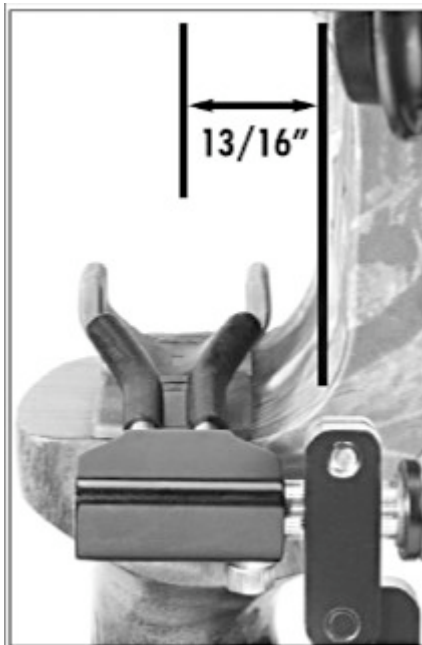


# Bow Manual

Mathews Legacy, Outback, Ovation and later

## Rest

Mathews recommends measuring off the side of the riser at the rest attachment hole to the center of the arrow shaft  $13/16$  of an inch. Adjust the rest as needed for proper arrow flight. A center-shot tool is not needed. Arrow tip may point slightly left of string when set up properly on a right hand bow.



Center shot is dictated by shooters form and arrow spine, if bow is at it proper specs. You will however want to check the idler wheel for lean when bow is at full draw. If it is leaning you need to put a few twists in the yoke of the cable on the opposite side that it is leaning towards, this will get it to stand straight up and down. Remember that this is checked at full draw. If your idler wheel has a lean this will indicate an incorrect center shot and also produce a corkscrew effect to your arrow while in flight. Also keep in mind that it is not always possible for any given shooter to get a bullet hole due to their form. Be concerned with tight groups; don't let the paper tuning be the only determining factor. You will also find on a few occasions you will need to do the complete

opposite of what a tune chart will tell you. In other words, go with a lighter spine rather than a going heavier.

When an arrow flexes as it leaves the bow the flex is mostly in the vertical plain. This makes the tip of the arrow point downward and is then below the plane through the rest and nock. The arrow flexes up between the rest and the nock end. With the mass of the point below the horizontal plane through the rest and the nock as it recovers, the arrow will tend to displace itself lower than where it started out because the heavier part of the arrow (the point) has more influence on the center of balance than the rest on the arrow. The small differences in spine and point weight will result in differences in recovered height. An arrow with a point right at the source of support (the rest) when it flexes, stays closer to the horizontal plane (line between rest and nock) because that heavy point doesn't dive down below the plane as if flexes.

In selecting arrows from the Easton selection chart use the hard cam column.

Most hunters cut their arrows to protrude 1 inch beyond the rest support.

To test for vane clearance over you rest, put lipstick on the rest and look for marks on the vanes. Lipstick on the top edge of a vane will give a good indication of any surface contact...it will be very evident as to what the vane is kissing. If you use a lipstick brush instead of taking it straight off the tube, you have more control over where it goes and there is less waste. Also, lipstick is odourless, unlike other powder sprays like deodorant.

## Release

Wearing a wrist sweatband under a release prevents slipping.

Use graphite to lube your release.

Hold the release behind the trigger when drawing the bow to prevent accidental triggering.

## Bow Specs, Cams Strings Timing

For the Outback bow the priorities in getting it to spec are:

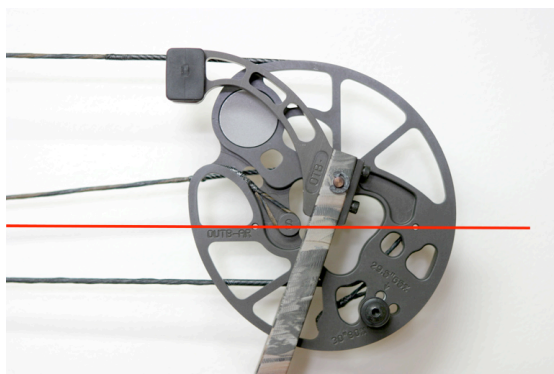
- 1) Make sure Axle to Axle is at 31 1/2
- 2) Make sure cam is in proper rotation
- 3) Brace height will fall out but should be between 7 3/8 and 7 5/8

For other Mathews bows, brace height and cam rotation are the setup priorities, the ATA will fall into place on its own. The only model I prefer to have you chase ATA is the Outback.

