photoshop, select the appropriate rendering intent. The E-42B allows you to select from the four rendering intents currently found in industry-standard ICC profiles.

**NOTE:** If you experience tone reproduction problems, use the Photographic setting.

<table>
<thead>
<tr>
<th>E-42B rendering intent</th>
<th>Best used for</th>
<th>Equivalent ICC rendering intent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Photographic:</strong> Typically results in less-saturated output than presentation rendering when printing out-of-gamut colors. This style preserves tonal relationships in images.</td>
<td>Photographs, including scans and images from stock photography CDs and digital camera images.</td>
<td>Image, Contrast, and Perceptual</td>
</tr>
<tr>
<td><strong>Presentation:</strong> Creates saturated colors but does not match printed colors precisely to displayed colors. In-gamut colors, such as flesh tones, are rendered well. This style is similar to the Photographic rendering intent.</td>
<td>Artwork and graphs in presentations. This style can be used for mixed pages that contain presentation graphics and photographs.</td>
<td>Saturation, Graphics</td>
</tr>
<tr>
<td><strong>Relative Colorimetric:</strong> Provides white point transformation between the source and destination white points. For example, the bluish-white color (gray) of a monitor is replaced by paper white. This style avoids visible borders between blank spaces and white objects.</td>
<td>Advanced use when color matching is important, but you prefer white colors in the document to print as paper white. This style may also be used with PostScript color management to affect CMYK data for simulation purposes.</td>
<td>Relative Colorimetric</td>
</tr>
<tr>
<td><strong>Absolute Colorimetric:</strong> Provides no white point transformation between the source and destination white points. For example, the bluish-white color (gray) is not replaced by paper white.</td>
<td>Situations when exact colors are needed and visible borders are not distracting. This style may also be used with PostScript color management to affect CMYK data for simulation purposes.</td>
<td>Absolute Colorimetric</td>
</tr>
</tbody>
</table>
**RGB Source or Device Link**

The RGB Source or Device Link setting allows you to define the characteristics of the RGB data in your document so that the appropriate color conversion occurs on the E-42B. Commonly used monitor color spaces are available from the printer driver and the E-42B. For others, use Command WorkStation to download custom monitor or scanner profiles.

When you specify a setting for the RGB Source, the E-42B overrides source color space definitions or profiles that other color-management systems may have specified. Because the color space definitions are overridden, the output from the E-42B is consistent across platforms.

If your document contains an embedded RGB profile that you want to use, select the Use Embedded Profile When Present (RGB) option (see “Use Embedded Profile When Present (RGB and CMYK)” on page 28). In this case, the RGB Source setting is ignored and the embedded profile is used instead.

The E-42B RGB Source options are as follows:

- **EFIRGB** specifies an EFI-defined color space recommended for users who have no detailed information about their RGB data.

- **sRGB (PC)** specifies the definition of a Windows computer monitor profile used as the default.

- **Apple Standard** specifies the definition of a Mac OS computer monitor profile used as the default.

- **Adobe RGB (1998)** is an Adobe-defined color space used in prepress workflows.

- **eciRGB** is the European Color Initiative (ECI) recommended space for use as an RGB working color space and format for exchanging color data between ad agencies, publishers, and printing houses.

- **Fiery RGB** is an EFI-defined color space recommended for users of office applications. This color space is similar to EFIRGB but is larger and can provide a more desirable blue output.

With the Use Embedded Profile When Present (RGB) option, PostScript RGB data that contains a source color space definition is converted using the RGB/Lab Rendering Intent option (see “RGB/Lab Rendering Intent” on page 24). Non-PostScript RGB data and PostScript RGB data that do not contain a source color space definition are converted using the EFIRGB source profile and Presentation rendering intent.
Separate RGB/Lab to CMYK Source

The Separate RGB/Lab to CMYK Source option determines how RGB colors (as well as Lab and XYZ colors) are converted to CMYK. The name of this option is meant to be descriptive, because the option defines the color spaces that are used by the E-42B to “separate” the RGB data into CMYK values.

The two choices available for this option determine whether RGB data is converted into the full gamut of the copier/printer (Separate RGB/Lab to CMYK Source turned off) or is first converted into the gamut of another digital printer or press standard (Separate RGB/Lab to CMYK Source turned on). This feature helps make one device behave like another for RGB data. For example, if a high-quality ICC profile is available for another print device, the copier/printer can simulate the behavior of that device.

Separate RGB/Lab to CMYK Source is also useful for prepress applications. For example, it allows you to experiment with the appearance of an RGB scan under different press printing conditions, without having to convert the RGB data to CMYK data for each condition.

**NOTE:** Use the Separate RGB/Lab to CMYK Source print option in conjunction with the Output Profile or CMYK/Grayscale Source print options.

