

A Tale Of Four Binderies

A first-hand look at how four binderies work ...even on roller skates!

When LBI Executive Director Debra Nolan is looking for the latest insights, trends and information on the library binding and hardcover binding industries, she prefers going directly to the source: the bindery itself. That's exactly what she did last fall when she visited not one but four Midwestern binderies in less than a week's time. *ShelfLife* chatted with Debra about her visits, how it helps LBI members, and what it's like to see books on roller skates.

Why the tour?

In the three years I've worked with LBI, visiting member binderies has been a priority. It's vital to get to know members in their work environments – where I can see the daily operations and meet the staff. It gives me a better understanding of the priorities and how LBI can better serve as a resource and advocate for the industry.

Tell us about this particular tour.

This particular tour concentrated in the Midwest, specifically Missouri and Illinois. Here, I was able to

meet with three LBI members and one nonmember all within a two-hour radius.

Do you do these tours often?

When I travel for LBI, I try to tie-in at least one bindery visit if I can. Visiting four operations in one week presented me with a unique opportunity to compare and contrast the similarities and differences.

What were some of the highlights of each bindery?

The first visit was to San Val, an LBI member in Steelville, MO. I'd already met San Val's Gary Jaffe and Michele McBride at the LBI Fall Conference, but on this visit, I was also able to talk with other staff members, including Joe Winkelmann, the new

plant manager. He'd only been there a couple of weeks when I visited, so it was great to get his perspective on the industry.

I also had the opportunity to see San Val's binding carousel machine in action. This device (which was designed by Jimmy Harmon, San Val's Maintenance Manager) is a special "all-in-one" station where workers can perform aspects of the "by-hand"



San Val's staff using the Binding Carousel Machine

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THE ORIGINAL
HARDCOVER
BOOK BINDERS

A Tale of Four Binderies

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Bound to Stay Bound employee, Rachel Scoggins, on skates.

binding process. Instead of an individual book being passed from station to station, the carousel can hold several books at once and “spins” to each worker as they complete their individual task (such as gluing).

According to Jimmy, the carousel gives the workers the opportunity to work at multiple stations throughout the day, and has increased productivity some 25-30 percent.

The next stop was Bound To Stay Bound in Jacksonville, IL, a family-run LBI member bindery that works primarily in pre-binding children’s books for school libraries.

My guides were Bob Sibert and Mark Lovekamp, an LBI board member who retired from the bindery at the end

of the year after an incredible forty-five years in the business.

While I was there, Bob and Mark showed me something you don’t usually see in a library bindery— rows and rows of inventory. But what was really interesting was how they transport the inventory from the book stacks to the packing and shipping stations: roller skates! Employees literally skate from one end of the floor to the other, which if you’re shipping 10,000 books a day (BTSB’s average), it makes efficient sense! Bob says the practice (which started years ago under his dad’s leadership) is popular with the employees, at the very least for the purpose of exercise!

Just a couple of miles away from Bound To Stay Bound is LBI Member Perma-Bound, a state-of-the-art “sister” company in that both have their roots in the Hertzberg-New Method family of binderies and both work primarily in pre-binding children’s books. While there, I met with Jim Orr and Bill Hull who showed me something unique: a customer call center. There’s a center dedicated to each of Perma-Bound’s geographic sales regions; each center is staffed with several employees at once. Using this system, customers who call are able to ask for

specific information and the employees have the ability to quickly retrieve it directly from this computerized “hub.”

“It completely solves the problem of having to pass a customer from department to department,” Jim explains. “It’s been unbelievable in terms of improving efficiency.”



Perma-Bound, Jacksonville, IL

My last visit was to R & R Bindery in Girard, IL. I had met R & R’s Rick Roberts and Alan McIntire at the LBI



Alan McIntire and Rick Roberts, R & R Bindery

Fall Conference, and was looking forward to seeing their facility. This bindery is newer than most. I enjoyed seeing the automatic casing-in machine, made by DGR, at work. What is fascinating is that industry-wide, traditional techniques are adapting to state-of-the-art technology. It's incredible.

What did you learn on this tour?

