



# The Nitty Gritty of Feathers

## Shapes:



The most popular feather shape in the US is the **Parabolic / Round Back**. This lower profile shape provides dependable, fast and accurate results. The **Shield / Shield Back** provides a higher profile for increased stability, forgiveness and "Traditional" looking appeal. The **Magnum / Banana Cut** is even more feather for arrows tipped with larger / heavier broadheads. The **Cut Section / Full Length** are made for Archers to design their own shapes and sizes using a feather burner or chopper. The **Rayzr** is a 2" feather made with Whisper Quiet Technology. The shape is altered by increasing the angle on the back of the feather and cutting the Rayzr from a specific location in the full length feather making it the "**First Modern Feather for Modern Bowhunters**".

## Sizes:

Size	Available Shapes	Target / 3D	Hunting	Comments:
1 7/8"	Parabolic	Yes	No	Popular outdoor target feather
2"	Rayzr	Yes	Yes	Very good with fixed blades & Whisper Quiet!
2 1/4"	Shield	Yes	No	Left wing only
2 1/2"	Parabolic	Yes	No	Right wing only
3"	Parabolic + Shield	Yes	Yes	Use with mechanical heads for hunting
4"	Parabolic + Shield	Yes	Yes	Is now the dependable do-it-all feather!
5"	Parabolic + Shield	Yes	Yes	Traditional feather and size!
5 1/4"	Cut Section	Yes	Yes	Flu Flu's + Design your own shape
5 1/2"	Magnum	Yes	Yes	Big feather for heavy arrows / broadheads!
<b>Full Lengths</b>	Make your own	Yes	Yes	Design your own shape + size

In all situations where broadheads are used, use enough feather to stabilize the arrow, so the broadhead does not guide the arrow. We recommend you always Bare Shaft Tune your arrows to your bow and then either Paper Tune or Walk Back Tune your bow. Always test shoot your equipment safely.

Size	Average Weight	Height in MM	Height in Inches	Comments:
1 7/8" Parabolic	0.64 Grains ea.	12 mm	0.472 in.	The heights of these feathers were measured at their highest points. While the 4" and 5" Shield Cuts have the same height as their respective Parabolic Cuts, their weights are more because the Shield Cuts use more feather in their profiles.
2" Rayzr	1.40 Grains ea.	13 mm	0.512 in.	
2 1/4" Shield	1.67 Grains ea.	16 mm	0.629 in.	
2 1/2" Parabolic	0.80 Grains ea.	12.5 mm	0.492 in.	
3" Parabolic	2.04 Grains ea.	13.5 mm	0.531 in.	
3" Shield	2.21 Grains ea.	16 mm	0.629 in.	
4" Parabolic	2.76 Grains ea.	15.5 mm	0.610 in.	
4" Shield	2.95 Grains ea.	15.5 mm	0.610 in.	
5" Parabolic	3.63 Grains ea.	16.5 mm	0.649 in.	
5" Shield	4.10 Grains ea.	16.5 mm	0.649 in.	
5 1/2" Magnum	4.26 Grains ea.	19.5 mm	0.767 in.	

## Colors:

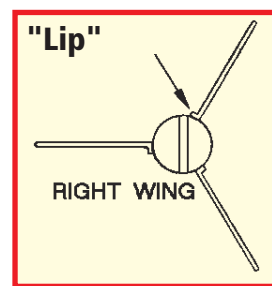
Gateway offers a virtual rainbow of Unequaled colors starting with our **16 Vibrant Solid** colors, **9 Affordable Imitation Barred** colors, **8 Exclusive Camo** colors and **3 Patriot** colors. Using the Fluorescent colors enables archers to see their arrow fly in low light situations. Darker colors can be used for discreetness and contrasting colors in **Spliced Feathers**. Gateway's imitation barred colors provide beautiful contrasting stripes on solid colors. And our exclusive Camo colors will help break up your outline, hiding your arrows from endlessly searching eyes.

## Left Wing or Right Wing:

A right handed person may use left wing feathers or right wing feathers and a left handed person may use right wing feathers or left wing feathers. **What does matter is the type of clamp you have with your fletching jig.** Inspect the clamps you use to build your arrows. Clamps marked with a RH indicates right wing helical, while LH indicates left wing helical. No marking on the clamp means you are using a straight fletch clamp and "wing" does not matter. Do not mix left and right feathers on a single arrow. One advantage to using right wing fletch is field points will tighten on impact with the target. If you're using left wing fletching, waxing the threads of your field points will stop them from loosening.

## Identifying Left and Right Wing Feathers:

Grasp the feather by its smooth, evenly ground base. Upon inspection, the "Lip" on the base is on the rough side of your feather. Hold the feather so the rough side is facing away from you. Pull the feather web apart. Turn the feather, so when you stroke the webbing from the top down, the webbing comes apart. The direction the webbing is pointing, either left or right, is the wing of your feather.

