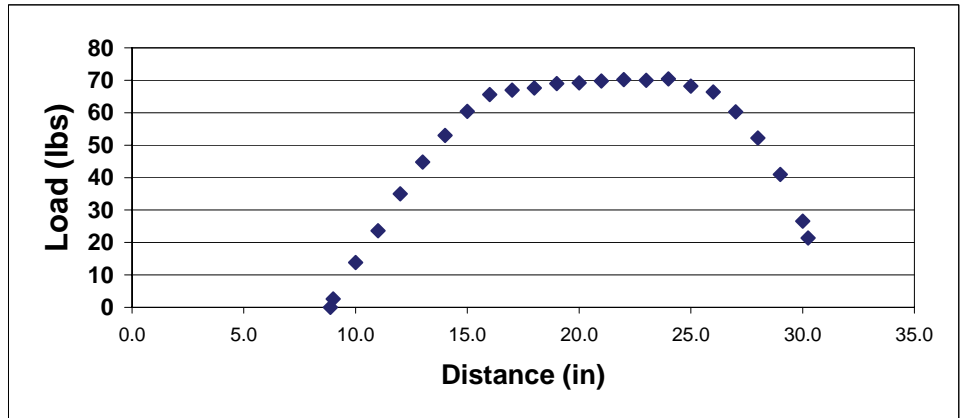




Eliminator from Mission by Mathews

TestID:	Mission Eliminator					
Tested By:	JS					
Date:	11/16/2008	Draw Length:	30.25	in	Speed:	310 ft/sec
Time:	6:41:33 PM	Brace Height:	7.12	in	Power Stroke:	1.78 ft
Units:	Unit = l				Kinetic Energy:	74.705 ft*lbs
Min Load:	21.4	Max Load:	70.4	lbs	Stored Energy:	98.44
Min Pos:	30.25	Max Pos:	24	in	Dynamic Eff.:	0.75887
Pre Test Comm:						
Post Test Comm:						

Distance	Load R1
8.87	0.00
9	2.60
10	13.80
11	23.60
12	35.00
13	44.80
14	53.00
15	60.40
16	65.60
17	67.00
18	67.60
19	69.00
20	69.20
21	69.80
22	70.20
23	70.00
24	70.40
25	68.20
26	66.40
27	60.30
28	52.20
29	41.00
30	26.60
30.25	21.40



Mission by Mathews strives to provide their customers with a product that displays a high performance-to-value ratio. Mission incorporates solid and proven technology on bows built to provide the basics but with the same quality and in the same facilities as the Mathews models.

Mission's Eliminator is a short axle-to-axle rig that features parallel limbs, an aluminum riser, a comfortable grip, silencing package and perimeter weighted single cam – all for a very attractive price tag.

The Basics

Riser: Mission has given their Eliminator a significantly reflexed riser. To determine if a riser is reflexed or deflexed an imaginary line is drawn through both limb pocket pivot points. If the deepest part of the grip is in front of this line then the riser is considered to be deflexed. However, if

the throat of the grip is behind the line (closer to the archer) the bow is considered to be reflexed. All else being equal a deflex riser will have a higher (longer) brace height and for that reason is considered to be more stable and more forgiving of slight shooting form flaws. A reflex riser is considered to be less stable but faster. As with most things in life you have a give and take relationship between the two.

The Eliminator's riser is fashioned from high-grade aluminum through a CNC machining process. The machinists at the Mathews plant start with a forging done to the rough shape. As the heated metal was forged in the dies the aluminum crystals were orientated along the length of the forging, resulting in a higher strength end product. The firm completely machines all surfaces to the final dimensions, including all the work that's done to lighten the riser. This type of machining allows for an intricate and aesthetic overall structure. Mission designer Matt McPherson has formed the riser with many cutouts, through-holes, chamfers, arcs, and steps that give the Eliminator a sharp technical look.

These features also help to reduce overall mass weight.

Seated into the handle is a one-piece grip molded from a rubber composite material. The surface is semi-smooth meaning that it will allow your hand to consistently move into the correct position while providing a slightly "sticky" grip that is comfortable and warm. Some softer rubber grips have the tendency to induce torque by "grabbing" the shooter's hand and restricting independent movement.

A threaded metal stabilizer insert (front only) and straight composite cable guard round out the riser package. Mission film dips the riser and limbs in the Advantage Max-4 camo pattern. Generally, film dipping a component consists of several steps: The first step in this process requires that a sturdy powder coat be applied electrostatically followed by a drying/hardening period in an oven. Next, a piece of film with the Advantage camo pattern printed on it is placed flat on the surface of the water in a stainless steel tank. The film base is dissolved by the water, which leaves only the camo pattern



**The new
Eliminator from
Mission by Mathews.**

lying on the water's surface. The cleaned and powder coated part is lowered through the ink and into the water. The ink pattern wraps around the part creating a seamless and flawless finish. The riser is then removed, rinsed and dried before a hard protective coat is added.

