PRINTING PARTNERS

PARTNER Resource GUIDE

Our Partner Resource Guide is provided to you as a service and a guide. Within this guide, we cover many topics and answer many frequently asked questions, but on the chance that you have additional questions, we are always at your disposal to answer your questions.

The printing industry is undergoing a transformation as digital printing becomes more affordable and the quality improves. This new technology is changing the way in which all of us do business. How we prepare our files and how we approach design – all of the old rules just don't work. We welcome your questions to promote possible savings in time and cost.

PRINTING PARTNERS

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PrintingPartners.net

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Printing Specifications:

This booklet was printed utilizing the digital NexPress on UDIGITAL #80 text and cover weight stock.

4-color black & white with 30% magenta removed 35% yellow removed

CMYK Image

4-color black & white with 30% cyan removed 30% yellow removed

PRINTING PARTNERS JOB REQUIREMENTS



Jobs that are sent into Printing Partners should adhere to these guidelines as closely as possible. By meeting these guidelines, there is a greater opportunity to reduce the overall cost of your job, by reducing the amount of time that we spend altering, correcting or preparing your file. And subsequently the faster it will move through our shop.

The requirements are fairly straight-forward and if you take them into consideration prior to starting the job, they will not be a problem at the completion of your job.

For Conventional jobs:

- All colors and images should be CMYK, Spot (PMS) colors should not be altered and should be specified correctly.
- Images should be 300 dpi and placed at 100% in the document.
- If the design calls for images or colors to bleed, there should be a minimum of one-eighth of an inch (.125) bleed on all sides that trim.
- The document size should be the same as the trim size of the final piece.

For NexPress jobs:

- All scans, if scanned in RGB, should remain in RGB.
- All digital photographs should be RGB
- Colors should be CMYK, Pantone colors should be used only from the Pantone Color Bridge Library
- Images should be at 300 dpi and placed at 100% in the document.
- If the design calls for images or colors to bleed, there should be a minimum of one-eighth of an inch (.125) bleed on all sides that trim.
- The document size should be the same as the trim size of the final piece.

Submitting Files

For PDF files:

Submitted PDF files should have been exported as high-resolution and include bleeds and crop marks. A low-resolution (or "smallest file size") PDF will not print as desired.

For instructions on saving high resolution PDF files, please see the section "PDF Settings" on page 4.

For Open files:

Open files are the editable files that exist in whichever program (Quark, InDesign, Illustrator, Corel) it was created. When you send this type of file to us, you will need to supply all of the elements that go with that job.

Items such as fonts, images, and any artwork that may have been placed or used on your pages. If you are using Quark or InDesign this process has been simplified by the manufacturer, all other programs will require that you collect these elements manually. On a PC, this can be difficult when it comes to locating your fonts.

With Quark and InDesign, there is a function within the program that will gather all of the elements, including your fonts, and compress (ZIP) them for sending. In Quark, it is called "Collect for Output;" InDesign calls it "Package".

QuarkXpress

In Quark, you should open your document and load your fonts. Check to make sure all of your links are "ok" and then proceed to the "Collect for Output" located under the File Menu. You will be presented with a dialog box that asks where you want to save the document and what you want to include in this collection. It is best if you create a new folder and include the fonts, linked images, embedded images and layout. Once Quark is finished, you will have a layout, fonts folder and picture folder in the folder you created. Copy all of this to your media or compress (ZIP) the file and send it to us. Quark will give you a warning about collecting fonts. It is true that copying fonts and giving them to someone else is not legal, however, for companies such as Printing Partners, you are allowed to give us copies of the fonts you used in your job. It is our requirement to only use them for your job. Your fonts will be used for your job only and then archived with your job in case we need to re-run that job at a later date.

InDesign

In InDesign under the File Menu, select "Package..." A box will appear asking for instructions. This gives you the opportunity to tell us what you need done. This step is not necessary, so you can click Continue. You will then be presented with a dialog box asking you to name the folder to save the elements. At the bottom of the window are a series of check boxes, these are your options of what to collect. The first three check boxes are the most important, Copy Fonts, Copy Linked Images, Update Graphic Links In Package. Click the Save button. Once InDesign is finished, copy this folder to your media or compress (ZIP) the file and send it to us.

For Conventional Printing

Distiller or PDF Settings

Follow these general settings to create a high-resolution PDF for printing output. As Acrobat is updated, some settings may be added, what is shown below are the basics. If you have questions, please contact us.

General Settings

Compatibility: Acrobat 8 Object-Level Compression: Off Auto-Rotate Pages: Off Binding: Left Resolution: 2400 Embed Thumbnails: No Optimize For Fast Web View: No

Images

Color Images Sampling: Bicubic Downsampling to 300 ppi for images above 450 ppi Compression: Off Image Quality: Maximum

Grayscale Images Sampling: Bicubic Downsampling to 300 ppi for images above 450 ppi Compression: Off Image Quality: Maximum

Monochrome Images Sampling: Bicubic Downsampling to 1200 ppi for images above 1800 ppi Compression: Off Anti-Alias to gray: Off

Fonts

Embed All Fonts: Yes Subset embedded fonts when percent of characters used is less than 100%

Color

Adobe Color Settings Settings File: None Color Management Policies Leave Color Unchanged Document Rendering Intent: Preserve Device-Dependent Data Preserve Under Color Removal and Black Generation: No When Transfer functions are found: Remove Preserve Halftone Information: No

Advanced

Allow PostScript file to override PDF Settings: No Allow PostScript XObjects: No Convert gradients to smooth shades: Yes Convert smooth lines to curves: No Preserve Level 2 copypage semantics: Yes Preserve Overprint Settings: Yes Overprinting default is nonzero overprinting: Yes Save Adobe PDF Settings inside PDF file: Yes Save original JPEG images in PDF if possible: Yes Save Portable Job Ticket inside PDF file: No Use Prologue.ps and Epilogue.ps: No Create Job Definition Format (JDF) file: No

Document Structuring Conventions (DCS) Process DSC comments: No

Standard Reporting and Compliance Compliance Standard: None

JOB REQUIREMENTS PDF SETTINGS

PDF Settings in InDesign

If you have Distiller, InDesign will list the settings you have for Distiller in the settings list. Simply select the appropriate setting. If you do not have distiller you can follow the same rules as listed on page 4. The only additional screen you will have in InDesign will be for crop marks and bleed. You will need to include crop marks and at least 1/8" of bleed.

