

2008 Compound Hunting Bow Evaluation



By *Anthony Barnum*
&
Jon Teater

www.ArcheryEvolution.com

Introduction:

Welcome to the 2008 Compound Hunting Bow Evaluation. The focus of this event is Hunting Style Compound Bows that highlight the cutting edge of those products currently available in the archery marketplace. The goal is to provide those archers who enjoy hunting with appropriate objective information, as well as some subjective commentary, for aiding in the purchasing process. That being said, this evaluation is by no means conclusive; some tests could not be performed due to limitations in resources, time, or budget. Each archer should assess what is important to him or her and interpret the results accordingly. As always, we recommend that anyone who is in the market for a compound bow shoot as many different makes / models as possible to determine what best suits their individual needs and desires.

The format of this year's evaluation has changed dramatically from those provided in previous years. In an effort to address some of the feedback that has been provided to us, the results of this year's evaluation take the form of individual write-ups for each participating manufacturer. The goal for this format change is to provide the objective test results for each bow while also contributing some subjective observations that aren't captured as part of the objective tests.

Also new for this year is the focus on 3 key areas of the bowhunting marketplace: Flagship bows, Short-Draw bows, and Speed bows:

Bow Segment	Guidelines	Draw Length	Draw Weight
Flagship	Bow that manufacturer feels is the "flagship" of their lineup; generally the most "marketed" bow	29"	60# peak
Short-Draw	Bow designed specifically for women, youth or short-draw archers; generally has maximum draw length of 27"	26"	50# peak
Speed	Bow that is designed to provide as much speed and raw power as possible; generally the fastest bow of the lineup	30"	70# peak

Flagship models have been the focus of previous evaluations. In an effort to provide a broader spectrum of information, an expansion into the short-draw and speed bow arenas is necessary. We hope you enjoy the results and find the information provided to be both useful and helpful in your quest to find the best compound hunting bow for you!

Initial Conditions and Test Categories:

Each participating manufacturer was asked to provide the compound hunting bow that they felt best represented their company and would best suit the following categories:

- **Efficiency**
- **Noise Output**
- **Mechanical Properties**
- **Vibration**

Note: The criteria outlined in this evaluation were deemed to be the important factors to consider for a compound bow. This evaluation in no way represents all areas that are important to archers. Personal experience and preference were used to derive these criteria.

Upon receiving each bow, a thorough examination is conducted straight out of the box. An inspection of the finish and machining is conducted with notes taken on any imperfections that are noticed. The areas of interest for this inspection are as follows:

- **Grip**
- **Cable Guard**
- **Riser**
- **Limbs / Pockets**
- **Cams**
- **Strings / Cables**



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After the inspection is complete, a string loop of BCY #24 D loop rope and a Spot Hogg Premiere arrow rest are installed; Carbon Impact arrows are used in the rest setup and alignment effort. A Revere Model 9363 load cell and TotalComp T500E indicator, adapted for use on a Hooter Shooter, are used to determine the peak draw weight, draw-length (see Figure 1), Actual Let-Off and Effective Let-Off; brace height is measured to the nearest 1/16" with a Mitituyo Micrometer.

Speed measurements are taken in the out of box configuration to baseline the speed of each bow as provided by the manufacturer. After this assessment is made, tuning to exact Draw-Length / Draw-Weight specifications is made as follows:

- Draw length is adjusted with modules or integral draw-stops (as applicable).
 - Modification to strings / cables is only be used as a last resort with permission from the manufacturer
- Draw weight is adjusted through modification of the limb bolts
 - If the specified draw weight can not be reached by the particular bow (i.e. draw weight is too low), modification to the string / cable(s) may be necessary

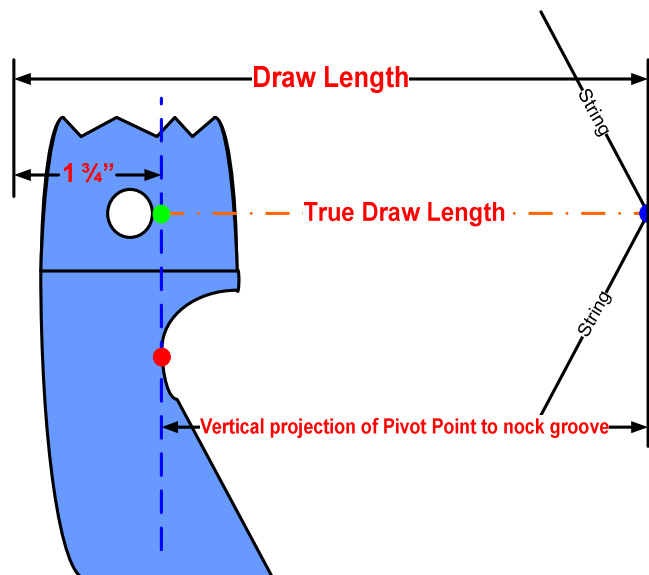


Figure 1 Draw Length Measurement Guide

Draw-Force curves are then created to determine the amount of stored energy for use in dynamic efficiency calculations, after which performance testing based on the test categories begins.

For the performance tests, 250 and 300 grain Victory Archery V1 Series VForce 300 HV Arrows, 350 grain Gold Tip Ultralight Series 22 Arrows, 360 grain Victory Archery V1 Series VForce 300 Arrows, 420 grain Victory Archery V1 Series VForce 400 Arrows, 450 and 490 grain Gold Tip Pro Hunter 7595 Arrows, and 540 grain Easton XX75 2514 aluminum arrows are utilized. These arrow weights equate to 5, 6, 7, and 9 grains per pound of the specified peak draw weight for all test categories except 70#, where the 540 grain arrow is used in place of a 630 grain arrow. All arrow weights are verified using an Easton Advanced Grain Scale and confirmed with a Coffey Marketing US Reloader Digital Pocket Scale.

A Hooter Shooter is used throughout the performance testing to minimize human induced errors. The Easton Professional Chronograph is used for all speed measurements in conjunction with the Pro-Chrono Digital Chronograph from Competition Electronics for confirmation. The Easton Professional Chronograph was used primarily for its ability to display speeds down to the tenth of a foot per second. Both chronographs consistently provided speed measurement within 1-2 fps of one another.

Each bow is evaluated on the 4 objective criteria outlined below.

Test Category	Assessment
Dynamic Efficiency	Provides an indication of the amount of energy output by a bow relative to the energy expended through drawing the bow back. An assessment is made with multiple arrow weights
Speed per inch of Power Stroke	Provides an indication of the amount of speed output by the bow over the distance from the valley to the static brace height position. An assessment is made with multiple arrow weights.
Noise Output	Provides an indication of the noise output characteristics of a bow at the “point blank” range utilizing a series of shots with multiple arrow weights.
Vibration	Provides an indication of the vibration characteristics of a bow during and after shot execution utilizing a series of shots with multiple arrow weights.



Dynamic Efficiency

Objective: The objective of the Dynamic Efficiency test is to provide an assessment of the amount of energy output by a bow relative to the amount of energy expended by drawing the bow back.

Rationale: The purpose of the compound bow is to transfer the energy expended in drawing the bow back (Potential or Stored Energy) into the energy propelling the arrow downrange (Kinetic Energy). Unfortunately, not all of the Potential Energy is turned into Kinetic Energy. This could be due to various reasons, but regardless of the cause you are not getting all the energy out of the bow that you have put into it. The reason for testing dynamic efficiency is to determine which bows perform the best in transferring the energy that is “stored” into the energy in motion that is released through the arrow.

Procedure: A Revere Load-Cell, adapted to mount on the Hooter Shooter, is used to create Force – Draw curves for each bow. The plot information obtained from this setup is then analyzed to obtain the amount of energy expended in drawing the bow back (See “Stored Energy” in Figure 2 below). This value in pound-feet (lb-ft), considered “potential energy” (or stored energy) for this assessment, is then compared with the Kinetic Energy output by the bow during shot execution with 4 different arrow weights. The Kinetic Energy is calculated with the following formula:

$$KE = \frac{ArrowWeight * Velocity^2}{450240}$$

Where “KE” is in pound-feet, “Arrow Weight” is in grains, “Velocity” is in feet per second (fps) and 450240 is a conversion factor that accounts for unit changes between arrow weight (grains) and velocity (fps). The ratio of the Kinetic Energy to the Potential Energy for all arrow weights is assessed.

Example: The speed of a 350 grain arrow out of the 70# Bowtech 82nd Airborne was measured to be 341.1 feet per second (fps). The speed of a 540 grain arrow out of the same bow was measured to be 281.4 fps. Using the formula for KE above, we can show that the Kinetic Energy of the 350 grain arrow is 90.4 lb-ft, while the Kinetic Energy of the 540 grain arrow is 94.9 lb-ft. Dividing these two KE values by the Potential Energy (109.1 lb-ft), a dynamic efficiency of 82.9% and 87.0% is achieved, respectively.

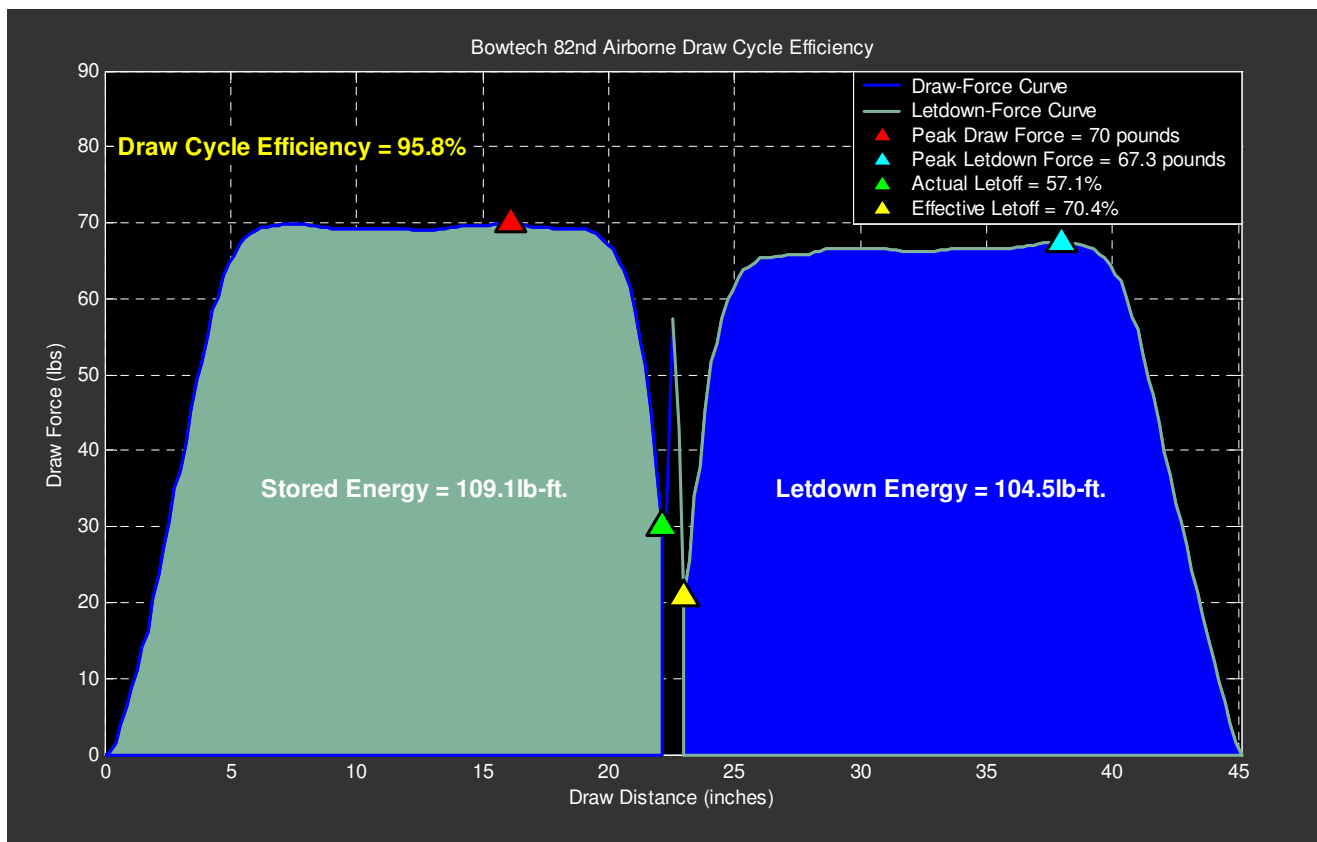


Figure 2 Force-Draw Curve and Letdown Curve



Speed per Inch of Power Stroke

Objective: The objective of this section is to determine the speed properties of a bow based on power stroke at point blank range with 4 different arrow weights.

Rationale: Because there are so many varying configurations in today's compound bows (e.g. low or high brace height, reflex / deflex riser geometry), the amount of speed output by each bow per the inch of its power stroke is a reasonable way to put each bow on more of an equal playing field.

Procedure: Each bow is mounted to the Hooter Shooter. A series of 5 speed measurements are taken with an Easton Professional Chronograph at a distance of three (3) feet from the bow with 4 different arrow weights. These measurements are confirmed with a Competition Electronics Pro-Chrono Chronograph, with the highest and lowest readings removed before averaging the speed per arrow weight. The brace height of each bow is then measured and 1.75 inches is added to this measurement. This value is subtracted from the measured draw-length (all bows setup to 26", 29" or 30" draw-length depending on category) to determine the length of the power stroke. The power stroke value is then divided into the average speed for each of the arrow weights. The average speed per inch of power stroke over all arrow weights is then calculated for use in the overall results.

Assumptions: An assumption is made that the speed per inch of power stroke more accurately characterizes the speed performance of a given bow. Another assumption is made that the string travel past the brace position during shot execution does not impart any energy on the arrow.



Noise Output

Objective: The objective of this section is to determine the noise output properties for each bow at point blank range.

Rationale: A great deal of emphasis is placed on the amount of noise output by compound bows. Today's hunting bows have different noise output characteristics with varying arrow weights. Many hunters use heavier arrows for increased down range kinetic energy, while others use lighter arrows for increased speed. Because of these issues, noise output readings are measured at point blank range for 4 different arrow weights.

Procedure: Each bow is mounted to the Hooter Shooter, after which a PCB Piezotronics microphone is setup at a distance of 36 inches from the front of the bow. The Microphone is set at a height of 18 inches, and is offset from the path of the arrow by 6 inches. A series of five (5) shots is executed for 4 different arrow weights from each bow, during which sound output data is captured. This data is then analyzed, after which the highest and lowest readings are removed; the average noise output is calculated for each bow for both dB(A) and dB(C) weightings.

Assumptions: An assumption associated with this test is that the sample size of three firings per arrow weight is sufficient to correctly characterize the noise output of the bow at point blank range.

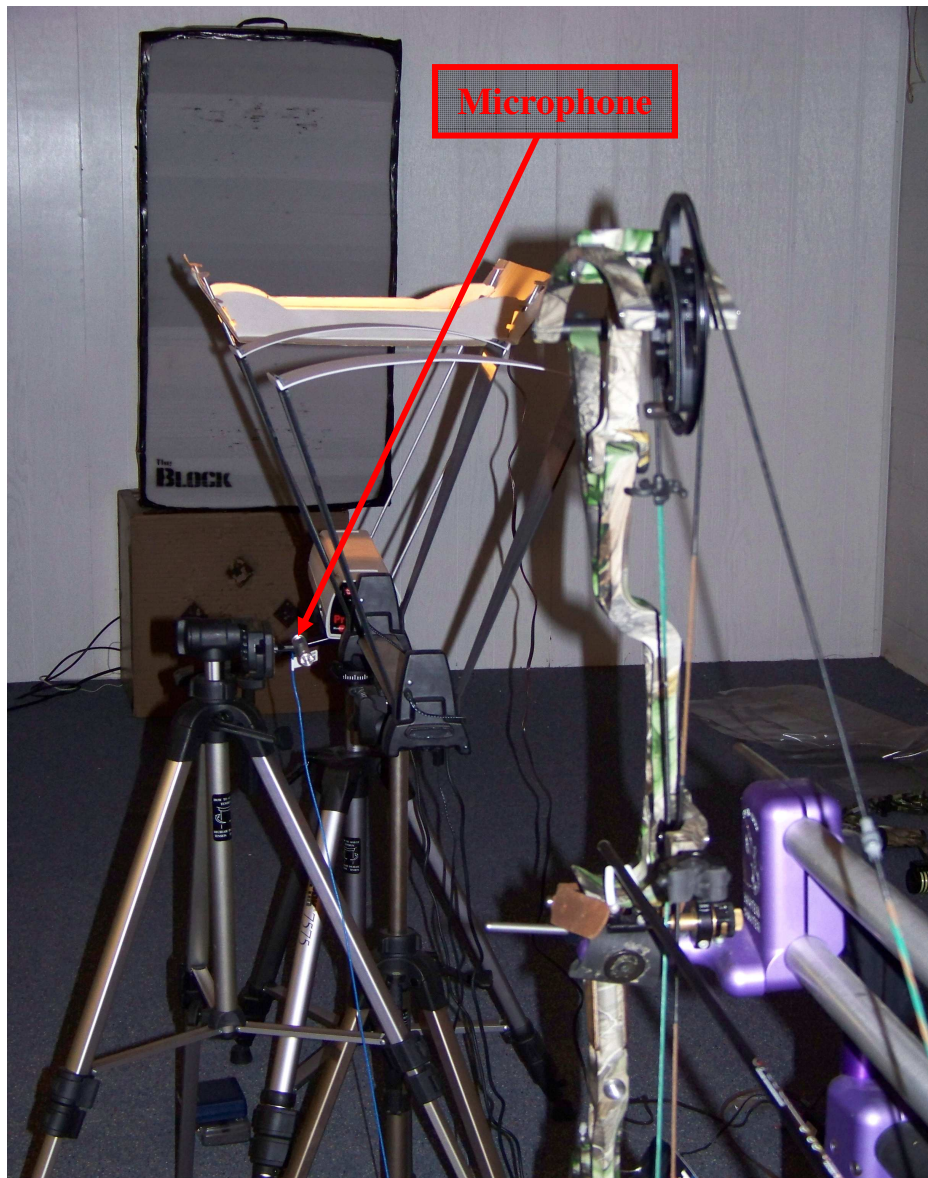


Figure 3 Noise Output Data Collection Setup



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Noise Output

Equipment Used: National Instruments USB Data Acquisition unit, PCB piezo-electric microphone, Matlab software.

Test Setup: Microphone mounted 36 inches in front of bow at a height of 18 inches, with an offset of 6 inches from the centerline, as shown in Figure 4.

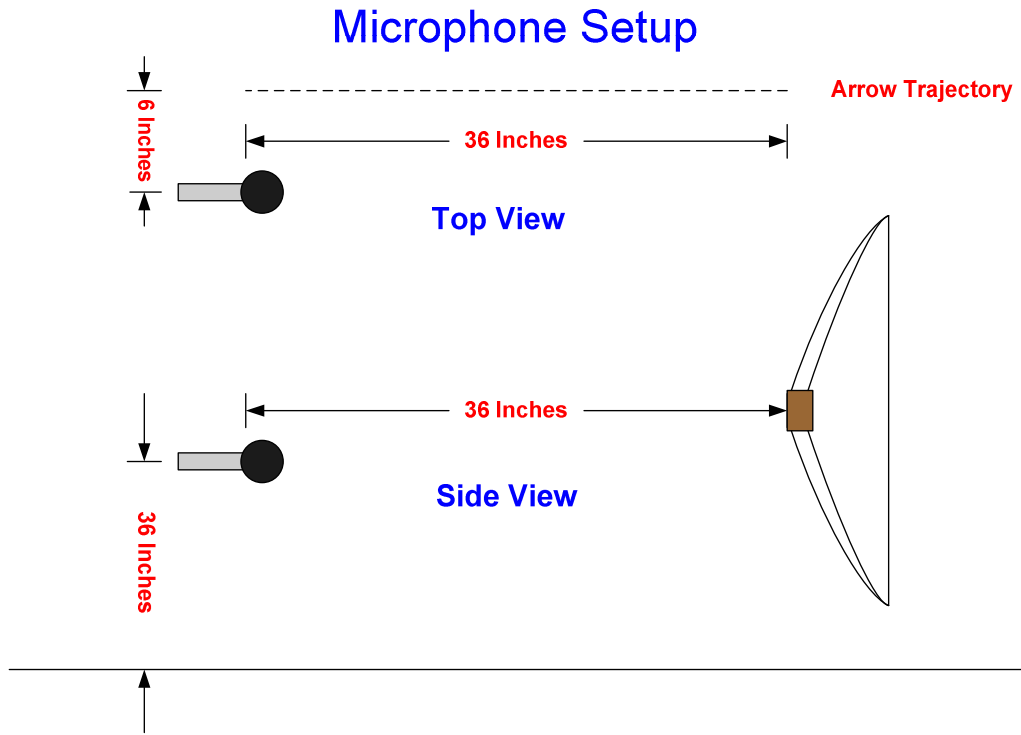


Figure 4 Microphone Setup



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Vibration

Objective: The objective of the Vibration Test is to provide an indication of the peak vibration each bow produces under shot execution with four different arrow weights. To most accurately reflect the vibration felt by an archer, the vibration data is collected on the front of the bow's riser opposite the throat of the grip.

Rationale: The less vibration output by a bow and felt by the archer during and after shot execution, the more enjoyable a bow is to shoot, especially during long practice sessions. Our test equipment is highly sensitive; an archer may not be able to distinguish between some of the calculated vibration outputs of given bows.

Procedure: A PCB Piezotronics tri-axial accelerometer is attached to each bow on the front of the riser at a point opposite the throat of the grip. A series of 5 shots is taken with 4 different arrow weights, during which vibration data is collected. After data collection is completed, each raw data set is analyzed to determine the maximum Total vibration amplitudes (combination of X, Y, and Z vibration amplitudes; see Figure 6 below). The highest and lowest measurements are removed, after which the average maximum vibration amplitude of the three remaining shots for each arrow weight is calculated.

Assumptions: An assumption is made that the front of the riser of each bow, opposite the throat of the grip is an area that is representative of the amount of vibration an archer can expect to experience.

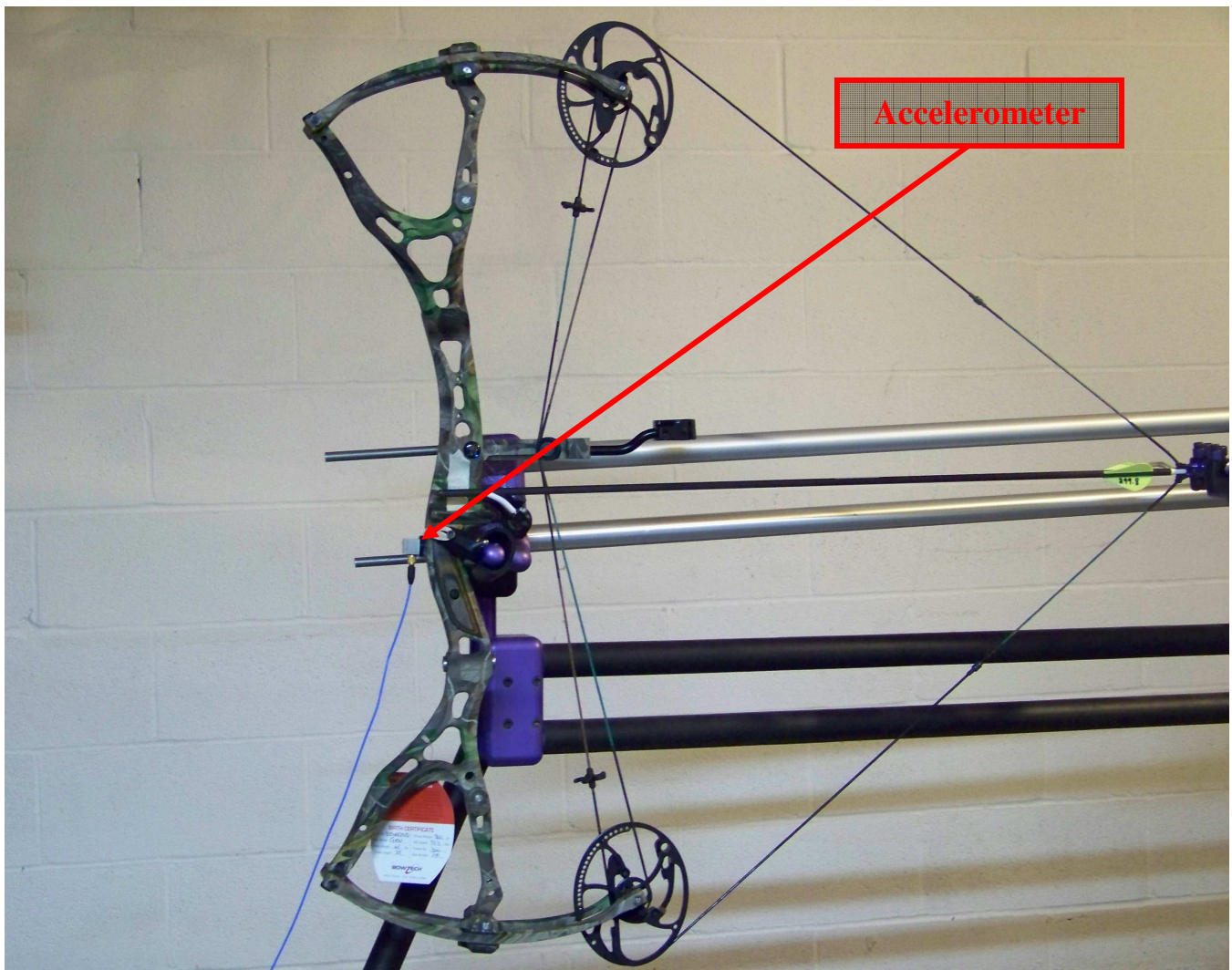


Figure 5 Vibration Data Collection Setup



Vibration

Equipment Used: National Instruments USB Data Acquisition unit, PCB tri-axial accelerometer, Matlab software

Test Setup: Accelerometer mounted opposite the throat of the grip on the front of the riser, with orientation as shown in Figure 6.

Accelerometer Orientation

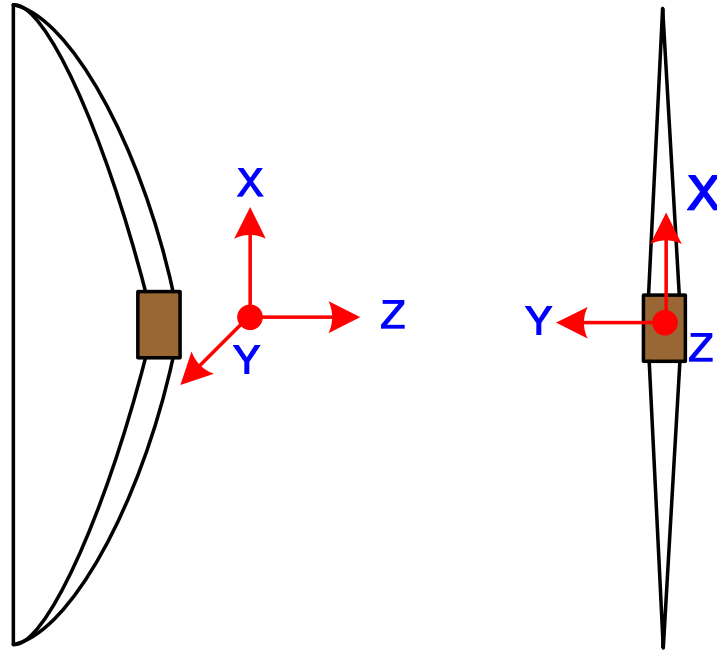
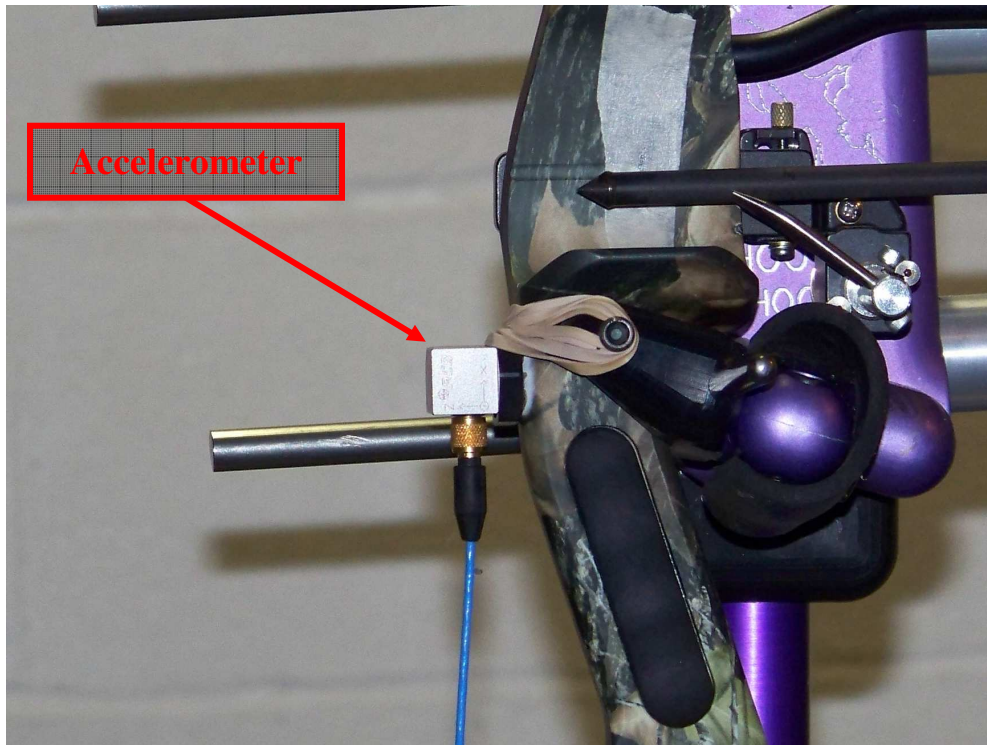
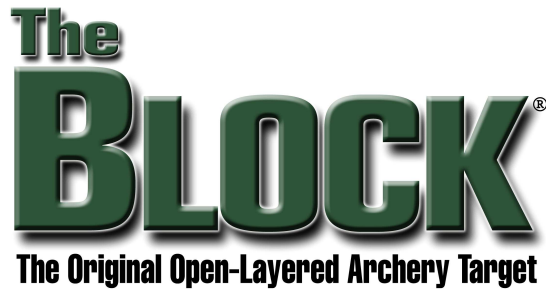


Figure 6 Accelerometer Orientation



2008 Compound Hunting Bow Face-Off Sponsors



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2008 Compound Hunting Bow Evaluation Equipment Used / Special Thanks

Equipment Used:

General:

- Hooter Shooter by Spot Hogg
- Spot Hogg Premier Arrow Rests
- BCY #24 D loop rope
- Easton Bow Force Mapper System & Professional Chronograph
- Pro-Chrono Digital Chronograph from Competition Electronics

Force / Weight Measurements:

- Revere Load-Cell / TotalComp Indicator
- Easton Hand-Held Digital Scale
- Easton Advanced Grain Scale
- Coffey Marketing US Reloader Digital Pocket Scale.

