Some information on file uploads and formats.

This is not a technical article, but some friendly suggestions. I help relocate donated files in Solid Model Memories, and I have a few suggestions based on my observations. This is my personal opinion, and is not the official policy of the web site, nor is it intended to be.

As you know if you wish to add a document to SMM you upload to the "Member Submitted Plans" folder. Eventually those files will be distributed to various folders, depending on the description supplied by the contributor. This, of course, is for those items that you don't plan to put in your personal folders.

I help the site owners and managers to move files, as the job is pretty big, and they don't have the time needed to continuously keep up with the filing. There can be as many as 300 files waiting to be moved, so it's a pretty big job.

Here are my suggestions to simplify the process, and to supply the members with the best possible files. After all, the idea is to have a database of files that will help others in research, or to be able to build rare and difficult to find plans. I am thankful to those who have shared their material.

Here is my list of suggestions:

- Take your time when preparing to scan your documents. Remember, this is not a contest to see how much material you can upload. If you are as careful with your files as you are with your model building, it won't take that much more time to deliver a high quality product and the extra work can be fun and rewarding; particularly when you get an "Ataboy" from your fellows.

- Pick a title for the file that describes what it is. Some files don't have a title, and others are not very descriptive. If there are multiple files, be sure to indicate the number and total, such as "1 of 3." If you know where the file originated be sure to add the source. The source may be a publication or kit, but also credit other web sites too.

- Unless you are doing editing (clean up or stitching) to improve the quality of the file, try not to upload files that can be found on other websites. You might contribute by letting everyone know of your find through the forum.

- Pick a graphic format that matches the file. If the file is black and white, look at "Gif" or "Tiff." Gif is a good format because it can create a small file, but doesn't loose detail. Tiff files can be pretty big, but if you do a little editing you can get them down in size. If you have a color file then likely "Jepeg," or "jpg" files is what you'll use. The problem with Jepeg is it is "lossy." In simple terms; using the Jpeg compression format can cause a loss of image quality particularly during editing. Jepeg was developed for photographs where some loss of quality may not be as important. It is the most common image format on the net. There is also "BMP" files, and some of the plans have been submitted in that format. BMP is a "bit map" non compressed format, and thus can be quite large. It is also primarily a color format, and is not as popular on the web due to the larger files, but use it if that's easiest for you; I'm not trying to tell you what format to use. "Wiki" search the formats and you will find a lot of information about them; this might help you choose.

- When you scan a document try and keep the image square to the bed of the scanner. This is especially important if you are making "tiles" of a larger image. If the "tiles" are cocked at different angles, you need to rotate the image to get it aligned with the other parts. Jepeg files, particularly, don't rotate well at angles other than 90 or 180 degrees. The pixels will start to skew, and you will get a jagged image.

If you are really nice you'll stitch the files together yourself and the resulting file will be a smaller size, and more useful.

- If your scanner software is like mine, you should be able to see the results of your scan before you need to save the file. If the file is in a thick book, it is very hard to get an image that has no distortion, particularly if it is across two pages; that I understand. But, if the image is a single sheet or in a magazine, you should be able to press the image tightly against the glass to remove most distortion. With wrinkled sheets, look at using a piece of cardboard behind the page as a press to flatten the document. You can rub the back of your cardboard stiffener to take out the worst of the wrinkles. Many plans are in the center of the magazine, across two pages. If the magazine is bound with staples, you can pry up the staple to slip the sheet out, then return it and bend the staples back in place.

- No matter which format you choose, keep the same size joining dimension, and as near as possible file size. Keep the pixel count the same. This makes it easier to join and mate files where necessary. I have seen multiple files where one half of the image was better than a megabyte, while the other half was less than 100 kilobytes.

- Look at the number of pixels per inch in your file. The fewer pixels the lower the resolution, but also the smaller the file…generally. If you go for, let's say 300 pixels/inch, you will have a reasonably high resolution file. If, on the other hand, you don't need to have high resolution because original is not very large, or the image is simple; go with a lower resolution. A good example of this would be the instruction sheets for the old Strombecker models. You can have a scan that doubles the size of the original, and even with a fairly low resolution, let's say below 100 pixels/inch; the file will still be very useful. You will only need the higher resolution file if you have a great deal of detail, and lots of fine lines. You can do what you want, but sometimes the extra file size does nothing to enhance the image.

