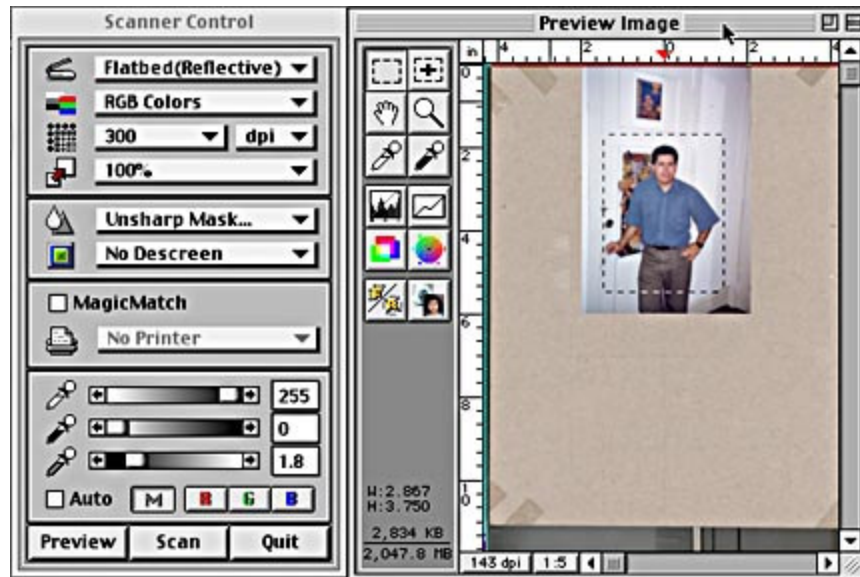


## SCANNING & SAVING PHOTOS:



Dozens, if not hundreds, of manufacturers make scanners, and each has its own software package to drive the scanner. With that in mind, we obviously can't detail every software package. However, there are some basic theories in common to most, if not all, scanners.

### GENERAL THEORY

Scanners capture images into a form that is called a **raster image**. Raster images are sort of like a very fine grid pattern, where each grid square is coded to contain a certain color. Each little square is numbered as to its x and y coordinates, and applications and printing devices are able to arrange those grid squares properly to create the desired image.

### COLOR SPACE (OR MODE)

Most scanners allow us to scan in one of several modes:

- **Lineart** is black-and white art that has no screens, such as a pen and ink illustration or black-and white text on a page.
- **Grayscale**, or halftone, is used for things like black-and-white photos that will print in one color.
- **Color** scans can be color photos, color lineart, etc. Most scanners scan in RGB, but many allow us to select between RGB color, CMYK color, and color lineart.

Check out our help pages on the RGB and CMYK color spaces for more detail on those topics.

## RESOLUTION

Scanners also allow us to select the resolution of our scan, so that we don't have a file that is too large or too small:

- **72 ppi** (pixels per inch) is the resolution used for Macintosh computer monitors
- **96 ppi** is the resolution used for IBM compatible computer monitors
- **150 ppi** is the resolution used for laser printers
- **266 ppi** is the resolution used for 133 line screen printing presses
- **300 ppi** is the resolution used for 150 line screen printing presses
- **400 ppi** is the resolution used for 200 line screen printing presses
- **1,200 ppi** is the resolution used for lineart, regardless of the line screen

Check out our help page on resolutions for more detail on this topic.

## SCALE

Before scanning your image, it's very advisable to know exactly what size it will be used at. That way, you won't have to scale it in your page layout program, which takes more memory. The biggest danger in scaling scans in your page layout program is that, if you scale **UP**, you lose resolution. For example, a 300 ppi image scaled to 200% is effectively 150 ppi. That resolution is too low for printing on a printing press. Scaling a scan **DOWN** in your page layout program is not a problem, except that your image is taking up more disk space and processing memory than is necessary. If you are in doubt about the final size, scan your image larger than you know you will need. **Scans can always be reduced, but they can't be enlarged without loss of quality.**

## MOIRE

Try to avoid scanning previously printed photos or graphics with screens. Doing so will leave an ugly pattern in the scan, called a moiré. If you absolutely have no choice but to scan a previously printed image, then follow the instructions on our moiré help page.

## SAVING FILES

After scanning your file, you will need to save it. There are a host of possible formats to save your file to. **We suggest TIFF format.** For printing purposes, our options are only TIFF and EPS, although there are other formats available. The most commonly available formats are:

- **TIFF** - Tagged Image File Format. The most popular raster image format, used widely for lineart, grayscale and color images. PhotoShop 5.x also and QuarkXPress 4.x also support TIFF clipping paths, which was previously the exclusive domain of the EPS file format. TIFF files are also editable, to a certain extent, in some page layout programs, such as QuarkXPress, unlike the EPS file format.
- **EPS** - Encapsulated PostScript. A close second in popularity among graphic artists, the EPS file format is supported by all professional illustration and page layout applications. The drawback with saving file in the EPS format actually has nothing to do with the format itself. The problem is that QuarkXPress 4.x has problems printing larger EPS files. It will just ignore them like they weren't there. Best to use TIFF, at least until Quark fixes their EPS problem.
- **PICT** - A Macintosh graphics format that can be useful for lineart, but not much else.
- **JPEG** - Joint Photographic Experts Group. This file format **SHOULD NEVER BE USED** for print graphics. It uses a form of compression which loses information and drops resolution well below what is required for printing on a press. It is used only for monitor-only graphics like the internet.
- **PCX** - An IBM compatible format (also serviceable on the Mac) that is not compatible with the printing industry. If you're an artist on a Windows machine (an oxymoron), don't use this format.
- **PDF** - Portable Document Format. Used by Adobe Acrobat to display images across-platform, usually for on-screen use only.

## FILE COMPRESSION

When you save your files, **don't use any kind of compression** (EPS JPEG preview, JPEG, or TIFF LZW, or anything else). These will cause unexpected results like forcing color photos to print grayscale. If you must compress your files so they fit on a disk, use a utility like StuffIt or, on the PC, PK Zip. Service bureaus and print shops will **charge you extra** for removing saved-in compression, because it is considered file manipulation, as well as punishment

for a bone-head move. No one that we are aware of charges to UnStuff or UnZip files.

## **SHARPENING SCANS**

High-end drum scanners and many flatbed scanners use a trick called Unsharp Masking to sharpen images that may otherwise appear a little fuzzy after scanning. If it is available in your scanning application, use it. Otherwise, you can apply the same process in PhotoShop after you have scanned the image.

In PhotoShop, open the Unsharp Mask dialog box (Filter>Sharpen>Unsharp Mask). Use low settings to keep your image from becoming unrealistically sharp. Applying this filter at low settings several times, if necessary, is more desirable than using a single higher setting. Experiment with the filter, paying attention to "halos" around contrasty areas. If a halo appears, you've overdone it.

**We'll repeat, for emphasis: Please don't over-sharpen your scans. Although they may look dazzling on your monitor, we guarantee they will look ugly and artificial on the press. Subtlety is the key here!**

## **DEFINITIONS:**

**PPI:** *Pixels per inch - The resolution (or detail) of an image in a scanning or graphics program. (Also the resolution of computer monitors: 72 ppi for Macintosh, 96 ppi for IBM compatibles.*

**DPI:** *Dots per inch - The resolution of an output device like a laser printer or imagesetter. A standard office laser printer is 300 dpi. A standard imagesetter is 2,540 dpi.*

**LPI:** *Lines per inch - The resolution (line screen) of a printing press, which determines how much detail the press (and the paper) can hold.*