

2014

By Jon E. Silks

MECHANICAL Broadhead Battle

Our Tests Slice, Smash & Crash to Rank Bowhunting's Best

“What broadhead are you going to use this year?” If I had a dollar for each time someone asked me that question, my next elk hunt would be paid for! No doubt you are often asked the same question and have had more than a few conversations about the qualities of your favorite head.

Simply put, broadheads are intriguing — and for good reason. They play the most deadly role in our bowhunting pursuits. There is plenty to pique our interest and even generate friendly debate. Fixed-blade or mechanical? Over-the-top or rear-deploying blades? Two blades or three? Large diameter or compact? Chisel point or cut-on-contact tip? And the list goes on and on.

In addition to debating the relative merits of each broadhead's design, there is no shortage of anecdotal evidence from friends, websites, and hunting celebrities about the heads' effectiveness in the field. However, *Petersen's BOWHUNTING* wants to offer you something different — something you can sink your teeth into and use to make an informed buying decision.

This year's test of 13 popular mechanical broadhead models reaches far beyond the commercials, ads and celebrity endorsements to produce reliable rankings based on solid test methods. In the pages that follow, you will find verifiable broadhead performance data that simply doesn't exist anywhere else.

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Broadhead-tipped arrows (below) are measured for depth as part of our foam penetration test.



THE COMPETITORS



Cabela's Instinct Incision: The Instinct Incision features an aircraft-grade aluminum ferrule and hardened chisel tip. Blades are made of stainless steel and are advertised at .030 inches thick. At the full open position they create a 1.75 inch wound channel. In flight the blades tuck into the ferrule and are held in place with a thick rubber O-ring. In flight the Instinct's profile measures only .75 inches in diameter to enhance flight performance.

MSRP: \$34.99 per 3
www.cabelas.com



Dead Ringer Super Freak: The Super Freak features an aircraft-grade aluminum ferrule and case-hardened, stainless-steel, trocar tip. Patented setscrew adjustments give the archer a choice between 1.75-inch and 2.25-inch cutting diameters. Spring stainless steel blades measure .032-inch thick and are tested to 185,000 foot-pounds of shear strength. The partially exposed blades make a .75-inch cut upon impact before over-the-top deployment to the full 1.75-inch diameter.

MSRP: 44.99 per 3
www.deadringerhunting.com



G5 Havoc: The Havoc is a 2-blade design that incorporates a no-screws blade capture at the front end and the G5's Dual Trap blade-retention system that holds the rear of the blades securely until impact. An all-steel collar and elastomeric ring, which make up the Dual Trap, are designed to provide strength and reliability. The Lutz blades are .03-inch thick and reach a 2-inch cutting diameter when fully deployed. The stainless steel ferrule terminates in a cut-on-contact tip.

MSRP: \$49.99 per 3
www.g5outdoors.com

Physical Dimensions: We used a Mitutoyo 8-inch dial caliper to determine each broadhead's cutting diameter, blade length, blade thickness and the length of the head beyond the end of the arrow. Cutting diameter on 3-blade heads was calculated by laying two of the blade tips along one jaw of the calipers and the third on the opposite jaw. That number

is divided by 1.5, and then multiplied by 2. Example: Tip-to-tip distance is .75/1.5=.5x2=1-inch cutting diameter.

An Easton Digital Grain Scale, calibrated according to manufacturer's instructions, was used to determine the mass weight of each individual broadhead. Three separate heads were measured and averaged for a final result.

BROADHEAD PHYSICAL DIMENSIONS

MANUFACTURER	MODEL	# OF BLADES	ADVERTISED CUTTING DIA.	TESTED CUTTING DIA.	TESTED BLADE LENGTH	TESTED BLADE THICKNESS	TESTED WEIGHT (AVG.)
Rage	Hypodermic	2	2.000"	2.142"	1.15"	0.035"	98.1 gr.
G5	Havoc	2	2.000	1.910	1.20	0.033	101.3
Slick Trick	Nuke	2	1.800	1.785	1.09	0.035	102.9
Cabelas	Instinct Incision	2	1.750	1.769	0.94	0.030	99.7
No Limit	Grave Digger	4	1.750	1.757	0.94	0.032	97.5
NAP	Spitfire	3	1.750	1.733	0.815	0.030	104.8
Dead Ringer	Super Freak	2	1.750	1.725	1.17	0.031	99.7
Rexpid	Rexpid II	2	1.500	1.542	0.69	0.028	99.9
Trophy Taker	Ulmer Edge	2	1.500	1.491	1.085	0.036	100.5
Hunga Munga	100 Grain	3	1.438	1.433	0.82	0.035	101.1
Innerloc	EXP 2-Blade	2	1.438	1.375	0.661	0.030	102.1
Wasp	Jak-Hammer	3	1.250	1.342	0.646	0.035	100.0
Rocket	Steelhead	3	1.125	1.117	0.50	0.027	97.8

