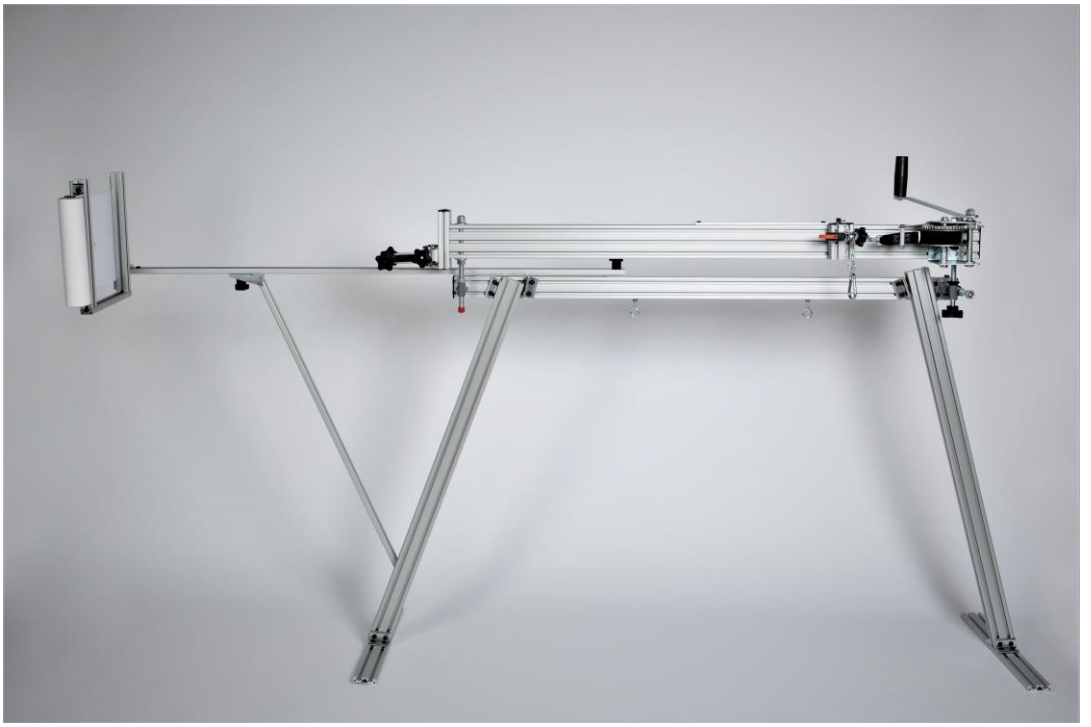
SUPER TUNING

MADE EASY

vernon coop



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Bowsmith Pro Assembly

Assemble the legs. The angeled brackets for the feet may be shipped installed to the feet or loose in a parts bag. It may be easier to remove the corner brackets from the feet, and attach to the mitered end of the leg. Flush the bottom surfaces.

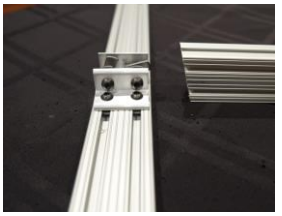
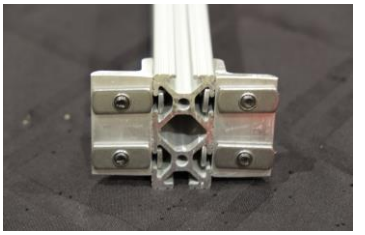


Figure 1.

Make sure the rectangular flat nuts are horizontal. Loosen the socket cap screws. Slide the nuts into the slots on the foot. Square up the brackets. Snug the screws finger tight, and do not over-tighten at this time.


Figure 2.

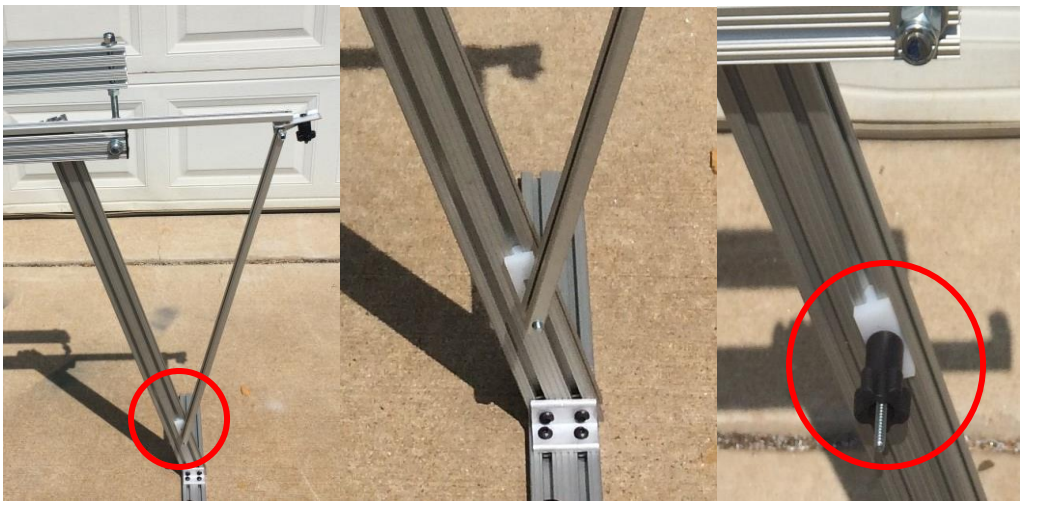

Figure 3.

If you bought the paper tuner with your Bowsmith Pro now is the time to install the slide for the brace.

Make sure it's on the front-back side of the machine. Square the bracket to the leg, and then tighten the four socket cap screws hand tight. Install the other leg assembly. Now tighten feet and leg bolts using a standard L wrench - not supplied

There are two methods to adjust the cant of the machine. The easiest is by adjusting the feet. Loosen all the screws and angle feet in the direction needed and re-tighten. See figure 4. Note all bolts on the feet and legs need to be tight. The supplied driver may not give you enough torque. I recommend using an L wrench for this.

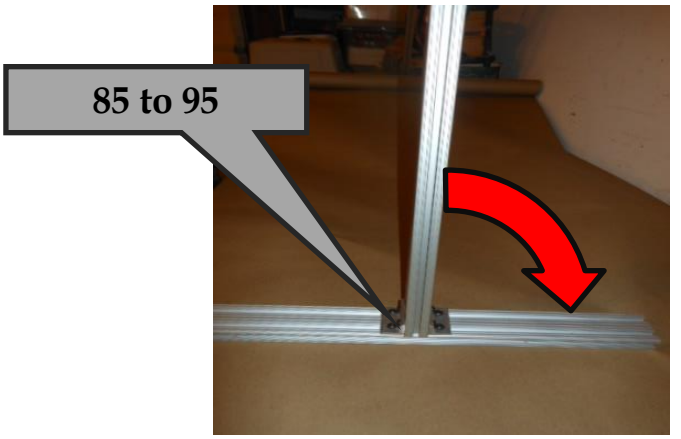

Figure 4.

Attach the legs and feet to the 4 inch aluminum rail. The forward leg angles towards the front of the Bowsmith Pro, and the rear leg angles towards the rear of the Bowsmith Pro.

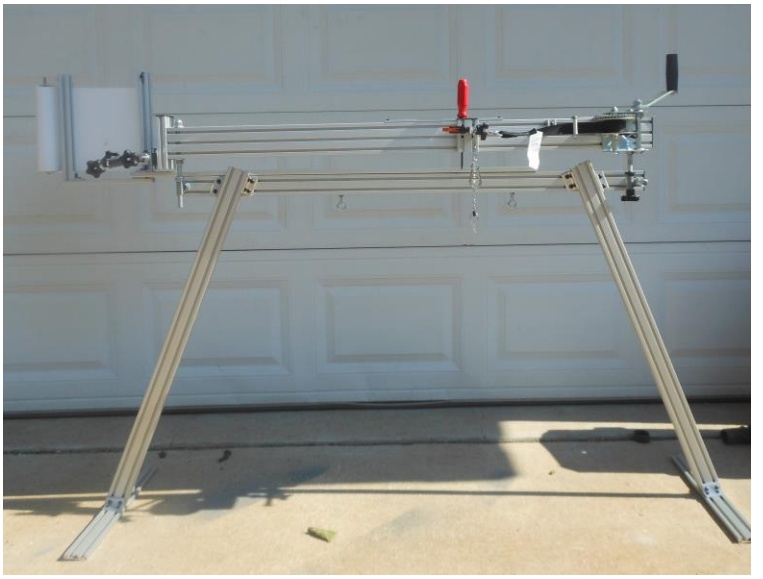

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Figure 5

For those of you who ordered the Bowsmith Pro with the attached Paper Holder now is the time to assemble and install. Note: Frame does not need to be attached to machine at this time.

This is a new product and like all our products we are constantly trying to improve. We welcome any suggestions!
We may be doing an upgrade to this and if we do we will send you it free of charge.

Figure P-1

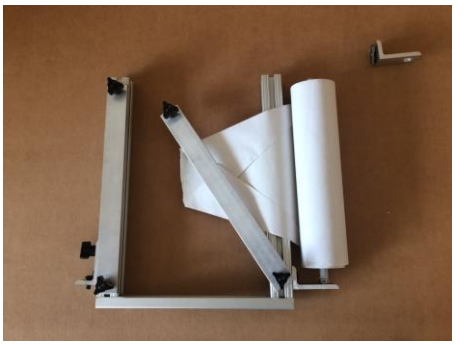


Figure P-2

Slide pieces together and tighten ¼ -20 screws through the holes in the bottom of the ½ inch rail. Figures P-1 and P-2.
Install the paper as shown. Figure P-2. Do not back the knobs all the way out just loosen top and bottom and slide up out of the way . Lay paper in through both rails and tighten thumb screws or 1/20 bolts.

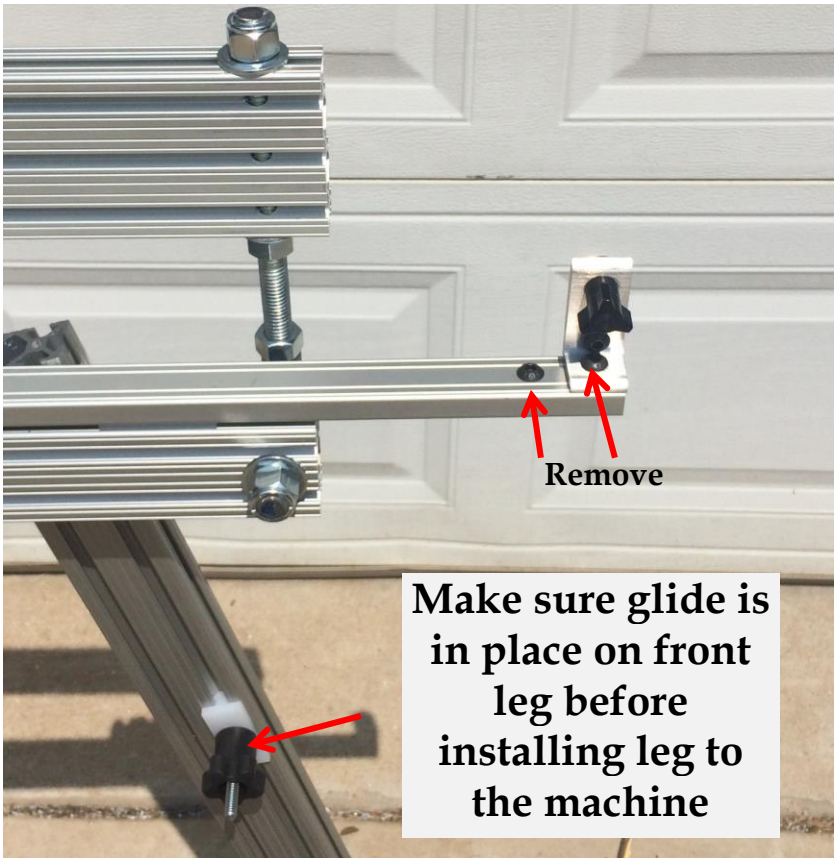


Figure P-3

Slide the rail out a few inches and remove both ¼-20 cap screws

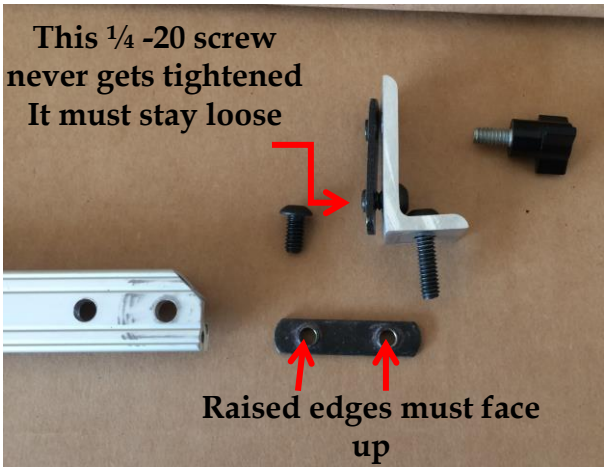


Figure P-4

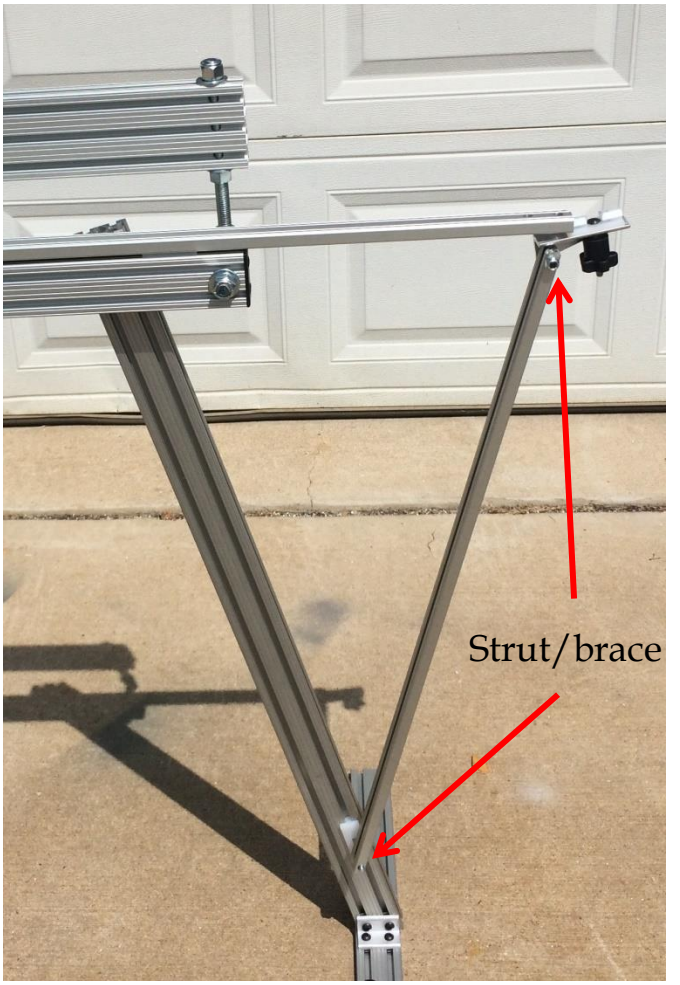


Figure P-5

Slide the strut into place on the top rail and slide the bottom over the 2 inch bolt on bottom locking glide and replace knob on locking slide. Figure P-

The slide on the leg should have been installed before attaching the leg to the frame see Figure 3, page 3.

