

## Bow Setup & Tuning – Bare Shaft Tuning

In our bow setup and tuning guide part 1 we talked about arrow selection. In part 2 we covered brace height and tillering. In part 3 we covered limb alignment and centre shot. That's all the bow setup you can do without actually shooting it....now onto some that requires some actual archery!

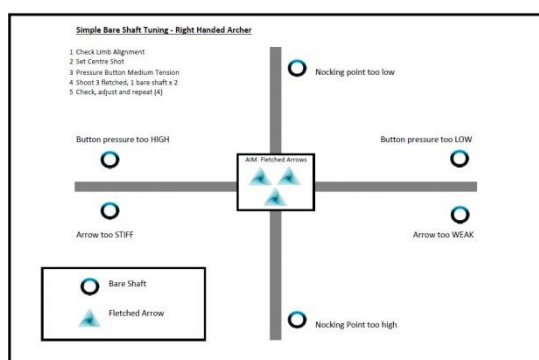
The vanes on the arrow are there to stabilise it. As the arrow is released, the action of the air against the vanes will effectively push the rear of the arrow behind the tip and create a straight and level flight. The main purpose of bow tuning is to get the bow setup to a point where the arrows need as little correcting from the vanes as possible. In an ideal world, we'd like to be able to shoot arrows without any vanes and for them to be just as accurate. This way the bow is as forgiving as it can be and the only inconsistency in the flight of the arrow will therefore be introduced by the archer(!). We achieve this tune using a process known as **bare shaft tuning**.

For this process you do have to be shooting fairly tight and consistent groups at 20 yards. If you can't do this then it'll be hard to judge whether any inconsistencies are due to the bow tune or the archer. So we will assume you are grouping mainly into the gold at 20 yards on a 122cm face. You should also have selected the correct arrow spine for your bow as discussed in previous newsletters. Incorrectly spined arrows will simply not tune correctly.

*Note: shooting a bare shaft may well result in the arrow going substantially off target! Make sure you are using a net indoors or a backstop outdoors. Learn from our mistakes! ☺*

Firstly, shoot a group of 3 arrows. Then shoot an arrow without vanes, a bare shaft. Then shoot another 3 normal arrows and then another bare shaft. We shoot a couple of bare shafts to make sure we get a consistent result and not just a poor shot. The result should be a reasonable group of 6 arrows together and 2 bare shafts in a similar position to **each other** but not necessarily in the main group. If not, repeat.

Observe the position of the bare shafts. Their position will indicate what needs to be adjusted on the bow. The diagram on the left gives an idea of what might need changing. This is for a right handed archer, for a left handed archer the left and right positions would swap.



Firstly, check height of the bare shafts. If they have gone higher than the group then the nocking point is too LOW and should be raised. Do this by 1mm at a time, perhaps adding a single loop of nocking point thread each time. Alternatively if the bare shafts have gone lower than the group then the

nocking point is too HIGH and should be lowered. Again, by very small amounts each time.

Get the bare shaft height tuned correctly before you move on.

Now examine the left and right position of the bare shafts. If the bare shaft has gone right of the group, this could indicate that the arrow spine is too weak or that the plunger pressure is too low. Assuming your arrow spine is correct (as discussed in a previous article!) you should first adjust the

plunger pressure in single turns, making it stronger, until you see the bare shafts coming into the middle. You may need to change the actual spring inside the plunger button for a stronger one as appropriate. If you've followed the arrow selection charts then your arrow spine shouldn't be too weak however you can make small changes to the spine to make it stiffer by either reducing the length of the arrow or reducing the point weight. Assuming your arrow spine is correct,

Of course, conversely if your bare shaft has gone LEFT of the group your plunger pressure might be too HIGH and you should adjust it lower in single turns (or by changing the spring) until the bare shaft comes into the middle. Alternatively your arrow spine might be too stiff and can potentially be altered a little by using heavier points.

Most modern recurve bows do have a +/- 10% poundage adjustment via the limb bolts (as discussed in the previous article on setting the Tiller). Potentially these can be used to add or remove poundage to better suit the spine of the arrow also.

In a worst case scenario, you might need to swap to an entirely different spine of arrow to bring the bare shaft perfectly into the group.

Having shot a number of bare shaft group sessions and making appropriate changes, you should end up with the bare shaft consistently hitting the middle (or pretty close!) of the fletched arrows group.....and your bow is now in tune! Make a note of these settings. Remember that if you change any part of the bow – string, limbs, plunger, arrows etc then you will need to restart this tuning process again from the beginning.