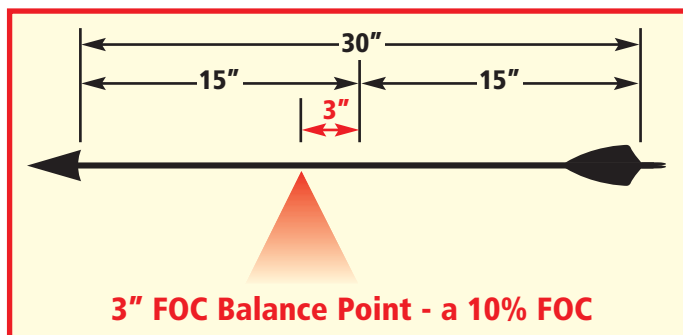


If the feather you are trying to identify is already on an arrow, hold the arrow and look down the nock end. If the base "Lip" is on the left side of the webbing the feather is a right wing. Vice versa for left wing.

## How to:

**A. Select the Correct Size Feather** - Decide what you are going to do with your equipment. Indoor Target archery is different from Outdoor 3-D. Hunting with thin diameter carbon shafts is different from hunting with cedar shafts. Start by using the recommendations in the Size Chart (first page). Using a larger feather will give you excellent control over your arrow. The smaller the feather, the quieter and faster your arrow. Indoor target archers should choose the largest feather that provides adequate clearance and fletch it with a tight helical twist. Outdoor target archers and hunters should choose the smallest feather that provides consistent arrow flight with both field points and broadheads.

**B. Understand FOC** - Your arrow has a balancing point. On a bare arrow with no nock, point or inserts, the balancing point will be in the center of the shaft. Once completed, if your arrow's balance point stayed exactly in the arrow's center the arrow would perform poorly in flight. FOC is expressed as a percentage.

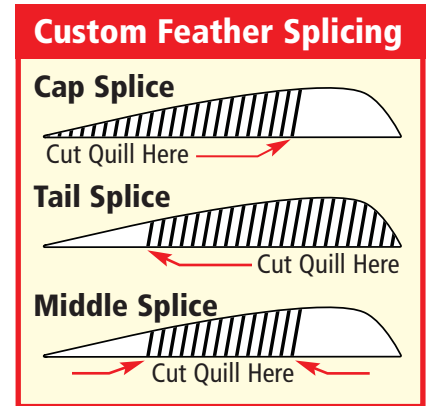


Measure the length of your arrow from the bottom of the nock groove to where the point contacts the arrow shaft. Here is an example, measure your arrow and divide the length in two, a 30 inch arrow divided by 2 = 15 inches. Now, use a straight, thin object to balance your arrow on. Mark the balance point and measure from the nock groove to this balance point mark. In this example the arrow's balance point has moved forward to 18" from the nock groove. Now, take your second answer, the balance point of the completed arrow (18 inches) and subtract the exact middle of the arrow (15 inches) 18 - 15 = 3. Take the answer and divide it by the total arrow length. (3 divided 30 = .1) Multiply the answer by 100 and you have your FOC percentage (10%).

The suggested use of FOC information is when you are having erratic arrow flight. By manipulating your arrows FOC balance point you might improve your arrow flight. There is no magic number but there are acceptable ranges and if your arrows don't fall into a 7% to 14% FOC range and you are not seeing good arrow flight adjust your FOC.

Using feathers instead of plastic vanes allows you to move your balance point Forward of Center (FOC).

**C. Splice Colors** - Pick your favorite colors, as many as you like, using feathers of the same wing. Prepare your arrow shaft by scuffing the fletching area with fine grit sandpaper or steel wool. Clean this same area using a solvent recommended by the manufacturer, keeping in mind rubbing alcohol always works. Prime this area if you are using fast set gel glues. Decide how far down the arrow from the nock end you will place your feathers. Place a mark on the clamp at this point. Also, mark the clamp where the feather base will be cut. Always insert your feather on the same mark and make all cuts on the same marks. Place your feather in the clamp and cut the base completely through with an exacto knife. Repeat the process on the alternate color feather. Remove the alternate feather. In your hand, hold the pieces you wish to join. Upon putting them together, notice how the feather attaches itself and attempts to "heal" itself. Place the loosely joined pieces into your clamp and glue to the shaft. When you have finished this arrow and are dabbing a drop of glue on the ends of each feather, place a small dab along the base where you made the cuts. Even any height differences with a scissors cutting from the nock end down.



