GETTING STARTED

BOW TUNING Part One

In the first of a two-part series, ANDREW SMITH offers a beginner's guide to bow set-up – enabling you to get the best from your bow

Most archers cannot resist fiddling with their bow in pursuit of higher scores. For beginners who've just bought their own bow, this usually starts when they begin to hear mutterings on the shooting line along the lines of: 'I need to retune my bow'; 'My arrows are flying better since I tuned my bow'; or, after a particularly bad day's shooting, 'I haven't had time to tune my bow.'

In Part One of this article I will cover the checks and adjustments you need to make on your bow before you go out and shoot. In Part Two, I will explain how to make further adjustments after you have been shooting for a while, to improve accuracy. As most archers' first bow is a takedown recurve with aluminium arrows, I have concentrated on setting-up for this type of configuration.

How much tuning?

The object of tuning is to set your bow up so that the arrow flies as cleanly as possible to the target: the more an arrow wobbles in flight, the less accurate it will be. The amount of tuning you need to do before you can go out and start shooting will depend on where you bought your bow. If you bought it from a Pro Shop and asked skilled staff there to set it up correctly then the job is already done. I would suggest that if this is the case you leave well alone – because at this stage you will get more out of the sport by shooting than bow-tuning. Top scores are not achieved by simply changing a few settings on the bow – good shooting technique is also very important. But if your bow is already set up, don't give up on this article – because by reading it you will gain a better understanding of the adjustments that have been made to your bow, and better knowledge of how it actually works.

Putting the bow together

The first stage in setting your bow up is to make sure that it is put together properly. This means slotting the top and bottom limbs in the correct limb pockets; screwing in the button if you have one; and stringing the bow using a bow stringer, making sure the string is not upside-down (the largest loop on the string is attached to the top limb). It is very important to string your bow correctly, as a lot of damage can be done to the limbs if you don't.

String the bow using a bow stringer, making sure that the string is not upside-down

Limb alignment

Most modern metal-handled bows available today are made with international-fit limb pockets. This is because each manufacturer's

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product will be slightly different, so handles now come with additional adjustments to account for these discrepancies. The advantage of this is that you can mix and match limbs and handles from different manufacturers. The downside is that you are now responsible for certain set-up adjustments that were traditionally the preserve of the bowyer.

The two adjustments that can be made on most bows concern the tiller and the limb poundage (which can be increased or decreased by about 10%). However, new beginner/intermediate handles (like the Hoyt Eclipse) now include the same limb adjustment as seen on their more expensive handles, which means you can also adjust the limb alignment.

To make sure that the limb tips are moving in the same direction when you let go of the string, check that the string runs directly through the middle of each limb, and that the limb tips are not twisted. To check these, look down the length of the string – checking both the top and the bottom limbs. How you correct any errors depends on your handle adjustment options. For the Hoyt Eclipse, it's a matter of adjusting a screw in the limb pockets; for others you need to grip the limb tip and twist it gently in the opposite direction to the twist. However, the best option is to ask for help from your coach or local Pro Shop – because getting this wrong could necessitate a new set of limbs.

Note: To find the limb centres, just stick a piece of masking tape across the back of both limbs just below where the limb meets the handle, and measure and mark the exact mid-point. I also suggest that you check the string alignment every time you string your bow. You should not have to make any major changes, but do ensure that the limb tips are not twisted and that the string is in the groove of the limb before shooting. If you shoot a bow with twisted limbs, it will not be as accurate as it should be – and eventually the twist will become permanent.

Bow tiller

When you look at your bow you will notice that the arrow rest is not positioned in the dead centre of the bow, and the hand that holds the bow is below the horizontal line from the point where you draw the string. This means there is an imbalance in the forces on the bow at full drawer, causing the top limb to want to tilt towards you. The ideal solution would be for your arm and arrow to be in exactly the same place – but obviously this is impossible, so we have to redress the imbalance by moving the bottom limb closer to the string than the top. This is called adjusting the tiller. The difference is quite small – only 1/8" – but it's enough to improve the balance of the bow. It is done by adjusting the poundage screw on the bottom limb, and can be checked and measured using a bow square. If your bow cannot be adjusted for tiller, don't worry – in Part Two we will explore how to fine-tune it just by changing the nocking point.

Tiller adjustment can be checked and measured using a bow square

Bracing height

The bracing height is the distance between the centre of the string and the handle when the bow is strung. All bows have a recommended bracing height range listed in the manual: most measurements are made from the centre of the button, or from the throat of the handle to the string. It is important at this stage that your bracing height is within the recommended range; again, we will cover how to find the optimum adjustment in Part Two. For now, set the bracing height (by adding or removing twists in the string) so that it is approximately ¼" (6mm) below the top of the range. This helps arrow clearance, and ensures that the limbs work properly.

