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Tech Note

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

#17 Purposes of V-Guide Notching

V-guides are often applied to the back surfaces of conveyor belting. This is usually done to assist the belt's ability to track on conveyor systems. Many times these guides are selected for wide width, short center conveyors that are notorious for having belt training problems. Design engineers often specify v-guides be used when take up mechanisms are not easily manipulated to center moving belts on head or tail pulleys.

A common example of v-guide use is found on belts used on trench digging machinery. These trencher belts often operate in conditions where dirt and mud can build up on conveyor parts and cause the belt to move off operating center lines.

To combat resulting edge wear, v-guides aid tracking and help to keep the belt running where it should. Another example of common v-guide use is found on narrow belts operating on live roller conveyors. These APC belts, *All Parts Conveyors*, are made from both rubber and PVC.

When pulley sizes are large enough, v-guides need not be notched. When pulley sizes are smaller, a notch or slot must be cut crossways in the v-guide profile. This is true whether the guide is made from rubber or from thermoplastic materials like PVC or urethane.

The purpose of the notch or slot is to remove enough volume from the v-guide's profile so that it will properly fit in the pulley groove and not ride out. When pulley diameters are small, the v-guide will be too fat to fit in the pulley groove provided for it. This causes the conveyor belt carcass to pucker as it presses the v-guide into the groove of the pulley.

The challenge for NIBA distributors is to know how much v-guide volume must be removed to make the v-guides fit the pulley grooves in which they will operate. Properly notched v-guides have sufficient bulk removed from their volume to conform to the difference of circumferences between the bottom surface of the belt wrapping the pulley, and the dimensional circumference of the v-guide protruding into the v-guide groove.

The following illustration explains the requirement for determining notching.

B guides, for instance, are 13/32" thick. On a 4" diameter pulley, the bottom of a belt surface wraps a circumference of 12.57 inches. The attached B guide however, wraps a smaller diameter, approximately 3 1/8" diameter. Theoretically, that circumference would be 9.82 inches. The length difference of the two circumferences is 2.75 inches; which amounts to the amount of rubber volume which must be removed from the v-guide to properly compress around a 4" pulley.



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In the example presented, slots 1/4" wide, and nearly as deep as the bond surface of the belt, will accommodate the compression. In this example, such slots should be cut on 3/4" center-to-center spacing. Slotting, rather than notching, is preferred for smoothness. Similar calculations are made for other guide profiles depending on thickness and pulley size.