Speed Measurements

- Easton Bow Force Mapper Professional Chronograph
- Coffey Marketing US Game Scale

Noise Output Measurements:

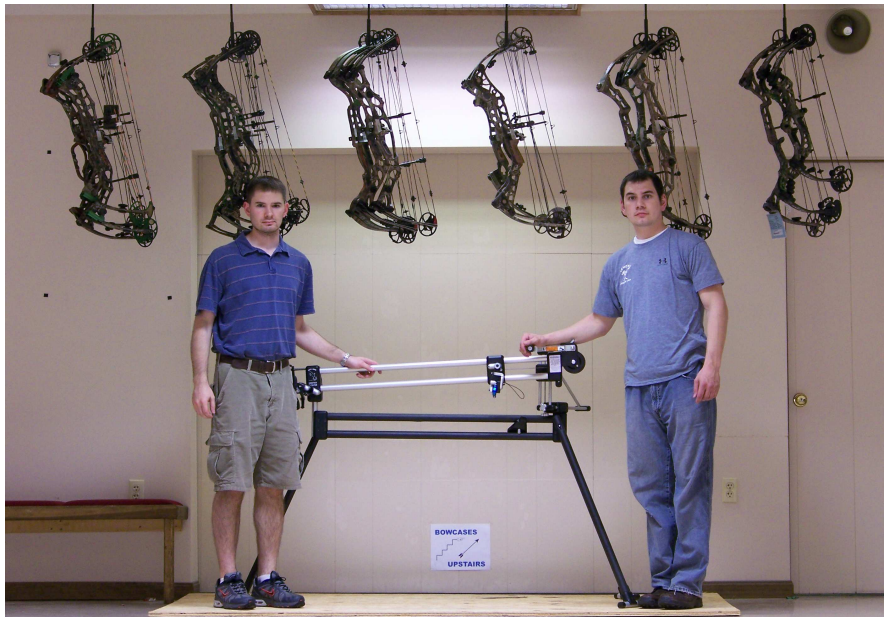
- National Instruments USB Data Acquisition unit
- PCB piezo-electric microphone
- Larson Davis Model 831 Sound Level Meter
- Anechoic Chamber

Instruments used for Vibration Test:

- National Instruments USB Data Acquisition unit
- PCB piezo-electric microphone
- PCB piezo-electric Tri-Axial Accelerometer

Special Thanks:

We would like to thank all of the manufacturers and sponsors who provided bows and test equipment for this evaluation; without them and their support, this evaluation never would have been possible.




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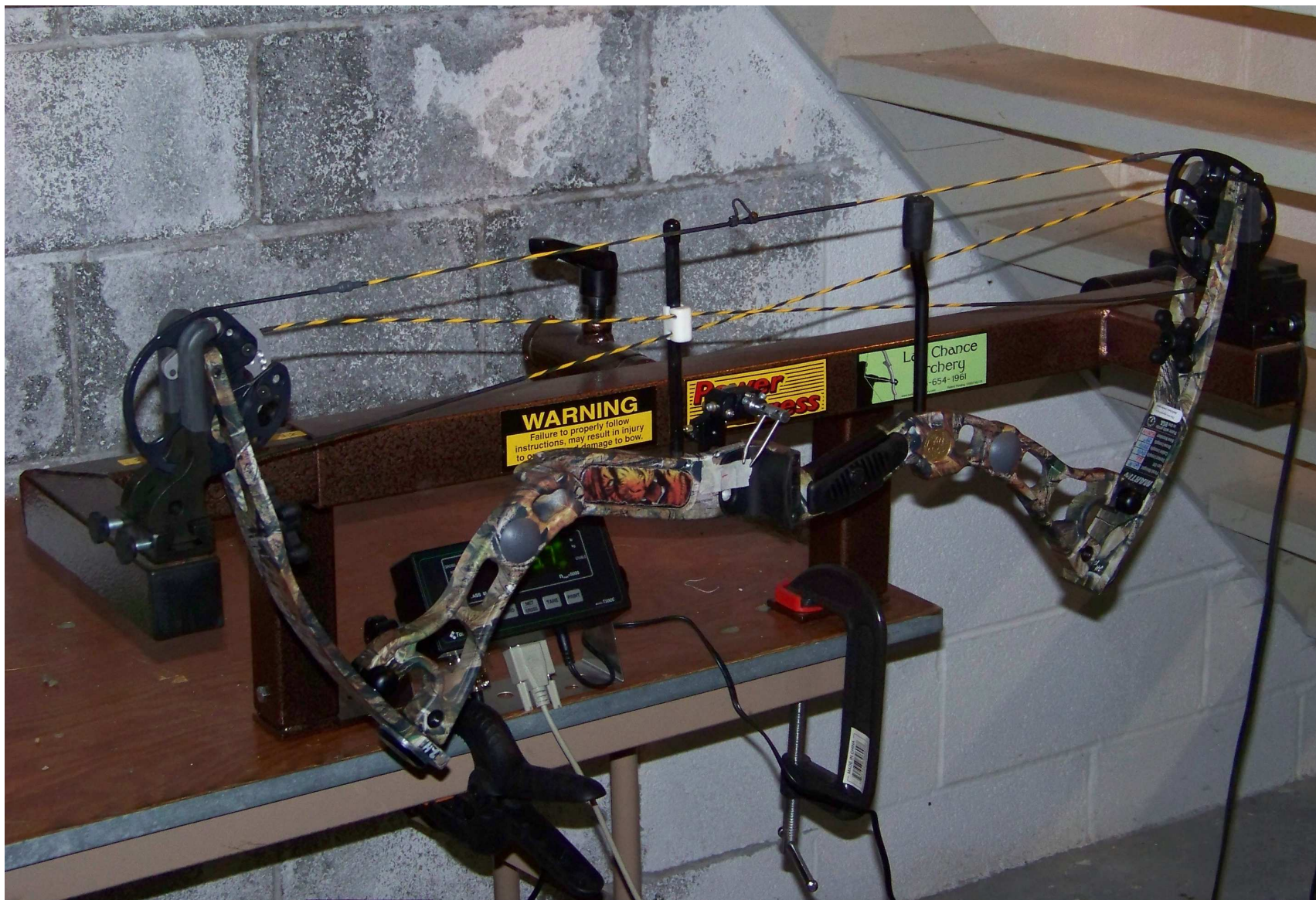

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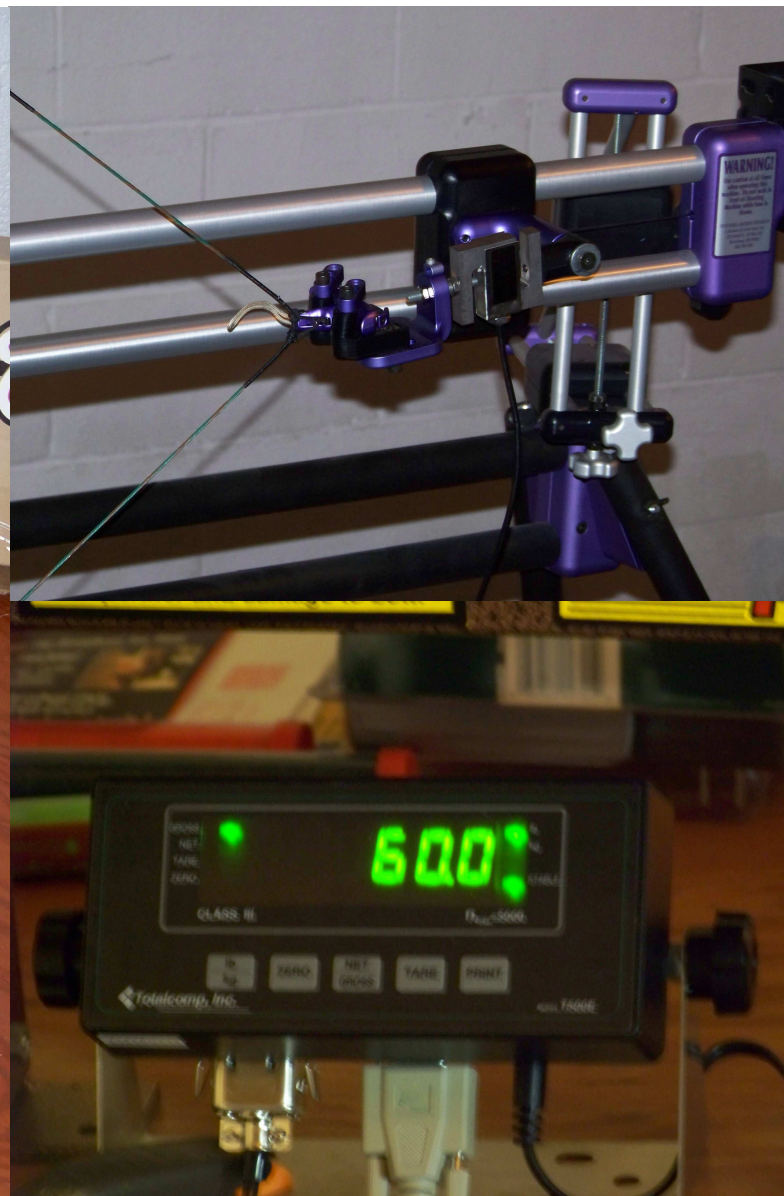
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2008 Compound Hunting Bow Evaluation Miscellaneous Pictures



2008 Compound Hunting Bow Evaluation Miscellaneous Pictures



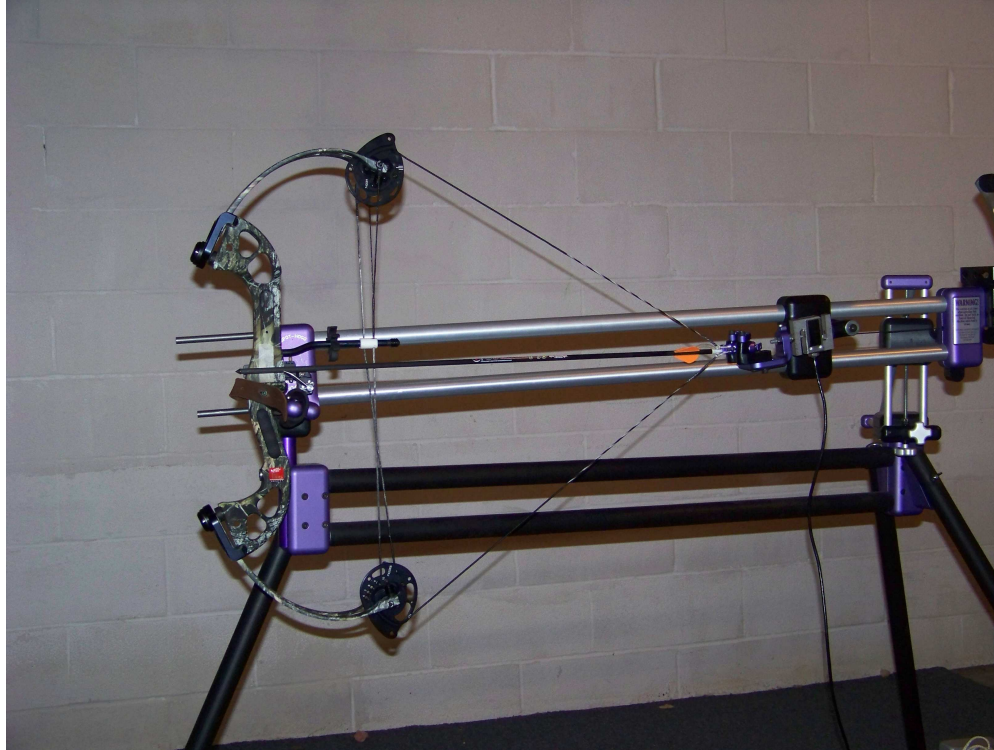
2008 Compound Hunting Bow Evaluation

PSE X-Force SS SD Test Results



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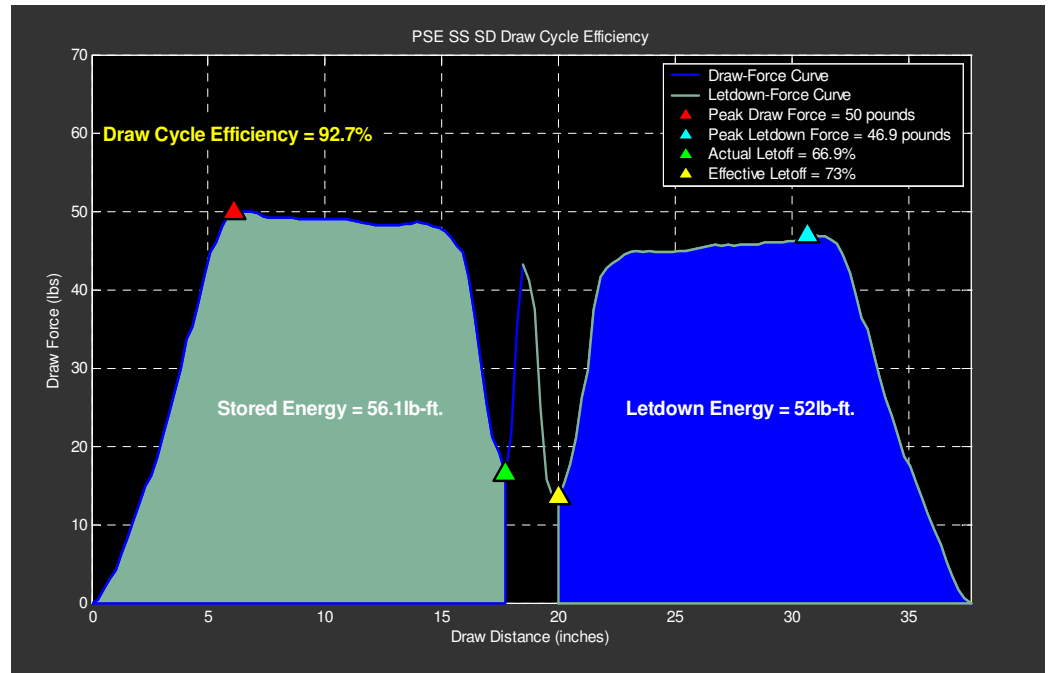
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PSE X-Force SS SD



Introduction:

The X-Force SS SD is PSE's high-end short-draw model for 2008. Living up to its SS SD moniker (Super-Short Short-Draw) this bow has a diminutive axle-to-axle length advertised at 26 5/8" with a maximum draw-length of 26". Sharing the same limb configuration with its sibling, the X-Force, the LF Hybrid cam system serves as the power-plant for the SS SD.

The X-Force SS SD sample that was provided to Archery Evolution was measured to have a brace-height of 6 13/16 inches, while the axle-to-axle length was measured to be 26 9/16 inches. The requested 26 inch, 50 pound model was measured straight out of the box to have a 26 inch draw length and peak draw-weight of 53.5 pounds. At these settings, the SS SD achieved an average speed of 289.5 fps with a 250 grain arrow. A slight adjustment to the limb bolts brought the bow into exact specifications in short order.

Some imperfections were noted during our thorough examination of the finish quality. Small areas void of film-dip finish were noted near the damper attachment points on the limbs. A small blemish was noticed on the upper limb pocket, while some noticeable machining marks were visible on both the upper and lower cam. Note that these blemishes are noted solely from a quality perspective as they did not impact the performance of the bow.

The riser on this bow as well as other X-Force models features cutouts in the shelf that indicate appropriate center-shot and arrow rest alignment, which helps decrease the amount of time needed to tune the SS SD. It should be noted that these references are just a starting point and fine-tuning may be necessary. The draw-cycle of the SS SD is somewhat aggressive, as indicated by a stored energy to peak draw force ratio of 1.122. Yet, the stacking of the cam is quite "smooth" and transitions into a lengthy plateau in which a great percentage of the peak draw force is held for quite some distance. Later in the cycle, the cam rotates into a steep drop off that ends in a short valley with a firm back wall, which helps maintain a consistent point for arrow release.

PSE X-Force SS SD

Contact Info: PSE Archery

www.pse-archery.com

MSRP:	\$799.99	Draw Length:	23"-26" *
Cams:	LF Hybrid Cam	Draw Weight:	50, 60*
Limbs:	12" split limbs	Brace Height:	6 3/4" *
Grip:	B.E.S.T. grip	Axle to Axle:	26 5/8" *
Let-off:	65%, 70% *	Mass Weight:	3.3 *
String:	BCY 8125		
Damping:	Factory Installed dampeners		*Advertised
Finish:	Mossy Oak Breakup		

Performance at a Glance (50 lbs, 26"):

Arrow	Speed	K.E.	Momentum
250 Grains	279.7	43.4	10.0
300 Grains	258.7	44.6	11.1
350 Grains	241.3	45.2	12.1
450 Grains	215.4	46.3	13.8

Arrow (Grains):	250	300	350	450
Dynamic Efficiency:	78.5%	80.6%	81.8%	83.8%
Speed Per Inch of PS:	16.0	14.8	13.8	12.4
Noise Output (dBA):	87.6	86.5	81.6	86.2
Total Vibration (G):	187.4	222.5	221.8	126.8



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Detailed Test Results:

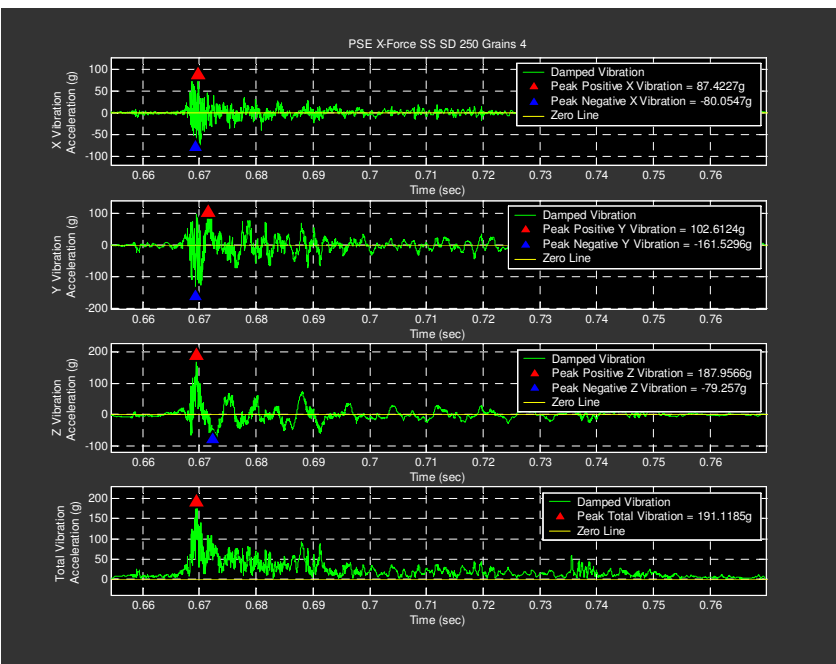
Speed / Performance Measurements:

Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of Power Stroke: 14.3

Dynamic Efficiency: 81.2%

Speed Point Blank - Tuned 26", 50#	PSE X-Force SS SD							
	Brace Height = 6 13/16		Draw Weight = 50.0		Draw Length = 26		Axle-to-Axle = 26 9/16	
	250 Grains		300 Grains		350 Grains		450 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	279.4	278	258.8	258	241.0	240	214.8	214
2	279.7	278	258.9	258	241.2	240	215.4	215
3	279.6	278	258.2	257	241.3	240	215.5	215
4	279.9	279	258.6	257	241.4	240	215.3	215
5	280.0	279	258.8	258	241.3	240	215.4	215
Avg. Speed	279.7	278	258.7	258	241.3	240	215.4	215
Kinetic Energy	43.4	43.0	44.6	44.2	45.2	44.8	46.3	46.2
Momentum	10.0	9.9	11.1	11.0	12.1	12.0	13.8	13.8
Power Stroke	17 7/16							
Speed per inch of Power Stroke	16.0	16.0	14.8	14.8	13.8	13.8	12.4	12.3
Avg. Speed per inch of PS (BFM)	14.3							
Stored Energy	55.3							
Dynamic Efficiency	78.5%	77.8%	80.6%	80.0%	81.8%	80.9%	83.8%	83.5%
Avg. Dynamic Efficiency (BFM)	81.2%							



Vibration Measurements:

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

Positive X-Vibration: 90.4 g

Negative X-Vibration: -76.2 g

Positive Y-Vibration: 105.4 g

Negative Y-Vibration: -164.1 g

Positive Z-Vibration: 141.8 g

Negative Z-Vibration: -80.4 g

Total Vibration: 189.6 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: 104.0 dB

A-Weighted Sound Output: 85.5 dBA

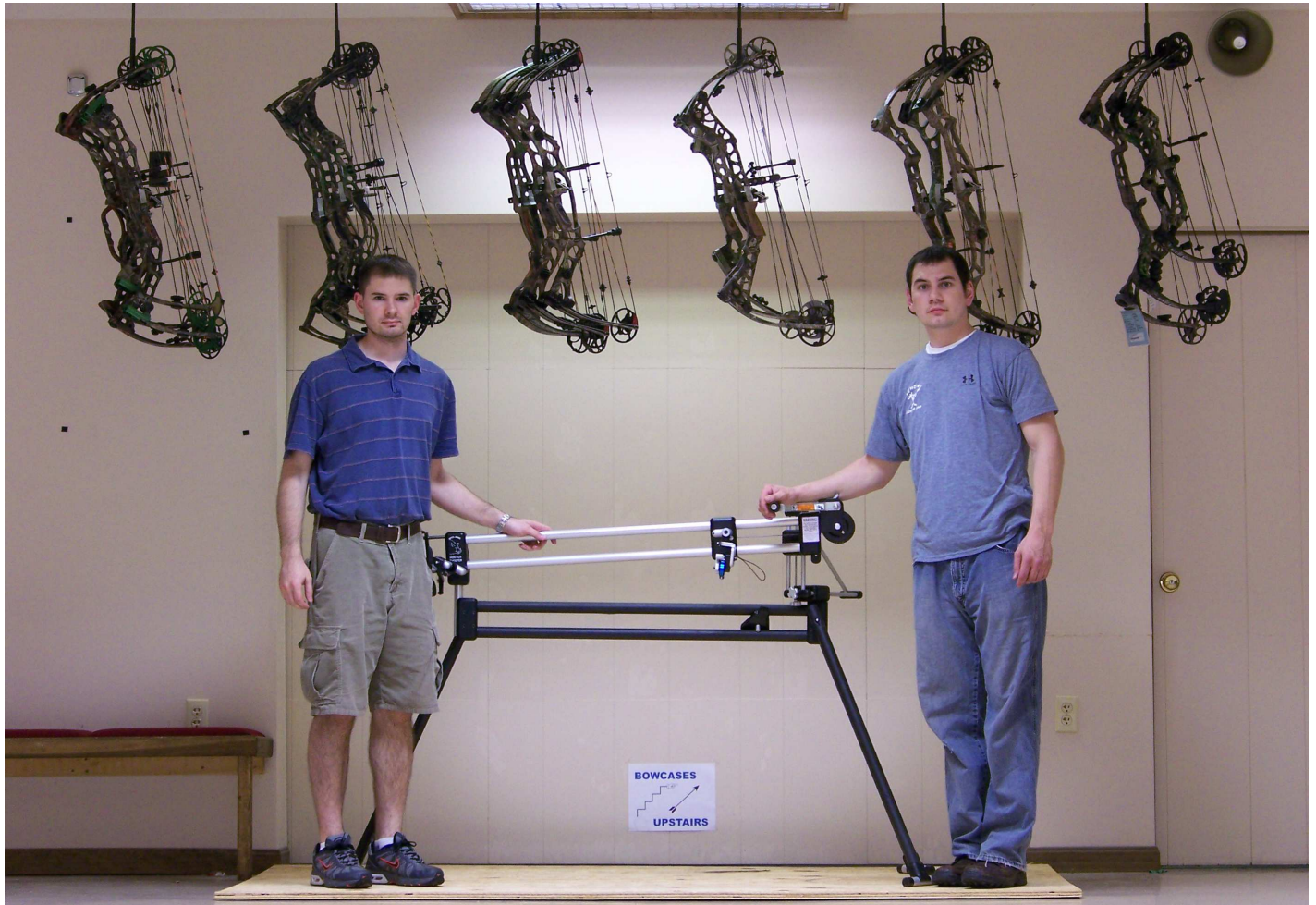
C-Weighted Sound Output: 94.2 dBC

Noise & Vibration	PSE X-Force SS SD															
	Brace Height = 6 13/16				Draw Weight = 50				Draw Length = 26				Axle to Axle = 26 9/16			
	Peak Noise Output (dB)				Peak A-Weighted Noise Output (dBA)				Peak C-Weighted Noise Output (dBC)							
Parameter	250 Grains				300 Grains				350 Grains				450 Grains			
Grains	250 Grains	300 Grains	350 Grains	450 Grains	250 Grains	300 Grains	350 Grains	450 Grains	250 Grains	300 Grains	350 Grains	450 Grains	250 Grains	300 Grains	350 Grains	450 Grains
Measurement	Max				Max				Max							
1	108.1	103.1	102.8	102.0	87.3	86.8	81.5	82.3	98.5	94.1	92.9	92.0	98.5	94.1	92.9	92.0
2	107.5	103.3	103.3	101.8	88.7	87.7	82.0	86.9	97.9	92.7	92.7	92.8	97.9	92.7	92.7	92.8
3	107.7	102.4	102.7	101.9	88.0	84.0	81.4	83.3	98.0	91.5	92.4	92.0	98.0	91.5	92.4	92.0
4	108.1	103.0	102.7	105.9	85.2	85.8	81.7	81.1	98.5	94.5	92.4	97.0	98.5	94.5	92.4	97.0
5	108.2	102.5	102.9	103.5	87.5	87.0	81.7	88.0	98.6	91.4	92.5	95.0	98.6	91.4	92.5	95.0
Average	107.9	102.9	102.8	102.5	87.6	86.5	81.6	86.1	98.3	92.8	92.5	93.3	98.3	92.8	92.5	93.3
Total Average Max	104.0				85.5				94.2							



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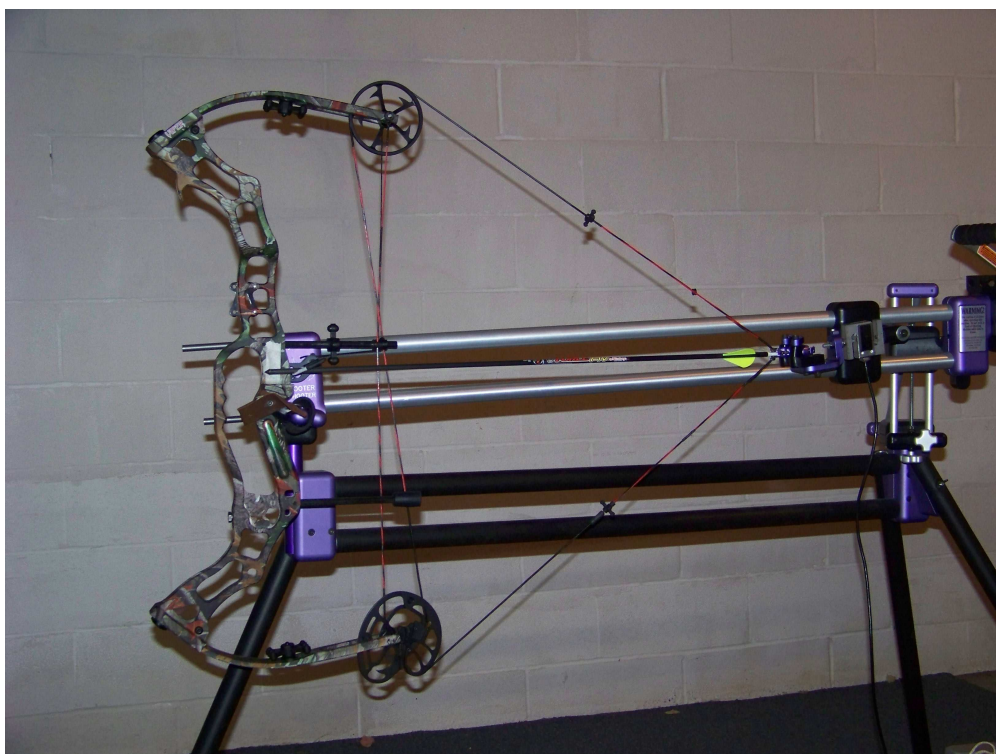
2008 Compound Hunting Bow Evaluation

APA Innovations Viper Test Results



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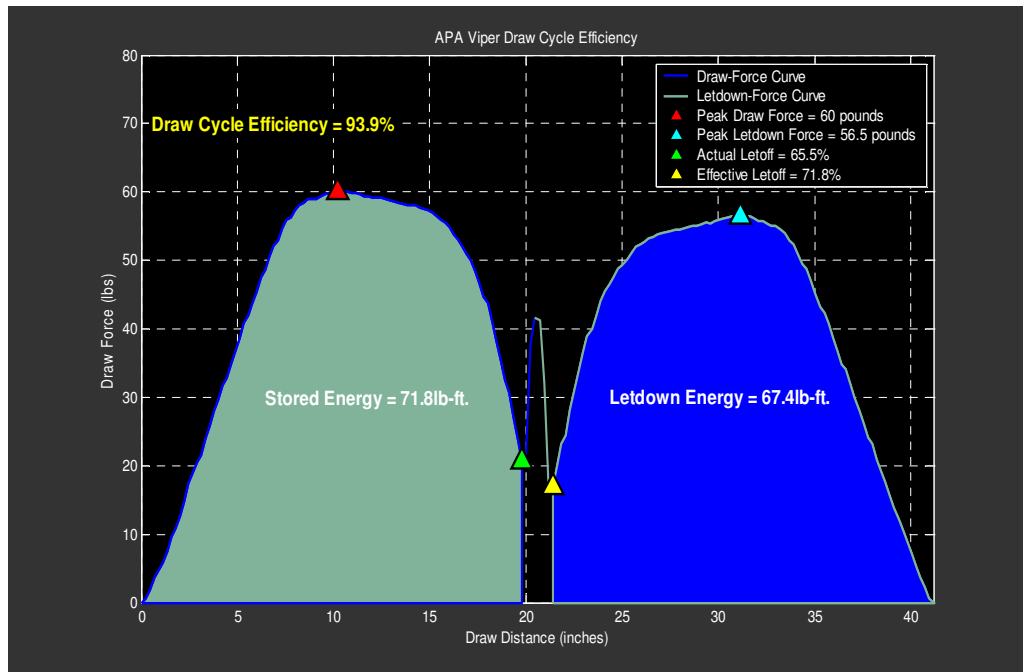
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APA Viper



Introduction & Features:

Continuing with its deadly serpent theme, APA Innovations' flagship model, the Viper, offers versatility that is unparalleled in the archery industry. The addition of the fanged riser, which provides the means to hang the Viper on a nearby branch, rounds out the already impressive list of tools built into the riser. These include a blade sharpening tool, a nock alignment tool, and a broadhead tightener. The front riser bridge / built in carry handle also provides an easy way to lug your bow to and from the field.