One full turn on a limb bolt will change draw weight two to three pounds. Be sure to never exceed more than five full turns out on each limb bolt from max poundage when shooting the bow. When pressing the bow, Mathews recommends turning the limb bolts out 7 turns. Loosen the setscrews when adjusting limbs.

### Cam Timing

Line the two holes up on the cam with a straight edge. You want the two holes to run parallel with the bowstring when bow is at max poundage in the relaxed position. If your straight edge points towards your riser, put twists in cable at cam end. If your straight edge points towards your string or gets closer to your string you twist both ends of string equal amount of turns. If you do not twist string evenly (both ends of string), the top half will fight the bottom half of string and peep will constantly want to rotate.



An easy way to check is to use a piece of long string. Tie a few knots on one end (or tie it to a small lock washer) so it won't pull thru the cam hole. Then thread it through the outermost hole and up through the bottom limb slot. Just hold the string up by the idler wheel limb and move as needed until the string is centered on the middle

of the second hole on the cam. Measure the distance between this string and the bowstring at the idler and cam and twist cable and bowstring as needed until the distances are equal.

Anytime you twist string and cable you will have altered nock point and peep height and will have to retune.

For every twist you put in the cable you need to put 2 twists in the string to keep the cam in the same position. [one each end ?]

In place of the factory rubber stop at the local hardware try using 1/2 X .194 x 1/2 Nylon spacers with the right size hole in them to fit the screw. You can also sand one side flat and get the draw length just right for yourself. Also plastic shrink-wrap tubing for Radio shack, or plastic tubing from the hardware store also works well.

Bow is not in press under pressure when checking cam rotation. Bow should be at max poundage in the relaxed position (limb bolts turned all the way in), out of press. If you need to make an adjustment you then back poundage (7 turns) off, put in press make string or cable adjustment take bow out of press turn limb bolts back to max poundage and check rotation

Mathews recommends the Apple double pull press and the Sureloc press. (Apple Super Pro or the Sureloc X-Press).

As viewed from left side of bow, twisting string only rotates cam counter-clockwise. Twisting cable only rotates cam clockwise. To raise brace height and keep cam timing the same, twist top and bottom half of string equal number of times and put approximately the same number of twists in cable. If the split part of cable starts to twist upon itself, twist each split half of cable in the opposite direction.

Correct Cam rotation and brace height assures draw length is correct for cam and bow will hit max poundage.

To check your idler wheel alignment (lean) hold the bow with the string facing you and the idler wheel up. Take an arrow and hold it along one side of the idler wheel and see how it lines up with the string. If it angles out from the string then you need to add twists to one side of the yoke or the other. Also check it at full draw. To

confirm this test gently apply pressure to one of the yoke cables to see if the arrow lines up. Then press the bow add the appropriate number of twists to your one side of your yoke. Typically it should not take more than 4-8 twists to get everything perfect.

Always check the idler wheel for lean on all Mathews bows when bow is at full draw, not at rest. If you have a slight lean, put a few twists in yoke of cable opposite side it leans towards to get it to stand up straight at full draw.

The reason the idler wheel alignment is checked at full draw is to have you look at whether it is either the yoke system that needs to be adjusted, or whether you are torquing the bow. It maybe a yoke system that needs adjusting or it could be a form issue.

### Brace Height

Brace height is measured from center of burger button hole to the inside of the string with suppressors on, as the bow would be shot.

Brace height can also be measured from the deepest part of the grip to the inside of the string, but this assumes the factory grip has not been changed.

Brace height determines the amount of preload on the limbs before being drawn and therefore determines peak draw weight. Cam rotation is also very important when it comes to poundage, tuning aspects, noise and vibration.

Brace height below spec will result in lower draw weight. If the cam is under rotated it will also result in a loss of draw weight.

If the top suppressor is being bent back check the ATA and brace height of the bow. If the ATA is longer than spec. or the brace height is below spec. the string will be pushed into the suppressor harder and it will cause early wear.

Rubber string dampers – C for Cam end and I for Idler end.

### Arrow Speed

For every 3 grains of weight you add to the string you will lose 1 FPS. For every 3 grains of

weight you add to your arrow, you will lose 1 FPS. For every 5 pounds of draw weight that you go down you will lose 9 FPS. For every inch of draw length you go down, you will lose 10 FPS.