Nocking Point

The nocking point is the point on the string where you attach the arrow. For now, we will be using the brass nocking points clipped on to the string using a nock set tool. You need to set these at 1/8" above square.

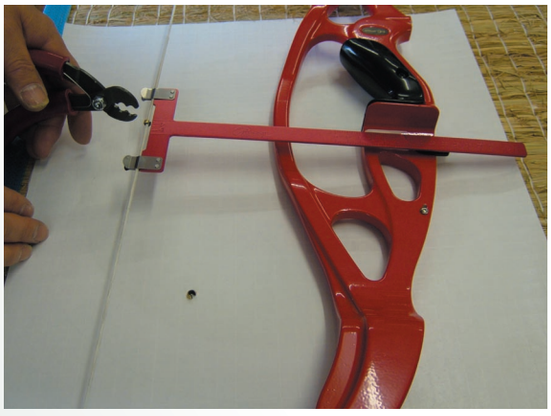
Most bracing height measurements are made from the centre of the button (shown), or from the throat of the handle to the string

Archer's paradox

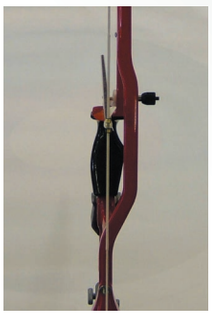
You will probably have been told that your arrows need to be matched to your bow. Here's an overview to clarify exactly what this means:

When you shoot arrows using a finger release the string goes forwards, but during the release you also push the string sideways towards you (the amount of sideways deviation depends on how good your release is). The forward and sideways motion creates forces within the arrow to make it bend one way (on the horizontal plane) when it leaves the string, and in the opposite direction as it clears the bow handle. The arrow will do this several times before settling down and hitting the target. This motion is known as the archer's paradox. The more powerful the bow, the more force is channelled through the arrow – which makes the arrow bend more.

If the arrow bends too easily, two things will happen. The arrow will take too long to settle down in flight before it hits the target, and will therefore have a tendency to bear to the right for right-handed archers (and in the opposite direction for left-handers). Likewise, if the arrow is too stiff it will fly off to the left and not bend enough – so its back



Nocking points should be set at 1/8" above square



Make sure the string is lined up with the centre of each limb; the arrow tip should point slightly to the left (right for left-handers)

may hit the arrow rest. In both cases, accuracy will be compromised.

Arrow manufacturers take into account the archer's paradox by offering arrow shafts for different bow poundages. So when you buy your arrows, the Pro Shop will take into consideration your draw length and your limb holding weight (or peak weight) at full draw, and select arrows that will fly out of your bow correctly.

You can view some slow-motion video clips on the Beiter website that demonstrate what happens in the archers' paradox: go to www.wernerbeiter.com/en/products/videos/video.php.

As long as you've bought arrows to match your bow, the only further adjustment needed concerns arrow clearance. Make sure that the whole of the arrow tip (pile) points to the outside of the string (outside left for a right-hander, vice versa for left-handers). Make sure the string is lined up with the centre of each limb.

Set-up without a pressure button

In the first few months of shooting it is not necessary to use a pressure button – providing the arrow rest you choose has a plastic protrusion to act as a button. By far the most popular is the Hoyt Super Pro rest; these are also quite cheap, at around £2 each. I recommend using this set-up for the first few months even if you do have a button, as it keeps things simple.

Note: Most new bows have the bow window cut out quite a long way from the centre of the handle, to ensure the best arrow clearance. If you shoot with a stick-on arrow rest, like Hoyt's Super Pro, be sure to use double-sided tape with additional padding – otherwise the rest will be too close to the bow handle.

Set-up with an arrow rest and pressure button

The pressure button goes some way towards correcting archer's paradox, and towards counteracting a bad release. It is also one of the most useful items you can attach to your bow for fine-tuning. If you decide on an adjustable magnetic rest or a stick-on flipper/Hoyt Super Pro rest and pressure button from day one, you will need to make the following checks and adjustments:

If you are using a Hoyt Super Pro rest, make sure you cut off the small piece of plastic sticking out above the rest. This acts as a simple button, and will interfere with these adjustments. With a stick-on rest, you just need to attach it to the bow and ensure that the arm of the rest is long enough to rest the arrow on when you have set the pressure button. Adjustable magnetic rests should be set so that the arm only sticks out a few millimetres from the arrow, and the centre of the arrow touches the centre of the button. The arm should be set to allow it to move towards the bow and return freely to the set position.

Finally, you will notice that the pressure button is sprung. For now you need to set it to its middle position (roughly to about 12-15oz of pressure) by turning the screw on the end: clockwise to increase spring tension, and anti-clockwise to decrease it. There is a grub screw on the side of the button, which needs to be slackened off and re-tightened when completed.

And that's all there is to bow set-up. The adjustments you have made will not be perfect, but they'll be good enough to allow you to start working on your technique. More on fine-tuning in Part Two; in the meantime, happy shooting.