Figure P-6

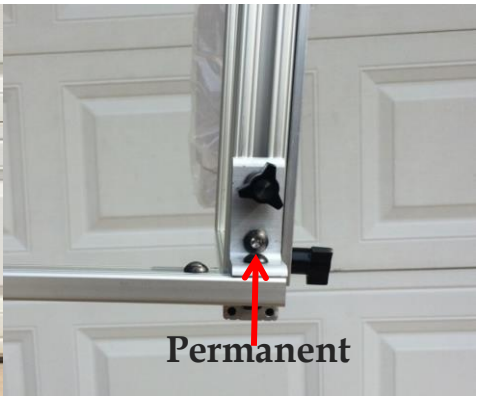


Figure P-7

Figure P-8

Reinstall L bracket that holds paper frame.
Figures P-6, P-7 and P-8

Figure P-9

The paper frame needs to be in this configuration to slide it in and out otherwise it will cause binding. Figure P-9

Figure P-10

To operate
1. make sure all 3 knobs are loose and slide into place and lock knobs A and B in place on .
2. Slide knob C up towards the machine while picking up on the sliding rail to eliminate sag and tighten in place.
3. Now rotate paper frame into place.

Figure P-11

We have included this zero torque bow holder, some people prefer it over the bow hand when bare-shaft or paper tuning.

Torque Box Assembly

This is the Torque Box Assembly, and is preset at the factory with 1 degree of angle. See figure 6-A

Even with the safety catch on. A snapped D loop or accidental discharge may not totally stop the bow from discharging or damaging equipment. **USE EXTREME CAUTION.**

Your Bowsmith Pro comes pre-assembled and pre-tuned for a Hoyt Pro Comp Elite. (These settings should work for most compound bows)

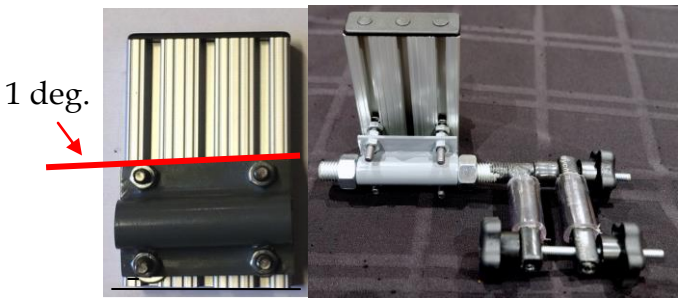


Figure 6 -A and B.

The back side of the Torque Box Assembly has an aluminum corner bracket. Slide the corner bracket onto the main rail, by lining up the rectangle washers into the slots on the main rail. Tighten the four ¼-20 button head cap screws with the supplied hex wrench. See figures 7-A, B and C

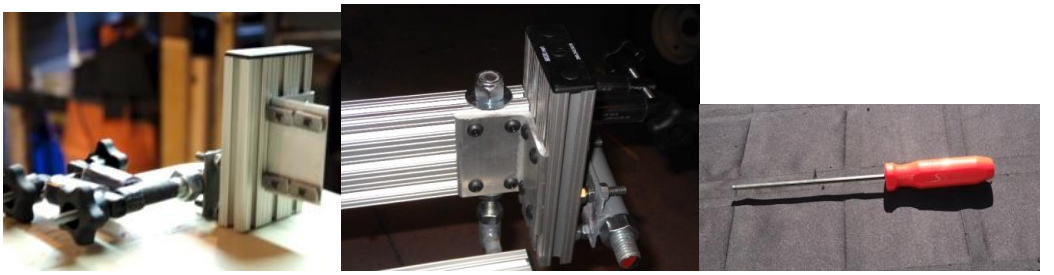


Figure 7 –A, B, and C

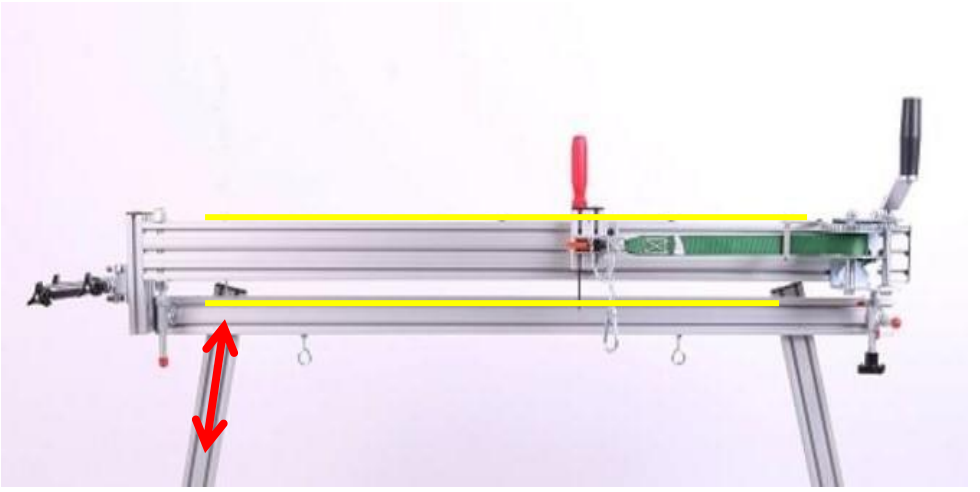


Figure 8

Adjust the height of each leg assembly to get the top of the main rail “close” to level. Install the Torque Box and Bow Hand assembly onto the front end of the main rail. Figure 8.

“Close counts”

Adjust the height of the release bracket (figure 10) so the winch strap runs parallel to the top edge of the main rail as in Figure 9

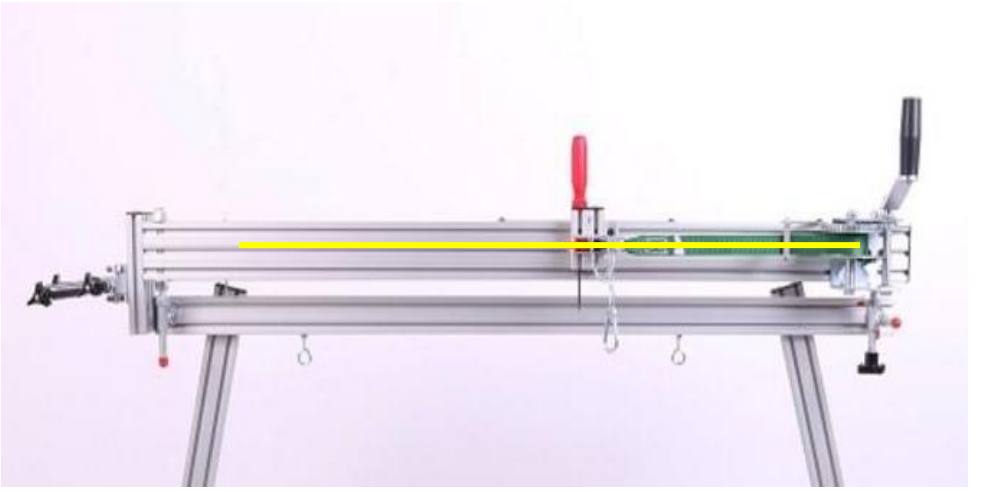


Figure 9.

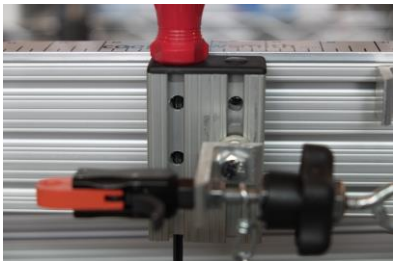


Figure 10.

Adjust the height of the Torque Box and Bow Hand Assembly (figure 11-B) to bring the D-loop in line with the release at the same time keeping the bow square to the machine. Use the Safety Pin in the Release (figure 12) and attach the safety catch (carabiner) to the bowstring, at all times when checking Bowsmith Pro settings.

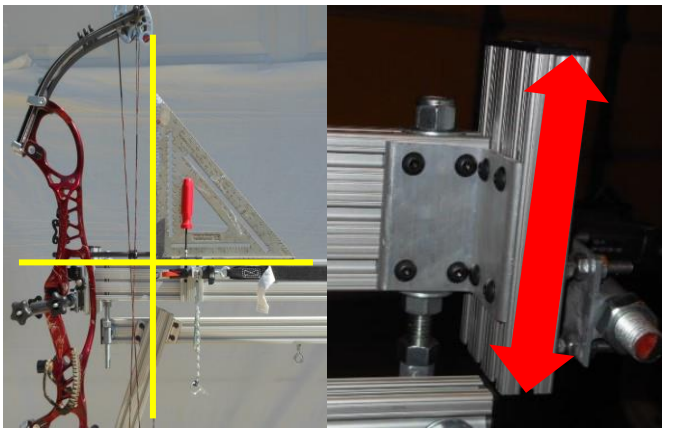


Figure 11-A and B

USE THE RELEASE PIN IN THE RELEASE. FULLY INSERT THE PIN INTO THE SMALL HOLE IN THE BODY OF THE RELEASE.

Release Pin in Body of Release see figure 12.

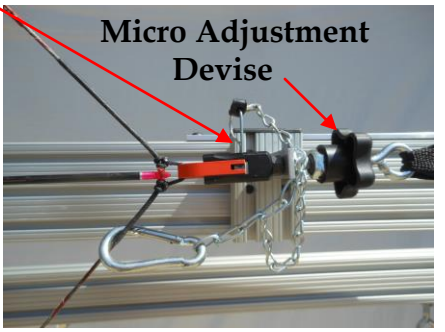


Figure 12

KEEP THE SAFETY CATCH ATTACHED TO THE BOWSTRING AT ALL TIMES.

THE ONLY TIME YOU DON'T USE THE SAFETY CATCH IS WHEN FIRING THE BOWSMITH PRO .

Check that all fastners are secure, but do not over tighten.

Set your bow in the bow hand. Nock the bowstring by sliding the carrier and hooking the release onto your d-loop (use the safety catch AND RELEASE PIN) and maintain some tension on the bowstring/d-loop with the winch strap, while you put the Bow Hand fingers in place. Adjust your bow so your bow is plumb while in the bow hand. Hold your bow plumb while you tighten the knobs on the Bow Hand. It helps to have a little tension applied to the d-loop with the winch.