PDF Settings in QuarkXpress

Under the Edit Menu, go to Output Styles. When the window opens, you will see a list of all styles available. For our purposes use the style "Press — High Quality/High Resolution" then click the Edit button. The preset settings are fine, only the Marks will need to be adjusted. The Offset should be 0.167-inches and Bleed should be 0.125-inches. Click okay and you are finished.

Creating a PDF

Using Distiller

You will first need to make a PostScript file from the application you are using. Once that file has been created, use Acrobat Distiller to create the PDF.

Using InDesign

With the application open, go to the File Menu and select Export. Select the correct Distiller settings and make sure you have selected Adobe PDF (Print) from the list at the bottom of the Dialog box. Click Export and save the PDF file to your hard drive.

Using QuarkXpress

With the application open, go to the File Menu and select Export > Layout as PDF. The dialog box will ask you to choose a place to save the document. You can limit the pages to be converted to PDF with the Pages field, these page numbers correspond to the Page Layout window page numbers. Select the PDF style "Press — High Quality/High Resolution". You can, if you need to, override the style settings, by clicking on the Options button and making changes. These changes will only apply to this PDF.

PRINTING PARTNERS MAILING REQUIREMENTS



Cost-effective mailing starts with a good mailing list. We accept lists in almost any format. Once we receive your list(s) we can:

- Merge multiple files
- Purge duplicate entries by checking names, addresses, or names and addresses
- Correct and standardize address components and identify deliverability

A critical part of mailing is an understanding of Post Office regulations. To ensure the best postage rate we barcode mailings so they qualify for automation rates. This means we must adhere to the following regulations:

- The mailing panel must have adequate room for a barcode.
- There may not be extraneous information that interferes with optical scanning in restricted areas.
- The mailing indicia and any endorsements must be properly worded.

Mailings with a nonprofit indicia must adhere to additional regulations:

- There may be nothing "promotional" on or in the mail piece (additional regulations may apply).
- The return address of the nonprofit entity must appear on the mail piece.
- To receive the lowest nonprofit rate, the weight of the piece may not exceed 3.3 ounces.
- When a response device is used, the business reply device address must include the barcode and FIM in order to qualify for the lowest postage rate.

Be sure to check PrintingPartners.net for the most up-to-date information.

Postcards

To qualify for postcard rates, a mail piece has to meet certain requirements. You only receive a postcard postage discount for Presort First Class or First Class Mail.

Shape: Rectangular Minimum height of 3.5 inches Maximum height of 4.25 inches Minimum length of 5 inches Maximum length of 6 inches Minimum thickness: 0.007 inch Maximum thickness: 0.016 inch

Additional restrictions:

Aspect ratio (length divided by height) must always be between 1.3 and 2.5 for automation postcards. If not, there is a nonmachinable surcharge added to each piece.

Letter

To qualify as a letter, a mail piece has to meet certain requirements. They are as follows:

Shape: Rectangular Minimum height: 3.5 inches Minimum length: 5 inches Maximum height: 6.125 inches Maximum length: 11.5 inches Maximum thickness: 0.25 inch

Additional restrictions:

A surcharge applies to certain conditions including square, rigid and unusually shaped envelopes that weigh one ounce or less. Minimum mail piece thickness is .007 inch OR if the piece is more than 4.25 inches high or more than 6 inches long the minimum paper thickness of the piece is .009 inch.

Flats

To qualify as a flat, a mail piece has to meet certain size requirements.

Greater than 6.125 inches high or

Greater than 11.5 inches long or

Greater than .25 inch thick

And

Not more than 15 inches long or

Not more than 12 inches high or

Not more than .75 inch thick

Additional restrictions:

Minimum mail piece thickness is .007 inch OR if the piece is more than 4.25 inches high or more than 6 inches long the minimum thickness of the piece is .009 inch.

See the next page for information on address placement on flats.

Flats Address Placement

The standards require:

- The entire delivery address should be in the upper portion of all Periodicals, Standard Mail, Bound Printed Matter, Media Mail, and Library Mail flat-size pieces mailed at automation, presorted, or carrier route prices.
- The new standards define "upper portion" as the top half of a mailpiece; however, we encourage mailers to place the address as close to the top edge as possible (while still maintaining a 1/8-inch clearance from the edges).
- For enveloped or polywrapped flat mail, the upper or top half is either of the shorter edges of the mailpiece. For bound or folded flat mail, the bound or final folded edge must be vertical and on the right side, with an exception for Carrier Route (or Enhanced Carrier Route) saturation mail, where either of the



shorter edges can be the top. If the delivery address is on an insert in a polywrapped flat, address must remain in the upper half throughout processing and delivery.

- Mailers may place the address parallel or perpendicular to the top edge within the upper portion of the mailpiece, but not upside down as read in relation to the top edge.
- If a vertical address does not fit in the upper half, address may pass midpoint if placed within 1" of the top edge.
- Mailers must also address ALL presorted, automation (this includes First-Class Mail in addition to the classes of mail mentioned above), and carrier route flat-size mailpieces using a minimum of 8-point type (.080" high), with our preference being all caps and using a sans serif font, or;
- If the mailpiece bears an Intelligent Mail® barcode with a delivery point routing code for automation pricing, the address may be a minimum of 6-point type (.065" high) in all capital letters.
- In addition, for ALL automation price pieces, the characters in the address must not overlap, the address lines must not touch or overlap, and each address element may be separated by no more than five blank character spaces.
- Postage and Delivery Address must be on the same side of the mailpiece. Postage must be in the top, right corner of the mailpiece or address area. Postage must have the same "read direction" as the Delivery Address. This does not apply to Periodicals that are not required to display postage.

Endorsements

Ancillary service endorsements are instructions printed on the address side of your mail piece to give the Postal Service instructions on how to handle your mail if it is undeliverable as addressed. These include Address Service Requested, Return Service Requested, Forward Service Requested, Temp Return Service Requested, and Change Service Requested. Most endorsements are the same for all classes of mail, but the treatment and cost differ by class of mail.

Address service requested

This endorsement instructs the Postal Service to forward priority, first class and standard mail at no charge for the first 12 months. A separate address notification is also provided to the sender for a fee. After 12 months, additional information is provided and varying fees apply.

Return service requested

This endorsement instructs the Postal Service to return undeliverable mail to the sender with address notification, or reason for nondelivery. There is no charge for First Class mail. Standard mail is charged the appropriate single piece First Class rate.

