tech report

BINDING AND FINISHING

MECHANCIAL BINDING

Mechancially bound materials are those which are bound using “industrial” type bindings such as plastic combs or wire spirals. Plastic comb binding is a piece of plastic with “teeth” that fit into rectangular holes in the paper. It allows your documents to lay flat when opened. Comb binding is an inexpensive but professional looking option. A continuous coil of wire or plastic passes through many little holes along one side of the papers. Plastic coils can add a fun, colorful look to your project. Because the plastic or wire is threaded through all the holes in coil or spiral binding it is generally more expensive than comb or double loop wire binding.

A sturdier alternative to the single wire spirals or the plastic comb is Wiro (Wire-o or double loop wire) binding. The wire forms teeth or double loops that fit into rectangular holes in the paper. The loops are crimped to hold the wire in place. Like comb and coil bindings, these allow the book to lay flat when open.

Comb, coil, and wire binding methods require additional finishing time. Pages must be punched with the proper pattern of holes before binding. Because only a few pages at a time can be punched and they must all line up correctly it adds to the preparation time.

Writing notebooks, notepads, steno pads, cookbooks, booklets, manuals, reference materials, workbooks, and calendars often utilize comb, coil, or double loop wire binding methods.

STITCHING

Saddle-stitching or saddle stapling or “bookletmaking” is common for small booklets, calendars, pocket-size address books, and some magazines. Several sheets of paper are folded (the fold becomes the spine of the booklet) and two or more staples are placed in the fold.

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PERFECT AND CASE BINDING

When the document is too large for saddle-stitching it may be side-stitched or side stapled. The staples are placed about 1/4" or so from the edge. A cover may be glued on. Side-stitched books can’t be opened flat and extra allowance is needed in the inner margin.

PERFECT BINDING

Perfect binding puts all the pages or signatures together, roughens and flattens the edge, then a flexible adhesive attaches the paper cover to the spine. Paperback novels are one example of perfect bound books. Booklets, telephone directories, and some magazines use perfect binding methods. Compared to other binding methods, perfect binding is quite durable and has a low to medium cost. It can be used with publications that are several inches thick.

A variation of traditional perfect binding is lay-flat or Eurobind binding where the cover is glued only to the sides of the spine so that a perfect bound book can lay flat when open. Also, some books may combine glue with sewn together signatures.

CASE BINDING

Case or edition binding, the most common type of binding for hardcover books, involves sewing the individual signatures together, flattening the spine, applying endsheets and a strip of cloth to the spine. The hard covers are then attached. The spine of a case bound hard cover book is typically rounded and there are hinges (grooves) along the edges of the cover near the spine. Case bound books often also have dust covers or jackets.

In order to bind pages using stitching, perfect and case techniques, the job must be printed in a certain order. These ordered pages are called signatures. They are pages that are arranged in the proper order so that they will fold and bind correctly. The

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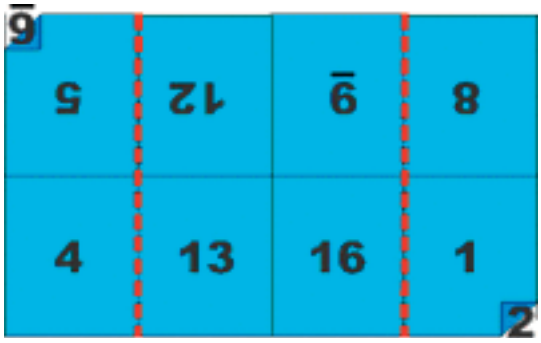
IMPOSITION

process of setting up theses signature is called imposition. (To impose means to set up the signatures.)

Commercial printers often use large sheets of paper that they fold, cut, and trim to the finished size. One of many possible ways of printing multiple pages is shown in the illustration below. This example is a 16-page “sheetwise imposition” signature. One large sheet is printed with 8 pages on each side. The solid lines are for cutting. The dashed lines are where the paper is folded. Once cut and folded the pages form a 16 page booklet or signature. Several such signatures may be assembled into the final book or other publication.



Knowing how commercial printers position your pages for printing can be an important planning factor when it comes to adding color and spreading graphics across a 2-page spread. As with any job, consult your printer early in the planning process to insure good results and to make sure that your job doesn’t involve processes that your printer cannot handle.

Some things to consider:

- **Reduce the cost of adding a third color to a job**
  Run black with blue on one side of the press sheet. Then run black with green on the other side. You may incur a slight extra charge for the color change but not as much as if you were mixing black, blue, and green all on one sheet and having to run each side through the press multiple times.

- **Reduce the cost of four-color process printing**
  If planning a publication that mixes black and white with some four-color process illustrations -- plan all color so that it falls on one side of a press sheet or all within a single signature when the job consists of multiple signatures.

- **|Print better color from your desktop**
  Even for desktop printing, understanding imposition is important. Most inkjet papers are designed to produce best results on only one side. Need double sided documents? Plan your color for one side and black and white only for the second side.

- **Insure smooth page-to-page transition of images**
  When an image crosses the gutter (spreads across 2 pages) it may not align properly in the final assembled document. Plan graphics that cross the gutter for pages with a natural spread — i.e. no worry with exactly matching cut edges. For example, in our 16-page signature described above, a graphic crossing pages 10-11 would have a cut down the middle. Whereas, a graphic spread across pages 8-9 would have a fold, not a cut — less worry with proper alignment.

