

Responsible Broadhead Testing

No other single moment in bowhunting will determine your success or failure more than the split second that your broadhead impacts big game. And how your broadhead performs during that split second will define if you will ultimately recover that animal and further define your success as a bowhunter.



With that in mind, your friends at Muzzy offer the following points and broadhead tests that will help you become both knowledgeable and responsible about your choice in broadheads.

Remember that today's hunting broadheads fall into several categories, and under the ideal set of conditions, they are all capable of taking big game. But if there's one thing you know about bowhunting it's that conditions are rarely "ideal" when you mix moving, unpredictable game in the wilds with your heart pounding.

That's why it's each bowhunter's responsibility to thoroughly evaluate their choice in broadhead design to make sure that it effectively fulfills the requirements for ethically harvesting big game in the less-than-ideal real world of bowhunting.

The crucial design features of your broadhead include;

1. **Shaft Alignment** – *Scotty's Spin test*
2. **Flight Characteristics** – *Truths, Myths and Cures*
3. **Penetration** – *Hey, these creatures have bones!*
4. **Head Integrity** – *Tip, ferrule and blade retention during impact*
5. **"Lethality"** – *The deadly combo of cutting surface and blade sharpness*

Shaft Alignment – Scotty on Star Trek will confirm this one. If your broadhead isn't aligned with your shaft, it won't fly straight. And if it doesn't fly straight, why even bother trying to shoot at something? You just can't defy the laws of physics, Captain.



So here's your test. Install your broadhead, then spin-test it on a hard, flat surface or use a quality arrow spinner. If your broadhead wobbles or oscillates even a little, it's not aligned properly.

If it doesn't spin perfectly true, you have;

- a bent arrow shaft
- a misaligned adapter insert or tip
- a misaligned broadhead
- a flat spot on the tip

To determine the problem;

- Install the broadhead on a different arrow (a straight one, please). If it spins true, your other arrow or insert adapter are suspect culprits. If it still wobbles a little, your broadhead tip and/or ferrule are suspect.
- Install a different broadhead on the first arrow If it still wobbles, you have a bent shaft or misaligned insert adapter. But if you're sure they're straight, then you definitely need a different brand of quality broadheads (such as Muzzy).

* (Note – If your installing hot-melt glue-on broadheads directly to the shaft or a tapered adapter, keep adjusting and spin testing as you try to work out all the variables you're dealing with.)

**Flight Characteristics** - Oh man, there's a bunch of worms in this can!

How your broadhead-tipped arrow flies as it leaves your bow and downrange depends on a whole host of variables. In fact, one of the biggest myths about poor broadhead-tipped arrow flight is



that it's the fault of your broadhead design or that the blades are "wind-planing". That's one reason so many bowhunters make the quick-fix mistake of running out and buying mechanical heads with retractable blades as a cure all for a poorly tuned bow setup. Sorry, but your broadhead design and their blades probably aren't the scapegoat here. Because as you'll discover, poor arrow flight with broadheads is usually an amplification of general poor arrow flight even without broadheads, that can be attributed to several important areas including;

- Your arrow is still bent or the broadhead is misaligned
- Your nocking point on your bowstring is too high or low.
- Your arrow is not spined correctly to match your bow and shooting setup.
- Your arrow is deflecting off of your arrow rest during launch.
- Your bow, arrow and rest combination is not tuned properly
- Your form is horrible and you should switch to golfing (only kidding, but we will address how your form can affect arrow flight).

Your arrow is still bent or the broadhead is misaligned – If you performed Scotty's Spin test properly, you can rule out this variable. But to be sure, let's first install a straight field tip on your straight arrow before trying the following tests.

Your nocking point on your bowstring is too high or low – Let's start with the basics of a bare-shaft test. Whether you're shooting wood, aluminum or graphite out of a compound, recurve, longbow, this is the first necessary step to understanding and achieving perfect arrow flight. Begin by stripping off the veins or feathers of three arrows. We know it's painful, but veins or feathers hide the basic causes of poor arrow flight so get rid of them. Next check and write down the position of your nocking point relative to the perpendicular position of your arrow rest (use a bow square with



measurements) If you're setting up a new bow or string, we recommend starting at 3/8-inch above perpendicular.