- **Enabled** converts all RGB colors into the CMYK color space for a specified simulation (select the desired simulation with the CMYK/Grayscale Source print option).
- **Disabled** converts all RGB colors into the CMYK color space of your copier/printer.
Spot Color Matching

The Spot Color Matching option provides automatic matching of spot colors with their best CMYK equivalents.

- **On:** The E-42B uses a built-in table to generate the closest CMYK matches of spot colors your copier/printer can produce. (New tables are generated when you add new output profiles.)

  With Spot-On, the E-42B uses the CMYK matches determined through Spot-On (see page 51).

- **Off:** The E-42B processes spot colors as CMYK data and uses CMYK equivalents defined by the spot color manufacturer, such as PANTONE. These are the same CMYK equivalents used by applications that include spot color libraries.

**NOTE:** Spot colors that are not included in the built-in table are treated as CMYK.

For jobs that include spot colors, turn Spot Color Matching on unless you are printing press simulations. In that case, turn Spot Color Matching off and select the appropriate CMYK/Grayscale Source (see page 18).

For a PDF job that includes spot colors that are not included in the built-in table, turning Spot Color Matching on retains the original spot colors. The E-42B references the built-in table to generate the closest CMYK matches of the original spot color.

**NOTE:** Use Spot Color Matching only when printing composites, not when printing separations.

Spot Color Matching and the PANTONE Coated Color Reference

The PANTONE Coated Color Reference prints differently depending on the Spot Color Matching setting (see *Fiery Color Reference*).

- **On:** The E-42B uses a built-in table or, with Spot-On, the Spot-On color dictionaries to generate the best matches for the PANTONE colors that your copier/printer can produce. The PANTONE number is displayed below each swatch.

  For more information about Spot-On, see page 51.

- **Off:** The E-42B prints swatches using the CMYK values recommended by Pantone, Inc. (and used by applications that provide PANTONE color libraries). The CMYK values used to generate the color, as well as the PANTONE number of the color, are printed below each swatch. These CMYK values are printed through the selected CMYK/Grayscale Source and Output Profile settings.
Substitute Colors

Spot-On allows you to create a list of substitute colors. These are colors that, when called for in a document by their RGB or CMYK values, are substituted with a different color having the CMYK values from the Spot-On color dictionary. This permits exact color control and overrides individual RGB and CMYK colors.

To enable substitute colors for a job, turn on the Substitute Colors option.

For more information about creating and using substitute colors, see Command WorkStation Help.

Use Embedded Profile When Present (RGB and CMYK)

If the Use Embedded Profile When Present (RGB) option is enabled, the E-42B ignores the RGB Source option and uses the RGB profile embedded in the print job as the RGB source profile. If the Use Embedded Profile When Present (RGB) option is disabled, the E-42B uses the profile specified in the RGB Source option.

Similarly, if the Use Embedded Profile When Present (CMYK) option is enabled, the E-42B ignores the CMYK/Grayscale Source option and uses the CMYK profile embedded in the print job as the CMYK source profile. If the Use Embedded Profile When Present (CMYK) option is disabled, the E-42B uses the profile specified in the CMYK/Grayscale Source option.

When a CMYK profile is embedded in a job and the Use Embedded Profiles When Present (CMYK) option is enabled for the job, or when a job is sent with PostScript Color Management, the job contains calibrated CMYK (or CIEBasedDEFG) data. For jobs containing calibrated CMYK, the CMYK processing options are not used. Instead, the RGB/Lab Rendering Intent print option (see “RGB/Lab Rendering Intent” on page 24), which normally affects only RGB data, is used to process the calibrated CMYK data. The RGB Source or Device Link setting does not affect calibrated CMYK data.
Specifying ColorWise print options

To modify E-42B printing behavior, do any of the following:

- Specify default values for ColorWise options in Color Setup in Command WorkStation. You can also set default values from E-42B Setup, as described in Configuration and Setup. The defaults apply to all subsequent print jobs unless you override them.

  A job uses the E-42B default settings (unless otherwise specified) at the time it is processed for printing, and not at the time it is sent to the E-42B Hold queue.

- Specify ColorWise options for an individual print job using the settings that appear in the printer driver.

- Specify ColorWise options for a job printed through Hot Folders with the Job Properties settings in Hot Folders.

- Specify ColorWise options for a job already submitted and held at the E-42B with the Job Properties settings in Command WorkStation.
For the location of each print option, see the following table.