Forward service requested

This endorsement instructs the Postal Service to forward the mail piece months 1 though 12 at no charge for First Class and Standard mail. After 12 months, additional information is provided and varying fees apply.

Change service requested

This endorsement instructs the Postal Service to provide the sender a notice of new address or reason for nondelivery. The mail piece is disposed by the Postal Service. Varying fees apply to Manual and Electronic notices for Standard, Priority and First Class mail.

Temp-return service requested

This endorsement is only for First Class mail and there is no charge. The mail piece is returned with a new address or reason for nondelivery attached. If a temporary change of address piece is forwarded, no separate notice of temporary change of address is provided to the customer.

For more information on mailing, visit www.usps.com.

Tips for Mail Piece Design

- On all folded booklet-style mailers the bound edge should be on the right hand side (leading edge) of the mail piece
- All mailing panels should be faced so the final folded edge is at the bottom of the mail piece to minimize tab requirements
- For automation mail (Barcoded) there MUST be at least an area of 4 inches wide by 2.75 inches tall of blank space to print the address & barcode. These dimensions will ensure there is enough space around the information so it can be read accurately on USPS machines.

MAILING REQUIREMENTS MAILING INFORMATION

Rate Options

An up-to-date listing of current USPS rate options is available on our website: www.PrintingPartners.net/services/mailing.php

PRINTING PARTNERS DESIGNING FOR DIGITAL



Why digital printing?

Whether your client works for an ad agency, a design studio, an in-house design group, or as a freelance resource, you need to offer high-value solutions, new ways of solving old problems, and more timely, more effective ways of reaching and influencing customers. That's what digital printing is all about.

Digital printing offers design freedom

Take advantage of high-quality, full-color printing that delivers results you'll be proud of. With digital printing, you can get sharp text and lines plus rich, detailed halftones. Moreover, digital printing supports an extremely wide range of paper sizes, stocks, weights, and finishes (both coated and uncoated). Because paper cost is often less of a factor in short-run printing, you're likely to have the flexibility to specify papers that have previously been out of reach.

Digital printing is fast

You always want to say "yes" to clients, even when they come to you with "impossible" deadlines for new projects or updates. Digital printing makes this easier, because it delivers high-quality printed pieces in hours, not days. That speed makes digital printing a powerful tool for responding to rapidly changing markets. And with far less available time allocated for printing, more of the time is yours—giving you a better opportunity to do work you'll be proud of. Electronic collation right on press offers fast results for jobs that mix multiple weights or types of paper.

Digital printing supports variable data printing for maximum effectiveness

With traditional printing, every piece is identical. But with digital printing, each printed piece can be customized in many ways. You can incorporate a recipient's name, location, or any information your database contains, including images, colors and design elements. Messages targeted at individual reader's interests and needs with clear and relevant messages are far more convincing and effective. They deliver higher response rates—up to three times higher for direct mail. As a result of that efficiency, digital printing's cost per lead or sale is low, and its cost-effectiveness is high.

Digital printing makes short-run printing practical and cost-effective

With traditional printing, most of the cost is getting on press. While that makes the per-piece cost of long runs attractive, it often makes short runs prohibitively costly. That can mean missed opportunities for your clients— and for you. Digital printing can make the shortest runs practical and cost-effective, right down to printing just a single high-value piece.

Choose digital production, and there's never a need to print more than is actually needed. That eliminates two of the biggest expenses in traditional printing: storage and obsolete inventory.

Digital printing's a natural

An all-digital printing process is the natural extension of your computer and design applications. It works seamlessly and intuitively with the way you work now. It's a natural for providing fast, powerful, innovative, costeffective solutions to your clients. As you learn more about digital printing, you'll soon discover a whole new range of creative options never dreamt of in the conventional print world. Digital printing systems like the Kodak NexPress are a perfect choice for smaller quantities, print on-demand and tight deadlines. Digital also excels when a project calls for a variety of substrates or when a job requires several different versions. And, when it comes to variable data printing, there is simply no other way.

Why the digital NexPress?

The digital NexPress is a unique printing solution. It combines the power of a press with the flexibility of a printer. Like an offset press, the NexPress digital press delivers high productivity and consistently top-quality pages. At the same time, it provides the immediate turnaround and short-run economy of a printer. The ability of the press to reproduce true color on a variety of substrates—coated and uncoated—gives you the options most digital printers can't deliver. And because it's sheet-fed, you can choose from a wide range of paper stocks and combine up to three different papers in a single job. The technology of Kodak NexPress dry ink eliminates the time-intensive drying process, enabling documents to go directly to finishing. These features make the NexPress the right choice for the higher-value print applications your clients need, including high-quality, on-demand prints in short runs with quick turnarounds, fully customized 1-to-1 marketing materials and full-color collated pages that are ready to be finished immediately. The NexPress was designed and built to meet the requirements of jobs that demand quality, flexibility and speed.

TIPS AND HINTS DESIGNING FOR DIGITAL

Secrets to great digital color

Print gamuts

Gamut is the term used to describe the range of colors that a specific device can produce. If you're accustomed to designing within the limitations of the traditional color gamut of the CMYK offset process, you'll be pleasantly surprised to learn that the advanced technology of Kodak NexPress dry inks make it possible to exceed that gamut by 20%. Your computer monitor, however, can display many colors that are outside the gamut of any printing process, even a 600-dpi digital printer. In the same way, the inkjet or dye sublimation printer you may use to create proofs also has its own distinctive color gamut. The bottom line: what you see on your monitor or on your proof is not necessarily a good indication of the final printed result. The best way to know exactly how your color will look is to ask your printer to proof the job on the NexPress digital press. That's one of the benefits of digital printing—proofs can be run on the same printer as the final output.

Blacks and grays

If you want to print a solid black area, use a formula that combines all CMYK colors to create a "rich" or "super" black. A few sample formulas are shown here and you can check with your printer for other variations that work well. If you're planning



to reverse white or light-colored type out of black, modify the formula to a slightly less rich mixture. Here again, your printer is the best source of information as you learn about the capabilities of digital printing.

For neutral shades of gray, use straight tints of black.