The Viper sample provided to Archery Evolution was measured to have a brace-height of 7 7/16 inches, while the axle-to-axle length was measured to be 31 3/8 inches. The requested 29 inch, 60 pound model was measured straight out of the box to have a 29 1/4 inch draw length and peak draw-weight of 63.5 pounds. At these settings, the Viper achieved an average speed of 300.8 fps with a 300 grain arrow. A slight adjustment to the integrated draw stop and limb bolts brought the bow into exact test specifications in short order.

A thorough examination of the finish quality showed some imperfections. While providing some very useful tools, the tool center was void of film dip in a couple of small areas. The bolts securing the sharpening blades are also exposed on the opposite side, which could scratch the user if he or she is not careful. Otherwise, the fit and finish is quite good and the Skyline camo is appealing. Finally, there were some noticeable machining marks on both the cam and the idler wheel. It is important to note that none of these imperfections impede on the performance of this (or any) bow. Also note that the quality of the finish on this year's model is not consistent with that of previous model year APA bows. The bows previously provided for testing purposes were almost flawless in the fit and finish category.

The Viper's new Venom XP Single Cam offers an integrated adjustable module that allows draw-length adjustments from a minimum of 25 inches all the way up to a 30 inch draw, making the bow both easy to adjust and versatile. The integrated adjustable draw stop also provides almost infinite draw-length and let-off resolution as well as a hard back wall. Laser etching near the draw-stop track provides a useful reference point for determining the appropriate draw-stop position. Adding to the bows snake "theme", the idler wheel on the Viper incorporates the same fang geometry that is found on the riser, which is a nice visual touch. The additional features of this product make it quite unique, yet everything is wrapped up into a nice shooting package.

APA Innovations Viper

Contact Info: APA Innovations

www.apaarchery.com

MSRP:	\$839.90	Draw Length:	25"-30" *
Cams:	Venom XP Single Cam	Draw Weight:	50-70*
Limbs:	13 1/2" Composite	Brace Height:	7 9/16" *
Grip:	Two-piece laminate	Axle to Axle:	31 1/4" *
Let-off:	80% *	Mass Weight:	4.4 lbs.
String:	Scorpion		
Damping:	Bowjax		*Advertised
Finish:	Skyline		

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

Arrow	Speed	K.E.	Momentum
300 Grains	292.5	57.0	12.5
360 Grains	268.9	57.8	13.8
420 Grains	252.9	59.6	15.2
540 Grains	226.4	61.4	17.5

Arrow (Grains):	300	360	420	540
Dynamic Efficiency:	79.4%	80.5%	83.1%	85.6%
Speed Per Inch of PS:	14.8	13.6	12.8	11.4
Noise Output (dBA):	87.6	86.8	82.8	82.0
Total Vibration (G):	162.7	171.7	148.5	114.5



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www.ArcheryEvolution.com

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Detailed Test Results:

Speed / Performance Measurements:

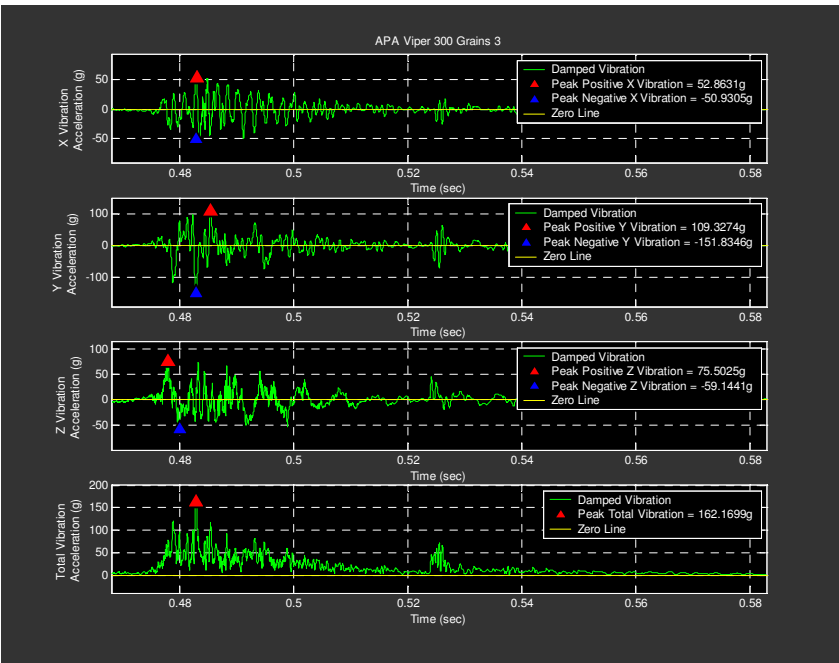
Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of

Power Stroke: 13.1

Dynamic Efficiency: 82.1%

Speed Po Blank - Tuned 29", 60#	APA Innovations Viper							
	Brace Height = 7 7/16		Draw Weight = 60.0		Draw Length = 29		Axle-to-Axle = 31 3/8	
Grains	300 Grains		360 Grains		420 Grains		540 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	292.3	291	269.1	268	262.5	252	226.5	226
2	292.5	292	269.0	268	252.8	252	226.5	226
3	292.8	292	268.7	268	252.9	252	226.0	225
4	292.6	292	268.8	268	253.0	252	226.1	225
5	292.5	292	268.9	268	253.1	252	226.6	226
Avg. Speed	292.5	292	268.9	268	252.9	252	226.4	226
Kinetic Energy	57.0	56.8	57.8	57.4	59.6	59.2	61.4	61.1
Momentum	12.5	12.5	13.8	13.8	15.2	15.1	17.5	17.4
Power Stroke	19 13/16							
Speed per inch of Power Stroke	14.8	14.7	13.6	13.5	12.8	12.7	11.4	11.4
Avg. Speed per inch of PS (BFM)	13.1							
Stored Energy	71.8							
Dynamic Efficiency	79.4%	79.1%	80.5%	79.9%	83.1%	82.5%	85.6%	85.0%
Avg. Dynamic Efficiency (BFM)	82.1%							



Vibration Measurements:

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

Positive X-Vibration: 55.3 g

Negative X-Vibration: -62.5 g

Positive Y-Vibration: 104.1 g

Negative Y-Vibration: -140.9 g

Positive Z-Vibration: 73.8 g

Negative Z-Vibration: -65.7 g

Total Vibration: 149.4 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: 102.9 dB

A-Weighted Sound Output: 84.8 dBA

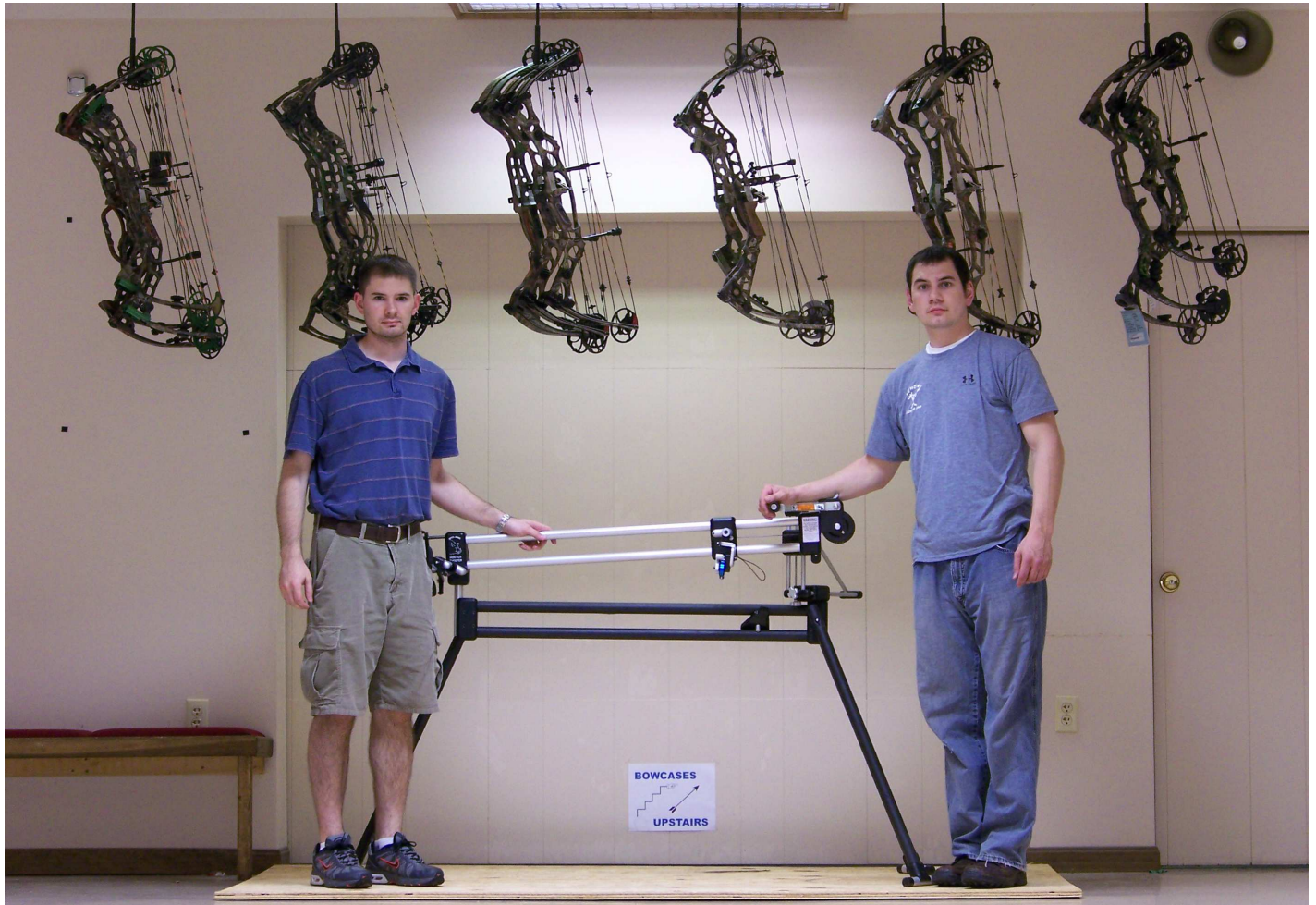
C-Weighted Sound Output: 93.8 dBC

Noise & Vibration	APA Innovations Viper														
	Brace Height = 7 7/16				Draw Weight = 60				Draw Length = 29				Axle to Axle = 31 3/8		
Parameter	Peak Noise Output (dB)				Peak A-Weighted Noise Output (dBA)				Peak C-Weighted Noise Output (dBC)						
Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains			
Measurement	Max				Max				Max						
1	104.6	103.3	100.8	102.4	84.3	85.7	82.4	86.5	96.2	94.9	92.1	91.7			
2	104.0	103.4	100.8	101.8	85.6	88.0	82.1	83.4	95.8	95.3	92.1	91.9			
3	107.4	103.5	101.1	101.7	89.6	85.8	84.2	81.6	99.0	94.6	91.4	90.5			
4	106.3	105.7	100.0	101.0	88.3	88.4	81.7	79.8	97.8	97.4	91.2	91.4			
5	105.6	103.8	102.0	101.9	88.8	86.6	83.8	81.0	97.2	93.8	93.2	90.5			
Average	105.5	103.6	100.9	101.8	87.6	86.8	82.8	82.0	97.1	94.9	91.9	91.2			
Total Average Max	102.9				84.8				93.8						



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Anthony Barnum



Jonathan Teater

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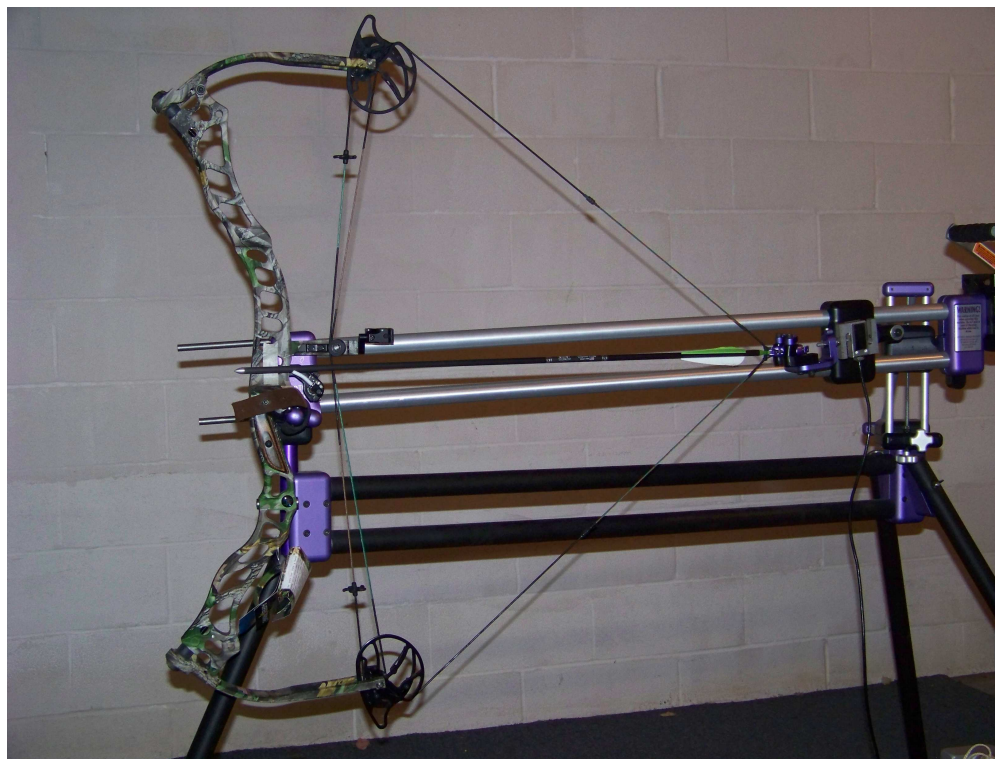
2008 Compound Hunting Bow Evaluation

BowTech 82nd Airborne Test Results



By *Anthony Barnum*
&
Jon Teater

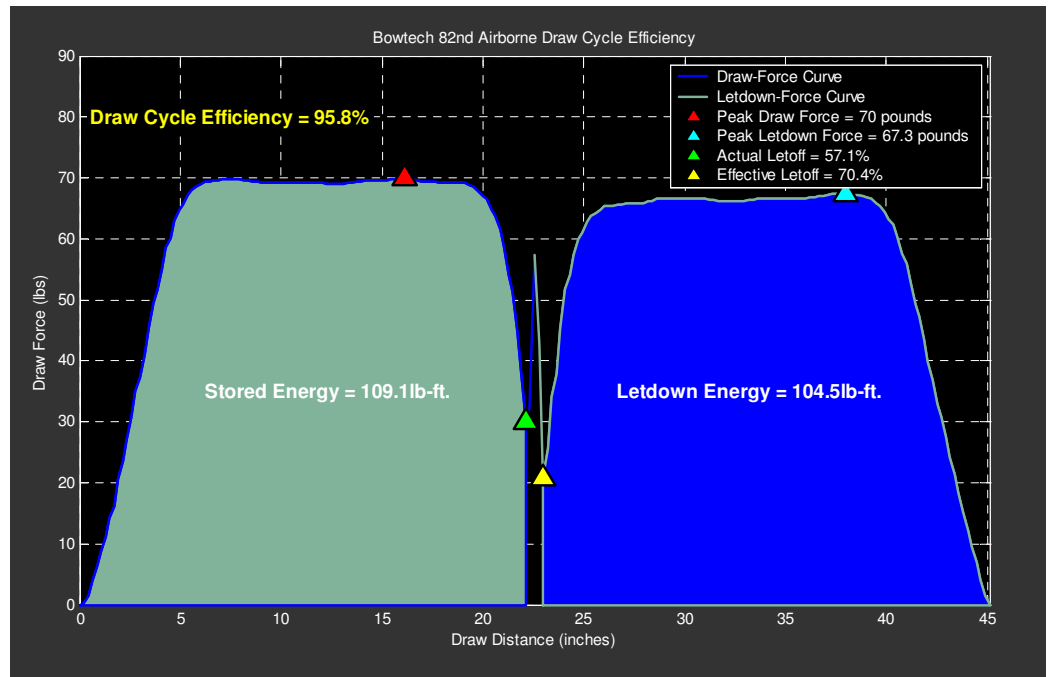
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BowTech 82nd Airborne



Introduction:

The 82nd Airborne is BowTech's speed-bow offering for 2008 and boasts an advertised IBO speed of up to 350 fps. Like its brother, The General, the Airborne features the new InVelvet™ finish and ShortStop™ string stopper / roller-guard. The addition of new Zero Tolerance Limb Pockets rounds out the innovations by providing consistent limb alignment. Another benefit of this bow is that a portion of the proceeds from the purchase of every Airborne goes to the Tragedy Assistance Program for Survivors (TAPS), which aids the families of our fallen service men and women.

The 82nd Airborne sample that was provided to Archery Evolution was measured to have a brace-height of 6 1/8 inches, while the axle-to-axle length was measured to be 36 1/4 inches. The requested 30 inch, 70 pound model was measured straight out of the box to have a 30 1/8 inch draw length and peak draw-weight of 70.7 pounds. At these settings, The 82nd Airborne achieved an average speed of 343.9 fps with a 350 grain arrow. A slight adjustment to the integrated draw stop and limb bolts brought the bow into exact specifications in short order.

A thorough examination of the finish quality showed only minor imperfections. Small raised areas were observed on the grip, while small tooling marks were found on the top cam and modules. Some minor imperfections were also noted on the ShortStop™: specifically, there was a small area where it appears that machining was not completed on the damper portion as well as some very small areas void of anodizing. Other than that, the finish on the riser, limbs, and limb pockets was just about flawless.

The power-plant for the 82nd Airborne is a new Binary Cam system that offers draw-length changes via interchangeable modules. Our sample came equipped with speed modules (smooth modules projected to be available for 2009), which store a tremendous amount of energy throughout the draw cycle. This amount of energy storage equates to a stiff draw-cycle (holding a high percentage of peak weight over a significant portion of the power stroke), which is a necessary sacrifice in order to achieve the speeds that this bow is capable of. The high efficiency of this system also aids in the overall performance of the bow.

BowTech 82nd Airborne

Contact Info: **BowTech Archery**

www.bowtecharchery.com

MSRP:	\$829	Draw Length:	26 1/2 -30 1/2 *
Cams:	Binary Cam	Draw Weight:	60, 70*
Limbs:	Composite	Brace Height:	6 1/8" *
Grip:	Laminate two piece	Axle to Axle:	36 1/2" *
Let-off:	65%-80%*	Mass Weight:	4.3
String:	BCY 452X		
Damping:	InVelvet™, Hush Kit, ShortStop™		*Advertised
Finish:	Realtree Hardwoods Green® HD™		

Performance at a Glance (70 lbs, 30"):

Arrow	Speed	K.E.	Momentum
350 Grains	341.1	90.4	17.1
420 Grains	315.4	92.8	18.9
490 Grains	294.2	94.2	20.6
540 Grains	281.4	94.9	21.7

Arrow (Grains):	350	420	490	540
Dynamic Efficiency:	82.9%	85.0%	86.3%	87.0%
Speed Per Inch of PS:	15.4	14.3	13.3	12.7
Noise Output (dBA):	93.5	90.5	92.8	92.8
Total Vibration (G):	380.6	327.7	259.2	222.4



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Detailed Test Results:

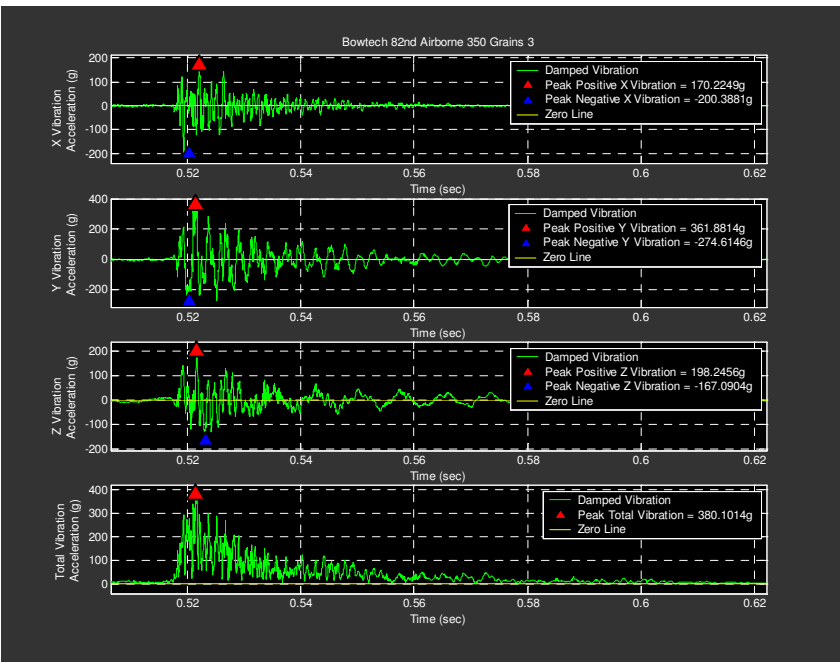
Speed / Performance Measurements:

Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of Power Stroke: 13.9

Dynamic Efficiency: 85.3%

Speed Point Blank - Tuned 30", 70#	Bowtech 82nd Airborne							
	Brace Height = 6 1/8		Draw Weight = 70.0		Draw Length = 30		Axle-to-Axle = 36 5/16	
	350 Grains		420 Grains		490 Grains		540 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	340.9	340	315.4	315	294.4	293	281.4	281
2	341.0	340	315.5	315	293.6	293	281.3	280
3	341.6	340	315.1	314	294.3	293	281.5	281
4	341.5	340	315.4	315	294.3	293	281.4	281
5	340.6	340	315.4	315	294.0	293	281.4	281
Avg. Speed	341.1	340	315.4	315	294.2	293	281.4	281
Kinetic Energy	90.4	89.8	92.8	92.5	94.2	93.4	94.9	94.7
Momentum	17.1	17.0	18.9	18.9	20.6	20.5	21.7	21.7
Power Stroke	22 1/8							
Speed per inch of Power Stroke	15.4	15.4	14.3	14.2	13.3	13.2	12.7	12.7
Avg. Speed per inch of PS (BFM)	13.9							
Stored Energy	109.1							
Dynamic Efficiency	82.9%	82.3%	85.0%	84.8%	86.3%	85.6%	87.0%	86.8%
Avg. Dynamic Efficiency (BFM)	85.3%							



Vibration Measurements:

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

Positive X-Vibration: 144.7 g

Negative X-Vibration: -149.4 g

Positive Y-Vibration: 267.6 g

Negative Y-Vibration: -246.9 g

Positive Z-Vibration: 152.9 g

Negative Z-Vibration: -120.4 g

Total Vibration: 297.5 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: 109.7 dB

