Adobe

Print Publishing Guide

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Adobe Print Publishing Guide for use with Microsoft Windows and Apple Macintosh Computers

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Contents

Introduction

This book explores the processes and issues involved in preparing color publications for reproduction on a commercial printing press—a set of tasks known as the prepress process.

Until recently, most prepress tasks—such as scanning color photographs, trapping, imposition, color correction, and generating color separations—were performed exclusively by skilled specialists working manually or on expensive proprietary systems. Now, many prepress tasks can be accomplished on the desktop.

The flexibility and direct control offered by this new technology have blurred the traditional roles of designer and prepress professional. Designers who have the knowledge and the equipment can do their own prepress work. The prepress industry has changed to support the new requirements of the desktop publisher. Commercial print shops have imagesetters to produce film separations and offer high-fidelity color and direct digital printing to distinguish themselves from other service providers. Service bureaus offering high-resolution scanning and electronic prepress now offer one-stop shopping for less complex printing.

Managing these changing relationships requires a knowledge of the printing process and the decisions that must be made to produce output of professional quality. This book discusses the processes and issues involved in preparing electronic files for commercial printing. It also gives you information to help you decide when to perform a prepress task, and when to leave that task in the hands of a prepress professional.

Color and Commercial Printing

When you create a multi-color publication, you want the colors in the final printed piece to match your expectations as closely as possible. To accomplish this, you need three things: a clear understanding of color and how it's displayed and printed on different devices, knowledge of the commercial printing process, and close communication with your commercial printer.

This chapter presents fundamental color and printing concepts, defines printing terminology, and introduces new technologies. We also recommend browsing in your local library, bookstore, or graphic arts supply store for books on graphic arts and commercial printing. The more you know about printing color, the better you can prepare your publication.

THE PROPERTIES OF COLOR

Objects appear to be certain colors because of their ability to reflect, absorb, or transmit light, which we perceive as color. Our eyes are sensitive enough to perceive thousands of different colors in the spectrum of visible light—including many colors that cannot be displayed on a color monitor or printed on a commercial printing press.

We describe color in terms of three characteristics—hue, value, and saturation. *Hue* is the wavelength of light reflected from or transmitted through an object. More commonly, hue is identified by the name of the color, such as orange, pink, or green. *Value* (also called lightness) indicates the darkness or lightness of a hue—in other words, how close it is to black or white. *Saturation* (also called chroma) refers to the vividness or dullness of the hue.

Many environmental factors, such as changes in lighting or the proximity of colors to each other, influence our individual perception of these color characteristics. In general, differences in how we perceive colors don't seriously affect our lives. In the realm of commercial printing, however, differences in color perception often affect the success of a print job.

Understanding how different factors influence color perception and what factors determine printed colors will help you manage printing results.

Every device used to create a color publication—be it a scanner, color monitor, color desktop printer, or commercial printing press—reproduces a different range of color. Even similar devices, such as two monitors made by the same manufacturer, can show the same color differently. You can view many more colors on your monitor than you can print on a desktop printer or a commercial printing press. There are also printing effects created with varnishes and metallic inks that cannot be represented on a monitor.

In addition, scanners and color monitors use a different color model to describe color from that used by desktop printers and commercial presses. As colors move from the computer screen to the printing press, they're converted from one color space to another, so your printed results don't exactly match the same colors you see on-screen.

When designing publications to be printed on a commercial printing press, think in terms of what can be reproduced with ink on paper and not what you see on your monitor, and specify and proof colors carefully. By working closely with your commercial printer and mastering some basic color concepts, you'll be able to print color publications that meet your expectations.

Color perception

Many factors subtly influence your color perception. In the underlying art, we used only one background color—blue—yet the blue appears to change because the different colored lines overlapping it affect perception of the color.

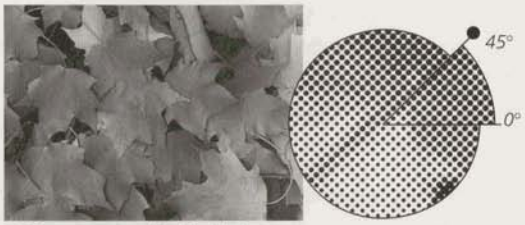
Continuous-tone art

An original photograph, drawing, or painting is called *continuous-tone art*. If you look closely at continuous-tone art, you will see that it consists of shades of gray or color that blend smoothly. Scanned images that contain a range of color tones are called *continuous-tone images.*

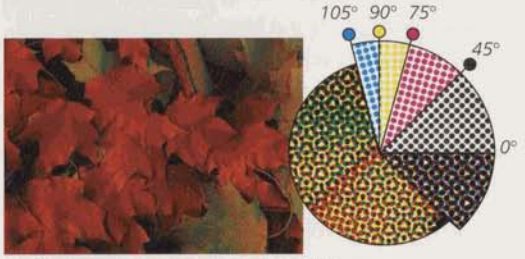
Halftone screens

To reproduce continuous-tone images and process colors on a commercial printing press, the image or color must be broken into a series of dots of various sizes and colors, called a *halftone screen*. Black dots are used to re-create black-and-white images. Cyan, magenta, yellow, and black dots are printed at different screen angles to re-create color images on the press. The four colored dots form a rosette pattern when correctly registered.

When printed, small halftone dots make up lighter areas of an image while larger halftone dots make up dark or color saturated areas.



Halftone screen with black ink

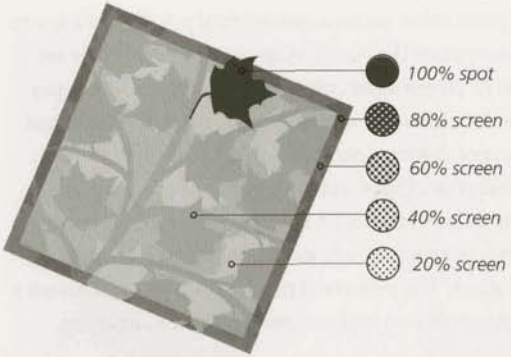


Halftone screens with process inks at different screen angles; correctly registered dots form rosettes

Spot colors and tints

Spot colors are printed with premixed inks on a printing press. (You can choose from among hundreds of different spot-color inks.) Each spot color is reproduced using a single printing plate.

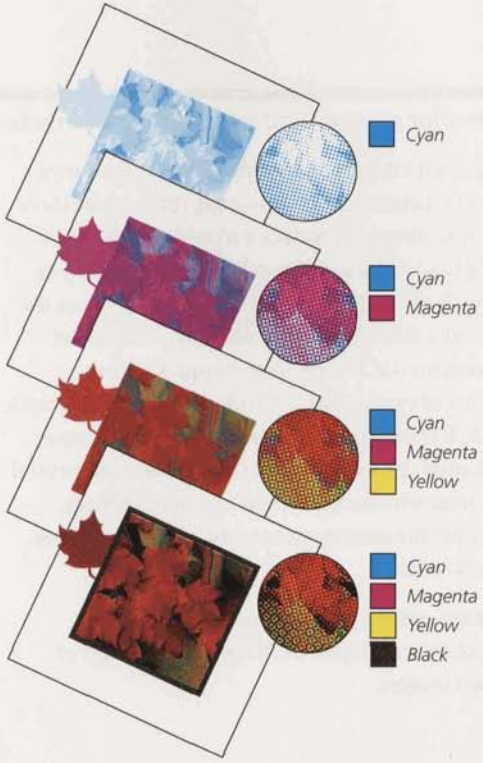
A spot color printed at 100% is a solid color and has no dot pattern. A *tint* is a lightened spot or process color and is created by printing smaller halftone dots of the base color. This is also called *screening* the color. For more information on spot colors, see pages 40–42.



Process colors

Process colors are reproduced by printing overlapping dots (halftone screens) of cyan, magenta, and yellow (CMY) inks to simulate a large number of different colors. Since CMY inks are translucent, they absorb some colors and reflect others. To create blue, for example, you combine cyan dots and magenta dots. Your eyes merge the cyan and magenta dots to perceive the color blue.

You could, in theory, mix 100% of cyan, magenta, and yellow to create black. However, you never print 100% of these inks for two reasons: First, ink pigments are imperfect and printing this combination of cyan, magenta, and yellow creates a muddy brown color instead of a sharp black. In addition, printing too much ink on a particular area of a page can oversaturate that area, causing the quality of the printing to deteriorate. To achieve fine detail and strong shadows in print, printers use black ink (K) along with cyan, magenta, and yellow inks. For more information on process colors, see pages 40–41 and 43.



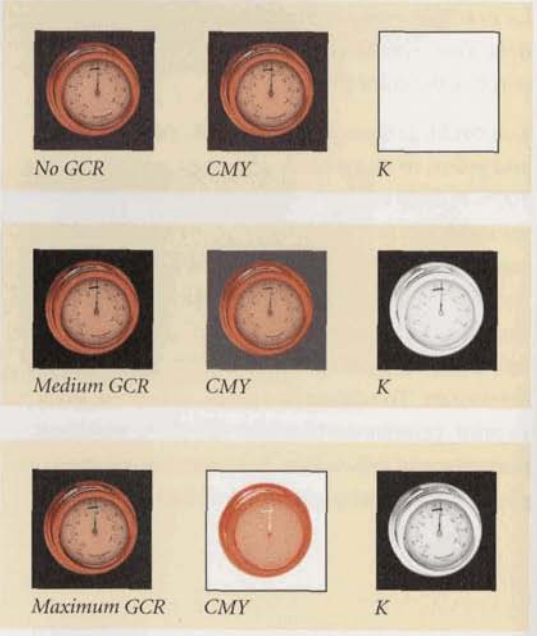
Separations

To print color art on a commercial printing press, you first separate the page containing the composite art into its component colors by producing a film separation for each ink—cyan, magenta, yellow, black, and any spot colors—needed to print the colors in your publication. (Spot-color separations are also called spot-color overlays.) A commercial printer uses these film separations to create the printing plates used on the press. The process of producing film or paper on a high-resolution imagesetter is known as imaging.

Undercolor removal and gray-component replacement

Using black ink in process-color production solves a particular printing problem—that 100% of the three CMY inks does not produce a true black. However, adding black ink can cause other problems, such as too much ink on the page. To avoid this, printers use undercolor removal (UCR) and gray-component replacement (GCR). These techniques replace amounts of cyan, magenta, and yellow inks with black ink. UCR is used primarily to deepen shadow areas and neutral colors in images; GCR replaces all neutral color areas with an appropriate amount of black, using only the minimum amount of cyan, magenta, and yellow inks.

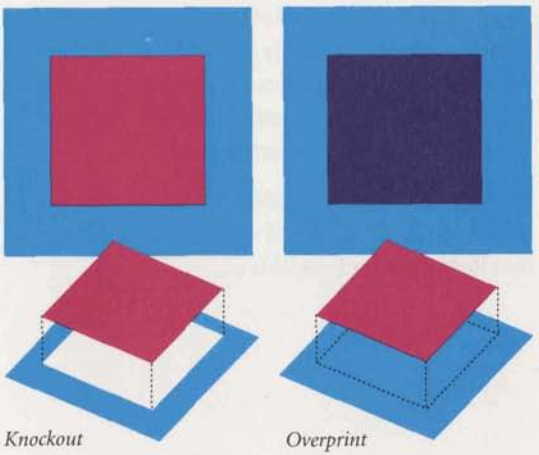
An image-editing program, such as Adobe Photoshop®, can adjust UCR and GCR settings of scanned images.



Knocking out and overprinting

When imaging color separations for a document with overlapping colors, the top object *knocks out* the colors on the other separations by default. In other words, the top object prints and any color behind it does not print, so that when the printed piece is produced, the inks used to create the top object print directly on the printing medium.

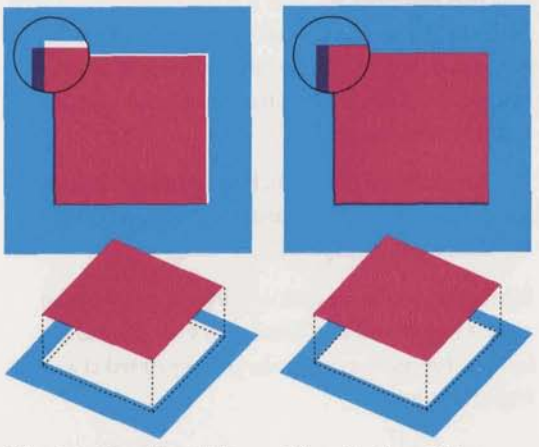
You can specify colors and individual objects to print on top of (*overprint*) any elements behind them. Typically, you want colored objects to knock out when the overlapping inks would blend to create undesired colors. However, overprinting can be used to create special effects against background colors or as a technique to prevent small gaps from appearing between colors or objects due to press misregistration. For more information on the uses of overprinting, see pages 46–47.



Knockout *Overprint*

Trapping

To create the results you want, a commercial printer must print inks in register—that is, exactly aligned with each other. If one or more inks print out of register, you may see gaps between color objects, or places where a process ink stands out rather than blends with the other inks to simulate a color. To minimize the effects of misregistration, commercial printers developed *trapping*, a technique in which adjacent colors slightly overprint along common edges. See pages 48–51 for more information on trapping.



Misregistration with no trap *Misregistration with trap*

Vector graphics

Vector graphics, also called *object-oriented graphics,* are made up of mathematically defined curves and line segments called vectors. You can edit the graphic by moving and resizing the entire graphic or the lines and segments that compose the graphic.

Vector graphics are resolution-independent; they can be displayed or printed at any resolution that a monitor or printer is capable of.

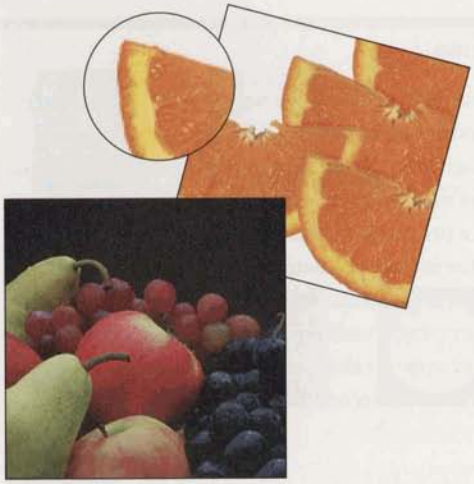
Vector graphics describe shapes mathematically.

Bitmap images

Bitmap images are formed by a rectangular grid of small squares, known as *pixels.* Each pixel contains data that describes whether it is black, white, or a level of color. The amount of color information in a bitmap image determines its file size. A 24-bit color image is much larger than the same image saved as an 8-bit color image.

Unlike vector graphics which are edited by altering lines and shapes, bitmap images are edited by manipulating groups of pixels.

Bitmap images are resolution-dependent; they can appear jagged and lose detail if they are created at a low resolution and then enlarged or printed at a higher resolution.

