



## HALFTONE SCANNING FOR OFFSET PRESSWORK

Scanning original art for halftone reproduction on offset presses requires great attention to detail in order to create high quality files. At Maple Press, we strongly urge you to have your printer create the halftone scans for your book. Your printer is in the best position to make the quantitative judgments regarding scanner settings appropriate for their pressroom capabilities and for your paper selection. We recognize that there are times when other considerations dictate the use of scans from other sources. While it is not possible for us to list specific settings for each of the many scanners on the market, we can give you certain guidelines to help you achieve the best possible artwork files.

Regardless of the settings used, it is very important that our press operators have some form of hard-copy proof of the final, sized images, without which they can only make broad generalizations regarding the results you expect. We recommend that you allow Maple Press to produce proofs of your files to simulate the printed pages. Otherwise, please send your proofs made from the artwork files.

### SCANNER QUALITY

In order to achieve good quality scans, it is vital that a good quality scanner be used. A high-end flatbed or drum scanner will yield the best results. Note that the resolution at which you are scanning your art, including any scaling factor as described later, must be below the maximum dpi your scanner is capable of capturing without interpolation. Interpolation is used by low-end scanners to increase their apparent resolution while sacrificing the quality a true high-end scanner can achieve.

In addition, it is important that the scanner be calibrated to the output device so that what the scanner reads as a 5% gray tone is the same value that the imagesetter will output as a 5% halftone dot. This process is performed regularly at Maple Press.

Finally, maintenance of the scanner such as cleaning, monitoring light source brightness and color, and step accuracy of the motors inside the scanner will all contribute to scan quality.

### MINIMUM AND MAXIMUM DOT VALUES

Scan tones are often described by the size of the halftone dot as a percentage of black. For example, 0% black would be pure white (or the color of your paper) and 100% black would be a solid, with varying levels of gray in between. At the extreme ends, dots will sometimes be too small to register an ink dot on the press or so large that they blend into the surrounding dots to become 100% black, causing a loss of detail in either case. These points are often called the “minimum dot” and “maximum dot” allowed. These values for the Maple Press equipment are summarized as follows:

<b>Coated Stock</b>	<b>Min</b>	<b>Max</b>
Web	3%	94%
Sheetfed	3%	97%
<b>Uncoated Stock</b>	<b>Min</b>	<b>Max</b>
Web	3%	93%
Sheetfed	3%	95%

**PRESS DOT GAIN**

Offset presses experience a phenomenon known as “dot gain” which encompasses a number of factors including the type of press being used and the paper stock on which the job is printed. The subject of dot gain, sometimes called “Tone Value Increase,” is complex and depends on many variables such as paper type, press type, line screen, output medium, and more. Maple Press conforms to industry standards for both web lithography, as found in the SWOP Specifications, and sheetfed lithography, as defined by GRACoL requirements. These two standards, available at [www.swop.org](http://www.swop.org) and [www.gracol.org](http://www.gracol.org), respectively, provide a thorough description of what exactly dot gain is and how to prepare your image files properly to account for its effects on press.

<b>RESOLUTION</b>	<b>SCANNING TO SIZE</b>
<p>Halftone scans should normally be scanned at a resolution equal to two times the line screen at which the job will be printed. For example, a Maple Press job printing at our standard of 133 lines per inch should be scanned at no less than 266 dots per inch (dpi). (133 x 2 = 266) Some jobs printed on our sheetfed presses on gloss-coated stock may be printed as high as 150 lines per inch. To add a margin of safety, we recommend scanning halftone artwork at 300 dots per inch. Black and white line art should be scanned at 900 to 1200 dpi. These values match those used by Maple Press.</p>	<p>Wherever possible, scans should be created so that the file, once brought into a page layout program, will not need to be scaled. If this is not possible, then the resolution of the scan should be modified according to the following formula:</p> <p style="text-align: center;"><b>2 x line screen x scaling % = dpi</b></p> <p style="text-align: center;">For example: 2 x 133 x 150% = 399 dpi</p>

**DIGITAL PHOTOGRAPHS AND COMPUTER-GENERATED ART**

The growing popularity of digital photography has led to a rise in the number of artwork files which were not created using a scanner. Illustrations derived from computer sources such as MRIs, CAT scans, computer screen shots, and the like add to the list of files that were not manipulated by a scanner designed to produce files intended for print. All of the guidelines presented above still apply to these types of files; however, care should be taken to check the minimum and maximum values in such a file, as well as the resolution and any compensation for press dot gain that may be desired. Both the SWOP and GRACoL standards address these issues, and preparing your files in accordance with these guidelines, as well as sending final, approved proofs of the files, will greatly improve the likelihood that you will be pleased with image reproduction at the press stage.