

Martin Onza 3

Tested by Jon Silks

Martin celebrates an incredible milestone in 2011 by hitting the 60 year mark! Congratulations Martin Archery. Three generations of the Martin family still have an impact on the company and the products their fans purchase. Each plays their role and together they make a unified team with a common goal. With over 25 patents to their name the Martin Archery crew has made a positive and significant difference in our industry.

This year Martin introduces the Onza 3. The new rig is loaded with both new and tried-and-true features and designs including an all new String Oscillation Suppressor, bridged reflex riser, Torque Reducing Guard cable containment system, Quick-Lock stabilizer mount, HammerHead string and cables, Vortex VEM dampers, Nitro 2.0 cams and much more.

Personalized Performance

The Onza 3 is powered by Martin's Nitro Cam System, which has been designed with excellent adjustability in terms of draw length and letoff. Draw lengths between 27.5 and 30.5 inches in half inch increments can be

selected on a single rotating module by simply removing a couple screws, rotating the module to the desired position and replacing the screws. No bow press is required to make this change. The module is clearly marked for each position so there is no confusion about placement. The bottom cam is home to an adjustable draw stop that can be used to customize the feel of the back wall and fine-tune the letoff. Martin advertises the letoff at 80 percent with adjustments downward.

Each Nitro 2.0 Hybrid Pro Cam is CNC machined from aluminum and rides on heat treated stainless steel axles and press fit sealed speed bearings (ball type). While Martin designates their Nitro as a hybrid cam system I would classify it differently, as it does not meet the definition of a hybrid as far as I understand it. Because there are naming issues, etc. with certain cam systems lets just call this a modified two cam configuration. In this system there is an evenly placed string – by that I mean that there is an equal length of string above and below the center of the bow. This is important as any mechanical seating or stretching of the string will be evenly distributed and cause less headaches. The cables in this system are each directly



The Onza's Nitro Cam System produces good speeds and offers excellent adjustability. A rotating module allows the archer to choose draw lengths from 27.5 and 30.5 inches in half inch increments and the adjustable draw stop will change the letoff and can be fine tuned to personalize the feel of the valley.

Bow Specifications

Manufacturer:	Martin Archery	Finish	Next G1 + Options
Model:	Onza 3	Grip	Vortex Leather-Back
Website:	www.martinarchery.com	Riser	Bridged, Reflex
Draw Weights	50, 60 and 70 lb peak	Limb Pockets	Roto Cup
Draw Lengths	27.5 to 30.5" with half sizes	Limbs	PowerTough, Gordon
Axle-to-axle length	33.25"	Cable Guard	Torque Reduction Guard
Brace Height	7.25"	Warranty	Ten Year Full - string/cables
Mass Weight	4.0 lbs	MSRP	\$649.99
Let-off	80 percent adjustable down		
Advertised IBO	330 - 340 fps		
Eccentrics	Nitro Cam		
Strings/Cables	HammerHead, BCY		

ted to both cams creating a self-correcting mechanism. Both cams function as a single component, eliminating or at least reducing, the effects of any imbalances in the system. Martin advertises the IBO speed of the Onza 3 at 330 to 340 fps.

This is a good place to talk about a feature that Martin advertises to reduce cam lean – the Torque Reducing Guard (TRG) cable containment system. Rather than run on rollers or through a cable slide that moves along a rod, this system has two angled slots that allow the cables to



Each ArrowTrade test bow is set up and initially tuned on a bow vise using RS arrow and string levels. This photo also shows the decorative elements on the riser and strut that commemorate this company's 60th anniversary.

Test Equipment	
Last Chance Archery Power Press	Competition Electronics ProChrono/indoor lighting system
Spot-Hogg Hooter Shooter portable shooting machine	Easton Professional Chronograph/infrared lighting system
G5 Bow Drawing Machine	Easton Digital Bow Scale
Calibrated Mitutoyo Dial Calipers – 8"	Calibrated steel rule – 36"
Calibrated Chatillon DFIS 200 Digital Force Gauge	Easton Archery Arrows
NAP QuikTune 3000 Arrow Rest	Tru Ball Chappy Boss Mechanical Release
American Whitetail Large Bag Target	Silks Outdoors Bow Analysis Program

Test Parameters

- Bow weight: 70 pounds +/- 0.1 pounds
- Draw Length will be set to 30" (+ 0.25" -0.00")
- Properly spined arrows will be selected according to the formula set out in the I.B.O. rules for minimum grains per pound (350 grains)
- All arrow velocity ratings must be measured using a shooting machine with mechanical release
- 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 result. All velocity values for a given arrow must fall within a range of 2 ft/sec
- A chronograph with a minimum of two gates set no more than 48" apart will be used. The initial gate will be set at 36" from the front of the bow's handle.