- On another tack, take a look at doing some pre-editing before you upload the file. There is a free graphics program called, of all things, "The Gimp" and "GIMPshop," which uses Gimp, but emulates the "look & feel" of Adobe Photoshop. This program is pretty straight forward, and can be used to manipulate your files to reduce the "noise" which does nothing to enhance the drawing, but only increases file size. With Gimp, you can change formats, scale, knit multiple files together, change to grayscale, and, black & white. It was developed by people who are experts in graphics; it is a pretty sophisticated program. You may need to teach yourself how to do some things, but once you have figured it out, you will be surprised at what you can do. There are a number of online tutorials if you really want to get into it. Gimp is not the only graphics program you can use, but it is my suggestion, because it works with the common formats. I have Corel and Adobe graphics suites, as well as a couple of CAD packages, and I find I use Gimp for most of my work in SMM.

There are a couple of "How-to-do-it" documents on the web which give some very good information on how to scan and edit graphic files to create the clearest and most useful plans. Two of the best are: *Restoring & Preparing Plans Using Photoshop* by Rufus Carswell, which can be found on the Yahoo Group "SeawaysShipmodelingList," and *How I Use My Computer's Scanner to Change Plans* I don't know the author, but it came from another ship/boat model site. As soon as I can find the source I will credit it, but I have attached a slightly edited version as an appendix, I have a variation of both these articles, using GIMP, which I'll publish shortly.

Well, that's about it. As I said this is only a suggestion to make the process easer for us, but it also will deliver a more useful image to your fellow modelers.

Appendix 1 - *How I Use my Computer's Scanner to Change Plans*

There are several things to consider.

- What are you trying to accomplish?
- Do you want to change the *scale* of an image?
- Or, are you trying to clean up a drawing and remove blemishes (for publication)?

First of all, you need to determine which of your software tools (if any) are up to what you're trying to accomplish. A scanner normally comes with a set of software tools; if you don't have these, you can get a nice one called IrfanView32 - a freeware tool that can do a lot (including running a scanner). Many of the tools try to be "helpful" - they'll print an image to fill the page, rather than to a uniform scale! So, the first thing you'll need to do is scan something and print it out, and then compare the printed image with the original - if they're not the same size, you've got a problem you'll have to resolve!
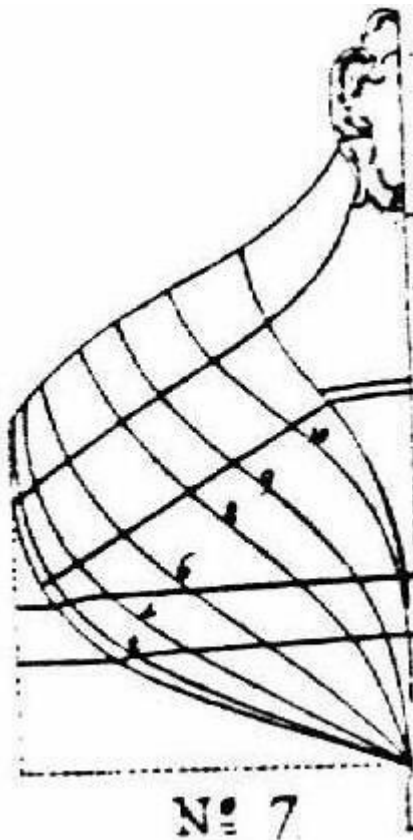
An image has two independent values that are important - the "Dots-per-inch" (**DPI**) and the image size (in **pixels**).

**DPI** is primarily an attribute for printing.

Image size primarily affects what you see on your screen (and, to a lesser extent, the resolution you'll see on you printer).

Here are two images, each one 210 x 425 **pixels**. The one on the **left** is at **200 DPI**; the one at the **right** is at **100 DPI**.

Save each and import the image into your image program (e.g., *Gimp or Photoshop*), and then print out the resulting image! You'll see the right image PRINTS half as big as the left one, even though each is the same SCREEN size!

