

# Recurve Bows – Basic Bow Setup

## Step 1 – Basic Bow Setup

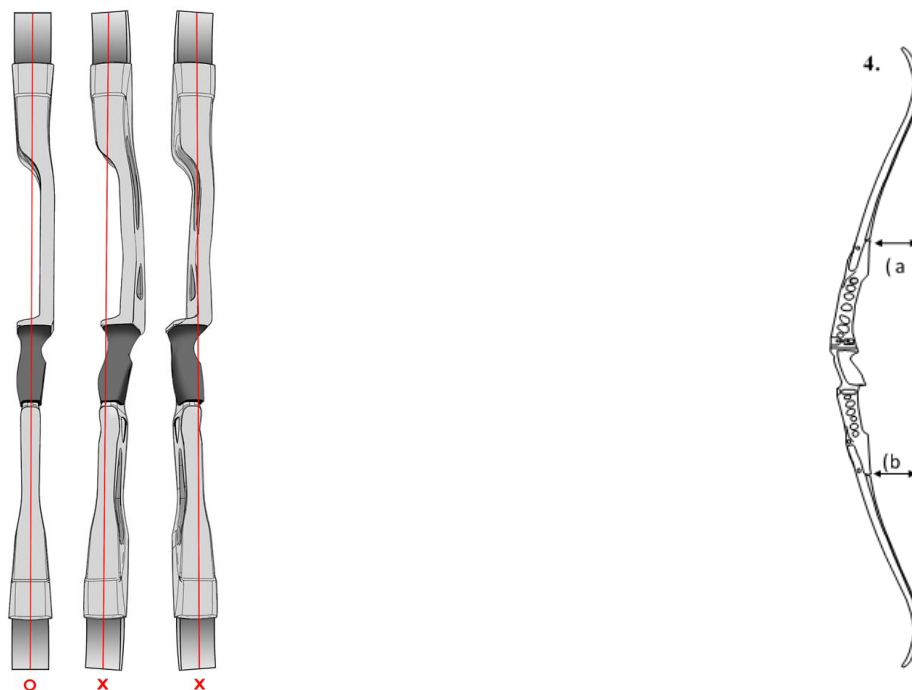
Your coaches can help you with this. Not all bows can be adjusted for limb alignment or tiller (e.g. wooden take-down bows), but centre-shot, bracing height and nocking point can be adjusted on all recurve bows.

- Limb Alignment – adjust so the string is straight down the centre of both limbs and the riser
- Tiller – set to between 0 and  $\frac{1}{4}$ " (0 to 6mm).
- Initial Bracing Height – depends on bow length, see table
- Nocking Point – a good starting point is top of bottom nocking point  $\frac{1}{4}$ " (6mm) above square
- Centreshot – align so right side of arrow just touches left side of string

**Note – all sketches for right handed archers. Reverse L/R for left handed archers/bows**

### Limb Alignment

Picture on left is good. Use Beiter gauges or masking tape to mark centre of limbs. If limbs aren't aligned, adjust limb pocket screws to move limbs left or right as needed.



**Tiller** - set to distance (a) is up to 6mm more than (b). Never less than (b). 4mm is typical and a good initial starting point]

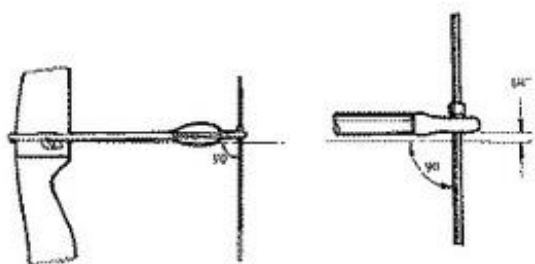
**Bracing Height** – measure from string to pressure button. Adjust string length (add or remove twists) to adjust. Initial suggestions:

Bow Length	Bracing Height	
	Inches	Cm
64"	8 $\frac{1}{4}$ " – 8 $\frac{1}{2}$ "	21.0 cm – 21.6 cm
66"	8 $\frac{1}{2}$ " – 8 $\frac{5}{8}$ "	21.3 cm - 21.9 cm
68"	8 $\frac{1}{2}$ " – 8 $\frac{3}{4}$ "	21.6 cm - 22.2 cm
70"	8 $\frac{5}{8}$ " – 8 $\frac{7}{8}$ "	21.7 cm - 22.5 cm