A-Weighted Sound Output: 92.4 dBA

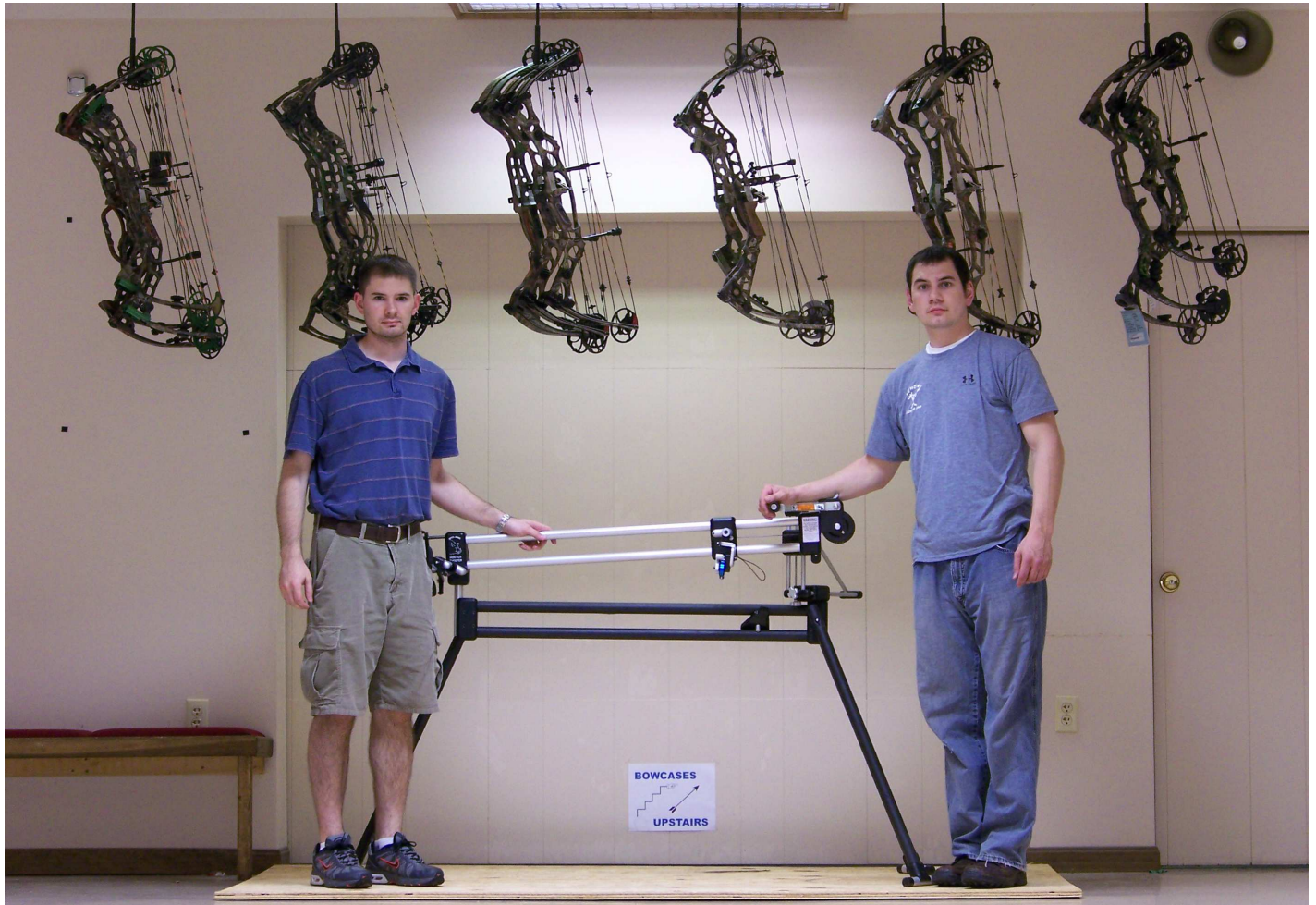
C-Weighted Sound Output: 100.2 dBC

Noise & Vibration	Bowtech 82nd Airborne																			
	Brace Height = 6 1/8				Draw Weight = 70				Draw Length = 30				Axle to Axle = 36 5/16							
	Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)		Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)		Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)			
Parameter	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains
Grains	350	420	490	540	350	420	490	540	350	420	490	540	350	420	490	540	350	420	490	540
Measurement	Max				Max				Max				Max							
1	111.2	108.2	108.5	109.6	92.2	92.6	92.1	93.2	101.7	98.8	98.7	100.3	101.7	98.8	98.7	100.3	101.7	98.8	98.7	100.3
2	110.6	108.5	111.2	109.4	93.4	90.6	94.8	93.2	101.4	99.4	101.4	100.0	101.4	99.4	101.4	100.0	101.4	99.4	101.4	100.0
3	112.2	108.2	110.3	109.1	94.0	89.8	93.3	92.3	102.9	99.1	100.5	99.7	102.9	99.1	100.5	99.7	102.9	99.1	100.5	99.7
4	111.9	108.4	110.1	109.2	93.5	91.1	92.9	93.0	102.6	98.7	100.0	99.9	102.6	98.7	100.0	99.9	102.6	98.7	100.0	99.9
5	111.8	108.2	107.8	108.1	93.5	89.5	90.2	90.5	102.6	99.1	97.7	98.8	102.6	99.1	97.7	98.8	102.6	99.1	97.7	98.8
Average	111.7	108.3	109.6	109.2	93.5	90.5	92.8	92.8	102.3	99.0	99.7	99.8	102.3	99.0	99.7	99.8	102.3	99.0	99.7	99.8
Total Average Max	109.7				92.4				100.2											



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Anthony Barnum



Jonathan Teater

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2008 Compound Hunting Bow Evaluation

BowTech Equalizer Test Results



By *Anthony Barnum*
&
Jon Teater

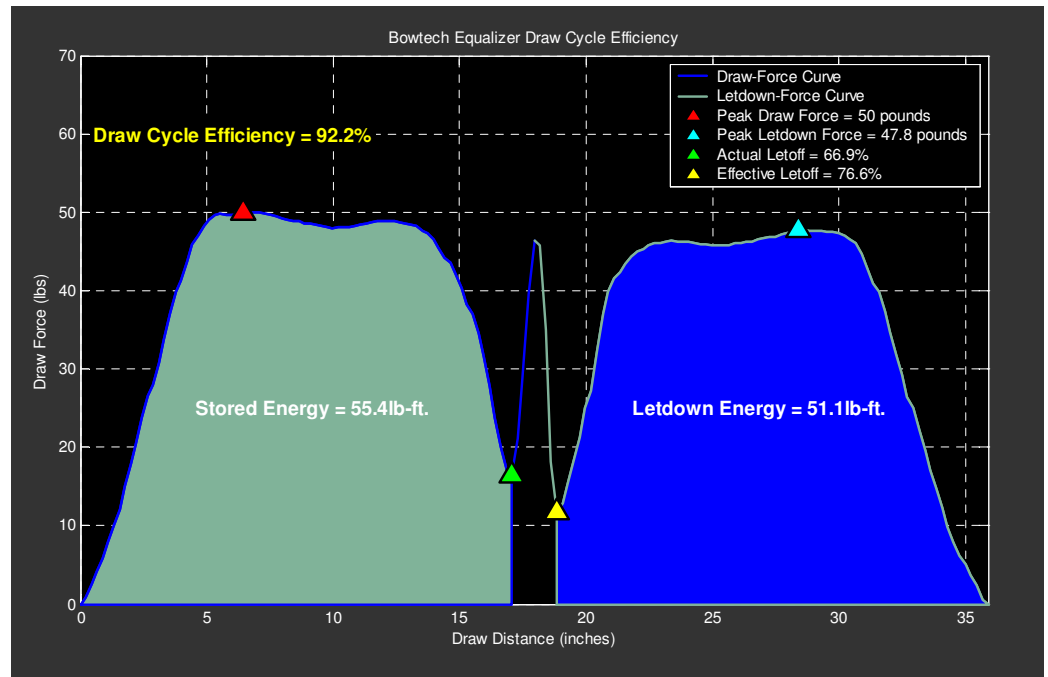
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BowTech Equalizer



Introduction:

The Equalizer is BowTech's high end short-draw offering for 2008. Like the rest of the BowTech lineup, the Equalizer utilizes a binary cam system that is scaled down to provide a draw-length range of 24–27 1/2". The parallel limb design and inclusion of the tried and true hush kit help to combat felt vibration both during and after the shot. The Equalizer boasts a relatively low mass weight even with the long riser needed to maintain an axle-to-axle length in excess of 33 inches and to accommodate the limb design.

The Equalizer sample that was provided to Archery Evolution was measured to have a brace-height of 7 3/16 inches, while the axle-to-axle length was measured to be 33 1/4 inches. The requested 26 inch, 50 pound model was measured straight out of the box to have a 26 3/16 inch draw length and peak draw-weight of 50.6 pounds. At these settings, The Equalizer achieved an average speed of 284.5 fps with a 250 grain arrow. A slight adjustment to the integrated draw stop and limb bolts brought the bow into exact specifications in short order.

A thorough examination of the finish quality showed only minor imperfections. Several "pin-point" areas void of film-dip finish were noted on the riser and limb pockets, while a small scuffed area was noticed on the end of the cable guard. Otherwise, there weren't any noticeable imperfections with the grip, limbs, cams, or strings and cables. Overall, the finish quality was quite good with only minor aesthetic deficiencies.

Several secondary features of the Equalizer add to the overall quality of the product. These features consist of stainless steel stabilizer bushings on both the front and back of the riser, an adjustable let-off / draw-stop peg for fine-tuning your setup, as well as oversized limb bolts that make it easy to adjust peak draw-weight. The Binary Cam system also includes built in timing marks, which provide a point of reference to ensure the bow is still in tune. These features, the overall aesthetic appeal and the performance of the Equalizer help provide a well-rounded shooting package.

BowTech Equalizer

Contact Info: **BowTech Archery**

www.bowtecharchery.com

MSRP:	\$749	Draw Length:	24"-27 1/2" *
Cams:	Binary Cam	Draw Weight:	29,40,50,60*
Limbs:	Composite	Brace Height:	7 1/4" *
Grip:	Laminate two piece	Axle to Axle:	33 1/4" *
Let-off:	65%-80%*	Mass Weight:	3.5
String:	BCY 452X		
Damping:	Hush Kit		*Advertised
Finish:	Realtree Hardwoods Green® HD™		

Performance at a Glance (50 lbs, 26"):

Arrow	Speed	K.E.	Momentum
250 Grains	282.2	44.2	10.1
300 Grains	261.0	45.4	11.2
350 Grains	243.3	46.0	12.2
450 Grains	217.4	47.2	14.0

Arrow (Grains):	250	300	450	450
Dynamic Efficiency:	79.8%	81.9%	83.0%	85.2%
Speed Per Inch of PS:	16.5	15.3	14.3	12.7
Noise Output (dBA):	86.2	84.9	87.8	81.9
Total Vibration (G):	213.3	189.9	210.8	175.9



Archery Evolution
www.ArcheryEvolution.com

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Detailed Test Results:

Speed / Performance Measurements:

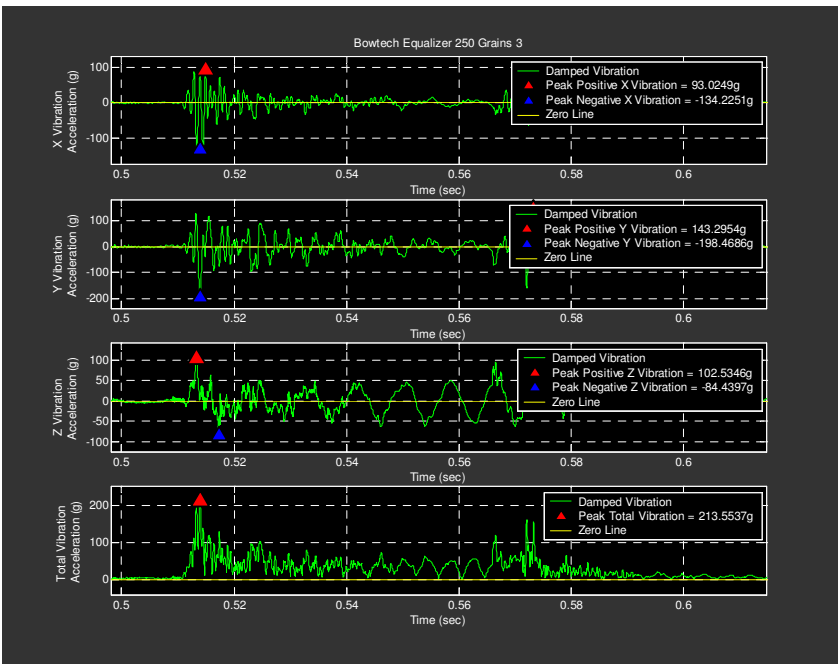
Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of

Power Stroke: 14.7

Dynamic Efficiency: 82.5%

Speed Point Blank - Tuned 26", 50#	Bowtech Equalizer							
	Brace Height = 7 3/16		Draw Weight = 50.0		Draw Length = 26		Axle-to-Axle = 33 1/4	
Grains	250 Grains		300 Grains		350 Grains		450 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	282.1	281	260.7	260	243.3	243	217.4	217
2	282.2	281	261.1	260	243.2	242	217.4	217
3	282.2	281	260.9	260	243.5	243	217.4	217
4	282.3	282	261.0	260	243.4	243	217.3	216
5	282.5	282	261.2	260	243.3	243	217.5	217
Avg. Speed	282.2	281	261.0	260	243.3	243	217.4	217
Kinetic Energy	44.2	43.9	45.4	45.0	46.0	45.9	47.2	47.0
Momentum	10.1	10.0	11.2	11.1	12.2	12.2	14.0	14.0
Power Stroke	17 1/16							
Speed per inch of Power Stroke	16.5	16.5	15.3	15.2	14.3	14.2	12.7	12.7
Avg. Speed per inch of PS (BFM)	14.7							
Stored Energy	55.4							
Dynamic Efficiency	79.8%	79.3%	81.9%	81.3%	83.0%	82.8%	85.2%	84.9%
Avg. Dynamic Efficiency (BFM)	82.5%							



Vibration Measurements:

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

Positive X-Vibration: 72.3 g

Negative X-Vibration: -107.4 g

Positive Y-Vibration: 120.8 g

Negative Y-Vibration: -190.5 g

Positive Z-Vibration: 109.2 g

Negative Z-Vibration: -67.1 g

Total Vibration: 197.5 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: 85.2 dBA

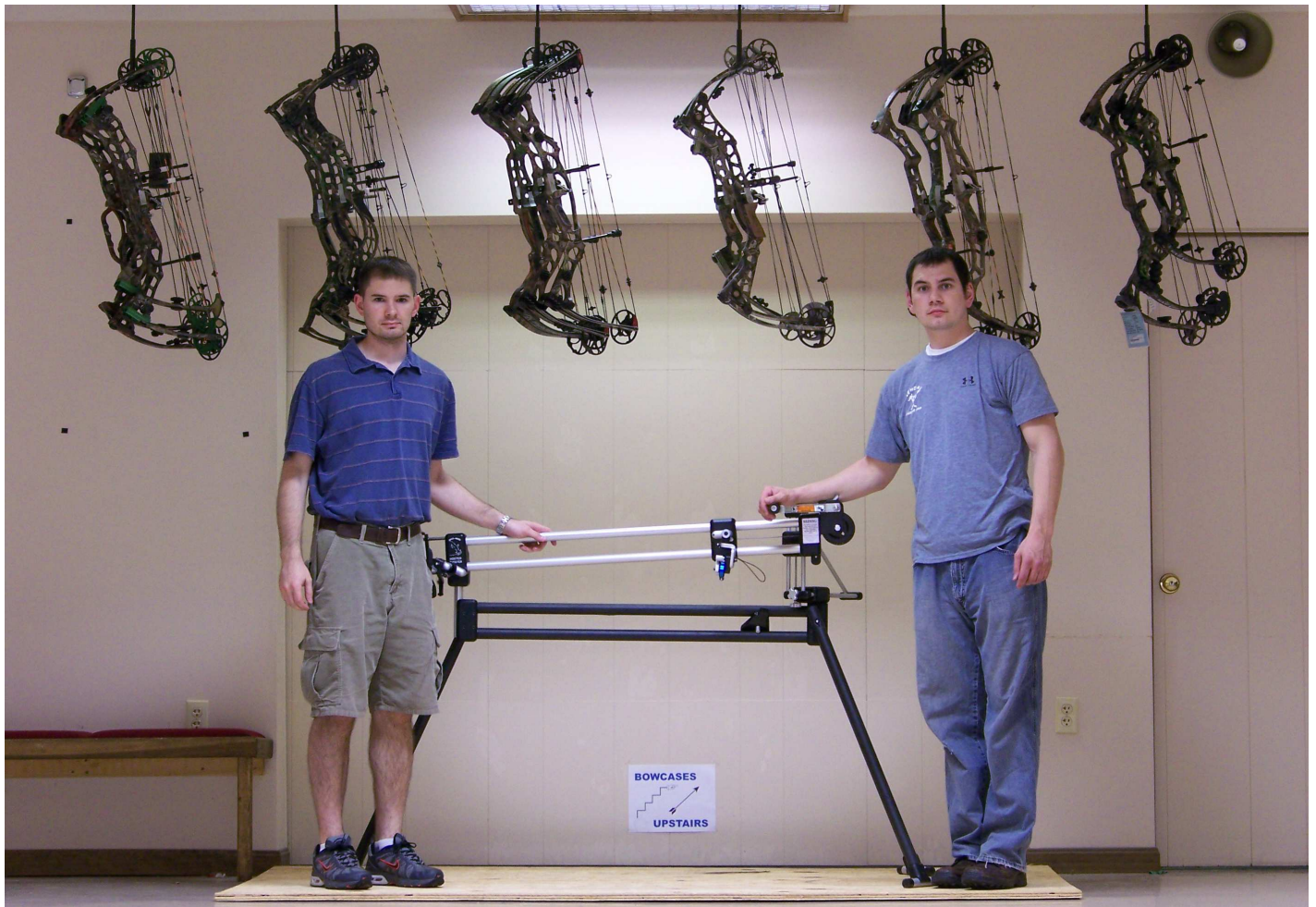
C-Weighted Sound Output: 92.7 dBC

Noise & Vibration	Bowtech Equalizer														
	Brace Height = 7 3/16				Draw Weight = 50				Draw Length = 26				Axle to Axle = 33 1/4		
Parameter	Peak Noise Output (dB)				Peak A-Weighted Noise Output (dBA)				Peak C-Weighted Noise Output (dBC)						
Grains	250 Grains	300 Grains	350 Grains	450 Grains	250 Grains	300 Grains	350 Grains	450 Grains	250 Grains	300 Grains	350 Grains	450 Grains			
Measurement	Max				Max				Max						
1	105.7	101.7	104.1	99.4	87.7	86.0	88.2	82.2	97.3	92.5	94.7	90.4			
2	104.0	102.4	104.0	99.6	86.8	84.4	88.2	80.4	95.8	92.0	93.8	89.4			
3	103.1	101.2	104.3	99.8	86.2	83.9	88.2	83.4	94.8	90.8	94.2	90.9			
4	103.0	100.7	103.4	99.6	85.5	85.1	87.0	81.6	94.4	91.7	92.8	90.0			
5	102.3	101.7	102.5	101.8	85.3	85.1	85.4	81.9	94.0	91.1	91.7	93.3			
Average	103.4	101.5	103.8	99.7	86.2	84.9	87.8	81.9	95.0	91.6	93.6	90.4			
Total Average Max	102.1				85.2				92.7						



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2008 Compound Hunting Bow Evaluation

BowTech The General Test Results



By *Anthony Barnum*
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Jon Teater

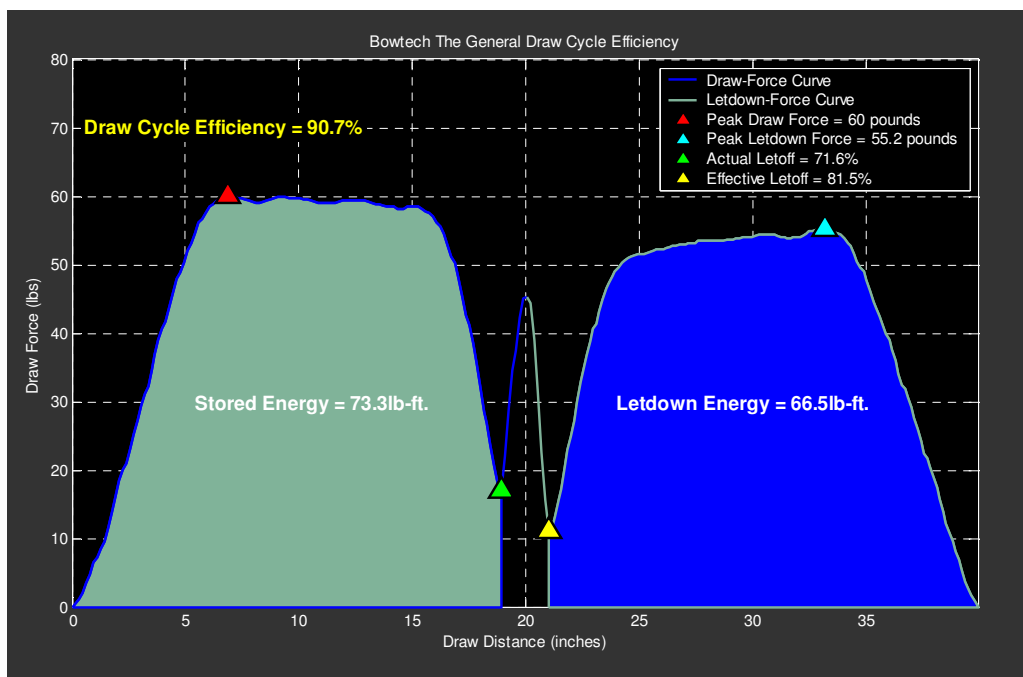
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BowTech The General



Introduction:

The General is BowTech's flagship offering for 2008 and boasts BowTech's proprietary Center Pivot limb technology similar to last year's Guardian. This year, finish options include the addition of InVelvet™, which provides a rubbery feel that offers additional vibration damping properties. A generous brace-height advertised at 8 1/4" is also provided. The addition of the ShortStop™, which is an integrated string stopper and roller-guard combination, round out the innovations for this model.

The General sample that was provided to Archery Evolution was measured to have a brace-height of 8 5/16 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 60.2 pounds. At these settings, The General achieved an average speed of 296.6 fps with a 300 grain arrow. A slight adjustment to the integrated draw stop and limb bolts brought the bow into exact specifications in short order.

A thorough examination of the finish quality showed only minor imperfections. Small raised areas were observed on the grip, while small scuffs were found on the riser. Some minor wear was also noticed in the serving material near the roller guard and the cable loop on the bottom cam. Other than that, the finish was quite nice and the machining was flawless.

The third generation of BowTech's CenterTrac Binary Cam system serves as the power-plant for The General, which features an offset integral draw stop that allows the consumer to fine-tune the bow to an infinite number of draw-length and let-off combinations. This cam system, used in conjunction with limbs of varying deflection ratings, help to control what is commonly referred to as "Cam Lean". Considering its large brace height and correspondingly short powerstroke, the 60 pound model used for this testing was required to store a substantial amount of energy over a short distance (18 15/16") in order to achieve a measured speed in excess of 295 fps.

BowTech The General

Contact Info: **BowTech Archery**

www.bowtecharchery.com

MSRP:	\$799	Draw Length:	25"-30" *
Cams:	Center Trac Binary Cam	Draw Weight:	50,60,70*
Limbs:	Composite Center Pivot	Brace Height:	8 1/4" *
Grip:	Laminate two piece	Axle to Axle:	31 3/16" *
Let-off:	65%-80%*	Mass Weight:	4.8
String:	BCY 452X		
Damping:	InVelvet™, Hush Kit, ShortStop™		*Advertised
Finish:	Realtree Hardwoods Green® HD™		

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

Arrow	Speed	K.E.	Momentum
300 Grains	295.5	58.1	12.7
360 Grains	271.3	58.8	14.0
420 Grains	252.7	59.5	15.2
540 Grains	224.5	60.4	17.3

Arrow (Grains):	300	360	420	540
Dynamic Efficiency:	79.3%	80.2%	81.2%	82.4%
Speed Per Inch of PS:	15.6	14.3	13.3	11.9
Noise Output (dBA):	88.8	88.1	86.5	85.0
Total Vibration (G):	132.0	135.6	109.4	91.7



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Detailed Test Results:

Speed / Performance Measurements:

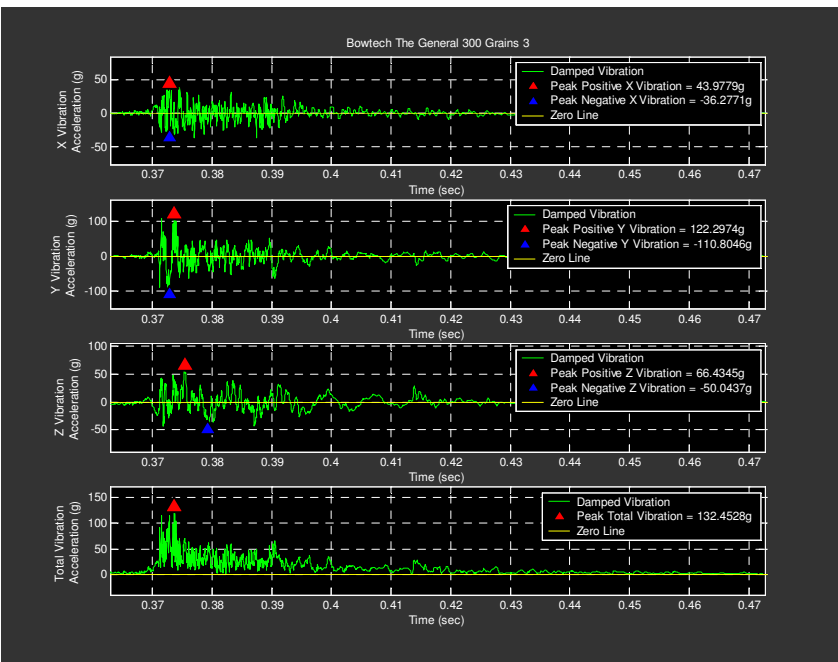
Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of

Power Stroke: 13.8

Dynamic Efficiency: 80.8%

Speed Point Blank - Tuned 29", #60	Bowtech The General							
	Brace Height = 8 5/16		Draw Weight = 60.0		Draw Length = 29		Axle-to-Axle = 31 1/4	
	300 Grains		360 Grains		420 Grains		540 Grains	
Grains	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	295.2	294	271.0	271	252.4	252	224.5	224
2	296.0	295	271.1	271	252.8	252	224.5	224
3	295.5	295	271.7	271	252.9	252	224.3	224
4	295.4	295	271.2	271	252.6	252	224.5	224
5	295.5	295	271.5	271	252.6	252	224.6	224
Avg. Speed	295.5	295	271.3	271	252.7	252	224.5	224
Kinetic Energy	58.1	58.0	58.8	58.7	59.5	59.2	60.4	60.2
Momentum	12.7	12.6	14.0	13.9	15.2	15.1	17.3	17.3
Power Stroke	18 15/16							
Speed per inch of Power Stroke	15.6	15.6	14.3	14.3	13.3	13.3	11.9	11.8
Avg. Speed per inch of PS (BFM)	13.8							
Stored Energy	73.3							
Dynamic Efficiency	79.3%	79.1%	80.2%	80.1%	81.2%	80.8%	82.4%	82.1%
Avg. Dynamic Efficiency (BFM)	80.8%							



Vibration Measurements:

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

Positive X-Vibration: 39.1 g

Negative X-Vibration: -40.4 g

Positive Y-Vibration: 108.6 g

Negative Y-Vibration: -96.0 g

Positive Z-Vibration: 56.7 g

Negative Z-Vibration: -47.7 g

Total Vibration: 117.2 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: 104.1 dB

A-Weighted Sound Output: 87.1 dBA

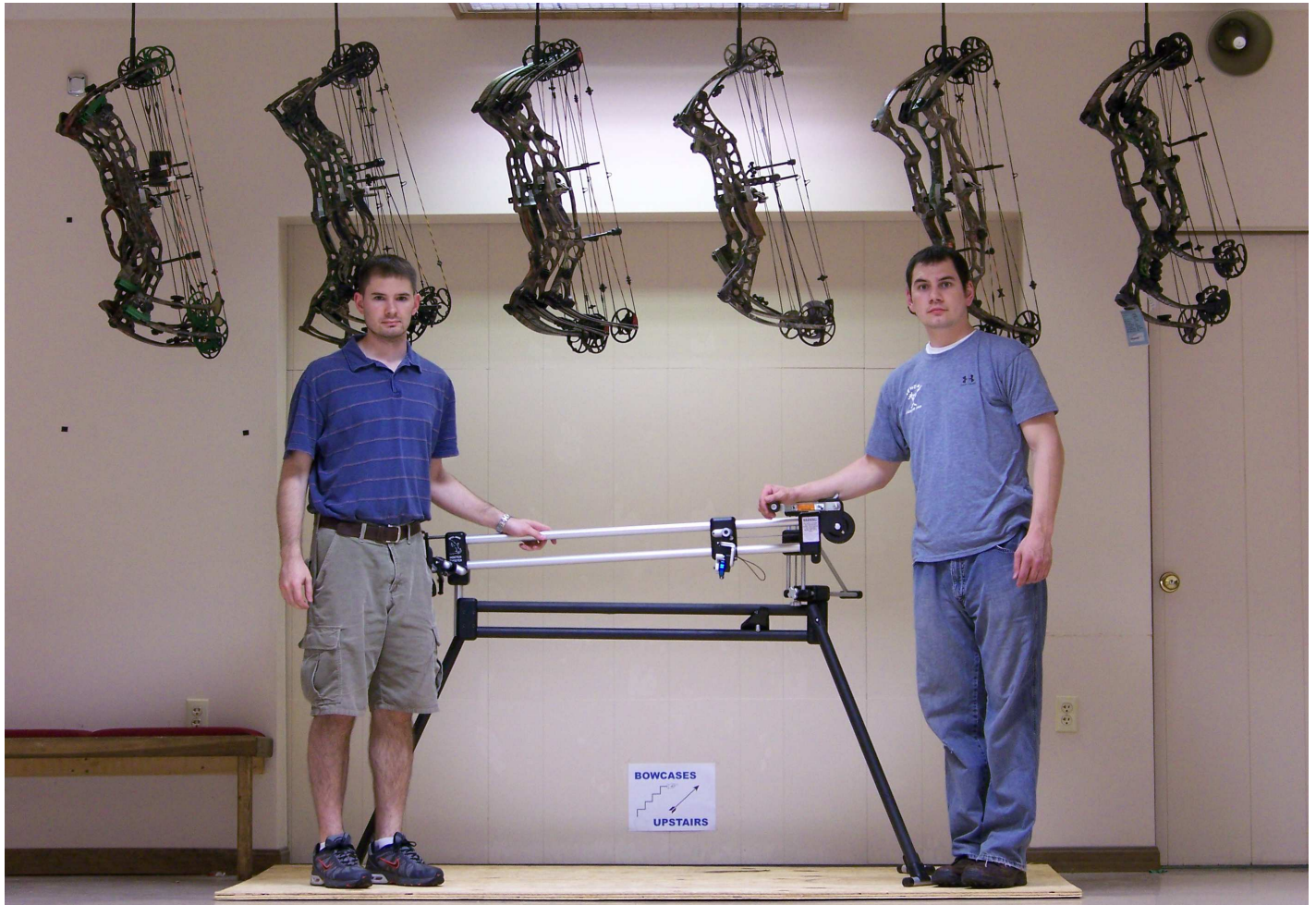
C-Weighted Sound Output: 95.4 dBC

Noise & Vibration	Bowtech The General																			
	Brace Height = 8 5/16				Draw Weight = 60				Draw Length = 29				Axle to Axle = 31 1/4							
	Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)		Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)		Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)			
Parameter	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains
Grains	300	360	420	540	300	360	420	540	300	360	420	540	300	360	420	540	300	360	420	540
Measurement	Max				Max				Max				Max							
1	107.9	105.7	103.9	101.3	99.4	88.2	86.3	84.8	99.4	97.3	95.2	91.3	99.4	97.3	95.2	91.3	99.4	97.3	95.2	91.3
2	105.9	105.0	104.6	101.0	88.1	87.7	85.4	84.7	97.4	96.9	96.1	91.8	97.4	96.9	96.1	91.8	97.4	96.9	96.1	91.8
3	105.9	105.6	104.1	100.2	87.9	88.4	87.3	85.6	97.5	97.3	96.0	90.7	97.5	97.3	96.0	90.7	97.5	97.3	96.0	90.7
4	105.2	105.1	103.0	101.8	88.3	86.9	85.9	83.0	96.9	96.8	94.9	91.1	96.9	96.8	94.9	91.1	96.9	96.8	94.9	91.1
5	106.3	106.0	104.2	100.3	90.1	88.7	87.6	85.5	97.9	97.6	96.0	90.2	97.9	97.6	96.0	90.2	97.9	97.6	96.0	90.2
Average	106.1	105.5	104.1	100.9	88.8	88.1	86.5	85.0	97.6	97.2	95.8	91.0	97.6	97.2	95.8	91.0	97.6	97.2	95.8	91.0
Total Average Max	104.1				87.1				95.4											



