

2010 Compound Bow Evaluation

Hoyt Maxxis 31

By Anthony Barnum



Hoyt Maxxis 31

Introduction:

Hoyt's drive to continually refine their riser platform, laminated split limbs, and Cam & 1/2 system has resulted their flagship offering for 2010, the Maxxis 31. Taking many of its design cues from the AlphaMax 32 that was introduced in 2009, the Maxxis 31 combines tried and true technologies with some new innovations including the new laminated XTS ARC Split Limbs and an inline roller cable guard. The new split limb assembly is Hoyt's first "past parallel" limb profile offering. This setup maintains the strength and consistency that we've come to expect from Hoyt while also providing the recoil reduction properties that are characteristic of limbs that move almost solely in the vertical direction. Advancing beyond the traditional carbon rod / cable slide combination seen on previous model years, the inline roller cable guard is paired with the smooth drawing XTR Cam & 1/2 system to help reduce friction provide a smoother draw cycle. Otherwise, Hoyt incorporates many familiar components on the Maxxis 31, including the Total Engineering Concept® (TEC) riser, Pro Lock limb pockets, StealthShot® string suppressor, and Shox damping accessories. Even with all of these accessories installed, the TEC riser provides substantial cutouts to keep the bow at an advertised mass weight of 3.9 pounds.

The Maxxis 31 sample that was provided for this evaluation was measured to have a brace-height of 7.075 inches, while the axle-to-axle length was measured to be 31 1/4 inches. The requested 29 inch, 60 pound model was measured straight out of the box to have a 28 7/8 inch draw length and peak draw-weight of 61.4 pounds. When shot by hand with a 300 grain arrow, the Maxxis 31 achieved an average speed of 311.1 fps in the out of box configuration with only a brass nock added to the string. Per request from Hoyt, 3 twists were taken out of the string to bring the Maxxis 31 into draw length specification, while the limb bolts were adjusted to bring the draw weight into spec.

Subjective Test Results:

Fit & Finish:

The fit and finish on the Maxxis 31 sample provided for this evaluation was very good, bordering on excellent. Hoyt's Pro Lock limb pockets and other machined components appear to have very tight tolerances. The only imperfections I was able to find in the finish were located in the recessed areas near the cut-outs on the riser; these imperfections were almost unnoticeable, though, and blended in well with the RealTree APG camo finish. No imperfections were noted on the remaining components.

Grip:

A change in pace was made in the grip area on the Maxxis 31. Hoyt is no longer using the 1-piece laminate grip from years past and instead is offering the 180 synthetic grip although it appears to maintain the same contours. My personal preference leans toward the laminate grip, but the 180 grip is one of my favorites for 2010. The grip is smooth and comfortable and my attempts to intentionally torque the bow at full draw were met with a high amount of resistance.

Draw Cycle:

The draw cycle on the Maxxis 31 is very smooth with great transitions from the stacking to holding phase and from the holding phase into the valley. The back wall is quite good with only minimal pull, but the valley is a little short as the bow wants to pull on you with even minimal creep. At full draw, the bow is quite stable even though it is only has an axle-to-axle length of 31 inches. On average, the Maxxis 31 stores 3.86 ft-lbs. of energy for each inch that you draw it back.

Some sound output as the draw stops contact the cables.

Sound & Vibration:

At the shot, there is very little jump, shock or residual vibration. The top of the bow kicks to the right a bit (counterclockwise on a right hand bow when viewed from above) and some very low amplitude residual vibration was felt in the riser for a relatively lengthy duration after the shot. The Maxxis 31 seemed to be below average in sound output from the shooters perspective.

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Contact Info: Hoyt Archery
www.hoyt.com

MSRP:	\$929	Draw Length:	26"-30" *
Cams:	XTR Cam & 1/2, Z3 Cam & 1/2	Draw Weight:	40-90*
Limbs:	XTS ARC Split Limb	Brace Height:	7" *
Grip:	180 Pro-fit Custom grip	Axle to Axle:	31" *
Let-off:	75%*	Mass Weight:	4.0 ^
String:	Fuse		
Damping:	String Shox, Alpha Shox, StealthShot®		*Advertised
Finish:	Realtree® APG® HD		^Measured

Performance at a Glance (60.1 lbs, 29"):

Arrow	Speed	K. E.	Momentum
300 Grains	306.9	62.7	13.2
360 Grains	283.6	64.3	14.6
420 Grains	264.8	65.4	15.9
540 Grains	236.5	67.1	18.2

Arrow (Grains):	300	360	420	540
Dynamic Efficiency:	80.5%	82.5%	83.9%	86.1%
Speed Per Inch of PS:	15.2	14.1	13.1	11.7
Noise Output (dBA):	90.0	86.2	85.0	82.2
Total Vibration (G):	184.5	167.7	154.8	131.2