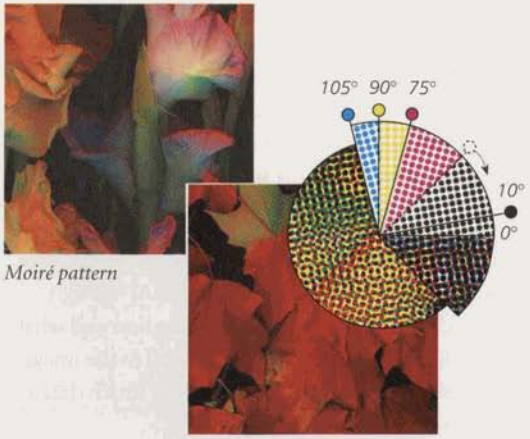


Bitmap images describe shapes with pixels.

Moiré patterns

When process-color separations are printed, the rows of dots (halftone screens) for each process ink are positioned at a specific angle so that the ink dots form a pattern that isn't distracting to the human eye. For the best results, the screens are positioned so that the dots form a symmetrical pattern, called a *rosette pattern*, which the human eye merges into continuous-tone color.

If a process ink prints at an incorrect angle, or if the paper shifts as it passes through the printing press, the rosette pattern does not print correctly. Instead, a *moiré pattern* appears, which disrupts the perception of smooth color gradations.



Moiré pattern

Misregistration

Paper sometimes stretches and shifts as it absorbs moisture and is pulled through a press. Printing plates can also stretch or be misaligned. These factors can cause multicolor jobs to print out of register, resulting in slight gaps or hue shifts between overlapping colors. Trapping and overprinting can help you compensate for misregistration.

Registered

Misregistered

Dot gain

Many variables—from the photomechanical processes used to produce separations, to the paper type and press used—affect the size of printed dots. Typically, dots increase in size as wet ink spreads as it is absorbed by the paper. Dots may also increase in size as negatives from different sources are duplicated to produce the final film. If too much dot gain occurs, images and colors print darker than specified.

Halftone dots in a color proof.

Halftone dots after printing.

BITMAP IMAGE AND OUTPUT RESOLUTION

Resolution is the number of dots available to represent graphic detail in a given area: on a computer screen, it's the number of dots or pixels per linear inch (ppi); on an output device, it's the number of dots printed in a linear inch (dpi); on a scanner, it's the number of pixels sampled per linear inch of the scanned image. The resolution of an output device influences both the clarity of detail and the tonal range that can be reproduced from bitmap images.

A pixel is the smallest distinct unit of a bitmap image. A high-resolution bitmap image contains enough data—a description of each pixel's location and what color is displayed—to show more detail in the image. A low-resolution image doesn't have as much data to render the same level of detail.

A higher bitmap image resolution doesn't always produce a better printed image. A bitmap image may contain more data than an output device can represent; therefore it is important to determine the appropriate bitmap image resolution to achieve the best printed results. If the image resolution is too high for an output device, it will take a long time to image; if the image resolution is too low, the quality of the output will be poor. To apply these concepts to scanning, see "Scanning Continuous-Tone Art" on page 52.

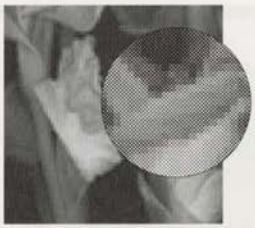


Image resolution: 72 ppi

Image resolution: 300 ppi

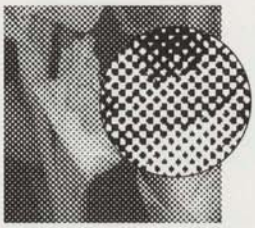


Image resolution: 300 ppi
Output resolution: 300 dpi

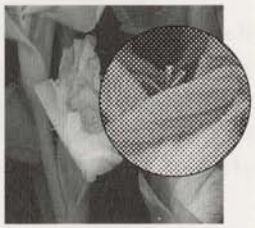


Image resolution: 300 ppi
Output resolution: 2400 dpi

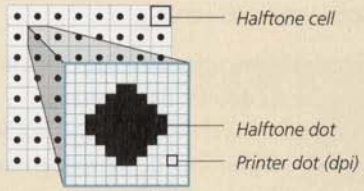
SCREEN RULING

Screen ruling, also known as *screen frequency* or *halftone frequency,* refers to the number of rows or lines of dots used to render an image on film or paper. Screen ruling is measured in lines per inch (lpi). The relationship between the output resolution (dpi) and the screen ruling (lpi) determines how fine or coarse a bitmap image appears on the printed output.

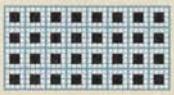
The screen ruling used to image film for a job depends on the resolution of the imagesetter, and the paper stock and type of press used to print the publication. A newspaper is commonly printed using a low screen ruling of 85 lpi because of newsprint's high absorbency of ink and the high speed of the press. A higher screen ruling would saturate the newsprint with ink and make the images look muddy. A four-color magazine printed on coated paper might use a screen ruling of 133 lpi. A lower screen ruling would make images appear coarse and less detailed.

Screen ruling also determines the size of a halftone cell, which in turn dictates the maximum size of a halftone dot. The halftone dot is made up of printer dots; printer resolution determines the number of dots available to create the halftone dot. The relationship between screen ruling and printer resolution determines the tonal range that can be printed. As the screen ruling increases, the size of the halftone cell decreases; fewer printer dots are used to create the halftone dot, so fewer shades can be represented.

To calculate how many levels of gray are available at a particular screen ruling and output resolution, use the formula shown on this page. The maximum number of grays that most output devices can produce is 256. The levels of gray available also influence the smoothness of blends. For more information on blends, see the *Adobe Illustrator User Guide.*

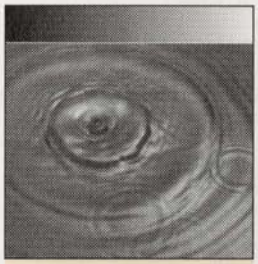


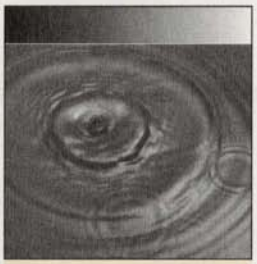

low lpi


high lpi

The lower the screen ruling, the larger the halftone cells; the higher the screen ruling, the smaller the halftone cells.

(output resolution ÷ screen ruling)² +1
=
shades of gray


(1200 dpi ÷ 90 lpi)² +1
=
178 shades of gray

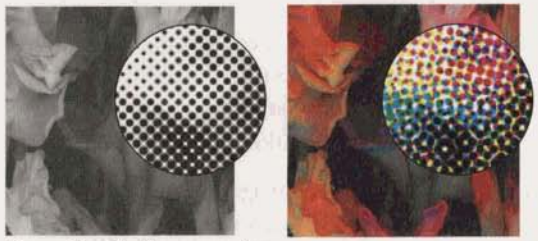

(1200 dpi ÷ 175 lpi)² +1
=
48 shades of gray

Increasing the screen ruling creates smaller halftone dots and adds detail to the image, although it reduces the number of grays.

Frequency modulation screening

Traditional halftone screening uses the size of the dot to convey shading: larger dots for darker shades, smaller dots for lighter shades. Frequency modulation (FM) screening, also called stochastic screening, renders the different shades of an image by controlling the number of dots in each area—more dots produce a darker area, fewer dots produce lighter areas. To use FM screening, you need special software or an imagesetter raster image processor (RIP) that supports FM screening.

FM screening has several advantages over traditional screening. Because there is no regular dot pattern in FM screening, moiré patterns that appear when screens are misaligned cannot occur. FM screening also uses smaller dots, so printed images may display more detail and subtle gradations of color. Some disadvantages of FM screening include solid colors appearing blotchy, and text and vector art looking fuzzy where they overlap screened colors.



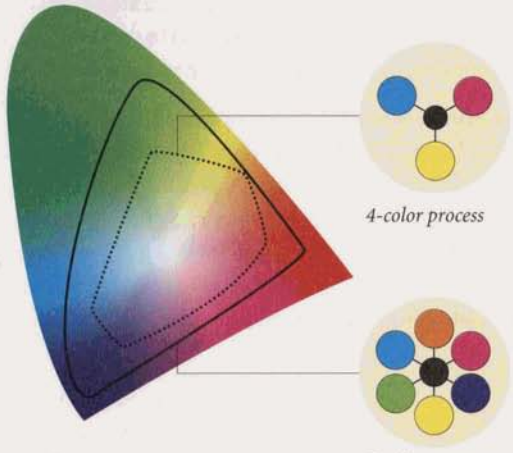
Conventional halftone screening

FM screening

High-fidelity color printing

High-fidelity color printing uses additional process inks to reproduce more of the color spectrum. For example, a magazine printed with high-fidelity color might use orange and green inks in addition to cyan, magenta, yellow, and black. This would increase the gamut of printed colors by about 20%. High-fidelity color can be printed with five or more inks on existing printing presses. Some solutions take advantage of FM screening techniques.

High-fidelity color is relatively new and is not yet widely available. Several high-fidelity color solutions have been developed, including the PANTONE® Hexachrome system. Adobe® PageMaker® supports high-fidelity color through the Kodak Precision Color Management System.



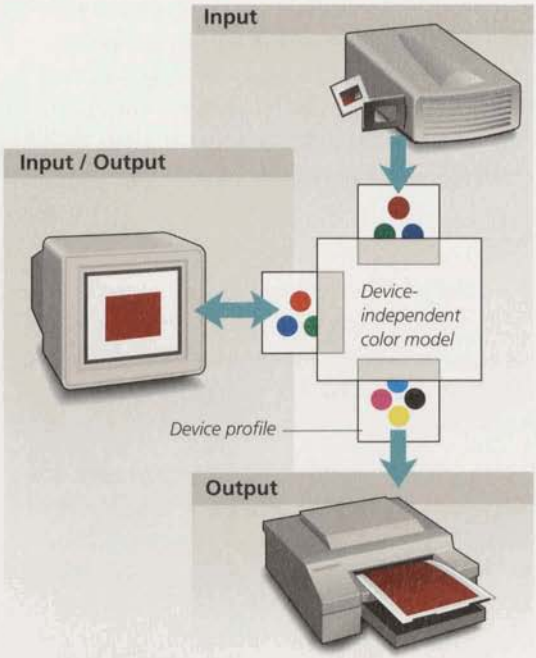
4-color process

7-color process

Color management systems

A color management system (CMS) is software that interprets color between various devices, such as scanners, color monitors, and printers. It can be integrated into an application or the operating system. Using device profiles, a CMS maps colors from the color gamut of one device into a device-independent color model, and then maps the colors into the color gamut of another device. This mapping allows an application using a CMS to correctly display and print colors from different devices.

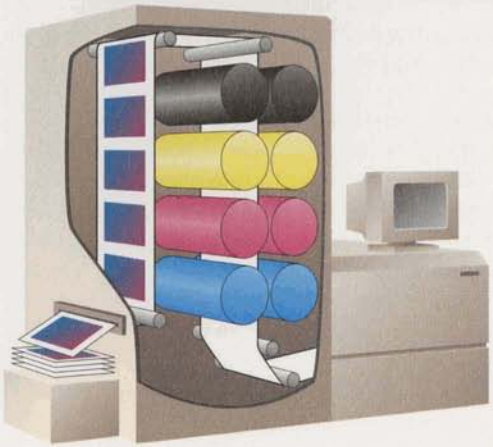
The smaller the color gamut a device can produce, the more important it is to reconcile gamut differences between devices. A CMS maps colors from a device with a large color gamut, like a monitor, to a device with a smaller color gamut, like a desktop color printer, to ensure that all colors on the monitor represent colors that the output device can reproduce. For more information, see "Color Management Systems" on page 56.



Direct-digital printing

In direct-digital printing, presses are connected to workstations that create PostScript® files from digital files, screen bitmap images, and send the files to the press. The presses do not require film or, in some cases, printing plates. Some direct-digital presses transfer digital information onto electrophotographic cylinders instead of plates and use toner to print four-color pages. Other presses send the digitized pages directly to special plates mounted on the press.

Direct-digital printing produces fast turnaround times, low production costs, and the ability to easily personalize publications. It is often used for on-demand or short-run color printing, where only a small number of copies are printed.



Web-style direct-digital press

OFFSET LITHOGRAPHY

You can choose from several different processes to print a publication: flexography, gravure, screen printing, and offset lithography are the most common. The method you choose depends on your budget, your choice of a commercial printer, and the printed results you want. Because offset lithography is the most popular printing process, we use it here to explain the basics of commercial printing.

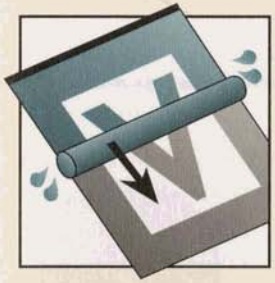
Unlike other types of printing, offset lithography involves printing from a flat surface. It works on the principle that oil and water do not mix—not because the image area is raised (as in flexography) or etched (as in gravure). The printing plate holds ink because the image area is treated so that it is receptive to oil-based ink but not to water.

A multicolor offset press has a separate printing unit for each ink being printed. If, for example, you're using process colors and one spot color in a print job and your commercial printer's press can handle five inks, a printing unit will be set up for each ink—cyan, magenta, yellow, black, and the spot color. The paper will then pass through each unit in succession. If the press handles fewer inks, your printer will print two or three inks first, stop the press and change the inks, and then run the paper through again to print the remaining inks.

Platemaking

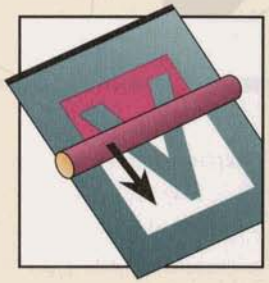
Using a photographic process, a printer exposes the reversed image from the film separation (a negative) onto a flat plate with a light-sensitive coating, and then develops the plate. The image area of the plate—now a readable positive—is coated with a chemical that attracts ink but repels water. The non-image area is coated so that it attracts water and repels ink.

A printing press repeats the wetting, inking, offsetting, and printing steps for each ink over and over throughout the print run.



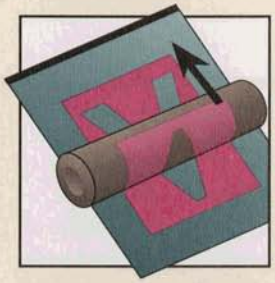
Wetting

The plate is mounted on a rotating cylinder. When the press starts, the plate comes into contact with water rollers first. Dampening solution (water plus additives) flows constantly from a traylike fountain through a series of rollers to the plate cylinder. The last water roller wets the entire printing plate, except where the plate has been treated to resist water.



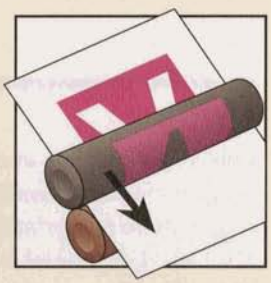
Inking

Next, the ink roller applies oil-based ink to the plate. Thick, greasy ink flows from another fountain through a series of vibrating rollers, which distribute the ink thinly and evenly. When the last ink roller contacts the wet printing plate, it smoothly distributes ink across the water-resistant image area.



Offsetting

The final roller is a rubber blanket, which is pressed against the printing plate and carries away a reversed inked image (the offsetting step). The rubber blanket has some flexibility and gives slightly when pressed against paper, so the image can transfer evenly to both smooth and textured paper.