Put It In The Right Order

How do you get your pages — printed from your desktop or prepared for commercial printing — into the proper printing order? Your service bureau or printer will have in-house software that will accept your postscript files and then create the properly positioned pages. You can use the INBooklet option in InDesign to impose pages for design or comping purposes or to make an imposition dummy.

- **Make a Mockup**
  Even before you start designing the pages, cut up and assemble a tiny mockup of your book, newsletter, or

booklet and number the pages so that you can see both the printing order and the reading order of your pages.

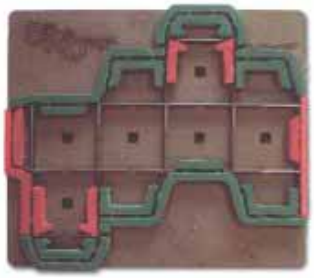
This can be invaluable when planning use of color and placement of graphics.

- **Print Thumbnail Pages**
  Whether printing from your desktop or using a commercial printer, create thumbnails of your publication. In fact, your printer may require a folded dummy or a signature sheet showing positioning of pages.

TIP: The two page numbers that are imposed side-by-side always add up to 1 more than the total number of pages in the booklet. For example, in an 8-page booklet all pairs of pages add up to 9 [8+1,6+3].

DIECUTTING

Die-cutting cuts shapes into the substrate. Because most presses require that the substrate feed into the press straight and square, irregularly shaped items must first be printed straight and square and then die-cut into the desired shape. The shape is cut according to the form of the die, which is a metal rule molded into the shape.



The substrate is pressed against the die and the cut is made. The very act of cutting paper weakens it. Avoid die-cutting too much of the page or die-cutting too close to the edge of the paper. Cut out a dummy to test the paper's strength.

An example of the shape of the die must be given to the printer or die-maker. The shape, drawn as a template, should be created as a separate separation. Draw the template and color it with a custom color named "die." It will output as a separation at 100% and can be used to make the die. The die separation doesn't necessarily need to be output as film unless the die-maker requires film. Be sure to suppress the printout if film is not required.

Intricate, detailed images are difficult to die-cut using metal dies and should never have sharp corners of less than 30°. In addition, paper with a cutout, like the center of the letter "O," must have some kind of bridge attached to it or the center will fall out. Laser dies are used to cut very intricate, detailed images and are more expensive.

Die-cutting is a relatively inexpensive finishing operation. If you have more than a bare-bones budget but not an unlimited

one, die-cutting is a method of finishing that adds a unique quality to a printed job for comparatively little additional expense.

EMBOSSING AND DEBOSSING

A more expensive finishing operation is embossing or debossing. A method of pressing an image into the surface of the substrate, embossing raises the surface while debossing lowers the surface. Both effects provide a dimensional look and a textured feel to the printed job. Both embossed and debossed images are created in the same way except that the dies are reversed. Two metal dies are used with heat and pressure to mold the image. The substrate is placed between them and the dies are pressed together, molding the paper into the shape of the image.

Designs for embossing or debossing must take into consideration that the paper will be raised or sunken. Type smaller than 8 or 9 points and rules thinner than 2 points should be avoided because they tend to be cut out instead of being pressed into the substrate.

Images should be placed more than 1/4" from the edge of the paper to avoid wrinkling the paper during embossing or debossing. Detailed, fine lines and intricate designs will appear even smaller when embossed.

Most importantly, designers need to keep in mind that embossing and debossing add dimension; the image itself becomes three-dimensional. Therefore, the image needs to be drawn with a side view, if possible, showing the levels to be embossed or debossed. During production, a flat separation with the levels marked like a topographical map must be created. Each level should be marked according to the height of the paper: level

1 for the first lowest, level 2 for the middle, and level 3 for the highest.

Specify whether round or beveled edges are required. Beveled edges will give a sharper edge definition while rounded edges will give a more subtle appearance. In addition, the space between letters of type needs to be increased from those on the comp to allow room for the paper to form the letters. When designing letterhead, remember that embossing and debossing will sometimes flatten when output on computer printers.

If an image is embossed without the application of ink, it is referred to as *blind embossing*. With ink printed on the image, it is referred to as *wet embossing*.

FOIL STAMPING

In addition, embossing can apply a thin, colored film called *foil* and the process is called *foil stamping or foil embossing*. The application of foil adds a shiny, metallic appearance in different colors and textures to the printed piece. Like other types of finishing, foil stamping uses a die in the shape of the image. A metallic or pigmented foil is placed over the die, heated, and under pressure, the foil is transferred.

Designers should allow enough space between elements of the image; otherwise, the foil will bridge the items and leave no space between them. For the same reason, type should be tracked a bit more than usual in production. And, like other types of finishing that require a die, foil stamping requires a die separation in the form of the stamped image.

THERMOGRAPHY

A type of finishing that does not require a die or rule is called thermography. An addition to the offset printing process, thermography uses a special powder that, when heated, bonds to the wet ink. The bonded powder creates a raised image. After the printed piece comes off the offset press, the powder is applied to it and heated. Thermography is often referred to as "raised printing."

Designers should avoid large solids or areas of heavy coverage because they can blister under the heat. In addition, thermography will crack when cut or folded so bleeds, as well as ink coverage in the gutter, should be avoided. An inexpensive method for producing the look of wet embossing, thermography requires only a black-and-white composite marked with the areas to be thermographed. However inexpensive it is, thermography should not be overused. If too much of the area is thermographed, the effect will be lost.