<table>
<thead>
<tr>
<th>ColorWise print option</th>
<th>Color window of printer driver or Job Properties</th>
<th>Basic Settings of printer driver, Job Properties, or Color Setup</th>
<th>Expert Settings of printer driver, Job Properties, or Color Setup</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto Trapping</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Detection</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black Overprint</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Black Text and Graphics</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>CMYK/Grayscale Processing Method</td>
<td>✔ ✔</td>
<td></td>
<td>✔ ✔</td>
</tr>
<tr>
<td>CMYK/Grayscale Source or Device Link</td>
<td>✔ ✔</td>
<td></td>
<td>✔ ✔</td>
</tr>
<tr>
<td>Combine Separations</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Composite Overprint</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gray (RGB and CMYK)</td>
<td>✔ ✔</td>
<td></td>
<td>✔ ✔</td>
</tr>
<tr>
<td>Optimize RGB Transparency</td>
<td>✔ ✔</td>
<td></td>
<td>✔ (Job Properties only)</td>
</tr>
<tr>
<td>Output Profile</td>
<td>✔ ✔</td>
<td></td>
<td>✔ ✔</td>
</tr>
<tr>
<td>Paper Simulation</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>PDF/X Output Intent</td>
<td></td>
<td></td>
<td>✔ (Job Properties only)</td>
</tr>
<tr>
<td>RGB/Lab Rendering Intent</td>
<td>✔ ✔</td>
<td></td>
<td>✔ ✔</td>
</tr>
<tr>
<td>RGB Source or Device Link</td>
<td>✔ ✔</td>
<td></td>
<td>✔ ✔</td>
</tr>
<tr>
<td>Separate RGB/Lab to CMYK Source</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Spot Color Matching</td>
<td>✔ ✔</td>
<td></td>
<td>✔ ✔</td>
</tr>
<tr>
<td>Substitute Colors</td>
<td>✔</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use Embedded Profile When Present</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
</tbody>
</table>
Setting default values in Command WorkStation

Command WorkStation allows you to set the default values for the ColorWise print options and print settings for the E-42B.

These settings are applied to all print jobs sent to the E-42B, unless a user overrides them for an individual job by changing settings in the printer driver. These default settings can also be overridden with Command WorkStation Job Properties. In addition, the defaults set in Command WorkStation are automatically reflected in the printer driver and in E-42B Setup (for those options that can be configured in Setup).

The ColorWise print option settings are in the Color Management area, on the Color Setup tab in Device Center. For more information, see Command WorkStation Help.
Setting print options in the printer driver

The printer driver writes a PostScript file containing the instructions generated by your application and the settings for the ColorWise print options you selected. The printer driver then sends the PostScript file to the E-42B. The E-42B performs PostScript processing and color conversions and sends raster color data to the copier/printer.

Setting print options for Windows

For information about how to install the Windows printer driver, set up the E-42B for printing, and set print options with the printer driver, see Printing.

Setting print options in Mac OS

For information about how to install the Mac OS printer driver and set up the E-42B for printing, see Printing.

This section explains how to set color-management print options with the printer driver for Mac OS.

To set print options for Mac OS X computers

1. Select Print in your application.

   The Print dialog box appears.

   ![Print dialog box]

2. Expand the dialog box, if necessary, by clicking the arrow next to the Printer name.
3 Click Preview, select Color Matching from the drop-down list, and then click In Printer.

4 Select Fiery Features from the drop-down list.

5 Set the print options related to color, as well as any other print options needed, and then click Print to send your job.

For information about how to set print options with the printer driver for Mac OS, see *Printing*. 
The E-42B includes by default a number of RGB and CMYK profiles that you can use for printing through the RGB Source, CMYK/Grayscale Source, and Output Profile settings for a job. For more information about these options, see ColorWise Print Options.

You can manage the profiles on the E-42B with Command WorkStation. You can import or delete other profiles, as well.

**Color files**

The User Software DVD includes a number of files, including color profiles, that are useful for color management. To add color profiles to the E-42B:

- Install the files on your computer.
- Use Command WorkStation to import the files to the E-42B.

For information about importing profiles to the E-42B with Command WorkStation, see Command WorkStation Help.
Installing additional ICC profiles on your computer

You can install (copy) additional ICC profiles from the User Software DVD or the E-42B to your computer. Use the ICC profiles with applications that support ICC standards, such as Adobe Photoshop.

Location on User Software DVD
Adobe ICC Profiles folder
(inside the Windows Color Files\Legacy\ICC Profiles folder or Mac Color Files/Legacy/ICC Profiles folder)

Profiles

These profiles were created by Adobe Systems, Inc. For more information, see the documents included in the folder.

CMYK Profiles:
- CoatedFOGRA27.icc
- CoatedFOGRA39.icc
- CoatedGRACoL2006.icc
- JapanColor2001Coated.icc
- JapanColor2001Uncoated.icc
- JapanColor2002Newspaper.icc
- JapanColor2003WebCoated.icc
- JapanWebCoated.icc
- UncoatedFOGRA29.icc
- USWebCoatedSWOP.icc
- USWebUncoated.icc
- WebCoatedFOGRA28.icc
- WebCoatedSWOP2006Grade3.icc
- WebCoatedSWOP2006Grade5.icc

RGB Profiles:
- AdobeRGB1998.icc
- AppleRGB.icc
- ColorMatchRGB.icc
- PAL_SECAM.icc
- SMPTE-C.icc
- VideoHD.icc
- VideoNTSC.icc
- VideoPAL.icc
Location on User Software DVD
ECI folder
(inside the Windows Color Files\Legacy\ICC Profiles folder or Mac Color Files/Legacy/ICC Profiles folder)

Profiles

These profiles were created by the European Color Initiative (ECI). For more information, see the documents included in the CMYK Profiles and RGB Profiles folders, as well as the ECI web site at www.eci.org.

