

Back-Up Brush Technical Bulletin 11/29/2012

Summary

Web converters are having increasing success razor slitting and pin perforating their products against a rotating Cylinder Brush. The industry buzz word for this product is a “Back-Up Brush”. Back-Up Brushes are replacing metal anvil and rubber covered anvil rollers in a wide range of razor slitting and hot and cold pin perforating applications. Users of Back-Up Brushes have reported superior slitting and perforating quality in conjunction with increased blade and pin life with reduced set up time.

How Back-Up Brushes Work For Razor Slitting

Nylon bristles are wound on to a metal core providing thousands of individual fibers to support the web. Nylon type 6:12 is the filament of choice for this application due to the bend recovery properties and excellent fatigue resistant properties of this type of bristle. As a general rule, the web should make an approximate 100 to 180 degree wrap over the brush. Back-Up Brushes can be used as web driven devices or can be externally driven at surface speeds equal to web line speed. Operating line speeds of 250–800 feet per minute are typical for this technology. Faster line speeds can be achieved if there is sufficient brush diameter to reduce possible core deflection. Web tension of 8 lbs per linear inch is sufficient to provide adequate surface tension for accurate slitting. Blade penetration into the brush of .065” to .125” is optimal for razor slitting. Razor knives penetrate the web and into the brush without damaging the bristles. The self healing bristles bend and recover to their original orientation each revolution providing excellent support for the web without damaging the brush or the blade.



**Razor Slitting With
A Back-Up Brush**

How Back-Up Brushes Work For Pin Perforating

Nylon type 6:12 filaments are wound on to a metal core for cold pin perforating. Tampico bristles are used for hot pin perforating. Tampico is a vegetable fiber that is grown in Mexico that can withstand temperatures of up to 800 degrees °F. Normal operating pin temperatures for hot pin perforating range from 150 to 600 degrees °F. Back-Up Brushes provide thousands of individual fibers to support the web. As a general rule, the web should make an approximate 100 to 180 degree wrap over the brush. Back-Up Brushes can be used as web driven devices or can be externally driven at surface speeds equal to web line speed. Operating line speeds of up to 1000 FPM per minute are typical for cold pin perforating and up to 500 FPM for hot pin perforating. Web tension of 8 lbs per linear inch is sufficient to provide adequate surface tension for accurate perforating. Pin penetration into the brush varies from .040” to .125” for pin perforating. Perforating pins penetrate the web and into the brush without damaging the bristles. The bristles bend and recover to their original orientation each revolution providing excellent support for the web without damaging the brush. Dimpling of the surface of the back up roll as seen when using conventional rubber covered anvil rolls is eliminated when using Back-Up Brushes.



**Pin Perforating With
A Back-Up Brush**

What Types Of Products Do Back Up Brushes Work On

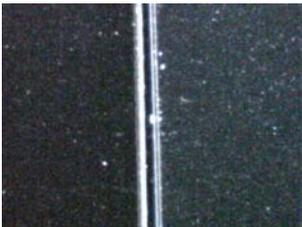
Converters of multi-wall paper bags, plastic film (both single layer and multi layer), label stock and flexible packaging products are currently using Back-Up Brushes to razor slit and perforate their products. They are used on duplex slitter rewinders, roll doctor machines and drum winders. Whether you are slitting online or offline, pre-print or post-print, Back-Up Brushes will adequately support your web without scratching or damaging polypropylene, metalized film and low density polyethylene film. Web thicknesses from 1 mil to 10 mil are currently being razor slit against Back Up Brushes. Web thicknesses from 1 mil to 15 mil are currently being pin perforated against Back-Up Brushes.

Benefits to Users of Back-Up Brushes

Set up time is greatly reduced when using Back-Up Brushes for Razor Slitting and Pin Perforating. Precise fitting or adjusting match pin and knife points is eliminated using Back-Up Brushes. Compliance with AIB standards is made easier due to a reduction in dust and dirt that is created when razor knives rub against the side wall or bottom of a segmented steel roll. Misalignment of pins and knives is virtually impossible with this technology. Web width changes can be done in minutes rather than hours for both manual and automated quick set positioning razor knife systems. Critical web width tolerance can be maintained not having the limitations of grooves in a segmented steel roll. The only limitation is the blade holder width. There is no changing of metal segments. Traditional metal anvil rolls leave the substrate unsupported in the grooves. This allows the material to flutter between the support edges or curl down in the grooves generating a jagged edged substrate.



**Jagged Edge Substrate
Anvil Roll Slit**



**5 Mill Film @ 500 FPM
Back-Up Brush**



**8 Mill Label Stock @ 200 FPM
Back-Up Brush**

Back-Up Brushes support the web better regardless of razor knife or pin wheel location producing superior slitting edge quality and perforating whole repeatability. Back-Up Brushes reduce maintenance costs and down time caused by broken or dull blades and pins as a result of misalignment and normal wear. Operator safety is enhanced due to a reduction in the amount of time and the frequency of handling sharp knives and pins.

Back-Up Brushes are manufactured as drop in replacements for conventional metal anvil rolls and rubber covered back up rolls designed from OEM specifications. They can be made with internal or external bearings on both live

and dead shafts. Back-Up Brushes are lighter and less expensive than most existing metal or rubber covered anvil rolls.

Conclusion

Back-Up Brushes are a cost effective technology that is ideally suited for replacing conventional metal anvil rolls and rubber covered anvil rolls to razor slit or pin perforate a wide range of web products. Back-Up Brushes are an easy retrofit for many converting applications without the need for equipment modification. Users of Back-Up Brushes have the opportunity to improve their product quality and reduce operational costs of razor slitting and perforating.

About Finzer Roller

Founded in 1968, Finzer Roller is a one-stop resource for rubber rollers and specialty coatings, including steel roller cores, replacement rubber coverings and peripheral products. The company services the film and foil packaging, corrugated box, wood, wood finishing, metal, graphic arts and other precision application industries. Headquartered in Des Plaines, Illinois, Finzer maintains manufacturing and sales in Arkansas, Florida, Illinois, Indiana, Maryland, New York, North Carolina, and Pennsylvania. Additional information is available at www.finzerroller.com.