

Bow Tuning

Arrows & Bare Shaft Method

Version 0.2

Matching Your Arrows to Your Bow

To move your archery on and get consistently better groups and scores you really need to spend time understanding how to tune your setup. You'll want to make sure that you have the right spine of arrow for the weight of the bow you are shooting. The goal is to get the arrow and the bow all working together. You will likely need to adjust your bow to the arrow you are shooting as it is difficult to manipulate the arrow alone.

Where to Start

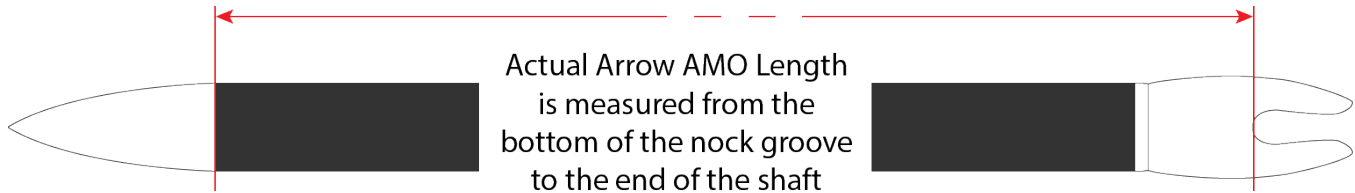
You should be a reasonably competent archer to start tuning and should be able to create a reasonable group of arrows up to 40 metres. To start we need to understand the variables.

Bow Draw Weight

You need to get a reading for your bow weight (how much weight is on your fingertips at full draw). You should be using a clicker by now so this should be easy, you just load up an arrow and attach a bow scale above or below your nock point. Then pull the string with the bow scale until you just go through the clicker and read what the bow scale says the draw weight is. Do this 3 or 4 times so that you get an average for your draw weight and attach the bow scale above and below the nock for good measure.

Arrow Length

This is usually measured by what is called the AMO (Archery Manufacturers Organisation) length and is a measurement of the arrow from the end of the shaft (not the point) to the bottom of the groove in the nock.



It is suggested that at full draw you have about 25-40mm of arrow beyond the rest.

Arrow Selection

It's probably reasonable to assume that someone like Easton has done a lot of arrow testing, probably more than the average archer could do anyway. So it's therefore reasonable to make your arrow selection using the Easton arrow charts to determine which spine of arrow you should be shooting with. It's not going to be perfect, because Easton don't make an arrow just for you. You will need choose an arrow based upon your draw length and the draw weight you measured earlier. Easton provide a weight range and length to choose from. However, because these are ranges, it's probably not going to be perfect for you straight away and that's why we do this additional tuning. But it should be close enough to start.

Selecting the right arrow is an attempt to get the arrow to flex at the right speed and by the right amount, it will make it easier to tune your setup and should prevent the fletches from hitting the Rest, button or shelf on your riser.

Weak or Stiff Arrows

An arrow that is unmatched to your bow may be more difficult to tune and will likely not give you your best grouping. It is also more likely to causes the fletches to catch the rest, button or shelf as they pass. If you're getting consistent fletch damage and marks on your riser's shelf, this could be because your arrow is not quite right for your setup.

An arrow that is considered weak for your bow will over flex on release, the arrow can then find it difficult to settle down in flight. A weak arrow is often described as "Whippy" and will tend to shoot towards the side of the target matching your draw hand.

A stiff arrow on the other hand can be equally difficult to group with and will not flex enough in flight.

In my research for this article I've read and heard many views on this subject and there is perhaps a slight preference to a stiffer arrow in people's opinions. But there are so many variables you can probably go one way or the other and get similar results. If you had pots of cash you'd buy a set of each and try them all to find the one that works best for you but a set of ACE's is not cheap. Anyway, Easton have apparently done all that, so I'll go with their guidance.

Point Weight Choice

It is commonly recommended that you should use the heaviest point you can in an arrow. The advantages are that a heavier point will make the arrow track better, will help to reduce the effect of wind and can also help an arrow to straighten or settle during flight.