CMYK Profiles:
- ISOcoated_v2_300_eci.icc
- ISOcoated_v2_eci.icc
- ISOuncoatedyellowish.icc
- PSO_Coated_300_NPscreen_ISO12647_eci.icc
- PSO_Coated_NPscreen_ISO12647_eci.icc
- PSO_LWC_Improved_eci.icc
- PSO_LWC_Standard_eci.icc
- PSO_MFC_Paper_eci.icc
- PSO_SNP_Paper_eci.icc
- PSO_Uncoated_ISO12647_eci.icc
- PSO_Uncoated_NPscreen_ISO12647_eci.icc
- SC_paper_eci.icc
**Location on User Software DVD**

EFI Support folder

(inside the Windows Color Files\Legacy\ICC Profiles folder or Mac Color Files/Legacy/ICC Profiles folder)

**Profiles**

These profiles were created by EFI. For more information, see the General Requirements for Applications in Commercial Offset Lithography (GRACoL) website at www.gracol.org, the Fogra website at www.fogra.org, and the Specifications Web Offset Publications (SWOP) website at www.swop.org.

**CMYK Profiles:**

- EFI EURO.icc
- EFI SWOP.icc
- Enterprise CMYK.icc
- GRACoL2006_Coated1_EFI.icc
- ISOCoated.icc
- ISOCoated_FOGRA39L_EFI.icc
- ISOUncoated_FOGRA29L_EFI.icc
- SWOP2006_Coated3_EFI.icc
- SWOP2006_Coated5_EFI.icc

**RGB Profiles:**

- EFI Fiery RGB Chroma.icc
- EFI Fiery RGB Chroma+.icc
- EFI Fiery RGB Chroma++.icc

**NOTE:** The EFI Fiery RGB Chroma profiles are designed to provide saturated colors, especially in nighttime images, while maintaining photographic detail. Of the three profiles, EFI Fiery RGB Chroma.icc has the least effect and EFI Fiery RGB Chroma++.icc has the greatest effect.

- EFIRGB.ICC
- Fiery RGB v2.icc
- Fiery RGB v4.icc
- Fiery RGB v5.icc
- RGB D65 (Splash).icc
For most ICC-aware applications, you must install the files in a folder named Color (Windows) or a folder named Profiles in the Library/ColorSync folder (Mac OS). For use with the E-42B, you can copy the files to a folder of your choice.

**To install ICC profiles on a Windows computer from the User Software DVD**

1. Insert the User Software DVD into the DVD drive.
2. Open the folder containing the profile.
3. Right-click the profile that you want and click Install Profile.

The profiles are installed automatically to the Windows\System32\spool\drivers\color folder on your computer.

**To install ICC profiles on a Mac OS computer from the User Software DVD**

1. Insert the User Software DVD into the DVD drive.
2. Open the folder containing the profile.
3. Copy the profiles into Library/ColorSync/Profiles.

**NOTE:** You must log on with Administrator privileges.

**To install ICC profiles on a Windows computer from the E-42B over the network**

1. Browse for the E-42B over the network, using the IP address or DNS server name.
2. Type the user name and password, if required.
   
   Ask your administrator if this information is required.
3. Double-click the PC_User_SW directory.
4 Open the ICC folder.

5 Right-click the profile that you want and click Install Profile.

The profiles are installed automatically to the Windows\System32\spool\drivers\color folder on your computer.

---

**To install ColorSync profiles on a Mac OS computer from the E-42B over the network**

1 Select Connect to Server from the Go menu.
2 Type smb:// followed by the IP address of the E-42B and click Connect.
   If you cannot locate your E-42B, contact your administrator.
3 Type the user name and password, if required.
   Ask your administrator if this information is required.
4 Double-click the Mac_User_SW directory.
5 Open the ColorSync folder.
6 Copy the profiles into Library/ColorSync/Profiles.

**NOTE:** You must log on with Administrator privileges.

On Mac OS, see the ColorSync documentation for setting ColorSync profiles, such as EFRGB.

**Other color files**

You can copy additional color files from the User Software DVD or the E-42B.

These files are used for the Control Bar feature.