Test Method

- Just to make sure the bow is at least in the right ballpark the draw weight and draw length are roughly verified with Easton's Hand Held Bow Weight Scale and a simple draw length arrow correlated to a mark on the shelf adjacent to the deepest part of the grip. This saves me a lot of time if the bow is not close to the right draw length or draw weight.
- Brace height is tested using calibrated dial calipers
- Install New Archery Products Quik Tune 3000 Arrow Rest
- Set nock point
- Verify draw weight using a calibrated digital force gauge backed up with the Easton Bow Force Mapper (BFM) System handheld unit
- Verify draw length using the Silks Outdoors Bow Analysis Program, which is a combination of a custom software package, G5 Bow Drawing Machine, Chatillon digital force gauge, calibrated 36" steel rule and trammel point
- Mark cams at full draw
- Paper tune by hand
- Set bow on Spot Hogg's Hooter Shooter portable shooting machine – draw to cam marks and fire through two chronographs – ProChrono and Easton. Both chronographs are equipped with indoor lighting kits.
- Speed is recorded from the average of 5 shots.

move with the draw cycle and shot. Of course the TRG is designed to safely contain the cables, however, beyond that they allow freedom of movement. As the bow is drawn to full draw the TRG allows the cables to move toward the centerline of the bow, which is advertised to reduce torque and cam lean. When the string is released for the shot the angled fixture directs the responding cables out and away from the passing arrow. The molded TRG bracket is attached to a carbon rod that is mounted to the riser.

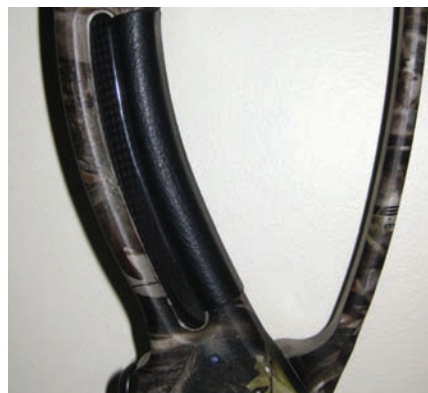
ArrowTrade Talking Points (Notable bow features to bring up during the selling process)

- A cam system that takes care of imbalances on its own has to be a big bonus. I do not want to worry about my bow losing efficiency during the season. I just want to hunt. The Nitro 2.0 makes that possible.
- For those of us that like to tinker around with our equipment the adjustability is welcome.
- The TRG is just one of the Onza 3 features that makes it super steady on the target.



The Onza 3 is home to Martin's unique Quick-Lock Stabilizer mounting system. A few turns is all it takes to loosen the stabilizer and remove the entire unit from the bow for easier travel.

PHOTO BELOW: The Onza 3 sports a leather-backed Vortex grip which insulates the shooter's hand from direct metal contact for a warmer handle on cold days afield. The remainder of the grip is angled and rounded to offer comfort and functionality.



Strength Beyond Parallel

Martin outfits the new Onza 3 with PowerTough limbs. Made with proven Gordon Glass material, the new-for-2011 limb design reaches a past parallel position at full draw. It is a well documented fact that parallel and past parallel limbs offer benefits in terms of shock, vibration and noise reduction. You would be hard pressed to find a bow on any pro shop's rack that does not showcase this feature. Each solid limb (not split/quad) measures 13 inches in length and is waterjet cut to exacting tolerances. Limb sets are selected based on matching deflection values. A deflection value is a measurement of the material's response to a known applied load. Limbs are offered in peak weights of 50, 60, and 70 pounds each with 15 pounds of weight range adjustment (down). Hunting bow limbs are film dipped in Next G1 camo while target bow limbs are black carbon weave film dipped. Martin also adds their proprietary coating to the limbs for increased durability.