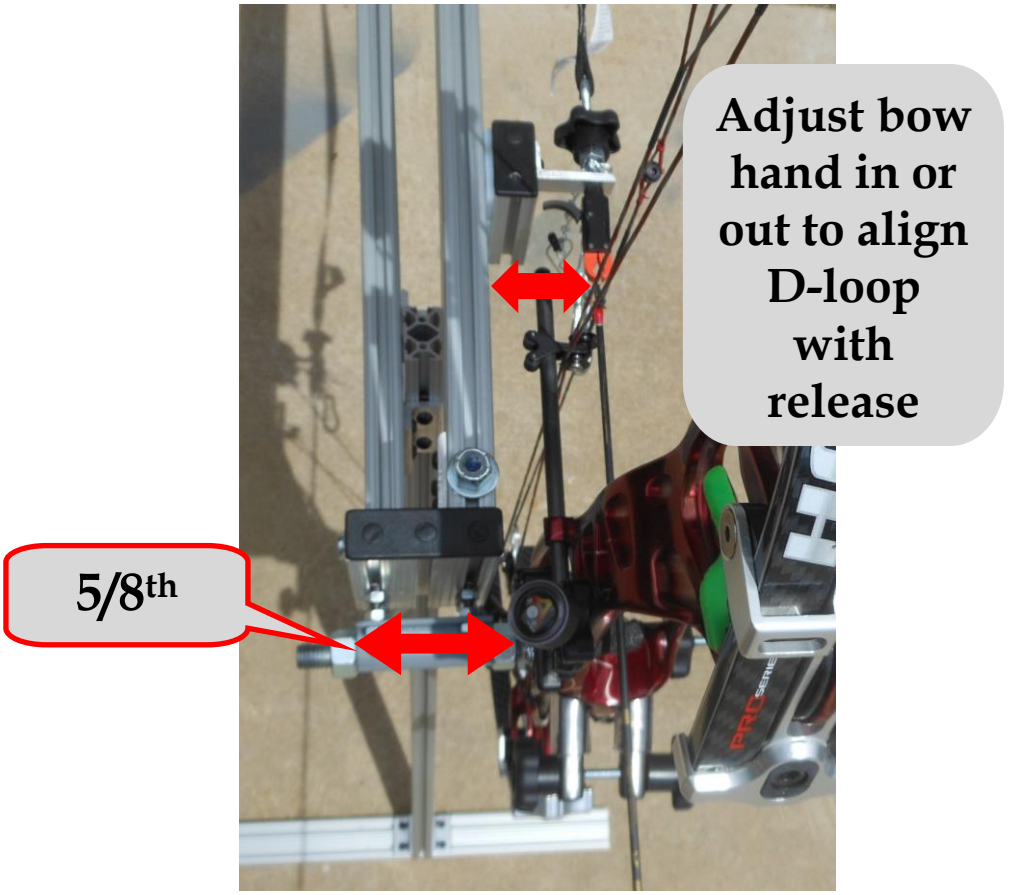


Figure 13.

Adjust the windage (lateral adjustment) for the Bow Hand, by turning the 5/8th nuts so that the winch strap is parallel to the main rail. The factory has applied a small amount of Loctite to the threaded rod, but the lateral position of the Bow Hand can still be easily adjusted by turning the 5/8th nuts. (Figure 13) Adjust the 5/8th nuts until the center of your bow; the center of the release; and the winch strap are all running parallel to the main rail. (Figure 14)

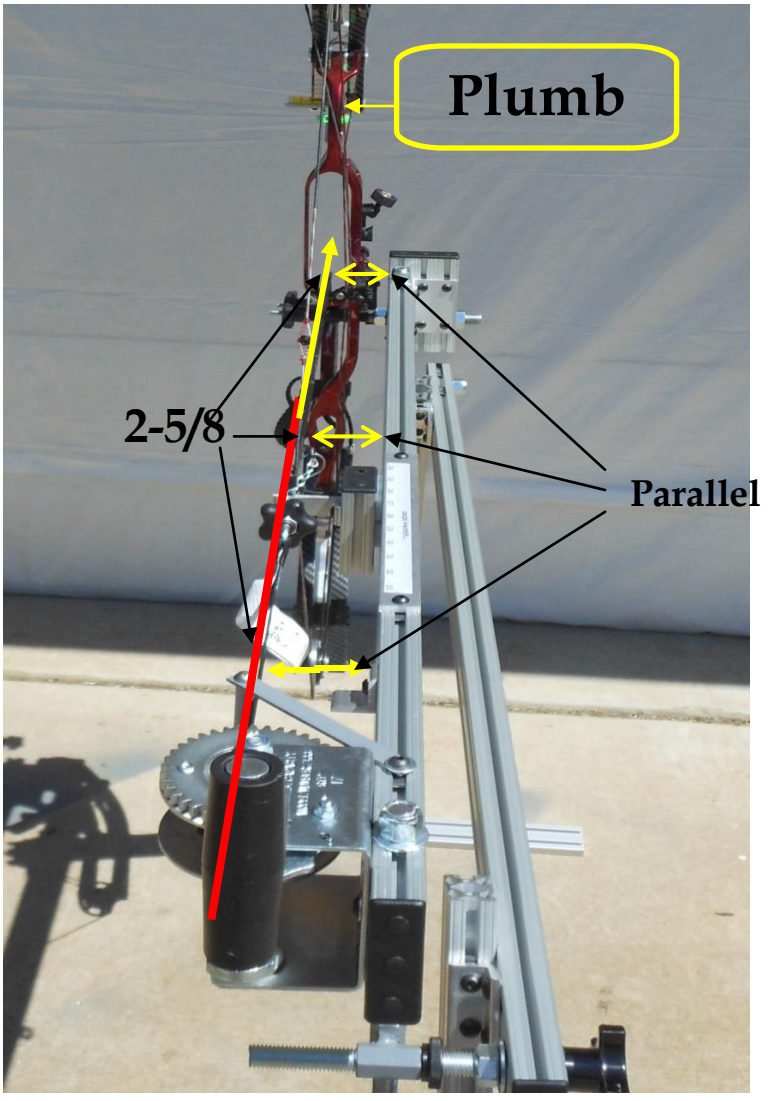


Figure 14.

Adjust the windage (lateral adjustment) for the Bow Hand; make sure there is minimum clearance between your arrow rest and the main rail. There are a couple combinations of rests and bows that will need a special fix. If you run into a clearance issue give us a call 815 325 9128. Figure 15.

Figure 15.

Snug the 5/8th nuts for the threaded rod on the Torque Box Assembly – do not over-tighten the 5/8th nuts. Adjust the cant angle of the riser (sideways tilt angle of the riser) by loosening the four socket cap screws behind the Torque Box, (figure 20) and rotate the Torque Box clockwise or counter-clockwise, as needed. Retighten the socket cap screws, when the cant angle for the riser is vertical.

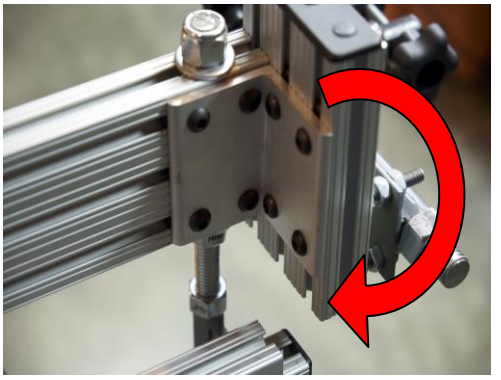


Figure 16.

Adjusting the socket cap bolts behind the Torque Box provides for a small amount of 2nd axis adjustment.

If more rotation is needed to reduce the sideways tilt of the riser to zero degrees, then, adjust the Torque Plate. (Fig- 17) Loosen the ¼-20 nuts closest to the aluminum rail, and rotate the Torque Plate (gray pipe) until the riser has zero sideways tilt. Snug the nuts touching the aluminum rail and do not over-tighten. The Torque Plate will usually be somewhere between zero and 1 degree above horizontal.

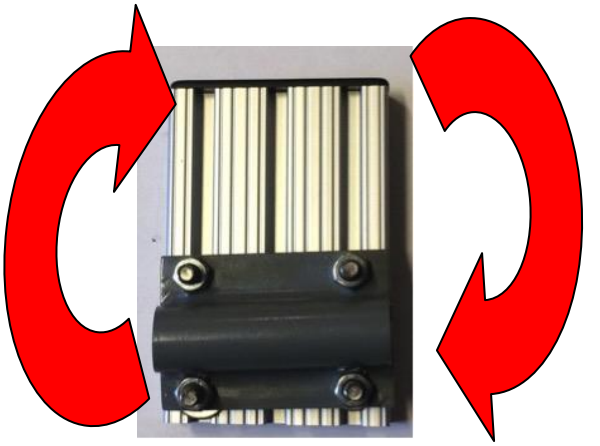
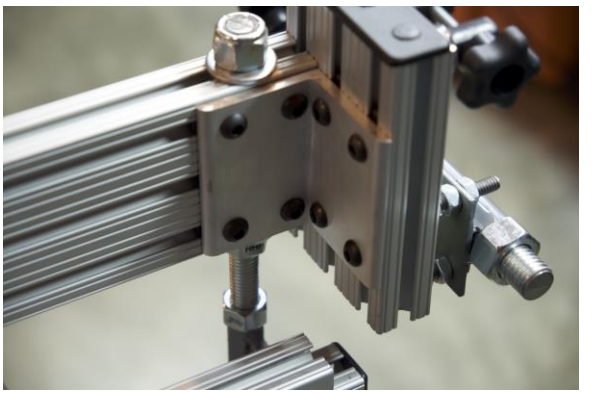


Figure 17. Torque Plate

If you have previously confirmed that 2nd axis for your sight is correct, then, you can install your sight on your bow, and adjust the 2nd axis rotation of the Torque Plate. Minor adjustment of the socket cap screws on the backside of the Torque Box Assembly should get your sight level bubble centered.

Also if the floor is out of level you can adjust the feet. See Figure 4.



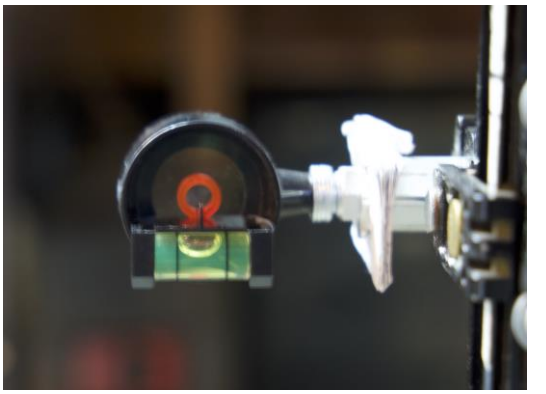


Figure 18 A and B

With the safties on! Place an arrow on the rest and draw it back a couple clicks. Sight down the bow to insure the arrow is square to the rail . If not adjust two of the four ¼-20 nuts on the torque box untill the shaft is straight and the string lines up with the release. You only need to adjust the top and bottom outside nuts . ***A little goes a long way.*** You may have to re-adjust the bow hand in or out until you have it right combination. See figures 13, 14 and 19.

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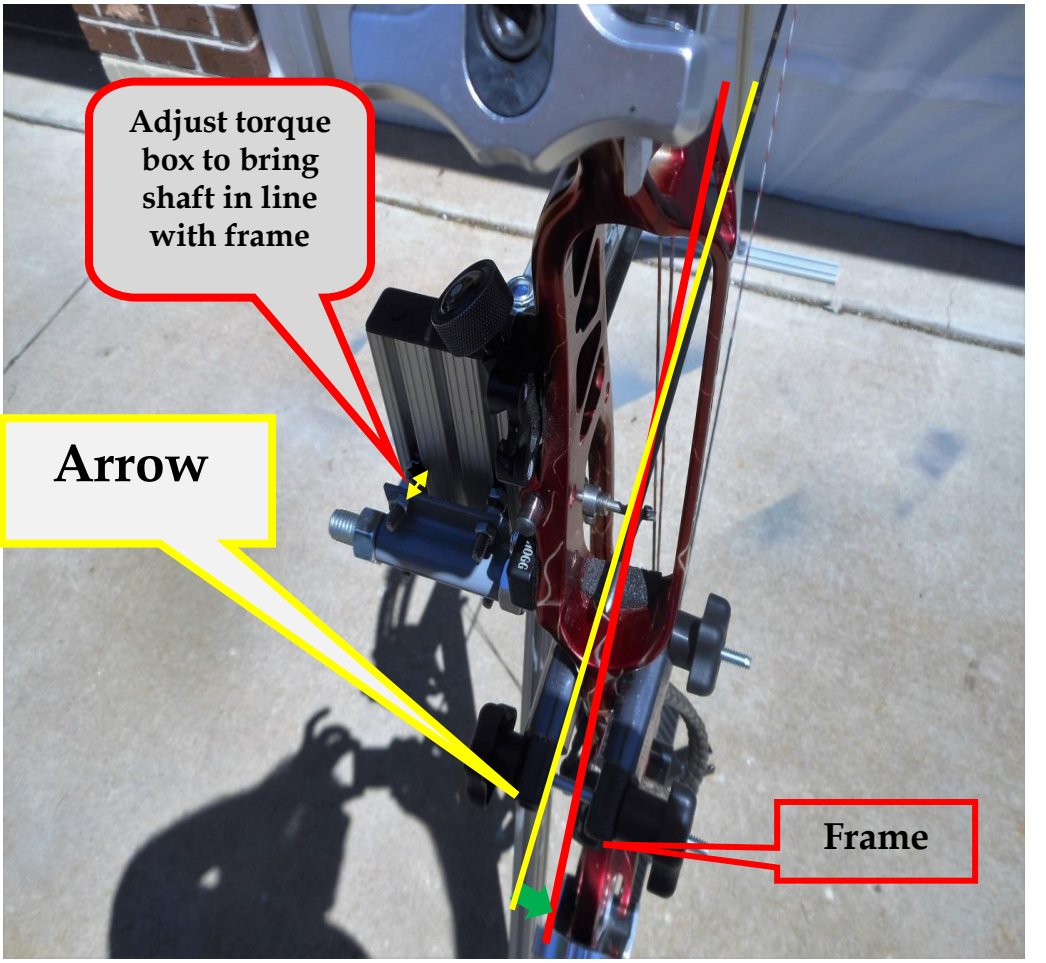
Adjust torque box to bring shaft in line with frame
Arrow
Frame

Figure 19.

