



SUPER TUNING ARROWS

Our spine tester design uses spring pressure versus dead weight.

We have found it makes locating and measuring the spine much easier if you can adjust the pressure exerted on the shaft from one to four pounds and greater yet for crossbow bolts.

Consistency is what we are looking for!



For digital
instructions and
videos , please see
our website.

www.coopsbowsmith.com

Why Spine Matters

Throughout a shot cycle, an immense amount of energy is placed into the bow at full draw. This energy is then transferred into the arrow upon release.

This rapid transfer of dynamic force causes the arrow to flex and oscillate. If too much flex occurs in the shaft, then the arrow will have a hard time recovering and flying straight.

Conversely, if the arrow doesn't flex enough, then it could fail to properly clear the bow and won't be as forgiving as it flies down range.

The most accurate arrow will be the one with the proper balance of flex and forgiveness as it leaves the bow, and necessary stiffness to recover and stabilize as it begins to head downrange.

Understanding arrow stiffness

The spine, or “stiffness”, of an arrow is a simple concept to understand, yet its importance is often overlooked. To understand what arrows you should be shooting out of your bow, you need to understand what arrow spine is, how it is calculated, and why finding the “right arrow” – or at least the best one – takes some forethought.

Arrow spine is evaluated by “deflection”, which is a measurement of the shaft’s propensity to bending when force is applied.

The traditional way spine ratings are determined is by taking an arrow shaft at a length of 28”, supporting it at both ends, and hanging a 1.94lb. weight at the center. The amount of flex that is induced on the arrow shaft by the force of the weight is then measured and gives us our “static” spine rating. For example, if an arrow bends one half of an inch at the center, then the shaft has a static spine deflection of .500”.

Because this numerical deflection is a representation of a physical measurement – that is the arrow’s resistance towards a static force – a stiffer shaft will have a lower

deflection number (less bend), and a weaker shaft will have a higher deflection number (more bend).

The most common deflections for hunting arrows are from 500 on the “weaker” end, to 300 on the stiffer end, with increments in between. (It is worth noting that some manufacturers use their own numerical systems, so be sure to check and see how the manufacturer’s classifications compare to the actual shaft deflection rating.

With all modern arrows, it’s not necessary to measure the spine to find out what its rating is, as the manufacturers have already done this for us . Rather we are looking to get shafts that are as close to identical as possible.

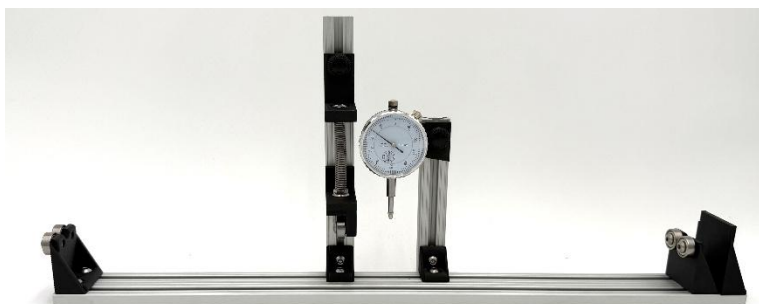
This is very important when shooting broadheads!

NOTE: do to tariffs on aluminum we had to switch to some carbon fiber parts all parts are guaranteed for life.

Spine-Tester carbon Pro

For more info see

www.coopsbowsmith.com

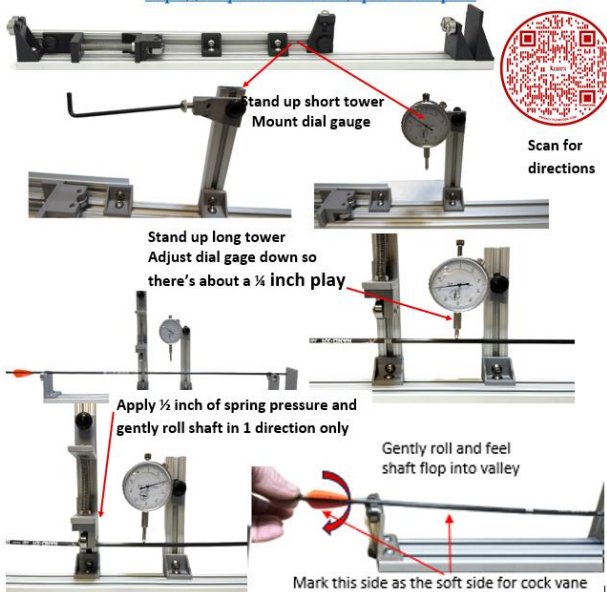


QUICK START FINDING THE SPINE

For complete digital instructions and videos , please see our website.