Spot colors

When printing digitally or 4-color process, you must be sure to use the Pantone Color Bridge Library when creating swatches. Recently, Pantone removed the CMYK builds from their Solid Spot Color Libraries. The new Solid Spot Color Libraries only include Lab color builds to represent the color on screen. If you attempt to digitally print a Solid Spot Color that only has Lab builds, the RIP will attempt to convert the Lab build to a CMYK build, which is inaccurate. See our blog post for more detailed information: *printingpartners.wordpress.com/2013/04/08/pantoneproblems.*

Achieving the best printing results

Large areas of solid colors, tints and blends

There are several design techniques you'll want to learn to help improve the way large flat areas of solid colors or tints reproduce on a digital press. To maintain a smooth appearance, introduce a slight pattern to modulate the color. The pattern can take the form of texture, subtle graphics or simple noise. Adding a pattern can also improve color reproduction and eliminate banding. The same holds true for color blends and gradients.

Use all your design options

One of the best ways to optimize quality in large areas is to incorporate imagery, photos, graphics or text in your design right from the start. When you naturally break up large areas of color with design elements, you're also taking advantage of one of the strengths of working on a digital press—that is, the ability to reproduce high-quality, full-color images.

Tints and Blends

- Areas of solid color, tints and blends may reproduce better if filtering techniques are used (i.e., noise or texture) at the design stage. Apply from image manipulation software such as Adobe Photoshop.
- Create blends from QuarkXPress, Adobe Photoshop and InDesign, or other common desktop publishing applications.
- Tints should not be less than 10%.
- Limit blends to less than 50% value change over 2-4" for best results.
- For tints less than 40%, apply noise or texture.

Photo reproduction

Sharp, crisp reproduction of photography and illustration is one of the greatest strengths of the Kodak NexPress. The NexPress excels at skin tones, highlight and lowlight detail, and rich, true color. So take full advantage by maximizing the use of photographic images whenever possible.

Text

With digital printing, your font choices and sizes are as limitless as they are in conventional printing. And unlike most digital printers, the NexPress can print 4 point black type clearly and legibly.

Dot gain

You've probably found yourself dealing with optical and mechanical dot gain. With the electrophoto-graphic technology of the NexPress, the dot gain is constant and a routine calibration controls the dot gain for all conditions. You should not have to make any adjustments to your files.

Dry ink coverage

While it would be technically possible to print 100% of each process color for a total coverage of 400%, it's not necessary nor recommended. On page 16, you saw how to create rich blacks and the total coverage of the recommended formulas ranged from 180% to 240%. For the NexPress, the maximum dry ink coverage is 280%. With more excessive coverage, a buildup of layers may become noticeable. If 280% coverage is exceeded in the file, it will be reduced to 280% automatically by the NexPress.

TIPS AND HINTS DESIGNING FOR DIGITAL

Examples of maximum coverage

C 70% M 55% Y 55% K 100% Total coverage: 280%	C 0% M 100% Y 100% K 80% C 0% Total coverage 280%	9:

Scanning and scan resolution

Scan continuous tone images at a resolution that will provide 300 dpi as the final layout size. Higher resolutions only increase raster image processing (RIP) time with little or no visible improvement in image quality. Perform all scaling, rotation and manipulation of your images in your image editing application before placing them in your layout.

Scanning

- Scan continuous tone images for 300 dpi at final size.
- Scan line art at a minimum of 600 dpi, up to 1200dpi.
- To capture a larger color gamut, scan continuous-tone images in RGB or Lab Color mode rather than in CMYK mode. (This is only if your job will be printed on the NexPress, otherwise using CMYK is recommended)
- Save at 100% of final size and orientation.
- Do not include screen angles or transfer functions.
- Using compression can result in image degradation.
- TIFF (for images) and EPS (for graphics) are usually acceptable.

Keys to a clean finish

Bleeds

Prepare jobs that bleed in exactly the same way as you would for conventional printing with an extra 0.125 inch (3mm) to allow for trimming on the bleed edges. For die cut jobs, increase your bleed to 0.25 inch (6 mm) to anticipate possible movement on finishing devices.

Imposition, folding and finishing

With the NexPress, you can set up your documents as 2-page reader spreads, or 1- or 2-page printer spreads. Automatic imposition software handles the setup and proper sequencing, but it's still a good idea to give us a mock-up of your layout to avoid any possible misunderstandings. Remember to allow the proper amount of space in the gutter for the binding process you will be using.

When it comes to folding, one concern with electrophotographic imaging systems is cracking in heavy-coverage areas. You can reduce the possibility of cracking by designing your job with less coverage on areas to be folded. Whenever possible, design your job to fold with the grain of the paper, not against the grain. For best results, score all folds. If you gloss coat the final pages—especially covers—you can reduce cracking and provide a durable, finished look.

The NexPress has a fifth imaging solution for clear overcoating with clear dry ink. Ask your salesperson. (See also page 40)

Trimming and binding

Virtually all commonly used binding methods are available for use with digitally printed documents. If you're taking advantage of the fast turnaround possible with digital printing, you'll probably want to keep your binding options simple to save time. We recommend saddle-stitching and coil binding for fast turn-times, but perfect binding is also an option with the NexPress.

File preparation

File preparation tips

In addition to designing your document to take full advantage of digital printing's unique capabilities, proper file preparation is essential to ensure that your job runs smoothly. You can supply open files or final PDF files to your printer. Before creating a PDF for the NexPress, contact your printer and request the Distiller Job Options file. Place this into your Distiller Settings folder before you create the PDF.

The NexPress performs at peak efficiency with any standard desktop application that produces PDF and PostScript files. It is a good idea to supply us with your open files as well. This will allow us to make any necessary adjustments faster and easier.

How to avoid font conflicts

- Use Type 1 standard PostScript fonts or TrueType Fonts.
- Do not use Multiple Master fonts.
- Do not apply font styles from the menu or keyboard; choose the correct version of the font from your type menu. (e.g., use Times New Roman Bold; do not apply "bold" to a regular font.)

Job submission checklist

Be sure to include all screen and printer fonts used in your document, including those embedded in image files. Include separate fonts for styles within font families.

- Provide a printed file directory for reference.
- Provide a hard-copy or PDF proof to indicate page elements and sequence.
- If necessary, include an imposition layout or mock-up of the final design.
- Make sure all trapping options are turned off. Inform us if you have done any trapping yourself.
- Make sure that all artwork has been converted to CMYK or RGB, depending on if the job is printing conventionally or digitally.
- Collect all linked files, fonts, images and page elements for output.

PRINTING PARTNERS ELECTRONIC FILE SUBMISSION GUIDELINES



General Font Handling Rules

In applications, use the actual stylized typeface if it is available, avoiding the use of style attributes such as bold, italic, bold italic, outline and shadow.