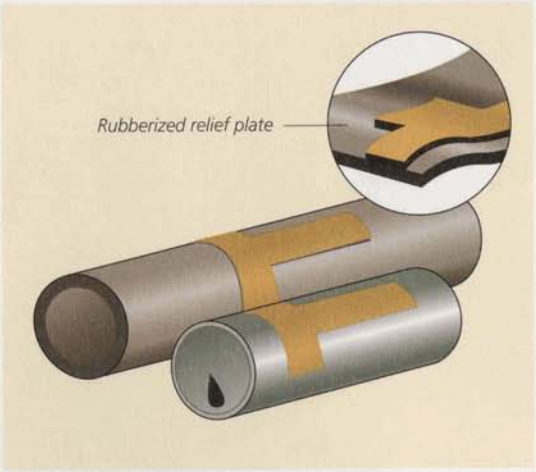


Printing

In the last step, the paper—in individual sheets (sheet-fed) or on a continuous roll (web-fed)—passes between the rubber blanket and an impression cylinder. The inked blanket cylinder with its reversed image presses against the paper, printing the positive image.

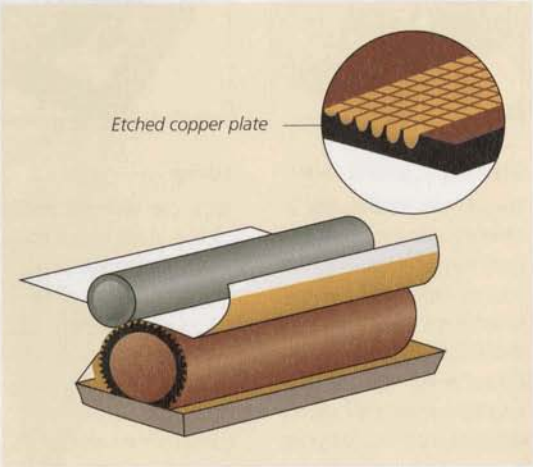
Flexography

Flexography uses a raised-image plate made of flexible rubber or photopolymer which prints directly onto a surface. The flexible plate makes it possible to print on irregular surfaces such as coffee mugs, aluminum cans, or corrugated cardboard.



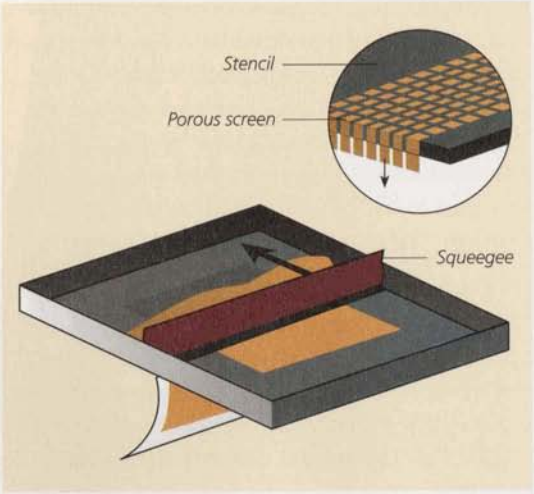
Gravure

Gravure printing uses an etched copper cylinder or wraparound plate where the surface of the cylinder represents the non-printing areas. The plate rotates in a bath of ink and the ink is retained in the etched wells of the plate. There are three types of gravure printing: conventional, variable area-variable depth, and direct transfer. Conventional gravure is often used for short-run, high-quality printing. It is the process that is illustrated here. Variable area-variable depth gravure is an excellent process for reproducing newspaper supplements, magazines, and mail-order catalogs. Direct transfer gravure is used mainly for packaging.



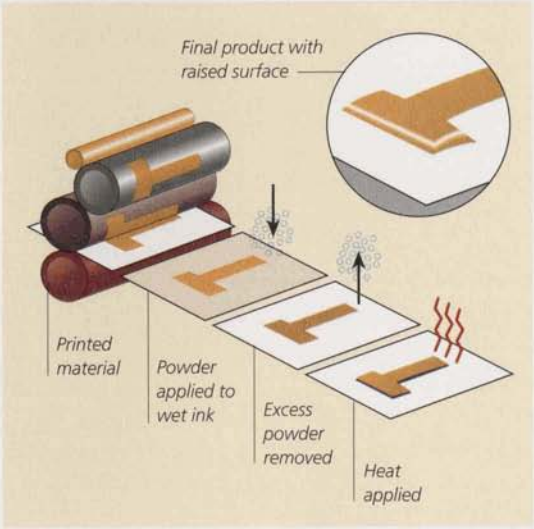
Screen printing

Screen printing is the relatively simple method of forcing ink through a screen stencil and onto a printable surface. It can be used to reproduce a few colors, or continuous-tone art. Because screen printing lays down the ink up to 30 times thicker than lithography, the color is more dense and durable than other printing processes. Commercial screen printing uses photographic stencils to transfer designs onto almost any printable surface, including posters, clothing, compact discs, and bottles.



Thermography

Thermography is a finishing process that uses special non-drying inks on offset presses. After the ink is placed onto the printing surface, it is dusted with a powder. The surface then passes under a heater, which fuses the ink and the powdered compound causing these areas to swell. The printing swells or raises in relief to produce an engraved effect. This process is used to create business cards, stationery, invitations, and greeting cards.



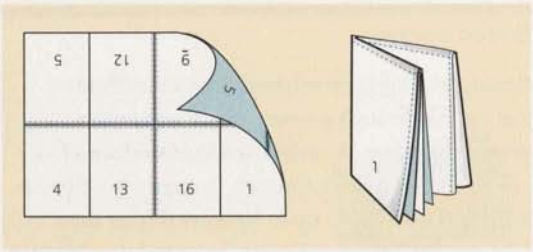
IMPOSITION AND BINDING

Imposition is the process of arranging the pages of a publication so that when the sheets are printed and folded for binding, the pages will be in the proper sequence. Individual pages are arranged on a large sheet called a *flat,* which is used to produce plates for the printing process. Each plate prints a single *form,* or impression, of the imposed pages. Two forms are printed back to back on a press sheet that is folded into a *signature.* The signature is bound with others, if necessary, and trimmed to create a publication.

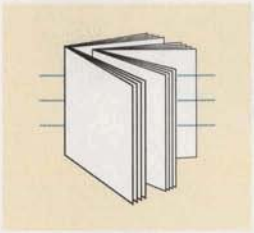
Imposition may be done manually or electronically. Manual imposition is a labor-intensive process where small pieces of film separations are precisely arranged and taped, or stripped, onto flats. Electronic imposition requires software, such as Adobe® PressWise®, that arranges the digital document into the proper formation.

Binding is the process of gathering folded signatures using one of several methods. In saddle-stitch binding, signatures are gathered to form a common spine and then stitched with staples. Perfect binding involves gathering groups of signatures, grinding the bound edge, and gluing the signatures at the spine into a one-piece paper cover.

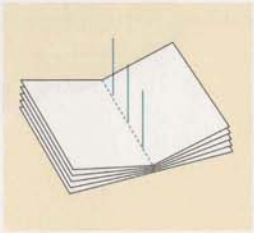
When signatures are collated and folded for saddle-stitch binding, the inner pages may project outward slightly. The printed area moves slightly with respect to other pages. The more pages there are in a book the farther out the pages closest to the center of the book move with respect to the other pages. This phenomenon is known as *creep* or *shingling.* If creep is not compensated for during imposition, graphics and text in a multiple-page publication will appear to move away from the *gutter*—where pages meet at the binding—in the first half of the book and toward the gutter in the second half of the book.



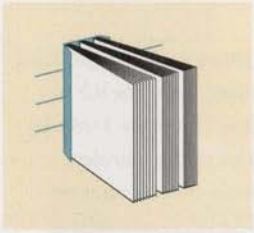
Imposed 16-page signature and folded signature.



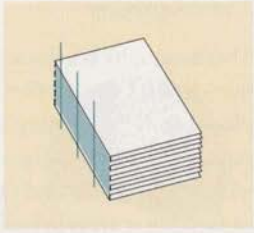
Inserted signatures



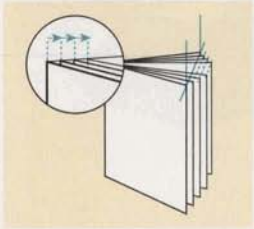
Saddle-stitch binding



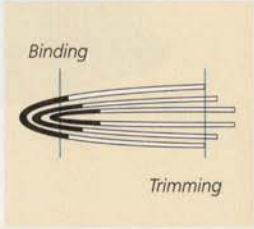
Gathered signatures



Perfect binding



Creep occurs when the inner pages of a signature project outwards.



Creep affects the printed area during binding and trimming.

As a first-time user of PageMaker, Mario Mirelez of Mirelez/Ross Incorporated created *The Art of the Garden* for an art exhibit at Eckert Fine Art in Indianapolis, Indiana. The limited edition of the exhibition catalog provided several creative challenges according to Mirelez, Director of Art & Design.

"First and foremost we wanted the catalog to be an effective sales brochure," Mirelez said, "both intelligent and legible. The piece was designed to feature the individual artists as well as their work. It was also designed to function not merely as a fine-art catalog, but to speak of the client's integrity as well."

The catalog was hand-collated, top-stitched five times, and bound with a spine protector glued to the cover. To give the catalog a more substantial feel, the front and back covers have gatefolds. As a finishing touch, a vellum overlay was printed and placed with the catalog, and they were bound with a foil stamp-embossed band.

At the end of each chapter of this book, we examine some of the key decisions Mirelez made while creating this award-winning publication.

Planning for Commercial Printing

Every commercial printing job requires that you consider a complex set of variables ranging from what your budget and schedule allow to how the paper stock and printing press affect your final output. The earlier you think about these variables, the more control you'll have over the quality, cost, and schedule of your project.

Preparing a publication for commercial printing takes careful thought: both imagesetters and commercial printing presses have inherent limitations, and it's possible to create publications that are difficult to print on either an imagesetter or a printing press. By thinking of your design and production cycles as steps in a larger process, you can make choices that will let you work more efficiently and help you achieve the best printed results.

Before going to a commercial printer with your project, you need to evaluate your skills, your schedule, and your equipment to determine what tasks you will do and what services you will contract.

In addition to choosing a commercial printer, you may need to select a prepress service provider to image color separations, scan continuous-tone art, and trap and impose your publication. Several types of vendors can provide these services: prepress houses and color trade shops; color-capable imagesetting service bureaus; and commercial printers. Shop for vendors who are willing to answer your printing questions, and ask to see samples of their work. Accurate film separations are critical since they determine the quality of your color output, so select a separation facility carefully.

Choose your vendors early, and involve them in up-front decision making. Review your rough design ideas with them, discuss any potential printing problems, and always identify who will be responsible for prepress tasks.

THE PUBLISHING PROCESS

Successfully completing a commercially printed publication requires several steps including planning and organizing, design and content development, and prepress tasks where your electronic files are prepared to be reproduced with ink on paper.

Making informed decisions in the planning stages builds a solid foundation for your project. When you have questions about your project, seek advice from your vendors. Keep track of decisions you make: who is responsible for the completion and quality of each task, when each phase must be completed, and what requirements must be met for the final output.

Select and consult your vendors

Evaluate commercial printers and prepress service providers based on the requirements of your project and the services you require. Visit the sites of potential vendors. Select a commercial printer and prepress service provider early in the design process, so that they can assist you in planning.

Choose prepress tasks

Determine which prepress tasks you will do based on your skills, time, and equipment. For example, if your design requires trapping or includes photographs to be scanned, determine if you can perform these tasks. Decide which parts of the process you will take primary responsibility for on the project.

Define project and quality requirements

Before you start to work, gather all the requirements for the publication, including budget, schedule, and output quality. Then, working with pencil and paper or directly on your computer, rough out your initial design ideas.

Create your publication

Use Adobe PageMaker or Adobe Illustrator® to build your document. Define the colors you will use and decide if they will be process or spot colors. Create or gather the content, vector art, and bitmap images for your publication. Review the design to determine how the page elements interact and overlap. Determine if you will use a CMS. Discuss printing issues with your commercial printer as your design evolves.

Proof and hand off your files

Print proof copies of your publication on a black-and-white or color PostScript desktop printer. Consult your printer about what proofing methods he or she recommends to check color quality and to safeguard against production problems. Decide what type of file to give to your service provider. Gather your files, the final laser proofs, your report listing details about your document, and any additional files, such as bitmap images and vector artwork.

Check and print your publication

Examine the film separations for quality and accuracy. Check that objects appear on the correct separation. Check proofs made from separations for correct trapping and smooth and consistent tints. Meet with your printer to review press proofs for final color quality. After you approve the press proof, the publication is printed and assembled.

The prepress process

DEFINING PROJECT REQUIREMENTS

Every printed project requires you to balance cost, schedule, and quality. Another key factor in your project's success is your relationship and communication with your prepress service provider. If you and your service provider have a clear understanding of each other's requirements, you can both do what is necessary to make your project a success.

You can save money printing a publication by planning early, accurately estimating which tasks you can accomplish and which tasks you will contract, and by taking responsibility for those tasks you choose to do. Clearly communicating responsibilities between you and your service provider can save both time and money.

When preparing a budget, estimate fixed and variable costs. Fixed costs do not vary depending on how many copies of the job you print. These costs include payment for designing, writing, editing, scanning, and print preparation. Variable costs—those costs that vary depending on how many copies you print—include press time, paper, and binding costs.

Estimate the resources and skills of the workgroup assigned to the project. If you have the expertise and equipment to do some of the prepress work yourself, it can be cheaper than having the work done by a prepress service provider. But doing your own prepress work can cost more if the work is done incorrectly, since you may not discover mistakes until your publication is imaged on film. Making changes late in the project cycle can result in missed press dates, additional charges from the printer, and delays in binding and delivery. Remember, the closer corrections are made to the press date, the more expensive they will be.

DEFINING QUALITY REQUIREMENTS

Quality can be conveyed through writing, design, content, and materials as well as through printing accuracy. But the perceived quality of your publication is greatly affected by the printing process. While you want the best quality for your publication, knowing the degree of tolerance you have for a particular project is important for both you and your printer. These factors influence your quality requirements:

- Audience: How do you need to influence your audience? Does the printed piece have to distinguish itself from similar pieces? Does this piece have to sell something (merchandise, credibility of a company) to a discerning audience? Does it have to get the attention of an audience to inform them, or is the audience anticipating the information in the piece?
- Length of time on the market: Is this a publication that announces a onetime only offer (like a sale flyer) or will it be used over and over again (like a cookbook)?
- Image integrity: Is the image detail important to the message? Images in a history textbook may not be color critical, but the detail must be clear for the image to be informative. Flesh tones should always look human and healthy. Images for a clothing catalog require significant detail, especially for fine prints and textures.
- Color matching: Will people make critical decisions based on the color in the piece? Clothing catalogs usually require an exact match to the actual clothing. If the color is wrong, customers may be dissatisfied with the clothing they receive. In other cases, it's more important for colors to be balanced; food images in grocery ads or cookbooks require a pleasing photograph, but not necessarily a color match.