Customer Connection - What is it that we care about when it comes to a riser?

We want it to be strong

CNC machined high-grade aluminum forging

We want it to look good

Chamfers, cutouts, stepped geometry and film dipped Max-4 camo

We want an effective and comfortable grip

Rubber composite grip with a great balance between comfort and function

We want it to perform

Reflexed geometry, longer power stroke = more speed

We want to attach our accessories to it

Contains all of the standard accessory mounting holes

These are the basics that you as a dealer can mentally mark and recall as you are speaking to customers. These are your selling points as it concerns the riser.

Limbs/limb pockets:

Mission maintains most of the technical information concerning their limbs as proprietary. Lets focus on what we do know - Eliminator limbs are constructed from a formulation of fiberglass. Each limb measures approximately 14 inches in length and is straight in form (not recurve) and solid in construction (not split/quad limb sets). Probably one of the most important features of the Eliminator

limbs is their position at full draw, parallel. Limbs that reach a parallel position at full draw distribute the force from release in equal and opposite directions. Basically this causes the leftover energy after propelling the arrow to be cancelled out as the limbs act in opposition to one another. A bow that incorporates this technology has significantly reduced shock, vibration and noise as compared to a similar bow with upright limb sets.

The Eliminator's limb pockets support roughly 3.5 inches of the

limbs and the last 1.25 inch (approximately) forms a "V" shape. Limb ends are given a mirror image of the "V" that fit snugly inside the pockets. The "V" has a natural tendency to create a secure interface lock that produces consistency, precision and repeatability - all critical in the limb-to-riser interface area. Eliminator pockets pivot as the weight is adjusted rather than remain stationary while the limbs move independently. This system (pivoting pocket) is generally considered to be more precise and consistent. Pockets are made of a black composite material.

Customer Connection - What is it that we care about when it comes to limbs and pockets?

We want limbs that will last

Mission and Mathews have a reputation of creating limbs that stand up to all the shots you or I could throw at them. They have been proven over and over again on countless thousands of bows. Mission's testing program is rigorous to say the least.

We want pockets that provide the best chance at an accurate and consistent shot

Although the pockets are not machined aluminum they do incorporate the V-shape that brings inherent consistency and accuracy to the interface. And these pockets pivot.

Eccentrics: A single cam eccentric system, the Eliminator Cam, is advertised to power the new Mission rig to 310 fps as rated using IBO specs. As you will see in the testing data this is exactly what my chronographs recorded. The cam has a perimeter weight that is designed to enhance speed and reduce shock. A unique and useful Quick Change Axle (QCA) does away with the typical e-clip design and uses a simple plastic capture fixture on one side and a pull-knob on the other. Axle removal is extremely simple with this design. The clip removes with finger pressure and has a double-lock setup that keeps it secure even if you should bump it on the treestand or branch. The opposite end of the axle has a pressed on aluminum bezel. With this design, there are no e-clips that can fly off and get lost as you pry them away from the

axle. Great idea Mission! Draw lengths from 24 to 30 inches in 1/2 inch increments are cam specific meaning that to change the draw length you will need a new cam. The Eliminator Cam generates approximately 80 percent letoff. The draw curve generated signifies an aggressive climb with consistent transitions throughout.

Customer Connection – what do we want out of our cam systems?

We want speed – I understand that not everyone is hung up on speed, however, you don't have to be hung up on it to appreciate what it does for distance judging and penetration power.

310 fps IBO – this is a real speed. Your customer can actually expect that their bow will be capable of something very close to this speed right out of the box (IBO specs of course). No special tuning, tied on string nocks, etc needed!

We want a comfortable draw

As explained above the draw cycle is aggressive with consistent transitions. I can pull a great deal of weight as long as there are no sharp transitions that beat up on my shoulder. It is the smooth transitions that lead most to interpret a draw cycle as comfortable

Silencing/Shock reducing features: At the top of this list is the parallel position of the Eliminator's limbs. Few other features or technologies, if any, account for more progress in this area. Mission also outfits their new rig with limb-mounted String Cushions and cable D-Amplifiers.

Customer Connection – what do we want to hear when the bow is shot?

We want to hear nothing, however, we are reasonable people. We will take super silent as an alternative!

The Eliminator is a super quiet rig with little of either shock or vibration to speak of. There is a little more noise with a light arrow as opposed to a heavy arrow, which is par for the course.