You should use higher quality postscript, true type or open type fonts. Some inexpensive and free fonts may not print correctly.

Hard-Copy Proofs

It is our experience that hard copy proofs are vital to insure the integrity of the final output. Clients should provide the following with every project:

- 1. A hard-copy proof or PDF proof. Printing Partners will not be held responsible for the integrity of the imposition proof without a hard-copy proof since this is compared to the final as a quality-control measure.
- 2. Hard-copy or PDF proofs must match the supplied electronic files. This is absolutely critical to the internal quality/review process.
- 3. On all files which are sent by web or email, the client should provide a PDF to show position & approximate color. A low resolution PDF is acceptable if you are sending open files.
- 4. Printing Partners will not be held responsible for the integrity of the final piece without a hard-copy or PDF proof.

If you have submitted a file without a hard-copy proof, Printing Partners will:

- 1. Produce a proof from the electronic file.
- 2. Compare the printout to the PDF proof or send it to the client for approval.
- 3. Await the client's approval to proceed.
- 4. Only after approval by the client, salesperson or CSR acting on behalf of the client, will Printing Partners process the job.

Hard-Copy Proof Specifications

- Your proofs should be 100% in size. Tiling may be necessary, and is preferred to off-size proofs. Proofs not at 100% size create quality control problems such as checking text, subject position, etc.
- Make sure you consider the print area of your printer. Some printers have a non-printable border.
- Print proof with file name, crop marks, date and time. Click the registration marks option in the print dialog box when using programs that support this feature.
- For a spot or process color project, color proofs are preferred. Color proofs can give us insight into color breaks, the status of imagery (color or black and white), and any potential trapping problems to watch out for.
- If you are relying on black and white laser proofs, grayscale mode should be used when printing proofs of color pages. Black & white proofs of color pages should be printed with "Colors as Gray" turned on.
- Tiled proofs should be complete and taped together as a page or a spread.
- Handwritten instructions can clarify aspects of your proof, making the project easier to process.
- Fifth or spot colors should be labeled. This assists us in understanding if a color needs to be a spot color or a process tint match.

Submitting Revisions or Corrections

A client can save money through the use of the guidelines for electronic prepress, by helping to ensure that the work is right the first time, thus eliminating the need for most author's alterations (AAs). However, in the course of producing a project, AAs will sometimes happen. In order to expedite an AA in the most cost-effective manner, we recommend the following:

- All changes should be marked on the most recent vendor-supplied proof. Do not mark changes on the originally submitted design proof that you included with the disk.
- Text and mechanical changes must be made to the computer file and saved as a revised file with a new electronic file name. This new name should include the suffix '_R1'. For example, if your original file name were 'Sales Broch', the new name should be 'Sales Broch_R1'.
- A new hard-copy proof should be created of the revised file, using the guidelines discussed above.

The items you should then ship to your vendor include:

- Marked-up, most recently vendor-supplied proof.
- Hard-copy proof of the revised file that includes your AA's.
- Revised computer file, (correctly renamed with _R1, _R2, etc.)

If only color corrections to 4/C images are to be made and you wish us to correct the color, submit only the marked up vendor–supplied proof. If you have modified imported live images, you must re-submit these files. In this instance, do not rename the imported illustrations or scans, since they have been already imported into your layout document. You may wish to open up your layout document and update the links, to ensure that cropping and placement issues have not been altered by your modifications.

If you do not follow the above procedures, the submitted AA electronic file typically will be produced from scratch, as if it were a completely new submitted electronic file.

If you cannot produce a current hard copy proof that matches the electronic file due to last minute changes, you can send us a PDF proof via email.

File Naming Recommendations

Any new file submitted must have a unique file name. No two electronic files should have the same exact name. Revisions of the electronic files should not use the same name as the unrevised file.

Text Handling and Text Special Effects

Reverses

The words "REVERSE" or "DROP OUT" may be used interchangeably. For the offset printing process, define a reverse using the default color "WHITE" that exists in your application's color palette.

Outlines

Text outlines should be created in drawing programs and saved as an EPS file for outline effect. To create an outline in Adobe Illustrator or other object-oriented drawing programs, do the following:

- 1. Set the original text in a text box applying all attributes of kerning, font, point size, leading, horizontal scaling, color, etc.
- 2. When text is final, save the document for future editing.
- 3. Convert text to outline in Illustrator .
- 4. If you use 100% black stroke or fill, set the black stroke or fill to overprint in Illustrator. If you plan on having your vendor do trapping, you should not set color stroke or fill to overprint or surprint, even if that is the eventual effect you are looking for. Make sure you make these requests clear on your proof.
- 5. Save in Illustrator.

Drop Shadows without Outlines

Drop shadows can either be created within the page layout program or by using a drawing program that will produce an EPS file. It is very important to note that a shadow be a separate, editable and definable element. Do not use the "SHADOW" attribute from the type style dialog box. You may use the shadow effect in Quark or InDesign, but remember that combining shadows and spot colors may create problems.

The preferred method of creating a simple drop shadow (no outline included) is as follows:

- 1. Set the original text in a text box on pasteboard applying all attributes of kerning, font, point size, leading, horizontal scaling, etc.
- 2. Select "Step and Repeat" to duplicate text at the desired shadow offset.
- 3. Apply color/tint to shadow text.
- 4. Send shadow text box behind.
- 5. Select original text box and make it transparent by selecting None for color background under the Modify menu.
- 6. Group the two text boxes and position on layout.

Drop Shadows with Outlines

This is an alternative method of producing a drop shadow if outline is involved, using Adobe Illustrator:

- 1. Set the original text in a text box applying all attributes of kerning, font, point size, leading, horizontal scaling, color etc.
- 2. When text is final, save for future editing.
- 3. Convert text to outline
- 4. Select "Copy and Paste in Front"
- 5. Create the proper offset by moving new text.
- 6. Apply shadow color/tint.
- 7. If you use 100% black stroke or fill on either layer, set the black stroke or fill to overprint in Illustrator. If you plan on having your vendor do trapping, you should not set color stroke or fill to overprint, even if that is the eventual effect you are looking for. Make sure you make these requests clear on your proof.
- 8. Send shadow text behind.
- 9. Group together.
- 10. Save in Illustrator.

Trapping

The responsibility to set traps is a workflow decision that should be discussed.

We do not require the client to do trapping, preferring that the client prepare files in a manner consistent to the guidelines. This will assist us in applying and being responsible for trapping.

