

Archery Club

September 2017

Fletching

Vanes or Feathers

Straight or offset or helical

Nocks Points FOC

Let's discuss the purpose and composition of fletchings. Think of fletchings as propeller fins for your arrow. They induce spin and stabilize its flight. As the shaft slices through the air, the wind flows over the fletchings, which spin and help align the shaft toward your aiming point. Arrows most commonly are fletched with three feathers or vanes. Some archers use four to stabilize large broadheads or to allow them to lower the profile of all the fletchings



Vanes or Feathers?

There are no hard and fast rules when it comes to choosing between feathers and vanes. The best way to figure out what will work with your rig under the conditions you expect to encounter is to try both and gauge the results.

Feathers impart more drag and spin on the arrow, along with being lighter and more flexible than **vanes**. **Vanes** are more durable.

Feathers:

Advantages

Lighter

Better rest clearance

Much better at broadhead stabilization

More durable for target practice grouping

Can fletch with as much twist as needed

Tend to have better “correction” capabilities when hitting a limb

Vanes:

Advantages

Less Expensive

Less noise when released from bow

More common in pro shops

Slightly easier to fletch

Trueflight's **Feather Facts**

Why do feathers give better guidance?

The surface of a feather has a slight roughness which helps "grip" the air flow. When the arrows yaw, this added grip helps realign it quickly and efficiently. The huge weight saving with feathers also helps stability. Any weight added to the rear of the arrow (like plastic vanes), makes the arrow LESS stable. Add too much weight on the rear and the arrow will try to swap ends. Finally, as the fletching crosses the arrow rest on release, feathers simply fold down out of the way, then pop back up. Plastic vanes bounce the rear of the arrow far out of alignment. This large deflection causes a substantial arrow "swing" which is only aggravated by plastic vanes weight and lack of "grip". **Does that "swing" matter?** Yes! While the arrow is yawed, aerodynamic forces are forcing it AWAY from its original path. The arrow is no longer going where it was aimed. Due to the sluggish straightening ability of plastic vanes, the arrow typically oscillates from one yawed condition to another. This yawing cost speed, range and accuracy. **Why is bow tuning so much easier with feathers?** The feather's ability to fold down when hit eliminates the large initial swing. The light weight of feathers inherently adds to the stability of the arrow. The "grip" of the feathers adds further to clean, straight flight. The combination of all these advantages means good, consistent arrow flight is built into the arrow. Because of this it will tolerate a wide range of bow variables. Arrow rests, pressure buttons, release aids, shaft spines; all are much less critical and require a minimum of set up.

Fletching length and height

Vane size (length and surface area) also plays a large role in the amount of stabilization your arrow will receive. Small low profile vanes will do less to stabilize the arrow than large high profile vanes. The more or less surface area a vane has, the more or less contact it will have with the air.

Higher surface area vanes are more effective at correcting the arrow in flight. This plays a large role if you release an arrow with bad form because the fletching will help correct this to a slight degree shortly after the arrow leaves the bow.

FLETCHING SURFACE AREA The larger your fletching, the larger the surface area and contact patch with the wind. So a larger 4-5" fletch certainly has some aerodynamic advantage when it comes to correcting unstable arrow flight. If you shoot a big gnarly fixed-blade broadhead, or if you're a finger/traditional shooter, you should definitely get the larger fletching material. You'll need it. But if you shoot a well-tuned modern compound with a mechanical release and expandable broadheads, a 2-3" fletch will be plenty. A jumbo fletch on a prime modern rig is arguably just dead weight.

FLETCHING TURN

STRAIGHT, OFFSET OR HELICAL? Another factor that determines the effectiveness of your fletching is the *turn*, or angle of the fletch on the shafts. If your fletching is arranged in a helical (spiral) pattern—like a boat propeller—your arrow will rotate in flight. Much like a football that's thrown with a perfect spiral, an arrow will fly straighter and be more stable if it rotates in-flight. Aerodynamically, a helical configuration is clearly a better choice. However, a helical fletch may not always be appropriate or necessary for your particular bow setup. For example, some arrow rests will not provide enough clearance to allow a helical fletch to pass thru without contact. In this case, many archers use an offset fletch, where the vanes are still straight, rather than in a spiral pattern, but they are slightly turned on the shaft to promote some rotation in flight without compromising fletching clearance. For very unforgiving arrow rests with limited clearance, or for competition target setups that don't require much stabilization, the straight fletch may be the best option. Take a look at the diagrams below and the corresponding pros and cons associated with each fletching configuration. When you order your arrows, you'll need to select one of these options.

