

# BOW

Tested by Jon E. Silks

# REPORT

## ShadowCat

*by Martin Archery*

Until recently I was not that familiar with the Martin Archery Company and their products. Of all the bows that have come across my evaluation bench in the past four years Martin was probably one of the few well-known brands, if not the only one, that didn't figure in an earlier test. I had heard plenty of talk about them and noticed that they had a strong and loyal following.

Finally it was time to test a Martin for ArrowTrade, the new Shadowcat. While waiting for the bow to arrive I did a little research on the company. Born from an arrow and string making hobby, the Walla Walla, Washington based Martin Archery Company was officially started in 1951 by Gail and Eva Martin.

At the present time Martin employs nearly 110 people and operates out of nearly 110,000 square feet of building space. The Martin's sons, Dan and Terry, now serve as Vice Presidents of their flourishing archery company.

The company that brought us the Dynabow, one of the first bows with a single lower cam, and the Kam-Act bow, one of the first true cam bows, now holds over 24 U.S. Patents and more are pending.

Now, lets move on to the evaluation of the Shadowcat. I was excited to see what the Martin team had produced and what it was about their bows that created such a loyal following for so many years.

### The Basics

**Riser:** The Shadowcat is built around an attractively machined riser that sports multi faceted surfaces for extra detail. Martin machines this riser from a solid block of 6061 aluminum on a CNC mill. The reflex geometry measures just over ½ inch, .580 inch to be exact. The riser is machined with five cutouts/holes and two rear



*Seven vibration dampeners are installed in what would be the weight relief holes of a conventional compound riser. The single cam model tested is powered by the Dyna-Cam.*

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projecting pedestals to house Martin's patented V.E.M.s (Vibration Escape Modules). These modules are constructed of a soft proprietary rubber compound and were placed in the optimum locations to intercept and eliminate vibrations. Of course the riser is also drilled and tapped with all of the standard AMO accessory holes including those for stabilizers, sights and rests. The stabilizer and quiver mounting holes have metal inserts for a clean long lasting connection interface.

There are two insulating rubber grip choices that mount with two 10-32 button head hex screws, one on each side of the handle. One grip is a low-wrist, 17 degree version and the other a medium-wrist, 23 degree configuration. A single set screw holds the straight steel cable guard which is home to the factory speed roller cable slide. The riser is dressed up with Mossy Oak's New Break-Up camo pattern, applied through an Immersion-Graphics Final Finish dipping process. Anodized target

colors are also available in Red Ghost Flame, Blue Ghost Flame, Platinum Ghost Flame and Sunburst.

*Customer Connection:* The feel of the rubber grip is very appealing to many archers. Make sure you get the bow into the customers hands and if needed switch the grip to customize the feel.

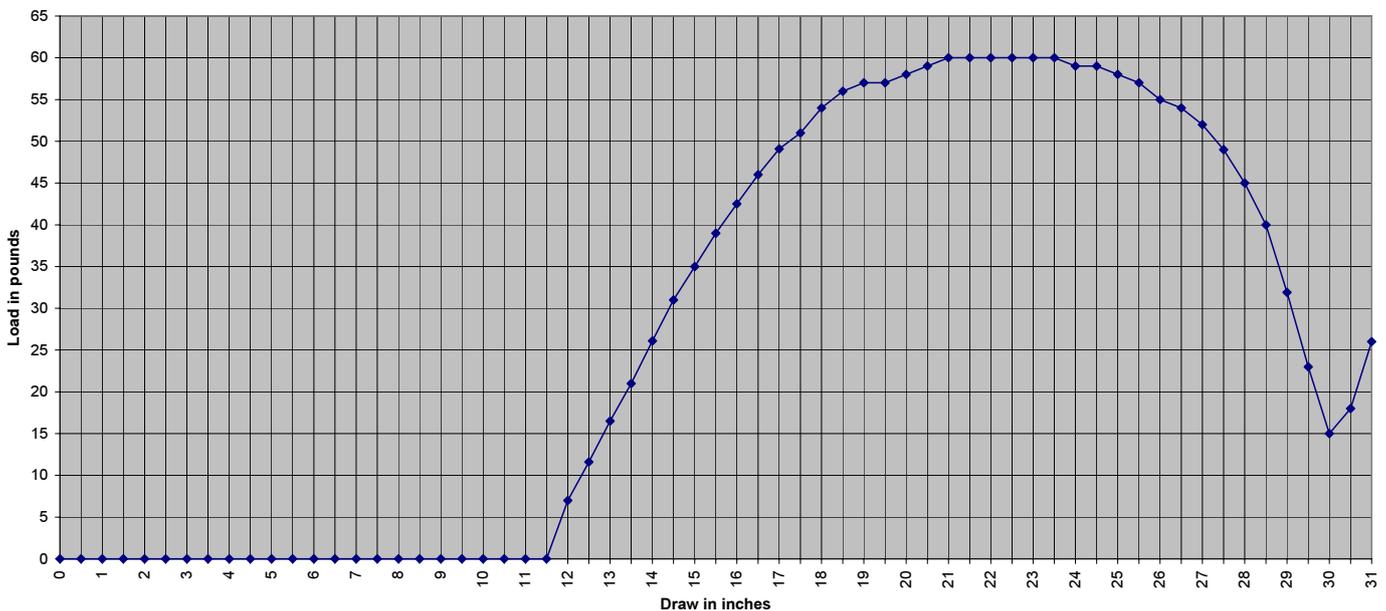
If the customer does not like the top of the bow tipping back in their direction make sure to hook them up with a stabilizer to balance it out.

