

Barebow: Tiller set-up

Words: Andrew Rees

One of the critical factors in any good recurve set-up is tiller – the correct relationship between the top and bottom limbs. As the string is released, the objective is to have the limbs working in, or very close to, unison. For basic set-up, manufacturers will refer to measurement of static tiller – the difference between a pair of measurements that are taken on the braced bow, perpendicular to the string where the limbs meet the riser.

For Olympic-style shooting, a nock height of around 12mm above the rest and the split finger position on the string results in a recommended static tiller measurement that is often between 3mm and 6mm greater on the upper limb.

So, why measure static tiller? It is a convenient guide to the real objective: the correct dynamic tiller. This is the relative position of the limbs *when the bow is fully drawn* and should, when correctly set, see both limbs exerting the same force on the arrow. But dynamic tiller is hard to measure because it can only be assessed when the bow is at full draw.

This presents problems. Where do you measure? How do you ensure measurements are parallel to the arrow? How do you undertake any measurement safely and, especially for the barebow archer, where is the best finger position on the string?

Static tiller is measured from perpendicular to the string. It is the distance from the string to the limb/riser intersection.



With the differing strains applied to the upper and lower limbs as the draw-hand moves to different string-walking marks, it is not possible for the barebow archer to set a dynamic tiller which suits all finger positions. However, with a digital camera or camera-phone, a simple school protractor and someone willing to take photos, it is possible to set a good working tiller.

The dynamic tiller may be assessed using a mobile phone and a protractor. The 90-degree line follows the arrow and the zero line is on the tip of the lower limb. In this case, the top limb is significantly weak and should be adjusted by winding-in the upper limb-bolt.



- 1 Make a note of the draw weight of the bow at your draw length, set the static tiller to zero and adjust the nock-point so that the underside of the top bead is around 16mm above the rest.
- 2 Have someone take a digital photo of you at full draw, with your fingers positioned on your 30 metre string-walking mark. Make sure the image has top and bottom limb-tips clearly visible, together with as much of the arrow as possible.
- 3 Print out the photo or, preferably, view it on a screen at a size where the protractor can span from tip to tip on the limbs.
- 4 Place the protractor with the 90-degree line on the exact line of the arrow. If the zero line is in line with both limb tips, then the dynamic tiller is correct for 30 metre shots and will be reasonable for the range of distances encountered in field archery.
- 5 If the zero line does not meet both limb-tips, then the limb bolt on one of the limbs will have to be adjusted up or down in accordance with the manufacturer's instructions.
- 6 Having adjusted the limb and made sure it is secure, repeat 1-4 above until the limb-tips are in the desired position.
- 7 Measure the weight of the fully drawn bow again and adjust both limbs in unison to the original poundage by moving the top and bottom limb bolts the same amount, adjusting the bow's draw-weight but keeping the relative tiller of the limbs constant.
- 8 Once the draw-weight is correct, measure the static tiller and you will have a reference which should be checked each time the bow is reassembled or retuned by increasing or decreasing the bow's draw-weight.