STRAIGHT



- Pro: fastest flying vane configuration
- Pro: least amount of air resistance
- Pro: works with any arrow rest
- Pro: minimal fletching clearance problems
- Con: less stable at long distances
- Con: less stabilization for broadheads
- Con: best used in a well-tuned bow

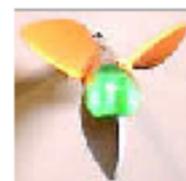
OFFSET



- Pro: better broadhead stabilization
- Pro: minimal air resistance in flight
- Pro: works with most arrow rests
- Pro: stable flight to intermediate distance
- Con: needs more fletching clearance
- Con: loss of velocity (tiny)

MOST POPULAR CHOICE

HELICAL

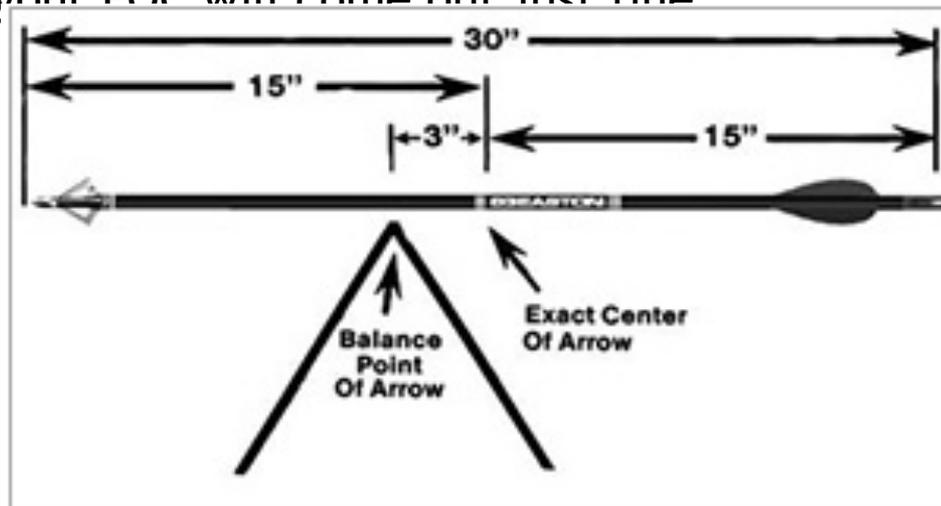


- Pro: best broadhead stabilization
- Pro: most consistent arrow flight
- Pro: increased overall distance accuracy
- Pro: corrects flight attitude problems
- Con: loss of arrow velocity in flight
- Con: fletching clearance problematic
- Con: not compatible with containment rests

FOC (FRONT OF CENTER BALANCE)

If you're not familiar with the concept, FOC refers to the balance point of the arrow, end to end. A projectile's flight is most stable when most of the projectile's mass is positioned on the leading side. An arrow should be heavier in the front than in the back. But how much? Where's the "perfect" balance point? Most experts suggest a balance point of 7-15% front/forward of center.

Most common arrow components tend to yield finished arrows well within the recommended 7-15% FOC range. If you're buying typical hunting arrows, it's going to be a non-issue. Move on. The only real danger of slipping off the FOC precipice is if you use really heavy fletching and super-lightweight target nibbs, or if you choose small light fletching and a macho man tip weight (or a heavy brass insert). For common arrows with basic vanes or feathers, aluminum inserts, and 85-125 grain tips, chances are your FOC will come out just fine



What About Points?

Link to Lancaster Archery Guide to Points

<http://www.lancasterarchery.com/blog/basic-guide-to-target-archery-arrow-points/>

And What About Nocks?

Link to Lancaster Archery Guide to Points

<http://www.lancasterarchery.com/blog/a-basic-guide-to-arrow-nocks/>