CNC machined 6061 aluminum is known to be strong and long lasting. Another plus is the machining detail which

***The NitrousX version of the Martin ShadowCat is shown here with a Red Ghost Flame anodized finish. The arrow passes between the cable, eliminating the need for a cable guard. According to Martin, that eliminates the torque on the eccentrics and increases the bow's stability. Most hunters won't want to slow down reloading or risk cutting a cable with Martin-X rigging, but it's become the preferred set-up for top Martin tournament shooters like George Ryals.***



## Force Draw Chart: Martin ShadowCat With Dyna-Cam



***The easy-to-handle force draw curve helped Silks rank the ShadowCat right up there with premium bows from BowTech & Mathews.***

adds to the "look" of the Shadowcat.

The Mossy Oak New Break-Up camo finish is a sharp looking pattern that will turn heads.

Sell the customer on the factory provided vibration dampening modules: there are seven on the riser!

**Limbs/limb pockets:** The Shadowcat's limbs are machined from a unidirectional fiberglass laminate known as Gordon's PowerTuff. Gordon Composite Inc. has been manufacturing bow limb material since the early 50s and has built a world class reputation for strength, precision and durability. Limbs are matched based on deflection numbers to ensure consistency and accuracy.

In the same manner as the riser, the limbs are taken through the Immersion-Graphics Final Finish dipping process to apply Mossy Oak's New Break-Up pattern. It is amazing how this process so evenly and seamlessly coats each part.

Martin aligns each limb to the limb pocket and uses two precision machined stainless steel rockers under each limb to properly position them. Lateral movement tolerances are held extremely tight to maximize consistency and accuracy, producing the same results shot after shot.

The Shadowcat's limb pockets are CNC machined from a solid block of 6061 aluminum and are finished with Mossy Oak's New Break-Up pattern. Martin uses

locating holes and dowel pins to precisely position each limb pocket where many manufacturers use only the limb bolt.

*Customer Connection:* Sell this bow on accuracy – use the matched limbs, limb alignment and limb pocket alignment to make your case.

Gordon Power Tuff limb material is a well known and proven product. The reputation that Gordon brings to the table should be used as a selling point.

**Eccentrics:** The Shadowcat model that I received was equipped with Martin's Dyna-Cam eccentric system. This single cam configuration rides on sealed ball bearings (idler wheel also) and has a module based draw length adjustment feature. Each module provides one inch of adjustment which is supplemented with three pegs on the cam itself for an additional ½ inch range. Bows are shipped with the string on the number two, or middle, peg. The total draw length range with this cam is 27 to 32 inches. The Dyna-Cam is a grey colored CNC machined stainless steel component while the modules are plastic. The modules can be changed without a bow press and are held in place by two small hex screws. The let-off is also determined by the cam and is available in 65 or 75 percent. Speeds range between 295 and 300 fps IBO with this system.

Other eccentric systems available include the Tru-

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Arc hybrid cam and the Nitrous 2-cam. The Tru-Arc, or Advanced Rotational Cam, is a hybrid cam similar to Darton's CPS or the Cam & ½ Hoyt systems. Rotating module adjustments allow for a draw range of 28 to 33 inches, according to Martin's literature. Speeds for this eccentric configuration are approximately 300 fps.

Shadowcat's fastest eccentric, 310 fps IBO, is the Nitrous 2-cam. Again, this is a rotating module adjustment system and produces a draw length range of 24 to 32 inches. Both cams ride on roller bearings.