The Onza 3 is home to the minimal material Roto Cup System, which has been improved with even tighter tolerances than before ensuring perfect alignment of the limbs and riser. You can hardly call this a limb pocket since there is no pocket-type feature. It would be more accurate to call it a limb containment or alignment system. The limb bolt passes through a large diameter counter sunk plate, then a washer, the end of the limb, a small section of the riser and finally is threaded into a rotating barrel nut. Each end of the riser flares out to create a broad base platform for the limb containment system. One end houses the barrel nut as explained above and the other end is machined into a dished out semi-circular structural feature that cradles Martin's Roto Cup component. This "cup" is aligned to the riser by, and pivots around, a hidden precision polished steel pin that is pressed into the riser. Two more polished steel pins then align the Roto Cup to the non-hinged portion of the limb.

ArrowTrade Talking Points

- Gordon Glass material has been proven thousands of times over – a great choice for limb material.
- You have to like the Roto Cup – it gets the job done without bulk.

Taming the Shot

Martin is focused on improving an archer's shooting experience through designs and features that reduce the vibration and shock at the shot, which in turn reduces noise. One of those features, the String Oscillation Suppressor (SOS), is mounted along with the Torque Reduction Guard (TRG), which we talked about in another section. The two are coupled together and mounted on a carbon rod that is attached to the bridged riser. The SOS contacts the string near its mid point with a soft rubber-like module that is suspended by two posts in a U-shaped fixture. The design allows the module to move inside the fixture, absorbing the initial blow of the string without the blunt stop common to most



Martin showcases their new String Oscillation Suppressor (SOS) and Torque Reduction Guard (TRG) cable containment system on the Onza 3. The SOS tames string vibration to reduce overall noise while the TRG allows the cables to move freely toward the center-line of the bow at full draw, reducing torque.

rear-mounted string suppressing systems. Following the first strike of the string the SOS moves/flows with increasing resistance quickly reducing oscillation. The position of the SOS near the center of the bow equalizes the length of string above and below the contact point. According to Martin this positioning reduces oscillation up to five times faster than some systems that catch the string low on the bow and leave a longer, more difficult to control, section of the string above the contact point. Martin also stresses that their new design does not have any ill effects on tuning or arrow flight.

Joining Martin's SOS in the assault on vibration, shock and noise are the company's Vortex Vibration Escape Modules (V.E.M.). These modules are seated within a special structure on both ends of the riser. Each soft-bodied co-polymer module is coupled with a bullet-shaped solid mass weight suspended in the center. Together they look like the intake of a jet engine. Vibration introduced during the shot is counteracted, as the weight moves within the module.

Further reducing shock, vibration and noise are the PowerTough limbs, which are positioned beyond parallel at full draw. Limbs and limb pockets will be covered in another section.

An advertisement for the Predators View Peep Sight. It features a black and white photograph of a peep sight mounted on a bow. The text "PREDATORS VIEW PEEP SIGHT" is prominently displayed in a bold, stylized font. Below the image, there is a description of the product's unique features and contact information.

PREDATORS VIEW PEEP SIGHT

Predators View Peep Sight
Unique patent pending shape allows your eye to focus naturally on your pins and target quicker and clearer, due to the displacement of light diffraction.

717-433-7126 www.predatorsviewpeepsight.com

ArrowTrade Talking Points

- Making a bow the quietest it can be should be the focus of any design engineer. Most of us are bowhunters and a quiet shot is one of the qualities we look for in a bow. Martin goes all out in their fight against noise.

Rounding Out the Package

The Onza's riser is bridged to create a stiffer platform. This type of riser is a key component in lengthening the life of the product, reducing vibration through the grip and increasing accuracy. The riser is available in Next G1, Bonz Camo, Skulz Camo, red and black finishes. Another Onza 3 feature is the Vortex leather-backed grip. The rear of the grip where the heel of the shooter's hand comes into contact with the riser is covered with a leather panel. This provides a measure of insulation while at the same time allows the hand to repeatedly move into the proper position. Directly in front of the leather, halfway through the depth of the handle, is a groove that runs the length of the grip (top to bottom) with an insert that is made to look like carbon fiber. The remainder of the grip consists of a rounded section of the aluminum handle. Martin added their Quick-Lock integrated stabilizer mounting system to the front and back of the Onza 3 riser. Once your stabilizer is attached a few quick turns loosens the unit and the entire fixture can be removed by sliding it laterally out of the riser. Finally, you don't have to worry about game-spooking noise if your arrow falls off the rest – Martin's Silent Hunter

Arrow Shelf has you covered.