www.coopshowsmith.com

<https://coopshowsmith.com/spine-tester-pro-1>



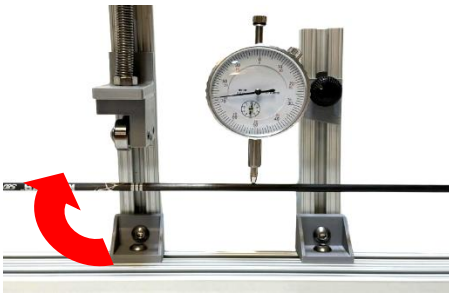
Note: it is not necessary to use the dial gauge to locate the spine. This is best done by feel



This is how your spine tester arrives.

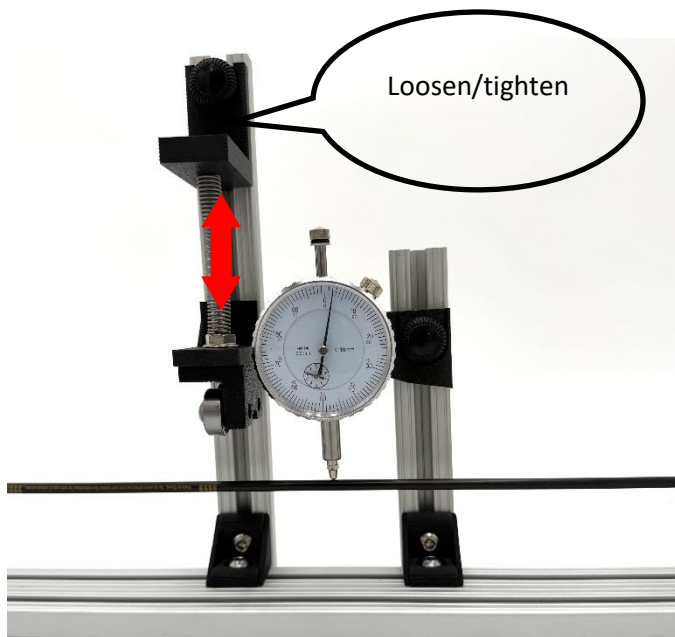


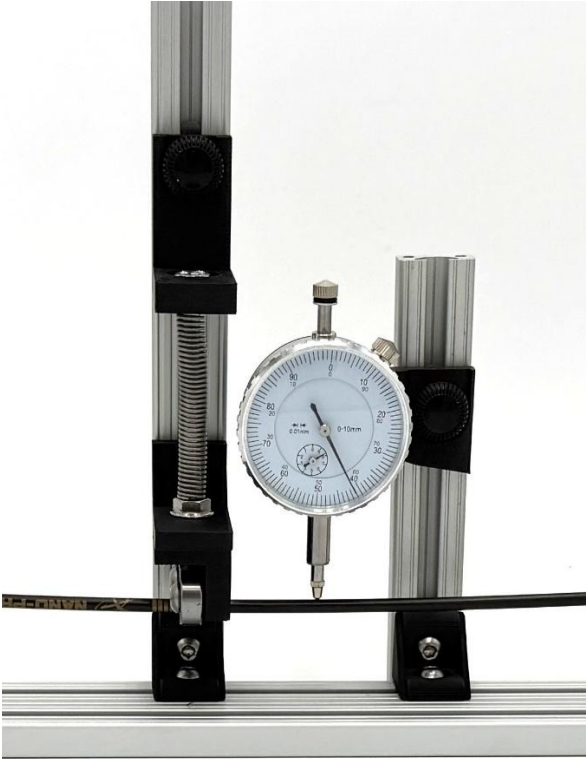
**To assemble un-package stand up
both towers and install the dial
indicator**



**Loosen the $\frac{1}{4}$ -20 screw and position
*as shown in the picture***

To locate the spine, Start by raising the sliding block by loosening the knob and retighten it so it is out of the way. Now place your arrow between the two outer rollers.