Rules, Frames (Borders) Specifications

The words "FRAME," "STROKE" and "BORDER" may be used interchangeably. The words "RULE" and "LINE" may be used interchangeably.

Rule Specifications

Do not use a predefined "HAIRLINE" width rule in any application. Keep in mind that predefined hairline rules vary in width between different applications and output devices. This is a very imprecise tool, which can become totally unusable when output on a high-resolution device such as an imagesetter. Instead, define your own hairline width rules as .25 point.

Caution should be taken when using paragraph rules in QuarkXPress. For example, when using rule above or below, the rule takes on the text inset of the text box.

Wherever possible, do not use rules to create frames. It's extremely difficult to align rules to create perfect corners. Even though certain sides of frames (such as in the creation of ads) may be bled off the page, it is highly recommended to use frame options within the applications, even if that means that part of the frame bleeds off the page.

Importing Graphics

Live images (not including EPS files)

A live image is any image element in an electronic layout file that will be incorporated in the final document. These can include scans, other digitally captured images (digital camera, Photo CD or video frame grabber) or computer-generated art.

Any live computer image files should be supplied in a CMYK format, as opposed to RGB. Conversion to CMYK from RGB can be accomplished in Adobe Photoshop. It is best to have the scans created as CMYK on a scanner that supports this feature, since the RGB/CMYK conversion algorithms in desktop programs can be unpredictable. If you are printing digitally, you can leave these files as RGB.

Encapsulated Postscript (EPS) images

Page layout programs treat EPS files as electronic pickups. After placing EPS files in a page layout document, do not rename EPS files. The EPS file name is the link between the page layout document and the EPS file.

Defining Colors

When defining colors, you should reference a printed tint guide before entering values in the color palette because RGB color monitors do not accurately represent ink on paper, whether CMYK tints or Pantone spot colors. This is because of the different color gamuts associated with printing vs. monitors.

Process vs. Spot Colors

Many desktop programs allow you to specify colors in three ways: You can specify a spot color by product name such as Pantone, a process color by setting CMYK percentages, and process color tints based on pre-defined systems such as TruMatch and FocolTone.

When specifying spot colors, be sure to use the appropriate spot color libraries when creating your swatches.

When specifying process tint matches it is important that you use the Pantone Color Bridge Library when creating your swatches. Because Pantone has recently removed the CMYK building from their spot color libraries, you MUST use the Color Bridge Library or your colors will print incorrectly. For more information on this, view our blog post: *printingpartners.wordpress.com*/2013/04/08/pantoneproblems.

We recommend that you always specify tint percentages using the TruMatch or FocolTone system. Whenever specifying colors, always work from printed swatchbooks, not what you see on the screen.

Transparency

QuarkXpress, InDesign and Illustrator all offer transparency effects within the applications. This includes transparent colors as well as drop shadows. While this effect will look correct on your screen and in most cases it will look correct in your PDF, there can be issues when we prepare your file for printing.

The problem arises when transparency and spot colors are used together. When you specify transparency, any color that is affected by the transparency is rasterized in CMYK. If all affected colors are CMYK, then there is no problem. However, if any of the colors are spot colors, the color may shift when it is rasterized. Also, when we produce printing plates for the job, your spot colors will now be 4-color and will not print correctly.

The solution. If you are working with a spot color and transparency, you can send us the open files, or after proofing and approvals, switch your spot color over to either cyan, magenta or yellow. We can then "map" that color back to your spot color for printing. The contract proofs we produce for you will show the colors after they have been mapped. If you have any questions on how to handle this type of situation, please contact your salesperson or CSR and they can answer any questions you might have.

Creating and defining EPS files

Try to minimize the nesting of EPS files. Printing an EPS within an EPS increases the chance that the file will not RIP correctly in PostScript. Generally, if it won't print to your PostScript laser printer, chances are we may have the same or similar problems during production. Nesting EPS files also creates linking problems between applications that may cause unpredictable results.

To get the same results as nesting using Adobe Illustrator, "Open and Copy" illustrations instead of "PLACE".

You should restrict object-oriented EPS illustration files to single subjects. In other words, do not have several illustrations in one EPS file that are usually viewed in individual graphic boxes or windows. For example, don't put multiple logos in one EPS file if they are individually cropped for use in your layouts.

The reason for restricting to a single subject is that every time you place the EPS file, the PostScript RIP (both your laser printer and our high resolution RIP) has to process the entire EPS file even though only a small part is showing through the cropped windows. This can result in productivity losses.

If you use 100% black stroke or fill, set the black stroke or fill to overprint in Illustrator. Generally, do not set other colors, stroke or fill, to overprint.

When creating your EPS illustrations, convert all text to outlines to eliminate font calls and ensure font compatibility at production time.

Convert to outlines. Beware that some typefaces in smaller sizes may not be suitable to convert to paths.

UPC codes

UPC codes are available in an approved EPS file form. It is strongly recommended that you do not try to create your own UPC barcode. It is extremely difficult to meet all the UPC guidelines.

Did You Know?

The printing press was a very important invention that changed the way people communicated with each other and shared ideas. Printers could make books faster, which meant that knowledge could be spread more widely, and more people learned how to read.

Here are some interesting facts about printing:

- 1. It took almost two years to produce Shakespeare's First Folio. The First Folio was printed in 1623 and was the first time that Shakespeare's plays had been published together.
- 2. Johannes Gutenberg adapted a wine press to make the first printing press around 1439. Instead of pressing grapes, the equipment pressed metal letter forms onto sheets of paper, parchment, or vellum. Gutenberg was a professional goldsmith who used his metalworking skills to make the first set of movable type in Europe!
- 3. When books were made by hand, scribes used water-based inks; these inks did not stick to printed pages very well, so printers had to invent oil-based inks. The oil-based inks spread over the metal type more evenly. Printers sometimes used ingredients from their homes to create inks. Soot, for example, made a good homemade black ink.
- 4. Mexico had a working printing press in 1534—before Ireland, Russia, or America! The first American printing press was started in Cambridge, MA in 1639. Jose Glover came from England with his family to open the first print shop, but he died either during the journey or very soon after his arrival. His widow and one of the assistants, Stephen Daye, successfully started America's first print shop.
- 5. Each piece of movable type, including letter forms, punctuation, and blank spaces, was originally made by hand. Some printers created their own typefaces, also called fonts. Some of these fonts are still used today. Garamond, for example, is on many computers and is named after the French printer Claude Garamond.