*Customer Connection:* The choice of three cam systems and a modular draw length adjustment is definitely a plus. Today's consumer likes versatility and choice. This of course also benefits you. Sell it!

Although speed is still important to some customers it is not the "biggie" that it used to be. Martin's Shadowcat is not a rocket but it is still in the speed ballpark (310 fps with the Nitrous cams). Accuracy and lack of noise should be emphasized and used to sell this bow.

**Strings/Cables:** Martin uses Brownell's ULTRA-CAM string material that provides outstanding strength from the thinnest diameter blended bowstring in the industry. Rated at 6,474 ft/lb, with a .013 diameter, this material is made with strength in mind

*Customer Connection:* Brownell string material is well known and widely used for strings and cables.

**Silencing System:** Even at first glance it is obvious that the Martin design team had vibration dampening on their mind. There are seven different V.E.M.s (Vibration Elimination Modules) located at key points along the riser. These patented modules are made from a proprietary soft compound and are molded to fit into the riser cutouts.

*Customer Connection:* Shock free silent shooting has become the crown jewel of archery shooting. Martin has taken a big step in that direction with the V.E.M.s.

### Testing

Since this was the first Martin Bow I had ever evaluated I wanted to be particularly thorough in every respect. When the bow arrived I spent an entire hour doing an overall quality inspection, looking for any blemishes in finish, machining or mechanical function. What I found were smooth, professional looking machined edges with some extra detail, a seamless camo finish and mechanical function that performed without a hitch. A good start!

The Shadowcat was set up with a string nock, N.A.P. QuickTune 3000 arrow rest, 60 lb. pull, and a 30" draw length - the standard rigging for my bow tests. A T.R.U. Ball Pro Diamond release aid was used for all testing. Also, standard to the testing set-up is a 540-grain Easton XX78 Super Slam aluminum shaft.

First up on the agenda was to paper tune the bow to ensure proper arrow flight. The Martin was ready to go after some adjustments to nocking point position and arrow rest spring tension. The Shadowcat was not the easiest bow I have ever tuned but it was certainly manageable and not even close to being considered difficult. We were ready to go.

After only a few shots with the Shadowcat there was already a problem - I was very disappointed that it wasn't here for testing a few months back when I had 10 or 12 other bows in for testing. I am certain the Shadowcat would have ranked high in our 2004 Head to Head bow test. I did at least have a few bows to compare with the Martin, two of which ranked in the top three of the Head to Head. Comparison testing helps me to evaluate more subjective aspects of a bow such as quietness, draw cycle

### About The Author

Jon E. Silks has a degree in Quality Engineering and works in the area of non-destructive technology. His entire career has centered around the testing and evaluation of products. Now 35, he's been bowhunting since age 12.

Silks started writing for magazines and websites three years ago and since then has done more than 175 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 Bowhunting.net and Bowsite.com and has been published in *Petersens Bowhunting*, *Bowhunter*, *Arrow Adventure*, and *Whitetail*

*Fanatic*. Jon and Jennifer Silks have six children and the family moved in 2003 from central Pennsylvania to Ohio. Silks can be reached at (937) 383-8888 or by email at silksoutdoors@core.com





*Last issue we showed you a CSS Encore outfitted with multiple Tunerz sound and vibration dampeners. This issue it's the Martin ShadowCat, which fills the riser lightening holes with sound dampening material. Martin also uses an insulating rubber grip (photo above) that comes in low and medium-wrist positions. The grip on the left has a 17 degree angle, or you can snap that off and set the bow up with the grip on the right, which has the 23 degree grip angle.*



feel, grip feel and shock/vibration.

The first subjective feature to be tested, and the one that is generally at the top of my list for importance, was noise level. Now, I've learned quite a bit about quietness in the last year through talking with sound experts and sitting down range with arrows whizzing by (protected of course). Noise level, expressed in decibels, is not the only factor that comes into play when trying to determine the offensiveness of a sound. Frequency must be taken into account for the test to be valid. That is why it would seem that tests done in the past that focused solely on decibels didn't quite seem right. Even though human ears are not nearly as sensitive as that of most game animals I still believe that we are better at picking up and more accurate at determining the offensiveness of a sound than a decibel machine. Another lesson learned is that the sound of a bow from behind (the shooters position) is worlds apart from the sound down range. The distinction between bows is far less from down range. With all that said we shot five bows with each being evaluated from various positions. I ranked the Shadowcat at the very top

right along with the Bowtech Liberty and Mathews Outback. I was impressed to say the least.