(At least it's supposed to - if it doesn't, you'll either have to change some settings, or use a different program!)
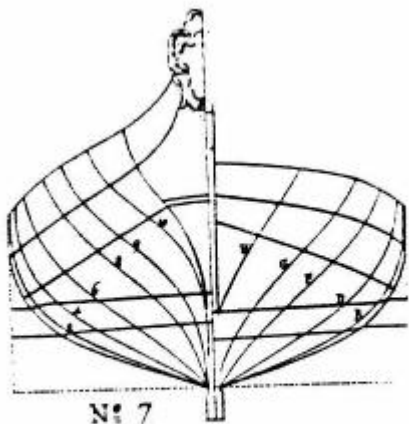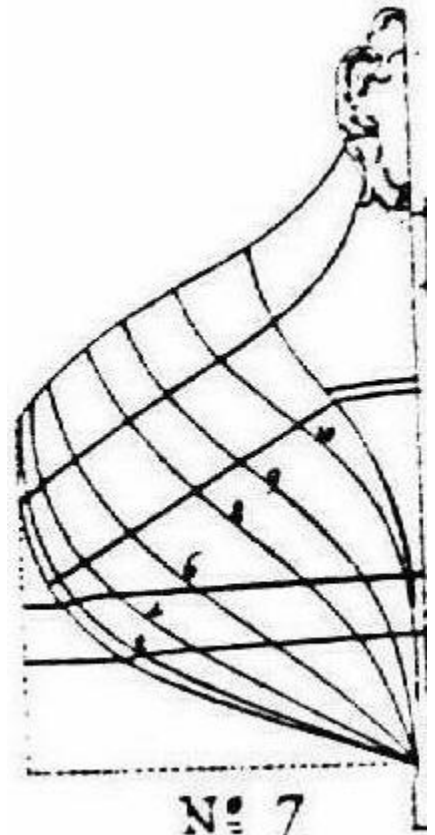

Your scanner has a couple of different modes of operation. If you scan the plans as a "**B/W Photo**" (**left**), you'll get an image of the original, including all stains and discolorations of the paper, etc.; the lines, however, will appear reasonably smooth.

If you instead scan the plans as a "**B/W Document**" (**right**), you'll
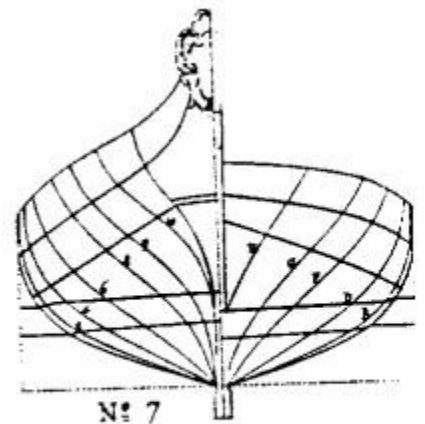
lose all shades of gray; every pixel will be **either** black **or** white.

You'll get rid of many of the "blots," but your lines will go all "jaggy." Notice that the "smudges" appear "sharper"; there are no grey pixels bordering them to make a smoother transition.
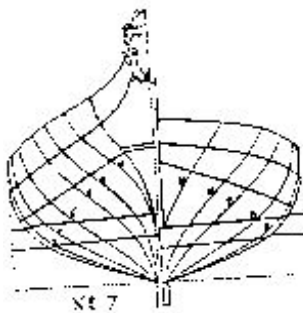
The most important thing you can do is to get the drawing lined up with the scanner! Here are two images, each scanned at 72 dpi. The one on the left is not aligned (it's tilted) - notice how the baseline and centerline vary in apparent width (another case of "jaggies"). The one on the right has been aligned so the base scans as a single line; notice how the centerline appears much cleaner.
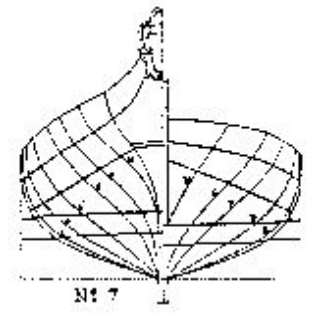
Scaling the image

An image can be made to print larger or smaller in one of two ways:

- Changing the "size" of the image (number of pixels) - making it smaller also decreases the *resolution*. Using most image-manipulation tools, this will not affect the DPI recorded for the image; thus the resulting image will print larger or smaller by the same amount (the file size will vary as well).