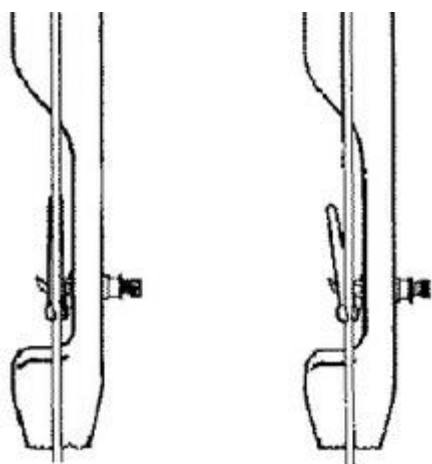
Taken from Easton Tuning Guide. Bow or limb manufacturers may have slightly different recommendations which you should follow if you have them. Generally don't go below the lower value in the table above without a very good reason

## Recurve Bows – Basic Bow Setup

**Nocking point** – initially set to 4 to 6mm above square:



**Centreshot** – set so right side of arrow ‘touches’ left side of string (string in centre of limbs/riser). You adjust the pressure button collar to set this. Another way to do it is to set the arrow dead on centreshot (left picture) and then wind the button collar another 1/4 to 1/2 turn (depending on arrow diameter) more.



Full centre-shot.

Outside centre-shot.

It's a good idea to make sure that your pressure button is set to a medium pressure. If you take it out and press it against a set of kitchen scales, adjust the spring so it starts moving when the scales are reading around 16 ounces (450 grams). You can adjust this with the allen screw on the back of the button (on most buttons, some have different ways of adjusting).

Finally, it's also a very good idea to check that your sight track is parallel to the string so as you adjust the sight your windage doesn't change.

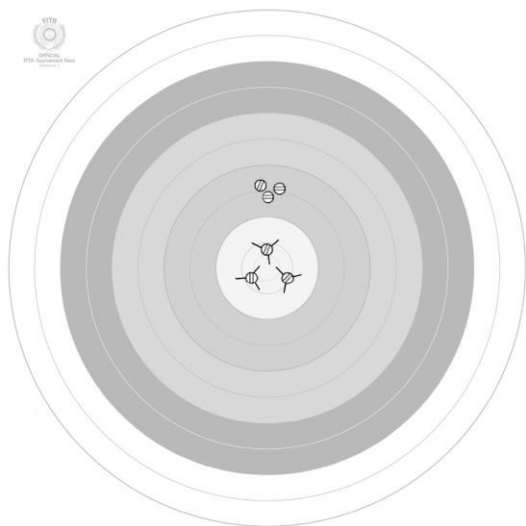
Now your bow is basically set up. You can adjust bracing height to get the bow to sound 'quieter' – generally up to a point a higher bracing height may give better groups and be quieter, a lower bracing height will be faster but noisier and less forgiving of a bad shot / release. Really high bracing height might be quiet but not put much energy into the arrow so you'll lose cast (sight marks will be worse).

# Recurve Bows – Initial Tuning

## Adjust the nocking point

This is best done by comparing the flight of bare (unfletched) arrows with fletched arrows at around 20 yards (18m). You need to be able to shoot reasonable groups at the distance you choose, but don't go shorter than 10 yds as the arrow will still be settling at that distance.

Don't worry if the bare shafts are left or right, just look at the height. Adjust the nocking point until the bare shafts are around 2 to 3 inches lower than the fletched arrows.



*Nocking point low*

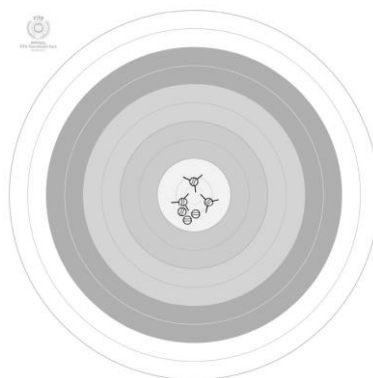


*Nocking point high*

## Adjust the pressure button

This gets the arrows flying as well as they can. If your arrows aren't roughly the right spine for your bow, you may not be able to get this perfect without adjusting bow weight too. If in doubt, consult the coaching team.

You're now looking at the horizontal position of the bare shafts. Left (compared to fletched) means arrow is too stiff, Right means arrow is too weak. In the same place or 2 to 3" left is good (right hand picture)



That completes initial tuning. If you're able to shoot good groups at longer distances, then you can move on to more advanced walkback tuning.

## Recurve Bows – Walkback Tuning

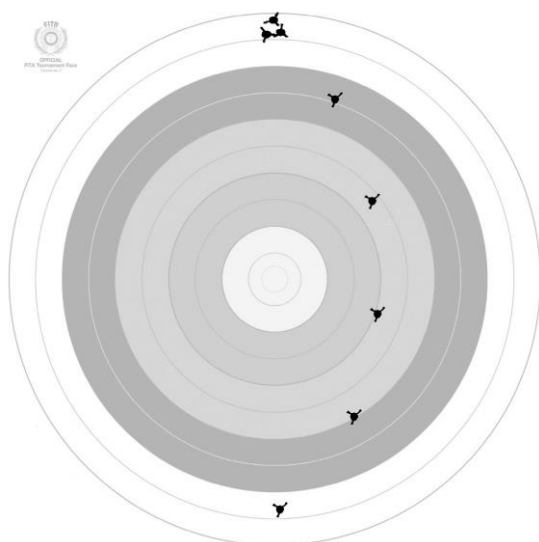
You only need fletched arrows for this and a spare couple of hours. You're looking at where they land at each distance.