PRINTING PARTNERS TYPES OF FOLDS



TIPS AND HINTS TYPES OF FOLDS

Folds come in two types: parallel and right angle. The folds you make before you put a standard-size sheet of paper into a business envelope are good examples of parallel folding; two creases in the same direction, ideally along the paper grain.

A right angle fold is two or more folds, with each fold at 90 degree angles to the one before it.

To make clean folds, many jobs require small variations in panel size. While they may look similar, individual panels are sized at slight differences to accommodate paper thickness.

It's also worth remembering that the more folds you have, the lighter the weight of paper required. That's because heavier stock may build up too much thickness to roll into itself a number of times, or may require wider scoring to minimize possible cracking.

Don't be offended if we ask if you'd like to see a paper dummy. We're not implying anything — we're just offering a preliminary layout made from blank sheets of paper folded and bound with the correct number of pages and folds in the weight you desire to give you an accurate representation of the final piece.

Paper Grain

Paper is made up of fibers and they are arranged to go in the same direction. If we bend paper at a 90 degree angle to the fibers, they will crack. If the fibers crack, the ink will fall off and there will be cracking in the fold. If we fold the paper with the grain, it will fold smoothly with very little disruption to the ink.

This is important when we order paper. We need to know how the piece will fold and how we will place the piece on the press sheet when it prints. This allows us to make sure the grain of the paper is going parallel with the folds. This way your piece will look its best when it finished.

Types of Folds

Tri-Fold -

A tri-fold piece has six panels, three inside and three outside. The panel that folds inside needs to be smaller than the other panels. This gives room for the paper to fold without binding. Depending on paper stock, the size difference can be a 1/16 of an inch or 1/8 of an inch. The best rule of thumb is to make the panel 1/8 of an inch shorter to allow plenty of room to fold.



Panels 1 & 2 are outside

TIPS AND HINTS TYPES OF FOLDS

Double Parallel Fold ·

Folding in this way gives you 8 panels. All four panels are of equal size, so simply divide your length by four.



Roll Fold -

With a roll fold, the number of panels you have is up to you. The best way to figure this fold out is to determine what the finished size of your piece is going to be. That height and width size is the dimensions of the first two panels. Each panel from here on will be 1/8 of an inch smaller than the one that proceeds it. The panels keep getting smaller in width as you go.





Panels 1 & 2 are outside

Gate Fold -

This will give you 6 panels. If you open it flat, you will be looking at 3 panels. The two on the outer edges will be 1/2 the size of the center panel. The two panels that fold in do not always touch, there can be a slight gap. Also, text that runs across the gap may not line-up perfectly.





Panels 1 & 3 are outside

Double Gate Fold -

In a Double Gate Fold, you have four panels. Panels 2 & 3 are the same dimensions as your finished piece. Panels 1 & 4 fold into the other two panels and can be 1/8" or 1/16" shorter. The heavier the paper stock, the shorter the panels will need to be to allow the paper to fold without binding.



Panels 2 & 3 are outside

TIPS AND HINTS TYPES OF FOLDS

Z-Fold —

Gives you six panels, all panels are the same size. No panel folds into another, so you don't have to allow for extra space.



Accordion Fold —

With an Accordion Fold, all panels are the same size.



PRINTING PARTNERS

PRINTING **PARTNERS** TYPES OF BINDING



TIPS AND HINTS TYPES OF BINDING

3-Hole Drill

This is a standard drill to allow the paper to be put into a 3-ring binder. Drilling can be specified in many different configurations to meet different requirements.

Saddle Stitch

A binding where the paper is folded in half and staples are placed in the fold to hold the pages together. Depending on the paper stock, this binding option is for smaller page counts.

Perfect Bind

A binding where the pages are glued together. Typically used for paperback books. The page count can vary greatly. We recommend that a perfect bound book have a minimum thickness of .125-inches.

There is no minimum page count, because paper can vary in thickness depending on what weight paper you are printing on.

Coil / Wire-o / Spiral Bind

A binding method where a plastic or wire coil is wound through holes in the paper to hold the book together. A typical example would be spiral note books.

Case or Edition binding

A binding method similar to perfect bind that finishes as a hard cover book.

GBC Bind

Also commonly known as a comb bind, a GBC bind is a plastic comb that is fed through punched holes. GBC binding comes in various sizes.

PRINTING **PARTNERS** DIE CUTTING AND FOIL STAMPING



TIPS AND HINTS DIE CUTTING AND FOIL STAMPING

Both of these processes require a die, the difference being that one cuts and one stamps. Additional time will be needed once your final proofs have been approved in order to have a die created.

Die Cutting

Depending on what you are cutting, the die can be slightly different. When you cut, you can also score the paper so that it folds correctly. When you create your die, solid lines are used to indicate cut marks and dotted lines are used to indicate scores. If you are replicating a pocket folder, sometimes it helps to take an old one apart so you have an example to go by. Generally, you will create the die in a drawing program such as Illustrator. It can also be created in Quark or InDesign.



A door hanger cutting die loaded in the press

Creating the cutting die

Depending on the company you are sending the die to, there are different requirements. Some companies create the die by pounding metal strips into wood, this process is done by hand and generally is done from a printout of the file you create. Some companies use a laser system to create the die and they work from an electronic file.

Glue Tabs

These are important to getting a good finished product. The tab should be at least 3/4 of an inch to allow for good glue coverage. Generally, you do not want ink on the tab, 1/8 of an inch for color bleed is acceptable. Glue may not stick to some inks, so as a general rule ink is not printed on the tabs.

Embossing / Debossing / Foil Stamping Dies

These dies are created from black and white artwork. Grey values are not allowed. The black area of the die is the part that will make contact with the paper. So if it is a foil die, that is the area that will have foil. In embossing / debossing, it is the area to be raised or lowered. Typically they are created from electronic files.

Mock up

Die cutting can be an intricate process and mistakes can get expensive. It is best to mock up what you have created once the file for the die is complete, print it out at 100%, even if it requires tiling the document. Once it is printed out, cut and fold the die along the lines you have made. Check to see if the folded piece is correct. If not, you will need to fix your die. Once it is correct, send us a copy of the finished mock up so we understand what you are trying to accomplish. This way we can make sure everyone is communicating correctly.