To determine your proper nocking point, shoot through a printout of the **“Nocking Point Paper Test Sheet”** To print, scroll to **Page 8** at the end of this document and select “Print this Page” from your printer menu.

Suspend the sheet several feet in front of an arrow backstop. Stand eight (8) feet in front of the sheet. Shoot three bare-shafted arrows and follow these instructions on the Sheet;

- For arrow tail high tears, lower nocking point.
- For arrow tail low tears, raise nocking point.
- You have achieved your proper nocking point when the arrow doesn't tear upward or downward. When you discover your proper nocking point, check it with your bow square and write down the measurement on your bow limb for future reference.

*(NOTE: If your arrow tears also deflect left or right, don't worry for now, we will address that in the next section.)

Your arrow is not spined correctly to match your bow weight – This is perhaps one of the most common culprits in poor broadhead flight. But before beginning your bare shaft testing here, first determine if your arrows are properly spined for your bow by opening up the helpful **“Easton Shaft Selector Plus Program”** (Windows users only) found on the Home Page. After

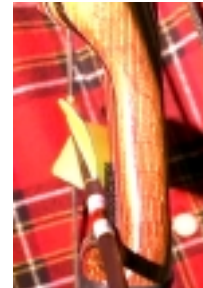


you've launched this program, click through the simple steps to check for your optimum arrow spine. For more information on Easton products, log on to; www.eastonarchery.com

Also check to be sure that your arrow rest is positioned for true center shot.

Remember that you're dealing with five (5) variables here;

1. Your bow's draw weight
2. Your arrow's spine deflection
3. Your arrow length
4. Your broadhead weight
5. Your arrow rest position relative to true center shot



After you've determined that your arrows are in fact properly spined for your bow by using the **“Easton Shaft Selector Plus Program”** found on the Home Page, you're ready to paper test shoot them. You do this by shooting them through a printout of the **“Arrow Spine Paper Test Sheet”** found on **Page 9**. To print this Test Sheet (note right or left-handed shooters) at the end of this document, select “Print this Page” from your printer menu. Note that we have included tear directions for both left and right-handed shooters. Be sure to use the right one, and also make sure that your arrow is shooting from a center shot position.

For Finger Shooters: Suspend the sheet several feet in front of an arrow backstop. Stand 6 to 10 feet in front of the sheet. Shoot three bare-shafted, field-tipped arrows through the sheet and follow the instructions on the Sheet.

For Release Shooters: Attach the sheet to a target or backstop. Stand 20 yards from the sheet. Shoot three bare-shafted, field-tipped arrows into the sheet and follow the instructions.

Testing For Right-handed Shooters

- If arrow tail tears to the left, your arrow spine is too weak
- If arrow tail tears to the right, your arrow spine is too weak

Testing For Left-handed Shooters

- If arrow tail tears to the right, your arrow spine is too weak
- If arrow tail tears to the left, your arrow spine is too weak

*(**Note:** You can slightly increase your arrow spine by making your arrows shorter if you can safely shoot a shorter arrow. You can also reduce the effective spine of your arrows by shooting a heavier broadhead. Inversely, you can decrease the spine by shooting a lighter weight tip. If you have an adjustable arrow rest, you may also be able to fine tune left or right tears by adjusting your relative center shot position.)

Your arrow is deflecting off of your arrow rest - Now that you've eliminated the effects of broadhead alignment, nocking point and arrow spine, you're ready to explore the realm of arrow rests. Perhaps some of the most common yet least understood problem is achieving perfect arrow launch from your bow. And the most common problem here is that your current arrow rest is affecting your arrow flight through friction and deflection.

With hundreds of different rest designs on the market today, we can't begin to determine exactly what your particular rest problem might be or how to correct it. However, we can help you determine if you have an arrow friction/deflection problem and how to eliminate it forever.

Friction/Deflection Test – If you already notice any friction wear on your feathers, vanes or your arrow rest, your rest is obviously creating both resistance contact of some kind and friction on your arrow. This can cause poor arrow flight and reduce arrow velocity. If you're unsure, simply spray your arrow with foot powder, then shoot the arrow. (Shoot your normal arrow with feathers or veins for this test).