### Roller Guard

If your string moves forward from the roller after the shot this is because your bow is not at correct brace height. When your brace height is under spec, the string and cable do not have proper tension backwards to keep them on the roller. This is adjusted by twisting string and cable to get it corrected.

If you are using a non-factory string and cable which have thicker servings, you will also see wear here as there is not enough distance between rollers and guard.

### ATA

If you want maximum speed and performance, set brace height to spec, with the cam correctly timed and limb bolts bottomed/tightened down. ATA is less important, except on the Outback.

### Draw Force

Since both the Outback and the LX reach peak draw weight at about 18" AMO draw length and the LX has a 1" shorter brace height the slope of the front side of the DFC of the Outback is very slightly greater by a fraction of a pound per inch draw. This is verified by DFC comparisons and should be hardly perceptible from one bow to the other. Since both bows have basically the same SE/PDF they also tend to have the same rate of let-off on the back side of the DFC if both bows have the same rated let-off. However, if you happen to be comparing an 80% to a 65% let-off bow there is a difference in the slope of the backside of the DFC in that the 80% let-off cam comes down a little quicker. Naturally the DFC is different with different draw lengths and peak draw weights. But with the same peak draw weight the slopes of the front side and backside of the DFC are pretty constant as draw length varies.

### Draw Length

AMO draw length is true draw length plus 13/4". It is an industry standard back from the no broad head clearance riser days.

A way to estimate draw length is based on your wingspan (arm spread). This is measured by standing with your shoulder blades against a long wall. Keeping your shoulders relaxed and down (do NOT hunch up) raise your arms to a "T" formation making sure both arms are extended and level to shoulder height. Have someone mark the wall at the tips of the middle fingers. Measure this distance to the nearest 1/8 inch. The following table give you an estimate of your draw length:

69"=27"  
70"=27 1/2"  
71"=28"  
72"=28 1/2"  
73"= 29"

For every inch of wingspan over or under 71" add or subtract 1/2 inch from 28" of AMO draw length. This estimate is based on an average finger length and assumes you are built proportionally. If your fingers are extra short or long, add or subtract 1/2" from wingspan accordingly. If you have broad shoulders you must also reduce the estimate.

This estimate also assumes the use of proper form: That is to say, both shoulders are down and relaxed, head is erect, chin is level, bow arm is relaxed & unlocked. Also, no leaning back at the waist, no tucking the head back to reach the string, tip of drawing elbow even with or very slightly above the plane of the arrow, and the drawing elbow in line with the arrow when at full draw when viewed from behind.

### String and Cable

The string affects axle-to-axle length and the cable affects brace height.

The more weight you add to the string through accessories the more string oscillation you will create therefore the more noise and vibration you will have.

All servings are 62 braid with end servings being .018 and center servings being .024.

String and cable need to be set to exact length before twisting blindly to rotate the cam. When you get a factory string and cable for a bow, you always need to put a certain amount of twists in it to get the bow to spec. You cannot just take

them out of box and install and expect it to fall into place. The cable controls max poundage. The tiller is set by maxing out both limbs and backing off equally, not measuring.

You measure a string under 100 lbs pressure from the furthest points outside to outside. Keep in mind that without the proper pressure your string will be 1/2" short and the cable will be 1/4" short.



When the string lengthens under pressure it is called structural elongation. When pressure is applied, each strand in the string tends to move toward a center point. This creates a smaller diameter of the entire string, thus making it lengthen. However, when you take away the pressure, the strands move outward, away from the center point again. This overall process is called stretch. Stretch will always return to its original shape and length. Creep, on the other hand, is the result of stretch becoming permanent. When a string creeps, it lengthens indefinitely and needs to be twisted to attain a previous length. Creep is often mistaken for stretch and vice versa.

The yoke on new cables are un-served and thus must be twisted when put on the bow. For a right-handed bow you twist the right yoke 12 times and the left yoke 9 times.

Cables are measured without the separate twists in each side of the yoke. Each side is twisted the same during measurement. However, twisting them differently only adjusts the idler wheel lean. All twists put in a cable yoke are clockwise in direction.

You would have to put about 45-50 twists in your string and about 10-15 twists in your cable. Two twists per inch the best way to figure out how many twists is needed.