PRINTING **PARTNERS** TYPES OF VARNISH

Kodak NexGlosser glossing unit

TIPS AND HINTS TYPES OF VARNISH

Spot Varnish

A spot varnish is a varnish that is put on only a portion of the page. It can be gloss or dull and is used to highlight or emphasize a photo or text, or can be used as a subtle design element. A spot varnish requires that a special plate be created for the press. It is treated as an additional color. Spot varnishes can be solids or screens; you can have almost as much control over a spot varnish as you would a spot color. Some spot varnishes can also be tinted to create an effect. If your printer has the ability, you can also mix dull and gloss so you can have both on one piece.

Flood Varnish

A flood varnish is a varnish that goes over the entire page; it covers everything. Flood varnishes can be gloss or dull, and they can be tinted if needed. A flood varnish can be gloss or dull but not both. You can have a flood with a spot varnish – depending on your printer and what they use for varnishes, this process can be different, so speak with them if you want to mix it up a little.

Aqueous Coating

An aqueous coating is similar to a flood varnish. Aqueous coatings are faster drying and more cost-effective. They aren't quite as glossy or dramatically dull as a flood varnish would be. In most instances, an aqueous coating is a good alternative. Speak to your salesperson about which might work best in your situation.

Dull Varnish

Just as you have dull paper, you can have a dull varnish. It produces an area on the piece that will not reflect light in the same manner; it can make colors fade into the background. It can also feel a little rough to the touch, depending on the varnish used.

Gloss Varnish

Like gloss paper, a gloss varnish can make colors pop. It can protect certain inks as well. Metallic inks or deep rich colors like a four color black tend to show finger prints and scuffing, so covering them with a varnish helps to hide the finger prints and protects it from scuffs.

Raised Clear Ink

The NexPress has capabilities to print raised clear ink to create a tactile experience. You can use different tints while designing to create different heights of the raised clear ink. The set-up process is very specific. Ask your salesperson for a "Kodak NexPress Dimensional Printing System Creative and File Preparation Guidelines" book for more details.

Glosser

A digital flood gloss varnish. It really isn't a varnish, it almost feels like a lamination, but it is different from that as well. It adds a very glossy surface to the digitally-printed piece. This can be performed only on certain digital presses, so check with your printer first.

Dry Ink

Digital presses use a dry ink to create a dull or matte finish on printed pieces. It can work very much like a dull spot varnish. These inks can also be tinted to enhance other colors. You can not mix these colors. Not all digital presses have this capability, so check with your printer.

A Dry Ink color for the NexPress starts in your graphics or page layout programs. The name must be specified correctly in order for the NexPress front end to recognize the colors you are specifying.

All of these colors are defined in the color palette and are used like any other color you have used in the past. the difference is what they are named and how they are specified. These colors are LAB colors.

NexPress DryInk clear

This color is called: NexPress DryInk clear and is defined as:

Ink Name	L	Α	В
NexPress DryInk clear	10	0	0

NexPress DryInk red

This color is called: NexPress DryInk red and is defined as:

Ink Name	L	Α	В
NexPress DryInk red	56.7	69.3	59

NexPress DryInk blue

This color is called: NexPress DryInk blue and is defined as:

Ink Name	L	Α	В
NexPress DryInk blue	30.2	17.6	-69.9

NexPress DryInk green

This color is called: NexPress DryInk green and is defined as:

Ink Name	L	Α	В
NexPress DryInk green	60.2	-74.9	1.8

Once these colors are defined in Quark, InDesign or Illustrator, you can use them like a normal spot varnish. If you use this color with an image, such as a bitmapped tiff or colorizing an image with it, you will need to tell that image to overprint. If you do not, the software will knock out the color under it and you will lose the effect.

To specify image overprint in Quark

Go to the trapping dialog box, select the image you want to use the DryInk with and then in the Trap Information window, click on the pulldown menu for Picture and select Overprint.

To specify overprint in InDesign

Overprint is a little different in InDesign. Once you have created your text, color block or image and placed them where you want them, you can select them and use the Attributes dialog box to tell them to overprint. This will only work with images that are grayscale and are colored in InDesign.

To specify overprint in Illustrator

Overprint in Illustrator is very similar to InDesign. Create your art, and then select the part you want to overprint. In the Attributes dialog, you can select the fill or stroke to overprint. Remember, colors created in Illustrator will need to be named and specified the same way in order for the NexPress front end to recognize that they are dry inks.

Equivalents Chart

Inc	InchesI		Inc	hches ———		
Fraction	Decimal	Millimeter	Fraction	Decimal	Millimeter	
1/64	0.015625	0.397	33/64	0.515625	13.097	
1/32	0.03125	0.794	17/32	0.53125	13.494	
3/64	0.046875	1.191	35/64	0.546875	13.891	
1/16	0.0625	1.588	9/16	0.5625	14.288	
5/64	0.078125	1.984	37/64	0.578125	14.684	
3/32	0.09375	2.381	19/32	0.59375	15.081	
7/64	0.109375	2.778	39/64	0.609375	15.478	
1/8	0.125	3.175	5/8	0.625	15.875	
9/64	0.140625	3.572	41/64	0.640625	16.272	
5/32	0.15625	3.969	21/32	0.65625	16.669	
11/64	0.171875	4.366	43/64	0.671875	17.066	
3/16	0.1875	4.763	11/16	0.6875	17.463	
13/64	0.203125	5.159	45/64	0.703125	17.859	
7/32	0.21875	5.556	23/32	0.71875	18.256	
15/64	0.234375	5.953	47/64	0.734375	18.653	
1/4	0.25	6.350	3/4	0.75	19.050	
17/64	0.265625	6.747	49/64	0.765625	19.447	
9/32	0.28125	7.144	25/32	0.78125	19.844	
19/64	0.296875	7.541	51/64	0.796875	20.241	
5/16	0.3125	7.938	13/16	0.8125	20.638	
21/64	0.328125	8.334	53/64	0.828125	21.034	
11/32	0.34375	8.731	27/32	0.84375	21.431	
23/64	0.359375	9.128	55/64	0.859375	21.828	
3/8	0.375	9.525	7/8	0.875	22.225	
25/64	0.390625	9.922	57/64	0.890625	22.622	
13/32	0.40625	10.319	29/32	0.90625	23.019	
27/64	0.421875	10.716	59/64	0.921875	23.416	
7/16	0.4375	11.113	15/16	0.9375	23.813	
29/64	0.453125	11.509	61/64	0.953125	24.209	
15/32	0.46875	11.906	31/32	0.96875	24.606	
31/64	0.484375	12.303	63/64	0.984375	25.003	
1/2	.5	12.700	1	1.0	25.400	

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