Consider these publication requirements

Newsletters

The newsletter is printed with one ink (usually black), photographs are recognizable but may lose some detail from the original, and the paper stock is a standard type always kept on hand. The piece is designed to be read and eventually replaced with the next edition.

Hardware direct-mail catalog

The catalog is printed using paper and inks regularly kept in stock by the printer. The standard size makes it cheaper to bind and finish. The catalog includes crisp black-and-white photographs and color photographs with good detail. Color accuracy is important but not critical since buying decisions are not usually based on the represented color. Registration is accurate to 1/100 inch. The publication will be replaced in several months.

High-end clothing catalog

The high-end catalog uses premium papers and inks. Color accuracy is critical to the publication's success, so color in the photographs matches the actual clothing. Printer registration is very accurate, and all the artwork is trapped. Although the expected duration of the publication is short, a high-quality publication helps persuade the audience to buy.

Fortune 500 corporate annual report

In an annual report, the image of the company is conveyed by the quality of design, printing, and appearance of the publication. Color, while less critical than in a clothing catalog, is accurate and black-and-white photographs are very sharp. The product has no discernible flaws.

CHOOSING PREPRESS TASKS

One of the most difficult decisions regarding a project to be printed is how much work you will do from the desktop. With the expanding range of desktop publishing tools able to accomplish prepress tasks, the temptation is to do many of the tasks yourself. But each prepress task that can be done on the desktop requires skill, time, and equipment you may not have or want to acquire.

Your relationship with your printer can also affect your decision on which prepress tasks you do. If you intend to exercise a large amount of control over the publication, and assume the responsibility for the quality of the film separations, you may choose to do all the prepress work yourself and deliver a final file to your prepress service provider. If you want your service provider to be able to make changes to your publication, discuss prepress requirements with your service provider and hand off the required files.

Accomplishing prepress tasks can be easy with professional-quality software, but acquiring the skill and experience to do them takes time. If you are new to commercial printing, it may be worthwhile for you to pay a prepress professional to do the prepress work. As you gain experience, consider investing in training and equipment so you can eventually do more prepress work yourself.

Be prepared to accept the responsibility for the tasks you take on. Although you can save money doing your own prepress work, you can also pay more money to fix your mistakes. Regardless of which prepress tasks you do, clarifying requirements with your commercial printer and prepress service provider significantly reduces rework.

PREPRESS TASKS

Scanning and color correction

Continuous-tone art must be scanned to be converted into an electronic file. Image detail and color accuracy depend on the quality of the scanning equipment and the original photographs or images. In all cases, know what size you need the final image to be, and what level of quality, detail, and color accuracy you require.

Trapping

Overlapping or interacting colors require trapping if misregistration would result in visible gaps or color shifts between colors. A correct trap depends on press and paper tolerances. To build traps manually, you need to know how to calculate the color of the trap, and position the trap correctly.

Preparing files for color separations

Files should be checked for correct print settings and that the correct PostScript printer description (PPD) file was used. Verify that colors are named, defined, and applied correctly. Document files must be linked to the most current bitmap images and graphics. Missing fonts should be located so that the files print correctly from another computer.

WHAT YOU NEED	WHAT VENDORS CAN DO	TRADE-OFFS
You can scan images using a flatbed or transparency scanner. Scanned images can be large and require large amounts of disk storage and a computer with a fast processor and plenty of RAM. You need image-editing software, such as Adobe Photoshop, that allows you to adjust color values and edit the image. For best results, you should be familiar with basic concepts of resolution and color correction.	A prepress service provider can use a high-end drum scanner that is more accurate than desktop scanners, and provides a higher quality image. The service provider can supply low-resolution versions of your scans that will make designing your publication and printing proofs faster than if you used a high-resolution image.	Doing your own image editing can be time consuming, but you have complete control over the appearance of the final image. Many desktop scanners can provide a scan that fits your needs. Conversely, high-end drum scanners provide higher scan resolutions and better color correction than most desktop scanners.
PageMaker can automatically trap page elements you create in the application. With programs like Adobe Illustrator, you can trap artwork before it is imported into PageMaker. The design and complexity of the publication determines which trapping tool to use. To design effective traps, you need to understand when traps are necessary, and to obtain trap settings from your commercial printer.	Prepress service providers often use dedicated trapping software, such as Adobe® TrapWise®, to trap publications with superior results. High-end proprietary color-separation systems also provide trapping. Commercial printers who produce color separations know what settings are required for the press that will be used to print your job.	To construct traps manually, you need to determine which page elements need trapping. You then choose the best color for the trap. Automatic trapping tools eliminate the need for some of this knowledge, but they may not be able to trap all elements in your publication. Work with your vendors to determine the most efficient way to trap your publication.
When preparing a PostScript file, you must use the correct PPD for the output device and all print settings must be correct. You should be able to identify what elements or attributes in a file might prevent the imagesetter from imaging your file correctly, and know how to eliminate or correct them.	Service providers usually know what to look for to ensure the film will image successfully from your file. If you hand off a PageMaker publication, the service provider can adjust settings and correct your files if they fail to image properly.	When handing off a PostScript file, you have control and responsibility over settings selected in the file and little margin for error. When you hand off a PageMaker publication, you relinquish some control to your prepress service provider but your service provider can prevent problems or correct them if they occur.

SELECTING VENDORS

Once you have decided which tasks you will perform and which ones you will contract, then you must choose a commercial printer. Finding a printer can be daunting if you've never done it before. Look for printed material that is similar to your project and find out who printed it. Consult local design firms about what printers they use, and get suggestions from local computer user groups that focus on desktop publishing issues.

Decide if you want to work with a commercial printer who does prepress work and the printing, or if you prefer to have the prepress work done at a different location. Obtaining prepress services from a commercial printer allows you to communicate with only one vendor and manage only one relationship. If you wish to use a prepress service provider, such as a color house, that specializes in a particular aspect of prepress work you may want several vendors. If you choose to work with several vendors, make sure they understand each other's requirements.

Once you have narrowed your search, ask the prospective service provider to show you his or her facility. Ask to see samples of work that the service provider has produced and obtain customer references. Discuss the details of your project and schedule to determine if your requirements can be met.

When working with your prepress provider, make your intentions clear. If you want to learn to do your own prepress work, look for a service provider who provides training or can refer you to training classes. You may pay more for these services, but you may save money in the long run.

Following are a list of questions to ask potential commercial printers and service providers. The answers will help you assess capacities of equipment the service provider uses and the level of expertise available. Remember that your relationship with your vendors is key to the success of your project.

Questions to ask a commercial printer

- What experience do they have working with electronic publishing jobs?
- What are their rates? Is support or training included in the rate?
- Are both sheet-fed and web-fed presses available? The nature of your job should determine the type of press it is run on.
- How many colors can be printed in one press run? On a two-color press, your four-color job will require two press runs. You may be able to cut costs by shopping for a commercial printer with a four-color press.
- What prepress services do they offer? What prepress tasks, such as stripping, might be more cost-efficient if done traditionally?
- Do they support high-fidelity color printing?
- Can electronic imposition be done? Will they accept film that has already been imposed?
- What color matching systems are supported? Adobe PageMaker and Adobe Illustrator support several spot and process color matching systems including ones made by PANTONE®, Trumatch®, and Focoltone®.

Questions to ask a prepress service provider

- What are their rates? Is support or training included in the rate?
- Can they accept electronic files? If so, what file formats do they accept? From which platforms?
- Do they offer scanning services?
- What fonts do they have available?
- What steps are taken to ensure precision?
- Do they use dedicated trapping software, such as Adobe TrapWise?
- Do they use electronic imposition software, such as Adobe PressWise?
- How often are their imagesetters calibrated? Knowledgeable facilities calibrate both daily and every time the film is changed. Imagesetters should be calibrated for both emulsion density and halftone dot value. Operators should verify that film processing chemicals are not depleted or diluted.
- What type of imagesetters are available?
- What screening options are available?
- Who sets the printing settings if a PageMaker file is handed off?
- What PPD should you use? Do they provide a custom PPD?
- Who is responsible for checking the film quality?
- What color-proofing systems are available?

TALKING WITH YOUR COMMERCIAL PRINTER

Once you have chosen a printer, discuss the specifics of your project. Paper stock quality, paper coating, and ink types effect the color quality of your final publication. Your design and the colors you choose can influence your printer's recommendation. Also discuss the following:

- Your project budget
- Your schedule
- The number of copies you plan to print
- The dimensions of your publication
- The colors you plan to specify
- Your choice of finishing and binding (if any)
- Your use of bleeds and crossovers
- The graphics in your publication
- Who will be doing prepress tasks

Obtain information from your printer:

- Any recommendations, such as materials, binding type, or special inks
- Whether any materials, such as paper stock or special inks, must be ordered
- If you can save money by making minor changes to your publication or requirements
- The appropriate screen ruling (lpi) to use
- The trap specifications for your job
- Any additional settings you should use when creating your publication

The information you obtain from your printer will help you construct a publication efficiently.

BECAUSE *THE ART OF THE GARDEN* features reproductions of artwork for sale, the quality of the paper stock was very important. For the inside pages, Mirelez chose a premium paper stock that was natural in color and very smooth to the touch. This was contrasted by his selection of an industrial-type uncoated paper stock for the cover and a rough, heavy card stock for the binding.

Mirelez chose to work with a prepress service provider recommended by his client. Mirelez worked very closely with the service provider to make sure that details were handled correctly. The prepress service provider scanned 4-by-5-inch transparencies of the gallery artwork on a Scitex scanner. The other graphics were scanned using a desktop scanner, imported into Adobe Photoshop for retouching and manipulation, and then placed in PageMaker. The scanned art was printed at a very fine screen ruling (200 lpi) to capture the detail.

Mirelez works with several commercial printers. He chooses the commercial printer based on the requirements of the job. For example, he may work with one commercial printer for a two-color job and a different one for a four-color process job. According to Mirelez, a good rapport with his printers ensures the success of the projects.

Guidelines for Constructing a Publication

The way you create your publication is not only critical to the success of your design—it affects the way your publication prints, both to an imagesetter and on a commercial press.

Careful planning can save you money and time. Paying attention to certain tasks up front will keep your project on schedule and within budget, and is cheaper and easier than making corrections later.

This chapter covers the issues involved in creating a digital publication for commercial printing, such as creating page layouts that avoid typical printing pitfalls, choosing the best graphic format, and compensating for misregistration using overprinting or trapping.

When properly assembled, a publication will print correctly and require less rework for you and your vendors.

SPECIFYING COLORS

Colors in your digital document need to be reproduced by printing ink on paper. Spot colors are reproduced with pre-mixed inks, while process colors are reproduced with cyan, magenta, yellow, and black inks. While spot inks are nearly opaque, process inks are translucent.

In most cases, avoid specifying colors based on the way they appear on your monitor. For the most predictable results, choose colors from a color-matching system. Color-matching systems are developed with rigorous specifications; commercial printers who license a color-matching system agree to maintain the specified color standards to produce consistent color. Work with your commercial printer to choose the appropriate color-matching system for your job.

When creating art to import into Adobe PageMaker, use an illustration program, such as Adobe Illustrator, that supports the same color-matching systems that you use in your publication. This ensures that your illustrations will match any additional elements created with the same colors used in your publication. If possible, naming the colors in your illustration exactly as you name them in your PageMaker publication saves steps when you output your publication from PageMaker. When you define process colors in your illustration, make sure that they are defined with the same component percentages as the process colors in PageMaker.

Whether you use spot colors, process colors, or a combination of both in your publication depends on your budget, the purpose of the publication, the type of page elements you use, and how your design will be reproduced. A balanced approach to color printing helps ensure acceptable results. Use the following guidelines to determine what colors are suitable for your publication.

Use spot colors when

- You need three or fewer colors and you will not be reproducing process-color photographs.
- You want the limited color variety you get from one or two spot colors and tints of those colors.
- You want to print varnishes or special inks, such as metallic, fluorescent, or pearlescent spot inks.
- You want to print logos or other graphics elements that require precise color matching.

Use process colors when

- You need more than three colors in your design. In general, printing with process inks costs less than printing with three or more spot inks.
- You want to reproduce scanned color photographs or color artwork that can only be reproduced with process colors.

Use spot and process colors together when

- Your publication requires five or more inks printed. You can meet most publication requirements with six inks—four process inks and two spot inks. Printing with more than six inks can be expensive since it may require more press setup and more than one run through the press.

Color photograph printed with process inks

Vector art using a spot color

Rich black display type using black and magenta process inks

Spot varnish applied to enhance the text effect

Text with spot color applied

WORKING WITH SPOT COLORS

Specifying a spot color means that any page element assigned that color will appear on the same color separation. The color name you assign does not determine what ink will be used in printing, but naming colors consistently lessens any confusion between you and your prepress service provider. When you submit your publication or separations to your commercial printer, you specify which ink should be used.

If you are already printing spot and process colors, you can print with fewer plates if you convert spot colors to their process-color equivalents. When converting a spot color into a process color, be aware that many spot colors cannot be reproduced accurately with process inks. Use a spot color to process color conversion chart to determine the best process color alternative, or ask your printer for suggestions. If possible, print a test publication using the converted colors before the final printing.

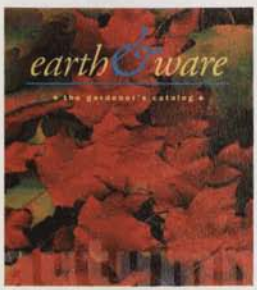
Varnishes are used to protect a page, create a special effect, or accentuate photographs or display type. A flood varnish is applied to the entire area of the publication, and a spot varnish is applied only to a specific area.

Specify a spot varnish just as you would a spot color. Set spot varnishes as a spot color that will overprint and design a silhouette of the image or text to be coated. If the silhouette cannot be created in Adobe PageMaker, you can create it in Adobe Illustrator. Consult your vendors to determine their requirements for specifying a varnish.

Avoid using tints of spot colors for small type or hairlines. The dot pattern required to produce a light tint often cannot accurately represent small text or lines, and the line or text will appear broken. For best results, use a single, solid color ink to print hairline rules and small text.

Spot color

Spot color converted to process



Publication page

Varnish silhouette

20% screen

40% screen

WORKING WITH PROCESS COLORS

Process colors are printed using all four process inks in a precise halftone pattern to create the illusion of full color. To achieve predictable printed results, always use the CMYK (cyan, magenta, yellow, and black) values provided on printed color charts to specify process colors, or select colors from one of the process-color libraries.

Because process black is translucent and printing presses cannot lay large areas of solid ink smoothly, the addition of another process color is often beneficial. *Rich black* combines process black ink with one or more of the other process inks to achieve a more intense black. Use a rich black in areas where objects would show through process black and cause it to appear inconsistent.

Use a single, solid ink (such as 100% black or a dark spot color) to print hairline rules and small text. Fine elements printed with two or more colors are difficult to print in register, and misregistration can make the fine elements appear fuzzy.