THE COMPETITORS



Hunga Munga: The Hunga Munga features a 3-blade design that opens to a 1 7/16-inch cutting diameter. Blades are able to open independently and follow what the company calls a "Meat Scoop," which pushes impact material into the blade to force deployment. A blade clip snugly secures each blade before and during flight, eliminating the need for O-rings or rubber bands and also reduces noise from rattling. The tip-forward design is intended to reduce deflection on steeply angled shots.

MSRP: \$34.95 per 3
www.hunga-munga.com



Innerloc EXP 2-Blade: The EXP 2-Blade uses a small spring clip that acts as the pivot point for the blades and also applies a small amount of pressure that retains the blades in flight. A "cam" built into the blades interacts with the clip and actually varies the amount of tension they experience throughout the deployment process. Another unique feature is found in the two-function collar that can be flipped for two cutting-diameter choices — 1.125 inches and 1.44 inches. Stainless steel components are designed to get the job done regardless of weather or temperature.

MSRP: \$37.99 per 3
www.innerloc.com



NAP Spitfire Maxx: The Spitfire Maxx carries a larger cutting diameter than the original, with an advertised reach of 1.75 inches. No O-rings or rubber bands are needed, as NAP uses a unique, pressure-retention system to keep the .03-inch blades secure until impact. NAP's patented, micro-groove ferrule is advertised to improve flight characteristics and penetration, while the Diamize sharpened blades are said to cause massive hemorrhaging.

MSRP: \$39.99 per 3
www.newarchery.com

Continued from page 41

When it comes to broadheads, all serious bowhunters want a scalpel-sharp head that flies like a dart, penetrates deeply, delivers a lethal wound and can still get the job done after taking a beating from a rib or shoulder bone. Our tests are designed to objectively address each of those characteristics and help you find a broadhead that meets your demands and builds your confidence.

In conducting our tests, we used the best equipment, methods and services available. For example, test shots were launched using *BOWHUNTING's* exclusive X-Ring shooting machine equipped with Silks Outdoors analysis software. In-flight broadhead data was gathered via the state-of-the-art Velocitip Ballistic System from Full Flight Technology. Blade sharpness was tested by the Cutlery & Allied Trades Research Association in England. And slow-motion video of the test heads slicing through sheet metal and smashing into concrete block was captured using a an Olympus high-speed video camera.

Drag & Retained Energy: The Velocitip Ballistic System, which features an electronic arrow adaptor with built-in accelerometer, was used to compare the flight performance of various broadheads. The primary data collected from the system was drag (a direct measure of aerodynamic performance) and retained energy (how much lethality the arrow retains). Since the exact same arrow was used for each shot, we can eliminate the drag created by the vanes. So, the differences you see in our results represent a direct comparison of one head to another. We also included fieldpoint data to provide a benchmark for performance.

DRAG & RETAINED ENERGY DATA			
MANUFACTURER	MODEL	% RETAINED ENERGY	DRAG (MILLI-GS)
Fieldpoint	N/A	86.64	1057
Innerloc	EXP 2-Blade	85.16	1181
NAP	Spitfire	84.77	1196.3
Trophy Taker	Ulmer Edge	84.32	1244.7
Rage	Hypodermic	84.21	1246
No Limit	Grave Digger	84.18	1255.7
Hunga Munga	100 Grain	83.98	1271
Cabelas	Instinct Incision	83.68	1293.3
Rexpid	Rexpid II	83.50	1305
Slick Trick	Nuke	83.18	1325
G5	Havoc	82.49	1377.3
Rocket	Steelhead	82.46	1384
Dead Ringer	Super Freak	81.85	1430.7
Wasp	Jak-Hammer	81.78	1439.3

