

ABOUT STRESS LINES IN VINTAGE RECURVE BOWS

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Perhaps you never knew, but the fact remains that there were literally thousands, and thousands of vintage bows, from Damon Howatt, Bear, Wing, Shakespeare, Root, and Pearson etc. that were sent out of the factory with stress lines/cracks in them.

Stress cracks can occur because of excess stress, such as repeatedly overdrawing a bow, or a material flaw such as a small void in the fiberglass or a similar issue with the underlying wooden limb.

The even greater fact is that most of these bows are still in working order, and can be safely shot. This is the consensus of knowledgeable bowyers, collectors, and shooters alike. A stress line has little effect on bow safety given the properties of fiberglass and what a stress line/crack actually is.

Stress fractures are small vertical lines that come out of the fade outs, and run with the glass, mainly in the non-working limb section. Stress fractures generally occur very early in a bow's life, largely from having been factory overdrawn. For example, the Bear archery company for example would draw a bow as far as 36" in a stress test. Many stress cracks were originated from original factory overdrawing of the bow, even though the stress line might not have shown up until the buyer shot the bow several more times. Stress lines are very common in vintage recurve bows.

Limb shock effects things like poor glue lines, and horizontal cracks in fiberglass, but NOT stress fractures. The fact is, most stress cracks are under the finish of a bow, therefore moisture is not an issue, anymore than any other bow.

In my experience only about 5-10% of stress lines will expand with continued shooting. I have an old Root Target Master bow that had 8" stress lines from the riser down on all 4 sides of the limbs. I've marked the end of the line with a sharpie. Every chance I get I shoot the bow to see if any of the lines grow. To date, none of the lines have crossed the mark.

The only limb failure I've seen from a stress line was when multiple lines occurred in the middle (working part) of the limb. Most stress lines start in the riser part of the limb and run out anywhere from 1" to 6". There are lots of opinions out there about the nature and instability of stress lines, but little science.

Through my experience and research to date, I've concluded that:

1. All makes and models of bows can develop stress lines.
2. Almost all stress lines are vertical.
3. Superficial stress lines are far less severe than stress cracks. I differentiate between a line and a crack if I can feel or see any separation in the fiberglass, such as running my fingernail over the line.
4. Most stress lines and cracks are superficial and do not run through the entire fiberglass

5. Many stress lines resulted from overdrawing a bow during factory stress tests, even though the stress line may not have appeared right after testing (drawing a bow around 36" and leaving it drawn at that length for 24 hours or more). If nothing happened, the bow was deemed OK and placed for sale.
6. Stress lines can be repaired and stopped from "growing" by cleaning them out and filling the line with thin coats of cyanoacrylate (superglue)
7. Lengthy stress cracks that down all the way through the fiberglass down into the wood can render the limb unstable and risky to shoot. The further the stress line gets to the working center part of the limb the more exposure to breakage.
8. Many stress lines occur in the riser portion of the limb. If the stress line doesn't extend past the riser and into the "working" part of the limb (the center of the limb that has the higher stress points), then the bow is generally safe to shoot.

Crazing

Horizontal lines in the finish – almost like an alligator pattern - is called "crazing". It is cracking in the varnish. It is cosmetic only. Sometimes the crazing is caused by shooting the bow before the finish has fully cured. Sometimes the glass fibers in the raw glass were not tightly bound to the limb's surface and over time worked loose and caused cracks in the finish from the inside, most often at higher stress points on the limb. You can remove the varnish (sanding or fiberglass safe varnish remover) on the limb and refinish it with Tru-Oil or an oil based Polyurethane.