- Changing the DPI (either in scanning, or in subsequent processing) - however, the printer may ignore it if you go below 100 DPI! This method has the advantage that the file size does not change, yet the printed image's size does!
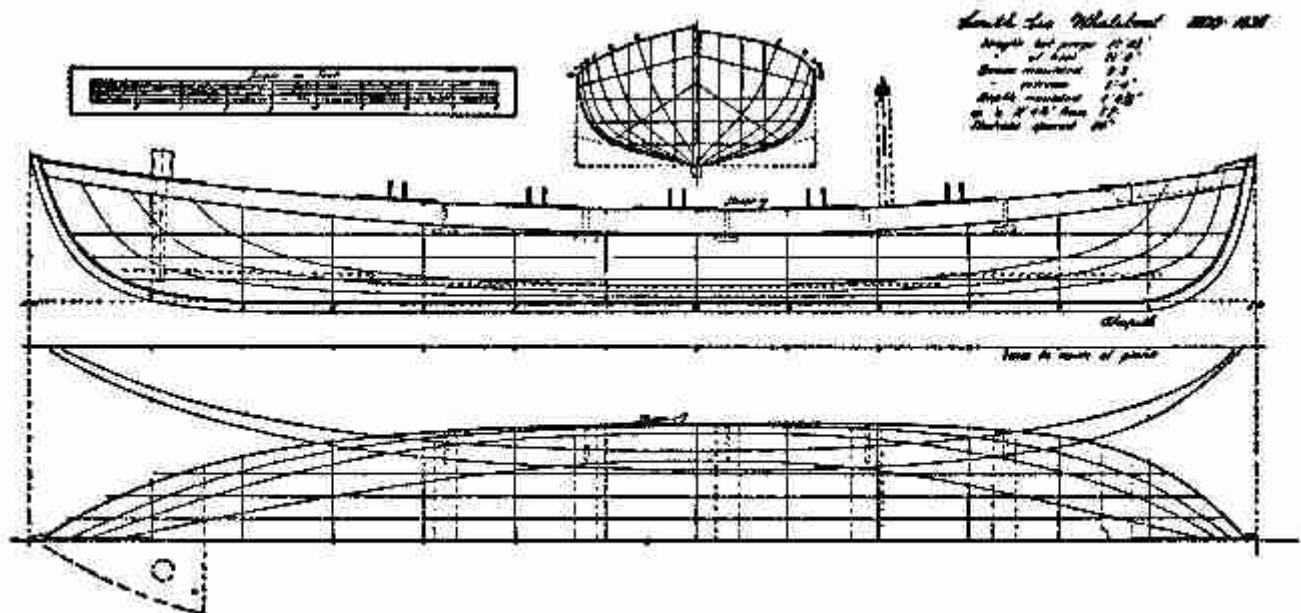
Example:

Fig. 15. Whaleboat of the first half of the nineteenth century.

As an example, we'll use this early 19th century whaleboat drawing (scanned at 150 **DPI**) from a book. Let's

say that we want to rescale the drawing to **1:48** (1/4 inch = 1 foot) to go with a model of a whale ship of the period, already at that scale.

The drawing has a scale, and that scale is divided into 9 feet. At 1:48 scale, 9 feet will be 2 1/4 inches = **2.250** inches long.

To begin, I *cropped* the *scanned* scale (cropped dimensions = 242w x 40h; DPI = 150) and printed it out (**note**: it's better to scale from the printed image than from the original - your scanner and or printer may introduce a bias); Using a *decimal* ruler (to avoid having to work with fractions), I determined that the scale printed out with a length of **1.342** inches. The drawing should be printed **bigger**!
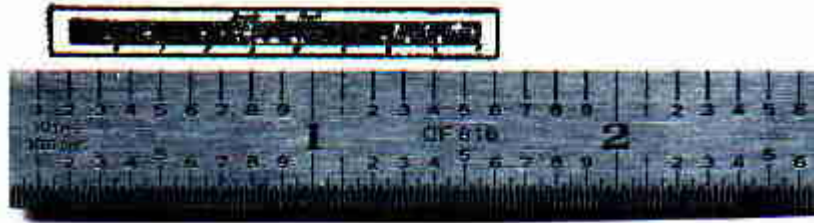
There are now two choices of *method*:

Changing the Image Dimensions:

Increase the dimension of 242 pixels by 2.250/1.340 = **406** pixels. (Note that this image file consumes 3.82Kb of storage.)