THE COMPETITORS



No Limit Archery Grave Digger: A combination of fixed and mechanical blades makes the Grave Digger unique among our contenders. A cut-on-contact blade made from 420 stainless steel forms the tip and creates a 1-inch cutting diameter, while the curved, mechanical blades open to a 1.75-inch cut. The curvature actually protrudes somewhat when closed, causing the mechanical blades to catch on the impact material and forcing them to deploy.
MSRP: \$42.99 per 3
www.nolimitarchery.com



Rage Hypodermic: The Hypodermic's two rear-deploying blades are made of stainless steel and measure .035-inch thick. A solid, single-piece steel ferrule is machined with a hybrid tip that couples the benefits of a hard-hitting chisel with the aerodynamics of a low-profile, leading-edge blade. A unique plastic Shock Collar holds the blades securely in flight but releases them on impact for complete deployment.
MSRP: \$44.99 per 3
www.ragebroadheads.com



Rexpid II: Rexpid uses a one-of-a-kind gear system that forces the blades to open in tandem and also provides the tension needed to secure the blades in flight. The stainless steel head has two ears that protrude out each side where the blades are attached. The trocar tip is designed to carry the Rexpid II through tough hide and bone, while the sharp blades are intended to create a high hemorrhage rate.
MSRP: \$39.99 per 3
www.rexpid.com

Penetration: We compared broadhead penetration using two kinds of custom-built, block-style targets. One was made of pure foam plates wrapped in plastic film, and the other was a three-material combination of rubber backed carpet, .03-inch sheet metal and foam plates, also wrapped with film.

Each test head was shot three times into each block, and the depth of penetration was recorded and averaged for a final result. As mentioned earlier, we use manmade materials to maintain consistent media properties (hardness, firmness, density, etc.) required for valid test results.

When it came to selecting media for penetration and impact testing, we chose a variety of manmade materials over actual animal parts. The reason, in a word, is consistency. While shooting into an actual deer or elk shoulder sounds cool, it is in fact one of the worst ways to compare broadheads because of major inconsistencies in bone thickness from one area to the next and one animal to the next. We strive to be fair and test every manufacturer's product on a true "apples to apples" basis.

FOAM PENETRATION RESULTS

MANUFACTURER	MODEL	FOAM PENETRATION
1. Innerloc	EXP 2-Blade	12.69"
2. Rage	Hypodermic	12.22
3. G5	Havoc	12.09
4. Hunga Munga	100 Grain	12.04
5. Slick Trick	Nuke	11.81
6. Wasp	Jak-Hammer	11.67
7. No Limit	Grave Digger	11.54
8. Rocket	Steelhead	11.53
9. Dead Ringer	Super Freak	11.46
10. Rexpid	Rexpid II	11.43
11. Cabelas	Instinct Incision	11.34
12. NAP	Spitfire	11.03
13. Trophy Taker	Ulmer Edge	10.99

The Tests

Test Setup: A Mathews Creed XS was set up with a 29-inch draw length and 65-pound draw weight. It was equipped with a NAP Apache arrow rest and a string loop. The bow was tuned to shoot Carbon Express Maxima Red arrows with a 100-grain field-point. The bow was paper tuned and walk-back tuned before being loaded into the X-Ring shooting machine.

Notably, none of the test heads hit further than .8-inch from the aggregate centerpoint! So, if you have a properly tuned bow, every single one of the broadheads included in this year's test will dial in for a super accurate shot.

THE COMPETITORS



Rocket Steelhead: The Steelhead has been around for a long time and has a reputation for being rugged and dependable on game. It has three blades that open to a 1.125-inch cut through an over-the-top action. Stainless steel blades are secured to the body with small screws and are held in place during flight with a rubber band. The ferrule is a one-piece, solid steel unit that is titanium nitride coated. The Steelhead also features a machined chisel tip for bone penetration.