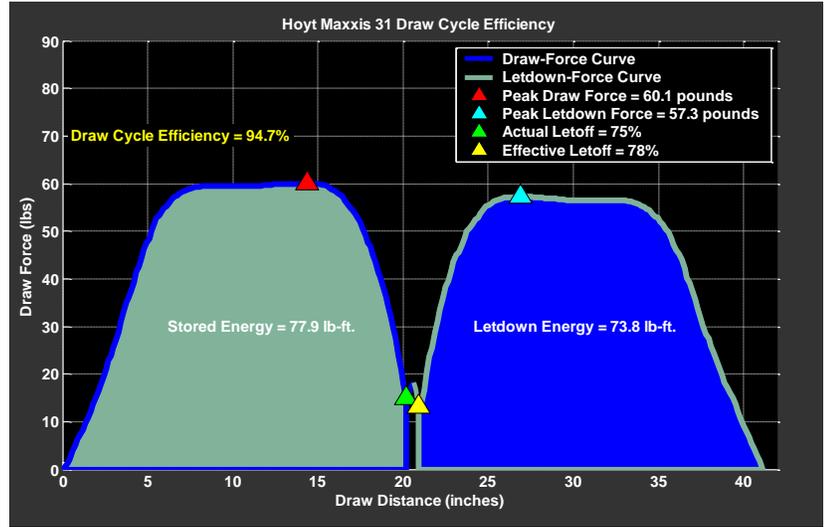
Hoyt Maxxis 31

Objective Test Results:

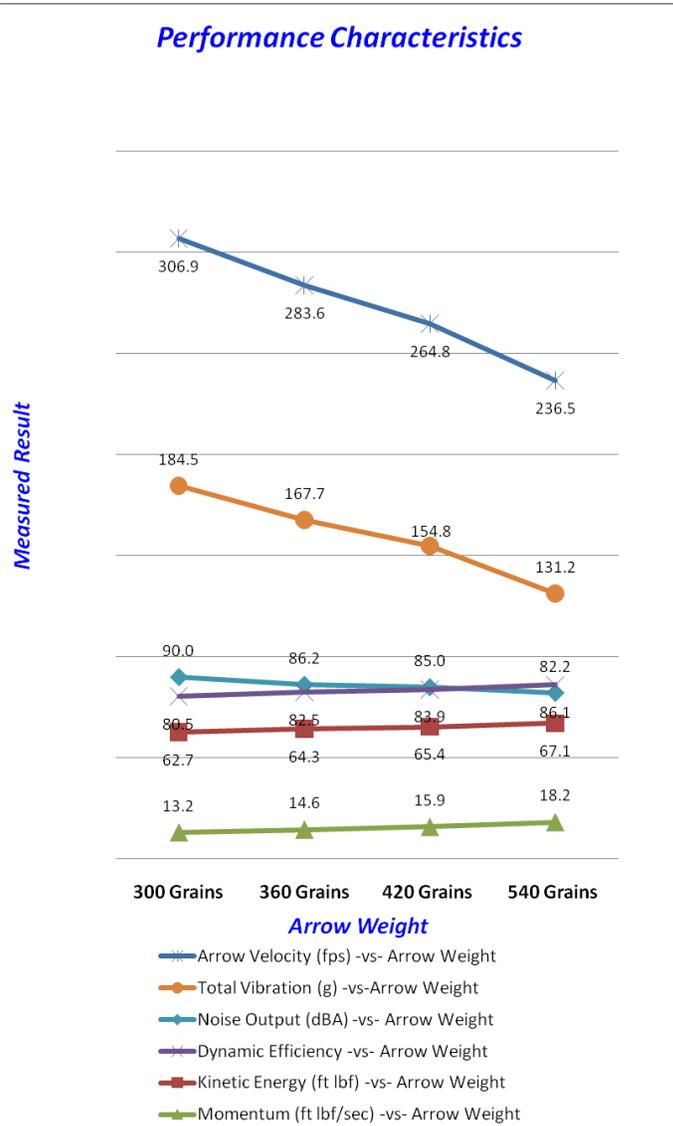
Speed / Performance Measurements:

Speed measurements are made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Draw Cycle Efficiency is calculated using the stored energy and the let-down energy captured in the Force-Draw curve. The stored energy is used further to determine the average dynamic efficiency of the bow.

Speed per inch of Power Stroke: 13.5
Dynamic Efficiency: 83.3%
Draw Cycle Efficiency: 94.7%



Performance Characteristics



Vibration Measurements:

Vibration measurements are made with 4 different arrow weights to determine the average vibration in 3 dimensions as well as the total average vibration.

Positive X-Vibration: 68.9 g
Negative X-Vibration: -84.6 g
Positive Y-Vibration: 132.2 g
Negative Y-Vibration: -142.0 g
Positive Z-Vibration: 97.8 g
Negative Z-Vibration: -102.8 g

Total Vibration: 159.6 g

Sound Measurements:

Sound measurements were made with 4 different arrow weights to determine the average sound output, the average A-Weighted sound output (mimicking the human ear) and the average C-Weighted sound output.

Unweighted Sound Output: 104.5 dB
A-Weighted Sound Output: 85.8 dBA
C-Weighted Sound Output: 96.2 dBC