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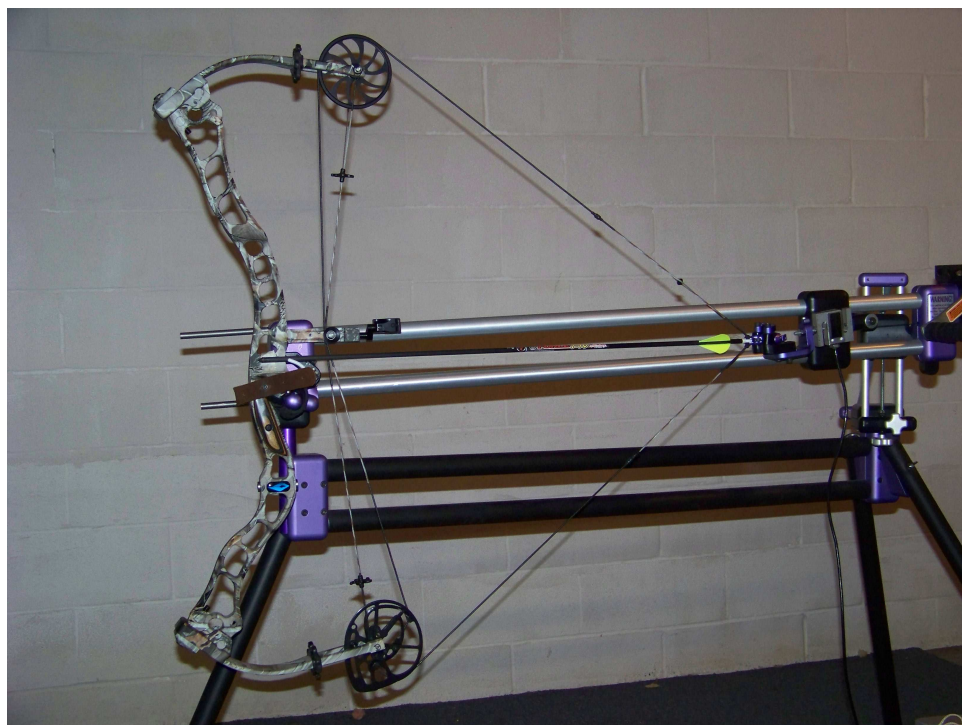
2008 Compound Hunting Bow Evaluation

Diamond Marquis Test Results



By *Anthony Barnum*
&
Jon Teater

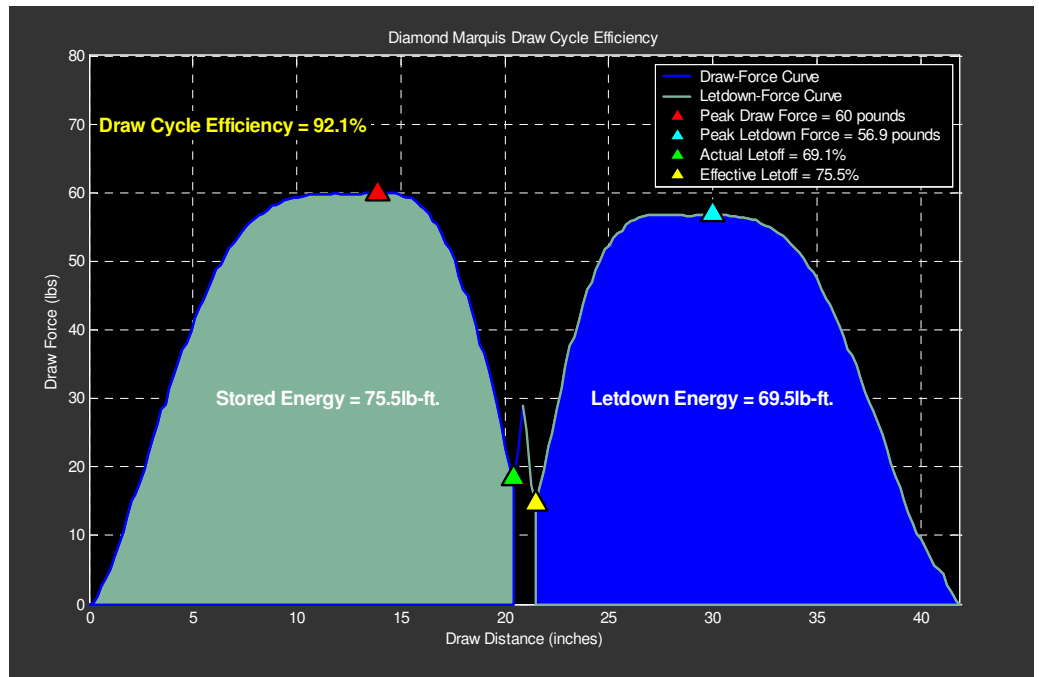
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Diamond Marquis



Introduction:

The Marquis is Diamond's flagship offering for the 2008 model year. The new Pinnacle5 single cam offers great performance (IBO speeds advertised up to 324 fps), while maintaining a smooth, comfortable draw cycle. The draw-stop helps to provide a hard-wall on this new cam, while interchangeable modules make draw-length adjustments easy to handle. Like its cousin, The General, the Marquis incorporates an integrated ShortStop™ / roller-guard combination that provides damping qualities while reducing the wear on string and cable serving material.

The Marquis sample that was provided to Archery Evolution was measured to have a brace-height of 6 13/16 inches, while the axle-to-axle length was measured to be 34 9/16 inches. The requested 29 inch, 60 pound model was measured straight out of the box to have a 29 1/8 inch draw length and peak draw-weight of 60.8 pounds. At these settings, the Marquis achieved an average speed of 306.7 fps with a 300 grain arrow. A slight adjustment to the integrated draw stop and limb bolts brought the bow into exact specifications in short order.

A thorough examination of the finish quality showed only minor imperfections in the grip, roller-guard, and limb pocket areas. Small raised areas were observed on the grip, while minor set-screw indentations were observed on the ShortStop™ attachment rod. A few minor scuffs were found on the limb-pocket, which may be attributed to damage during shipping. Either way, it is hardly noticeable. The only other item found was some machining marks on the inner portions of the cam, which does not impede the functionality of the bow. The finish quality, in general, is quite good and right on par with other BowTech / Diamond bows we have tested in the past.

The Marquis also provides an axle-to-axle length in excess of 34 inches, which helps to provide vertical stability. The lengthy riser combined with the parallel limb configuration still maintains a measured mass weight just over 4 pounds. Overall, the aesthetic properties of the Marquis can be summed up as follows: aggressive, yet refined. It is quite an attractive piece of machinery that is enjoyable to shoot.

Diamond Marquis

Contact Info: Diamond Archery

www.diamondarchery.com

MSRP:	\$749	Draw Length:	26"-30" *
Cams:	Pinnacle5 Single Cam	Draw Weight:	50,60,70*
Limbs:	Composite	Brace Height:	7" *
Grip:	two-piece laminate	Axle to Axle:	34 1/2" *
Let-off:	65%-75%*	Measured Mass:	4.3 lbs.
String:	BCY 452X		
Damping:	Hush Kit, ShortStop™		*Advertised
Finish:	Realtree® Hardwoods HD®		

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

Arrow	Speed	K.E.	Momentum
300 Grains	303.5	61.3	13.0
360 Grains	281.1	63.1	14.5
420 Grains	263.0	64.5	15.8
540 Grains	234.8	66.1	18.1

Arrow (Grains):	300	360	420	540
Dynamic Efficiency:	81.1%	83.5%	85.3%	87.4%
Speed Per Inch of PS:	14.9	13.8	12.9	11.5
Noise Output (dBA):	92.9	89.8	89.5	87.4
Total Vibration (G):	188.5	190.6	188.2	176.1



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Detailed Test Results:

Speed / Performance Measurements:

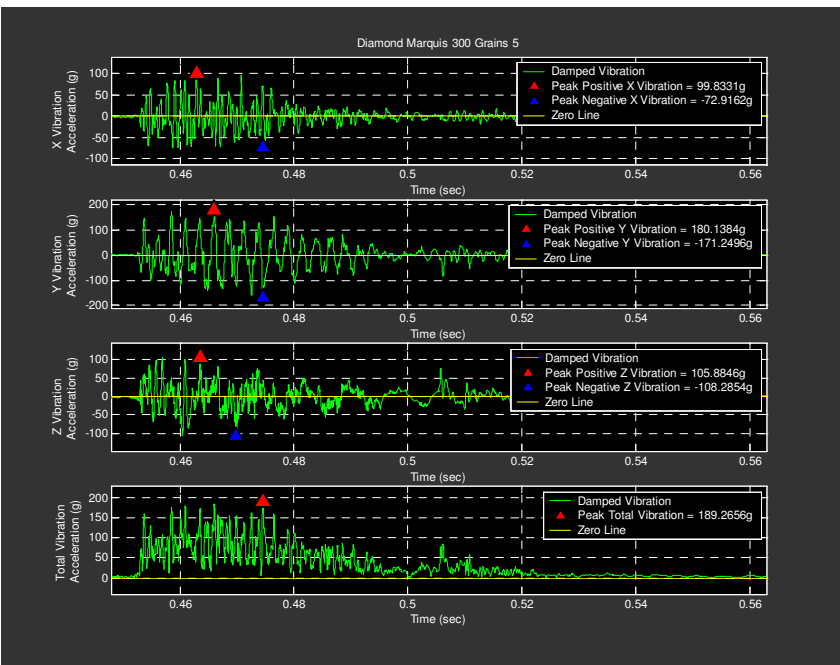
Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of

Power Stroke: 13.2

Dynamic Efficiency: 84.0%

Speed Point Blank - Tuned 29", 60#	Diamond Marquis							
	Brace Height = 6 13/16		Draw Weight = 60.0		Draw Length = 29		Axle-to-Axle = 34 9/16	
Grains	300 Grains		360 Grains		420 Grains		540 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	303.5	302	280.5	280	263.2	263	234.8	234
2	303.6	302	284.5	281	263.0	262	234.5	234
3	303.7	303	281.2	280	263.1	262	234.8	234
4	303.4	302	281.1	280	262.9	262	234.8	234
5	303.3	303	280.9	280	263.0	262	234.9	234
Avg. Speed	303.5	302	281.1	280	263.0	262	234.8	234
Kinetic Energy	61.3	60.9	63.1	62.7	64.5	64.0	66.1	65.6
Momentum	13.0	13.0	14.5	14.4	15.8	15.7	18.1	18.1
Power Stroke	20 7/16							
Speed per inch of Power Stroke	14.9	14.8	13.8	13.7	12.9	12.8	11.5	11.4
Avg. Speed per inch of PS (BFM)	13.2							
Stored Energy	75.6							
Dynamic Efficiency	81.1%	80.5%	83.5%	82.9%	85.3%	84.7%	87.4%	86.8%
Avg. Dynamic Efficiency (BFM)	84.0%							



Vibration Measurements:

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

Positive X-Vibration: 113.1 g

Negative X-Vibration: -110.3 g

Positive Y-Vibration: 153.8 g

Negative Y-Vibration: -144.1 g

Positive Z-Vibration: 100.2 g

Negative Z-Vibration: -96.7 g

Total Vibration: 185.8 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: 107.1 dB

A-Weighted Sound Output: 89.9 dBA

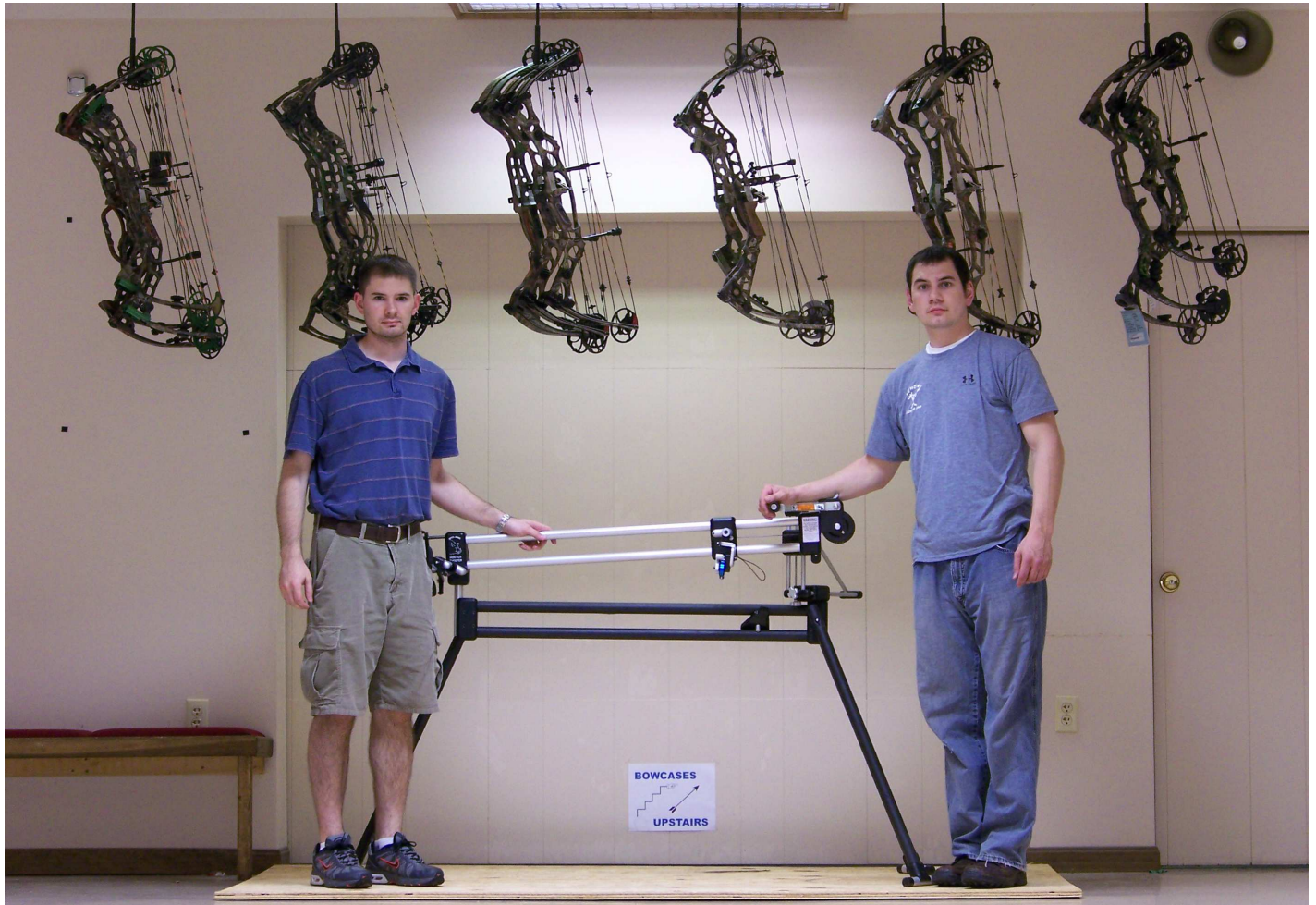
C-Weighted Sound Output: 98.9 dBC

Noise & Vibration	Diamond Marquis														
	Brace Height = 6 13/16				Draw Weight = 60				Draw Length = 29				Axle to Axle = 34 9/16		
Parameter	Peak Noise Output (dB)				Peak A-Weighted Noise Output (dBA)				Peak C-Weighted Noise Output (dBC)						
Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains			
Measurement	Max				Max				Max						
1	112.0	107.6	106.9	103.6	94.1	89.5	89.3	88.4	103.8	99.0	98.6	95.6			
2	110.8	107.3	106.8	101.8	91.9	88.5	89.3	87.4	102.5	98.9	98.5	93.9			
3	110.9	108.2	105.9	102.6	93.5	90.0	89.8	86.9	102.4	99.6	97.6	94.5			
4	110.7	107.9	106.6	102.6	91.4	91.5	90.2	86.3	102.5	99.2	98.4	94.9			
5	111.7	108.0	106.6	103.5	93.5	89.8	89.5	88.0	103.6	99.6	98.5	95.8			
Average	111.1	107.8	106.7	102.9	92.9	89.8	89.5	87.4	102.9	99.3	98.5	95.0			
Total Average Max	107.1				89.9				98.9						



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2008 Compound Hunting Bow Evaluation

Elite Archery Z28 Test Results



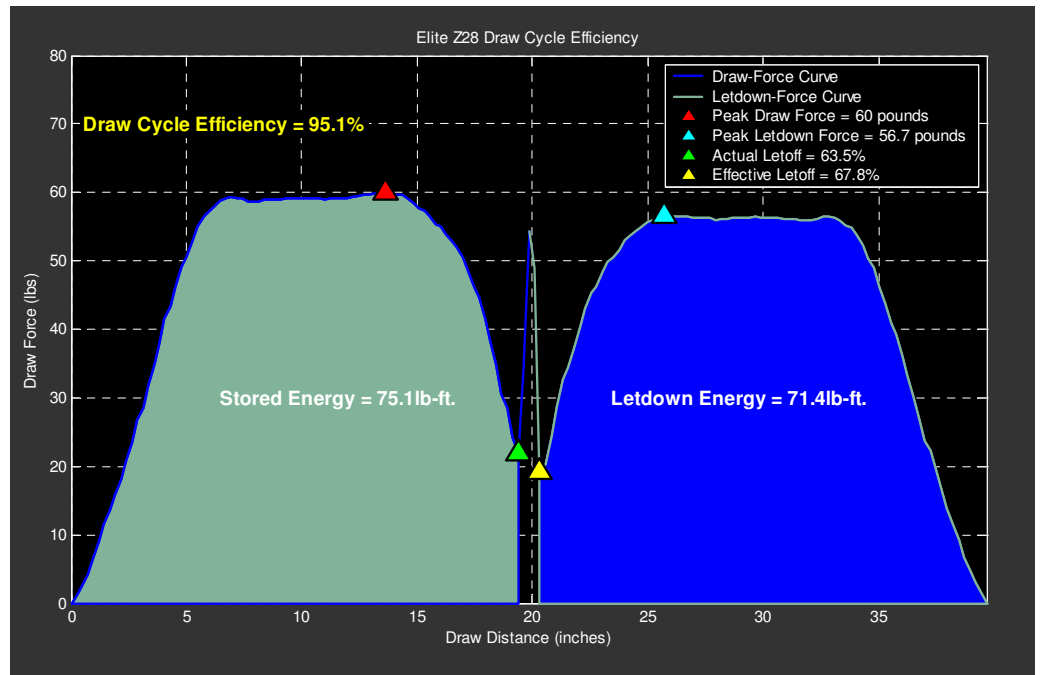
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Elite Archery Z28



Introduction:

The Z28 is Elite Archery's flagship offering for 2008. Offering the new Revolution Cam system, which is a dual track "binary" style cam, the Z28 boasts advertised speeds in excess of 330 feet per second. The integral draw stops on both cams allow adjustment of the valley to the archer's preferences, while also maintaining a solid back wall while at full-draw. The patent pending E-Suppressor and inclusion of Limb Saver damping accessories help to eliminate felt vibration and "shock".

The Z28 sample that was provided to Archery Evolution was measured to have a brace-height of 7 7/8 inches, while the axle-to-axle length was measured to be 32 13/16 inches. The requested 29 inch, 60 pound model was measured straight out of the box to have a 29 5/16 inch draw length and peak draw-weight of 60.8 pounds. At these settings, the Z28 achieved an average speed of 311.5 fps with a 300 grain arrow. A slight adjustment to the limb bolts and integral draw stops brought the bow into exact specifications in short order.

A thorough examination of the finish quality showed only minor imperfections. A small scratch in the finish on the E-Suppressor and some machining marks on the interior portions of the cam were the only blemishes noted. Other than these two minor items, the fit and finish on the Z28 was impeccable and the black powder coat finish appeared to be very durable.

The Z28 that we tested is different than any other hunting bow we tested this year in that it was provided in the "Ninja" pattern; basically, the whole bow is matte black in color. The "muted" finish lends itself to the hunting application more than most non-camo finishes as it is not shiny and can complement a wide variety of camo patterns currently on the market. This finish, along with a visually appealing riser design and filleting on just about every corner or edge, adds to the overall aesthetics of the product. Aside from the looks, the Z28 offers great performance while maintaining a substantial brace-height; in our testing, the average speed per inch of powerstroke was calculated to be 14.1. At the time that this report was written, this is the highest mark out of any of the flagship bows that we have tested this year. All in all, the Z28 appears to be a great product from a relative new comer to the archery industry.

Elite Archery Z28

Contact Info: Elite Archery

www.elitearchery.com

MSRP:	\$719	Draw Length:	27"-30" *
Cams:	Revolution cam	Draw Weight:	60-80*
Limbs:	Laminated Solid Limb	Brace Height:	8" *
Grip:	Laminate two piece	Axle to Axle:	32 1/2"*
Let-off:	60%-80%*	Mass Weight:	4.0 *
String:	BCY 452X		
Damping:	E Suppressor		*Advertised
Finish:	Powder Coat Black		

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

Arrow	Speed	K.E.	Momentum
300 Grains	307.3	62.9	13.2
360 Grains	283.5	64.2	14.6
420 Grains	264.2	65.1	15.9
540 Grains	235.4	66.4	18.2

Arrow (Grains):	300	360	420	540
Dynamic Efficiency:	83.7%	85.5%	86.7%	88.5%
Speed Per Inch of PS:	15.9	14.6	13.6	12.1
Noise Output (dBA):	88.7	84.1	85.5	87.1
Total Vibration (G):	222.8	234.4	228.7	188.6



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Detailed Test Results:

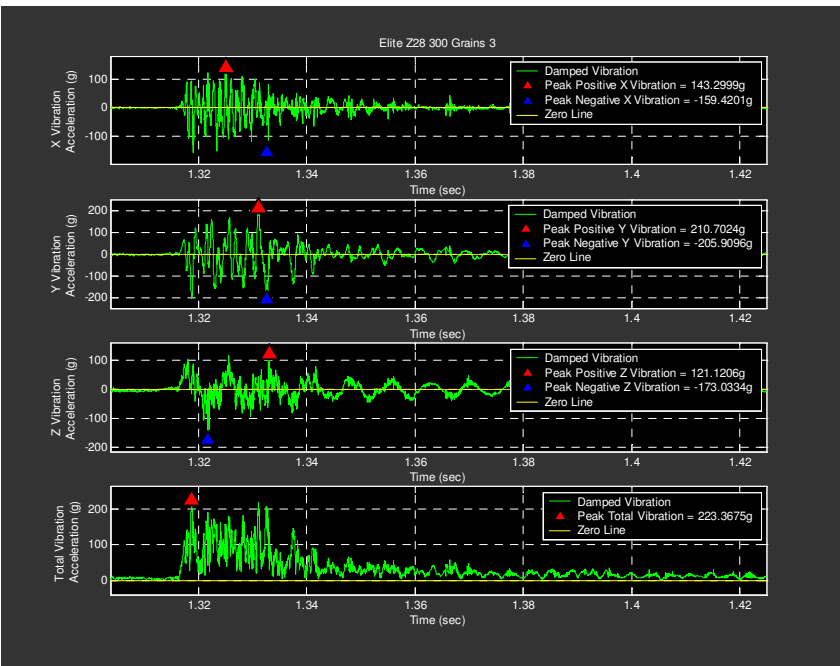
Speed / Performance Measurements:

Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of Power Stroke: 14.1

Dynamic Efficiency: 85.6%

Grains	Elite Z28							
	300 Grains		360 Grains		420 Grains		540 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	307.4	306	283.8	282	264.3	262	235.5	234
2	307.9	306	283.5	282	264.4	263	235.4	234
3	307.3	306	283.5	282	264.0	262	235.6	234
4	307.6	306	283.4	282	263.9	262	235.1	234
5	307.2	306	283.2	282	264.5	263	235.3	234
Avg. Speed	307.3	306	283.5	282	264.2	262	235.4	234
Kinetic Energy	62.9	62.4	64.2	63.6	65.1	64.2	66.4	65.6
Momentum	13.2	13.1	14.6	14.5	15.9	15.7	18.2	18.1
Power Stroke	19 3/8							
Speed per inch of Power Stroke	15.9	15.8	14.6	14.6	13.6	13.5	12.1	12.1
Avg. Speed per inch of PS (BFM)	14.1							
Stored Energy	75.1							
Dynamic Efficiency	83.7%	83.0%	85.5%	84.6%	86.7%	85.4%	88.5%	87.4%
Avg. Dynamic Efficiency (BFM)	85.6%							



Vibration Measurements:

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

Positive X-Vibration: 129.3 g

Negative X-Vibration: -155.7 g

Positive Y-Vibration: 178.3 g

Negative Y-Vibration: -202.9 g

Positive Z-Vibration: 115.8 g

Negative Z-Vibration: -108.7 g

Total Vibration: 218.6 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: 103.3 dB

