

**TECHNICAL BULLETIN**

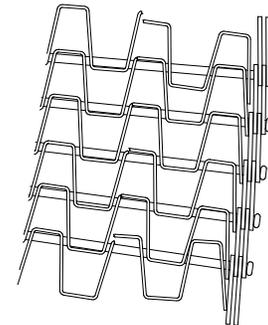
**FATIGUE RESISTANT OMNI-FLEX®**

Field experience shows that the most common cause of failure in Omni-Flex belts is fatigue. The fatigue failure in Omni-Flex belts is typically a break in the corner of the pickets between the third and fourth openings from the outside edge. This break is the result of progressive wear on the bar links transferring the cyclic load to the pickets.

*Fatigue Break at the corner between 3rd and 4th openings*

**Cause of Failure**

When an Omni-Flex belt is running straight the rod is in contact across the full front of the picket. This allows the use of multiple sprockets and distributes the load across the full belt width. Through a turn the outside edge remains extended. The entire tension load is transferred to the outside edge of the belt. After the bar links wear, this load is also applied to one corner of the outermost picket opening and soon causes wear and a slight bending of the picket. As wear continues, the second opening then begins to share the load. This continues to move across the belt until the first three openings along the outside edge are sharing the load.



At this time the loading is no longer concentrated at the corners of the pickets, but along the front face. In order for this to occur the picket legs must flex. This flexing stresses the corners of the picket with each load cycle. When this condition reaches the third and fourth opening, the amount of picket deflection is large enough to cause low cycle fatigue failure in this area.

The Rate of wear on the bar links and picket is dependent upon:

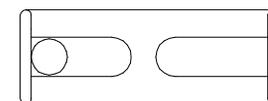
- The belt tension.
- The number of cycles the belt is stressed
- The environment (cleanliness, temperature, etc.)

Reducing the effect of any of these factors will in turn decrease the rate of link and picket wear, thus prolonging the life of your belt.

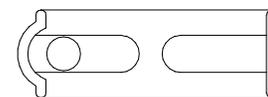
**Ashworth Fatigue Resistant Feature (Patented)**

The Ashworth fatigue resistant feature consists of an outward-facing radius centered on the trailing face of the picket. This radius, commonly called a dimple, is formed in several of the openings along the edge of the belt. The actual number of openings is a function of the belt width and turn ratio. The effect of the dimple is to lengthen the belt pitch in selected openings. This forces the bar link to bear the entire load in a turn. The pickets are not stressed until the bar links wear to the elongated pitch, at which time the fatigue failure process described above starts.

**Standard Omni-Flex Picket**



**Fatigue Resistant Omni-Flex Picket**

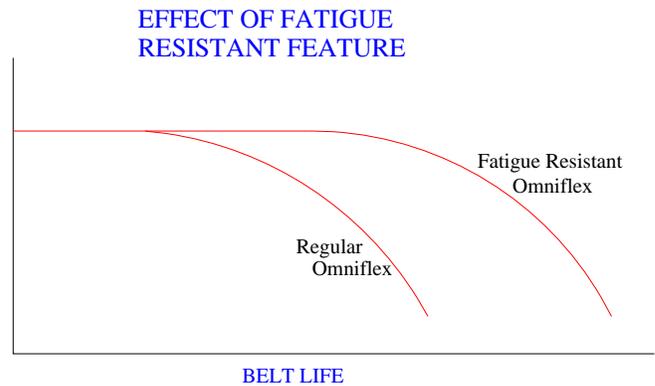


The fatigue resistant feature also absorbs the stress of side loading. Typically, side loading will spot load only one corner of the outermost opening. If the fatigue resistant feature is present, this load is instead shared between all the openings up to and including the inner most dimple. More pickets now share the amount of deflection, which therefore reduces the stress levels accordingly.

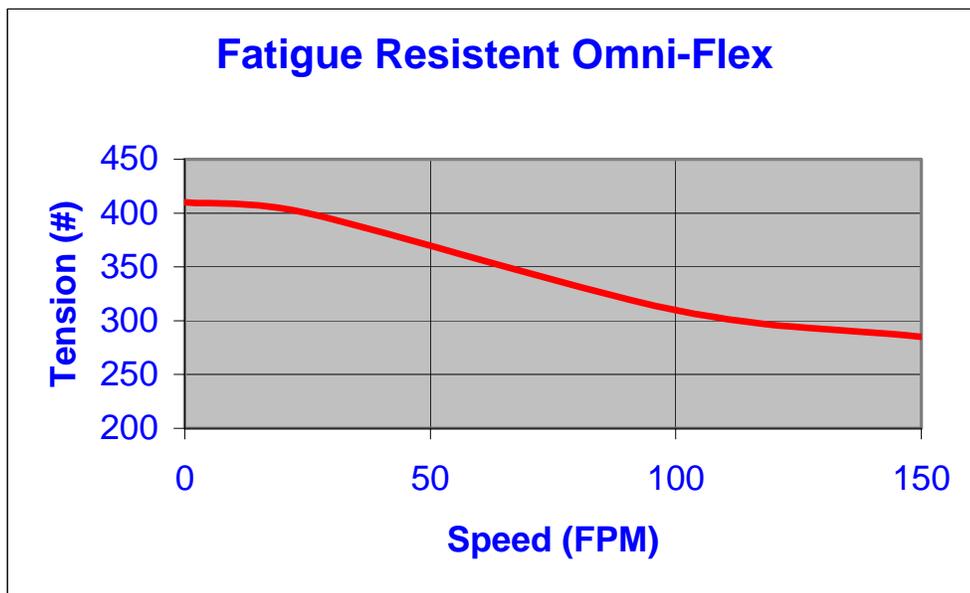
**THE FATIGUE RESISTANT FEATURE:**

➤ **Helps to reduce wear on the pickets in the later stages of belt life.** The dimples lengthen the pickets slightly so that belt wear is concentrated in the bar links longer than in standard Omni-Flex. Tests have revealed that Fatigue Resistant Omni-Flex gives an increase in life of at least 30% over regular Omni-Flex.

➤ **Experience has revealed that speed has an impact on belt rating.**



The chart below shows the ratings at various speeds. Ashworth Bros. Inc., does not recommend this belt be run at speeds greater than 150 ft/min.



*Consult our Product Engineers for other options specific for your application and system design.*

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