Avoid creating process colors with high ink contents. Most printers recommend a maximum ink coverage of 250%-320%, so that the paper doesn't become oversaturated and stretch, warp, wrinkle, or tear. Oversaturation also increases the likelihood of misregistration.

Process black (100% K)

Neutral rich black created with 100% K + 20% C + 20% M + 20% Y

Cool rich black created with 100% K + 20% C

Warm rich black created with 100% K + 20% M

Process colors in small type and fine elements are more likely to show misregistration.

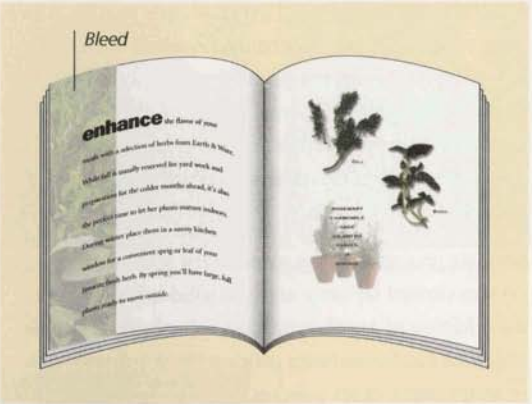
Spot colors in small type and fine elements produce a sharp edge.

BLEEDS

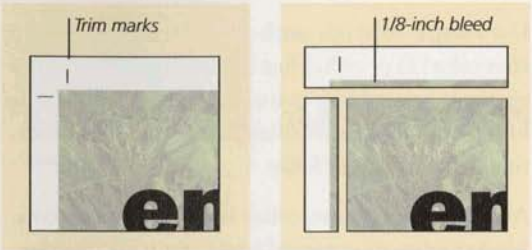
Printing an object to the edge of the final printed piece requires creating a bleed. A bleed extends objects off the print area to ensure that when the printed paper is trimmed during the finishing process, the ink coverage extends to the edge of the paper. For example, the colored bars on the side of each page in this book required bleeds.

Constructing bleeds requires that you focus on creating art from the perspective of the commercial printer. The accuracy of the press and the trimming equipment determine the size of your bleeds. When creating bleeds, avoid aligning objects exactly with the edge of the page. Pages are not always precisely trimmed at the trim marks.

You can extend most objects off the page to any size bleed. Consult your printer to determine the optimum bleed size for your job.



Bleeds extend to the edge of the paper.



Trim marks indicate where the page will be cut.

Avoid aligning objects exactly with the edge of the page.

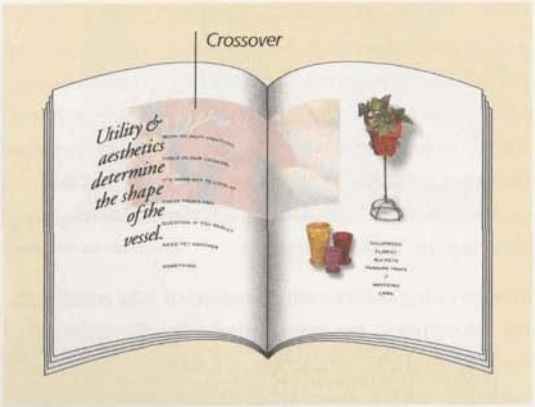
Adjust the design so trimming looks intentional.

CROSSOVERS

A crossover is a printed object that extends from one page to the next. Because a single object is printed on two sheets of paper, the pages must be carefully aligned in the final printed piece.

Binding methods affect crossover position and alignment. An object that spans the gutter may seem to disappear when the pages are bound, so you need to adjust the design accordingly. Also, when pages are gathered together for binding, some of the pages can be pushed out slightly. This phenomenon, called *creep,* can cause gaps or misalignment between the two parts of the crossover. Perfect-bound publications usually have less crossover misalignment than saddle-stitch publications. The center spread of a saddle-stitch publication will be exactly aligned because the two pages are be printed on the same form, but adjacent pages closer to the cover may be misaligned. Follow these simple rules when creating a crossover:

- Avoid putting small text across two pages. Type becomes less legible as it approaches the gutter.
- Avoid using thin rules in crossovers; they are very difficult to align.
- Positioning a crossover in your publication is important, especially when the art is placed at an angle across the gutter. Diagonal crossovers exaggerate misalignment.
- Consult your printer about imposing the two pages onto the same form so that the color and ink coverage will be consistent for both pages. Printing pages on different forms can increase variations in color spreads.



Crossovers extend from one page to another.

Before binding

After binding

Color shifts can occur when crossovers print on different forms.

Thicker rules help conceal misalignment.

OVERPRINTING TO ACHIEVE SPECIAL EFFECTS

Overprinting—when inks are printed on top of each other—can be used to create additional colors, special effects, and silhouettes. Typically, when you produce separations from a document with overlapping objects, the top objects knock out any colors beneath them on the other separations; overprinting leaves the background colors so that all of the inks for the overlapping objects print in the final piece.

Overprinting colors with uncommon inks combines the ink values in the overprinted color. For example, if a background color contains 50% C and the overprinted color has 60% M, the overprinted area will consist of 50% C and 60% M.

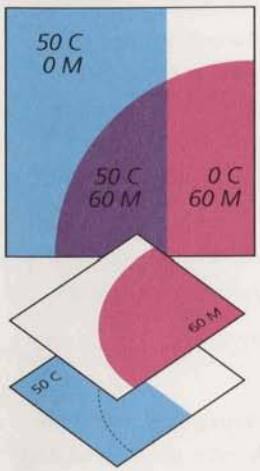
When you overprint colors with shared inks, common ink values are not combined. Instead, the ink values of the overprinted color are used in the printed color. For example, if a background color contains 50% C and 0% M and the overprinted color contains 20% C and 60% M, the printed color where the colors overlap will contain 20% C and 60% M.

Overprinting is also used to specify varnishes. Varnishes, which can be used to emphasize display text or to enhance images, can be treated like a clear spot color that is overprinted.

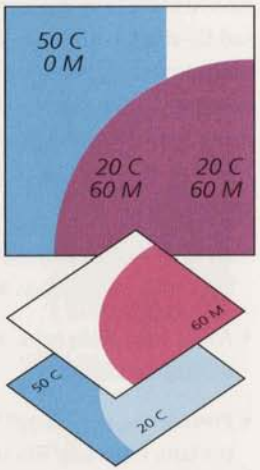
Talk with your commercial printer before setting inks to overprint since overprinting can increase the amount of ink coverage on the page and may cause problems on the press.

Overprinting can form a new color.

Overprinting can change the look of a color unexpectedly.



Overprinting objects without common inks combines the ink values where the objects overlap.



Overprinting objects that share inks reveals only the overprinted ink where the objects overlap.

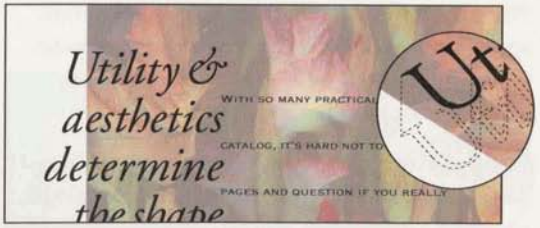
OVERPRINTING TO COMPENSATE FOR MISREGISTRATION

In some situations, overprinting text and objects can be more effective than trapping when compensating for misregistration. For example, sometimes small text and hairlines can be distorted by trapping. Overprinting preserves the shape of the object and the legibility of the text.

Before overprinting fine text and thin lines, evaluate whether misregistration will be more noticeable than a possible variation in the line or text color. Keep in mind that your solution should provide the least distraction between text (or line) and background should misregistration occur. Ask these questions to evaluate your situation:

- If gaps appear due to misregistration, will they be noticeable?
- Will the text change to an undesirable color if overprinted on the background?
- Will trapping distort the text characters?

Printing keylines around images is a common use of overprinting. The overprinted keyline can hide any misregistration that occurs when the image is printed. Ask your prepress service provider what keyline width to use.



Overprinted black text

Overprinted keyline

Small spot-colored text set to knock out, misregistered.

Small spot-colored text set to overprint, misregistered.

TRAPPING BASICS

When inks print out of register, gaps or color shifts appear between the objects. Trapping compensates for this misregistration by slightly expanding one adjacent color into another.

Trapping requires a thorough knowledge of color and design, and an eye for determining when trapping is necessary. For example, process colors that share sufficient quantities of common inks don't require trapping. An effective trap should compensate for misregistration without distorting the shapes of the objects on the page.

A publication designed with several interacting spot colors requires trapping because the colors do not share a common ink. A publication containing several process colors without common inks may also require trapping.

Not all color publications require trapping. Designs that contain isolated areas of solid color don't need to be trapped because there are no adjacent colors that could show gaps if misregistration occurs. Overprinting thin black lines, small black text, and keylines can compensate for misregistration, even when these objects appear on a colored background. Illustrations that make extensive use of black outlines, such as cartoons or certain highly stylized art, may therefore require minimal trapping. Also, designs composed entirely of process colors that share sufficient percentages of component inks do not require trapping; misregistration would reveal the common inks instead of an undesirable third color.

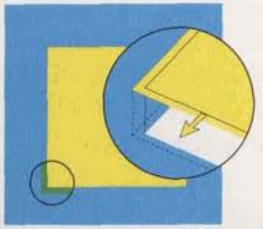
Page designed to avoid trapping

Page requiring trapping

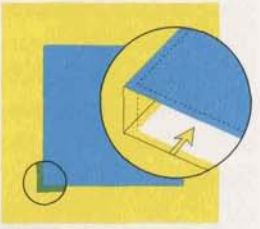
Chokes and spreads

A spread traps a light foreground object to a dark background. A choke traps a light background to a dark foreground object. Because the darker of two adjacent colors defines the visible edge of the object or text, spreading the lighter color slightly into the darker color maintains the visual edge.

A solid color object that overlaps both a lighter and darker background requires both spreads and chokes applied for effective trapping.



Spread

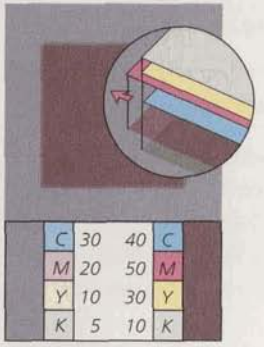


Choke

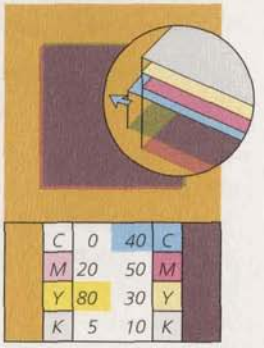
Trapping process colors

Process colors that share sufficient percentages of component inks don't require trapping because misregistration reveals a color that's similar to each of the adjacent colors. In the example shown here, the first two colors share sufficient percentages of common inks so that misregistration reveals a color that isn't visually distracting. However, the second two colors require trapping because they contain component ink percentages that differ enough to reveal a third color when the plates misregister. When adjacent colors each contain a significantly greater percentage of one component ink, a trap is usually required. Conversely, if all ink values in one color are greater than those in the other color, a trap is not necessary.

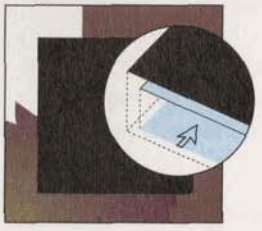
Rich blacks require a trapping technique called a *keepaway*. The *undercolor*—the process inks used to make a rich black—is made slightly smaller than the black area so that misregistration doesn't result in a tiny fringe of color. Should the inks misregister, the undercolor is covered by the black area.



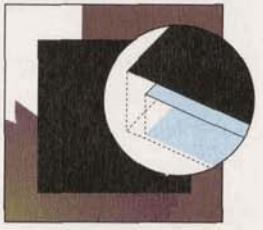
These colors share sufficient percentages of component inks, so poor registration reveals common inks.



These colors don't share sufficient percentages of component inks, so poor registration reveals a noticeable third color.



The undercolor of a rich black is pulled away from the edge...



so that when misregistration occurs, the undercolor will not show.

TRAPPING OPTIONS

Desktop computer software provides a range of solutions for trapping. Decide how much trapping you can do, and what applications you have that trap. Each application has strengths and weaknesses that you need to evaluate before trapping. For more information on trapping using Adobe PageMaker or Adobe Illustrator, see the user guides for these programs.

You can trap most illustrations in the originating application, or you can choose to trap an entire publication, including imported art, with dedicated trapping software like Adobe TrapWise. Dedicated trapping software gives you more control over trap color and placement, and allows you to trap more elements in your publication. Work with your prepress service provider to choose the best solution. Follow these tips for choosing a trapping solution:

- Apply traps in PageMaker when your publication does not have imported artwork that requires trapping.
- Art that uses opaque or metallic inks may have different trapping tolerances than other artwork in your publication. PageMaker and TrapWise allow you to control trapping for these inks. Consult your commercial printer if you are using opaque or metallic inks.
- The complexity of an imported illustration can determine which application to use. TrapWise efficiently traps complex artwork containing gradients and many overlapping colors.

Note: Avoid resizing graphics in PageMaker that have been trapped in another application. The trap widths will scale and will no longer be suitable for printing.

TRAPPING SITUATIONS

Overlapping multiple objects

Rich black object

Object overlapping image

Object abutting graduated fill

Imported EPS (Encapsulated PostScript) illustration

TRAPPING OPTIONS FOR PUBLICATIONS AND ILLUSTRATIONS		
Adobe PageMaker	**Adobe Illustrator**	**Adobe TrapWise**
Traps PageMaker-created objects and text.	Traps simple illustrations automatically; has tools for creating traps in complex illustrations.	Traps PageMaker SEP and EPS files.
Automatically traps overlapping PageMaker objects when needed.	Automatically traps simple illustrations using the Trap command.	Automatically creates traps where needed.
Automatically keeps undercolor from edge of PageMaker text or objects.	Requires adding a black stroke to rich black objects before importing into PageMaker.	Automatically keeps undercolor from the edge of text or objects.
Requires setting object or text to overprint bitmap image.	Requires setting object or text to overprint bitmap image.	Lets you control how objects trap to the image.
Cannot trap.	Requires creating a trap manually.	Automatically adjusts trap color and position along edge.
Cannot trap.	Cannot trap.	Automatically traps PostScript files or EPS files that contain imported EPS graphics.

Color and grayscale bitmap images must be screened before they are printed. When printing with traditional halftone screens, many printer dots are used to represent one pixel. You need to calculate the scanning resolution that creates a bitmap that works efficiently. For more information, see "Bitmap Image and Output Resolution" on page 16.