It is normal for non-factory strings and cables (e.g. Winners Choice) to have thicker serving diameters that change the radius of the cam and idler, resulting in a change in let-off, draw-length and a poundage loss.

Except for the Mathews LX, Conquest, and Black Max, all Mathews' bows now come with 1425x standard. 1425x provides exceptional speed with low stretch. Most black and white Zebra strings are still made of our former Zebra material, 8125. The reason for this is that many people still like the bright lustre of the 8125 white. 8125 has high-speed qualities but offers more stretch than 1425x. 452x is available only on request. Made with Vectran, 452x offers very low stretch qualities but compromises speed by 3-5 fps. To determine what material you have on your bow, bows with nocks are fitted with shrink tubing over the nocks. The shrink tubing will say either Zebra or Tiger. If your bowstring is not fitted with nocks, then you will have to judge by the age of your bow. Again, standard material on all new bows is 1425x, starting with the 2004 models. LX has 8125 and Conquest bows typically have Tiger. There is more information at [www.zebrastrings.com](http://www.zebrastrings.com).

The LX has a 22 strand Zebra while all others are 18 strands for the Zebra and 22 for the Tiger with 24 on cable.

Zebra strings (starting from the beginning of 2004) are made of 18-strand 1425x material. Prior to 2004, the Zebra strings were made of 18-strand 8125 material, except for the strings on the LX and Black Max which had 22-strand 8125 material. Because the new 1425x material is larger in diameter, these strings are all made in 18 strands. You can order replacement strings for the LX in 18-strand 1425x material.

The 1425x is a material that falls right in between 8125 and 452x. The advantage of 1425x is less stretch without losing speed.

Tiger strings are made of 22-strand 452x material that has very low creep, but is about 4fps slower than 1425x.

For overall performance, Mathews recommends 1425x.

Unfortunately, there is no way for you to determine if your string is Tiger or Zebra just by looking at it unless it has a speednock with the name on it, or if you count the strands. For the LX the string is brown and white; if the white is a bright white then it is a Zebra, if it looks ivory then it is a Tiger string. For the legacy, you should count the strands; 22 strands for Tiger and 18 strands for a Zebra.

Speed nocks in the right place may increase bow speed and you have to experiment a little to find the right spot. They are brass nocks with shrink tubing over them.

Some models of Mathews bow have speed nocks on the string, others don't. This is because Mathews makes strings to maximize each cam's potential performance. Since cams perform differently and have different specs' not every cam will be faster with a speednock. For the HP cam, Mathews found that it performed more efficiently without nocks than with them. On the other hand, some cams perform better with speed nocks like on the MQ-1. It all just depends on the cam.

Shrink tubing over the speednock not only provides good aesthetics to the string, it also protects thenock from possible flying off the string.

Signs of string creep is a nock point higher than you started with and your bow will impact low, your draw length will increase, your max poundage will increase.

Signs of cable creep is a decrease in poundage. Other points mentioned above aren't as prevalent due to the cable being much shorter in overall length.

The string will creep more than the cable because it is longer.

Twist the string an equal amount of turns on both ends to shorten and keep balanced. Do this until your string measurement is to spec. Twist the single loop end of the cable until the measurement is in spec. When done and mounted max out your limbs to see what max poundage is. If it's not quite up to the stated max you can add a few twists and poundage will build up quickly.

One side of the yoke usually has a little more twist than the other because the idler leans and you have to twist one side of the yoke more than the other to straighten it out. To check draw bow and look up at the idler at full draw the string should track straight off the idler if it is running off to one side or the other you'll have to put more twist in the opposite side that it is running to.

Draw the bow back and hold at full draw, look up at the idler wheel and make sure that it is visually standing straight up and down in relation to the end of the limb. If it is leaning slightly, put a couple of twists in the yoke of the cable opposite side it is leaning towards to get it to stand straight up and down.

### Tiller

You don't measure tiller on a one-cam bow. The limbs are either max down or backed out equal turns with nothing to measure

### Grips

Mathews uses 3-M weather-strip adhesive and it can be taken off if you want with a little heat from a hair dryer. Heat the grip area of the riser, and then wiggle back and forth. It's best to heat the riser; wood is an insulator.

