

STAY TUNED PART TWO

Andrew Smith goes through the crucial tests in the second instalment of his guide to recurve bow tuning



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Bow tuning begins

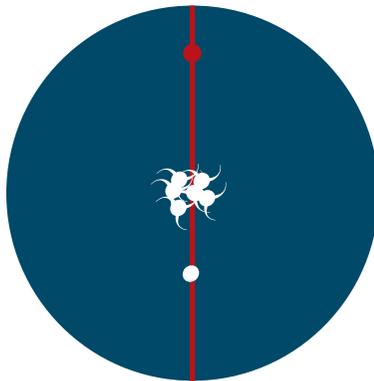
The most important thing to do from the start is make notes and only change one thing at a time. This way it is easier to find the correct settings and make changes. If you are shooting outdoors, select a very calm day with no wind.

The first step is to put your bow together, ensuring it is strung correctly. You should by now be in the habit of checking that the limbs are the right way round and not twisted. Attach all the accessories you normally use, such as the longrod, to your bow, as these will affect the adjustments we are about to make. If you shoot with a clicker then you should use it for these tests, and do not forget to shoot with the same tab as you normally do. Lastly, it is important to warm up before shooting. The best thing to do is to shoot a few ends to get you into your shooting stride.

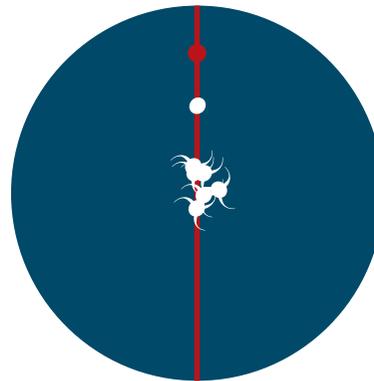
There are a few settings you need to take care of before running the tests. Firstly, I will assume that the centreshot is set so the point of the arrow is to the left of the string when looking from the back of the bow (for left-handed archers this will be reversed). Secondly, set the bracing height using the method I described last issue.

Finally – and this is very important – you need to make sure the arrow is not hitting any part of the bow on its way to the target, as this will make any results from the tests meaningless. To check for arrow clearance, sprinkle a fine powder around the arrow rest and shelf and shoot some arrows. Any marks in the powder will tell you where there is contact. To find out if the vanes are making contact, put a small amount of lipstick on them and, again, it will show on the riser.

The best course of action depends on where the contact is. The most common issues are due to poor form: Twisting the bow handle, not setting the centreshot far enough out, having soft button spring



Above left: bare shaft nocking point too low, bare shaft nocking point too high



Above right: bare shaft nocking point too low, bare shaft nocking point too high

Right: Bowshaft correct spring tension

tension or an arrow spine that is too whippy or too stiff, or setting the nocking point too low.

The bare shaft test

The general idea of this test is to fire a bare arrow shaft and see where it lands in relation to the fletched arrow in the vertical plane.

The test is best shot at 10 yards (9m) with aluminium arrows (once you get better you can move back to 20 yards) and 20 yards (18m) with carbon arrows. You will need to remove the fletchings from one of your arrows.

Wrap some insulation tape on the back of the stripped arrow to give it the same balance point as a fletched arrow, as this gives a more accurate result. The tape must be put on flat so as not to act as any sort of wing.

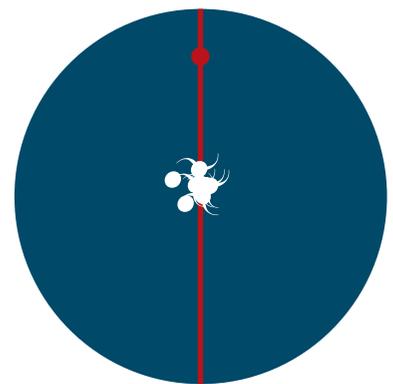
Set the sight up for the distance you are shooting and set the windage so that the sight pin is above the arrow. Remove the brass nocking points and create a temporary nocking point using a small amount of insulation tape. This will make it easier to move to the best position. Start by setting this at the same point as the brass nocking points.

Shoot three or six arrows with fletchings at the target, then shoot the bare shaft at the same point on the target. We are only interested in whether the bare shaft has landed above or below

the fletched arrow group. If the bare shaft is above the group then your nocking point is too low; below the group and it is too high on the string.