Firing an Arrow from the Bowsmith Pro

Hang one or two five-gallon buckets of water from the weight hooks or bolt to floor. Figure 20. (Buckets work great)

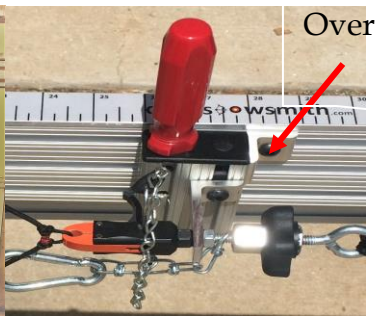

Figure 20. **Figure 21.**

Hook the release, attach safety devises (safety catch and release safety pin) and crank the bow back smoothly (don't over draw). Set full draw using the fine adjustment. Now set the over draw stop and adjust the over draw stop so it barely touches. (Figure 21) You don't want pressure against the over draw stop. Excess pressure on the over draw stop will distort the shot. You can insert a slip of paper between the release bracket rail and the over draw stop. Make contact with the over draw stop, using the fine adjustment, where you can still slide out the slip of paper.

Confirm the release trigger is in the fully forward position. Aim at backstop, make sure to remove string catch, then pull out the release safety pin, and pull trigger to fire.

Caution should be used when pulling the safety pin at full draw!
There is always the possibility that it will fire as you pull the pin!

To repeat, move the carrier smoothly forward and hook the release onto the d loop. When done correctly, you never touch the bow and the release should line up with the d- loop to be consistent.

It will take several shots for the machine to settle in, giving you consistently good shots.

Make sure your legs and feet are tight using a standard L-wrench

Tuning Arrows with the Bowsmith Pro

Tuning arrows is a learning process. Fire a few arrows to settle the machine in. Don't move the bow after you shoot. You should be able to slide the release into place without touching the bow. The release should line up with the D loop every time. Your bow sight should stay level or close and your string should stay plumb or close. I tune fully fletched arrows only. Shoot 12 arrows and find the ones that hit the same hole, set these aside and tune the rest of the fletched arrows. Turn the nocks from the cock vane to the next vane and find the one that shoots closest to center. Most guys who tune this way keep all their vanes the same color and mark the cock vane with a marker. Pay attention that nothing moves. I use one good arrow to double check things as I go.

A very accurate way to shoot after you have set the machine up and test fired a shot or two is to leave the winch clicker off. Crank the bow back to full draw with your right hand to just short of the over draw stop and hold the winch handle and pull the release with your left hand.

Remember to keep away from the front of the machine, never stand in front of the machine. Keep your hands and fingers out of the way. Keep your kids away. Check for loose bolts and always pay attention to what you are doing.

Optional Equipment

Using Bow Master L Brackets with the Bowsmith Pro

We offer a modified version of the Bowmaster. (figure 22) It doesn't include the compressing devise and is designed to work with a draw-board. But the original Bowmaster works just fine with all of our machines,

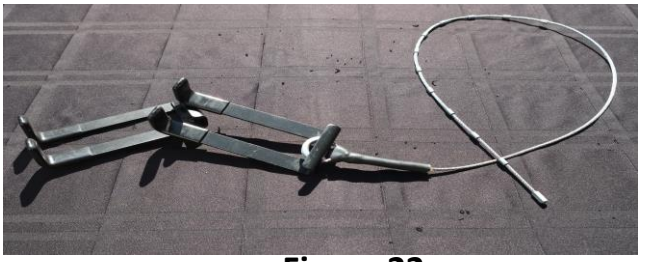

Figure 22.

Not included please order from our website

The bow L clamps are by Bow Master and can be used on past parallel bows, but only up to 6 degrees past parallel. If the past parallel limbs are more than 6 degrees past parallel to the limb tips, then, the Bow Master L clamps cannot be used. The Bow Master L clamps **do not work for all bows! Caution must be used!** Here is an easy way to tell if your bow is past parallel at rest. Below are photos of two different bows. Put a piece of paper up to the limb with one edge of the paper parallel with the string.(figure 23) The edges of the paper make it easy to see the angle of the limb. The picture on the left is of a bow that is not quite parallel as you can see by the yellow line (yellow line is the angle of the limb tip). The picture on the right is a bow that is definitely past parallel. Only use the Bow Master L clamps on bows that do not have past parallel limbs no greater than 6 degrees.

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NEW G2 VERSION FOR 2016

NOW WORKS WITH LARGE CAMS AND ON BOWS UP TO 6º PAST PARALLEL

Logo stamped on the bracket indicates it is suitable for past parallel*

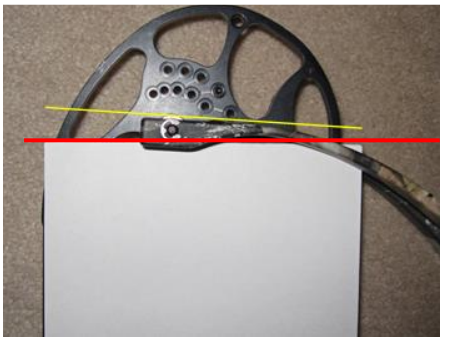
Split Limb L Brackets G2

This compact, lightweight bracket provides a quick and easy attachment point for the Bowmaster Bow Press. The L design presses from the limb tips and compress the limbs in much the same way as when the bow is drawn. This new design works on a wide variety of bows, including those up to 6º past parallel. They work equally well on both solid and split limb bows and also work on bows with flared limb tips.

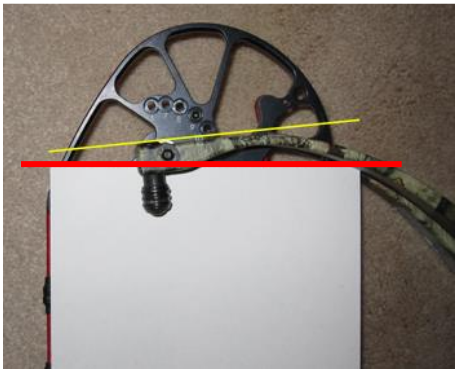
The NEW Bowmaster G2 Split Limb L Brackets are longer than previous versions and are designed to fit large cams like those on the newer universal fit compound bows. Like the 2015 version of the Split Limb L Brackets the new G2 L Brackets will also work on bows up to 6 degrees past parallel.

http://www.prototechind.com/split_limb_L_brackets_info.htm

Almost Past Parallel Versus Parallel



Almost parallel – 1 degree



Past-parallel +6 degrees

Figure 23. Almost Parallel versus Past Parallel

The Bow Master L clamps can slip off past parallel limb tips greater than 6 degrees. Use caution whenever using the Bow Master L clamps on any bow.

! WARNING: The limbs of a compound bow are under extreme tension. Use caution while working on the bow. Keep the face of the limbs away from you at all times. Eye protection must be worn!

Draw your bow just enough to fit the Bow Master L Brackets onto your bow. Set the L brackets in place. Adjust the length of the Bow Master L brackets making sure your cable ends are in the proper place, and the latch on the L bracket is fully engaged. See figures 44 and 45. **Find the longest setting possible ,with the least amout of draw!**

Now, back off the Bowsmith Pro winch and watch to make sure the hooks are centered and the cable is latched. You can now replace your string and cables, adjust twists in end loops and even remove cams if you are careful.

Remember to always keep you face and fingers out of the way!

Figure 24.

Figure 25.

If your limbstops are in the way you may want to remove them. Set the Bowsmith's Pro over-draw stop while your bow is at full draw and before going any further.

You must know your bow and not let the cams roll over too far! Your stops may need to be replaced before you draw the bow to full draw. Or you risk lock out!!!!

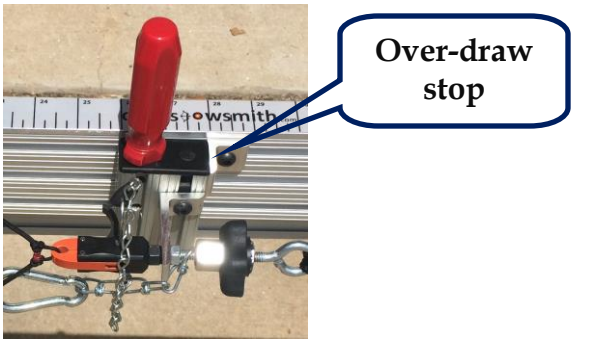


Figure 26.

If your bow has limb stops, then, loosen the limb stops so you can move the limbs stops out of the way of the Bow Master L brackets. After you finish working with the Bow Master L brackets, then, we can now re-position the limb stops. With the Bowsmith Pro, this is very easy to do. Get the bow back to full draw. You have previously set the over-draw stop. (figure 26) Now, just hold the top cam limb stop with your finger, touching the top limb, and tighten the limb stop in position.

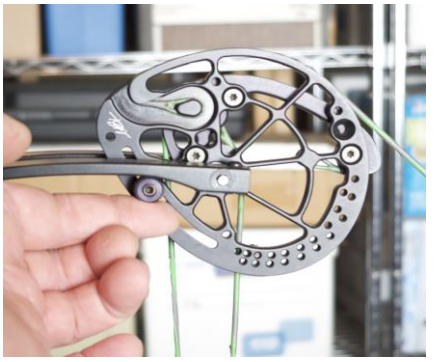


Figure 27.

Repeat the procedure for the lower limb stop. Bottom limb stop is easy, gravity takes care of everything. (figure 28 and 29) Tighten the limb stop in position.

Figure 28 Figure 29.

To remove the Bow Master L brackets, draw bow back slowly towards full draw. Check that all the strings and cables are where they are supposed to be on the cam, that the string is fully inside the groove for the bowstring and that the cables are inside the grooves for the cables. Slide off the L brackets when you have the bow drawn enough towards full draw so that the L brackets are loose. After removing the L brackets, let the bow down.

If you need to take down the entire bow, use an appropriate bow press, like a Bow Master cable press, if appropriate for your bow

(not included) .

I have included a form I use to record pertinent information, feel free to copy and use for your own bows. If you look at my bow specs and current set up, they are a little different. I want my bow back to

factory specs so that's my goal. And regarding "factory specs. "Very seldom do you get a bow that is at exact specs so a little + or -. Close counts. If you're off a 1/8 at brace or 3/16 with the ATA that's close enough for me but some people want it perfect. If this is you spend the extra hour or so.

On a new bow you want to also take these measurements as I have found them to be different from factory specs. This was the case with my Hoyt Pro Comp. I changed out the string set with a quality set, and without any tweaking it was a lot closer to spec, amazing!

When satisfied how the bow is set up enter the actual settings and keep on file.

One tip, try installing a peep at full draw. It's the easiest way yet I have found to insert and tie in place.

Installing new string

First thing is to set up the bow so it is plum level and square to the machine. Now take the time and take some measurements before you remove the strings and cables. Measure your peep height this will save you having to find it later by trial and error. Measure from center of shaft to center of peep.

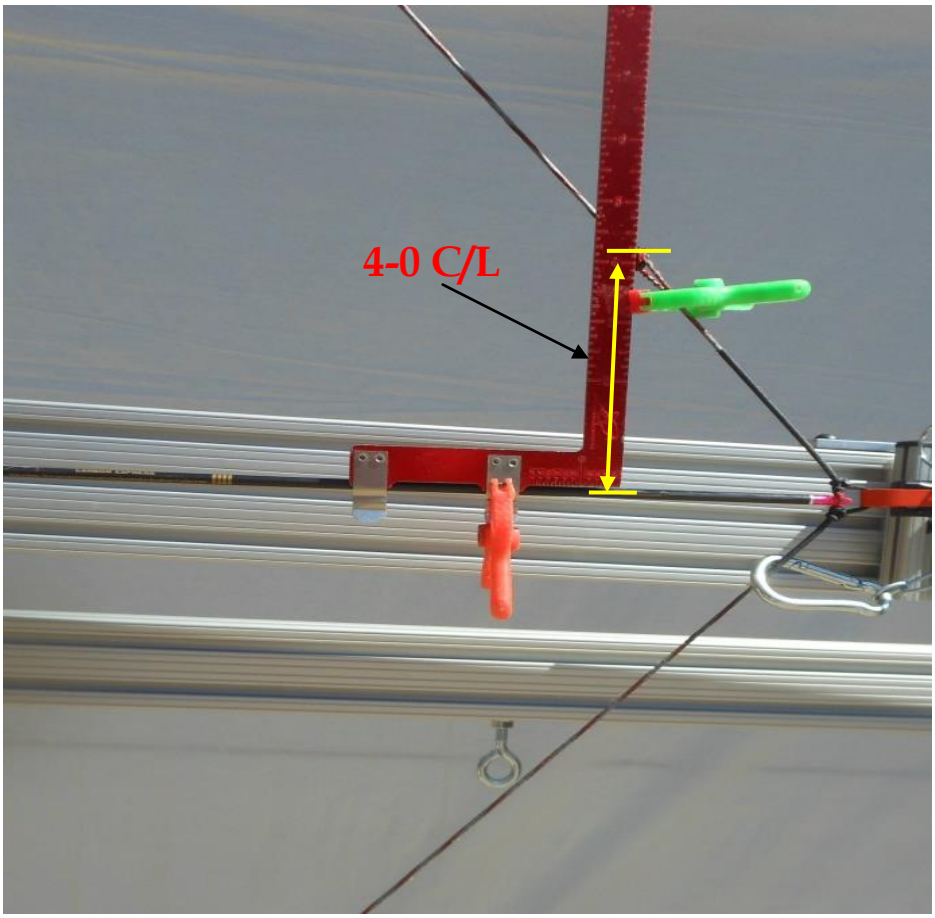


Figure 31-A

Figure 31 -B

Measure at brace and at full draw and record peep measurements. ***You can download a blank form from my website.*** You will notice we have an area to record the factory recommended settings, and next to that the actual settings. It's important to take note of these.