A-Weighted Sound Output: 86.3 dBA

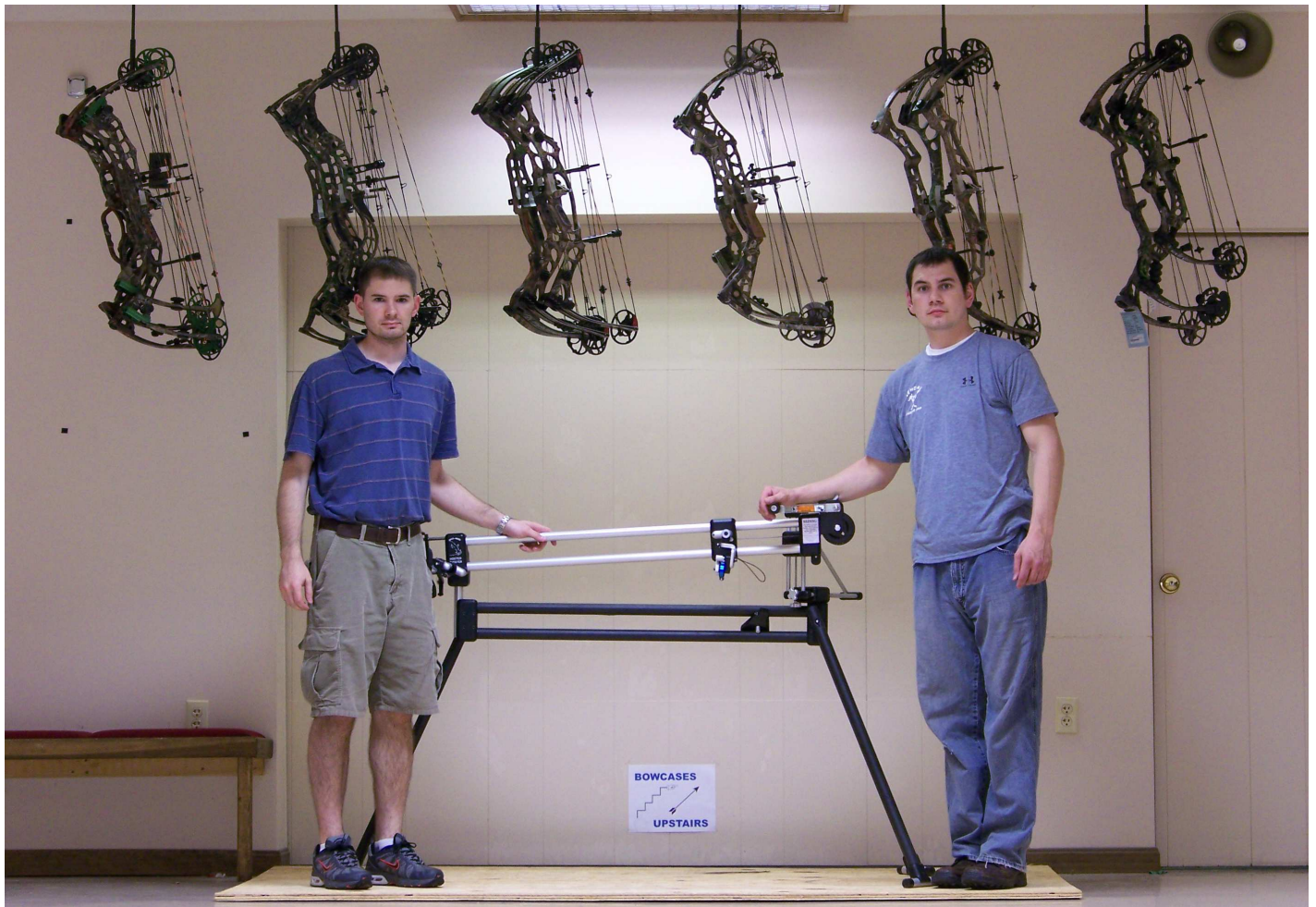
C-Weighted Sound Output: 93.6 dBC

Noise & Vibration	Elite Z28											
	300 Grains			360 Grains			420 Grains			540 Grains		
Parameter	Peak Noise Output (dB)				Peak A-Weighted Noise Output (dBA)				Peak C-Weighted Noise Output (dBC)			
Grains	300	360	420	540	300	360	420	540	300	360	420	540
Measurement	Max				Max				Max			
1	103.3	105.4	102.9	102.0	85.0	83.2	82.5	86.9	94.3	93.9	92.0	92.8
2	103.4	105.6	101.5	102.0	90.2	84.7	85.8	87.4	94.9	94.8	92.1	92.8
3	103.2	105.7	102.0	101.6	89.6	85.4	85.0	86.8	94.7	95.5	91.1	92.6
4	103.9	104.9	102.9	101.9	88.4	84.2	85.6	87.1	95.7	94.9	91.6	93.9
5	103.3	106.2	101.9	101.6	87.9	83.5	86.2	87.2	95.1	94.3	92.8	92.8
Average	103.3	105.6	102.3	101.8	88.7	84.1	85.5	87.1	94.9	94.7	91.9	92.8
Total Average Max	103.3				86.3				93.6			



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Anthony Barnum



Jonathan Teater

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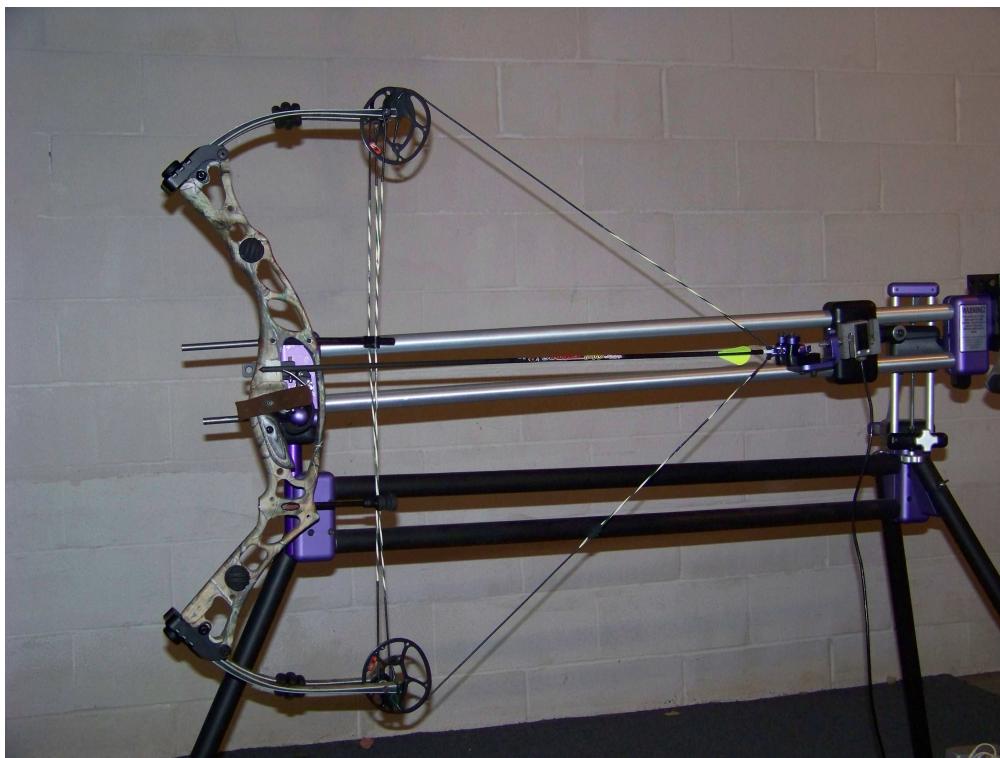
2008 Compound Hunting Bow Evaluation

Hoyt Katera Flagship Test Results



By *Anthony Barnum*
&
Jon Teater

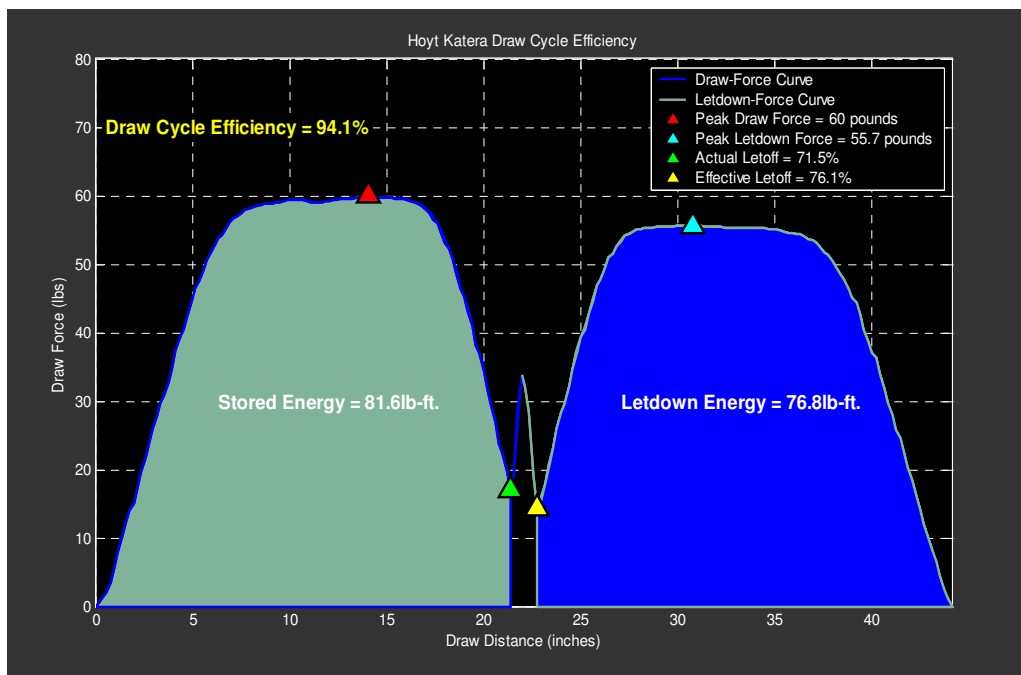
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Hoyt Katera Flagship



Introduction:

The tried and true combination of Total Engineering Concept® (aka TEC) riser design and 3/4" laminated split limbs are incorporated into Hoyt's 2008 flagship / speed bow, the Katera. The new Z3 Cam & 1/2, coupled with the Katera's 6 inch brace-height, offers an advertised IBO speed of 330 fps placing the Katera solidly in the speed-bow category. This new cam system stores a great deal of energy, yet somehow maintains an even draw-cycle that never seems to require too much exertion at any given point. Last year's popular addition, the StealthShot®, is also included on the Katera, while RizerShox, AlphaShox and StringShox round out the vibration damping accessories.

The flagship Katera sample that was provided to Archery Evolution was measured to have a brace-height of 5 7/8 inches, while the axle-to-axle length was measured to be 33 9/16 inches. The requested 29 inch, 60 pound model was measured straight out of the box to have a 29 inch draw length and peak draw-weight of 62.9 pounds. At these settings, the Katera achieved an average speed of 322.1 fps with a 300 grain arrow. A slight adjustment to the limb bolts brought the bow into exact test specifications.

A thorough examination of the finish quality showed only minor imperfections in various areas of the riser. Small areas void of the new Realtree® APG® HD camo finish were noticed near the top limb pocket, below the grip, and the front of the riser near the bottom RizerShox. A raised area in the finish was also noticed near the upper limb pocket. Again, these imperfections do not inhibit the performance or shootability of the bow and are only noted from a Quality Control perspective. The machining and anodized finish on the Z3 Cam system appeared to be flawless. The feel of the camo finish on the bow is different than any of the other bows we have tested; it has a grainy texture that is quite appealing to the touch. Tight tolerances along with a rock-solid limb-pocket assembly help to provide consistency from shot to shot.

Some of the features of the Katera include a Stainless Steel stabilizer bushing, an adjustable let-off peg, and pivoting limb pockets. The TEC riser can also act as a carrying handle (in addition to its duties mitigating riser torque), which is a benefit for a hunting application. The grip on this bow is one of our favorites and provides a constant, torque-free contact point for the shooter.

Hoyt Katera

Contact Info: Hoyt

www.hoyt.com

MSRP:	\$849	Draw Length:	24"-30" *
Cams:	Z3 Cam & 1/2	Draw Weight:	40-80 *
Limbs:	3/4" split limb laminate	Brace Height:	6" *
Grip:	Pro-fit Custom grip	Axle to Axle:	33" *
Let-off:	65%, 75% *	Mass Weight:	4.5 lbs. *
String:	Fuse		
Damping:	Alpha Shox, StealthShot®		*Advertised
Finish:	Realtree® APG® HD		

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

Arrow	Speed	K.E.	Momentum
300 Grains	313.9	65.6	13.5
360 Grains	290.6	67.5	14.9
420 Grains	271.3	68.6	16.3
540 Grains	241.7	70.0	18.6

Arrow (Grains):	300	360	420	540
Dynamic Efficiency:	80.4%	82.7%	84.1%	85.8%
Speed Per Inch of PS:	14.7	13.6	12.7	11.3
Noise Output (dBA):	90.7	89.0	90.5	89.0
Total Vibration (G):	177.8	149.1	128.2	128.4



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Detailed Test Results:

Speed / Performance Measurements:

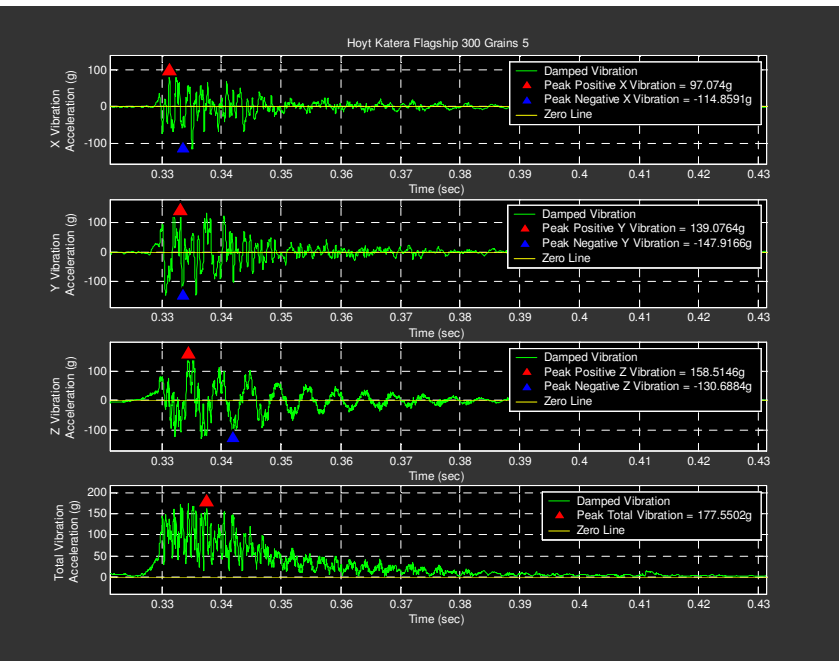
Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of

Power Stroke: 13.1

Dynamic Efficiency: 83.0%

Speed Point Blank - Tuned 29", 60#	Hoyt Katera							
	Brace Height = 5 7/8		Draw Weight = 60.0		Draw Length = 29		Axle-to-Axle = 33 9/16	
Grains	300 Grains		360 Grains		420 Grains		540 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	314.0	313	290.4	290	271.3	270	241.9	241
2	314.3	313	290.7	290	271.3	270	241.7	241
3	313.7	313	290.8	290	271.5	271	241.6	241
4	313.8	313	290.5	290	271.2	270	241.8	241
5	314.0	313	290.7	290	271.3	270	241.5	241
Avg. Speed	313.9	313	290.6	290	271.3	270	241.7	241
Kinetic Energy	65.6	65.2	67.5	67.2	68.6	68.0	70.0	69.6
Momentum	13.5	13.4	14.9	14.9	16.3	16.2	18.6	18.6
Power Stroke	21 3/8							
Speed per inch of Power Stroke	14.7	14.6	13.6	13.6	12.7	12.6	11.3	11.3
Avg. Speed per inch of PS (BFM)	13.1							
Stored Energy	81.6							
Dynamic Efficiency	80.4%	80.0%	82.7%	82.4%	84.1%	83.3%	85.8%	85.3%
Avg. Dynamic Efficiency (BFM)	83.0%							



Vibration Measurements:

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

Positive X-Vibration: 78.1 g

Negative X-Vibration: -80.0 g

Positive Y-Vibration: 115.8 g

Negative Y-Vibration: -130.3 g

Positive Z-Vibration: 118.0 g

Negative Z-Vibration: -118.1 g

Total Vibration: 145.9 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: 106.7 dB

A-Weighted Sound Output: 89.8 dBA

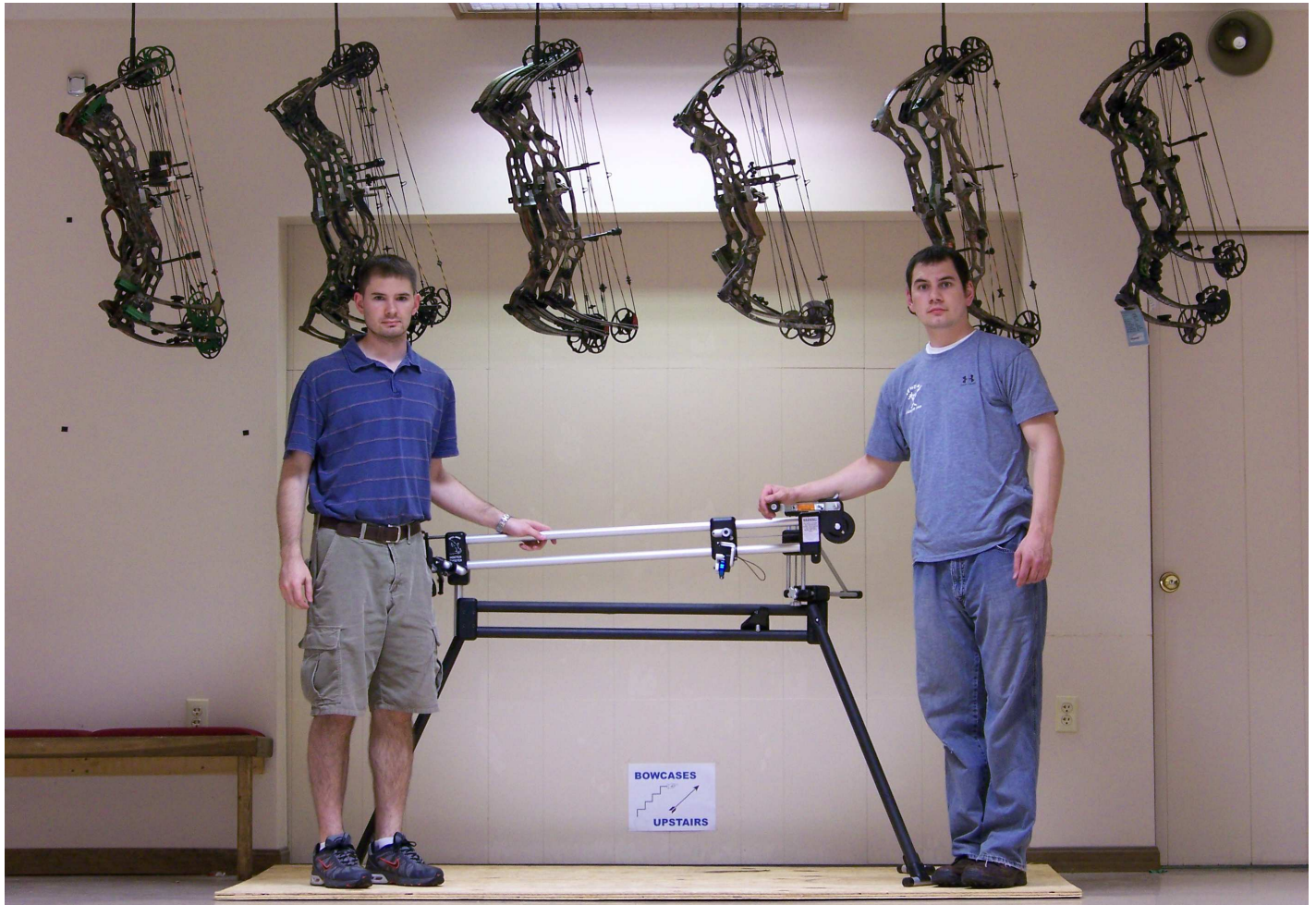
C-Weighted Sound Output: 98.4 dBC

Noise & Vibration	Hoyt Katera														
	Brace Height = 5 7/8				Draw Weight = 60				Draw Length = 29				Axle to Axle = 33 9/16		
Parameter	Peak Noise Output (dB)				Peak A-Weighted Noise Output (dBA)				Peak C-Weighted Noise Output (dBC)						
Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains			
Measurement	Max				Max				Max						
1	110.2	106.6	105.9	104.2	90.6	89.0	90.7	89.3	101.8	98.4	97.8	96.0			
2	109.5	106.6	104.7	104.3	89.4	88.8	89.7	88.7	101.0	98.0	96.6	96.0			
3	110.1	106.5	105.0	103.9	89.7	89.3	90.1	89.5	101.6	98.3	96.9	96.3			
4	111.4	107.8	106.1	103.9	91.8	90.9	90.6	88.4	103.1	99.6	97.9	95.6			
5	110.5	105.9	106.3	105.2	91.9	87.5	91.2	88.9	102.2	97.5	98.2	97.0			
Average	110.3	106.6	105.7	104.1	90.7	89.0	90.5	89.0	101.9	98.2	97.5	96.1			
Total Average Max	106.7				89.8				98.4						



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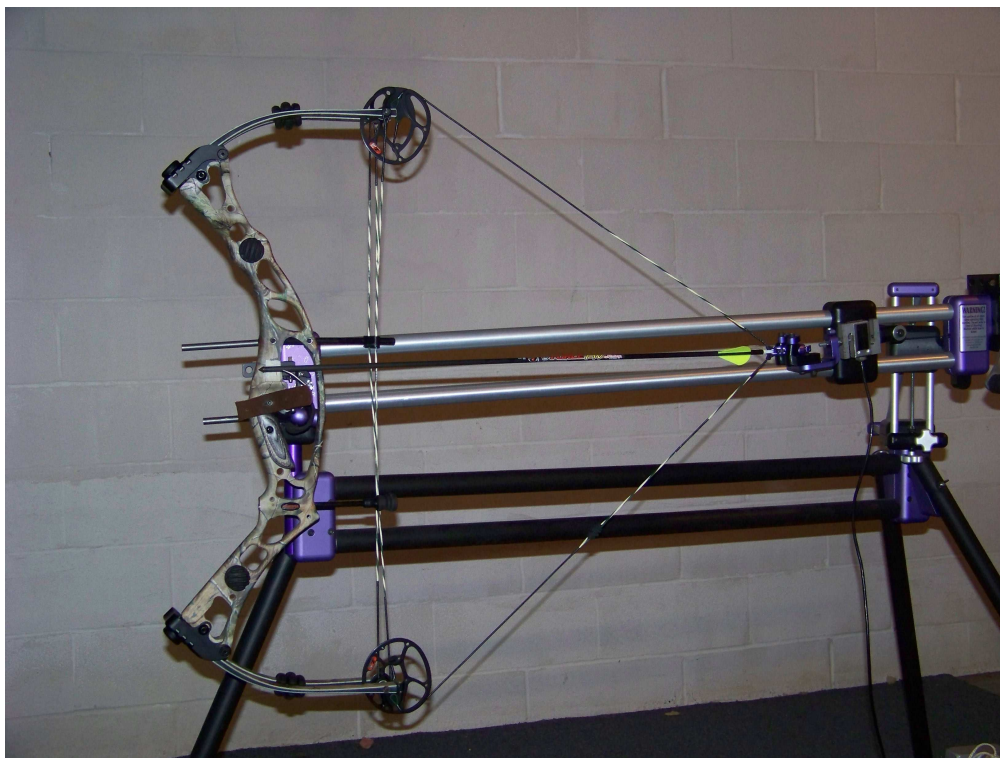
2008 Compound Hunting Bow Evaluation

Hoyt Katera Speed Test Results



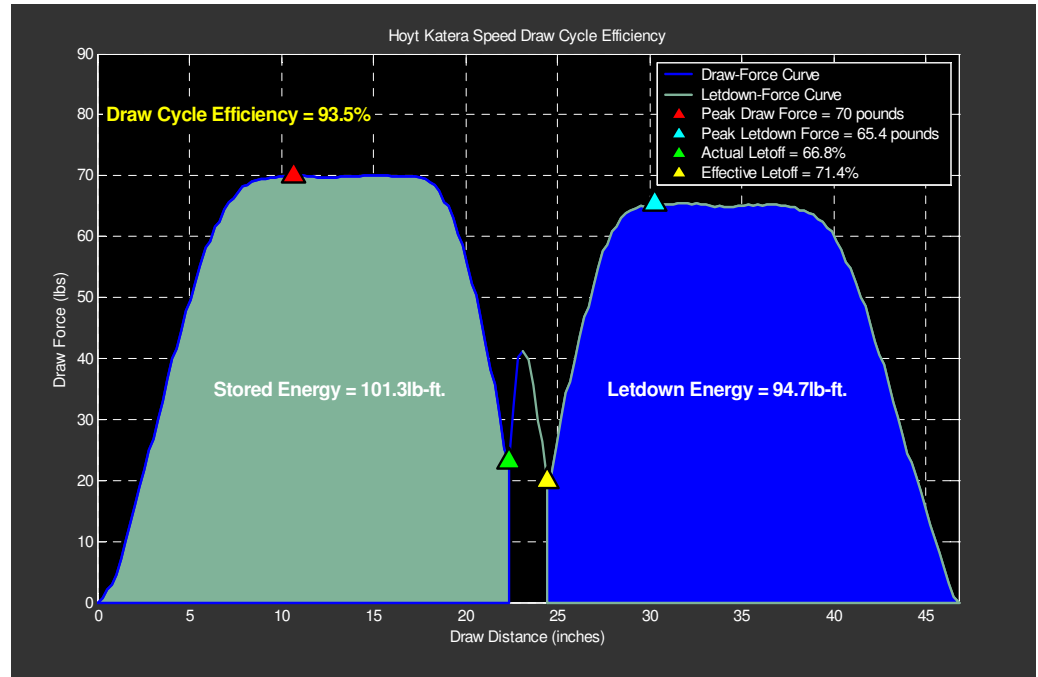
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Hoyt Katera Speed



Introduction:

The tried and true combination of Total Engineering Concept® (aka TEC) riser design and 3/4" laminated split limbs are incorporated into Hoyt's 2008 flagship / speed bow, the Katera. The new Z3 Cam & 1/2, coupled with the Katera's 6 inch brace-height, offers an advertised IBO speed of 330 fps placing the Katera solidly in the speed-bow category. This new cam system stores a great deal of energy, yet somehow maintains an even draw-cycle that never seems to require too much exertion at any given point. Last year's popular addition, the StealthShot®, is also included on the Katera, while RizerShox, AlphaShox and StringShox round out the vibration damping accessories.

The speed Katera sample that was provided to Archery Evolution was measured to have a brace-height of 5 7/8 inches, while the axle-to-axle length was measured to be 33 13/16 inches. The requested 30 inch, 70 pound model was measured straight out of the box to have a 30 1/8 inch draw length and peak draw-weight of 70.9 pounds. At these settings, the Katera achieved an average speed of 328.0 fps with a 350 grain arrow. A slight adjustment to the limb bolts brought the bow into exact test specifications.

A thorough examination of the finish quality showed only minor imperfections in various areas of the riser. Small areas void of the new Realtree® APG® HD camo finish were noticed near the bottom limb pocket, below the grip, and the side of the riser near the site window. Again, these imperfections do not inhibit the performance or shootability of the bow and are only noted from a Quality Control perspective. The machining and anodized finish on the Z3 Cam system appeared to be flawless. The feel of the camo finish on the bow is different than any of the other bows we have tested; it has a grainy texture that is quite appealing to the touch. Tight tolerances along with a rock-solid limb-pocket assembly help to provide consistency from shot to shot.

Some of the features of the Katera include a Stainless Steel stabilizer bushing, an adjustable let-off peg, and pivoting limb pockets. The TEC riser can also act as a carrying handle (in addition to its duties mitigating riser torque), which is a benefit for a hunting application. The grip on this bow is one of our favorites and provides a constant, torque-free contact point for the shooter.

