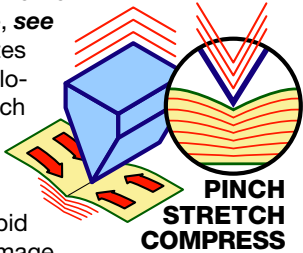
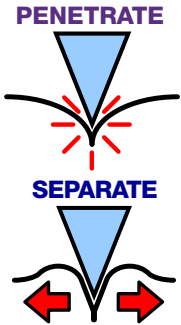


A Tough Customer: DieHard Xtreme

The dynamic of platen diecutting requires the tip of the knife should first penetrate the surface of a material, with as little pressure as possible, and then convert the vertical pressure into a lateral splitting force. **See left.** Although the majority of the displacement work of diecutting is done through the bevels of the blade, it is critical to penetrate the surface of the material as smoothly as possible. If the material is very dense and resistant to penetration, the pinching, stretching, and compression effort of the knife-edge, **see right**, generates excessive Explosive force, which will produce a rough diecut edge, and lead to rapid knife-edge damage.

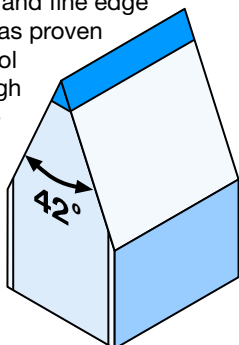


DieHard Xtreme

Fortunately, DieHard Xtreme was specifically designed for this type of application, that is, cutting very tough and difficult materials, such as PET, dense plastic, composites and laminates, and difficult to diecut materials.

The knife has a very sharp ground edge profile, which is enhanced and polished using an extra-fine grinding process. The knife is **Tip Hardened (59 HRC)** and **Edge Hardened (47 HRC)**, utilizing a deep hardening process. This focus on hardening the cutting edge and working surfaces however, does not undermine the bendability of the blade. With a 42 degree bevel angle and fine edge grinding the knife has proven to be the perfect tool for cutting very tough materials. The knife is available in 2 & 3 point, and in Coils & Strips.

This is one, tough blade, which is **Xtremely** effective!



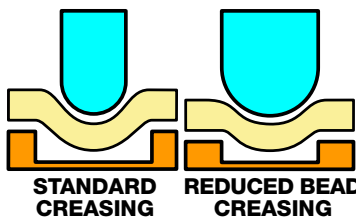
The Reduced Bead Technique: A Revolution in Creasing.

One of the most challenging of these key issues is creasing and folding paperboard and fluted materials. It is not just that the materials have and continue to change, or that the diecut products are increasingly more complex and sophisticated, and the speed of processing includes no time for testing, but the entire premise of how the crease tool is designed are fundamentally flawed.

It is time to change, and the Reduced Bead Technique has proven to be the most effective choice in generating a quality, consistent, and effective folding carton or container.

Current Tool Design Principles

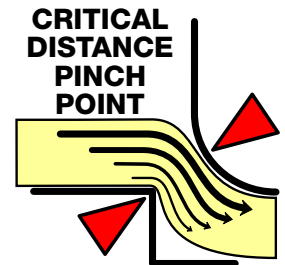
There are 4 major variations on the formula for designing creasing tools. **See above.** Each approach; from the US Calculation, which calculates the channel width by



doubling the caliper and adding it to the pointage of the crease, to the 1.25 multiple; gradually generates a gradually narrower channel; which naturally increases the pinching force on the paperboard. So what is wrong with this approach, and what are the differences between the "Standard" approach and the "Reduced Bead" approach?

As the name Reduced Bead Creasing suggests, this method of forming a crease integrates a smaller, more precisely defined bead than the standard crease. **See above.** (Note also the thinner counter, the narrower channel, and the higher pointage of the Reduced Bead graphic.) Of course there is more to it than simply making the bead proportionately smaller. In making the transition to Reduced Bead Creasing there are **7 Key Differences** from the traditional create tools design approach. This technique requires:

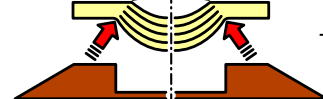
1. A Proportionately Smaller Crease Bead
2. A Higher Pointage of Creasing Rule
3. Wider Delamination of the Surface
4. Balanced Bead Delamination-Layering
5. A Proportionately Thinner Counter
6. A Male-Female Compression Gap
7. Compressive rather than Lateral Crease Formation



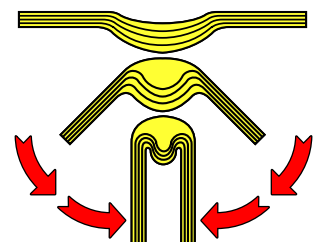
In creating a flexible, paperboard hinge it is essential that the engine room of the crease/hinge, the bead, is comprehensively and evenly delaminated. How do the tool design parameters of Reduced Bead make this happen?