If you look at my bow specs and current set up, they are a little different. I want my bow back to factory specs so that's my goal. And regarding "factory Specs" very seldom do you get a bow that is at exact specs so a little + or -. Close counts. If you're off an 1/8 at brace or 3/16 with the ATA that's close enough for me but some people want it perfect. If this is you spend the extra hour or so. When satisfied how the bow is set up enter the actual settings and keep on file. After filling out the form you can now carefully install the limb locks and remove the old string and cables. Check your bearings for excessive play at this time. When satisfied install the new strings. Hook the release using both safeties directly on the string and with the winch apply just enough pressure to remove the bow clamps. If the bow wants to roll forward you may have to attach a temporary d-loop. For this I generally use the old string. Now carefully back down the winch paying close attention that the string and cables are in their respective grooves and remove limb clamps. Figure 32.


)

Figure 32.

Adjusting cam lean

Tighten your limb bolts and back off 1/2 turn. You never want you're your limb bolts bottomed out this can cause binding and damage your limbs.

Attach string to release and be sure to use both safeties! Draw the bow back and adjust so it touches the bow stops. Now set the stop on the machine to prevent the bow from being over drawn.

Plum bow riser, do not use the bubble on your sight at this time rater clip on a small level. See figure 33.

Figure 33

Figure 34

Clip on level to the top cam or idler wheel at full draw; make sure it is on a flat spot. Figure 34. With riser plum, adjust top cam to be plum. Do this in ½ twist increments and do both sides ½ twists out on one side and ½ twists on the other this technique will not move your timing .

NOTE: At this time it's a good idea to keep notes as you go. It's easy to forget what you have done.

Using our limb retainers makes this fast and easy, no reason to move the bow back and forth to a press. **Use caution!** Make sure hooks are centered and when backing down make sure string and cables are in there proper places.

Note: these retainers are not for every bow and they should not be used at full draw! Find the shortest draw length that works for your bow.

! WARNING: The limbs of a compound bow are under extreme tension. Use caution while working on the bow. Keep the face of the limbs away from you at all times. Eye protection must be worn!

Blue line shows exaggerated cam lean.

Red line shows offset string caused by cam lean.

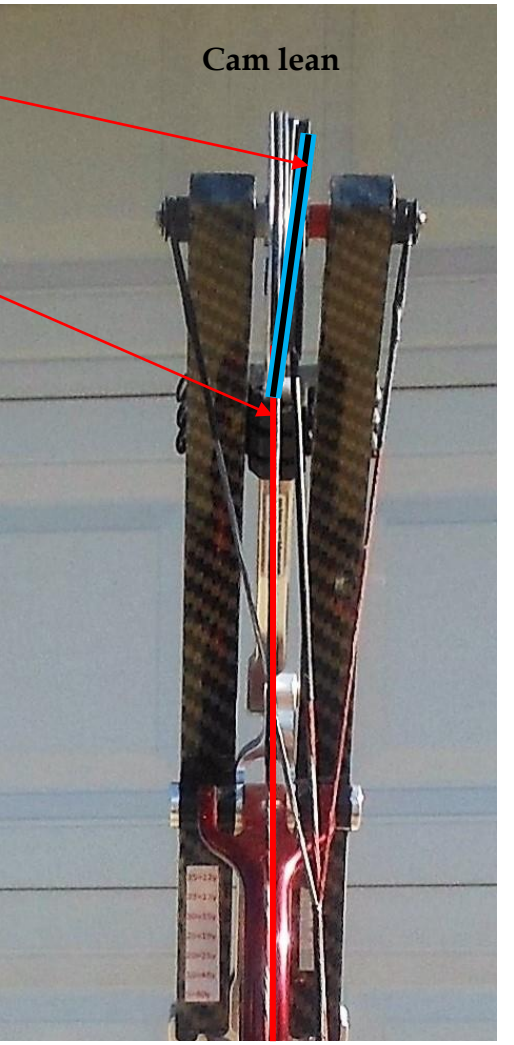


Figure 35

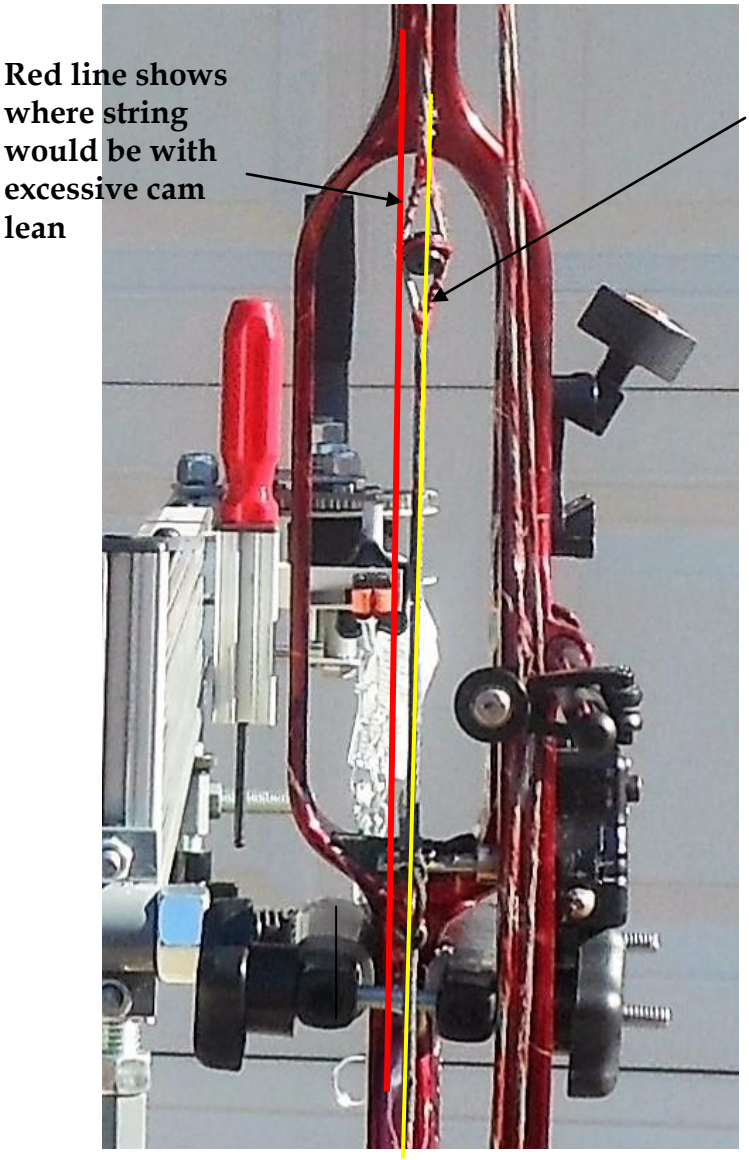


Figure 36.

Figure 36 shows how cam lean affects your center shot. The red line shows where your rest would need to be if we shot with cam lean. With the cam plumb at full draw there is no reason, ever to play with the yoke. Playing with the yoke causes the rest to be moved to compensate for a poor tune or form and may mask other problems

like a failing or week limb

Now there is something that will change your factory center shot.

Changing the guide so it rides closer to the string will have a huge effect that can be seen when we bare-shaft tune.

But we still apply the basics , plumb the top cam and set your center shot to factory settings.

I'm using a PSE roller guide and it does have an affect with the center shot pushing it about a 1/8 toward the riser. Now the purist can re-shim the top and bottom cam to bring the bow back to factory alignment, but it is not necessary for this small amount. The bow will shoot perfect as is.

Do not try and adjust the bottom cam it's not necessary as factory set up is all that is needed. If it is way out of whack it should be investigated as it could be a sign of other problems, such as a bent axel, failed bearing or limb failure.

With the top cam plum at full draw check your cams for timing.

If your bow has duel draw-stops set the top one at this time and take the bottom one off or slide back so it doesn't touch.

If your cams are out of time adjust control cable to bring cams into proper alignment and now re-install bottom stop if applicable.

Control cable is at the opposite end of the yoke.(figure 37)

Again: take notes!

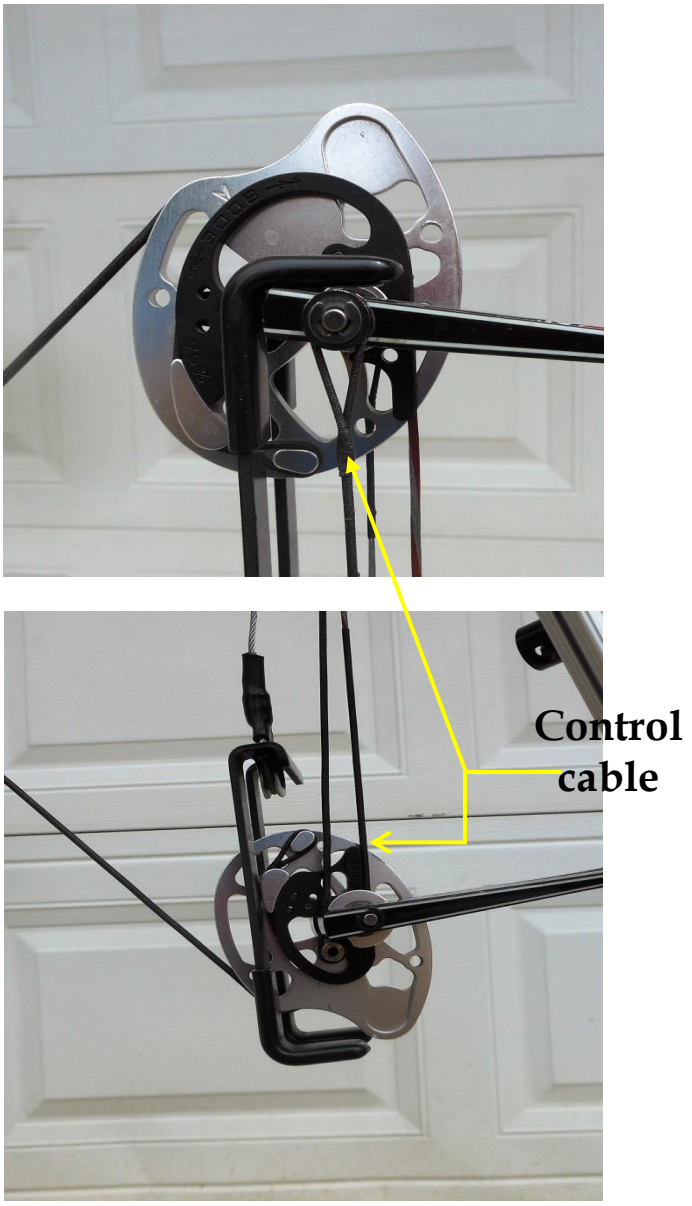


Figure 37.

Note how the limb retainers can be left in place as you make adjustments.

Now check your axel to axel and brace height. ***(Close counts)***

With these in a +- to specs check the tiller and adjust by loosening top or bottom bolt. Do not tighten! You want to maintain a ½ bolt turn from bottoming out

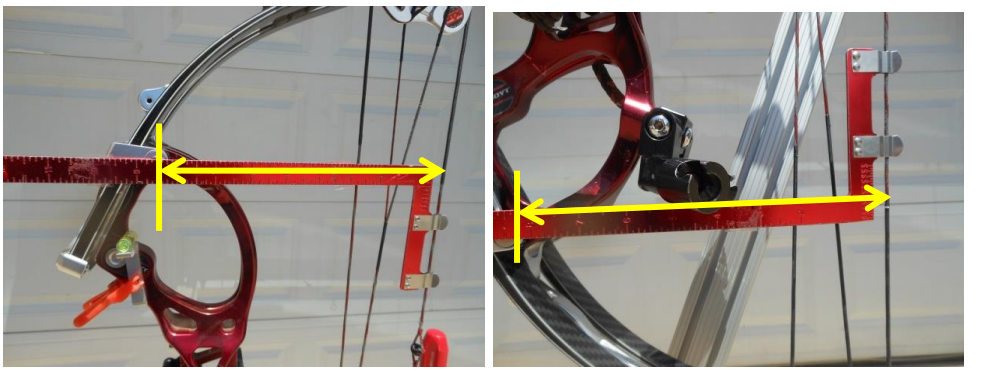


Figure 38.

Top and bottom the same.

I like to use the center of a bolt. See figures 38 and 39.

If you have to make more than a 1/2 turn to align the tiller go back and recheck your measurements. If you still have a significant difference between the top and bottom this could be a sign of a bad limb or improperly timed cams. I have even found bows with miss matched cam let offs. So it's worth investigating.

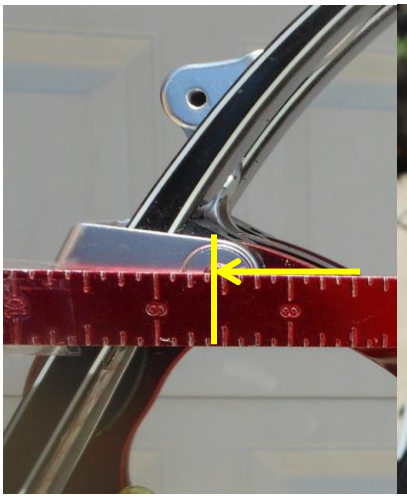


Figure 39 Figure 40

At this point I mark the bolts with an automatic center punch. (Figure 40) This way you have a permanent guide when adjusting the bows draw weight and tiller. With the cams set and the bow close to factory specs it's time to establish our nock point. Using our custom square I use an old arrow that is the same diameter of the arrows I will be shooting. I cut the arrow to the same length as the square and use the same nock that I will be using. Carefully pry the nock apart so it slides easily on and off the string. Tape the arrow to the bow-square with the nock on the bowstring. Eyeball your arrow so it passes through the center of the burger hole.