- FieryColorBar.eps,
- Ugra Fogra-MediaWedge V2.2x_EFIv1.eps
- Ugra Fogra-MediaWedge V3.0a_EFIv1.eps

The Control Bar feature is available with the optional Fiery Graphic Arts Package, Premium Edition. For more information, see *Fiery Graphic Arts Package*. 
Profile Manager in Command WorkStation

Command WorkStation allows you to import ICC profiles to the E-42B, export profiles, delete profiles (except for default profiles), and set the properties of profiles. You can also create custom CMYK source or output profiles by editing an existing profile and saving it as a new profile. These features are in the Profiles area, on the Resources tab in Device Center. For more information, see Command WorkStation Help.
Calibrating the E-42B ensures consistent and reliable color output. Calibrate the E-42B with the Calibrate feature in Command WorkStation using the copier/printer’s built-in scanner or a spectrophotometer.

You can determine if the E-42B is calibrated in Command WorkStation. For more information, see “Checking calibration status” on page 42.

If you defined a custom halftone screen with the Halftone Simulation feature, you must calibrate the E-42B for that halftone screen before you print a job with it. For more information, see “Calibration and custom halftone screens” on page 48.

Changing calibration has the potential to affect all jobs for all users, so consider limiting the number of people authorized to perform calibration. Set an Administrator password to control access to calibration (see Configuration and Setup).

**Calibration methods**

You can calibrate the E-42B using the following methods:

<table>
<thead>
<tr>
<th>Term</th>
<th>Refers to</th>
</tr>
</thead>
<tbody>
<tr>
<td>ColorCal (in Command WorkStation)</td>
<td>Calibration method that uses the copier/printer’s built-in scanner to measure toner density values</td>
</tr>
<tr>
<td>ColorCal from the copier control panel</td>
<td>Calibration method that uses the copier/printer’s built-in scanner to measure toner density values</td>
</tr>
<tr>
<td>ES-1000 or ES-2000</td>
<td>EFI ES-1000 or ES-2000 hand-held spectrophotometer</td>
</tr>
</tbody>
</table>

All of these calibration methods, except for ColorCal from the copier control panel, are performed with Command WorkStation Calibrator. For more information about each of these methods, see Calibrator Help.
Checking calibration status

You can verify whether the E-42B is calibrated in Command WorkStation.

**TO CHECK THE CALIBRATION STATUS FOR A JOB**

- In Command WorkStation, in Job Center, select the job.

  The time of the most recent calibration is displayed in the lower-right corner.

**TO CHECK THE STATUS OF A CALIBRATION SETTING**

1. In Command WorkStation, in Device Center, select General > Tools and click Manage under Calibrate.

   The list of calibration settings on the E-42B appears in Calibrator.

2. Check the “Last calibrated” column for the particular calibration setting.

   This column shows the last time the E-42B was calibrated for the calibration setting. “Default measurements” indicates the factory settings.

   ![Calibrator screenshot](image)

   You can set Calibrator preferences to optionally display a warning or suspend printing if calibration is out of date. For more information, see Calibrator Help.

**NOTE:** You can disable calibration (and color management) for CMYK data in a job by using the ColorWise Off setting for the CMYK/Grayscale Source option. You might want to disable calibration for testing purposes, for example. For more information, see “CMYK/Grayscale Source or Device Link” on page 18.
Calibrating in Command WorkStation

Multiple users can connect to one E-42B with Command WorkStation, but only one user at a time can use Calibrator. If you try to calibrate when another user is using Command WorkStation to calibrate, an error message is displayed.

TO CALIBRATE THE E-42B WITH COMMAND WORKSTATION

- In Command WorkStation, in Job Center, click the Calibrate icon.

Or

- In Command WorkStation, in Device Center, select General > Tools and click Calibrate.

1. Start Calibrator.
2. Manage calibration settings.
3. Set Calibrator preferences.

In this case, Calibrator automatically selects the calibration setting used by the job.
Calibrating from the copier control panel

You can calibrate the E-42B from the copier control panel with ColorCal, without using Command WorkStation.

When you calibrate from the copier control panel, the measurements are applied as follows:

- If the “Use media defined profiles if available” option is selected in Color Setup (the default color management settings on the E-42B), measurements are applied to the calibration setting associated with the tray and paper that you select during calibration.
- If the “Use media defined profiles if available” option is not selected in Color Setup, measurements are applied to the calibration setting associated with the default output profile that is selected in Color Setup.

If an Administrator or Operator password has been set, you will need it to perform calibration from the copier control panel. For instructions on using the copier control panel, see Configuration and Setup.

It is also possible to remove calibration measurements (and restore the default measurements) from the E-42B using the copier control panel. In general, it is not necessary, because any new calibration replaces the existing one if the same calibration setting is selected. Removing calibration affects all calibration settings.

To calibrate from the copier control panel:

1. Press the Home button to display the main screen, press the Fiery icon, and then press the Tools tab.
2. Press Calibration.
3. If a password is set on the E-42B, enter it and press OK.
4. Select the calibration set by selecting the media. The paper source for printing the measurement page is the tray containing the specified media.