The skill and ingenuity required to run a successful bindery cannot be underestimated. A bindery is a business and in order to keep up with, or ahead of, today's fast-paced market, its systems must be continually reexamined and fine-tuned. Some systems, like the staff on roller skates, may make sense in terms of productivity or efficiency. Other systems, like workflow or software, may need to be revamped from time to time so that the demands of new technologies can be met. Investing in equipment, adding to or reconfiguring space, participating in a merger or acquisition, and/or deciding to offer a new product or service may also be

considered from time to time. The point is that you have to keep moving if you want to stay afloat and bindery owners know well how to do this.

The commitment of bindery staff and the care they each take to do their job well is also quite remarkable. It was a delight to have an enthusiastic staff member show me a particular process or piece of equipment. The pride is palpable! It's no surprise, then, that some employees have spent their entire careers working in the same bindery. Others have recruited family and friends along the way.

Above all, I saw a lot of hard work, which isn't surprising given LBI members are hardcover binding experts who specialize in custom work...one book at a time. 📖

The Quality and Testing of Adhesive Bindings

By Werner Rebsamen

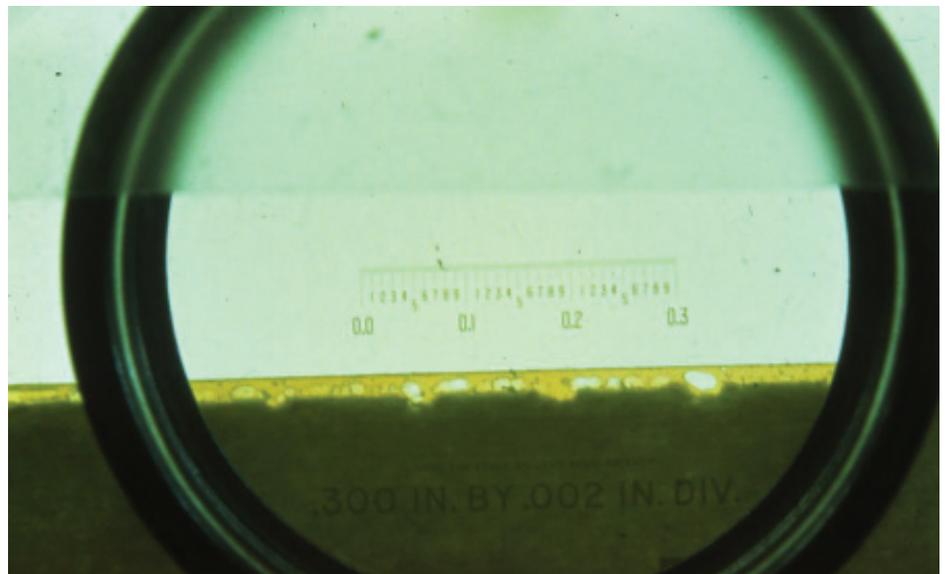
In our last two issues, we discussed the many different kinds of adhesive bindings. Our readers are now familiar with the various processes for binding books and the types of adhesives being used. You should now feel comfortable correcting those who simply state “that this is a glued, perfect bound book.” You can accurately explain the differences between a perfect, burst and double-fan binding.

These days, the majority of book blocks are adhesive bound. *But how good is the binding?* Henry, a friend and neighbor, recently purchased a 1 1/4 inch thick computer instruction book. He said he used it just a few times before it broke apart! Upon inspection I saw that it was one of those text blocks with the papergrain perpendicular to the bindfold. This means you will have to apply some force to keep it open. I also noted that the hotmelt coating was relative heavy; often a sign that the adhesive application temperature was lower than recommended. This results into poor adhesion. In other words, the damage was done long before a reader even touches the book. I’m sure some of our readers, especially librarians, have experienced many similar incidents which are the results of poor planning and mistakes made binding the text blocks.

