2010 Compound Bow Evaluation

APA Innovations Pit Viper

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APA INNOVATIONS INC

APA Innovations Pit Viper

Introduction:

For 2010, APA Innovations continues to provide great hunting bow versatility. This is exemplified in their Flagship model, the Pit Viper. The Pit Viper is built of the same platform as the Viper, which was APA's popular flagship model from 2008. Incorporating a new limb pocket design and single cam system, the Pit Viper provides better speed and more utility than its cousin. The new limb pocket design allows APA to maintain the same riser geometries from the past while also moving the limbs forward on the bow, effectively reducing brace-height to provide a longer power stroke and, subsequently, additional speed. The limb pocket is bolted to the riser in two places while the limb bolt is threaded into the front of the pocket itself instead of into the riser itself, as is seen on most compound bows. The new Venom V2 cam system not only employs modularly adjustable draw-length via rotating module, but also includes the patent pending Cam Lock Press system that was introduced on the XTreme Venom dual cam system in 2009, allowing the archer to repair his or her bow in the field.

The Pit Viper sample that was provided for this evaluation was measured to have a brace-height of 6.635 inches, while the axle-to-axle length was measured to be 31 5/16 inches. The requested 29 inch, 60 pound model was measured straight out of the box to have a 29 13/16 inch draw length and peak draw-weight of 62.9 pounds. When shot by hand with a 300 grain arrow, the Pit Viper achieved an average speed of 310.5 fps in the out of box configuration with only a brass nock added to the string. After changing the module to bring the bow down to the specified 29" draw, the peak draw-weight changed to 62.2 pounds; at these settings, the Pit Viper achieved an average speed of 297.2 fps when shot by hand. Per request from APA, a slight adjustment to the limb bolts was made to bring the Pit Viper down to the peak draw-weight specification of 60.0 pounds.

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Contact Info: APA Innovations
www.apaarchery.com

MSRP:	$799.90	**Draw Length:**	23"-30" *
Cams:	Venom V2 Cam	**Draw Weight:**	50-70*
Limbs:	13 ½" Composite	**Brace Height:**	6 5/8" *
Grip:	Two-piece laminate	**Axle to Axle:**	31 ¼" *
Let-off:	80% *	**Mass Weight:**	4.5 lbs.^
String:	Scorpion		
Damping:	BowJax		*Advertised
Finish:	Vanish Hybrid		^Measured

Performance at a Glance (60 lbs, 29"):

Arrow	Speed	K.E.	Momentum
300 Grains	293.3	57.3	12.6
360 Grains	271.0	58.7	13.9
420 Grains	252.6	59.5	15.2
540 Grains	224.2	60.2	17.3

Arrow (Grains):	300	360	420	540
Dynamic Efficiency:	79.3%	81.2%	82.3%	83.3%
Speed Per Inch of PS:	14.2	13.1	12.3	10.9
Noise Output (dBA):	87.7	86.8	84.3	81.5
Total Vibration (G):	206.2	177.2	171.3	179.0

Subjective Test Results:

Fit & Finish:

The Fit and Finish on the Pit Viper sample provided for this evaluation was quite good. The machining on the substantial riser is just about flawless and only minor "pin-prick" areas void of film dip finish were noted. Some machining marks were noted on both the limb pockets and the interior portion of the cam and idler wheel, but the black anodized finish of these components was quite good. With its rounded edges, smooth feel, and front riser bridge / utility center, it is obvious that machining the riser is quite a lengthy process. But even so, the Pit Viper maintains tight tolerances and overall, it is quite aesthetically pleasing.

Grip:

The grip on the Pit Viper is the standard grip that has been used on APA bows in the past. It is integrated right into the riser and complemented by side-plates consisting of 2 strips of rounded wood. For me, this grip is quite comfortable and consistent; each time I drew the bow back, my hand found its way to the same position every time. My attempts to intentionally torque the bow met moderate resistance, but as with any bow it is important to maintain proper form with the Pit Viper.

Draw Cycle:

The Pit Viper really shines in the draw cycle area. As you draw the bow back, it stacks gradually to peak weight about 1/3 of the way through the cycle, and transitions smoothly, with only a very small hump into a deep valley. There is a little bit of room for error once at full draw and it is not difficult to hold the bow back if for some reason you let up out of the valley. The draw stop integrated into the cam provides an extremely solid back wall. On average, the Pit Viper stores 3.51 ft-lbs. of energy for each inch that you draw it back.

Sound & Vibration:

At the shot, the Pit Viper is quite dead in the hand. There is very little jump or shock with only minor residual vibration traveling through the riser. The Pit Viper is equipped with BowJax dampeners on the limbs, string, and cable guard; the addition of a string suppressor further alleviates any felt recoil. To the shooters ear, the Pit Viper also exhibits minimal sound output.