You'll notice a build up foot powder on your arrow rest where it contacts the arrow. On the arrow you'll see the powder wiped off where the rest is creating friction or resistance on the arrow during launch. Most arrow rests on the market will create varying amounts of friction and contact points on your arrow. Although we recommend that you follow your particular arrow rest manufacturer tuning instructions to reduce this affect on your arrow's flight, we also have a guaranteed cure.



First, imagine an arrow rest that doesn't contact your arrow at all during the crucial stages of arrow launch. Sound too good to be true? Well, then find out how you can forever eliminate the effects of an arrow rest interfering with your arrow's flight, by simply clicking on the **Zero-Effect Arrow rest** button on the Home Page or go to hear what Champion Archers Ginger and Jesse Morehead have to say about the importance of achieving perfect arrow launch on the **Muzzy Family Page**.

Penetration – Hey, these creatures have bones! – Early cave men were the first to discover that the wild furry things they hunted had hard bones protecting vital organs from spears and arrows. And to harvest that game their arrows and spears had to get through the bones to bring down the creature. Despite some evolution, most things that modern bowhunters shoot at still have bones protecting their vitals.



But the good news is that Muzzy innovator John Musacchia, Sr. developed the Trocar tip in the late 1970's specifically for breaking and penetrating bone. In fact, the Trocar tip is recognized by the medical industry as the best bone-penetrating point known to man. And recent studies have shown that when propelled by today's arrow velocities, the Trocar tip is the most effective bone breaking point in the world. Knowing these facts, it's every bowhunters responsibility to shoot a broadhead design with a proven Trocar tip.

However, a Trocar tip must also maintain its shape during bone impact. Why? Because when a tip deforms, it represents a significant transfer of energy from the object to the broadhead, instead of from the broadhead to the object. And that reduces penetration. So your goal here is to determine two things; how well your broadhead penetrates while maintaining the shape of the tip.



WARNING! - *Unlike some of the other tests you've done so far, this test involves shooting broadheads into tough materials and we recommend that you consider complete safety here. Use common sense and make sure everyone, including you remain a safe distance from the test materials you'll be shooting at.*

Consistency is important in this test so we suggest using a uniform test material such as half-inch (1/2") thick concrete construction board. You can get these 3x5-foot sheets from your local lumber yard. Secure the concrete board against a firm target backstop such as closed cell foam so that it will not move on impact yet will stop your heads after they penetrate the concrete board.



Then stand ten (10) yards away and shoot into the concrete board while trying to maintain a perpendicular flight path on your arrows. Go ahead and try all of your favorite broadheads. Then measure the depth of penetration and also check the tips to look for any deformation or damage. If your bow setup is sooooo strong that you're easily blowing through the half-inch concrete board, then double its thickness (use two sheets together) and shoot again.

(In case you don't want to wreck all your arrows, we should let you know that independent testing shows that a Trocar-tipped Muzzy will outperform other popular multi-blade broadheads in most destructive penetration tests such as this.)

Head Integrity – Tip, ferrule and blade retention during impact – “Da-Drum drum” The integrity of your broadhead is crucial to its performance and effectiveness on big game. Quite simply it should come out the far side of game the same way it went in; with all the blades in tact and all the components in one piece. Though that sounds like a simple order, we’re sure you’ve heard the horror stories about broadheads failing when impacting big game.



So to make sure yours has “head integrity”, we suggest the simple 55-gallon drum test. Yeah, we know you’re not out there hunting steel drums. But the drum test offers an excellent test material for checking your broadhead’s integrity because it provides enough resistance and multi-directional stresses on tips and blades to determine if they will remain in tact during a heavy bone hit.

Again, stand ten (10) yards away from the drum and fire away with your favorite broadheads. If your broadheads fail to retain their blades and/or tip configuration during this test, you may want to consider a broadhead design with internally locking blades that can withstand repeated drum test shots (such as Muzzy). You may also want to shoot the same head again and again then record how many times you shot it into the drum and what effects occurred with each progressive shot.



Make sure you are ready to make a responsible shot on this guy!

“Lethality” – The deadly combo of integrity, cutting surface and blade sharpness – And the final score folks!

Rather than have you cut or hurt yourself in some silly physical test to determine how deadly your broadhead might be, we’ve designed this “safe” paper test for you to take. Just don’t break the lead in your pencil. Simply print this sheet from your print menu and test away.