Prerequisites to Quality Control

As a former manager in charge of quality control at one of the nation’s largest book manufacturing companies, I’m very familiar with how to control and evaluate bound products. The evaluation of the materials used and each step in the binding process is critical. Perhaps even more important is the planning of a bound product, taking into consideration its end-use purpose. For example, a cook book or music book must stay open. Poor planning or unrealistic cost reductions can send printed masterpieces to the graveyard. I could share many horror stories where this happened.

All quality control procedures need to be measurable. And while no individual test can be regarded as a measure of quality by itself, a combination of several parameters may enable a binder to determine the quality of an adhesive binding. Testing and quality control are complex matters—many books have been written on the subject. But honestly, I have never been a great fan of piles of statistics. When I was appointed director of quality control, I succeeded an engineer who generated daily reports on what went wrong. That required a large staff to accumulate all that daily data. And it was useless for us supervisors down in the trenches. The damages were already done, and the reports had mostly negative results. Instead, I put the individual operators back in charge. *What a difference that made!* Personal pride plays an



Measuring the thickness of the adhesive applied is most important. On this job, there is a problem with a “Swiss-Cheese” pattern which indicates moisture in the paper or wrong machine settings.

important role when establishing a quality control program. And education is the key to its success. A job done right the first time saves time and money. Needless to say, testing for adhesive binding quality requires some gadgets and testing machinery, and that is what this article is all about.

Evaluating an adhesive bound book in your office

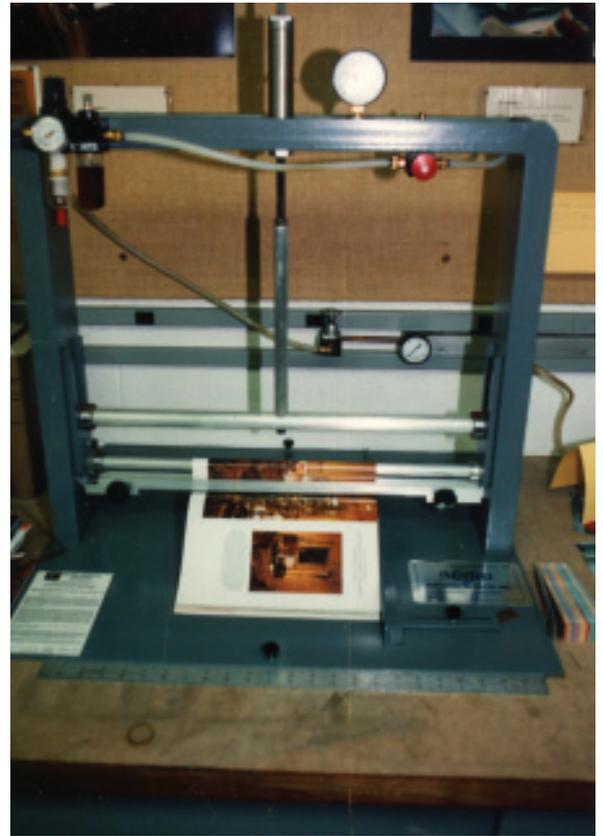
How should one test an adhesive bound book in an office/library environment?

Those who purchase or subcontract adhesive bindings are unlikely to have testing equipment. Knowing the difference between a good binding, one that is acceptable, and one that may cause problems when the product is being used requires more than simply opening and closing the bound product. A visual examination should include checking for cover register, squareness, scratches or marks on the cover, and smudged edges. On soft cover bindings, observe wrinkles on the spine, torn spine edges on top and bottom, and trim quality. Open the binding—is it easy to open or does it mousetrap?

There is a test listed in the U.S. Government Printing Office's Quality Assurance program that can easily be performed in any office environment. Called a **Subway-Test**, it simulates the distortion imparted to an adhesive bound book (most of the time a soft cover binding) by a reader riding on the subway. The bound product is bent 360 degrees to bring the cover back to back so that the product may be held with one hand. To do it in accordance to the Government specifications, the bound product should be tested in three places:

- Open book in the center and bring the front and back cover back to back.
- Now do the same with one third of the book block from the front and the back.