Testing

Tests were conducted using the following equipment:

Spot-Hogg Hooter Shooter portable shooting machine

About The Author

Jon E. Silks has a degree in Quality Engineering and works in the area of nondestructive testing technology. His entire career has centered around the testing and evaluation of products. Now 38, he's been bowhunting since age 12. Silks started writing for magazines and websites seven years ago and since then has done more than 400 product reviews. Manufacturers who appreciate his thoroughness and frankness have often asked him to review products that are still in the development stage.

Silk's work has appeared on the web on Bowhunting.net and Bowsite.com and has been published in Petersen's Bowhunting, Bowhunter, Arrow Adventure, and Whitetail Fanatic, along with ArrowTrade. Jon and Jennifer Silks have six children and live in Pennsylvania. Silks can be reached at jon@silks-outdoors.com.



Easton Professional Chronograph with an infrared lighting system
Oehler M35 Chronograph with indoor lighting system
Easton Digital Bow Scale
Last Chance Archery Power Press
Modified Apple Bow Drawing Machine
Chatillon DFIS 200 Digital Force Gauge
Mitutoyo Dial Calipers – 8 inch
Calibrated steel rule – 36 inch
NAP QuikTune 3000 Arrow Rest
Tru Ball Chappy Boss
American Whitetail Large Bag Target

Quality Test: The workmanship on the Eliminator was excellent. I could not find one problem in form, fit, finish or function. Within the past year the production process was changed to a "Lean" manufacturing process. In this environment workers are grouped into small cells, a method used by some of today's largest firms like GE, where I am employed. These small groups are responsible for complete bow assembly and of course take considerable pride in their work. The company expected and experienced an initial reduction in the number of bows produced, but production has risen to acceptable levels. More

importantly, the Mathews and Mission bows are being assembled with more uniform quality than ever before, the company says, something this test sample certainly reflects.

Set up: A 30 inch draw length and 70 pound draw weight has become the industry-accepted specs for IBO ratings. The draw length will be set according to the requirements of ASTM F 1544-04 (30 inches +/- .25 inches) and the draw weight will be set to 70 pounds +/- 1 pound (the +/- 1 pound requirement is also an ASTM F 1544 -04 requirement). Speeds will be measured using a correctly spined 350 grain arrow. This weight comes from the IBO rule, which states that, "Arrows must weigh at least 5 grains per pound of the bow's maximum shooting weight..." As stated earlier Arrow Trade bows will be tested at 70 pounds so: using the I.B.O. rule we would multiply 5 grains x 70 pounds = 350 grains. To summarize our ArrowTrade Standard:

Bow weight: 70 pounds +/- 1 pound

Draw Length will be set to 30 inches (+/- .25 inch) ATA (defined by ASTM F 1544-04)

Arrows will be selected according to the formula set out in the IBO rules

for minimum grains per pound (350 grains)

All arrow velocity ratings must be measured using a shooting machine with mechanical release (We will use the definition of a shooting machine found in ASTM F 1544-04)

A minimum of five shots must be chronographed using an arrow as defined above. The five shots will then be averaged to obtain the final reading. All velocity values for a given arrow must fall within a range of 2 ft/sec (Taken from ASTM F 1544-04).

An appropriate chronograph with a minimum of two gates set no more than 48 inches apart will be used. The initial gate will be set at 36 inches from the front of the bow's handle.

A single brass nock and QuikTune 300 Arrow Rest were attached to the



Shock-reducing features start with a parallel limb design and perimeter weighting on the cam. Noise and vibration are further tamed with the string suppressors and a new type of string silencer called deamplifiers.

bow – nothing more. With the exception of these two items every bow is tested as it would be shipped to the dealer or customer. In other words, if

it has string silencers or other components pre-installed it is tested with them installed. While the 'official' velocity rating for our calculations will

Bigger, Brighter, Lighter, Faster

New Pro Series XL Scope Housing has big 1-5/8 inch view for 3D competitors. Like the original 1-3/8 it incorporates a precision 2nd Axis leveling system. Loosen locking screw and rotate the portion holding the level so shots show the same left-right impact points at all ranges. Easier to use than the 2nd Axis adjustments on scope mounting block. So precise it can compensate for wind drift on outdoor field, target or 3D courses. Instructions show how many marks you should move the rear of the housing to produce the needed change of impact at different ranges.



As versatile as the original Super Ball Hooded Peep but 25 percent lighter on your string for increased arrow speed! The



New Pro Series Peep housing is sculpted to trim weight and boost bow performance. Accepts all current apertures, our pin-sharpening Verifiers and the Clarifiers that sharpen the target faces.