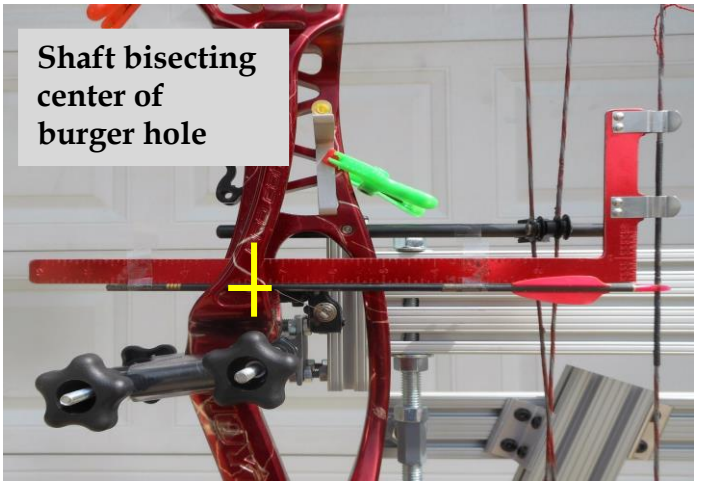


Figure 41

Now tie your nock into place. With triple over-hand knots and seal with a flame.

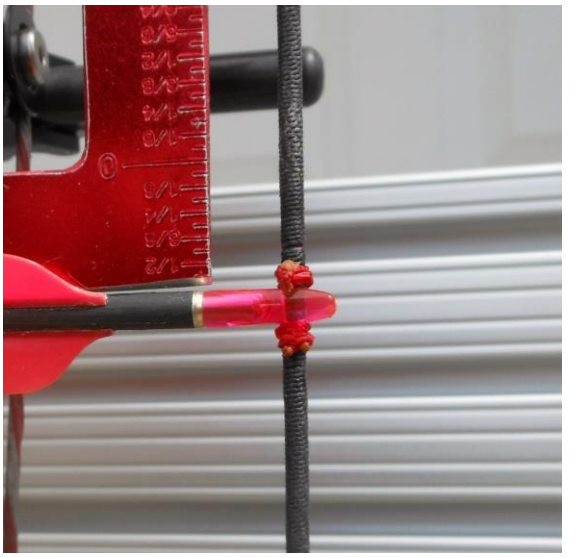


Figure 42

Tying a D-loop

I like to tie and set the bottom half first using the machine to put some tension on the live end

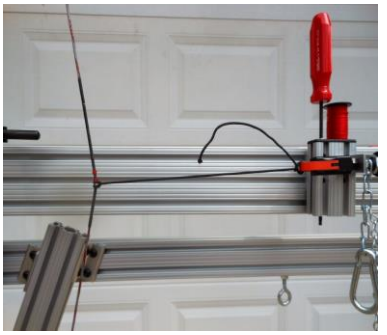


Figure 43.

Figure 44.

Figure 45

Figure 46

I also use the machine on the top tag along with my plyers to get it good and tight. Cut and seal. Figures 43 , 44 and 45.

I also use the machine to help hold the free end as I use my pliers to set the loop and tighten the knot. See figures 47

If you don't know how to tie a D-loop refer to figure 48. Getting a D-loop to stay in place requires it to be tight and the ends need to be melted forming a small mushroom head.

Figure 47

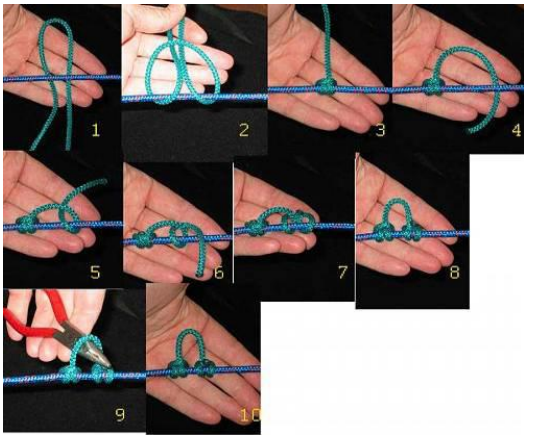
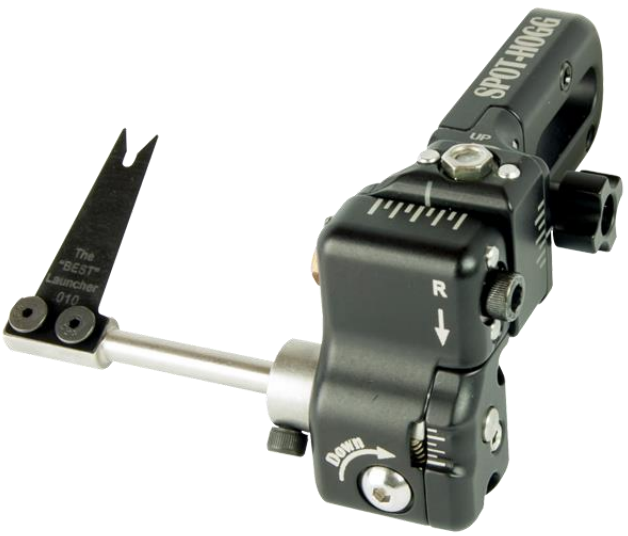


Figure 48.

Installing Your Rest

If you are using a drop away please follow the manufacturer's recommendations

If your using a blade this can be complicated but necessary in order to do it right.
I use a Spot Hog Edge. This rest makes tuning a breeze as the adjustments can be made with precision.



Using a number 8 or 10 blade set your blade to about 40 degrees to start. Move the rest to touch the bottom of the arrow and lock in place. This is good enough for now. Set the bow up in the Bowsmith Pro- plumb, level and square to the machine. Notice the blade. Is it standing tall? (No bow or sag) This is not good and will possibly make tuning hard and will make your shot less forgiving.

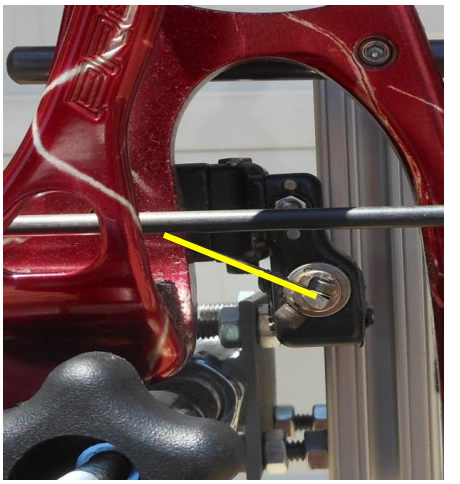


Figure 49

At brace –Bad

It's necessary to trim your blade to get the most out of it.
I start with a number 8 or 10 blade and using a Dremel tool. With a small sanding drum I carefully remove material until I have enough flex so it sags at brace and stands proud at full draw

Figure 52

Draw the bow back and watch your blade you can see how the shaft rises to bisect the burger hole, it is now straight at full draw, no sag. See figure 55. I also custom fit the v-notch to fit certain arrows.

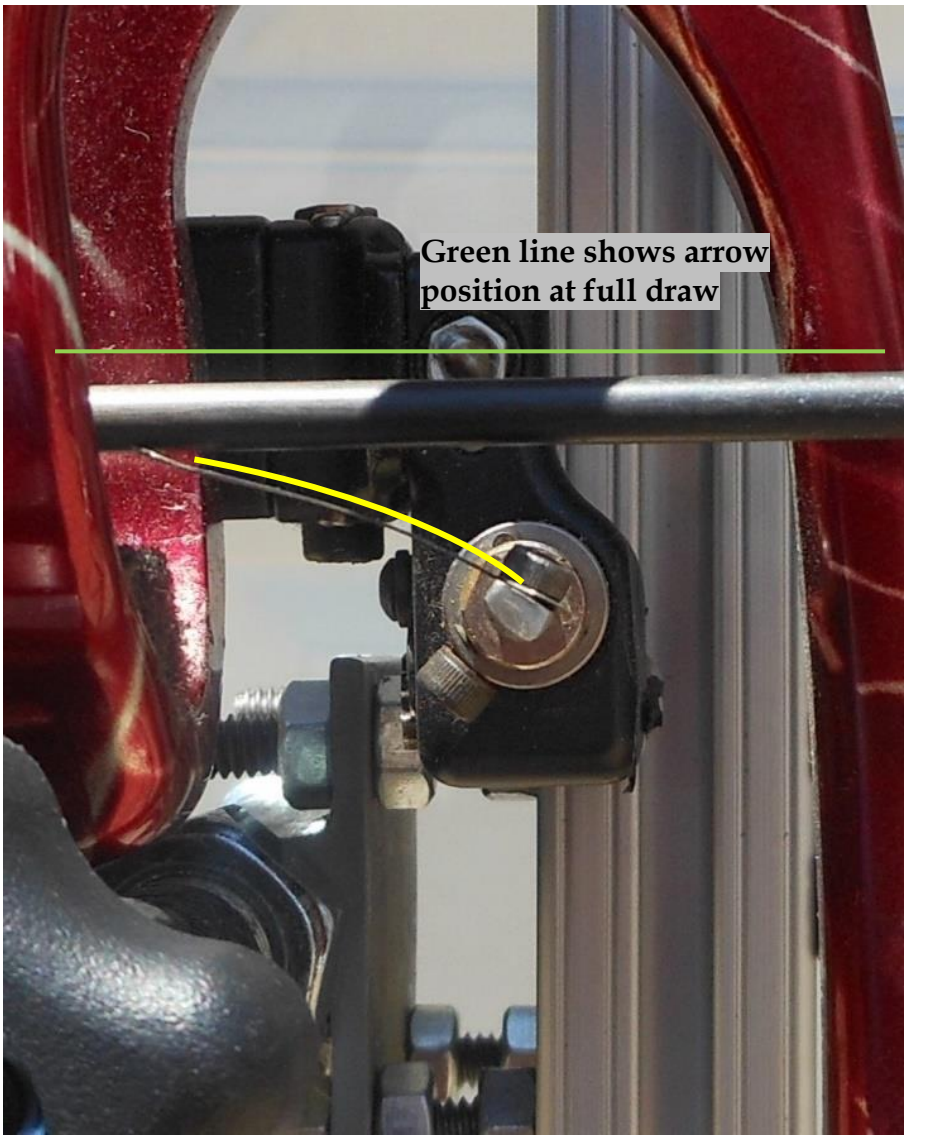


Figure 51

At brace, nice bow in the blade

"Good"

Figure 52

Full draw, “Good”

If you shoot full bores you will find that an arrow with 11-14% foc will be very forgiving when properly set up. Even a stiff full bore will shoot excellent with a lite point cut one inch beyond your rest.

Leaving an arrow at full length to get it to spine defeats your forgiveness and makes the bow touchy around center. Both the shooter and the arrow have to work harder.

You do not have to shoot 300 grain tips. The longer it takes the arrow to clear the bow the more susceptible it is to adverse movement.

Now with your blade tuned, place your bow square with the cut down arrow still taped in place and adjust blade height until it just touches the shaft. Refer to figures 51 ,52 53 and 54.

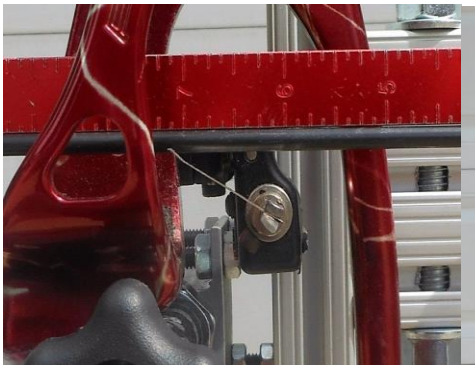


Figure 53

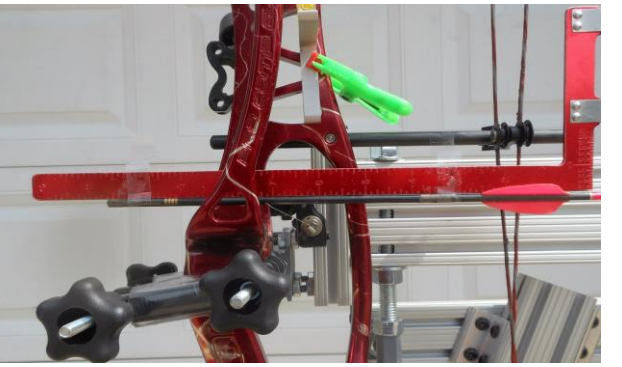


Figure 54

Now re-adjust your center shot to ***factory setting***. Figure 55.

Figure 55

Level nock travel
(This can only be done on a Bowsmih Pro and it is probably the most important step it tuning a bow that is rarely attempted at your local pro shop. Without our machine it's very difficult to accomplish.)

With the rest properly set at brace you can check your bows nock travel. With a drop-away rest this is easy but it will require a few small level vials that you can buy from e-bay for about 5 dollars for ten of them.