Your aim is to achieve a nocking point position where the bare shaft is about 1-3" below the group on the horizontal plain.

I suggest you repeat this process a couple of times with each nocking point setting, and if the bare shaft is in roughly the same place, move the nocking point about 1/8" in the right direction. Keep repeating the test and making adjustments until you get the desired result. When you are finished, don't forget to re-apply your brass nocking points, or change over to nocking points that are tied on using dental floss or string serving thread.



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Horizontal adjustments

This test will correctly set the button spring pressure for a right-handed archer (the readings will be opposite if you are left-handed). It is again done at 10 or 20 yards, and this time we are interested in how close the bare shaft hits in relation to the fletched group on the horizontal plane.

In this test we are looking for the bare shaft to land in the group of fletched arrows or just to the left, around seven o'clock (for a right-handed archer). Why this position? Because it gives the arrow good clearance from the bow.

If the bare shaft lands to the right of the group then the spring pressure is set too soft. Likewise, to the left and the spring is too hard. To adjust the button, loosen the top locking grub screw on the side of the button and, using the Allen key in the end of the button, turn it clockwise to stiffen the spring or anti-clockwise to weaken the spring tension. Initially, how much you move it will depend on where the bare shaft lands in relation to the fletched group. If the bare shaft lands at just below nine o'clock in the white, with the fletched arrows grouped in the gold, then one whole turn anti-clockwise is worth doing, but after that quarter turns are all it should take.

Walk back test

Once you have completed the bare shaft test, you can re-fletch your bare shaft. Another check you can do is the walk back test. The results of this test will gauge your arrow flight over a greater distance, identifying adjustments to your centreshot and button spring pressure and possibly addressing other issues such as poor arrow clearance.

The test is quite simple but to get the best results you need to have a nice calm day or a long indoor hall. Set up a target at 50 yards, with a target pin at 12 o'clock just in the black, and put a second boss below it on the ground, resting on the top target. The target pin will be your aiming point. Stand five yards in front of the target and set your sight for five yards (don't adjust your windage as it should still be set so the pin is above the arrow).

Shoot one arrow at the target pin, then walk back five yards and shoot another arrow, again aiming at the target pin. Repeat this until your last arrow is at the bottom of the second boss.

Where your arrows land will give you an indication of how your arrows fly at long distances and whether or not your centreshot and button spring tension are correct. Keep repeating the tests and adjustments until you get a pattern that is more or less a straight line, taking into consideration your shooting ability.

If your arrows drift to the right or left as you move back, you will need to adjust your centreshot. Drifting to the left indicates that your centreshot is too far out, and vice versa. The adjustments need to be quite small – about a quarter of a turn each time.

If you get a pattern of arrows creating a curve to the left then your spring tension is too stiff. Try reducing the spring tension by one-quarter. If they curve to the right then your spring pressure is too soft (again, the reverse applies for left-handed archers).

The diagrams to the left are exaggerated but it is important to adjust the centreshot first, the objective being to get the arrows in a relatively straight line – before fine-tuning pressure.

Once you have completed this exercise and are happy with the results, go back to 10 yards (9m) and repeat the bare shaft test. You will most probably find that the bare shaft no longer lands where it did before completing the test. This is because you have now found a set-up suitable for you. Make a note of the position of the bare shaft and the group. This way, if you change something or something breaks then you can quickly do a bare shaft test and set the nocking point and button to get the bare shaft to hit in the same place again, saving you all that time doing the walk back tests.



Above: Tuning is essential, if you want top scores

Below: The back screw alters button pressure, while the side screw locks everything down

