

4 Steps To Perfect Broadhead Flight

Broadheads are more difficult to shoot accurately than field points. Follow these four steps and the odds are your broadheads will group better than ever.

1. The Well-Tuned Bow

Most broadheads, however, aren't going to let you get away with bad tuning, especially if you have a fast bow. This is because the blades on a broadhead can act like wings and steer an arrow all over a target face. Launch an arrow poorly and the blades will catch air and drift off target right from the start.

Make sure to re-check your arrow spine before you begin tuning. Having an arrow that's too stiff or soft will make it impossible to achieve perfect broadhead flight. Make sure to consider all the variables that influence spine stiffness. According to Easton, the variables are:

1. shaft size (diameter and wall thickness)
2. shaft length (+/- 3/4 to one-inch can significantly change shaft stiffness)
3. weight of the broadhead to be shot (+/- 25 grains can significantly change shaft stiffness)
4. draw weight of the bow (+/- 2.5 to five pounds can significantly change shaft stiffness)
5. archer's draw length (certain shafts become significantly weaker when cut past 28 inches)
6. string material (Dacron strings are slower and require a slightly softer arrow, for example)
7. type of bow (recurve or compound with a wheel, soft-cam or speed-cam)
8. finger or mechanical release (finger shooters require a slightly stiffer arrow)
9. bow length (bows less than 40 inches in length require a slightly stiffer shaft)
10. overdraw length, if used (three-inch-plus overdraws require a slightly stiffer arrow)

Once you've got the right arrow, you need to tune the bow to the shaft. You don't have to tune with broadheads at this point; field points are fine at this stage. Later, you'll want to shoot at long range with broadheads (anywhere from 35–50 yards depending upon your skill level) to test your tune.

2. The Right Fletch

A lot of bowhunters go for extra speed by reducing arrow weight. That's OK, within reason, but don't save weight by cutting back on the size of your fletch. Arrows with field points can get by with very little fletch guidance. The same is not true in regard to broadheads. You need a lot of fletch to counteract any attempt by the broadhead to steer your arrow from the front of the shaft.

The general recommendation is that release shooters use five-inch vanes or four-five inch feathers. You can sometimes get away with four-inch vanes and three-inch feathers on arrows weighing less than 425 grains, but it never hurts to have a little extra guidance. You should also consider that you might need extra guidance on lighter shafts because they're going to be launched from your bow at a higher velocity.

Feathers, by the way, do offer more guidance than equivalently sized vanes. This is because their rougher surface offers more wind resistance. Traditional shooters should almost always go with five-inch feathers or possibly a four-inch, four-fletch combination. Finger shooters need all the help they can get to counter the initial wobble of a finger-released arrow, and shooting off the shelf requires a fletch that collapses when it hits the shelf. Compound shooters who have a finger

release are also probably better off using feathers. Whether you're using shooting fingers or a release, you should have a helical setting on your fletch. You never want a perfectly straight fletch when shooting broadheads. Helical fletching does a much better job of stabilization. A helical fletch causes the arrow to spin like a well-thrown football. This moderates any attempt by the broadhead to steer the arrow.

Bowhunters who use small-diameter carbon shafts may have trouble with their fletching clearing the arrow rest when using a helical orientation. In this case, the best choice is to select a straight offset of about one to three degrees. Incidentally, this is how most arrows prefletched by the manufacturer are oriented. Despite the campfire stories you might have heard, feathers and/or a helical fletch will not slow your arrows significantly downrange. Feathers are initially faster and only start losing speed once you're well past typical hunting ranges (50 yards). Helical settings on vanes cause almost no loss of speed at hunting ranges. So, err on the big side if you're uncertain about what fletch to use.

3. Front of Center (FOC)

If there's one variable of broadhead flight that's often overlooked, it's the arrow's front-of-center balance point, or FOC. In practical terms, FOC determines how much leverage the fletching has to correct the arrow's flight. The farther forward the balance point is from the center of the arrow--the FOC point--the longer the lever the fletching has to work with and the easier its job. The general recommendation for FOC is 12 to 15 percent for broadhead-tipped arrows. This compares to a recommendation of eight to 11 percent for field points (for pure target applications). The difference in suggested FOC is due, in part, to the longer length of a broadhead. It's also due, in part, to field points not having the ability to steer an arrow like a broadhead can.

Finger shooters, and those shooting shafts less than 26 inches in length, should probably look for a higher FOC. This is because shorter arrows are inherently less stable, and finger shooters, once again, need a little extra help to correct the normal arrow wobble upon release.

Note that it's possible to shoot very accurate groups with field points with less than eight percent FOC, but again, field points are more forgiving than broadheads. Just as with fletch size, it's better to err on the large side with FOC. You don't want to go overboard, though (past 18 percent). Too much FOC makes your arrows point-heavy and less aerodynamic downrange.

How do you figure out your arrow's FOC? The formula is: $[(ABP \div TAL) - .50] \times 100 = \text{FOC}\%$. ABP is the distance to the arrow's balance point from the nock of the arrow, and TAL is the total arrow length. All you need is a tape measure and something to balance an arrow on (like a pencil) to use the formula. First, balance the arrow and mark the balance point with the pencil. Then measure from the throat of the nock (where the string fits inside the nock) to the mark you made at the balance point. This is the arrow's balance point (ABP). Next, measure the length of your arrow from the throat of the nock to where the insert goes into the shaft. This is the total arrow length (TAL). (If you use carbon shafts with outserts, measure to where the point screws in.) Finally, input the figures into the FOC formula. For example: If you had a 30-inch arrow that balanced at 19 inches, the formula would read: $[(19 \div 30) - .50] \times 100 = 13.3 \text{ percent FOC}$.

What do you do if your arrow's FOC is too low? You might have to use a heavier broadhead or change shafts. Be careful here. Adding a heavier head can change arrow spine, meaning you might have to use a different arrow or, at the very least, re-tune the bow.

If you really don't want to change shafts or components and you're shooting vanes, try switching to feathers. They're typically much lighter and could move your FOC forward by two percent or more. You can also try using a lighter nock.

4. Straight To The Point

The final step is to make sure your arrows are perfectly straight and that your broadheads are perfectly aligned. The easiest way I've found to do this is with an arrow inspector. One quick spin on the Arrow Inspector will reveal even the slightest bend.

This tool is also invaluable for checking broadhead alignment. It will reveal whether your insert is square in the shaft and/or if the broadhead is bent. It's perfect for mounting traditional heads too. While I've never had bent broadheads from any of my favorite manufacturers, it never hurts to check each and every head. A warped broadhead or a bent arrow can result in terrible arrow flight.

Don't worry about aligning the broadhead's blade with the fletch. This is a wives tale that's been debunked by scientific testing. Those individuals who insist this makes a difference have likely experienced a poorly aligned insert. Rotating the insert to put the broadhead's blades in line with the fletch probably improved the broadhead's overall alignment.

Good Hunting!