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NIBA–The Belting Association
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Tech Note
Technical Notes from the Technical Committee, NIBA – The Belting Association

#1 Belt Camber

If unbalanced warp tensions exist in a conveyor belt, that belt will usually assume a crescent or banana shape when laid flat upon a horizontal surface. This deviation from a straight line is hereby defined as **camber**.

To measure belt camber, it is recommended that the belt be unrolled on a flat surface like the warehouse floor, a flat horizontal driveway, etc. Next, one end of the belt should be grasped (and one end only), then the belt dragged in a perfectly straight line for some ten to twenty feet. If the belt is too heavy for one person to move, that one end should be clamped to a fork lift and the same procedure performed. At this point, the belt should lie flat. Unequal and unresolved warp tensions in the belt will cause it to assume a crescent or banana shape.

(It is extremely important that the preceding procedure be followed to the letter. It is very difficult to have both edges of the belt at the same thickness--particularly wide belts. Accordingly, if we simply unroll the belt on a flat surface, that belt will always unroll in a banana shape--due to geometry, not unbalanced warp tensions. Dragging one end of the belt for some ten to twenty feet eliminates this geometrical consideration and does tell us whether we indeed do have a cambered belt.)

Camber is measured by drawing a taut line along one edge of the belt (inward camber edge) and measuring maximum deviation from that taut line to the belt at the center point of that line. Compute percent camber as follows:

$$\% \text{ Camber} = \frac{\text{Maximum Deviation (inches)}}{\text{Length of Taut Line (inches)}} \times 100$$

Currently, there is no accepted Camber standard in the U.S. market. For a maximum acceptable camber relative to a given conveyor belt construction, please contact your belt manufacturer.

Camber can be instilled into a belt during the slitting operation if one of the slitting knives is dull. A dull slitting knife will tear the fill yarns (crosswise yarns) rather than cut them. (While the belt is in roll form, the side of the belt which has gone through the dull knife will exhibit a fuzzy appearance due to the torn fill yarn.) Usually, this type of camber will be less than 1/2 of 1% and can be pulled out handily when the belt is properly tensioned and tracked.

Camber, quite frequently, is instilled into a belt during **improper** storage. For a guide to **proper storage**, please refer to NIBA Technote #2.

SKEW (BOW)

The fill yarns (horizontal yarns) in the belt carcass will usually lie along the perpendicular to the belt center line. Any deviation from this perpendicular by the fill yarn is hereby defined as skew or bow.

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A skewed pick in a plain, or square, weave is cause for concern since it is generally indicative of unbalanced warp tensions and will usually go hand-in-hand with a significant camber.

In a **straight warp** or **solid woven carcass**, ***skew is of little significance***. It is usually a cosmetic defect and is not indicative of a cambered belt.