### Quivers

Distance from center of bolt to top of quiver:

2 Piece	4 1/2"
2 Piece raised	6 1/2"
1 Piece det.	7 1/2"

### Maintenance and Lubrication

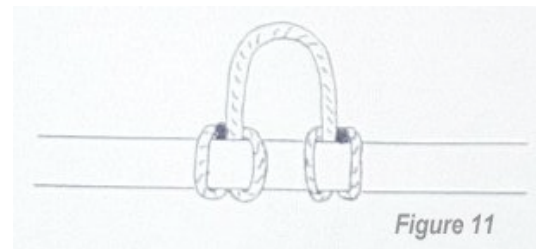
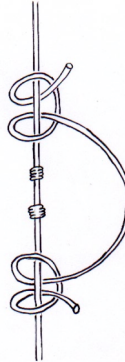
#### String

Zebra recommends applying wax to your string frequently with any silicone based string wax or other synthetic based wax. Doing so will help protect against abrasion, help to bundle the strands and extend the life of your bowstring. You should always check your string before you shoot and if you notice any broken strands it should be replaced immediately.

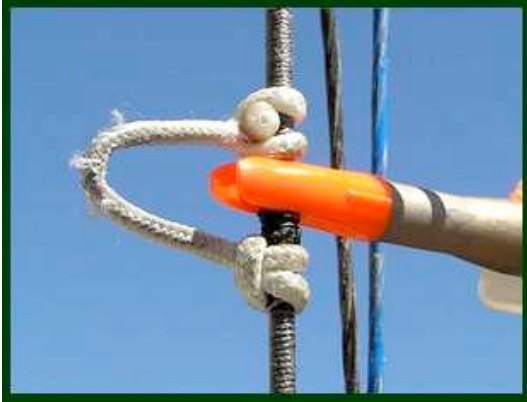
Zebra string recommends using any silicone-based wax like BCY's ML6 and Dalton wax conditioner.

To add your string loop, start with a 4 1/2" piece of 1/8th-inch diamond braided nylon cord. Fray the ends slightly, then melt the fibres just enough to get a nice mushroom, as this will keep the knots from slipping. Tie the loop on as shown in

**fig.1.** Once you get it fairly tight, check to see if an adjustment needs to be made to your starting length. After you get it on your bowstring, make sure you cinch it down tightly by running a screwdriver into the loop and pulling with enough force to seat the knots. You can use the loop without the brass crimps – the loop will stay in place, and it makes it easier to adjust your nocking point up and down by twisting the loop around the serving – move up and down like a nut on a bolt.







### Peep Installation

Draw your bow and have someone help you mark the string in alignment with your eye. You may try tying an elastic band on your string, and drawing the bow to get an idea of where your peep should go. Just move the elastic up and down till it looks about right. Then you will have a good idea where to start your peep

Any peep sight you decide to use should be installed so that an equal number of strands is on each side. If not, it will set to one side and may not ever roll around to your eye consistently.

Tie the peep in with serving material or dental floss above and below the peep. Slide the knots to within an inch of the peep. When the peep isn't rolling to your eye just slide the knots away from the peep and move one or more strands of the bowstring from one side of the peep to the other. Keeping the same number of strands on each side, continue adjusting until the peep rolls correctly to your eye. Don't forget to slide the knots back to within an inch of the peep when you finish adjusting. And don't shoot your bow without tying in the peep or you risk having the peep jump out into your eye.

Waxing the serving area of the string that wraps around the cams will attract and collect dirt and grit, which will prematurely wear your serving out and cause problems in those areas. The serving in those areas is what protects the string, so waxing there is not necessary. Just wax the exposed string areas to keep the strings fibres from separating and fraying.

To apply the wax, rub it on the string and use either your fingers or a piece of leather to rub the wax into the string and heat it up. Be careful not to overheat. Then take a piece of string and wrap

it around the bowstring and pull it down the string to remove any excess wax.

With the black lightning wax, you use a little piece of paper, to rub it in. If you use your fingers (at first) they will just take most of it off, where as the paper pushes it down into the fibres.

### Nock Point Installation

As a general rule, the nock point should be set perpendicular (90°) to your arrow rest or somewhere within ½" above the 90° point. This guideline is a starting point – you may need to move your nocking point as you fine tune.

### Nock Removal

To remove a broken knock, heat a small wood screw and quickly screw it into the nock. You don't need to screw it in very far. By essentially melting your way into the nock you avoid expanding the nock and putting stress on the nock insert or the shaft. Let the screw/nock cool and you can pull easily the nock out.