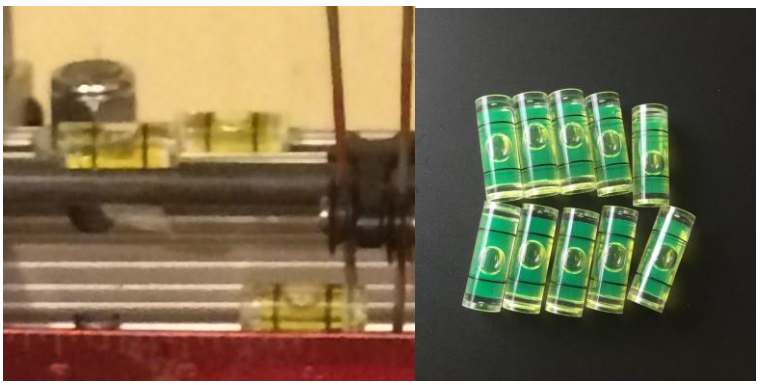


Figure 56

First set your top rail so it is level. Figure 57- bubble A. Next set a square on the top rail and adjust the bow so that it is plumb to the square using the string as the guide. See red and yellow lines figure 57

Now locate a couple spots on your riser to tape on a couple levels indicating level. Figure 57 vials B and C. Vial B is taped to the slide rod which in this case is perfectly square to the riser and string.

On a properly set up lizard tongue there will be some droop. You will have to make a cut down arrow, (Figure 54) that will duplicate the weight that is on the rest at full draw. But on a fall away rest, a full arrow will work. Note: the bubble D (figure 57)taped to my square.

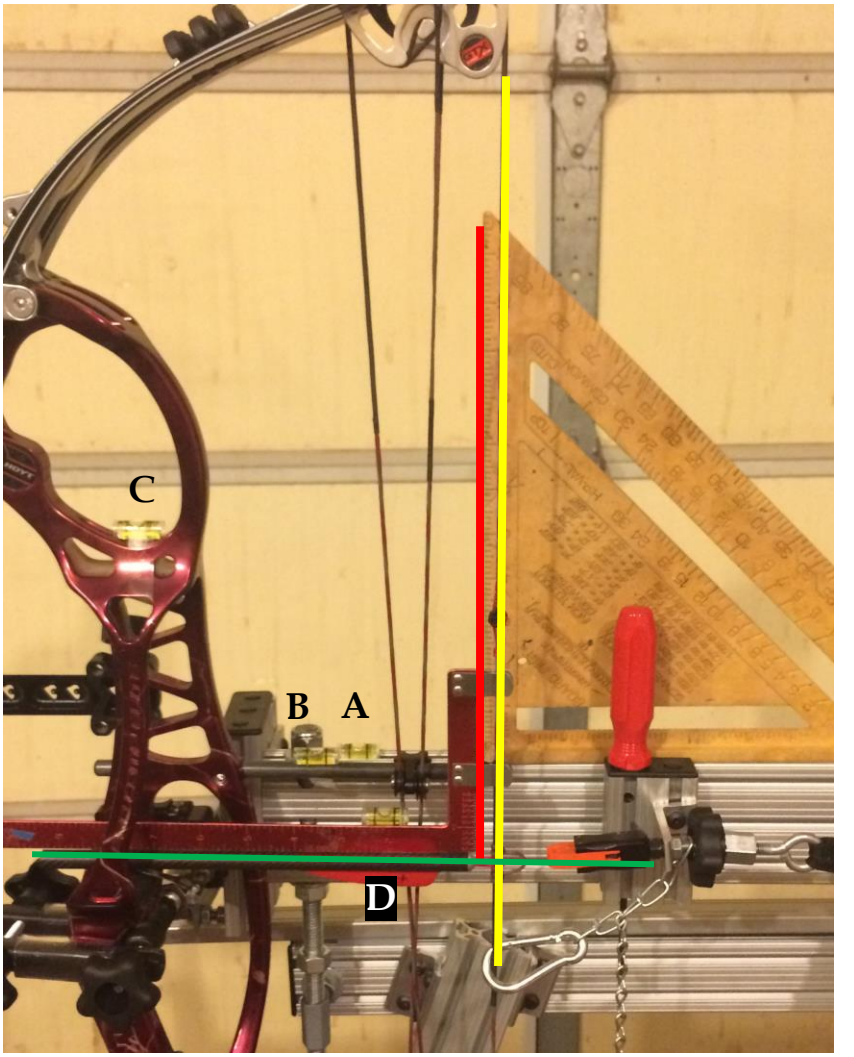


Figure 57

Next hook the release to the d-loop and crank the bow back to its shooting position
Figure 58.

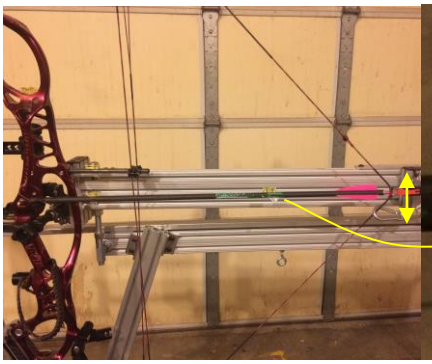


Figure 58

Figure 59

Adjust the riser so it is level again by loosening the ¼ -20 cap screw and moving the release up or down. Figure 58 levels B and C as shown in figure 57.
Tape a level to your shaft, be careful and get this straight with the shaft so it indicates properly. Figure 59.
As you can see in figure 59, the shaft is running nock high this will really cause you problems when bare-shaft tuning.

This can be caused by un-balanced limbs or cams out of timing. It generally can be corrected by removing a twist or two from the top cam using the buss cable and adding a twist or two to the control cable. This technique adjusting both cables will keep you from changing draw length and draw weight. If you timing is off a little after this its ok as long as your top cam hits first or comes into time first. Remember timing marks are only the starting point on every bow. Just because the timing marks that are perfectly aligned doesn't mean the bow is in time.
Figure 60 shows what a un-level nock condition looks like no matter what you do with the rest the bare-shaft will never be parallel to the fletched arrow

Figure 60

With this done its time to install your peep.

Installing your peep

Now take the time to install your peep. With the bow properly set up in the machine with both safeties installed you can crank the bow back to full draw and using the micro adjustment set the bow to where it just touches its draw stops.

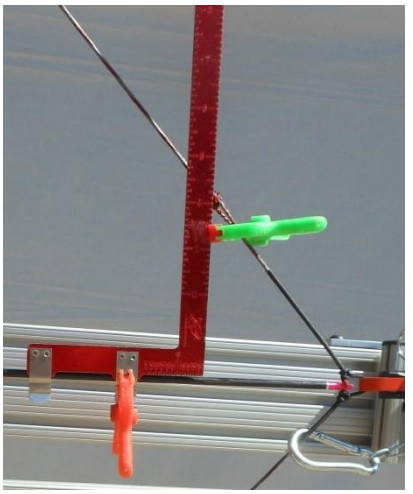


Figure 61

Measuring from the center of the shaft to the center of the peep, (using your recorded dimension- see figures 37 and 38) measure from the center of the shaft to the center of the peep and slide the parting string to the exact spot to where the peep will go.

Use your fingers to separate the string and slide peep into place.

Note: no tools are necessary to install the peep when done at full draw.

Re-measure to insure peep is in the exact place, figure 37. Now back the bow down to brace and measure your peep again. See figure 38. If satisfied with the position crank the bow back to full draw and tie in place. Learn to tie this type of knot its done with a single piece of string and it tightens when the bow is backed down to brace.

When satisfied with your knots, square your peep to your eye by rotating the string by adding or removing twists. Be careful you don't change the length of the string by more than ½ twist.

Setting Up Your Sight Using the Bowsmith Pro

First thing is to set up your bow riser plumb and for practical purposes we are using a target sight, but this procedure also works for most hunting sights. I recommend that all bow sights to be set at full draw to compensate for riser twist. Some bows have more than others but all can benefit from this technique. Your sight should be set using the same sight radius that you plan on shooting.

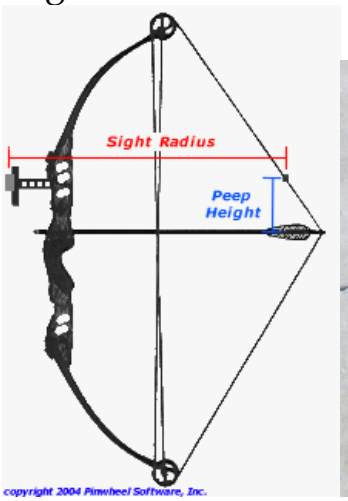


Figure 64

Figure 65

The Bowsmith Pro needs to be on level ground with no weights added. Use a level on your riser and set it plumb. I use small custom made levels that are great for this. See Figure 65. Clamp a level to the side of the sight if it won't clamp try using double-sided tape. Plumb the sight rail or elevation slide to the riser at full draw!

This is very important for having a straight shot at all ranges, try and get this perfect. See figure 66.

Figure 66

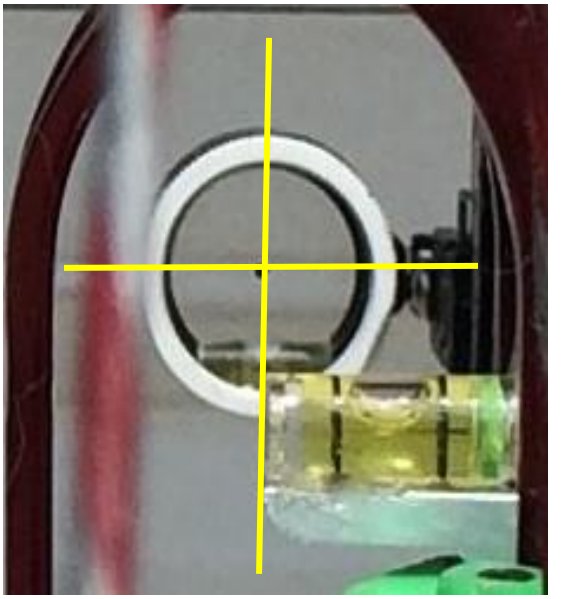


Figure 67

With the bow at full draw, the riser and the sliding sight rail plumb, figure 66., set your scope bubble to a level condition maintaining a plumb riser and plumb sight rail. See figures 66, 67 and 68.

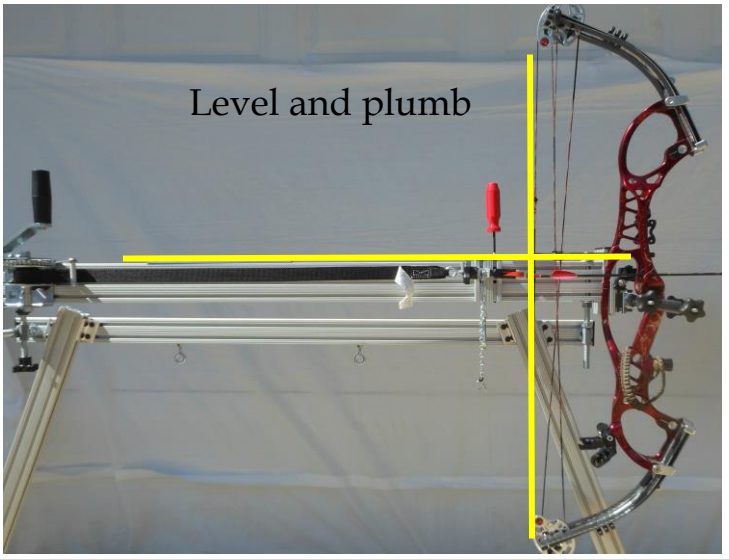


Figure 68

Now with this done its time to set the 3rd axis; this is where a helper comes in handy. With the bow at full draw **on level ground** pick up the back of the machine so the bow is pointed down at about a 45 degree angle. (It is not necessary to go further)

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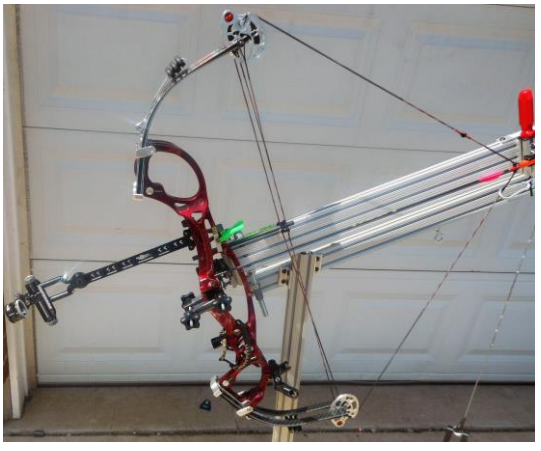


Figure 69

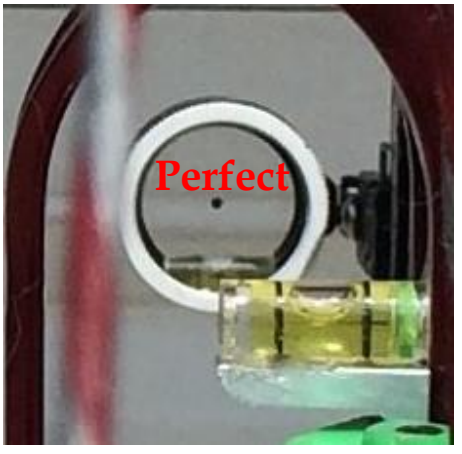


Figure 70

If the sight bubble stays level (centered), when the rear of the Bowsmith Pro is raised up off the ground, then you are good. If the sight bubble does not stay level, if the sight bubble runs left or runs right, then repeat the adjustment process (3rd axis adjustment) until you get a level bubble throughout its range of motion (Bowsmith Pro feet must be on level ground, and when the Bowsmith Pro rear foot is raised up off the ground). Now is a good time to shoot the bow and set the sight at 20 yds. The bow at this point is very good and you could get away with paper tuning.

For the advanced shooter we are going to take this to the next level and use the machine to super tune the shot.

