

Rider rolls vs. contact bars  
Alliance with Corn Products  
Additions to our tech team  
Penetrating polymer coatings

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REPORT Your corrugator adhesives newsletter  
from Harper/Love Adhesives Corporation

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## Aquaseal Plus™ Outstanding performance. Superior wet strength.

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# ADVANCED ADHESIVES REPORT

Your corrugating adhesives newsletter  
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APRIL 2001

## Rider-roll replacement devices

*Contact bars are a useful alternative. Both have their advantages and disadvantages*

By Rex Woodville-Price

There are basically two ways to hold the single-face web in intimate contact with the glue roll: the venerable rider roll and the newer rider-roll replacement systems such as the popular Interfac contact bar. Some estimate more than half the box plants in the USA use a contact bar. Most modern corrugating equipment manufacturers today offer some kind of rider-roll replacement as an option with their new glue machines. Both systems have advantages and disadvantages.

### Rider-roll advantages

- Most existing glue machines were supplied by the OEM (Original Equipment Manufacturer) with a rider roll. The cash outlay to buy a contact bar, and the downtime to install it, can be avoided by keeping the roll. However, since these systems generally have such a short ROI (Return On Investment) this point lacks much weight.
- A rider roll has the ability to crush, so it can hide high-low flutes by crushing the good flutes down to caliper of the low flutes thus making what I call low-low flutes.
- It is easier to run oversized medium (medium wider than the single-face liner) with a rider roll.

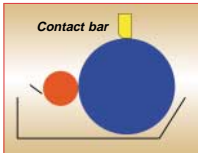
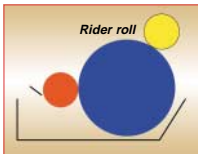
### Rider-roll disadvantages

- Can crush flutes.
- Requires operator adjustment with every caliper change.
- Requires adjustment of parallel at frequent intervals.
- Bearings require maintenance and lubrication.

### Rider-roll maintenance, adjustment and operation.

For a machine equipped with a rider roll to run properly the following criteria should be met.

- The rider roll must be round. TIR (Total Indicated Runout) should not exceed  $\pm 0.0015$ ".
- The rider-roll bearings must be maintained in good condition and lubricated at regular intervals.
- The rider roll must be parallel to the glue roll.
- The rider roll must be straight and round and balanced. This becomes even more important if the machine is run at higher speeds. An unbalanced roll, even if it has acceptable TIR, will have the tendency to oscillate up and down.
- The rider-roll-to-glue-roll gap must be adjusted to the correct distance. This gap is equal to the caliper of the single-face web being run through the station. Every time there is a change of paper grade that affects caliper, the rider roll must be adjusted.
- Always measure the gap. Operators used to check the set of the rider roll by using one hand to try to stop the roll from turning while the machine was running. If the roll stopped, it meant the roll was not too tight (too low). For obvious safety reasons we don't recommend this practice. It is also a bad idea because if the roll is too high you will be able to stop it, but you won't know if it's too high.



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### Contact bar advantages

- No operator adjustments are necessary.
- Can contribute to decreased adhesive consumption.
- Reduces or eliminates crush at the glue machine.
- Can improve pin-adhesion test and ECT values.

### Contact bar disadvantages

- It is difficult to run oversized medium. If the bare medium extends out too far, it will be caught by the shoe gap and will tear, tending to ball up under the shoe. The rider roll is more forgiving of this condition, however, any plant should strive to avoid running such mismatched combinations for obvious economic reasons.
- Installation position is critical to proper operation.

### Frequently asked questions

#### Q What should the shoe-to-glue-roll gap be?

A In general terms, the shoe to glue roll gap setting should be greater than the largest film of glue but less than the smallest flute run. This means that for machines running B, C, or A flutes only, this setting should be 0.060". If standard E flute is run, the setting should be 0.030" — unless the combined caliper of the single-face web is less, as with G, N or F microflutes. Metal feeler gauges should not be used to set the gap; they are too stiff and will not conform to the curved surfaces. It is better to use something like die backing from the flexo printing plates. This is usually available in a thickness of 0.030".

#### Q How do I know if my contact bar is exerting enough pressure on the single-face web?

A The pressure the shoe exerts on the single-face web is determined by the distance from the tube to the glue roll (1-1/4" at the spring), not by the set of the shoes. This is an important distinction in understanding how the bar works. No matter how the gap is set, the distance from the shoe to the roll will be that of the single-face web it has under it during operation. Changing the gap will not change the amount of pressure exerted on the single face, only moving the whole bar will.

#### Q My contact bar sometimes jumps up and down or chatters during operation. What causes this?

A In the run position (down) the bar needs to rest against fixed stops (same as the original rider roll but with adjustment mechanism fixed) and with pressure holding it there. Be sure your machine has *double-action* pneumatic cylinders which hold the bar down against the stops with pressure during operation. Some machines have *lift-only* cylinders and rely on the weight of the rider roll to keep it down.