This allows you to test the adhesion at three, equally divided places. If any sheets start to come loose, you should reject the product or, at the least, you have a valid reason for a major complaint. Some of my students referred to that test as the **SAT** – **Student Abuse Test**. An appropriate terminology, as students press bound products onto a copy machine, creating partial distortions similar to a subway test. The resultant stresses on the binding are quite valid in determining the durability of a bound product.



The tensile-page pull tests evaluate the strength of the adhesion to the binding edge.

There is only one problem with this test. If you complain about the binding to the publisher, they will send you another book that will fail again. You could always have a library binder double fan adhesive bind the book and send the invoice to the publisher!

Testing in a book manufacturing facility

Setting up a testing area to evaluate adhesive bound products will help quality control personnel and operators ensure optimum binding.

Taking into consideration the parameters outlined earlier, achieving strength and durability requires that the right steps be taken in all processes. Testing bound products on the basis of “hand-feel” is a questionable procedure. If testing is done regularly over time, such data can be recorded, eliminating production defects caused by an improper combination of paper, adhesives and manufacturing

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Adhesive Bindings

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procedures. The best, and most successful tool implemented in my consulting assignments around the world are “Logbooks.” A small sample of the paper used, showing the spine preparation pattern applied is mounted onto a card. All the critical data is then recorded—type of paper, grain-direction, trim-size, adhesive used, application temperature, caliper of the spine adhesive, and speed of the binder. In addition, all testing data is recorded onto this sheet. This information can be particularly valuable if the job is repeated, if something goes wrong, or if multiple shifts and crews are working. In my consulting experience, I have found crews changing the temperature of a hotmelt adhesive by more than 40 degrees, believing that with such changes they will do a better job than the previous shift! Such temperature changes can play havoc with the viscosity and subsequent adhesive binding quality. *Remember Henry’s book?* Another crew used “the hotter the better” theory, assuming that in the application of the hotmelt, higher temperatures would improve the quality. What actually happened is that the higher temperatures caused an extremely thin film on the spine. When the bindings collapsed, they could not understand why. As mentioned above, education is the key.

Machinery suppliers have done a great job in addressing many of these quality control problems. In today’s binding world, digitally controlled manufacturing processes significantly reduce the chances for human error. Even so, regularly collected data is still a valuable tool to analyze adhesives and the various methods of adhesive binding.

Timing of testing adhesive bindings

When is the right time to test adhesives? That is a good question. While most adhesives are impossible to test during the manufacturing process, hotmelt



A tensile flex test evaluates the strength of the adhesion on text blocks which must open flat.

adhesives set relatively quickly and can be tested after about 15 minutes. Waiting less time will provide erratic testing results with little value, as the adhesive must set. It would be better to allow one hour for the hotmelt to set, but during that hour, another 10,000 books could be bound.

As for PUR and PVA adhesives, very little testing data is available. PUR must “cure” at least one hour, PVA cold emulsion adhesives take 20 hours to dry.

The Tensile Page-pull Test

A tensile page-pull test is the most commonly used procedure to test the strength of an adhesive bound product. This test is performed by laying a product to be tested open onto a platform. The sheet selected for testing is secured uniformly in a suitable tension clamp. The product to be tested, in our case a book block, is held down on either side of the sheet to be removed. Pneumatic or mechanical devices then increase tension until the sheet is either torn or pulled from the binding edge. When the sheet releases from the binding edge, or if the

paper tears, that data is recorded and or memorized by a meter or computer. The total force (in pounds) is then divided by the height of the volume (in inches) to yield the page-pull unit of measurement as pounds per lineal inch (lbs/inch).

Some quality control people angle their books to be tested by approximately 10 degrees. This results into a “tensile-peel” test which some believe is better than pulling the sheets out straight from the binding edge.

On thin books, three sheets are pulled. On books up to a 3/4 inch bulk, we pull five sheets. On thicker volumes, we pull seven sheets, and then delete the highest and lowest values. All sheets selected are evenly divided throughout the book block. The tensile page-pull values are then averaged out and divided by the linear inches. For example, if the average is 33 lbs. and the binding edge is 11 inches long, the result will be 3 lbs. per inch.