Bare Shaft Tuning Using A Machine

The point of this is to get the bow to shoot perfectly with perfect form. To become a shooting machine should be every shooters dream. The shooter must learn perfect form. If you have no desire to shoot with extreme precision and need an excuse for why your bow is never in tune from one day to the next then this is not for you. I have found it easier to switch the bow vise out for the straight bar for bare-shaft tuning. If you don't have one, they are available on our website. You will need two arrows that you plan on shooting, one fletched and one bare.

Figure 71

Set your bow up in the machine so the bow sight scope is level. Shoot a few times at 15 yards to settle the machine in. Figure 72. First shoot your fletched arrow and mark the hole then shoot a bare-shaft and look at the difference

Bare-shaft tuning can be difficult. Too stiff of a rest can cause your arrow to bounce or mask an un-level nock travel. This is why you need the sag in the rest!

Make very small adjustments to your rest. If you blow past the sweet spot you may get indications that you need to move the rest more toward the side or up and you will begin chasing a phantom.

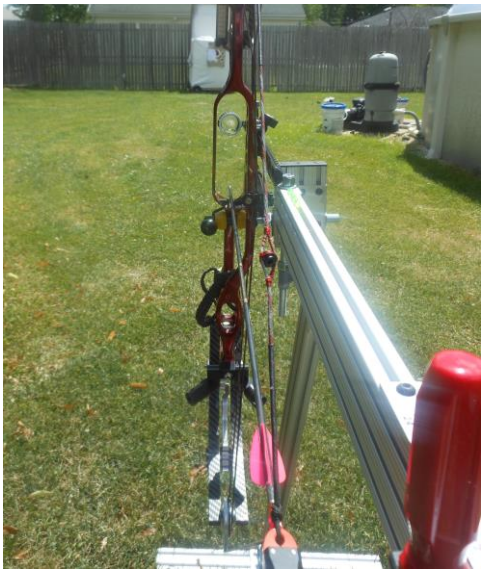


Figure 72

Figure 73

This is what a out of tune cam looks like when I intentionally set the timing so to have un-level nock travel. See Figure 73.

Figure 74

This is a low rest

Keep your bow square handy with the cut down arrow still attached you may need to start over. If you are moving the rest more than one full turn left or right you may want to start over and re-set it to the factory recommended center shot.
With my spot hog I move the rest 1/16th turn or less at a time that's about 1/1000th of an inch.

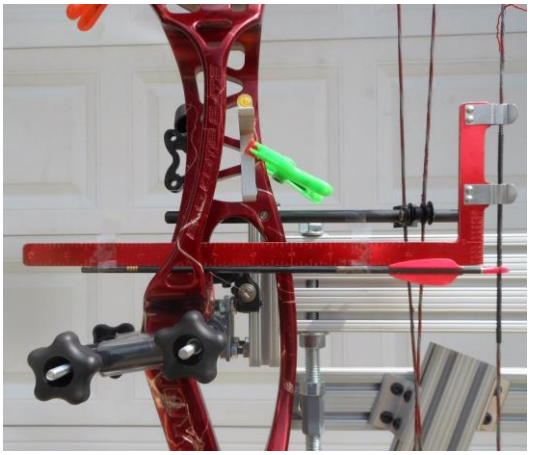


Figure 75

Figure 76

This takes time and persistence to learn and remember close counts. You can get it perfect but it is not necessary. I have shot many of 60X rounds with a bow shooting bare-shafts 6 inches off, as seen in figure 76.
Figure 76 is the result of a stiff blade and poor nock travel , it causes the arrow to bounce like it's on a trampoline. And although you can shoot perfect scores with this set up you need heavy points and longer arrows and feathers to get your shafts to spine. Your fletching is working hard to keep the point going straight, and what you have is a very unforgiving and unstable arrow. Most of you can see this in your missed shots they are generally exaggerated making the shot worse than what it should be. By setting the rest up as I explained in pages 40 through 45 you gain forgiveness and your stiff as hell full-bores can be set up like a properly spined shaft would be. In reality your rest compensates for a overly stiff spine.

Figure 77

This is good!

Figure 77 is good! This shows excellent nock travel and a slightly low rest. What you gain is forgiveness and a lot more dead center shots.

I keep a bare shaft in my quiver to check my form now and again.

Once your bow is tuned and you shoot a bare-shaft and your continually shooting to the right or left, you may have a slight draw-length problem.

Your shot is like a book to far of a draw and you shoot left - under drawn and its right.

A little is normal and will gradually diminish as you progress.

Paper Tuning

Figure 78

Paper tuning is rather straight forward. I will be using the Bowsmith pro with its attached paper holder.
Slide the paper holder from its stowed position and lock into place. Then rotate the paper frame into its shooting position. Note: attempting to slide this in or out without the paper frame in its stowed position will cause binding. See figure 78.

Figure 79

Make sure your arrow is aimed at the back stop and shoot an arrow through the paper. As you can see in figure 81 we have a perfect bullet hole. If the bow is set up correctly you should get this on almost any new set up. If you have a rip or offset hole follow the diagram on figure 82 to correct

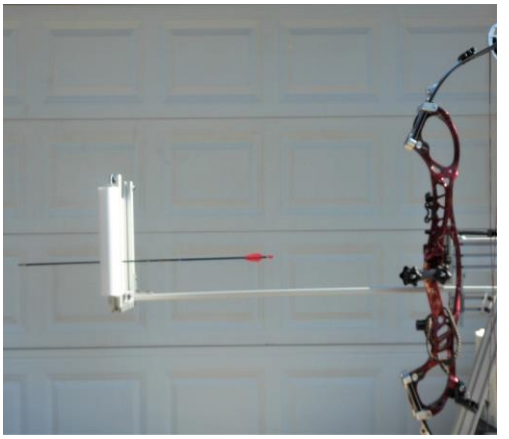


Figure 80

Figure 81

Don't waste your time shooting bar-shafts threw paper! Without fletching the back of the shaft tends to follow the hole the point made.

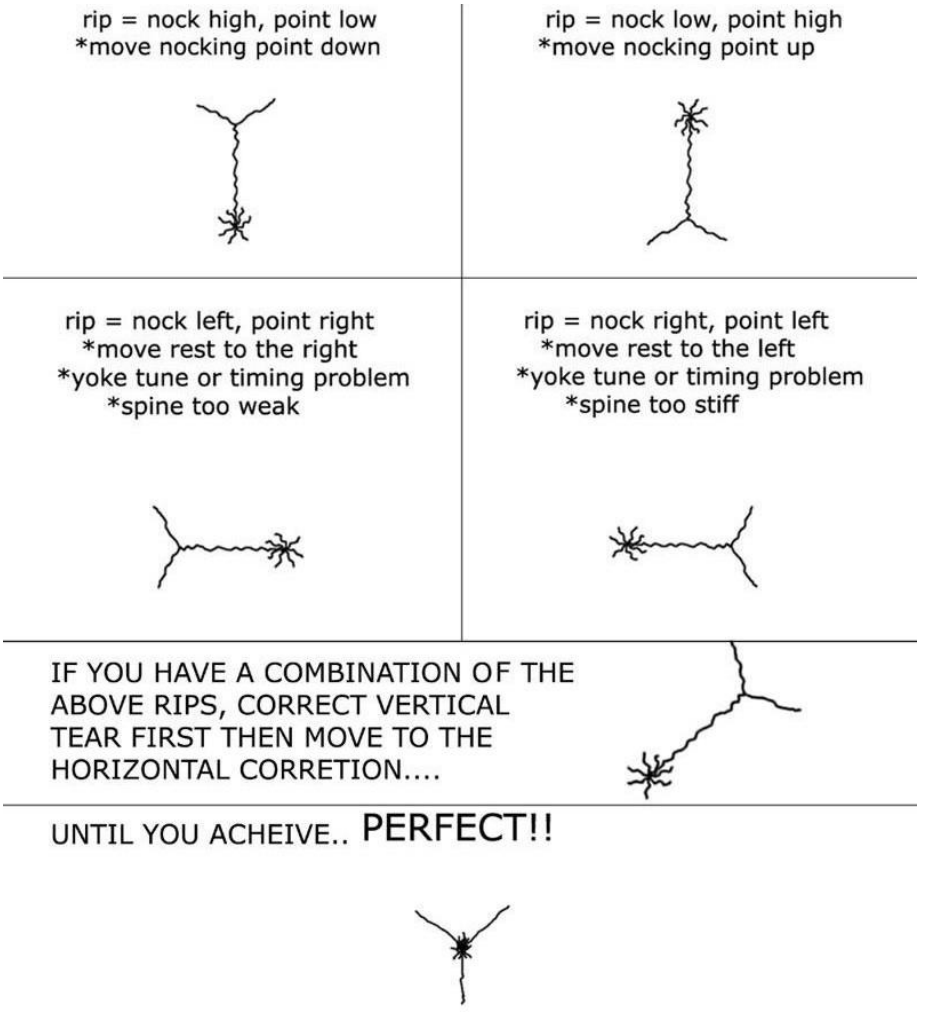
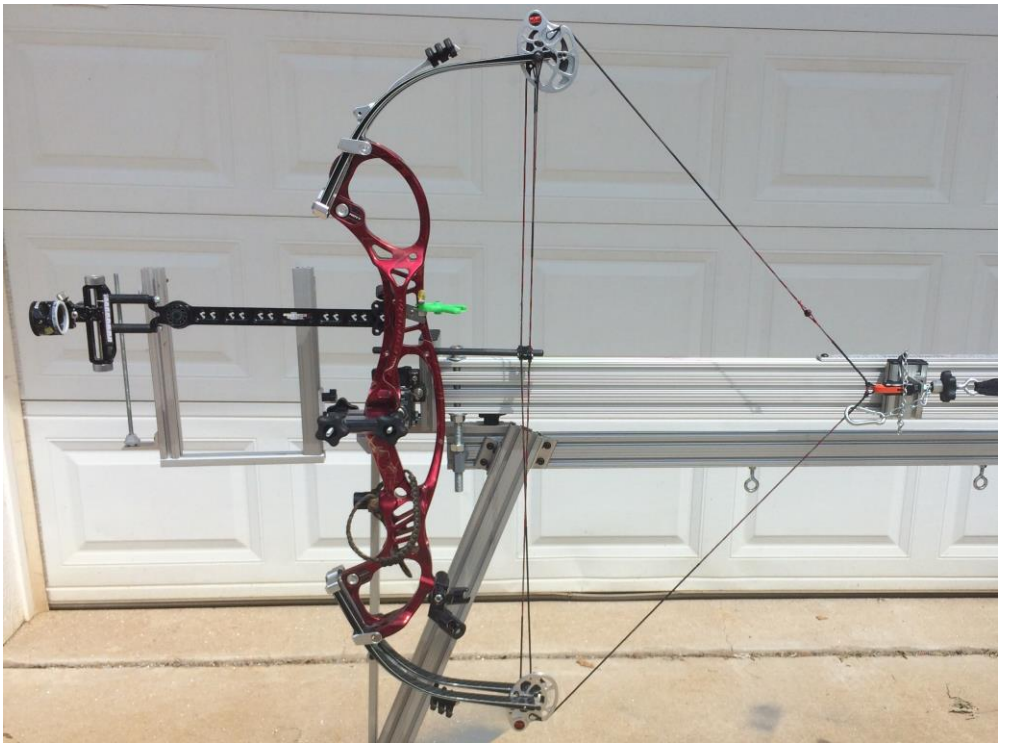


Figure 82

Now with your bow shooting good from the machine its time to shoot the bow. Concentrate on trying to use your best form. If you have good form your shots should duplicate that of the machine. And you should be shooting bullet holes . If you are getting major tears contact a coach and have him check and help you to adjust your form.

For small imperfections, about the diameter of your shaft, no adjustment is needed as it is common for your form to move around a touch until you become as good as your favorite pro. I am a good shot and it is typical for me to have a slight left tear one day and a slight right a few days later. It's important that you know your bow is correct!
Remember we all have good and bad days. Don't start tweaking your bow because you're having a bad day.



I'm always interested in hearing from users who have found new ways to use our machine. Please drop me a line at coopsbowsmith@gmail.com

Good shooting, Coop
(815)-325 -9128

coops  wsmith.com

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** _____

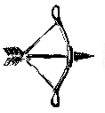
DRAW WEIGHT _____

LIMB BOLT -TOP _____ **BOTTOM**_____

PEEP HEIGHT _____

SIGHT RADIUS _____

TILLER + - BOLT TURN **TOP**_____ **BOTTOM** _____

coops  wsmith.com

OWNER _Vern Coop_____

MAKE AND MODEL _2014 Hoyt pro comp, gtx-2, 75%

FACTORY SETTINGS	**ACTUAL BEFORE TUNE**
AXEL TO AXEL 36-15/16	37-1/8
BRACE HEIGHT __7-15/16__	___8___
DRAW LENGTH _-26.25__	25.75 D-loop- 26.25
DRAW WEIGHT 40-50_	_47_
LIMB BOLT /TILLER	top_2.25 bottom_ 1.75
PEEP HEIGHT	static 5-7/16_ full-draw _4___

TUNED SETTINGS

AXEL TO AXEL __37__

BRACE HEIGHT __8__

DRAW LENGTH __25.75___ **D- LOOP** _26-1/8th_____

DRAW WEIGHT __47____

LIMB BOLT -TOP __2_____ **BOTTOM** ___2_____

PEEP HEIGHT __5-7/16____

SIGHT RADIUS __32.125_____

TILLER + - BOLT TURN **TOP**__0___ **BOTTOM** ___0___