We can match their Mathews®

Feather Lite Hunting Stabilizers combine carbon rods, Sims Navcom™ and replaceable and adjustable weights that allow tuning and optimum balance. Optional Quick Detach System makes it simple to case bows, locks up tight with a partial turn. Stabilizers come 6, 8 or 10 inch in black or these patterns: Realtree® Hardwoods, Hardwoods Green, Mossy Oak® Obsession & the AP & Lost Camo. Match the Mathews Reezem™, Drenalin™, DXT™ or earlier models. Stabilizers weigh just 3.4 to 4.3 ounces.



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be taken with an arrow as defined above, we will also use two other test arrows as reference points. This will be done to bring a bracketed picture of the bow's speed performance to the reader. Test arrows include a light-weight 350 grain arrow, a mid-weight 420 grain arrow and a relatively heavy 540 grain arrow. Before recording speeds with these arrows the bow was first paper tuned with each one. Most every bowhunter/archer will be able to extrapolate their approximate arrow speed in relation to similar set-up parameters and results presented from the three test arrows.

Speed/Velocity Test: Speed was measured with the two chronographs listed above – Easton's model as the primary and the Oehler as a backup/verification unit. Following are the resulting speed ratings for each in feet per second rounded to the nearest whole number:

540 grain arrow
259.1
259.4
258.9
259.5
259.3
Average: 259 fps

420 grain arrow
291.4
291.0
291.1
291.5
291.6
Average: 291 fps

350 grain arrow
310.5
310.8
310.3
310.3
310.0
Average: 310 fps

Potential customers will generally make their bow purchase choice based on several factors including the cost, speed, shot noise, shock/vibration level, grip and the draw cycle.

In our testing for ArrowTrade Magazine we try to give you a feel for how a bow performs in the "subjective" areas mentioned above as well as

the objective areas. You can then focus on the bow's notable subjective points when interacting with your customer. The term "subjective" can basically be translated into "opinion". I will be giving my opinion of this bow's performance in the following subjective categories:

- Shot noise**
- Shock and vibration levels**
- Grip comfort and function**
- Draw cycle "feel"**

As briefly described above the shot noise generated from the Eliminator is minimal. It does have a short lived "rap" sound emitted from the strings/cables when shooting a notably light arrow, however, most of us hunt with somewhat heavier arrows and only a dull thud can be heard when shooting these.

Shock and vibration levels as you might expect from a quiet bow were minimal. A small "bump" could be felt in the bottom of the handle at the shot. Nothing major, just enough to let you know you launched an arrow. I couldn't detect any vibration to speak of.

I liked the rubber composite grip. It is a good mix between comfort and functionality. It allows your hand to move into a consistent position and provides a semi-soft, contact point for the archer. The throat is narrow without going to extremes and no sharp edges took away from the comfort.

The draw cycle is certainly aggressive, which helps provide the speed, however, there are no rough transitions from start to finish giving an overall smooth feel. When making my testing notes I wrote down "very smooth" and underlined "very" several times. Definitely a pleasure to shoot.

Technical Information

(350 grain arrow/
70 pound peak draw weight/30 inch draw length)

Measured Speed: 310 FPS

Kinetic Energy: 74.7 foot-pounds

(This is the energy that actually goes into propelling the arrow. Basically it is the energy that is left over from the stored energy after all of the bow system friction is accounted for.)

Stored Energy: 98.44 foot-pounds

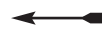
(When you draw the bow you supply power/energy into the limbs. The amount of energy that the limbs can hold is known as the stored energy.)

Efficiency Rating: 75.89 percent

(This is the amount of the stored energy (in percent) that can be successfully transferred into propelling the arrow upon release. The bow design, including limbs, limb pockets, cam systems, and axle types play into the bow's efficiency. An example would be a sealed ball bearing in the idler wheel verses a simple unsealed rod bearing. It takes more energy to rotate the unsealed rod bearing (more friction) verses the sealed ball bearing (less friction) so more of the bow's potential energy is used. The end result is a lower efficiency rating because less stored energy is left over to propel the arrow.)

SE/PF Ratio: 1.4

This is the ratio of stored energy to peak force. In other words what return are you getting for the power you supply.



Mission Eliminator

Manufacturer: Mission by Mathews
Bow model: Eliminator
Draw weights: 40, 50, 60, and 70 pound peak
Draw Lengths: 24 to 30 in .5 inch increments
Axle-to-axle length: 30.25 inches
Brace Height: 7.125 inches
Mass Weight: 4.2 pounds
Let-off option: 80 percent approximately
Eccentrics: Eliminator Single Cam
Strings and cables: Zebra
Tested speed: 310 fps
Available finish: Advantage Max-4
Grip: One-piece composite rubber
Riser: Fully machined aluminum
Limb pockets: Pivoting - composite
Limbs: Solid 14 inches - parallel
Cable Guard: Straight, composite
Warranty: Limited lifetime
MSRP: \$479.00