MSRP: \$39.99 per 3
www.rocketbroadheads.com



Slick Trick Nuke: The Nuke has a 1.3-inch diameter in flight and expands to a 1.8-inch cutting diameter when deployed. It takes little movement for the blades to make that transition, which translates into efficiency (less wasted energy). An aluminum body with steel Trocar tip works with the stainless steel blades to create what Slick Trick calls quick killing "Slug Holes." Slick Trick has a reputation for super sharp blades, and the Nuke had the sharpest blades in our test.

MSRP: \$39.99 per 3
www.slicktrick.net



Trophy Taker Ulmer Edge Stainless Steel: The Ulmer Edge Stainless Steel is a low-profile head that features rear-deploying blades. Even the backsides of the .036-inch thick blades are sharpened to cause damage on the way in and out for non-pass through shots. A distinctive blade engagement feature is advertised to allow the blades to pivot around bone when necessary. A setscrew locks the blades in place for practice sessions. The single-piece, stainless steel ferrule is machined into a chisel tip to optimize hard-impact penetration.

MSRP: \$49.99 per 3
www.trophytaker.com

COMBO PENETRATION RESULTS

	MANUFACTURER	MODEL	FOAM PENETRATION
1.	Rocket	Steelhead	6.57
2.	Dead Ringer	Super Freak	6.13
3.	Wasp	Jak-Hammer	5.75
4.	Cabelas	Instinct Incision	5.68
5.	Innerloc	EXP 2-Blade	5.36
6.	No Limit	Grave Digger	5.08
7.	Trophy Taker	Ulmer Edge	5.07
8.	Hunga Munga	100 Grain	4.66
9.	Slick Trick	Nuke	4.52
10.	G5	Havoc	3.55
11.	Rage	Hypodermic	3.47
12.	NAP	Spitfire	3.03
13.	Rexpid	Rexpid II	1.93

Hemorrhage Test: One of the more entertaining tests in our lineup is the hemorrhage test. A thick, sealed plastic bag containing two gallons of colored red water was suspended in front of our Rinehart target. Using a TenPoint Vapor crossbow, each head was fired low through the bag. We recorded elapsed time from the instant the broadhead was fired to the time the water drained down to the reference line. How fast can your broadhead let the air out of your next target?

HEMORRHAGE TEST RESULTS

	MANUFACTURER	MODEL	TIME
1.	Hunga Munga	100 Grain	4.1 sec.
2.	NAP	Spitfire	5.96
3.	Rage	Hypodermic	6.14
4.	Wasp	Jak-Hammer	6.68
5.	Slick Trick	Nuke	6.78
6.	Rocket	Steelhead	7.09
7.	Innerloc	EXP 2-Blade	8
8.	No Limit	Grave Digger	9.44
9.	G5	Havoc	9.83
10.	Rexpid	Rexpid II	11.56
11.	Trophy Taker	Ulmer Edge	13.03
12.	Dead Ringer	Super Freak	13.98
13.	Cabelas	Instinct Incision	19.16

THE COMPETITORS

2014 MECHANICAL Broadhead Battle



Wasp Jak-Hammer SST: The Jak-Hammer is outfitted with Wasp's Stainless Smart Tip (SST), which pre-aligns the edges of the trocar tip with the line of the three blades. This creates a straight cutting path from tip to tail. The stainless steel blades are held in place with an O-ring until impact, when they open to a 1.25-inch diameter cut. Blades measure .036-inch thick.

MSRP: \$31.99 per 3
www.wasparchery.com

Sharpness: Three blades from each test model (one blade each from three brand new heads) were sent to the Cutlery & Allied Trades Research Association in Sheffield, England, to measure blade sharpness with the Razor Edge Sharpness Test (REST) machine. The machine measures the amount of force required, in Newtons, to cut through a rubber test medium. The less force required to cut the rubber, the sharper the blade. As a reference point, a shaving razor will typically result in a reading near .3 N. Additional information about the REST machine can be found online at www.CATRA.org.