My patterns don't match the pictures

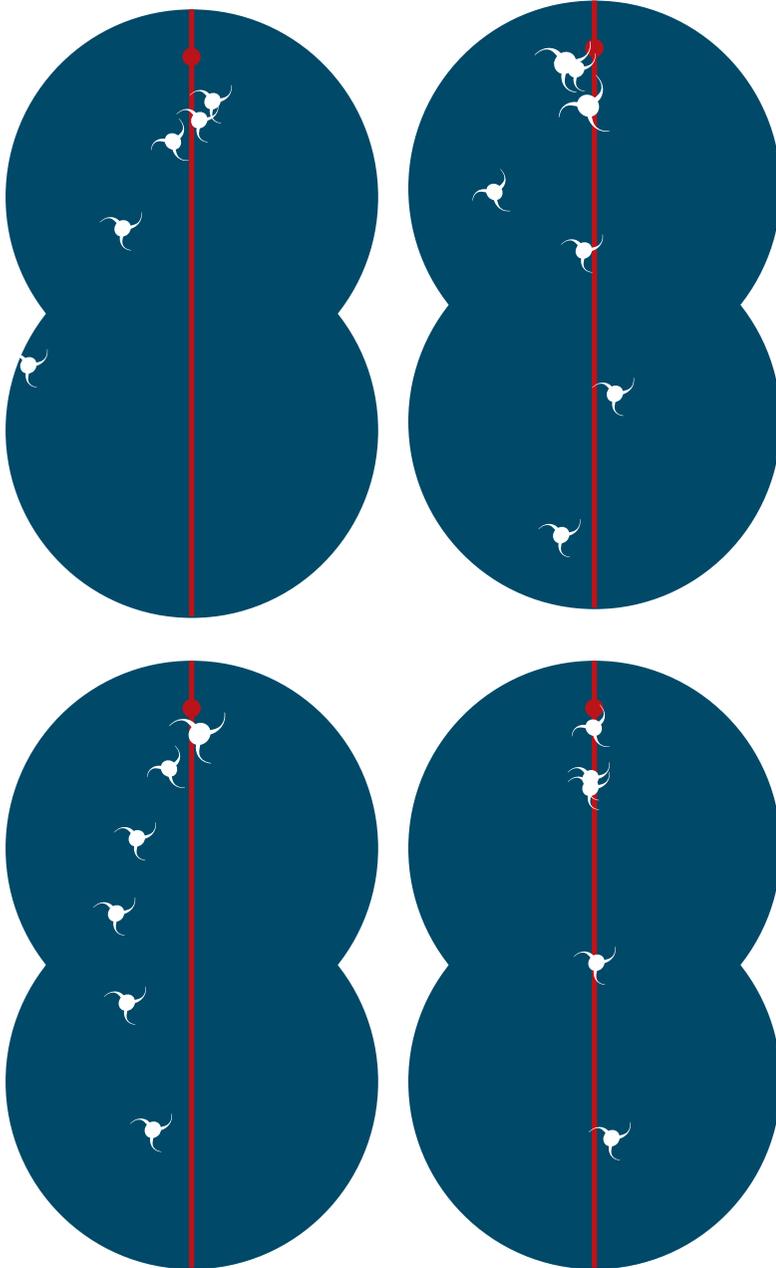
This is common and you have to take into consideration your own shooting ability, but if after checking all your adjustments the results do not seem right, there are a number of possibilities:

- You are unable to get the bare shaft to move closer to the fletched group when adjusting the spring tension. The most common reason for this is that the arrows have the wrong spine: they are either too weak or too stiff. The solution, after re-checking with your club coach, is to buy the correct arrows.
- You are having issues with arrow clearance: re-check using the methods mentioned above and start again.
- You are making odd left and right shots. Make sure that when you shoot you line the string picture up the same each time, otherwise erratic left and right shots will occur.

A final word on carbon arrows

It is not uncommon these days for archers to progress quickly from aluminium arrows to carbon arrows, mostly in an attempt to get lower poundage bows to reach longer distances. All the above tests can be carried out on





carbon arrows – although the walk back tests might be harder to interpret, as the patterns are not so defined.

To get the best out of carbon arrows once your settings have been adjusted, the next stage is what the top archers call “shooting for groups”. This involves shooting arrows that plot the group’s sizes, making changes to the bow set-up and seeing how this affects the group size. This is very time-consuming, and unless you can shoot groups small enough to recognise any sort of pattern at, say, 60m or 70m (adults) then your time is much better spent practicing.

Now that you have finished bow tuning, here is the bad news: The bow is tuned up only to how you shot during the tests. Tomorrow you might shoot differently due to tiredness, having a bad day at work, or any of a number of factors that affect your ability to shoot well. What does not change is the bow: It will shoot the arrows the same every time if allowed to do so. The good news is that you do not have to continually bow tune – just practice more. The only time you should consider checking the tune, especially at this early stage, is if you buy new pieces of equipment or something breaks or gets moved.

Top left: Walkback centre shot too far out

Top right: Walkback erratic results

Above left: Walkback spring tension too stiff

Above right: Walkback test finished result

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