NOTE: keep the dial gauge close to the pressure point. Testing has shown no measurable distance in deflection when kept to a minimum.



small adjustments can be made to
help center shaft

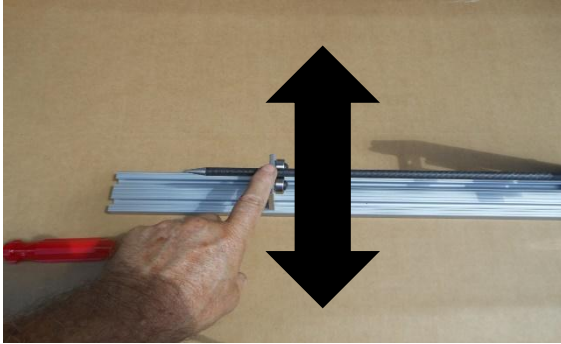
Locating the spine

Use caution with aluminum or carbon over aluminum so as not to bend.

Experiment with old shafts if necessary.

With your spine tester set up the same way, we did for testing for deflection. Roll the arrow using your finger to get a feel for the shaft and watch the dial.

NOTE: due to the cost the dial indicator is a lower quality device I'd recommend buying a digital one, easier too use and greater accuracy.



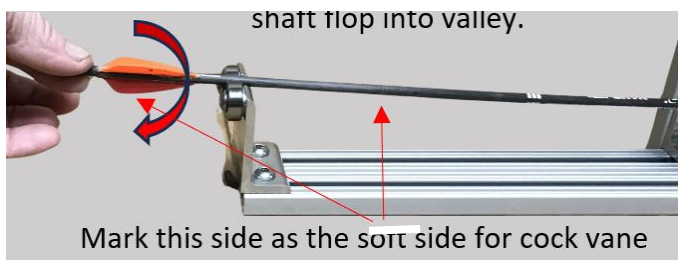
You will feel the arrow fall into a valley and the dial **may** indicate a rise. This is the spine or the soft side of the shaft.

you can do this by feel alone.

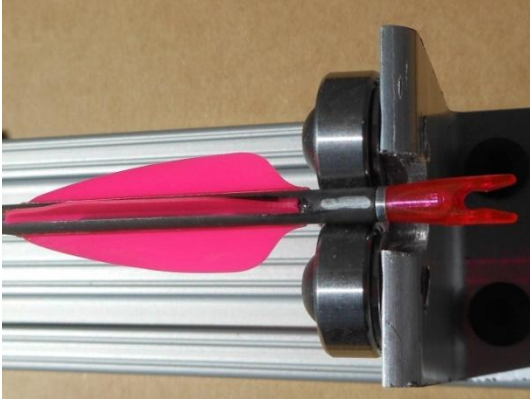
NOTE; It may be easier to find the spine by applying more pressure to the shaft.

Very stiff crossbow bolts may require a lot of pressure to locate the spine.

Rotate the shaft 180 degrees and mark the soft side. This way when the bow is fired the arrow will flex up away from the rest.



I recommend using the same color fletching this makes nock tuning easier if necessary. Also, use the basic tri fletch pattern I have found this to be the best through extensive machine testing.



**Fletch and finish your shafts and weigh.
Weigh each point and adjust until perfect.
Be sure and weigh your completed arrows.**

Get them perfect!

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**Make sure your nocks fit the string
properly.**

**Too tight and they will pluck, giving you a
shotgun effect most noticeable at longer
ranges.**

Too loose and they risk falling off!

Your arrows are now ready to use or you may want to move on to the next phase of advanced tuning and shoot them through a machine to group tune. All shafts are not the same the cheaper shafts benefit the most from machine tuning. I shoot Carbon Express Nano Pros for field and have found that group tuning at 80 yards works best after the shafts have been SPINED. I nock tune or cull any flyers and I'm good to go.

OWNER _____

MAKE AND MODEL _____

FACTORY SETTINGS

ACTUAL BEFORE TUNE

AXEL TO AXEL _____

BRACE HEIGHT _____

DRAW LENGTH _____

DRAW WEIGHT _____

LIMB BOLT SETTING _____

PEEP HEIGHT _____

SIGHT RADIUS _____

TUNED SETTINGS

AXEL TO AXEL _____

BRACE HEIGHT _____

DRAW LENGTH _____

D- LOOP _____

DRAW WEIGHT _____

LIMB BOLT -TOP _____

BOTTOM _____

PEEP HEIGHT _____

SIGHT RADIUS _____

TILLER + - BOLT TURN TOP _____

BOTTOM _____