As you're going to be walking back gradually, you can't do this when others are using the range as you'll be in front of the shooting line. Set up the target around 40 yards from the shooting line and lean another boss on the floor against it. It helps to pin a rope to it so you have a vertical line top to bottom.

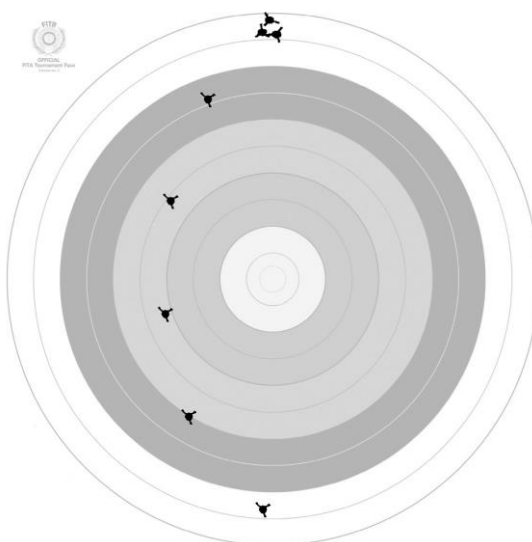
Start at around 10 yards – how far back you'll get depends on the power of your bow, on light bows the arrows will drop more quickly. Set your sight so that when you're aiming at the gold the arrows are hitting high – about 12 to 18 inches below the top of the boss.

Unless you're a *really* good shot you'll not shoot perfectly each time, so shoot 3 arrows at each distance and take the average. Ignore really bad shots. Shoot 3 arrows at each distance, moving back 5 yards between each set of 3. You're looking for a pattern; you're aiming to get the arrows dropping in a vertical straight line as you walk back. You're likely to see one of 3 patterns:

Curve (left or right) – this needs adjustment of the centre-shot in or out by a small amount

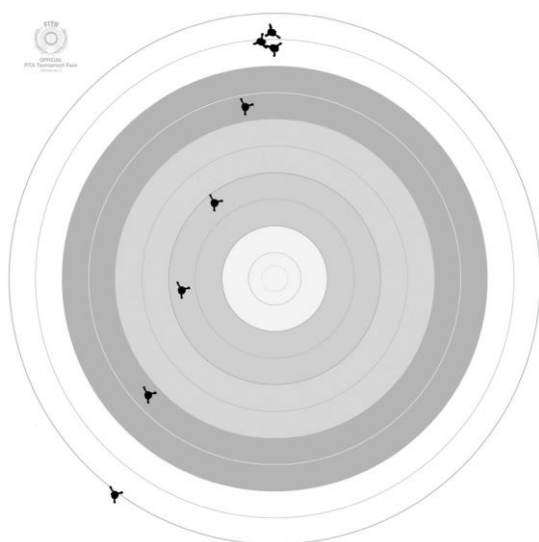


*Centre-shot needs moving in to bow*

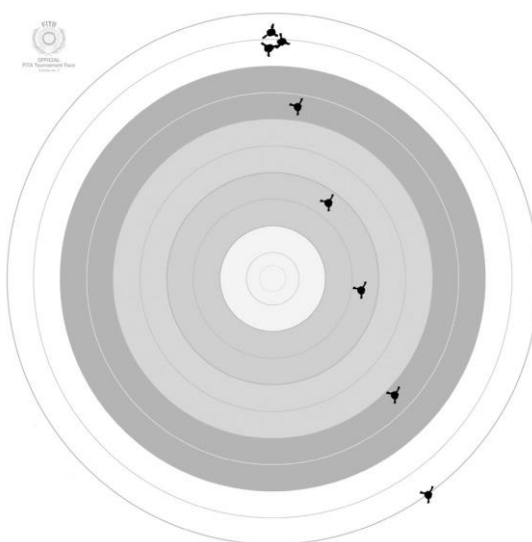


*centre-shot needs moving out from bow*

Straight line (left or right)



