

WHY NOTCH?

DOUBLE-FAN BINDING

Although the double-fan adhesive binding process was first introduced to the United States and Canada in the mid 1950's, it was not until the late 1960's that Mekatronics introduced it to the library binding industry and put it to effective commercial use as an alternative method for leaf attachment other than oversewing, the dominant method since the early 1920's.

At a time when adhesive binding is rapidly becoming the preferred method for leaf attachment, it is important to remember that it is an unforgiving process. With oversewing, the strongest known method for leaf attachment, a missing needle or broken thread will not significantly affect the integrity of the binding.

Like any machine, or process, double-fan adhesive binding had its limitations until the introduction of the MEKANOTCH™ spine-notching machine that will be described later. Material-related characteristics such as glossy, coated, or heavily calendered paper and adhesives establish the limits that cannot be exceeded without loss of binding quality.

Double-fan adhesive binding is a demanding process that leaves no margin for error. Careful attention must be given to the following:

1. ADHESIVE

The adhesive plays a major role in the quality of the leaf attachment process. It must be a high quality, specially formulated polyvinyl acetate (PVA). The formulation of PVA adhesives goes beyond the fundamental differences between polymers and plasticizers. An adhesive may contain components such as viscosity modifiers, tackifiers/extenders, solvents, fillers, humecants, wetting and foam control agents and biocides which may be compounded in order to tailor the product to facilitate application by machinery and bonding on specific substrates.

The best adhesives for double-fan binding are produced in Germany, where the PVA's were invented in the early 1920's and have been in successful use since that time. Mekatronics' ULTRAFLEX™ is such an adhesive.

2. MANNER OF APPLICATION

A variety of equipment is currently being used throughout the industry. This equipment ranges from homemade, hand-operated devices to semi-automatic machines. With the exception of those machines in which spine milling and double-fan gluing are combined, use of all other types of equipment must take into consideration the following:

When the spine of a book block is milled or trimmed before being clamped for the fanning operation, extreme care must be exercised to ensure that all pages are flush with each other, and will therefore be tipped during the gluing operation. Failure to do so may compromise the binding unless the spine is first **“notched”** as described below.

When fan-gluing periodicals, the pages may not be coated to the proper depth. Periodical covers, usually stiffer than the text papers, will dominate while being fanned and will receive more glue than the adjacent text papers. Also, periodicals with inserts will prevent the glue from penetrating between some pages causing a weak leaf attachment.

SPINE NOTCHING BRIDGES THE GAP

Spine preparation plays a key role in the technology of adhesive binding, especially when a variety of coated, stiff and cross-grained papers must be processed. Milling cutters with roughers help to expose paper fibers to some degree for improved linkage with the adhesive. Also, text blocks with heavy coated stock are sometimes double-fanned twice rather than once, a practice that may cause excessive penetration of glue at various places within the text block. In most cases, these attempts at stretching the limits of the process result in weak bindings and a wide gap between the durability of sewn and adhesive bindings.

The MEKANOTCH™ spine-notching machine introduced in 1980 and Mekatronics' newly developed semi-automatic, in-line ULTRABIND™, bridge that gap. These machines feature spine-notching patterns that increase the spine area and expose additional paper fibers to enhance the linkage between paper and adhesive.

Notching improves the quality of the adhesive bound book block by increasing the length of the edge of the page to be glued. The notch penetrates into the pages and thus will catch the edges of the pages that were improperly jogged. By way of an example, a 1" thick by 11" high book block with 1/16" wide by 1/16" deep notches at 5/16" intervals will increase the spine area by 25%.

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