#### Q Some of the springs are sitting crooked in the contact bar. What causes this?

A If the bar is slamming up and crashing down, the springs can move out of position. Regulate pneumatic flow with a flow control device to achieve a smooth movement of the bar. Remember the bar is considerably lighter than the rider roll it replaces. Do not try to do this by simply reducing pneumatic pressure at the regulator. Insufficient pneumatic pressure could allow the bar to come off its stops during operation.

#### Q The corrugating rolls are worn and causing high-low flutes. What can I do to finish them off until I get new rolls?

A Interfic provides two types of springs: their standard and one with the confusing name of *heavy duty*. The heavy duty spring isn't a better spring, it is a device that allows the bar to crush out high-low flutes. Once the new rolls are installed be sure to replace the standard spring, as the heavy duty ones are only a temporary measure which will probably compromise board quality.

#### Q How much single-face web should contact (wrap) the glue roll?

A Ideally, only the web that is under the curved portion of the shoe should touch the glue roll. The web should touch the roll under tension. The contact bar is not a roll and cannot force the web to wrap the glue roll; it can only hold it there. The web should leave the roll at a point downstream of the edge of the shoe. If it is trying to leave under the shoe it will try to lift the shoe and cause a less-than-ideal application of glue.

#### Q What is the proper position for the contact bar?

A The shoe should be placed at the point where the web wraps the roll and its curved surface should be concentric to the glue roll surface at a separation of 3/16". If either glue machine or double facer have been moved since original installation (anything that affects the path of the web through the glue machine), then the bar may need to be moved.

### Hints and suggestions

- When installing new shoes, be sure to make them parallel to the surface of the glue roll. This will ensure proper operation and prolong their service life. This can easily be done by using a small hammer to tap on the hinge legs and move them. They will move because there is clearance between the hole in the leg and the bolt that fastens it to the tube.
- It is important to use OEM springs as they have the right dimensions and correct spring rate curve. Most box plants don't have access to a spring dynamometer to check nonstandard springs.
- Cleanliness is important. Strive to keep the bars as clean as practical.

# Harper/Love joins forces with Corn Products

*New alliance delivers the most comprehensive product line and technical service network in the corrugating industry*

Harper/Love Adhesives Corporation and Corn Products, the North American business of Corn Products International, Inc., recently formed a North American marketing alliance for the United States and Canada. The alliance provides the North American corrugating industry a single servicing point for the combined product lines and quality customer services of Harper/Love and Corn Products.

In the United States, the alliance provides each company mutually exclusive rights to sell and service each company's product line. In addition, Harper/Love will provide technical resources to further support Corn Products' existing customer base.

## *New faces in technical support: Expansion reflects Harper/Love planned growth program*

Take care of existing customers. Anticipate the needs of new ones. Put the right people, with the right skills, in the right place, at the right time. Our most recent additions are part of our plan to satisfy the needs of the Corn Products alliance and other growth opportunities, without compromising service to our existing customers. They are the latest of seven added to the technical service team since January 2000.



*Left to right:*

**LARRY WATSON** – *Technical Service Representative, DuBois, PA*  
More than 22 years' experience in the corrugated industry as a corrugator operator and supervisor. He will service Harper/Love customers on the East Coast.

**RAUL PEREZ** – *Technical Service Representative, Charlotte, NC*  
Twenty-four years' experience in the corrugating industry as an operator, supervisor and superintendent – including extensive experience in manufacturing triple-wall.

**HARVEY GUTHREY** – *Corporate Accounts Manager, Dallas/Fort Worth, TX*  
Twenty years' experience in sales and service with industrial starches and resins, and a marketing degree from the University of Texas.

**HACK BARTLEY** – *Sales and Technical Representative, Hodges, SC*  
More than 10 years' experience in corrugated adhesive sales and service, and previous experience in the textile industry.

## *Penetrating questions, practical answers*

Wet strength is good. Wax is a problem. That's why liner manufacturers, corrugators, and box makers are replacing wax with polymer coatings. These modern coatings accomplish the same water-resistant ends without the problems associated with wax. Unfortunately, the same properties that provide wet strength also create challenges in adhesion.

The answer is a starch formula that contains a penetrating agent, such as XM-5, or other products, such as LiquiBond™, that help the adhesive get past barrier coatings and into the fibers where they can do some work. Thanks to years of practical experience, sophisticated tools, and scientific method, the Harper/Love laboratory staff hasn't failed yet to conquer modern coatings for successful adhesion.

Among the tools our researchers use is a *double-backer simulator*, built by Harper/Love consultant Bill Nikkel. This desktop tool supports controlled experiments involving heat, time, temperature, pressure, and adhesive formula.

Work on the simulator is preceded by tests that give us some idea how hard the coating will be to penetrate. Finished samples are run through a variety of pin-adhesion and soak tests. Worst case, we're able to go into our customer's plant with a solution that will require minimal adjustment to run successfully on the corrugator.

*R&D Chemist John Swafford checks plate temperature on the Nikkel double-backer simulator*