   The measurement page consists of swatches of color that will be measured by the copier/printer’s scanner and then compared to the target color values.

   **NOTE:** If you print a measurement page from the Bypass Tray, you must load the appropriate paper in the tray and select the correct paper size from the copier control panel.

5. Press Print to print the ColorCal measurement page.
   Or, press Skip if you already have the page and want to proceed to scanning.
6. Retrieve the measurement page from the copier/printer.
7. Place the grayscale strip face-down on the copier/printer glass (platen).
8. Place the measurement page face-down over the strip, according to the instructions on the measurement page, and close the platen glass cover.
   Be careful not to move the strip and color measurement page.
9  **Press Scan.**

A message appears when the measurement is complete.

10  **To print a comparison page, press Print Comparison Page.**

The comparison page shows how the copier/printer will print with the calibration.

11  **Press Yes to use this calibration for all media types, otherwise press No.**

12  **If you are satisfied with the calibration, press Finish.**

The calibration measurements are saved.
Managing calibration settings

Every output profile on the E-42B must be associated with a calibration setting. The calibration setting provides the E-42B with measurements of the density response of the copier/printer toners for specific printing conditions (for example, media type). This data, along with the expected density response of the copier/printer, allows the E-42B to apply corrections to color values that are sent to the copier/printer, to achieve the calibrated output. For more information, see “Understanding calibration” on page 49.

An output profile can be associated with only one calibration setting, but the same calibration setting can be used by more than one output profile.

A calibration setting must be associated with at least one output profile, otherwise the calibration setting will never be used for printing.

Output profiles and calibration settings

The E-42B has one or more factory-supplied output profiles. These output profiles and their associated calibration settings may produce acceptable color quality (in the following table, see scenarios 1 and 2). However, you may need to create custom calibration settings and output profiles, depending on your situation (in the following table, see scenarios 3 and 4).

<table>
<thead>
<tr>
<th>Your paper</th>
<th>Action</th>
<th>See</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Recommended paper for a factory-supplied output profile (the paper that the profile is based on)</td>
<td>Printing with the output profile produces acceptable color. You do not need to create a calibration setting or custom profile.</td>
<td>See “Finding recommended paper and print settings” on page 47 to find the recommended paper for an output profile.</td>
</tr>
<tr>
<td>2 Paper similar to a factory-supplied profile’s recommended paper</td>
<td>You might be able to use the output profile. The print settings required for your paper (for example, media type and media weight) must match the print settings required by the recommended paper. If the color quality is acceptable, you do not need to create a calibration setting or custom profile.</td>
<td>The output profile name usually indicates the general type of paper (for example, plain, coated, or heavy). To find the print settings required for the recommended paper, see “Finding recommended paper and print settings” on page 47.</td>
</tr>
<tr>
<td>3 Paper that is similar to a factory-supplied profile’s recommended paper, but uses different print settings</td>
<td>You might still be able to use a factory-supplied output profile, if you create a custom calibration setting and use it to calibrate the E-42B with your paper.</td>
<td>For more information, see “Custom calibration settings” on page 48.</td>
</tr>
<tr>
<td>4 Paper that does not yield acceptable color with any factory-supplied profile</td>
<td>You must create a custom calibration setting and custom profile.</td>
<td>For more information, see “Custom calibration settings and output profiles” on page 48.</td>
</tr>
</tbody>
</table>
NOTE: Recommended papers are chosen for color quality, as well as other factors, such as feeding reliability and quality of transfer.

Finding recommended paper and print settings

You can find the recommended paper and print settings for a particular output profile in Calibrator.

TO FIND THE RECOMMENDED PAPER AND PRINT SETTINGS FOR AN OUTPUT PROFILE

1. In Command WorkStation, in Device Center, select Color Setup > Color Management.
2. Select the output profile and note the name of the calibration setting displayed to the right.
3. In Device Center, select General > Tools and click Manage under Calibrate.

The list of calibration settings on the E-42B appears in Calibrator.

4. Select the calibration setting from the list.

The recommended paper is shown in the list and the required print settings are displayed in the Calibration related properties area.

5. Click Close to close the window.
Custom calibration settings

If you are printing on a paper that is similar to the recommended paper, but uses different print settings, you might still be able to use the output profile, but you must create a custom calibration setting. If the color quality is acceptable, you do not need to create a custom profile (see scenario 3 in the table under “Output profiles and calibration settings” on page 46).

You can add a new calibration setting that you can then select when performing calibration. You can delete a custom calibration setting. You cannot delete a factory-supplied calibration setting.

For information about adding a custom calibration setting, see Calibrator Help.