Now that you’ve done all these other important tests, let’s see how your favorite broadhead scores against the industry standard (Muzzy) in comparative ratings. Just enter the value for each category that you tested and add the total for your broadhead. We’ve also included a fun evaluation summary score for you.

Here’s how to score; Perfect = 4 points Good = 3 points Fair = 1 point Poor = minus 2 points
(In case you think we’re being too harsh on subtracting points for poor performance, remember this whole thing is about you being a totally responsible bowhunter when shooting at game.)

Type of test	Your Broadhead	Test head #2	Test head #3	Muzzy
Spin test Perfect shaft alignment				4
True Flight				4
Penetration amount (check tip for deformation)				4
Head Integrity Tip Deformation				4
Integrity - Blade Retention				4
Blades locked without arrow				4
Number of Blades				4 or 3
Surgically Sharpened				4
Blades hand-inspected				4
Blades require mechanical action to open subtract 1 point for each variable that may affect blade function Add 1 point for each fixed blade				4 or 3
Lethality – Grand total				40 or 38

Scorecard:

38 to 40 - Keep shooting this head, you have a responsible broadhead for big game.

30-38 - You’re shooting a marginal broadhead that may work okay on small game.

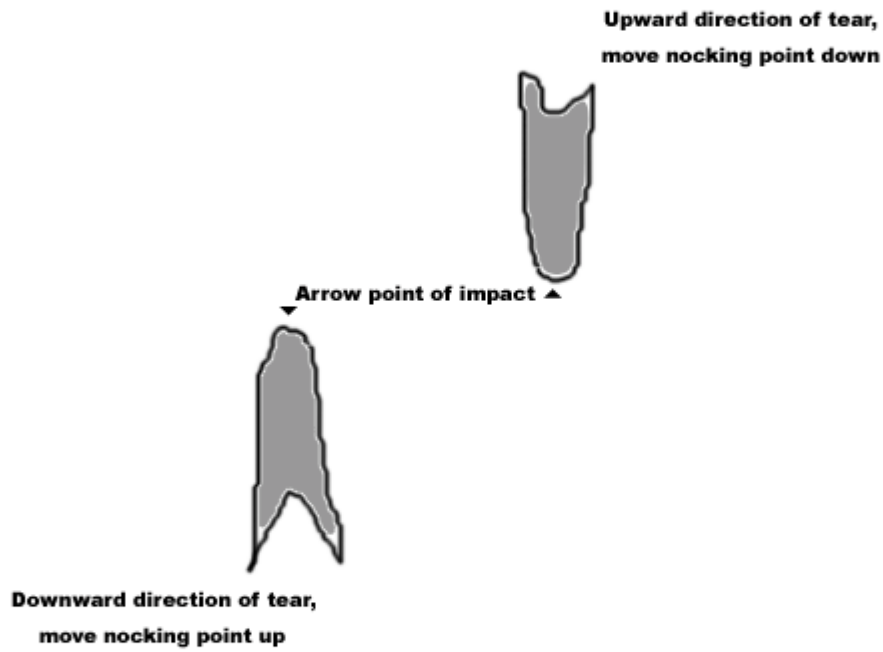
30 or less - This is okay to shoot at frogs in deep muck where you’ll never find the thing again.

Now that you know how to effectively test broadheads and make a responsible choice in which broadhead you should shoot, let’s have some fun by either watching some mini-hunts or taking the responsible shot test by clicking back to the home page.

Have fun afield and always take the responsible shot with the best head you can get.

Nocking Point Paper Test Sheet

(print copies to shoot through & use a field tip on a bare shaft)



Arrow Spine Paper Test Sheet

Shoot through paper at 10 feet for finger shooters
Release shooters use paper on backstop at 20 yards
(print copies to shoot through & use a field tip on a bare shaft)

For Left-Handed Shooters



**Arrow tail tears to the right,
your arrow spine is too weak**



**Arrow tail tears to the left,
your arrow spine is too strong**

For Right-Handed Shooters



**Arrow tail tears to the left,
your arrow spine is too weak**



**Arrow tail tears to the right,
your arrow spine is too strong**