Hoyt Katera

Contact Info: Hoyt

www.hoyt.com

MSRP:	\$849	Draw Length:	24"-30" *
Cams:	Z3 Cam & 1/2	Draw Weight:	40-80 *
Limbs:	3/4" split limb laminate	Brace Height:	6" *
Grip:	Pro-fit Custom grip	Axle to Axle:	33" *
Let-off:	65%, 75% *	Mass Weight:	4.5 lbs. *
String:	Fuse		
Damping:	Alpha Shox, StealthShot®		*Advertised
Finish:	Realtree® APG® HD		

Performance at a Glance (70 lbs, 30"):

Arrow	Speed	K.E.	Momentum
350 Grains	325.2	82.2	16.3
420 Grains	301.2	84.6	18.1
490 Grains	281.0	85.9	19.7
540 Grains	268.5	86.4	20.7

Arrow (Grains):	350	420	490	540
Dynamic Efficiency:	81.1%	83.5%	84.8%	85.3%
Speed Per Inch of PS:	14.5	13.5	12.6	12.0
Noise Output (dBA):	92.6	90.4	88.8	90.1
Total Vibration (G):	221.8	193.2	173.3	173.4



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Detailed Test Results:

Speed / Performance Measurements:

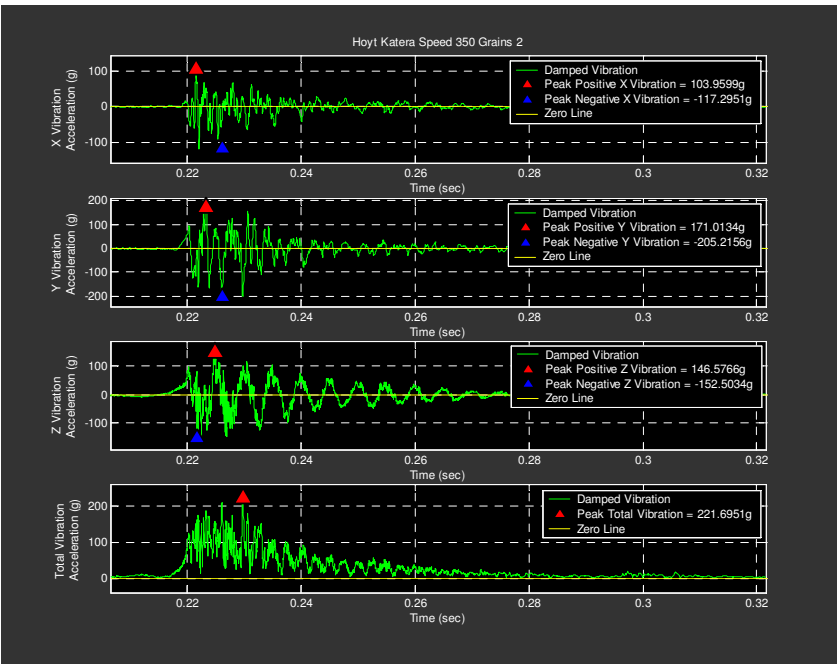
Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of

Power Stroke: 13.1

Dynamic Efficiency: 83.4%

Speed Point Blank - Tuned 30", 70#	Hoyt Katera							
	Brace Height = 5 7/8		Draw Weight = 70.0		Draw Length = 30		Axle-to-Axle = 33 13/16	
	350 Grains		420 Grains		490 Grains		540 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	325.0	324	301.1	300	281.0	280	268.3	267
2	324.9	324	301.2	300	281.1	280	268.4	267
3	325.6	324	301.3	300	281.0	280	268.5	268
4	325.2	324	300.8	300	281.0	280	268.5	268
5	325.3	324	301.4	300	280.5	280	268.7	268
Avg. Speed	325.2	324	301.2	300	281.0	280	268.5	268
Kinetic Energy	82.2	81.6	84.6	83.9	85.9	85.3	86.4	85.9
Momentum	16.3	16.2	18.1	18.0	19.7	19.6	20.7	20.6
Power Stroke	22 3/8							
Speed per inch of Power Stroke	14.5	14.5	13.5	13.4	12.6	12.5	12.0	12.0
Avg. Speed per inch of PS (BFM)	13.1							
Stored Energy	101.3							
Dynamic Efficiency	81.1%	80.5%	83.5%	82.8%	84.8%	84.2%	85.3%	84.8%
Avg. Dynamic Efficiency (BFM)	83.4%							



Vibration Measurements:

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

Positive X-Vibration: 81.4 g

Negative X-Vibration: -80.0 g

Positive Y-Vibration: 160.0 g

Negative Y-Vibration: -160.5 g

Positive Z-Vibration: 110.8 g

Negative Z-Vibration: -123.5 g

Total Vibration: 190.4 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: 108.4 dB

A-Weighted Sound Output: 90.5 dBA

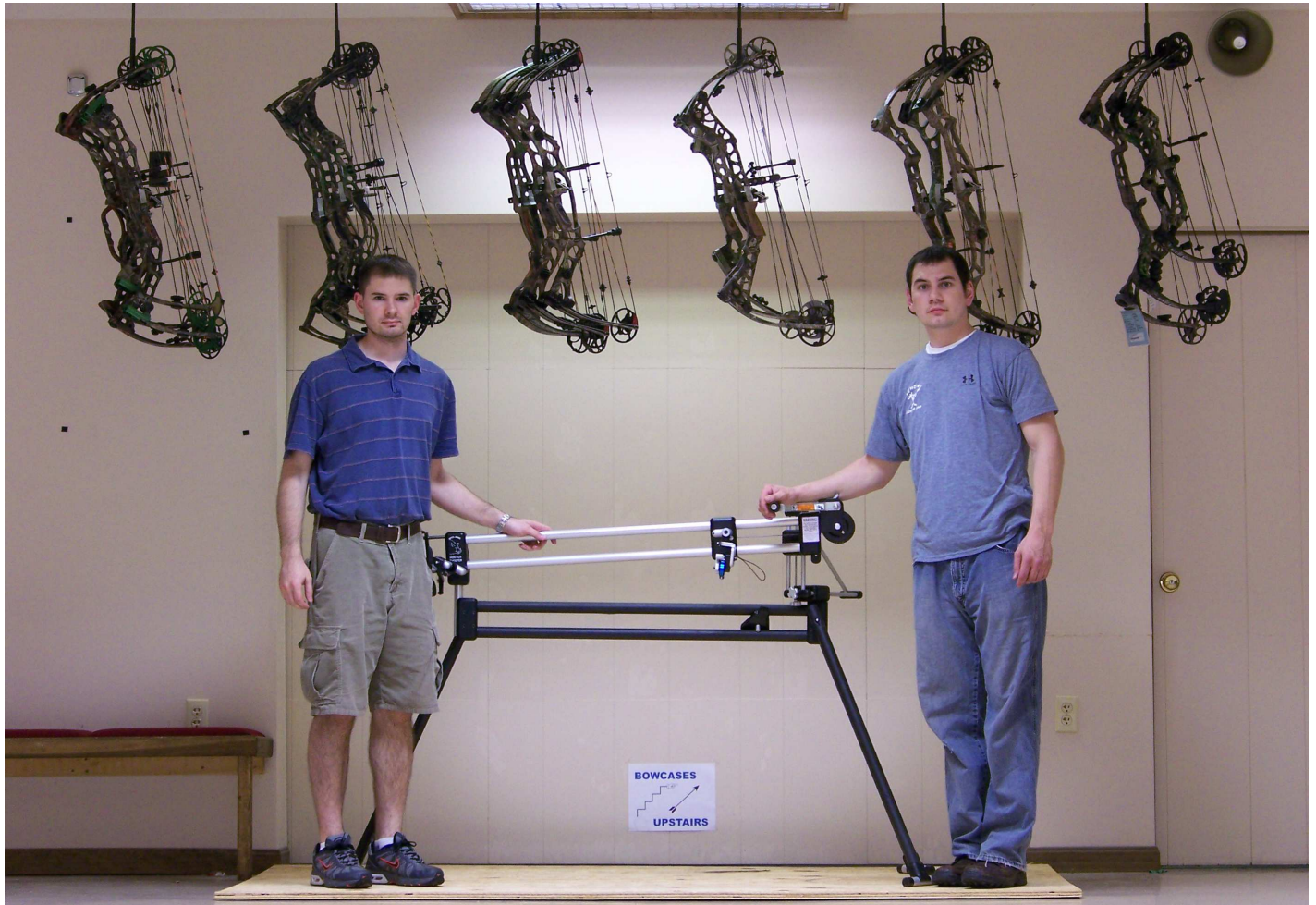
C-Weighted Sound Output: 99.9 dBC

Noise & Vibration	Hoyt Katera																			
	Brace Height = 5 7/8				Draw Weight = 70				Draw Length = 30				Axle to Axle = 33 13/16							
	Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)		Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)		Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)			
Parameter	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains
Grains	350	420	490	540	350	420	490	540	350	420	490	540	350	420	490	540	350	420	490	540
Measurement	Max				Max				Max				Max							
1	111.8	108.0	106.5	106.5	92.9	89.4	88.3	90.2	102.9	99.6	97.9	98.8	102.9	99.6	97.9	98.8	102.9	99.6	97.9	98.8
2	111.2	107.9	106.4	107.0	93.0	89.7	89.4	89.1	102.5	99.6	97.8	98.3	102.5	99.6	97.8	98.3	102.5	99.6	97.8	98.3
3	111.4	109.0	107.0	107.0	92.1	91.2	90.0	89.7	102.8	100.7	98.5	98.8	102.8	100.7	98.5	98.8	102.8	100.7	98.5	98.8
4	110.6	110.0	106.8	107.1	92.5	92.7	88.0	90.5	101.9	101.7	98.1	98.9	101.9	101.7	98.1	98.9	101.9	101.7	98.1	98.9
5	111.3	108.3	107.4	107.6	92.4	90.3	88.8	90.3	102.4	100.0	98.8	99.4	102.4	100.0	98.8	99.4	102.4	100.0	98.8	99.4
Average	111.3	108.5	106.8	107.0	92.6	90.4	88.8	90.1	102.6	100.1	98.2	98.9	102.6	100.1	98.2	98.9	102.6	100.1	98.2	98.9
Total Average Max	108.4				90.5				99.9											



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Jonathan Teater

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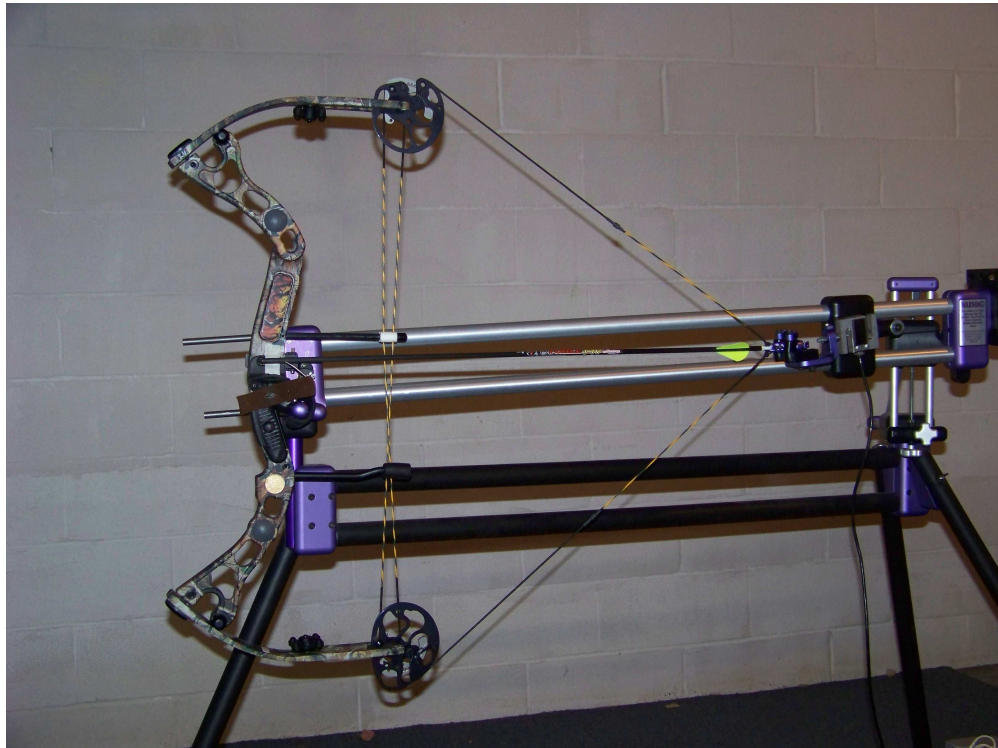
2008 Compound Hunting Bow Evaluation

Martin Firecat Pro-X Test Results



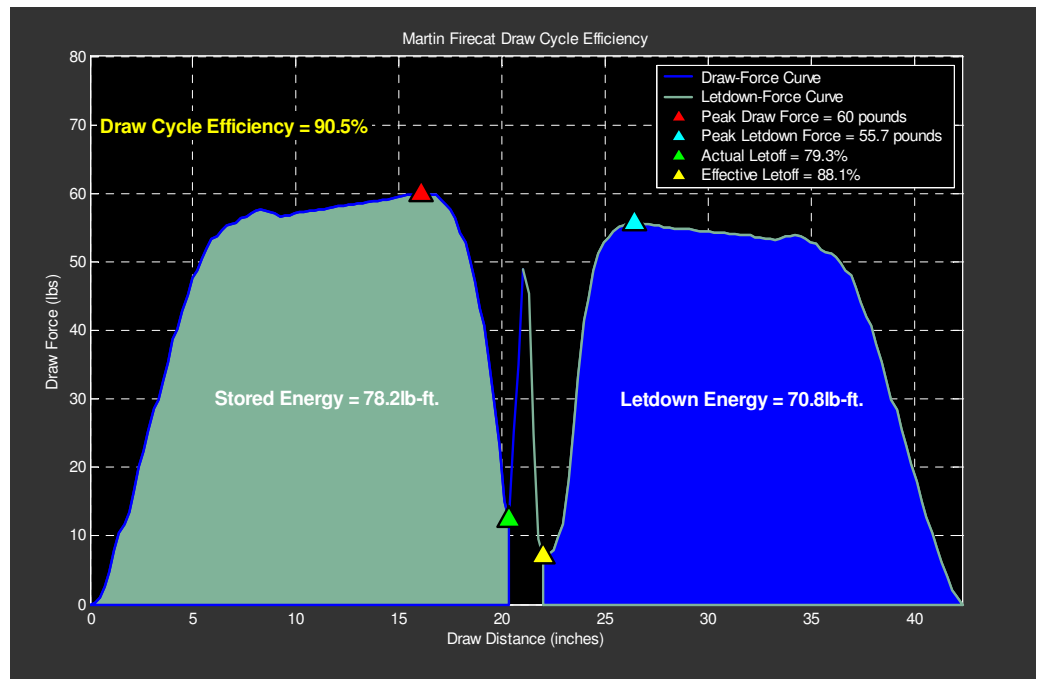
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Martin Firecat Pro-X



Introduction:

The Firecat Pro-X is Martin's flagship offering for 2008. The product design starts with a modular riser and the aggressive new C.A.T Hybrid Duo Cam system. The riser consists of machined aluminum components and damping features such as the V.E.M. silencing arrow shelf, V.E.M. damping modules and Thermal V grip. The addition of the Shock Termination Suppressor helps dampen the string oscillation after the shot. The C.A.T cam system features an integrated module, which allows for quick changes to draw length over a range of 26" to 30". Another major feature of the cam is a draw-stop post, which permits minute draw-length adjustments and a solid wall. Also included is a felt pad that is positioned on the Coreflex bow limb to help cushion the post as the cam rotates to full draw.

The Firecat Pro-X sample that was provided to Archery Evolution for testing was measured to have a brace-height of 6 15/16 inches, while the axle-to-axle length was measured to be 32 3/8 inches. The requested 29 inch, 60 pound model was measured straight out of the box to have a 29 1/2 inch draw length and peak draw-weight of 63.0 pounds. At these settings, the Firecat Pro-X achieved an average speed of 319.4 fps with a 300 grain arrow. A slight adjustment to the integrated module and limb bolts quickly brought the bow into exact specifications.

A thorough examination of the finish quality showed some imperfections in the film-dipped camo finish, the cam anodizing as well as some of the machine-work. Several raised areas and "nicks" were noted on the riser and limb film dipping. Some machining and tooling marks were also noted on both the top and bottom cam, although none of them seem to have impeded performance or caused any undue wear on the string and cable.

Another Martin innovation utilized on the Firecat Pro-X is the Pivoting Roto Limb Cup, which provides effective alignment of the limbs by employing stainless steel connection points to the riser. This limb attachment system features light weight components, helping the Firecat maintain a relatively low final assembly weight. This assembly anchors the limb to the riser while under some fairly substantial forces while drawing the bow. The draw cycle may take some getting used to as there is a sharp drop into the valley and a relatively high let-off, which can take you by surprise. All in all the Firecat Pro-X is a solid offering from one of the industry's oldest manufacturers.

Martin Firecat Pro-X

Contact Info: **Martin Archery**

www.martinarchery.com

MSRP:	\$599	Draw Length:	26"-30" *
Cams:	C.A.T Hybrid Duo Cam	Draw Weight:	60.70 *
Limbs:	Coreflex	Brace Height:	7" *
Grip:	Thermal V Grip	Axle to Axle:	33" *
Let-off:	80% *	Mass Weight:	4.3
String:	Double Helix Elite		
Damping:	V.E.M., STS		*Advertised
Finish:	Realtree® APG®		

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

Arrow	Speed	K.E.	Momentum
300 Grains	303.6	61.4	13.0
360 Grains	280.3	62.8	14.4
420 Grains	261.5	63.8	15.7
540 Grains	233.1	65.1	18.0

Arrow (Grains):	300	360	420	540
Dynamic Efficiency:	78.5%	80.3%	81.6%	83.3%
Speed Per Inch of PS:	14.9	13.8	12.9	11.5
Noise Output (dBA):	87.6	86.2	85.2	81.6
Total Vibration (G):	307.7	288.9	272.6	196.3



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Detailed Test Results:

Speed / Performance Measurements:

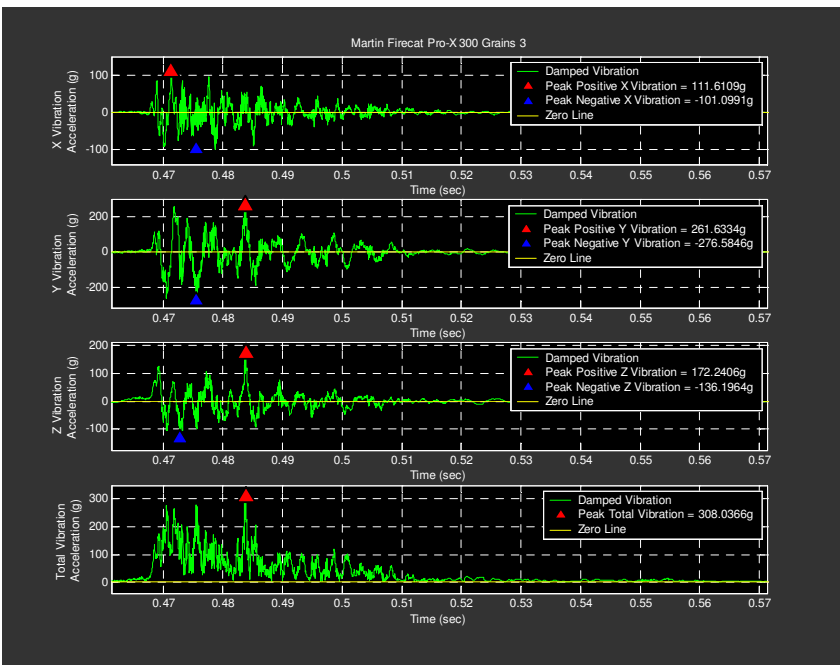
Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of

Power Stroke: 13.3

Dynamic Efficiency: 80.7%

Speed Point Blank - Tuned 29", 60#	Martin Firecat Pro-X							
	Brace Height = 6 15/16		Draw Weight = 60.0		Draw Length = 29		Axle-to-Axle = 32 3/8	
Grains	300 Grains		360 Grains		420 Grains		540 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	304.2	303	280.3	280	261.3	260	233.3	233
2	303.5	303	280.5	280	261.5	261	232.5	232
3	303.6	303	280.2	279	261.5	261	233.2	233
4	303.4	303	280.2	279	261.6	261	232.9	232
5	303.7	303	280.3	280	261.7	261	233.1	233
Avg. Speed	303.6	303	280.3	280	261.5	261	233.1	233
Kinetic Energy	61.4	61.1	62.8	62.5	63.8	63.5	65.1	64.9
Momentum	13.0	13.0	14.4	14.4	15.7	15.7	18.0	17.9
Power Stroke	20 5/16							
Speed per inch of Power Stroke	14.9	14.9	13.8	13.8	12.9	12.8	11.5	11.5
Avg. Speed per inch of PS (BFM)	13.3							
Stored Energy	78.2							
Dynamic Efficiency	78.5%	78.2%	80.3%	79.9%	81.6%	81.2%	83.3%	83.0%
Avg. Dynamic Efficiency (BFM)	80.7%							



Vibration Measurements:

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

Positive X-Vibration: 88.7 g

Negative X-Vibration: -84.3 g

Positive Y-Vibration: 234.8 g

Negative Y-Vibration: -243.1 g

Positive Z-Vibration: 134.5 g

Negative Z-Vibration: -100.2 g

Total Vibration: 266.4 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: 102.8 dB

A-Weighted Sound Output: 85.1 dBA

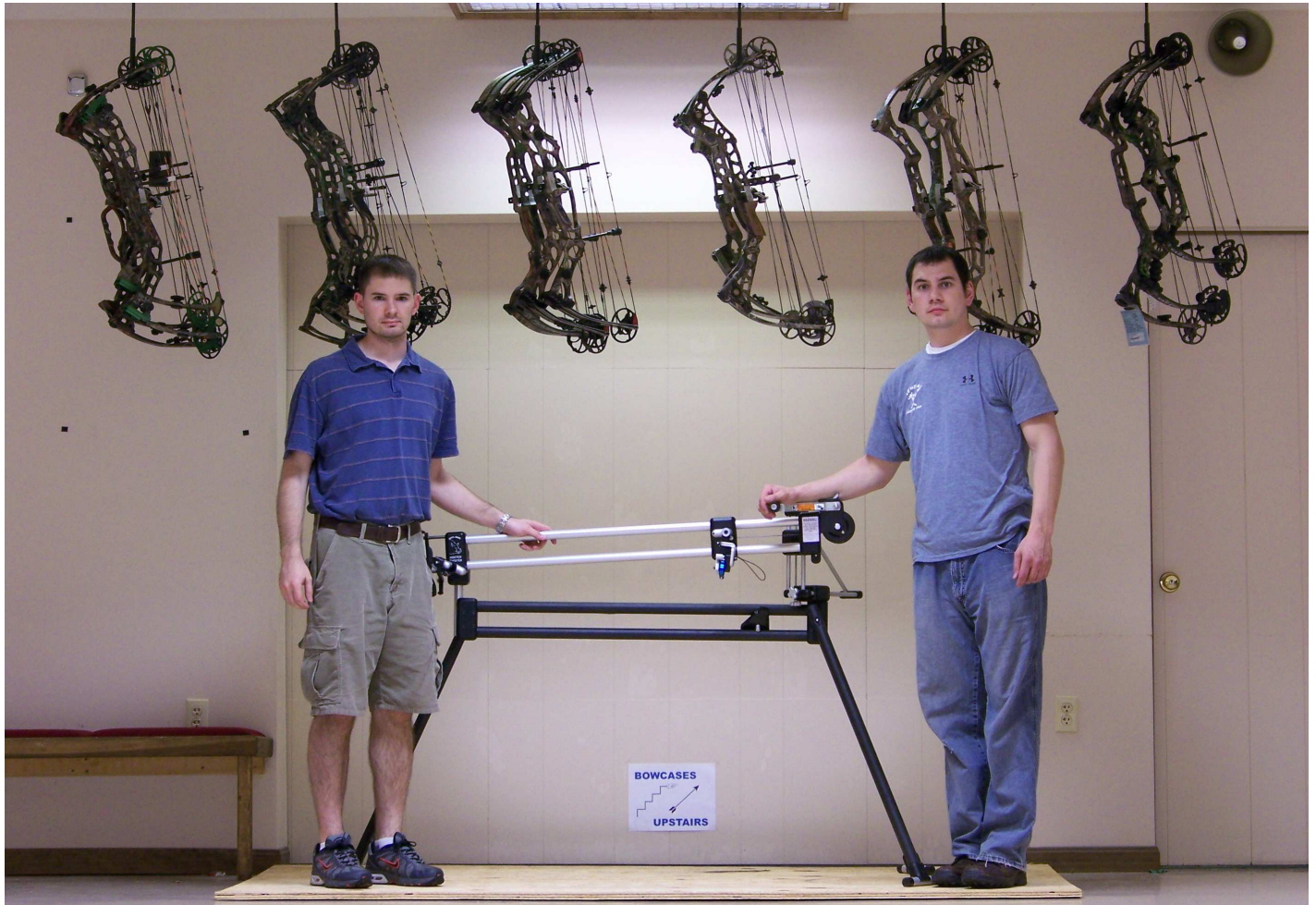
C-Weighted Sound Output: 94.4 dBC

Noise & Vibration	Martin Firecat Pro-X														
	Brace Height = 6 15/16				Draw Weight = 60				Draw Length = 29				Axle to Axle = 32 3/8		
Parameter	Peak Noise Output (dB)				Peak A-Weighted Noise Output (dBA)				Peak C-Weighted Noise Output (dBC)						
Grains	300	360	420	540	300	360	420	540	300	360	420	540			
Measurement	Max				Max				Max						
1	104.3	103.1	103.4	100.9	87.2	85.8	86.7	81.4	96.4	94.3	95.3	93.6			
2	103.7	104.1	102.7	101.0	88.9	87.2	85.3	82.1	95.8	95.8	94.4	93.1			
3	105.0	103.1	102.4	102.3	88.1	85.6	85.1	81.4	97.0	94.6	94.5	93.6			
4	102.8	102.5	102.3	103.0	84.1	87.4	84.8	83.7	93.6	92.8	94.4	93.3			
5	103.1	103.6	102.2	102.1	87.5	84.6	85.2	80.8	95.3	93.1	93.8	93.1			
Average	103.7	103.3	102.5	101.8	87.6	86.2	85.2	81.6	95.8	94.0	94.4	93.4			
Total Average Max	102.8				85.1				94.4						



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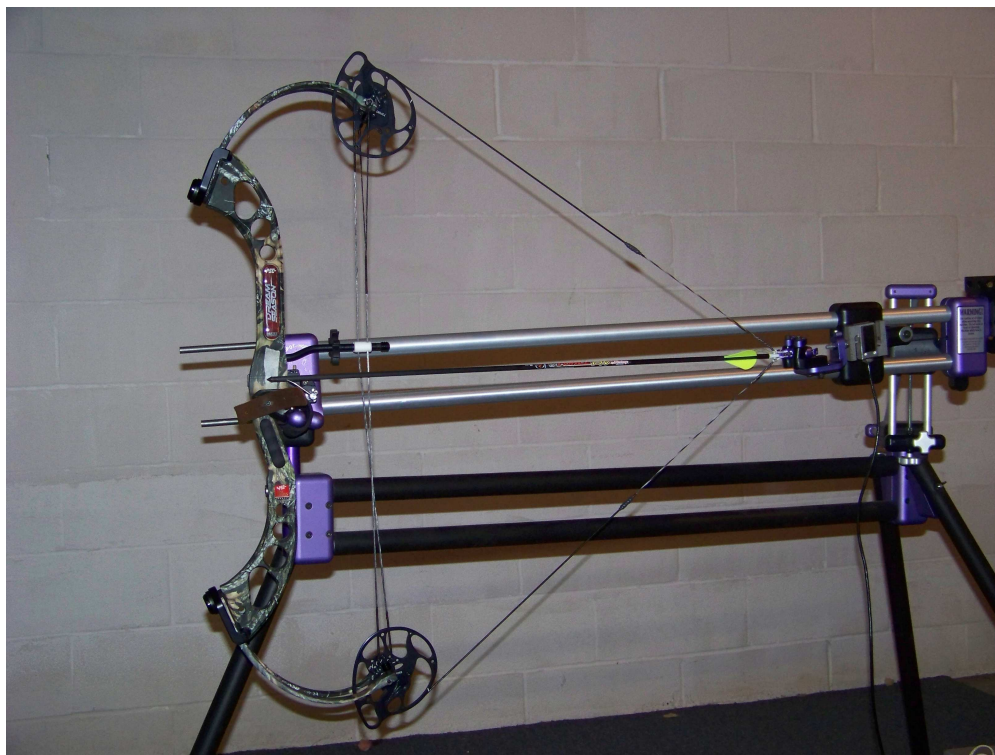
2008 Compound Hunting Bow Evaluation

PSE Dream Season Test Results



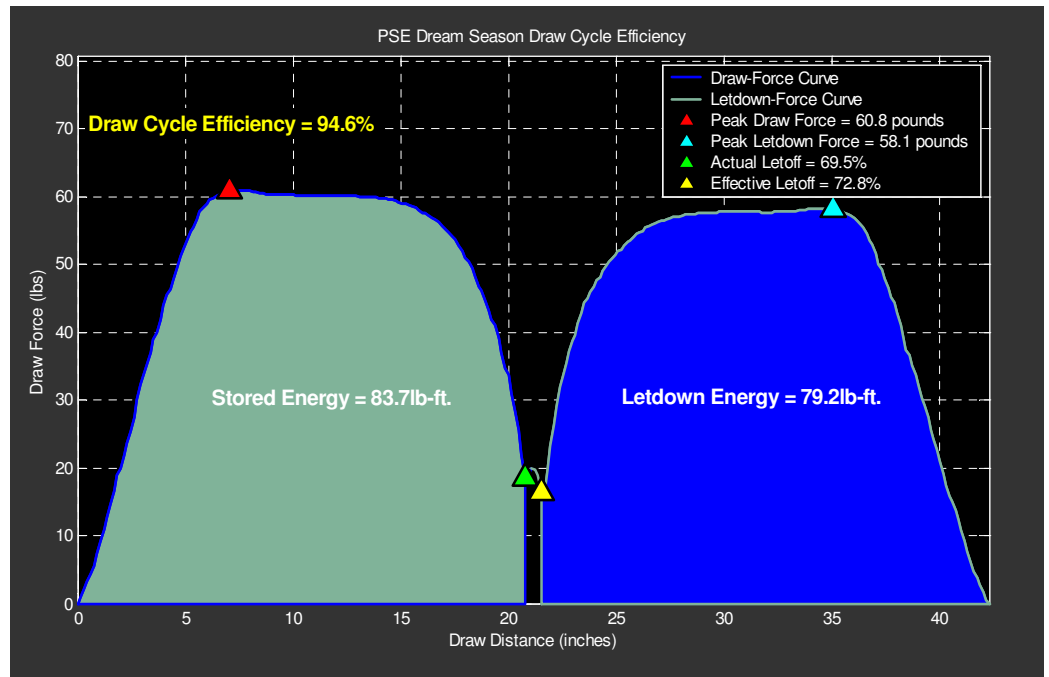
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PSE Dream Season



Introduction:

The Dream Season is PSE's flagship model for 2008. Taking its name from the popular Drury Outdoors reality hunting show, the Dream Season has proven itself in the field. This bow possesses many of the same performance and aesthetic characteristics of its big brother, the X-Force, while offering an increased brace-height and a slightly tamer shooting platform. The revolutionary limb design's extreme pre-load combined with the oversized cams contribute to the aggressive appearance of the Dream Season.