RAZOR EDGE SHARPNESS TEST

1.	Slick TrickNuke	0.86 N
2.	G5Havoc	1.00
3.	Hunga Munga100 Grain	1.01
4.	RageHypodermic	1.05
5.	RexpidRexpid II	1.05
6.	InnerlocEXP 2-Blade	1.12
7.	Trophy TakerUlmer Edge	1.13
8.	NAPSpitfire	1.24
9.	WaspJak-Hammer	1.61
10.	RocketSteelhead	1.61
11.	Dead RingerSuper Freak	1.66
12.	CabelasInstinct Incision	2.09
13.	No LimitGrave Digger	2.69

Reference Data

N=Newtons	Shaving Razor Blade	0.3 N
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TOTAL CUTTING POTENTIAL

	MANUFACTURER	MODEL	FIXED	# OF BLADES	TCP
1.	No Limit	Grave Digger		4	2.74"
2.	NAP	Spitfire		3	2.60
3.	Hunga Munga	100 Grain		3	2.15
3.	Rage	Hypodermic		2	2.14
5.	Wasp	Jak-Hammer		3	2.01
6.	G5	Havoc		2	1.91
7.	Slick Trick	Nuke		2	1.79
8.	Cabelas	Instinct Incision		2	1.77
9.	Dead Ringer	Super Freak		2	1.73
10.	Rocket	Steelhead		3	1.68
11.	Rexpid	Rexpid II		2	1.54
12.	Trophy Taker	Ulmer Edge		2	1.49
13.	Innerloc	EXP 2-Blade		2	1.38

Total Cutting Potential: The ability of a head to cut—and the amount of cutting that actually occurs—is a factor of sharpness, cutting diameter and number of blades. With this in mind, we calculate the Total Cutting Potential (TCP) of a head by multiplying the radius by the number of blades. We consider it "potential" because a lost blade in bone or otherwise means you have that much less to do the cutting once it breaks through into the core of the animal. Blade angle is not considered in the TCP, since angle does not change the amount of flesh that is cut as long as penetration is equal.

Here are two examples of TCP calculations: A 2-blade, 2-inch cutting diameter head has a radius of 1 inch. To get the TCP, you multiply the radius by the number of blades, which gives you a TCP of 2 inches. Now, consider a 3-blade head with a cutting diameter of 1.375 inches. The radius is .6875-inch, so you multiply .6875 by the number of blades 3. Your TCP would be 2.0625 inches, which means you will cut slightly more flesh than the 2-blade head with a 2-inch cutting diameter.

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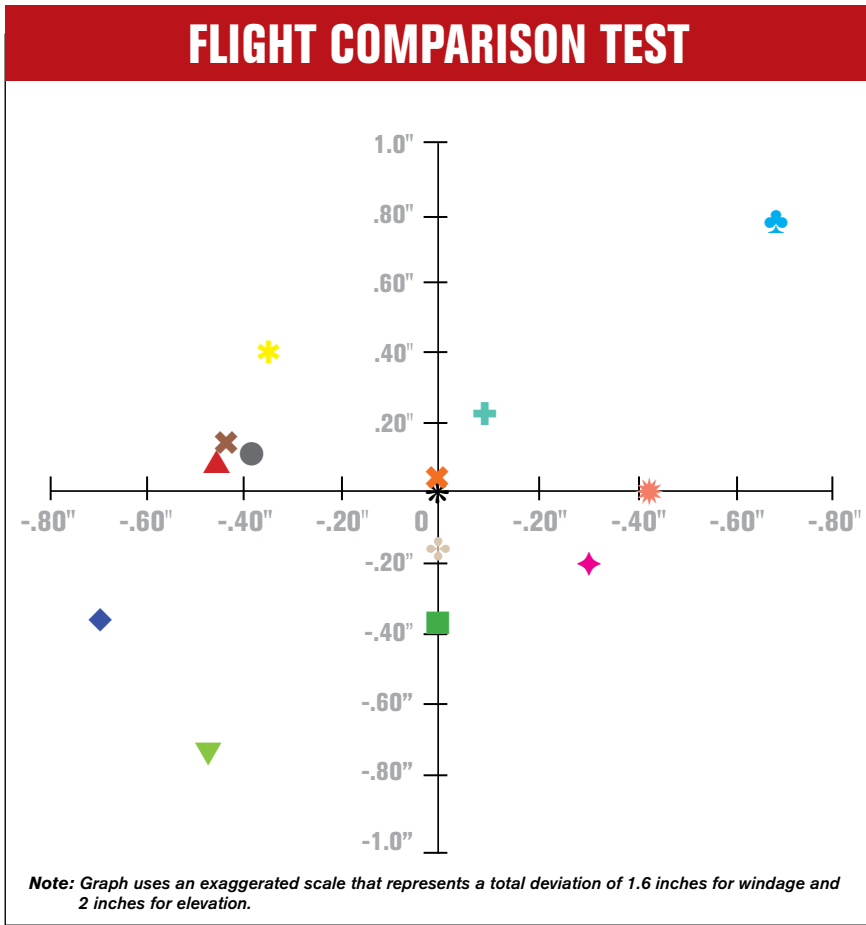
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FLIGHT COMPARISON KEY