Changing the DPI

Decrease the **DPI** of 150 by 1.340/2.250 = **89** DPI (note that this image, while appearing smaller on the screen, still prints at the correct scale (and only takes 2.17Kb of storage). **Caution**: some printers will refuse to print the image properly if they consider the DPI is too small - verify this with your own printer; the solution is to perform the initial scan at a higher DPI!

Finally, I applied my choice of method to the original drawing. Take your choice!

Steps to perform

1. Seriously consider using "*B/W Document*" mode for scanning if the drawing is in poor condition.
2. At low resolution (*DPI*), adjust brightness and contrast and other scanning parameters to minimize blemishes and defects.
   (If you get a *moiré* pattern of blemishes (say, due to a regular pattern such as cloth weave in drawings on linen), consider using the *descreening* feature of the scanner.
3. Switch to a higher resolution (*DPI*) for the actual scanning process.
   (If you're planning to enlarge the drawing, allow enough *DPI* so that the *enlarged* drawing will still have at least 300 DPI).
4. Incrementally rotate the drawing until *reference lines* (e.g., baseline, centerline) are smooth and have no more *jaggies*.
   This step is especially important if the drawing is so large that you will later have to join ("*stitch*") several successive scan images together.
5. After one last *preview*, make the actual scanned image.

6. If the final result will require *stitching*, repeat the next two steps as necessary.
7. Convert each of these scans from two-level (B/W) to 256-level gray scale.
   (Remember that the recorded *DPI* is likely to change in this *copy* process)
   If you're going to *splice* scans together, save each of these copies.
8. Perform any *splicing* needed. Save the result.
9. Using a drawing program (e.g., *MsPaint*), clean up the image by removing extra black areas and repairing "lost" lines.

   Hint: Straight edges are easier to clean up if you use the *line-drawing tool* and "*erase*" by drawing a white line where the edges need to be sharpened.

10. Scale the resulting image - you can adjust *DPI* or the actual image dimensions (or both):
    o   **DPI**: to make an image print *larger*, *decrease* the DPI.
        This will keep the file size the same (an advantage if making bigger, but not if scaling *down*!)
    o   **Image size** (pixels): to make an image *bigger*, *increase* the size in pixels.
        The file size will increase if making the drawing bigger, but decrease if making it smaller.
11. Use a "*Blur*" or "*Smooth*" tool to de-emphasize *jaggies* in diagonal lines.
12. Convert the image to the desired final file format.

    Hint: *JPG* images are preferred for shaded images (e.g., *photographs*); the *JPG* compression is very efficient when there are no sharp edges. However, *drawings* encoded as *GIF* images are likely to be smaller file sizes than the corresponding *JPG* encoding. This may be significant if you intend to share the result over the Internet.
    If you use *GIF* encoding and intend to use the resulting image for a web site, make sure that you have "*Transparent Color*" disabled when you save the image, or all of your lines may display in the color of your web-page's background!

Example

Here are a series of scans of a simple object (the scale that often appears on most plans; in this case it allows the scaling of the drawing in **E**nglish, **F**rench, and **S**wedish feet!
**Note**: All image scanning and manipulation was performed as *TIFF* files; I then converted them to *JPG* and *GIF* files in order to display them here.

This one was scanned at 100 DPI as a "True Color, RGB" image. Note that the paper is brown (that doesn't make it any easier - it adds a lot of "noise" to the scanned image!)