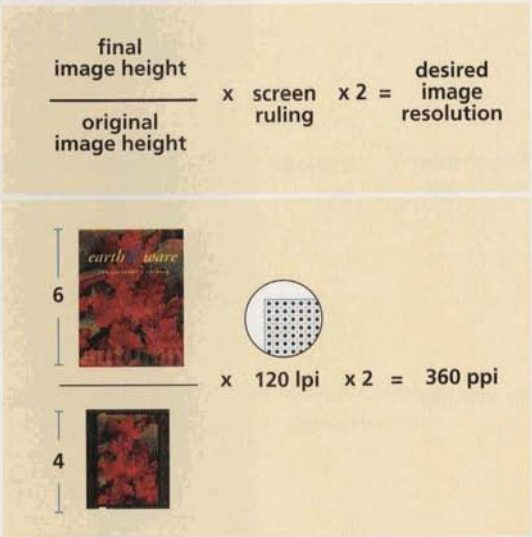
Before you scan, determine the quality requirements for your publication, and choose a scanning method based on these requirements. Decide if the image will be used in other publications, or if it will need to be enlarged for other purposes. If you plan to reduce or enlarge the scanned image, keep in mind that the new image may lack the quality of the original scan. Base your scanning resolution on the largest estimated size of the final image.

To determine the best scanning resolution, you also need to know if your bitmap images will be reproduced using frequency modulation (FM) screening or conventional halftone screening. The resolution to use when reproducing images using FM screening depends on the FM screen you use. Ideally, you want to produce an FM dot that is close to the minimum size that your printing press can print consistently. If you scan images that will be reproduced with FM screening, scan at slightly above a comparable halftone screen ruling that would be used with your final output device.

Regardless of the screening method, scan line art at the output device resolution if the output device resolution is less than 1200 dots per inch (dpi). Scanning at a higher resolution than 1200 pixels per inch (ppi) will not improve the appearance of the line art.

If you use traditional halftone screening for color and grayscale bitmap images that will print at their original size, a conservative approach for calculating scanning resolution is to simply double the screen ruling of your output device to get the desired image resolution. For example, if the screen ruling is 150 lines per inch (lpi), the desired image resolution would be 300 ppi. Keep in mind, however, that images scanned at high resolutions require more disk storage space than images scanned at low resolutions.

To determine the optimal scanning resolution when you plan to resize the image, measure the original image, and determine the final size of the printed image. With this information, and the suggested screen ruling, use the following formula to determine the desired image resolution:



For images that will be resized, calculate the scaling factor and multiply it by twice the screen ruling.

Overscanning

Some images can be scanned at resolutions less than twice the output screen ruling. Images that do not contain geometric patterns, repeated patterns and textures, or straight lines can be scanned from 1.5 to 2 times the screen ruling. In this example, despite one image having a larger file size and higher scanning resolution, the printed quality of the two images is the same. Scanning at a higher resolution produced a larger file without improving the quality of the final image. The image scanned at the lower resolution requires less disk space and takes less time to print.

Scan resolution: 250 ppi
File size: 465k
Screen ruling: 133 lpi

Scan resolution: 400 ppi
File size: 1165k
Screen ruling: 133 lpi

Tips for working with bitmap images

- Save your scanned image in EPS or TIFF format if you work on both the Macintosh and Windows platforms.
- To save screen ruling settings in your bitmap image file, use an image-editing application, such as Adobe Photoshop, to set the screen ruling and save the image as an EPS file.
- Rotating or transforming imported bitmap images in PageMaker causes longer print times because the output device must calculate the rotation when your publication is being imaged. To shorten imaging time, crop and rotate bitmap images in an image-editing program before importing them into PageMaker.
- To save imaging time, convert RGB TIFF images to CMYK TIFF images in an image-editing application before placing them in PageMaker, or separate the files in PageMaker before printing. For more information, see the *Adobe PageMaker User Guide.*

Different scanned resolutions printed with a screen ruling of 175 lpi.

SIMPLIFYING ILLUSTRATIONS

The complexity of an illustration can dramatically affect how it images on an output device. Creating illustrations efficiently in Adobe Illustrator, or other vector-based software programs, reduces imaging time and imaging errors. Efficient illustration techniques reduce the amount of memory and time needed to image a publication. These techniques can also contribute to smaller files, faster screen redraw, and easier editing.

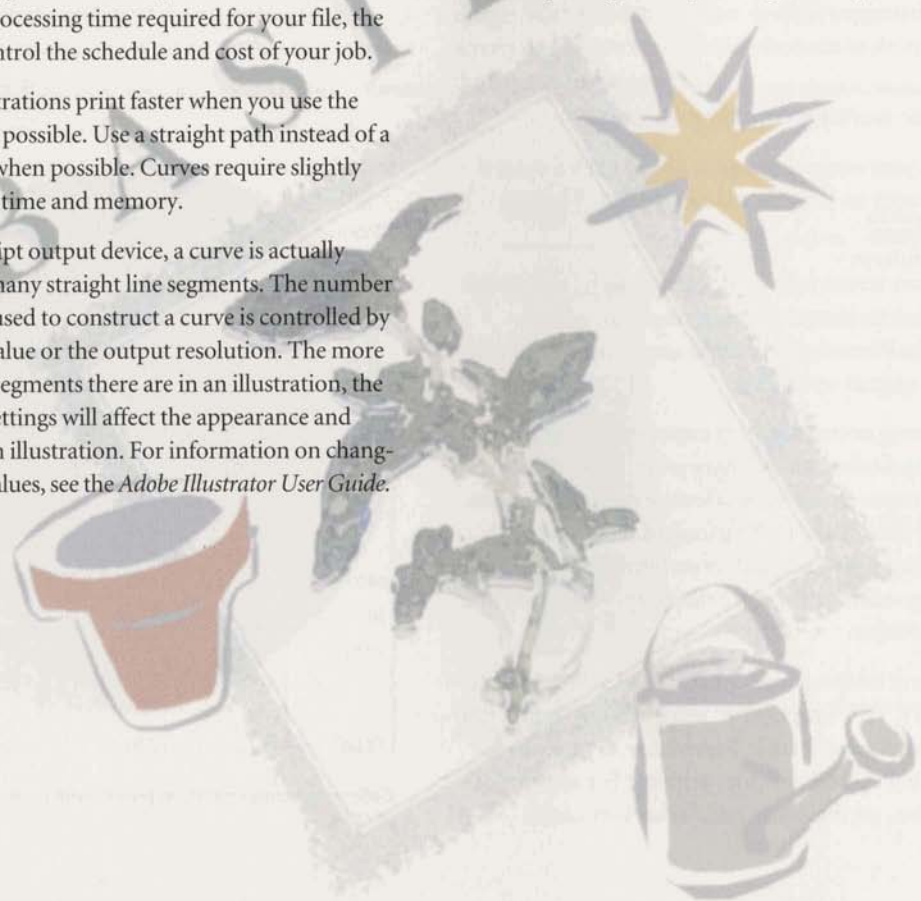
Prepress service providers may charge extra to image a file that takes longer than a standard time to output, or they may delay imaging your file so that it doesn't hold up other jobs. The more you can reduce the amount of processing time required for your file, the more you control the schedule and cost of your job.

Paths in illustrations print faster when you use the fewest points possible. Use a straight path instead of a curved path when possible. Curves require slightly more printer time and memory.

On a PostScript output device, a curve is actually made up of many straight line segments. The number of segments used to construct a curve is controlled by the flatness value or the output resolution. The more curved path segments there are in an illustration, the more these settings will affect the appearance and printing of an illustration. For information on changing flatness values, see the *Adobe Illustrator User Guide.*

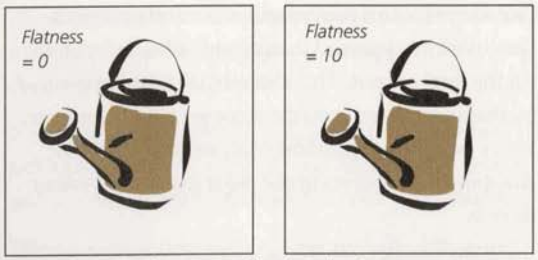
Although converting display type to outlines does not simplify an illustration, it can simplify printing an illustration from PageMaker. When an illustration contains type that has been altered or manipulated using fills, rotations, or transformations, converting the type to outlines will prevent the output device from having to download the font used. Be aware that converting type to outlines may slightly change the character shape. Avoid converting small type to outlines because the type may become unreadable.

If an illustration does not print from the original application, find and fix the source of the error in the art before importing it into your PageMaker publication.

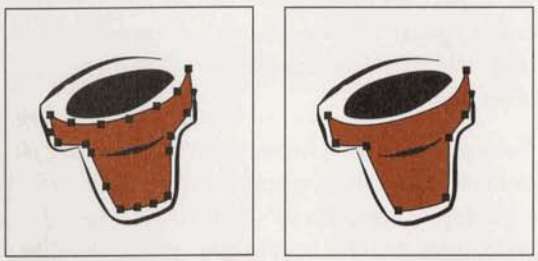


Tips for simplifying illustrations

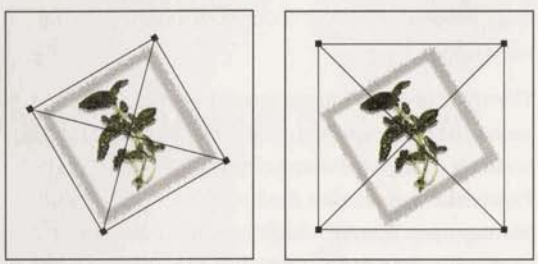
- Avoid multiple graphic or text effects in a single object. Rotating and transforming a bitmap image and masking it with a complex path will cause the object to print slowly.
- Delete any object you can't see in preview mode. All objects on printing layers process when you print, even if they are hidden behind other objects.
- Optimum flatness values depend on the complexity of the paths you have created and the output resolution. See the user guide for your software program for more information on setting flatness levels for illustrations.
- Because masking is memory intensive, simplify the path and the object you want to mask.
- Crop and rotate illustrations before importing them into PageMaker.
- Use text on a path sparingly.
- Limit the number of typefaces.
- Limit the number of gradients and patterns.
- Avoid rotating, scaling or skewing patterns; create them at the size and angle that they will print.



Higher flatness values cause objects to print faster.



Simplified paths print faster.



Bitmap images print faster when rotated in an image-editing application before they are imported.

These illustrations look identical, but the one on the right has been simplified and prints much faster.

COLOR MANAGEMENT SYSTEMS

A color management system (CMS) is used to achieve color consistency between devices. Ideally, this means that the colors on your monitor accurately represent the colors in a scanned image, and the colors you see on the final output. This consistency is accomplished by mapping colors from the color gamut of one device into a device-independent color model, and then mapping those colors to the color gamut of another device.

A CMS is most beneficial when designing publications for output devices with small color gamuts, such as desktop printers. The smaller the color gamut, the more valuable it is to reconcile color gamut differences with a CMS.

Color management systems can be built into an application or an operating system. An application-level CMS does not ensure color consistency between applications. In other words, colors may not look the same between two applications if the applications are using different CMSs or if one application does not use a CMS.

The value of a color management system can be measured by the quality of its device profiles and the accuracy of its color translations between devices. PageMaker comes with the Kodak Precision Color Management System which includes many device profiles for monitors, scanners, and output devices. PageMaker's support is extensible; when new color management systems come to market, PageMaker can support them.

To work with color management in PageMaker, you choose a CMS and then choose device profiles that represent the equipment in your system: your monitor, scanner, and printers, and any other equipment you use to input or output information. See the *Adobe PageMaker User Guide* for more information.

In some cases, you may not want to use a CMS. If the CMS does not have a device profile that accurately represents the color gamut of your input or monitor type, if you are not printing color, or if your prepress service provider is handling all your scanning requirements, you can turn the CMS off. When using a CMS, keep in mind the following:

- With a CMS, you can get more accurate color in your initial design and layout proofs from a color laser printer. This can be helpful in getting design approval earlier in the publication process.
- When a CMS is used in conjunction with scanning applications that color manage RGB to CMYK conversions, the bitmap images in your color proofs more closely match the original scanned artwork.
- A CMS can be used to convert the colors in RGB images to CMYK separated files.
- If your publication uses scanned images from a stock photo service, the images that appear on your monitor will more closely resemble the final printed image.
- If your prepress service provider uses a CMS, discuss the best way for your project to be compatible with their system.

CHOOSING A FONT FORMAT

Choosing the type of font to work with is the first step in making sure the type on your pages displays and prints correctly. The two main font standards are PostScript Type 1 and TrueType.

Competing font standards make selecting fonts an important decision: the same typeface design may be available in a PostScript font and a TrueType font. The visual characteristics of one font standard differ slightly from another. Because of this difference, using one type of font for displaying and proofing your work and then using a different font for printing can cause unpleasant surprises like different letter spacing and line endings.

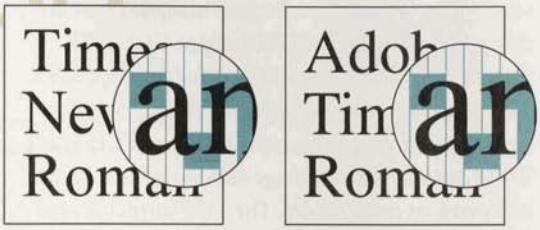
PostScript fonts are the industry standard for imaging to any PostScript output device. PostScript fonts are PostScript language-based outlines—object-oriented vector graphics—that can be scaled to any size, and still remain sharp and smooth on any platform, or output device.

TrueType fonts work well with non-PostScript and PostScript output devices. The disadvantage of using TrueType fonts when printing to a PostScript printer is that the font must be converted to a PostScript outline; the quality of the resulting font depends on the quality of the conversion. TrueType fonts retain their quality when scaled, but may not support all typographical features available in PageMaker. Because TrueType fonts must be converted to PostScript to render on a PostScript output device, many prepress service providers don't support them.

When creating a publication with double-byte characters, such as those found in Asian or Arabic character sets, talk with your prepress service provider to determine if the imagesetter can support the double-byte font required.

For most efficient printing, choose a font that does not have to be converted on your final output device, and use only one font standard in your publication.

Whatever font standard you choose, talk with your prepress service provider about the fonts you intend to use. Specify the name of the font, the company that made the font, and whether the fonts are in PostScript or TrueType format. Make sure you and your service provider use the same fonts.



Fonts from different manufacturers may not have the same characteristics even if they share the same font name.

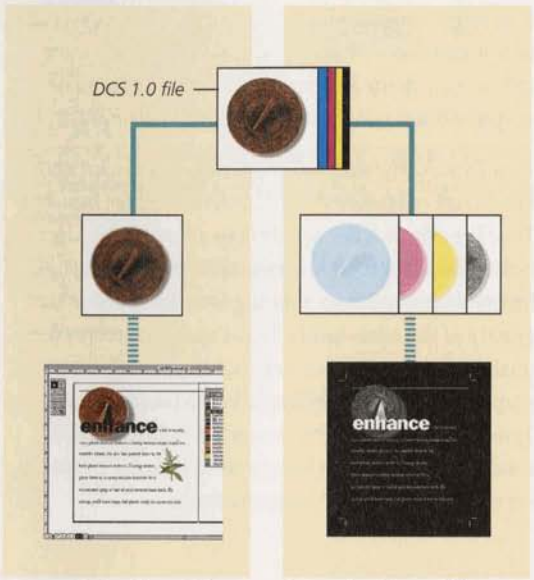
The file format you choose for your graphics depends on your workflow and final output. For information about which formats Adobe PageMaker and Adobe Illustrator support, see the user guide for each software program.