The smoothness of a bow's draw cycle has a significant affect on what I call the "fun factor" and, like noise, is high on my list of desirable attributes. I like to shoot. Shooting more frequently makes me a more accurate archer and improved accuracy makes me a more effective hunter. A bow that has a smooth draw cycle and minimal shock/vibration is fun to shoot and will keep me coming back for more. On the other hand a bow that shoots mach-10 at the expense of these qualities will not appeal to me and would keep me off the practice range. The Shadowcat has a steady draw cycle with no "bumps" along the way until right at the end where it drops off to the let-off. I found the cycle to be pleasant and as expected it scored above average in comparison with the other bows. The Martin definitely has this part of the fun factor formula nailed down.

The shock and vibration felt upon release, or actually the lack thereof, is the second part of the fun factor formula. It is at this point that the Shadowcat fell out to some degree. While it is quiet upon release and a smooth drawing rig it does have a significant kick and buzz when shot. Of course it is being compared to some of the most shock free bows on the market and is still not bad in this category - just not the best.

The balance and feel of a bow is not the biggest factor for me when selecting a bow but it is still of some

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import. During this year's Head to Head test there was one bow that the evaluators were very negatively affected by before they ever made the first shot. It felt like a 2x4 board in the shooters hands. The Shadowcat comes with two interchangeable rubber grips, one a 17 degree low and the other a 23 degree medium wrist. The 23 degree grip suits my style of shooting better and fits nicely into my hand. With the choice of two grips most archers will most likely find one or the other comfortable. Both grips are relatively narrow-throated which is another attribute that many archers prefer.

Maneuverability is directly related to the axle to axle measurement and the mass weight of a bow. The Shadowcat, in the configuration that I received, is 31 3/8 inches, axle to axle and the mass weight is 3 pounds 15 oz. These numbers automatically give the Martin a good score in this category.

Speed was measured using an Oehler Research Inc. M35 Chronograph. A total of 20 shots were taken using a 540 grain arrow to come up with a 233 fps AMO rating. A ProChrono Chronograph backed these numbers up. This of course is not a blistering speed but it will certainly get the job done. Martin advertises the Shadowcat's IBO speed at 300 – 310 fps.

Overall the Shadowcat is one of the top bows that I have had the pleasure to test this year. As mentioned above, it is smooth, quiet and fairly fast. The only down side, and it wasn't a show stopper, was the kick and vibration felt upon release. If Martin can tame that one area they may have the best bow on the market next time around. I particularly like the 23 degree narrow rubber grip which fits my hand well and is super comfortable.

### Test Bow Tech Info:

(540-grain arrow, 60 pound peak

draw weight, using a 30 inch draw)

### Stored Energy: 70.64 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: 83.7 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 type plays a part in 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. For comparison purposes, the last four bows tested for ArrowTrade show 81.27 percent (CSS Encore) 86.6 percent (C.P. Oneida Black Eagle) and 88.12 percent (Mathews Outback),

### Kinetic Energy: 59.11 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.)

### SE/PF Ratio: 1.18

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

## Specifications for ShadowCat with Dyna-Cam

(ShadowCats with other eccentric systems will vary from these specs.)

**Draw weights:** 50, 60 or 70 pounds peak

**Draw Lengths:** 27 to 32 inches

**Axle-to-axle length:** 31.5 inches (31 3/8 inches measured)

**Brace Height:** 9 1/4 inches (9 1/2 inches measured)

**Mass Weight:** 3 pounds 15 ounces

**Let-off option:** 65 or 75 percent

**Eccentrics:** Dyna-Cam

**AMO speed:** not advertised, 229 fps measured

**IBO speed:** 295 – 300 fps advertised

**Available finish:** Mossy Oak's New Break-Up

**Cable:** Brownell Ultra-Cam, 16 strand

**String:** Brownell Ultra-Cam, 16 strand

**Grip:** one-piece insulating rubber. 17 degree low or 23 degree mid-wrist

**Riser:** CNC machined 6061 aluminum - reflex

**Limb pockets:** CNC machined 6061 aluminum

**Limbs:** Straight, Gordon PowerTuff

**Cable Guard:** Straight, steel

**Warranty:** Limited lifetime

**MSRP:** \$599.00

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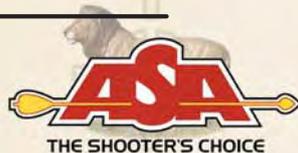
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