Is 3 lbs. per inch acceptable? In the 1960s, the Research and Engineering Council of the Graphic Arts initiated a large testing project to establish some “official” data of what is acceptable and what is not. These criteria are still being used as a guideline.

Below 2.00 lbs/in.	Unacceptable
2.00 to 2.50 lbs/in.	Satisfactory
2.50 to 3.50 lbs/in.	Good
3.50 to 4.00 lbs/in.	Very Good
Above 4.00 lbs/in.	Excellent

While some may brag about “very good” results, a tensile-page pull test alone does not measure the overall strength of a binding. A variety of tests are required to declare a binding a success or a critical failure. A book may have excellent tensile page pulls but fail a subway test. With the

sheets well embedded into the bindfold, the adhesive may be brittle and will crack

while performing a subway test. That is exactly what happened with Henry’s computer manual.

Tensile Page-Flex

A tensile page flex test should be performed on all lay-flat bindings—that is on book block bindings which are expected to lay open flat. It simply makes no sense to flex-test a catalog or other product that has a square back and features a good clamping effect. If such a product is flex tested, one would only flex the paper as the clamping effect in the binding edge completely eliminates any flexing movements.

Loading a book to be tested into a flex testing device correctly is critical. One must be careful as not to break the binding. Flex testing is recommended to take place at three places, first quarter, center and last quarter. At each location, a flex testing operator should select five sheets and mount only the inner sheet into the actual flexing device. The two adjoining sheets should float freely, while the remaining book block is clamped down.

In a flex test, the sheet to be tested is subjected to a constant 2 lb. load. On some testing devices, one must also calculate the load factor in accordance to the trim size. The sheet is then flexed at 120 degrees at 60 cycles per minute. The numbers of flexes is a matter of discussion. There are no standards, only suggestions of what represents a “good” binding and what may be weak. In general, 100 to 150 flexes are recommended to be a minimum for magazines, 200 for paperback bindings, 250 for text books and 500-1000 for catalogs.

Cover Adhesion

Another test for soft cover bindings may include a test for cover adhesion. The cover of a soft cover bound book is pulled from the binding. Adhesion to the spine should be

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While some may brag about “very good” results, a tensile-page pull test alone does not measure the overall strength of a binding.

Adhesive Bindings

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100 percent and can be judged on the amount of fiber tear. If that percentage falls below 90 percent, then something may be wrong. It indicates premature setting of the adhesive and poor machinery adjustments.

Adhesive Caliper

This is perhaps the most critical item. Several times a month I am asked to test problematic adhesive bindings and “judge” if the binding is good or bad. Variable thickness of the adhesive applied is the main causes for failures. An adhesive binder operator needs to check the adhesive film on the spine with a calibrated magnifying glass. This is done by splitting a binding with a sharp knife along the binding edge and carefully checking for uniform film application. The adhesive should flow into the prepared notches. This test checks the wettability, which is the flowing characteristic of the adhesive. The adhesive film should measure between 0.020 to 0.024 inches, uniformly from head to tail and on thick volumes from side to side. Coated paperstocks and heavy volumes may receive a slightly thicker coating.

Experts Testing

Some of the more sophisticated tests are better left to chemists and bookbinding adhesive suppliers. These may include tests for heat and cold resistance, cold crack, aging characteristics, and insidious ink solvent migration, a contamination of the hotmelt adhesive

with petroleum based inks. Such tests require sophisticated equipment and are often performed at no charge by adhesive suppliers. Personally, I have never found an industry where dedicated technical sales representatives have done so much for us. I can't emphasize enough that education is the key to success. These technical adhesive binding experts provide the industry with in-house training, coaching of adhesive binding crew and most of all, assistance in analyzing and solving problems with adhesive binding.

A series of tests and evaluations as described will provide a clear idea of how optimum quality can be achieved with adhesive binding to the benefit of all concerned.

As for Henry's computer manual, I removed the hotmelt adhesive from the spine area and double-fanned the text block with a quality PVA cold emulsion adhesive. The hardcover binding meets the specifications for library binding. I wish you could have seen the happy expression Henry had on his face – a quality bound book he could use and enjoy. 

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