The EPS (Encapsulated PostScript) file format can contain vector graphics or bitmap images. EPS is used to transport PostScript information between programs on the Macintosh and Windows platforms. These files contain a screen preview, instructions for a PostScript output device, and in some cases bitmap image data. Adobe Illustrator saves artwork in EPS format; Adobe PageMaker can create EPS files of a single publication's pages.

The TIFF™ file format is used for storing black-and-white, grayscale, or color bitmap images. There are three common types of TIFF images: RGB TIFF images store colors in the RGB color model; CMYK TIFF images contain preseparated image data designed for printing color separations; and CIE L*a*b TIFFs contain bitmap image data stored in a device-independent color model. The TIFF format is used for exchanging bitmap images between applications on the Macintosh and Windows platforms.

Photo CD files contain bitmap images in several resolutions and are stored on a special CD in YCC format. Photo CD files can store images from 35 mm, 70 mm, 120 mm, and 4-by-5-inch film formats. Photo CD is an efficient format for digitally storing photographs and slides.

Desktop Color Separation (DCS) files are EPS files that combine a low-resolution display image with high-resolution data for color separations. DCS 1.0 files are composed of five parts—a low-resolution file for placement, and separations files for cyan, magenta, yellow, and black. DCS 2.0 files support spot color separations and can store all of the separations in one file.



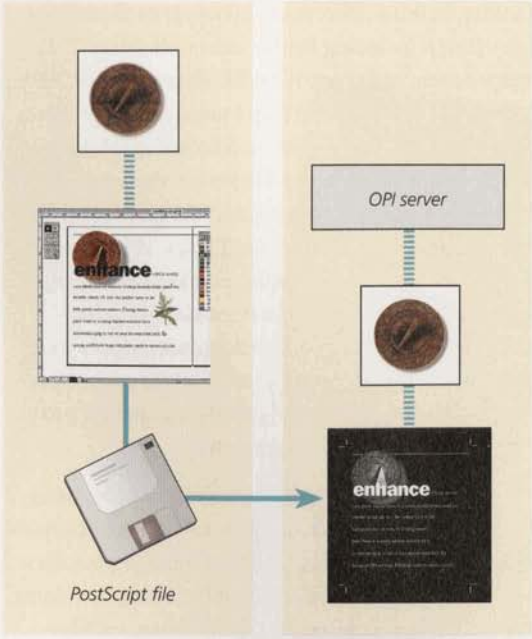
Low-resolution file used for placement

Separation files used for output

OPEN PREPRESS INTERFACE

Open Prepress Interface (OPI™) is an extension of the PostScript page-description language that lets you design pages with low-resolution placeholder images and replace the images with high-resolution images when creating separations. When you use an application that supports OPI, your service provider can scan your artwork, keep the high-resolution image, and give you a low-resolution image to use in your publication. You do not need the large storage capacity or fast processing speed required to store and edit high-resolution TIFF images, which range in size from several megabytes to 50 megabytes.

When working with an application that supports OPI, such as PageMaker, use low-resolution TIFF images to create a publication. You or your service provider can generate a PostScript file; OPI comments in the PostScript file specify the page, placement, size, and cropping of any TIFF images in the file. Your prepress service provider uses a prepress application, such as Adobe® Color Central®, that prints the PostScript file, reads the OPI comments, and automatically substitutes the high-resolution versions of the TIFF images before imaging separations. For more information about preparing PageMaker files for postprocessing applications, see the Adobe PageMaker User Guide.



Low-resolution file used for placement

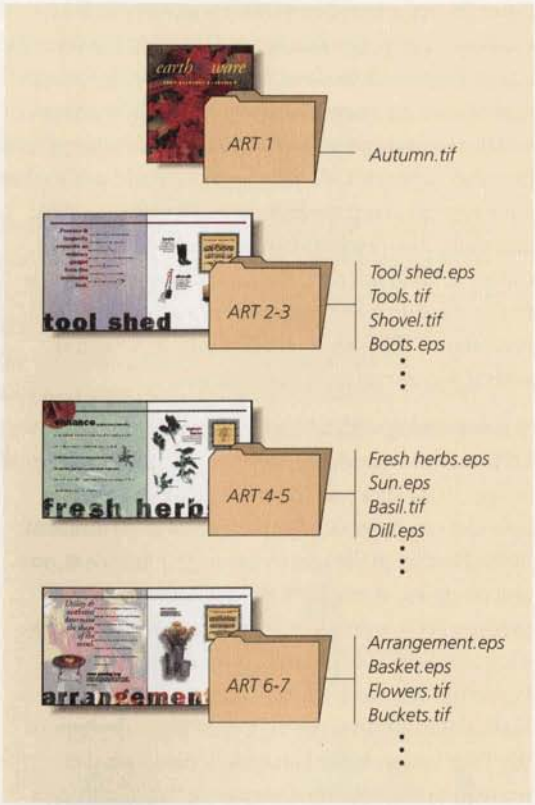
High-resolution file substituted for separations

MANAGING LINKED GRAPHICS

Linking builds a reference to an image or illustration file without including the file in a publication. This space-saving technique is useful when you work with large graphic files like bitmap images or EPS graphics. When you link to a graphic in Adobe PageMaker or place an EPS file in Adobe Illustrator, the application places a low-resolution version of the graphic in your document as a placeholder for display. When you print the document, the application locates the original graphic file on disk and uses it instead of the low-resolution version. Linking minimizes reduces your document file size, but if the original file cannot be located, the low-resolution placeholder prints, probably yielding disappointing results.

PageMaker and Illustrator identify linked files using their filenames and locations; therefore it's important to keep track of your linked files. Organize your files as you construct your document by setting up folders for your linked or placed art. Well-organized files make the eventual hand-off to the prepress service provider easier and can save time and money. Always verify that links are up-to-date before imaging a file.

As an alternative to linking, bitmap images and illustrations can be stored within a document. When you store a graphic in a document, a complete copy of the graphic file is included in the document, thereby increasing the size of the file. The advantage of storing graphics within a publication is that the high-resolution version of the graphic is always available when the file is imaged. For more information on linking and including placed files, see the user guide for your software program.



Organize your files as you construct your publication by setting up folders for art.

The Art of the Garden was printed using a traditional four-color process and two spot colors. According to Mirelez, "the two spot colors were chosen strictly on aesthetics. The only consideration was that they be dark enough to hold up as text type. Other than that, they merely had to look good with all the other graphics." The two spot colors were chosen near the end of the design process.

To save money, Mirelez did not use a varnish, but chose a dull, coated paper stock that contrasted with the ink's gloss, thereby achieving the same effect as a varnish.

Because he had reviewed the publication with his printer, and the printer had provided him with an actual-size dummy of the publication, Mirelez was able to design the publication efficiently. The interior of the catalog was designed to print on two 16-page signatures, and was then hand-collated and stapled. The binding cover was glued on by hand.

Getting Output

Proofing, preflight, and file hand-off are three key steps in the final production cycle. This chapter discusses how these tasks influence the success of your output.

Proofing lets you check your work and ensure that the final printed piece will meet your requirements. It is appropriate to proof your publication at several stages in your project and the proofing process should be integrated into your workflow.

Preflight, a term that prepress professionals adapted from aeronautics, refers to the process of stepping through a systematic list of quality-control checks on your publication before the final output stage. A pilot performs a preflight check to verify that a plane is airworthy and meets legal flight requirements; performing a digital preflight check lets you verify that a publication prints and meets your prepress service provider's requirements.

Handing off your file is a step in the publishing process where communication with your prepress service provider is critical. Recording the requirements, settings, and files in a written report for your service provider helps you organize files and serves as a reminder of all special treatment areas in your publication. The location and organization of all your files, including linked art and fonts, must be clear to your service provider for the hand-off to be successful.

Together, these steps ensure that your final output will meet your expectations. When you check your work as you create your publication and once again before the final hand-off, you can catch most mistakes before they require costly fixes late in the project.

DESKTOP PROOFING OPTIONS

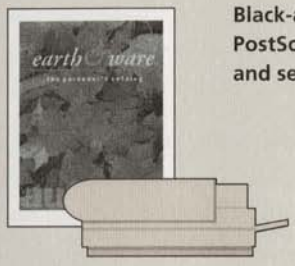
Always preview your publication throughout its development by creating proofs. Proofing allows you to check the layout, verify the accuracy of text and graphics, and anticipate and solve potential printing problems before the files are imaged. If you are creating a four-color process publication, proofing can show that colors will print on the correct separations.

Problems identified in an early preview or desktop proof can be corrected easily; the same problems identified on film separations are more time-consuming and expensive to fix. Also, many prepress service providers require PostScript laser printer separations when you deliver electronic files for imaging.

Intersperse preview and proofing cycles into your workflow as you develop your publication. When you find a mistake in your publication, correct the problem and verify the changes by proofing on the desktop before imaging film.

TYPE OF PROOF

On-screen previews



Black-and-white PostScript composites and separations

Color PostScript composites

WHAT IT IS	WHAT TO LOOK FOR
On-screen previews let you evaluate your publication throughout the design process. Calibrated monitors used in conjunction with a color management system offer a more reliable color display but are not a substitute for more reliable color proofing methods.	Use to refine the appearance of text and to check the overall layout. Check to see that appropriate colors have been assigned to each object. Don't rely on the on-screen appearance of colors to proof your colors: colors on the screen do not exactly match their final printed appearance.
Printing on desktop PostScript laser printers is a cost-effective way to identify problems with layout and design, and to verify that objects and colors print on the correct separations. Printing on laser printers can alert you to problems you may encounter on an imagesetter—files that generate PostScript errors on a desktop printer usually cause problems on an imagesetter as well. Non-PostScript laser printers are not good proofing devices, especially for separations, because the results may not match the output of a PostScript device.	Use a composite proof to preview your layout and text. Remember that because black-and-white composite proofs use screens to simulate color, solid colors print with a dot pattern. Create separated proofs to see whether your colors print on the appropriate separations and to check that elements knock out and overprint as specified.
Color composites printed on PostScript desktop printers can range in quality from low-resolution color halftones to continuous-tone dye sublimation prints and direct digital color proofs. Direct digital color proofs are gaining wider acceptance, and may be used as *contract proofs*—proofs that indicate to the commercial printer the color that you expect in the final document—for some jobs.	Color composites are useful for previewing overall page design, showing color relationships, and verifying bitmap image resolution. Because the actual separations from which the plates will be created are not used, these composites have two critical limitations as a proofing method: color accuracy (even in high-resolution output) is limited, and common press problems, such as moiré patterns, cannot be detected on most devices. Also, most color composites cannot accurately show traps.

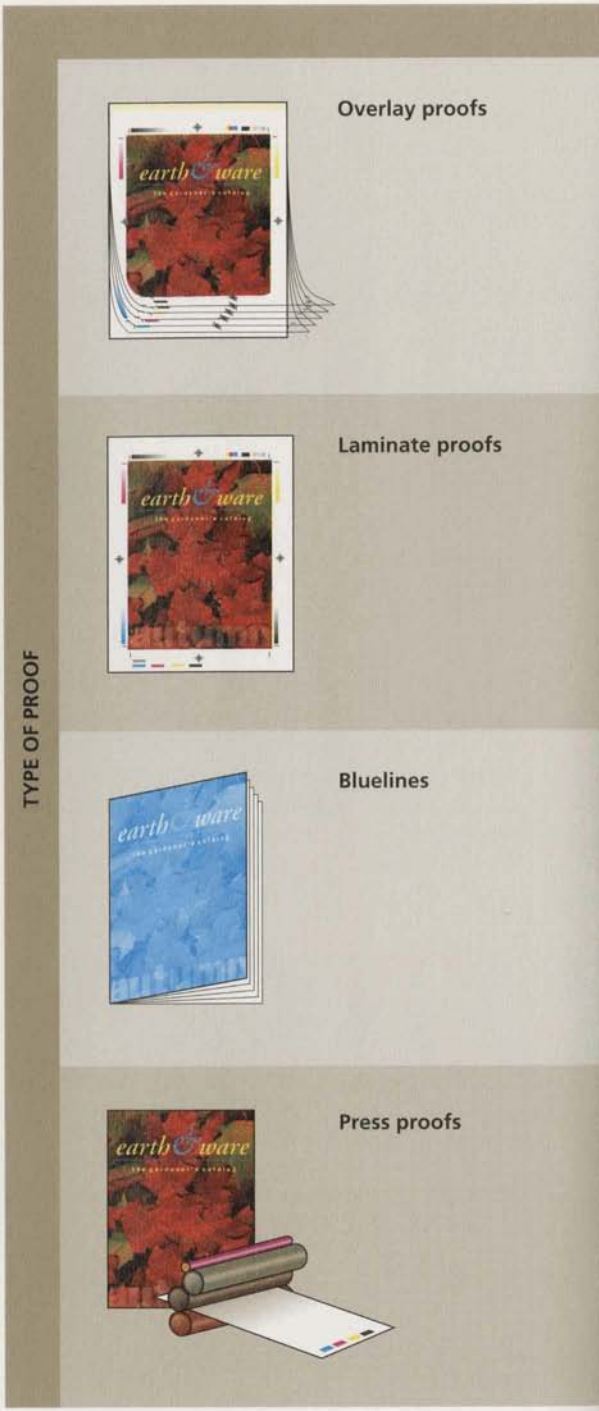
SEPARATION-BASED PROOFS

Separation-based proofs give you the best indication of final output quality. Color density, accuracy, and registration closely match the final printed output because the color proofs are based on the film that will be used to make the printing plates. Next to a press proof, separation-based color proofs are the most accurate proofs available, and are considered the industry standard.

In general, the closer the proofing method mimics the conditions of the actual printing press, the more expensive it is and the more reliably it indicates the final product's quality. For color work, plan to create *laminate proofs*. These proofs are often used as press proofs to indicate to the commercial printer the color that you expect in the final document. Most color proofing systems are for four-color publications, but there are a few proofing systems that can proof high-fidelity colors and spot colors. For spot colors, you can also get a *drawdown*—a smear of ink produced on the paper to be used—to verify quality and tone of a spot color. Consult your vendors to see what proofing options are available.

The final stage of proofing is not only for checking your work, but also for checking the printer's work. Without a press proof, it may be difficult to settle disputes with the printer about color quality. A proof often serves as a guide for adjusting the press during a press check.

Correction costs continue to increase after separations are made; most changes to the publication require that the film be reproduced after corrections are made. Errors discovered during a press check are the most expensive to fix if you have to fix the problem by reproducing film and creating new printing plates. You may also have to pay for press time that was scheduled.