**D. Attach Feathers to Arrows** - Scuff the fletching area of the arrow with fine grit sandpaper or steel wool. Clean this same area using a solvent recommended by the manufacturer, keeping in mind denatured alcohol always works. There are many fine glues and tapes to use. Using a Cyanoacrylate adhesive (super glue) will allow you to attach feathers to your new arrows in under one minute per fletching. A dab of regular glue on each end of a feather will keep them from peeling up or off on pass through shots. Always mark your clamp for consistent placement of the feather on the arrow. There are many types of fletching jigs from which to choose. Choose one which will give you consistent fletching placement on each arrow. Your arrows are your ammunition the more precise you are when you build your arrows the more precise your shots will be.

**E. Care for Your Feathers** - Storing your feathers in zip lock bags will keep your feathers fresh, dry and ready to use.

**F. Repair Your Feathers** - Use steam and finger pressure to repair wrinkled feathers. You don't have to replace wrinkled feathers. Feathers are not like vanes. Feathers can have small portions missing and this will not adversely affect arrow flight.

**G. Add Feather Arrow Tracers** - For added visibility. Dab some regular glue (Fletch Tite) around the arrow shaft above the fletching. Have about 3/8" of glue completely wound around the shaft. Carefully, place the arrow under your arm in your armpit with the fletching facing forward. Hold the feather tracer lightly by its quill and lay the quill into the bed of glue and spin the arrow with your free hand until the arrow tracer is all used up. Hold the tracer in place until dry. Waterproof all feathers when the glue dries.

**H. Waterproof Feathers** - Only apply powder to fletched arrows. Place the powder in a zip lock bag. Shake the powder onto the feathers and work it into the web of the feather using your thumb and forefinger. Shake off any excess powder. Expect the powder to last for an entire tournament with target arrows and the hunting season with hunting arrows.

**I. Get Tighter Groupings** - Fletch your arrows with one clamp and jig. This eliminates any differences in degree settings between various fletching jigs. Weigh your arrows with a grain scale and match your components. Use heavier inserts, points and nocks with lighter shafts. Vice versa with heavier shafts. Group the shafts as close as possible in weight and mark this identification on your arrows. By knowing which arrows differ in weight, allows you to adjust your shot accordingly. A very attainable benchmark is to shoot arrows built within 3 grains of each other.



# Frequently Asked Questions

## 1. Q: Are feather fletched arrows faster than plastic vane fletched arrows?

A: Yes, feather fletched arrows are faster than plastic vane fletched arrows.

## 2. Q: Why are feather fletched arrows faster than plastic vane fletched arrows?

A: First and foremost - Feathers weigh less than plastic vanes. In a recent test, Gateway's new Rayzr feather weighed 1.4 grains a Blazer vane weighed in at a whopping 6.2 grains. That's more than a 440% difference in weight alone. In a race to the target why load your arrow down with excess weight?

## 3. Q: Why do feathers guide arrows better than plastic vanes?

A: Feathers are all natural and these wonderful creations are meant to fly. There is a slightly rough side to feathers which "grip" the air during flight. This 'grip' is what helps stabilize the arrow if there are any variances in the arrows release.

Feathers are soft and pliable and will absorb impact with a rest or branch and have little to no deflection of the arrow flight path, unlike a hard, stiff plastic vane which can cause a large deflection in your arrow flight path.

## 4. Q: Are parabolic shaped feathers faster than shield shaped feathers?

A: From the testing we've done, through a chronograph out to 40 yards, No. Identical arrows other than one having 4" parabolic feathers and the other 4" shield shape feathers were shot and both readings were identical.

## 5. Q: What type of feathers are used to make feather fletching?

A: Turkey feathers are used for our feather fletching. We use the Primary Flight feathers from turkey. These feathers are a little stiffer and more durable than the secondary flight feathers. The feathers are collected from birds throughout the United States.

## 6. Q: Will the Rayzr feather accurately guide a fixed blade broadhead?

A: Yes, the 2" feather will work exceptionally well when you bare shaft, paper and or walk back tune. Gateway's DVD "*Building the Perfect Arrow*" explains bare shaft and paper tuning.

## 7. Q: What is "Whisper Quiet Technology"?

A: The 2" **Rayzr** feather is its own **unique shape**. Starting with a shield shape feather we increased the angle between the quill and highest point in the feather we continued to adjust the height and length difference until we achieved what we think is the optimal size for stabilizing fixed blade broadheads shot from modern equipment. Wanting to provide an even better product for archers and bowhunters around the world we started cutting the **Rayzr** from a specific location with the full length turkey feather. The results were astounding. A **Whisper Quiet** Feather! Now everyone using **Rayzr** feathers can achieve **Whisper Quiet** arrow flight.

## 8. Q: How should I fletch the new Rayzr feathers?

A: Fletch **Rayzr** feathers with a helical twist. While it is difficult to achieve a large degree of helical twist with clamps designed for 4" and 5" fletching you can also adjust some jig and clamp combinations to include a small amount of "offset" into the helical clamp. Use clamps and jigs which give you the most versatility!