Custom calibration settings and output profiles

If you determine that none of the factory-supplied output profiles produces acceptable color with your paper, you must create a custom calibration setting in Calibrator and a custom profile using profile-generating software such as Fiery Color Profiler Suite (see scenario 4 in the table under “Output profiles and calibration settings” on page 46). To create a custom calibration setting, you print a page of color patches on the E-42B using your paper and measure the page with Calibrator. If Fiery Color Profiler Suite is installed on your computer, you can start it from within Calibrator to create a custom output profile immediately after creating a custom calibration setting.

NOTE: Before creating a custom calibration setting and custom output profile, make sure that the copier/printer is calibrated (if calibration is supported on the copier/printer). For information about performing copier/printer calibration, see the documentation that accompanies the copier/printer.

Calibration and custom halftone screens

When color quality is important, make sure that the E-42B is calibrated for the particular halftone screen that you use. Changing a halftone screen usually modifies the color response of the copier/printer.

The best color is produced when an output profile that is associated with the appropriate calibration response is selected at print time. However, when custom halftones are specified, the E-42B does not have adequate information about the resulting color response. For this reason, producing good color with custom halftone screens is often possible only when you perform custom halftone calibration and use a profile based on this custom halftone. For more information, see “Custom calibration settings and output profiles” on page 48. When you create a custom calibration setting, you specify the custom halftone screen in Job Properties.
Understanding calibration

Calibration generates adjustments to toner densities that account for the difference between the actual toner densities (measurements) and the expected response (target).

- Measurements represent the actual color behavior of the copier/printer.
- Calibration settings contain sets of measurements that represent the output for specific printing conditions, such as media and print options.
- Each calibration setting is associated with a calibration target that describes the expected behavior of the copier/printer.

After you calibrate the E-42B for a specific calibration setting, the measurements are stored. These measurements are used to adjust output densities when you print with the output profile associated with the calibration setting.

Every output profile has an associated calibration setting. If you have not specified one, the calibration setting associated with the default output profile is used.

If you update the calibration for a job after the job has been processed, you do not have to process the job again. The new calibration affects the job without reprocessing.

How calibration works

Although the needs of most users are met by the default calibration setting, the E-42B allows you to select a calibration setting to customize calibration for specialized jobs.

Calibration allows you to:

- Maximize the color reproduction capabilities of the E-42B.
- Ensure consistent color quality over time.
- Produce consistent output across more than one E-42B.
- Achieve better color matches when reproducing spot colors, such as PANTONE colors or other named color systems.
- Optimize the E-42B for using ColorWise rendering intents, CMYK simulations, and ICC profiles.

Success in obtaining satisfactory print quality from the E-42B depends on many factors. Among the most important are establishing and maintaining optimal toner densities. The density is the measure of the light absorbed by a surface. By carefully regulating toner densities, you obtain consistent printed color.

Even with a calibrated system, toner density is affected by the settings of the copier/printer, humidity, and temperature. Density also tends to drift over time. Uneven toner density on paper affects calibration results. Regular measurement detects day-to-day variations in density, gradation, and color reproduction, and calibration corrects them.
Calibration works by calculating adjustments that compensate for the difference between actual (measured) and desired (target) density values. These calibration adjustments are often depicted as mathematical curves. The E-42B generates calibration curves for each of the four toner colors.

**When to calibrate**

Calibrate the E-42B at least once a day, depending on the volume of print jobs. If it is very important to maintain consistent color, or your copier/printer is subject to wide fluctuations in temperature or humidity, calibrate every few hours. For optimal performance, calibrate whenever there is a noticeable change in print quality or printing results are not as expected.

If you must split a print job into two or more batches to print at different times, it is important to calibrate before you print each batch. You should also calibrate the E-42B after copier/printer maintenance. However, because the copier/printer may be less stable immediately after maintenance, wait until you have printed approximately 50 pages before you calibrate.

**Note:** Because printed output from the copier/printer is very sensitive to changes in temperature and humidity, do not install the copier/printer near a window, in direct sunlight, or near a heater or air conditioner. Paper is also sensitive to climate changes. Store it in a cool, dry, stable environment, and keep reams sealed until they are used.

To monitor print quality, print color charts (from Command WorkStation or the copier control panel). These pages include fully saturated color patches and pale tints of cyan, magenta, yellow, and black. Images with skin tones offer a good basis for comparison. Save and periodically compare the pages you print. If a noticeable change in appearance occurs, calibrate the E-42B.

When you examine the Test Page, all color patches should be visible, even though they may be very faint in the five to two percent range. Each patch set should show uniform gradation from patch to patch as the color lightens from 100% to zero.

If the solid density patches (100% cyan, magenta, yellow, or black) look less saturated over time, show the pages to your copier/printer service technician to determine whether adjusting the copier/printer can improve output.
The Spot Color Matching print option automatically matches spot colors with their best CMYK equivalents so that spot colors can be simulated using the CMYK toner of the copier/printer. However, you may want to adjust the default CMYK equivalents to achieve a better match for your specific printing conditions. You can modify spot colors with the Spot-On spot color editor in Command WorkStation.