WHAT IT IS	WHAT TO LOOK FOR
Overlay proofs, such as DuPont Cromacheck and 3M Color Key, are created by printing film separations on acetate sheets colored to match the four process inks; the sheets are then layered on top of each other.	Use to locate saturation density problems, registration problems, pixelation of bitmap images. Overlay proofs are an economical way to check the placement of objects, verify that objects overprint and knock out as specified, and confirm that traps print correctly; they are less reliable than laminate proofs for proofing final colors.
Laminate proofs, such as Fuji Color-Arts, DuPont Cromalin, and 3M Matchprint, are created by representing each film separation on a layer of pigmented material, and then binding the pigmented layers together.	Laminate proofs are a reliable method for color forecasting and for identifying moiré problems. Remember that unless the base material for the proof is your paper, the printed colors may look slightly different.
Bluelines are photographic contact prints made from film separations. They are made on paper the same dimensions as the press sheet, and can be bound and folded so that you can check crossovers, bleeds, and page sequence. Bluelines are commonly produced for one-color or two-color publications as well as four-color process jobs.	Use bluelines to check for film scratches and smudges, and to verify that all pages are in the correct order, that text and graphics print on the appropriate pages, and that page elements are accurately aligned.
During a press check, the printer sets up the press for the print run using plates made from the approved separations. Once the press has been adjusted a final press proof is printed. After the press proof has been approved, the printer begins the final press run and compares the approved press proof with the final printed pages throughout the press run to ensure consistent quality.	Press proofs are the only way to see the true effects of color on the paper you've selected. Look for misregistration, color shifts, knockouts and overprinted spots, streaks of errant color, and places where color is too weak or too strong.

CREATING A REPORT FOR YOUR SERVICE PROVIDER

Plan to give a written report of all the requirements and settings for your document to your prepress service provider. The report not only helps you visualize your document from your vendor's point of view, but it gives your service provider and commercial printer an understanding of your expectations. You can start a report early in your project to keep track of decisions and issues, or you can track issues some other way and create a report for your service provider and commercial printer when you hand off your document.

A report for your service provider should be an orderly listing of the details of your document. For small projects, notes written on a printout of the thumbnails of your document should be sufficient.

For multiple-page publications, the report should account for every page in your publication, including blank pages, that will be bound in the printed piece. Indicate the number of color separations expected for that page. When printing color, knowing how many separations are expected for each page helps you identify colors appearing on the wrong page. If your publication contains linked art and images, you may want to track those files as well.

The report for your service provider should contain no surprises. Write brief notes; they are meant to be reminders, not complex instructions.

Sample topics for a service provider report

Settings for imaging

List print settings you've agreed to with your prepress service provider, such as output resolution, PPD used, screen ruling, UCR or GCR settings, and trap tolerance. Indicate film settings including emulsion orientation and whether the film is set to be positive or negative. If applicable, list the color management system and device profiles used.

Font list

List all fonts used in the document and any fonts that were included in imported artwork.

Detailed page listing

List all pages in your publication, including both blank and numbered pages. Use the page numbers to keep track of special requirements on each page. Indicate sections, chapters, or other breaks in long publications.

Filenames and location of artwork

This is the name of the document or PostScript file. For multiple file documents, list all file names. Indicate the location of low- and high-resolution images and any artwork in the originating application format.

Separations

If you are printing color, indicate the number of separations that need to be made for each page. This number should also include any spot varnishes on the page.

Notes

Include short memos to remind you of any special situations on the page. List the location of all bleeds, crossovers, manually stripped in images, and areas in the publication that need special attention. Indicate if the graphics on the page have been trapped.

Earth & Ware Catalog

Contact name: _____

Date: _____

Phone: _____

Publication specifications

Cover:

- 11 x 17 folded, 7.5 x 10 trimmed
- Paper: Starbright Tierra Vellum 80 lb.
- 5-color: 4-color process, spot varnish
- Saddle stitch

Inside signature:

- 16 page signature, 7.5 x 10 trimmed
- Paper: Starbright Tierra Vellum 70 lb.
- 6-color: 4-color process, PANTONE 5747 and spot varnish

• PPD: Agfa Select 7000	Resolution: 2400 dpi	Screen: 150 lpi	*Settings for imaging*
• UCR setting: 17%	GCR setting: none	Orientation: Tall	
• Fonts: Franklin Gothic-Heavy, Demi; Copperplate-32BC, 33BC; Adobe Garamond-Expert, Italic			*Font list*

Filename	Pages	Separations	Total	Notes	
• 00 Cover.pm6 front and back	1 total	4 + varnish	5	Bleeds off all sides Inside cover is blank Art is in *Cover* folder	
• 01 e&w Catalog.pm6	7 total			Art is in *ART 1* folder	*Location of art*
page 1 (i)		4	4		
page 2 (ii)		4 + spot & varnish	6	Bleed off top of page	
page 3		4 + spot & varnish	6	Bleed off top of page	
page 4		4 + varnish	5	Bleed into gutter	
page 5		4 + spot	5		
page 6		4 + varnish	5	Bleed into gutter	
page 7		4 + spot	5	Link to high-res Herb.tif	
• 02 e&w Catalog.pm6	9 total			Art is in *ART 2* folder	*Location of art*
page 8		4 + varnish	5	Bleed into gutter	
page 9		4 + spot	5		
page 10		4 + varnish	5	Basil.eps trapped in Illustrator 5.5	
page 11		4 + spot	5		
page 12		4 + spot, varnish	6		
page 13		4 + spot, varnish	6		
page 14		Black + spot	2		
page 15		Black + spot	2		
page 16		4 + varnish	4		

Detailed page listing *Filenames* *Separations* *Notes*

PREPARING FILES FOR IMAGING

When it's time to hand off your document to your prepress service provider, a systematic check of your files helps ensure that your document will print from another computer. This process, known as a preflight check, is intended to catch missing files, missing fonts, material not intended for printing, and any components that may prevent the document from imaging properly. After you have checked your files, organize them so that your service provider can easily find all the files required to print the publication. Make a final black-and-white proof of your files on a Postscript laser printer. If you plan to produce separations, print two sets of laser copies: one separated and one composite. Take the time to anticipate problems before you hand off files. This reduces the chance that your service provider will have to troubleshoot problems in the file and charge you for additional time required to prepare the file for imaging.

Checking files before for imaging

- For multiple-page publications, delete all unnecessary pages.
- Check all linked graphics to ensure that you are using the latest versions.
- Make sure that your print and document settings are appropriate for the final output device. Often print settings must be changed to proof the publication on a laser printer, so check that all settings are correct for your service provider's imagesetter.
- Use the right PPD for final output. A PPD file contains information for a particular PostScript output device that ensures the best possible results when imaging color separations.
- Verify that your colors are defined and named correctly. If you are using spot colors, make sure that each is defined with just one name.
- Check bleeds and traps. Make sure that bleed allowances are sufficient, and that trap specifications are correct.
- Ensure that your art files are organized.

Organizing files for hand-off

- Copy all art, publication, and bitmap image files required onto the medium you will use to hand off the files to your prepress service provider. Storage media such as SyQuest or Bernoulli cartridges or portable hard disks are excellent for transferring large amounts of data.
- Use a data-compression program to temporarily reduce the size of your files if you are working with large image files.
- Gather your final laser proofs, your prepress service provider report, and the assembled files. This is the packet you will hand to your service provider.

HANDING OFF FILES TO A PREPRESS SERVICE PROVIDER

Before you hand off PageMaker files, you need to know what file format your prepress service provider needs: a PageMaker file, a PostScript file, or both types of files. The choice of file format is important because it determines the file settings you must make and the work your service provider can do.

PageMaker format

Handing off a PageMaker file allows your service provider to run a preflight check on your file, making sure that linked files are found and that necessary fonts are available. Your service provider can also select the correct printing options for the job: emulsion settings, printer's marks, screen ruling, and any additional settings. If service providers encounter problems in the PageMaker publications, they can troubleshoot the files and fix them. Keep in mind that vendors generally charge for the time they spend fixing file problems.

Another reason to hand off PageMaker files is so your prepress service provider can trap your publication. While most dedicated trapping programs, such as TrapWise, trap PostScript files, many service providers prefer having the flexibility of making corrections and creating the PostScript file.

Before you hand off a PageMaker file, make sure that you and your prepress service provider are using the same PageMaker version. A previous version of PageMaker may not open or may not support the enhancements in a later version. A previous version may treat certain file characteristics differently, and you may get unexpected results in some cases. If you are using a different version or platform than your service provider, work with your service provider to choose the best output option.

PostScript format

When you create a PostScript file, you are using PageMaker to translate your page layout, illustrations, and bitmap images into PostScript language instructions tailored to a particular output device. These instructions are converted to a bitmap, or *rasterized*, at the resolution of the output device by a raster image processor (RIP) inside the output device.

When you give PostScript files to your prepress service provider, you are responsible for choosing the correct print settings for your job. Your service provider or your commercial printer can tell you what your file settings should be before you create your final PostScript file. For more information about creating PostScript files from PageMaker, see the *Adobe PageMaker User Guide*.

Hand off a PostScript file to avoid recomposition problems when changing from one computer platform to another; when your prepress service provider doesn't have PageMaker, or the same version of PageMaker; or when you have the time, information, knowledge, and equipment to do the necessary prepress work. Also, if your service provider doesn't have the fonts for your file, you can generate a PostScript file and include the fonts required to image the file.

CHECKING FILM SEPARATIONS

The success of your print job depends in large part on the quality of your film separations. The separation film and the proofs made from the film should be checked thoroughly.

Certain tasks necessary for checking film quality require specific equipment, such as a densitometer and a tool for measuring screen angle and ruling. Other tasks require a loupe or a keen eye for detail. Work with your prepress service provider to determine who will check the items in the following list.

What to look for on film separations

- The overall quality of the film separations. Look for streaking, scratches, or other damage to the film; also make sure that areas that should be clear aren't foggy.
- The maximum density (Dmax) of the black areas on your film separations as measured by a densitometer
- The dot value of your tints and halftones
- The screen angle and ruling for each separation
- The dimensions of the publication are correct.
- All objects printed on the correct separations.
- Objects overprinted and knocked out correctly.
- All fonts printed correctly.
- Bleed objects extend beyond the boundary indicated by the crop marks.
- Areas you expected to trap actually do trap.
- All the separations printed as specified and with the necessary printer's marks aligned correctly.
- Tints and halftones (including scanned images) look consistent and smooth.

Note: *If a single separation for a page is wrong, produce all separations for that page to ensure that the separations don't misregister.*

CHECKING CONTRACT COLOR PROOFS

Contract color proofs are the best way to examine how the colors in your publication will appear when printed. Check for color balance and color match.

Remember that some spot colors, varnishes, and metallic inks cannot be represented by color proofs. The proof may not accurately show all the qualities of the final printed piece. If you find problems with the color proofs, work with your prepress service provider to find the best way to solve them.

What to look for on contract color proofs

- Check color tints to make sure they are accurate and do not look mottled.
- Check that colors are even and consistent throughout the proofs.
- Check colors selected from color-matching systems against printed swatches.
- Examine the color bars to determine if detail has been lost in the film because of overexposure.
- Look at the trim marks to make sure that bleeds and crossovers extend the required amount beyond the marks.
- Check for type that is too weak or breaking up due to overexposure.
- For facial images, look at flesh tones; are they lifelike? Hair should have enough detail to appear real. Bright reflected light in the eyes should have no dot pattern and show only paper white.
- If images appear flat, look closely at the highlights and shadows. If highlight dots are too large, the whites will appear slightly gray. If the shadow dots are too small, the black will not be strong enough.
- For landscape images, a sky can look dirty due to too much yellow. Magenta and yellow dots should be as small as possible on white fluffy clouds, with cyan dots only slightly bigger. Highlight dots should be small.

CHECKING PRESS PROOFS

After you approve your separations, plates are made from the output film and mounted on a press. The press is prepared with the correct inks and paper, and several tests are run to ensure correct ink coverage and register.

After this process, called *make-ready,* is complete, sheets of your publication are printed and made available for proofing. You, the press operator, and the customer service representative then examine the sheets for final quality.

At this point, concentrate on changes that can be made by adjusting the press, such as color densities or color consistency. It is expensive to make any other changes to your publication beyond press adjustments.

What to look for on the press proof

- Is the type sharp? Use a loupe to look for broken or doubled lines.
- Are the colors and type density consistent from one end of the sheet to the other?
- Is the color correct? Compare the press sheet to the contract proof.
- Is the paper or printed surface the one you specified? Bring a sample with you to compare to the press proof.
- Are crossovers correct? Fold the press page and check the alignment and color match.
- Are halftone dots sharp in the highlights and shadows? Use a loupe to make sure that details and highlights match the contract proof.
- If spot-color inks are used, are they as specified?
- Are there blemishes or mottling of color?
- Check all areas of the press sheet for spots caused by problems with the press.
- Are all graphic elements present? Compare the press sheet to the blueline proof.
- Are separations in register? Check to make sure all separations line up on the register marks. Under a loupe, four-color subjects using traditional screening should show a rosette pattern, and no more than a single line of dots of a single color should be visible at the edge of the image.

MIRELEZ/ROSS INC. USED LASER PROOFS and proofs from a color copier to gain client approval for *The Art of the Garden*. Cromalins were produced for color correction and composite color proofs were made of each page to facilitate positioning the art. The prepress service provider color corrected the scanned images and trapped the files. Mirelez checked page sequence and artwork placement on bluelines.

Mirelez handed off his first electronic file to his prepress service provider—one large PageMaker file stored on a small, portable hard disk. This was a risky proposition for a designer accustomed to delivering layout boards where he could see the exact layout. Mirelez said he also took several other risks in the project, ranging from mixing contemporary computer graphics with traditional paintings to using an untested method of bookbinding.

The Art of the Garden was the first publication Mirelez produced with PageMaker, and he said that the interface made it easy to work in. Mirelez offered this advice to designers using PageMaker: "Get to know the program; explore its capabilities. It does beautiful things."

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Monday–Friday: 6 a.m.–5 p.m. Pacific Time

In the U.S.A. and Canada, use the phone numbers listed below to receive technical support for the following Adobe products during your complimentary support period or when using your Adobe Support Credits (ASCs).

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Adobe Fetch®	4506	Adobe Photoshop®	3955
Adobe Illustrator®	3953	Adobe Premiere®	3957

See other side for additional product numbers.

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Adobe CustomerFirst Member Services 1-800-685-3652
(support information and sales of CustomerFirst support plans)

Adobe Customer Services 1-800-628-2320
(general product information)

Immediate Support Benefits

MACINTOSH (U.S.A. and Canada only*)

Send in your completed registration card to receive these benefits

- Complimentary Person-to-Person Technical Support—
  90 days, from the date of the first call, for purchasers of an Adobe retail product; 30 days, from the date of the first call, for purchasers of an Adobe upgrade† product
- Complimentary subscription to *Adobe Magazine*
- Special notice of product upgrades

Choose from our ongoing support plans

Adobe has a variety of support plans, so you can choose the plan that best fits your needs. Adobe CustomerFirst offers annual support memberships, as well as two pay-per-call options—Adobe Support Credits (ASCs) and 900-number Technical Support Service.

For information about these services, call 1-800-685-3652.

For a complete listing of Adobe Technical Support phone numbers, call FaxYI, our automated fax request system, at 206-628-5737 and request Document 499908 to be faxed to you.

*For service and support in other countries, contact your local distributor. To find your local distributor, please refer to the list of authorized Adobe dealers included in your product box.

†An upgrade is a subsequent version of an Adobe product you have already purchased (e.g., version 4.1 or 5.0 are upgrades to version 4.0); an update contains minor adjustments (e.g., version 4.01 is an update to version 4.0).

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