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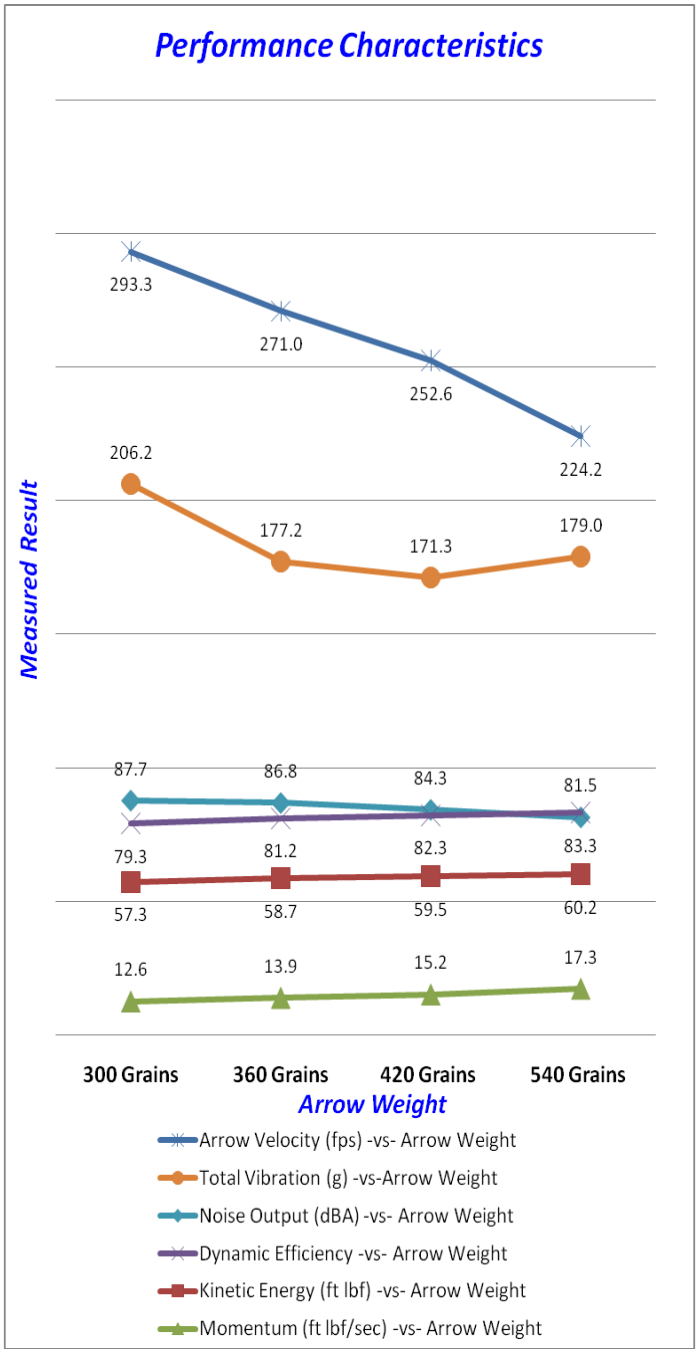
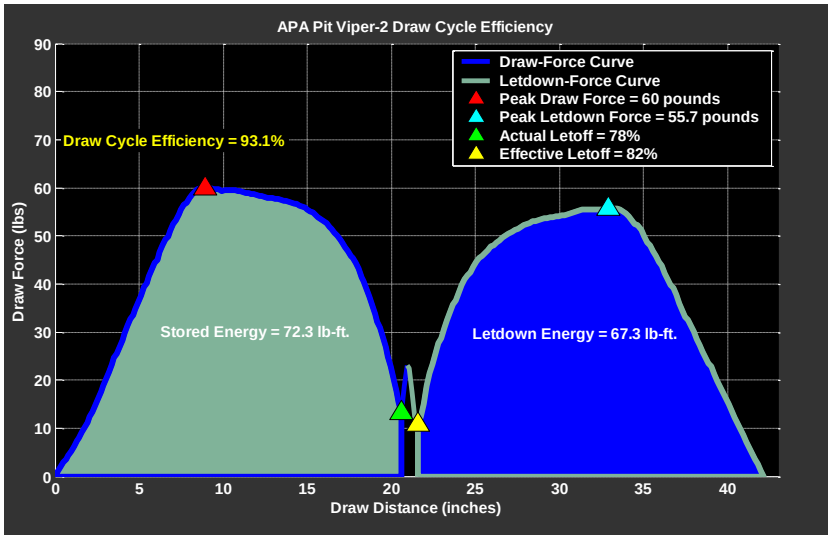
Objective Test Results:

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: 12.6
Dynamic Efficiency: 81.5%
Draw Cycle Efficiency: 93.1%





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: 73.3 g
Negative X-Vibration: -76.1 g

Positive Y-Vibration: 175.9 g
Negative Y-Vibration: -132.2 g

Positive Z-Vibration: 69.2 g
Negative Z-Vibration: -71.4 g

Total Vibration: 183.4 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: 102.1 dB
A-Weighted Sound Output: 85.1 dBA
C-Weighted Sound Output: 92.7 dBC