**NOTE:** Spot colors are also called “named” colors because a color name is used to represent a specific CMYK value.

**How Spot-On works**

Spot-On allows you to adjust and manage lists of spot colors and their CMYK equivalents. The matching lists of spot colors and CMYK values are known as Spot Color Dictionaries. Spot-On allows you to maintain multiple Spot Color Dictionaries for each output profile on the E-42B.

In Spot-On, you specify the job properties you will use to print. Based on the settings, Spot-On determines the output profile and its associated Spot Color Dictionary.

If you select Output profile X and redefine PANTONE 123 from 30%M to 50%M using Spot-On, you will get 50%M when you print a job with Output profile X. If you print a job with Output profile Y, you will get the original value.

If you select Output profile X and create a custom color named “My Purple” and define it as 80%C 40%M, ColorWise automatically calculates the Lab values using Output profile X and creates new CMYK values for use with Output profile Y.

To use the Spot-On features with named colors, you must enable the Spot Color Matching print option. For more information about this option, see page 27.

**NOTE:** Spot colors identified by names are printed with their defined CMYK values. Edits to an output profile made in Command WorkStation do not affect how spot colors print.

The edits to a job made with the color adjustment features in ImageViewer affect all colors in the job, including spot colors.

**NOTE:** ImageViewer is available with the optional Fiery Graphic Arts Package, Premium Edition. For more information, see *Fiery Graphic Arts Package*. 
Where to find Spot-On

The Spot-On feature is in the Spot Colors area, on the Resources tab in Device Center. For more information about using Spot-On, see Command WorkStation Help.

Monitor settings with Spot-On

Some Spot-On features require that a job be displayed with correct colors on your monitor. To display the colors correctly on your monitor, you must set up the monitor according to the manufacturer's recommendations, and specify the correct monitor profile for your monitor.

Specify the following settings for the monitor:

• On the monitor: Brightness, Contrast, and Color Temperature
• In the operating system: Resolution, Refresh rate, and Number of colors

For more information about setting up the monitor and the monitor profile, see the documentation that accompanies the monitor.

Substitute Colors

In addition to managing “named” colors, Spot-On allows you to create a list of “substitute” colors. These are colors that, when called for in a document by their RGB or CMYK values, are substituted with a different color having the CMYK values from the Spot-On color dictionary. This permits exact color control and overrides individual RGB and CMYK colors.

**NOTE:** You cannot use Substitute Colors at the same time that you use the following features: Combine Separations, Postflight, or Composite Overprint. Constraints are set for these print options in the printer driver and in Job Properties.

To define substitute colors, see the instructions in Command WorkStation Help.
2-Color Print Mapping

With Fiery Graphic Arts Package, Premium Edition, the 2-Color Print Mapping feature is available in Spot-On.

The 2-Color Print Mapping feature allows you to assign spot colors and process colors to the generic colors that are used in a job. This feature is designed for print shop operators to do the proofing for a two-color press. You can print a two-color job to a two-color press by mapping the colors in a job to the colors that are already created on the two-color press.

For information about 2-Color Print Mapping, see Fiery Graphic Arts Package.
IEVE is an image editing application that provides users with a visual workspace to adjust individual images in a job. With IEVE, you can see the effects of your adjustments and fine-tune the appearance of an image.

With IEVE, you can adjust tone, color, and sharpness, and perform red-eye correction. You can apply the same adjustments to all images on a page or a range of pages. When you save a set of adjustments as a preset, you can easily apply the same adjustments in the future.

Adjustments made in IEVE affect the job on the E-42B and cannot be applied to the original source document.

IEVE is accessible from Command WorkStation. For more information about IEVE, see IEVE Help.
Accessing IEVE

Start IEVE from the Actions menu of Command WorkStation.

**TO START IEVE FROM THE ACTIONS MENU**

1. In Job Center in Command WorkStation, select the job containing the images that you want to adjust.

   **NOTE:** IEVE supports PDF and PostScript jobs only.

2. To start IEVE, do one of the following:
   - Select Image Enhance Visual Editor from the Actions menu.
   - Right-click the selected job and select Image Enhance Visual Editor from the menu that appears.

The Image Enhance Visual Editor window appears.
**IEVE and Image Enhance print option**

IEVE adjustments are independent of the configurable Image Enhance print option. If the Image Enhance print option is turned on for a job that is also modified with IEVE, the effects of both are applied to the images in the job. We recommend that you use one or the other, not both, for a job.

- The Image Enhance print option is a faster way to apply simple adjustments that do not require visual confirmation before printing.
- IEVE is faster for making selective adjustments that require fine-tuning and visual inspection.
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