The Dream Season sample that was provided to Archery Evolution was measured to have a brace-height of 6 13/16 inches, while the axle-to-axle length was measured to be 32 25/16 inches. The requested 29 inch, 60 pound model was measured straight out of the box to have a 29 5/16 inch draw length and peak draw-weight of 60.8 pounds. At these settings, the Dream Season achieved an average speed of 322.6 fps with a 350 grain arrow. **Note: Per request from PSE, the Dream Season was tested in its out of box configuration; no adjustments to draw-length or draw-weight were made.**

Only minor imperfections were noted during our thorough examination of the finish quality. A small blemish was noticed on the upper limb pocket, while some machining marks were visible on the lower cam. Slight serving separation on the control cable near the lower cam was also noted. None of these imperfections inhibit the performance of the bow and it is worth mentioning that the film-dip finish was almost impeccable. The finish quality is quite good on this bow.

A couple of the key features that may normally be overlooked are found in the area of the sight window and on the cam. The sight window includes five tapped holes that allow the user to attach the site in 3 separate locations, vertically. This helps accommodate many new sight designs as well as a wide range of shooting styles. The cam offers posts that allow for $\pm 3/8$ " adjustment from the module draw-length as well as an adjustable post that changes let-off between 60% and 70%. These easy to use conveniences are packaged into a high-performance yet stable shooting platform.

PSE X-Force Dream Season

Contact Info: PSE Archery

www.pse-archery.com

MSRP:	\$849.99	Draw Length:	26"-30" *
Cams:	HF Hybrid Cam	Draw Weight:	50 - 80*
Limbs:	12" split limbs	Brace Height:	7" *
Grip:	B.E.S.T. grip	Axle to Axle:	33" *
Let-off:	60%, 70% *	Mass Weight:	4.1 *
String:	BCY 8125		
Damping:	Factory Installed dampeners		*Advertised
Finish:	Mossy Oak Breakup		

Performance at a Glance (60.8 lbs, 29 5/16"):

Arrow	Speed	K.E.	Momentum
300 Grains	322.6	69.3	13.8
360 Grains	297.5	70.8	15.3
420 Grains	277.5	71.8	16.6
540 Grains	247.6	73.5	19.1

Arrow (Grains):	300	360	420	540
Dynamic Efficiency:	82.8%	84.5%	85.8%	87.8%
Speed Per Inch of PS:	15.5	14.3	13.4	11.9
Noise Output (dBA):	89.8	89.8	86.2	82.4
Total Vibration (G):	152.1	156.3	137.8	142.4



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Detailed Test Results:

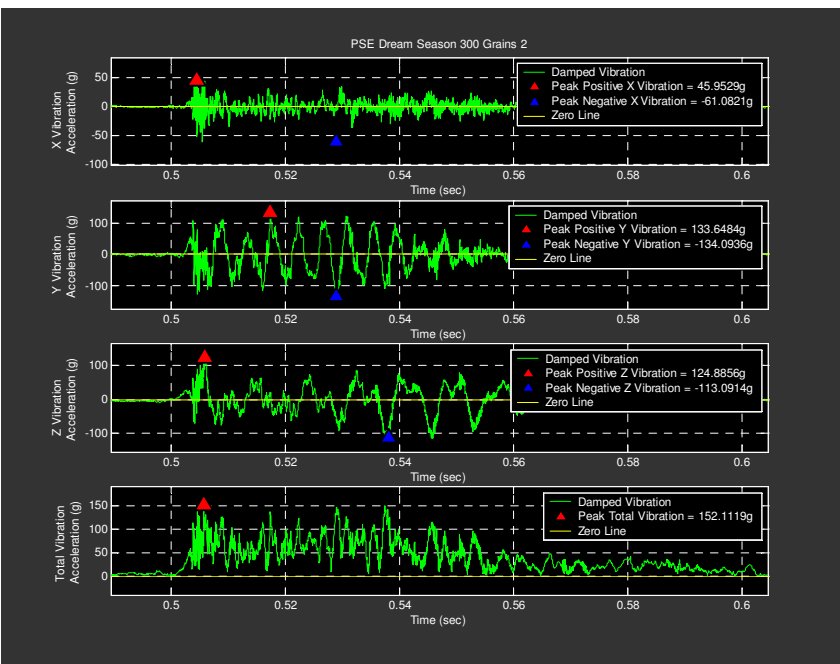
Speed / Performance Measurements:

Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of Power Stroke: 13.8

Dynamic Efficiency: 85.1%

Speed Point Blank - Out of Box	PSE X-Force Dream Season							
	Brace Height = 6 13/16		Draw Weight = 60.8		Draw Length = 29 5/16		Axle-to-Axle = 32 15/16	
Grains	300 Grains		360 Grains		420 Grains		540 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	322.5	322	297.2	297	277.8	277	247.7	247
2	322.8	322	297.7	297	277.0	277	247.5	247
3	322.5	322	297.6	297	277.5	277	247.6	247
4	322.9	322	297.3	297	277.9	277	247.4	247
5	322.4	322	297.8	297	277.1	277	247.6	247
Avg. Speed	322.6	322	297.5	297	277.5	277	247.6	247
Kinetic Energy	69.3	69.1	70.8	70.5	71.8	71.5	73.5	73.1
Momentum	13.8	13.8	15.3	15.3	16.6	16.6	19.1	19.1
Power Stroke	20 3/4							
Speed per inch of Power Stroke	15.5	15.5	14.3	14.3	13.4	13.3	11.9	11.9
Avg. Speed per inch of Power Stroke	13.8							
Stored Energy	83.7							
Dynamic Efficiency	82.8%	82.5%	84.5%	84.2%	85.8%	85.5%	87.8%	87.4%
Avg. Dynamic Efficiency (BFM)	85.1%							



Vibration Measurements:

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

Positive X-Vibration: 44.1 g

Negative X-Vibration: -48.2 g

Positive Y-Vibration: 126.8 g

Negative Y-Vibration: -127.7 g

Positive Z-Vibration: 110.6 g

Negative Z-Vibration: -113.0 g

Total Vibration: 147.1 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: 106.5 dB

A-Weighted Sound Output: 87.0 dBA

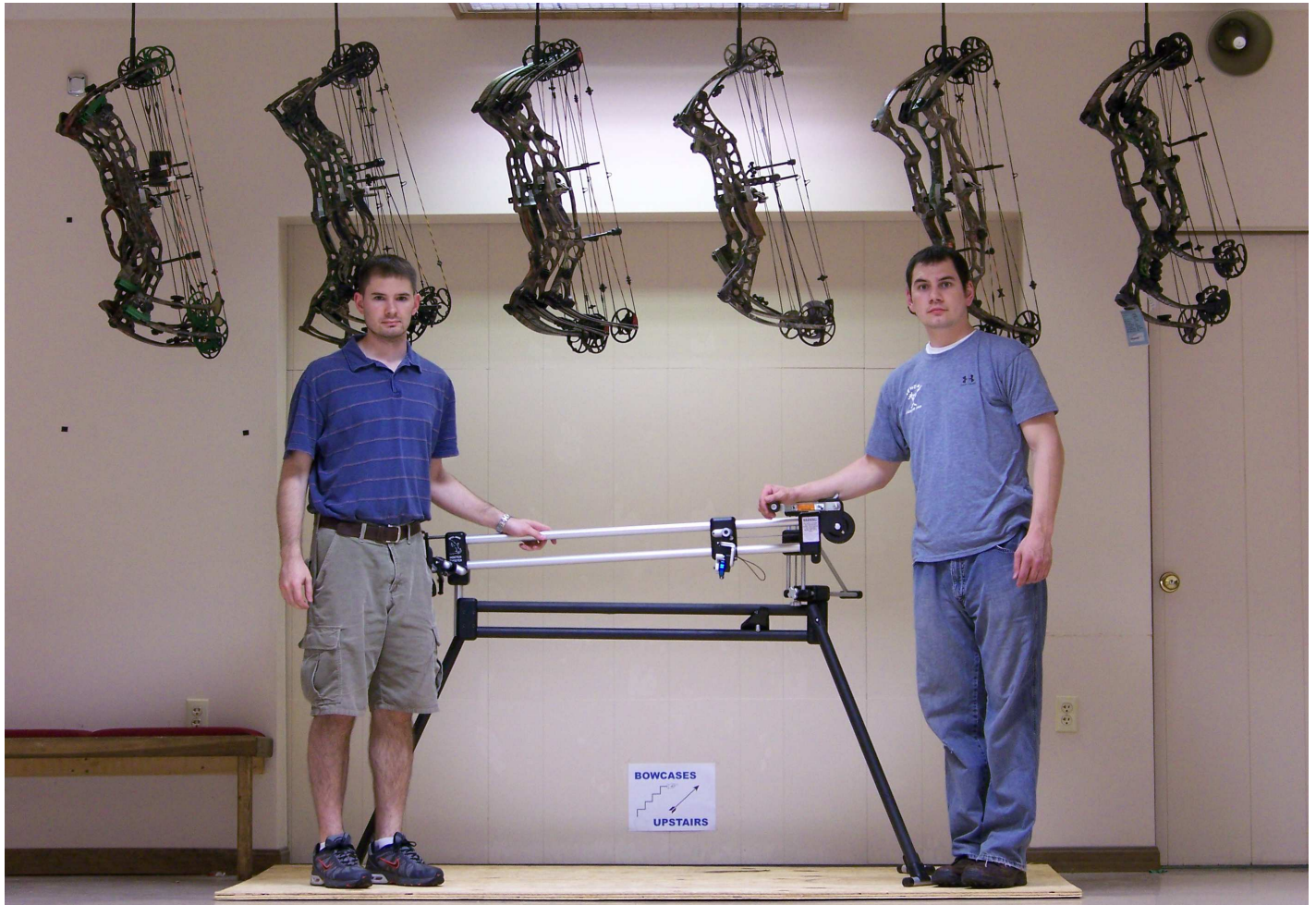
C-Weighted Sound Output: 96.8 dBC

Noise & Vibration	PSE X-Force Dream Season														
	Brace Height = 6 13/16				Draw Weight = 60.8				Draw Length = 29 5/16				Axle to Axle = 32 15/16		
Parameter	Peak Noise Output (dB)				Peak A-Weighted Noise Output (dBA)				Peak C-Weighted Noise Output (dBC)						
Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains	300 Grains	360 Grains	420 Grains	540 Grains			
Measurement	Max				Max				Max						
1	108.8	111.9	104.3	103.2	91.9	88.6	87.0	82.5	100.4	100.6	95.8	93.4			
2	106.3	115.5	102.5	105.2	88.6	98.4	84.9	83.6	97.8	105.2	94.0	95.3			
3	105.4	109.8	103.1	102.4	88.8	89.4	84.7	83.8	96.9	98.9	94.5	92.2			
4	104.2	101.5	106.0	102.3	87.7	84.9	88.5	81.1	95.3	93.1	97.5	91.8			
5	109.3	116.0	104.3	102.1	93.0	91.3	86.7	79.5	101.0	103.4	95.7	91.1			
Average	106.8	112.4	103.9	102.7	89.8	89.8	86.2	82.4	98.4	101.0	95.4	92.5			
Total Average Max	106.5				87.0				96.8						



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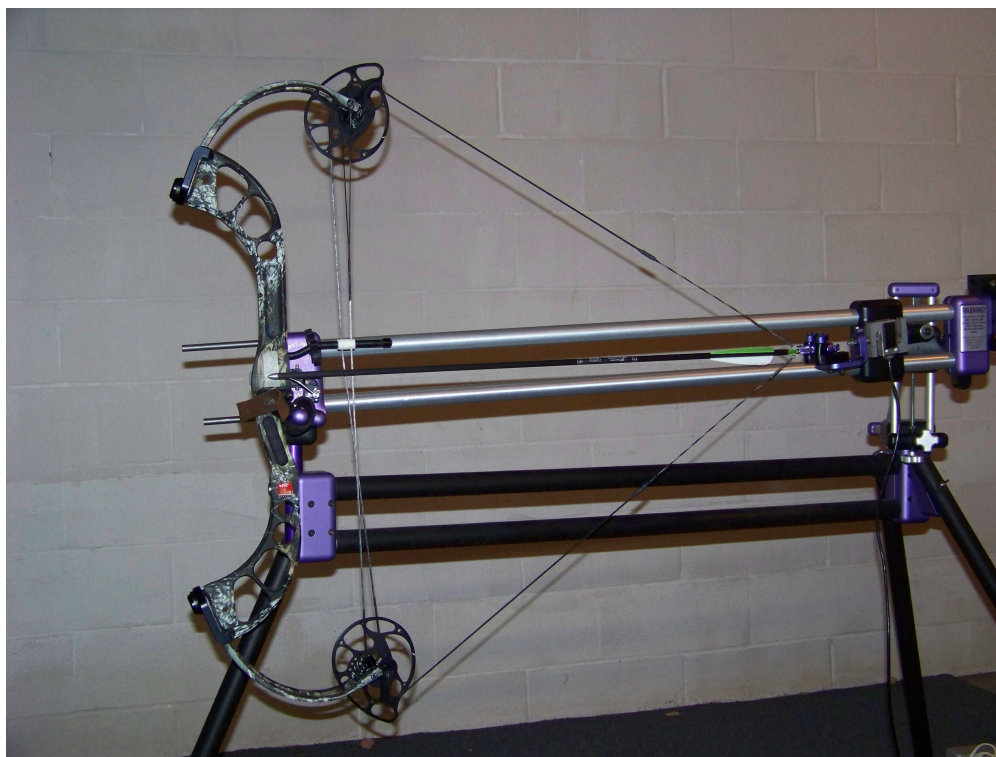
2008 Compound Hunting Bow Evaluation

PSE X-Force HF Test Results

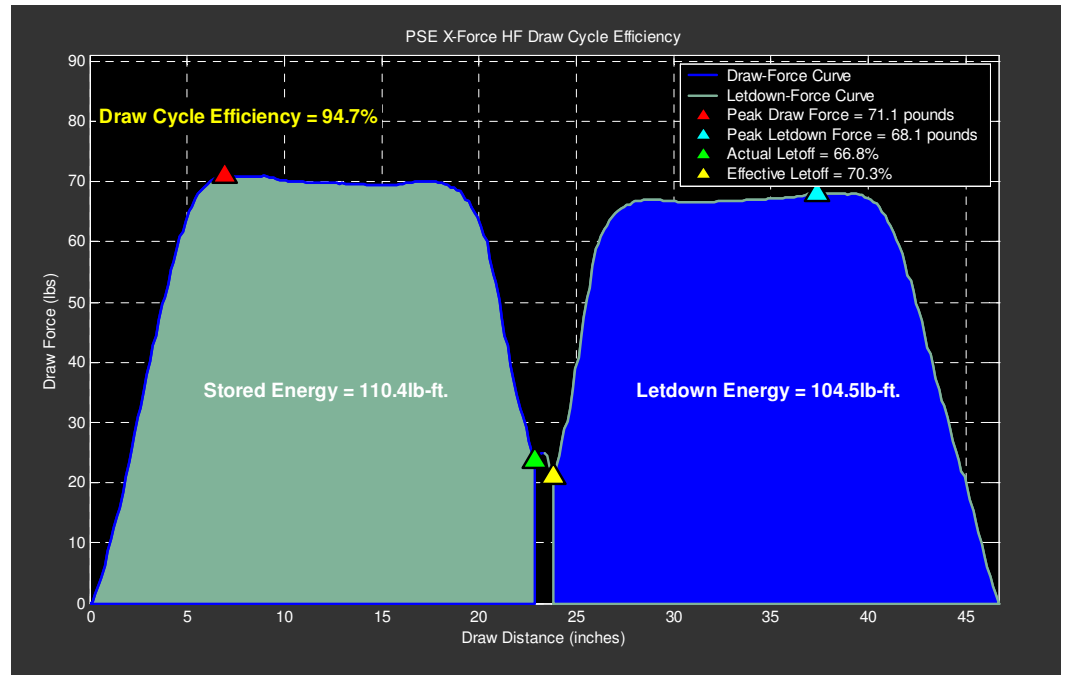


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Introduction:

PSE's speed-bow offering for 2008 is the X-Force HF. Introduced in 2007, the X-Force had a huge impact on the archery marketplace with its radical design and extreme speeds. The sleek riser design and thin, highly pre-loaded limbs have changed the perception of what a compound bow should look like. All of these design parameters, in conjunction with the aggressive HF Hybrid cam system, help to provide advertised IBO speeds in excess of 340 fps.

The X-Force HF sample that was provided to Archery Evolution was measured to have a brace-height of 5 7/8 inches, while the axle-to-axle length was measured to be 33 1/8 inches. The requested 30 inch, 70 pound model was measured straight out of the box to have a 30 1/2 inch draw length and peak draw-weight of 71.1 pounds. At these settings, the X-Force HF achieved an average speed of 341.8 fps with a 350 grain arrow. **Note: Per request from PSE, the X-Force HF was tested in the "out of box" configuration; no adjustments to draw-length or draw-weight were made.**

Only minor imperfections were noted during our thorough examination of the finish quality. These imperfections were focused in the cams, where some tooling / machining marks were noticed. These markings did not impact the performance of the bow and no additional string / cable wear was noted. Other than that, there were no noticeable flaws in the film-dip finish or machine-work. Overall, the finish quality was quite good.

From a visual perspective, the oversized design of the cam appears aggressive. This impression is confirmed upon drawing the bow, which is required to store a significant amount of energy in order to produce the advertised speeds. Surprisingly, the draw-cycle is very fluid without abrupt stacking or drop-offs while still maintaining its performance. Overall, the X-Force combines high arrow speeds in a tame, relatively vibration free shooting package.

PSE X-Force HF

Contact Info: PSE Archery

www.pse-archery.com

MSRP:	\$849.99	Draw Length:	26"-30"*
Cams:	HF Hybrid Cam	Draw Weight:	50 - 80*
Limbs:	12" split limbs	Brace Height:	6"*
Grip:	B.E.S.T. grip	Axle to Axle:	33"*
Let-off:	60%, 70%*	Mass Weight:	4.38
String:	BCY 8125		
Damping:	Factory Installed dampeners		*Advertised
Finish:	Mossy Oak Breakup		

Performance at a Glance (71.1 lbs, 30.5"):

Arrow	Speed	K.E.	Momentum
350 Grains	341.8	90.8	17.1
420 Grains	316.9	93.7	19.0
490 Grains	296.2	95.4	20.7
540 Grains	283.1	96.1	21.8

Arrow (Grains):	350	420	490	540
Dynamic Efficiency:	82.2%	84.8%	86.4%	87.0%
Speed Per Inch of PS:	14.9	13.9	12.9	12.4
Noise Output (dBA):	93.1	88.8	87.2	86.0
Total Vibration (G):	191.1	157.6	139.9	128.7



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Detailed Test Results:

Speed / Performance Measurements:

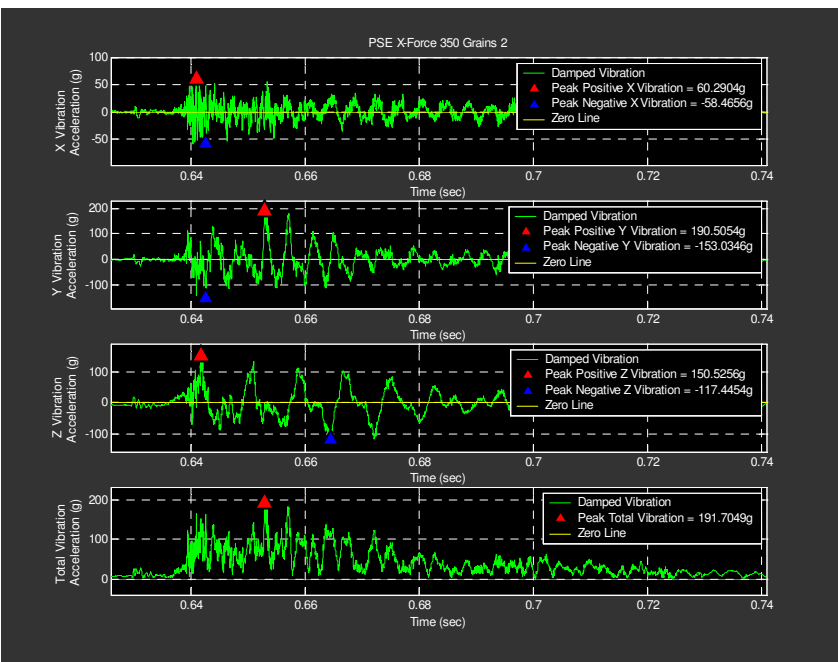
Speed measurements were made with 4 different arrow weights to determine the average speed of the bow per inch of Power Stroke. Utilizing the stored energy obtained from the Force-Draw curve, average dynamic efficiency was calculated.

Speed per inch of

Power Stroke: 13.5

Dynamic Efficiency: 84.9%

Speed Point Blank - Out of Box	PSE X-Force HF							
	Brace Height = 5 7/8		Draw Weight = 71.1		Draw Length = 30 1/2		Axle-to-Axle = 33 1/8	
	350 Grains		420 Grains		490 Grains		540 Grains	
Chronograph	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono	BFM	Pro-Chrono
1	341.6	341	316.6	316	295.9	295	282.8	282
2	342.1	341	316.9	316	296.2	296	283.3	282
3	341.9	341	317.1	316	296.2	295	282.9	283
4	341.5	341	317.2	316	296.4	296	283.2	282
5	342.0	341	316.8	316	296.2	295	283.2	282
Avg. Speed	341.8	341	316.9	316	296.2	295	283.1	282
Kinetic Energy	90.8	90.4	93.7	93.1	95.4	94.9	96.1	95.3
Momentum	17.1	17.1	19.0	19.0	20.7	20.7	21.8	21.8
Speed per inch of Power Stroke	14.9	14.9	13.9	13.8	12.9	12.9	12.4	12.3
Avg. Speed per inch of Power Stroke	13.5							
Stored Energy	110.4							
Dynamic Efficiency	82.2%	81.8%	84.8%	84.3%	86.4%	85.9%	87.0%	86.4%
Avg. Dynamic Efficiency (BFM)	84.9%							



Vibration Measurements:

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

Positive X-Vibration: 59.5 g

Negative X-Vibration: -55.4 g

Positive Y-Vibration: 145.8 g

Negative Y-Vibration: -123.5 g

Positive Z-Vibration: 127.1 g

Negative Z-Vibration: -114.9 g

Total Vibration: 154.3 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: 107.3 dB

A-Weighted Sound Output: 88.8 dBA

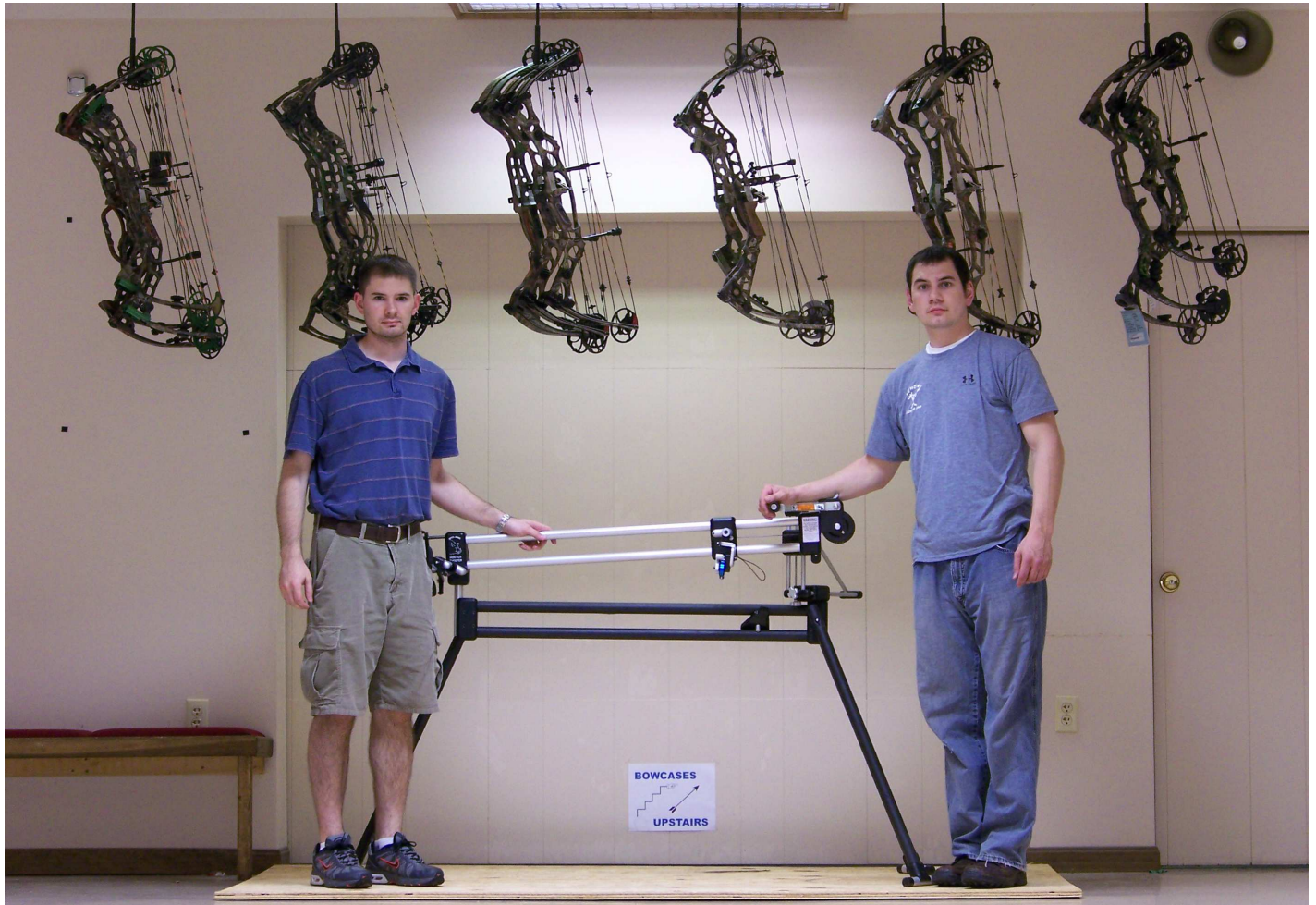
C-Weighted Sound Output: 97.3 dBC

Noise & Vibration	PSE X-Force HF																							
	Brace Height = 5 7/8				Draw Weight = 71.1				Draw Length = 30 1/2				Axle to Axle = 33 1/8											
	Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)		Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)		Peak Noise Output (dB)		Peak A-Weighted Noise Output (dBA)		Peak C-Weighted Noise Output (dBC)							
Grains	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains	350 Grains	420 Grains	490 Grains	540 Grains				
Measurement	Max				Max				Max															
1	111.0	106.8	104.5	107.4	93.4	89.0	87.9	92.2	100.2	97.8	95.9	98.1	111.0	106.8	104.5	107.4	93.4	89.0	87.9	92.2	100.2	97.8	95.9	98.1
2	112.5	106.7	105.3	104.8	92.9	88.4	87.6	82.5	101.1	97.5	96.4	93.7	112.5	106.7	105.3	104.8	92.9	88.4	87.6	82.5	101.1	97.5	96.4	93.7
3	114.5	107.7	105.0	104.8	93.0	88.1	88.6	85.1	103.7	98.5	96.4	94.4	114.5	107.7	105.0	104.8	93.0	88.1	88.6	85.1	103.7	98.5	96.4	94.4
4	112.6	107.8	103.8	104.6	91.5	89.5	85.7	86.0	100.8	98.5	94.5	93.5	112.6	107.8	103.8	104.6	91.5	89.5	85.7	86.0	100.8	98.5	94.5	93.5
5	113.2	105.8	104.2	105.1	93.7	89.0	86.2	86.8	101.9	97.8	94.9	94.3	113.2	105.8	104.2	105.1	93.7	89.0	86.2	86.8	101.9	97.8	94.9	94.3
Average	112.8	107.1	104.6	104.9	93.1	88.8	87.2	86.0	101.3	98.0	95.7	94.1	112.8	107.1	104.6	104.9	93.1	88.8	87.2	86.0	101.3	98.0	95.7	94.1
Total Average Max	107.3				88.8				97.3															



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