- * **CENTERPOINT**
- ◆ **CABELAS INSTINCT INCISION**
- **DEAD RINGER SUPER FREAK**
- ▼ **G5 HAVOC**
- × **HUNGA MUNGA 100 GRAIN**
- ▲ **INNERLOC EXP 2-BLADE**
- ◆ **NAP SPITFIRE**
- ★ **NO LIMIT GRAVE DIGGER**
- × **RAGE HYPODERMIC**
- **REXPID II**
- ◆ **ROCKET STEELHEAD**
- ♣ **SLICK TRICK NUKE**
- ✱ **TROPHY TAKER ULMER EDGE**
- + **WASP JACK-HAMMER**

Flight Comparison Test: A field-point-tipped arrow was shot from the X-Ring machine at 25 yards to give us a control reference point for comparing the broadhead impact points on the target. We then shot each test head three times and calculated an average impact point for each model. Those impact points are plotted on the accompanying graph relative to the centerpoint of the overall broadhead group.



Each test head was fired through .03-inch sheet metal at a range of 25 yards, with impacts captured using high-speed video equipment.

Hard-Impact Test: The hard-impact test was designed to simulate the performance of a head after it encounters and passes through a hard material such as bone. This test was performed at 25 yards, and the impact material was .03-inch sheet metal. A thin, dense foam panel was placed approximately 18 inches behind the metal to “catch” the heads after passing through. Results are presented in a matrix defining the level of damage suffered by each head. High-speed video equipment was also used to capture these shots in slow-motion. You can check those out on our website.

HARD-IMPACT TEST RESULTS		FULL PENETRATION	BROKEN BLADES	BENT BLADES	BLADE EDGES MARRED	MISSING BLADES	BENT/BROKEN TIP
Cabelas	Instinct Incision	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dead Ringer	Super Freak	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
G5	Havoc	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Hunga Munga	100 Grain	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Innerloc	EXP 2-Blade	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
NAP	Spitfire	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No Limit	Grave Digger	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rage	Hypodermic	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rexpid	Rexpid II	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Rocket	Steelhead	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slick Trick	Nuke	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Trophy Taker	Ulmer Edge	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Wasp	Jak-Hammer	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

ONLINE EXCLUSIVE:

**WATCH THEM SLICE,
SMASH AND
CRASH!**



This video screen grab shows one of our test heads making impact with our concrete block.

If a picture is worth a thousand words, a video is worth 10,000. That's why *BOWHUNTING* used high-speed video equipment to capture all the action in our hard-impact (sheet metal), zero-penetration (concrete block) and hemorrhage (simulated blood drainage) tests and posted them online at www.bowhuntingmag.com. Check them out today!



This video screen grab shows the Slick Trick Nuke just after passing through sheet metal in our hard-impact test. [ption here](#)

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Zero-Penetration Test: The zero-penetration test was a violent test of the broadheads' durability. It was conducted by shooting each head into cement blocks at 25 yards and evaluating the overall condition of the head after impact. The accompanying chart rates the damage from slight to moderate to severe. High-speed video equipment was also used to capture these impacts in slow-motion. You can check those out on our website.

ZERO PENETRATION TEST		DAMAGE
Cabelas	Instinct Incision	LIGHT
G5	Havoc	
Slick Trick	Nuke	
Trophy Taker	Ulmer Edge	
Wasp	Jak-Hammer	
Dead Ringer	Super Freak	MODERATE
Hunga Munga	100 grn	
Innerloc	EXP 2-Blade	
NAP	Spitfire	
Rage	Hypodermic	
Rexpid	II	EXTENSIVE
Rocket	Steelhead	
No Limit	Grave Digger	
Field Point	N/A	