Reduced Bead Creasing: The Key Differences

Although rarely measured, the most important measurement in creasing is the **Critical Distance**. **See above.** This is the "pinching" distance between the male crease rule and the female channel upper corner, when the diecutting press is completely closed, which generates the correct amount of internal delamination or bead layering. **See left.**

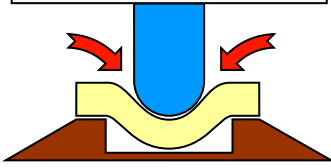


This pinching and trapping of the paperboard or fluted material between the upper and lower tool, enable the conversion of the partial internal delamination of diecutting into full internal delamination of the bead as the crease is folded. **See right.**



2 x Caliper
1.75 x Caliper
1.50 x Caliper
1.25 x Caliper

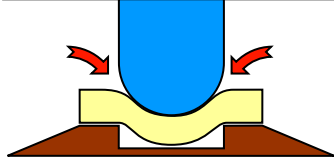
STANDARD CREASE
COMPRESSION 25%
LATERAL DRAW 75%



In traditional creasing the Critical Distance Pinching is achieved by 75% Lateral Stress or Draw, and 25% Compressive Force. **See left.** By comparison, in the Reduce Bead formulae, the Critical Distance Pinch Point is achieved by 75% Compressive Force, and only 25% Lateral Stress or Draw. **See below.** The differences in the two approaches to crease formation can be seen in a side-by-side comparison in the **final illustration.**

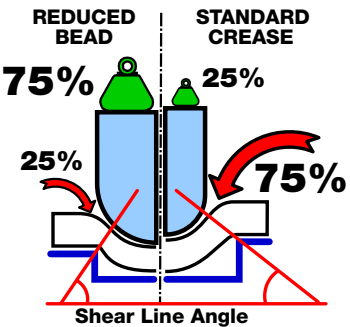
What is important to note is the shear line angle of each method at the Critical Distance. This key angle of attack simply means the Reduced Bead is not only smaller, it is more precisely internally delaminated into separate layers.

REDUCED BEAD
COMPRESSION 75%
LATERAL DRAW 25%



What are the Benefits & Advantages?

The advantages are the majority of crease failure, from spine fracturing, to bead collapsing, to crease end splitting, to buckling and surface bursting are eliminated! The thinner counter enables faster press speed; with less snagging, and the compressive relationship between the male and the female tool means channel wear is virtually eliminated. Counter or Matrix strips last three to four times longer, which obviously translates to greater carton-container folding consistency and uniformity. There is considerably less draw generated, so there are fewer nicks, flaking is eliminated, and sheet break-up is significantly lowered.



This is why, when describing the Reduced Bead Technique, the use of the word **“Revolutionary”** is perfectly justified.

Tom Dickson appointed Product Manager Diecutting for the US and Canada.

Sandvik DieCutting Products has announced the appointment of Tom Dickson as Product Manager DieCutting responsible for the US and Canada.

Tom, who has a BA Economics and BS Business, has 10 years’ service with Sandvik in the Strip and Wire Divisions. He has extensive sales experience in the diemaking industry having focused on this market sector for most of his Sandvik career. In his new role,

Tom has the key responsibility for managing and developing the sales and marketing of Sandvik’s cutting and creasing diemaking rules to the printing, packaging and board converting industries throughout the US and Canada.

He now leads a sales team providing total regional coverage. In addition to his management responsibilities, **Tom will continue with product sales in the Northeast. Gary Smith is responsible for sales in the Southeast, Ryan Flowers in the mid-West and Jacques Valiquette in Canada.**

The recent appointment of John Foster for the West Coast territory completes the nationwide sales coverage. Coming to Sandvik from a project and product management role, John has extensive sales experience in the food services industry – a major market sector for Sandvik’s diecutting products.

Completing the sales team and another recent appointment is **Michell Shem-barger in Inside Sales.** Her role is to focus on customer service and the support of the external sales team.

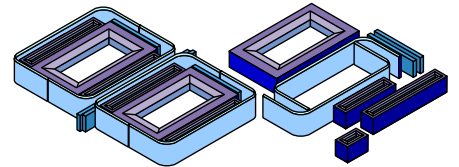
Says Tom Dickson, **“The key benefit of having national sales coverage is the ability to bring new products quickly to market.**

Continuous product improvement by Sandvik’s research and development organisation and response to market demands for advanced cutting and creasing rules, capable of handling new and improved substrates, has led to several new and recent product launches.

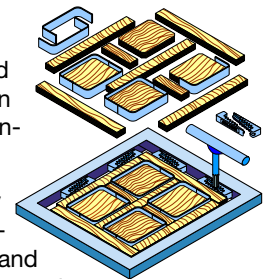
It also means that we can provide the high levels of technical support for our existing product ranges, which our diemaking customers expect.”

Steel Rule Diemaking: A Tradition of Excellence

The basic method of steel rule diemaking evolved in the late 19th Century, as traditional cylinder/flatbed Printing Machines were adapted to accommodate a stamping tool. As steel rules knives, creasing, perforating and scoring rules emerged, the toolholder, used to create the dieboard, was the standard metal blocks and spacing material used by the Letterpress Printer. **See below.** In fact the original **“Diemakers”** were **“Compositors”** who adapted to the new discipline.

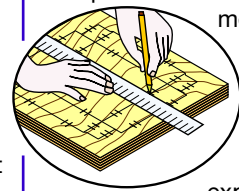


The disadvantage of this form of tool-making is the metal formes were very heavy, it took a great deal of time to **“build”** each panel from a number of pieces of metal, there was limited flexibility, and diemaking was an intensive time consuming process.

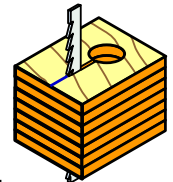


It was a relatively simple step to replace the heavy, and unwieldy lead composing blocks with individual pieces of plywood sawn on a circular saw. **See above.**

This provided a faster, and less complex method of diemaking, but it still had to be **“locked-up”** into a frame or chase, and there was always the danger of the tool unexpectedly coming apart.



The next logical step was to use a single piece of plywood or **“dieboard”** and draft/draw the image of the design directly onto the surface of the material. **See above.** Slots to accommodate the knives were sawn into the dieboard using a jig saw machine. **See right.** This was a simple, and inherently flexible method of steel rule diemaking, which rapidly gained dominance.



Each method was replaced with new technology, however, the knowledge, the skill and the experience of the diemaker remains the critical factor, in steel rule diemaking.