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Jim Fletcher Archery
P.O. Box 218
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760/379-2589
fletcherarchery.com

Testing

A single brassnock and QuikTune 300 Arrow Rest were attached to the bow – nothing more. With the exception of these two items every bow is tested as it



Martin's Roto Cup uses minimal material to align the limb and riser at this critical interface. A Vortex Vibration Escape Module situated in a special structure on each end of the riser tames noise-causing vibration as it travels through the riser.

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 be taken with an arrow as defined below, 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 lightweight 350 grain arrow, a mid-weight 425 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 setup parameters and results presented from the three test arrows.

The speed result from the 350-grain arrow is entered into the Silks Outdoors Bow Analysis Program, which then automatically calculates Kinetic Energy, Stored Energy, and Efficiency.

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

Velocity Test Results				
	350 Grain Arrow		425 Grain Arrow	540 Grain Arrow
Shot # 1	321		291	259
Shot # 2	321		292	260
Shot # 3	321		292	260
Shot # 4	321		292	260
Shot # 5	321		292	260
5 Shot Total	1605		1459	1299
Average Velocity	321		291.8	259.8

you a feel for how a bow performs in the “subjective” areas mentioned above. 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” and the pertinent chart is below right, across from the objective results.

Getting Down to Brass Tacks

Martin’s Onza 3 is as steady as they come while bearing down on the bulls-eye. It has excellent balance and feels comfortable at full draw. The draw cycle is smooth by any measure. There is notable shock and vibration at the shot, both of which are reduced by a quality stabilizer and a couple simple string silencers.




Martin shields the Onza with their super quiet Silent Hunter Arrow Shelf – no more game-spooking clanging noises when your arrow falls off the rest!

Objective Test Categories	
Kinetic Energy:	80.10 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:	96.23 foot-pounds
When a bow is drawn energy is supplied to the limbs. The amount of energy that the limbs can hold is the stored energy	
Efficiency Rating:	83.24 percent
This is the amount of stored energy (in %) 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.	
SE/PF Ratio:	1.37
This is the ratio of stored energy to peak force. In other words, what returns are you getting for the power you supply?	

Subjective Test Results	
Shot Noise:	The shot noise follows the performance in shock and vibration. It is average on the bare bow with some improvement coming from a stabilizer/string silencers
Grip Comfort and Function:	Good grip with a nice combination of warmth/comfort and functionality. Small ridge under shelf that could be eliminated.
Draw Cycle "Feel":	One of the Onza's highlights is the super smooth draw. Take a look at the attached draw curve and you will see gentle ascent/descent with easy transitions. The drop off to holding weight is especially mild.
Shock and Vibration Levels:	The shock and vibration levels are average and both are made somewhat better with a quality stabilizer and a couple simple string silencers.

TestID:	onza3	Draw Length:	30"	Speed:	321 ft/sec
Tested By:	jes	Brace Height:	7.34"	Power Stroke:	1.74'
Min Load:	14.9 lbs	Max Load:	70 lbs	Kinetic Energy:	80.10 ft-lbs
Min Pos:	30"	Max Pos:	20.00"	Stored Energy:	96.23 ft-lbs
				Dynamic Eff.:	83.24%
Distance (in)	Load (lbs)			Brace Height:	▲
9.09	0.00			Peak Draw Weight:	▲
10	11.20			Full Draw Condition:	▲
11	25.30				
12	40.70				
13	55.00				
14	64.20				
15	66.80				
16	67.20				
17	66.90				
18	67.70				
19	68.70				
20	70.00				
21	69.80				
22	68.60				
23	67.20				
24	65.90				
25	64.10				
26	62.00				
27	58.60				
28	50.60				
29	37.30				
30	14.90				



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