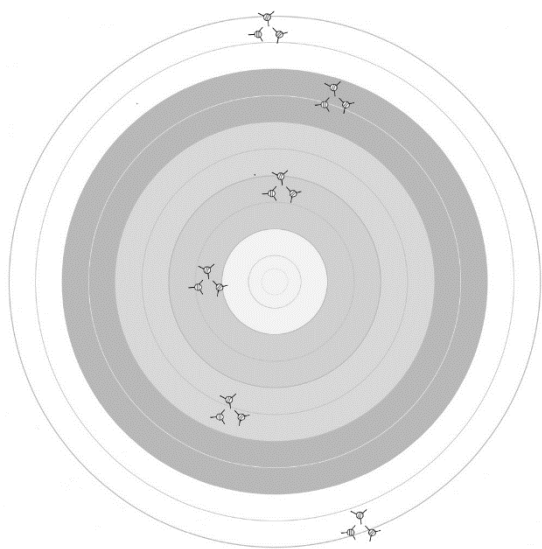
*Soften spring*



*Stiffen spring*

## Recurve Bows – Walkback Tuning

Or a combination of incorrect spring pressure and centre-shot will give an s-curve (left or right)

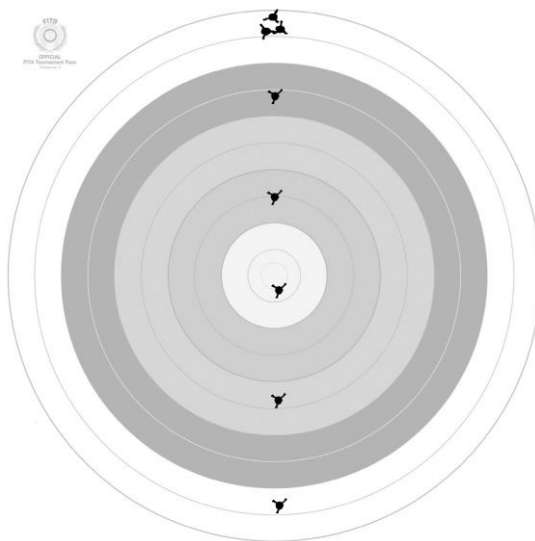


If you get this pattern, increase the spring pressure massively (make it as solid as it will go) and you should then get a curve of some sort.

Then adjust the centreshot until you get a straight line – it will almost certainly be a straight line to the left, indicating that the spring is too stiff. As you’ve already adjusted the centre-shot, you can now adjust the spring (reducing the pressure) until you get a vertical straight line.

If you don’t have the patterns with you, a simple mnemonic is “Straight: Spring, Bendy: Button”.

You’ll need to do this walkback several times until you get it right. Make small adjustments each time and repeat as you go. Eventually you’re aiming for a straight vertical line.



Your bow should now be set up well enough to shoot up to at least Bowman standard. Remember that a good archer can shoot really good scores with a poorly tuned bow, but tuning won’t turn a 3<sup>rd</sup> class archer into a Master Bowman! Don’t spend too much time tuning your bow until you’re sure you’ll benefit from it.

However if you’re at a high standard and want to go further, you can move on to various Fine Tuning techniques as outlined on the next page

## Recurve Bows – Fine Tuning

There are quite a few ways that you can fine tune your bow. At this stage you're shooting really good groups at 70m or longer, and looking for those few extra points.

One common issue is that although walkback tuning sets your centre-shot and button pressure quite well, at longer distances (up to 100 yards) you might still see that you need to move your sight left or right as you move from longer distances to shorter distances during a round. If you plot your group positions at different distances, you can make similar adjustments to those you used during walkback tuning, but these will only be very small adjustments, e.g 1/16 or 1/8 of a turn on your centre-shot or spring pressure. Remember that the long distance positions are those at the bottom of the target on the walkback charts, the shorter distances are nearer the top. So going left at 100 yds and less left at 80 yds, dead centre at 60 yds etc would probably be a fall to the left on the walkback, so you could try a very small reduction in button pressure to see if that helps.

Bracing height – try small changes, plot where the arrows fall on a target. The most efficient place will be where they're highest, lower or higher bracing heights won't be quite as high. Also check your group size, you might find the most efficient place doesn't give the best groups. Also if you make major changes, recheck bare shaft tuning etc.

Another way of fine-tuning nocking point can be to shoot at a distance you can group well at, and aim at shoot along a horizontal line (e.g. a piece of tape on a target). Make very small adjustments to your nocking point to get the vertical grouping as small as you can.

Similarly, shoot up and down a vertical line at the same distance, and make small changes to button pressure to see if you can improve horizontal grouping.

### Group Tuning

50m is a good distance to start. Number your arrows. Shoot 8 to 10, and plot every arrow on an arrow chart. If most arrows group and one or two don't, set them aside. Move your nocking point by 0.8mm, and repeat. If vertical group improved, move another 0.8mm, repeat again. Set back to original position and repeat moving nocking point in the opposite direction, until you get the best group size.

Then repeat with your selected nocking point position and do the same, making small spring pressure adjustments.

### References:

Arrow Shaft Tuning for the Advanced Olympic Bow Competitor (World Archery)

Equipment Setup – Recurve Bow (Archery Australia)

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