Easton will suggest a point weight for your recommended shaft but if you have selected a shaft where your bow weight is right at the lower end of the recommended weight range for the arrow, you may need to go a little heavier.

What does point weight do? A heavy point on an arrow will have the effect of making the arrow weaker, it'll also make the arrow heavier, which will increase your sight marks. A wrap by the fletches on the other hand will make an arrow stiffer.

Bare Shaft Tuning

This description is based upon a right handed archer, swap the lefts and rights around for a left handed archer. It is also assumed that you have already set the bows centre shot, although it should be noted that you can still set the centre shot on a bow even if the arrows are weak or stiff.

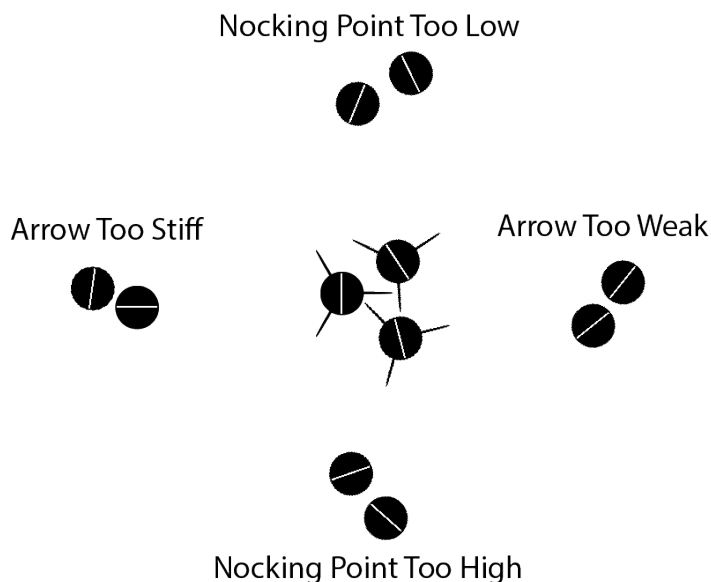
Bare shaft tuning will help us:

1. Tune your bow weight/draw setup to the recommended arrow.
2. Tune for tighter groups.

With a target at about 20 metres shoot groups of 5/6 arrows that include 2 bare shafts. You should really do this when you're fresh in order to get your best groups and the best results. I'd also suggest this is done indoors or in the best possible conditions outside and you should really be at a stage where you can shoot an identifiable and reasonable group of arrows (about 20-30cm in diameter).

If your bare shaft arrows fall to the right of the group, this indicates that the arrow you're shooting is too weak. The arrow has flexed and unlike the fletched arrows, which have been steadied to the target by the fletches, the non-fletched arrows have allowed the flexing to take them off course. To bring the

non-fletched arrows back to the group, you should slightly weaken the bow weight or stiffen the arrow (by decreasing point weight).



Equally, if your bare shaft arrows fall to the left of the group, this indicates that the arrow you're shooting is too stiff. The arrow has not flexed enough and unlike the fletched arrows, which have been guided to the target by the fletches, the non-fletched arrows have been kept on course. To bring the non-fletched arrows back to the group, you should slightly increase the bow weight or weaken the arrow (by increasing point weight).

Shoot For Groups

When you've got the bare shafts and the fletched arrows all in the same place, take a note of the nominal button setting and go to a target at 50/70 metres. We can now adjust the button pressure to try to improve your grouping by shooting a number of groups, each time tweaking the button pressure up (a full turn or two) to see if that improves the group. Then go back to the nominal setting and shoot more groups tweaking the pressure down each time.

What should happen is that your groups get bigger and smaller as you tweak the button pressure. Be as methodical as you can, make careful notes of the groupings and try to identify where you get the best groups. You should identify a button setting where the groups were their best. Set your button pressure where you got the best group and repeat this process, this time only changing the button by a quarter turn to see if you can find the best possible position. If you can identify a point where the groups are best, set your button to that pressure.