This one was scanned at 100 DPI as a "B/W Photo" image. Note how gray the colored paper appears.
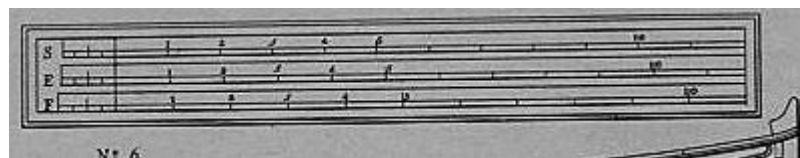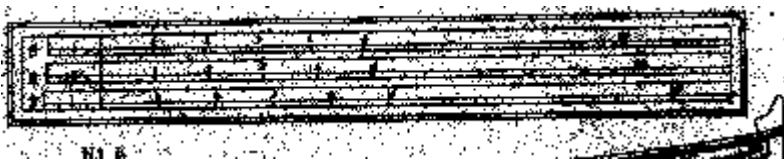
This one was scanned at 100 DPI as a "B/W Document" image. Note that the background is now white, but there's a lot of "noise" (black dots)

(**Note** – For this document: I had to *change the image* for this - and subsequent - scans from *Black & White* to *Index 256 Gray* so that I could display it here. Doing that also changed to DPI value recorded to 96; I had to then change that back too!)

This one was also scanned at 100 DPI as a "B/W Document" image; I rotated the drawing until the *jaggies* disappeared.
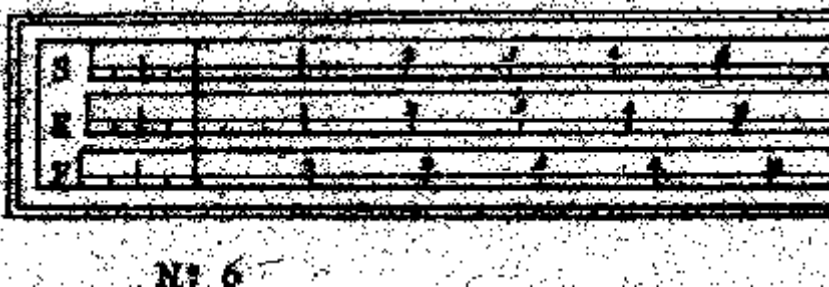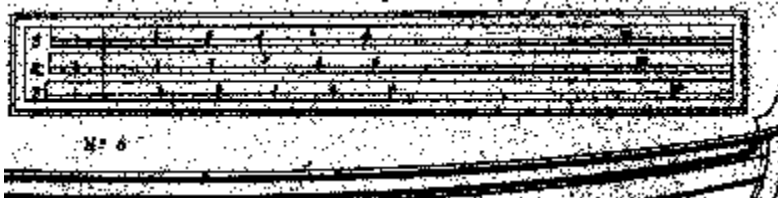
The same scanned at 200 DPI; also cropped for subsequent changes.

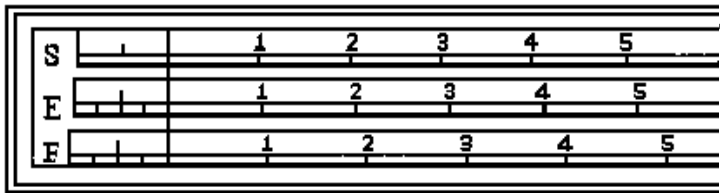I next ran the same image through *MsPaint* and manually erased superfluous dots...
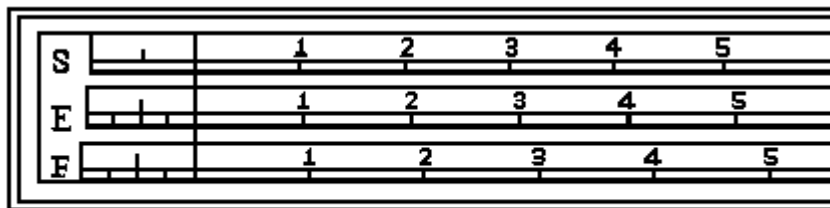
...and then filled some white dots within black areas.

Finally, I chose a *Blur* (sometimes called *Smooth*) filter to smooth off the edges and minimize the *jaggies* (in this case, this operation added 3 shades of gray to the previous Black and White).

Nº 6

The image was finally converted to a *GIF* format and saves for use here.