### Bow

Put dry graphite between the limb and pocket insert contact points and under the limb bolt head. The graphite burnishes into the pores of the plastic and paint and stays put. Also molybdenum-disulfide dry powder like molylyube works even better.

Dry lubricants are preferable because they do not attract and hold dust, dirt and grit.

To prevent the string sticking to the suppressors, put Scent-Away powder on them and they will not make any noise.

If the QCC bushing click, put dry graphite lube behind them and they will be absolutely quiet. You may need to remove the QCC's and sand them flat.

The cable guide bearings are sealed and self-lubricating, no need to do anything with them.

Seven full turns is what Mathews suggest before pressing, but do not shoot with them in that setting. Backing poundage off is most crucial with the bows that have the shorter limbs. Always be sure use a dual roller, double pull



press when pressing your Mathews bow. Do not use center pull presses.

Position the arms as close to the limb tips without touching the cam and idler. Bottom rollers should be positioned just below V cut in limb with top rollers coming down on end of riser.

When pressing the LX put the rollers just inside of the dampers on the riser (not towards limb cup).

The brass bushings in the riser are threaded and can be removed, if there is part of a bolt from the stabilizer in the brass bushing just have a shop use an easy-out to remove the broken bolt part and also can be used to get the old brass bushing out and they can replace it with a new one.

QCC's are the black buttons that yoke of cable hooked to. They are made through a process called injection moulding. Sometimes after this process there is a ridge of plastic left around the axle hole on the side that goes against the limb. This will dig into the side of the limb slightly and create a click noise when bow is drawn. You need to take them off and sand the side smooth that goes against the limb and you will not have this issue anymore. Lubrication is just a very temporary fix.

## **Limbs**

For maximum draw weight, tighten down the limb bolts or back it out 1/2 turn. Most people shoot them tightened down which won't hurt anything.

When adjusting limb bolts alternate one turn on top and bottom.

A bow will always operate at peak efficiency with the limbs bottomed out, as more energy is transferred to the arrow instead of being converted to resonance by the gap that a non-bottomed out bow will produce. Also, the bow will be quieter due to that same principle.

Older compound bows having composite limbs made of wood and glass. One could expect these limbs to take a permanent set with use and they could become noticeably weaker over the life expectancy of a high performance bow. With

this being the case, it was reasonable and in many cases necessary to replace both limbs even if only one had failed or became damaged. The limbs on our bows today are laminated from all high strength composite materials including the cores making them not only stronger but also much more durable. Today's bow limbs maintain their flexural characteristics over the entire life of the bow and replacing only the damaged limb no longer results in a flexural mismatch. With our modern bow limbs, as long as the replacement is the specified equivalent to the original, the consumer will be assured of the same consistent performance that they enjoyed prior to incurring limb damage.

The high inertia limb pockets are machined of brass and each cup weighs 1/2 lb. and aid in stability (target shooters).

The standard limb cups are 2 oz. each and the brass are 9 oz each. Going to the brass cups adds 18 oz. or 1.1/8 pounds and aids stability. The brass limb cups are not made in the V Lock cups.

## **Sights**

The ring helps keep you consistently centered in the peep. It also helps keep your anchor the same shooting pins at different distances. It also allows you to use a larger peep more accurately. Adjust your sight bracket in and out or change your peep size until they appear to be the same size.

On Mathews bows, when set up properly and sighted in, the sight pins will be to the left of the string by 3/16". This is due to the flex in the limb through the draw process.

Try to do away with the peep and you will adjust very quickly. Install a kisser button to help you achieve your same anchor point consistently.

Try blue fibre optic in you sight to reduce blurring.

## **Technique**

When you draw until you can't pull anymore that is called "pulling against the wall". Most people pull against the wall and use back pressure to trip their release. This keeps you from punching the trigger.

Pulling against the wall will help keep your anchor point the same and ultimately shrink your groups.

#### FX Tuning

you can't set the cam rotation with the cam in the # 2 draw post, the only time you can set or check the cam rotation is at max poundage and in the longest draw of the cam, so what you do is set or check the cam rotation in the longest draw and if you need to shorten the draw then you do so but

again you don't go back and reset the rotation in anything but the longest draw, if you do you are adding back the draw that you have taken away when using the draw post because you are twisting up the cable and that adds draw. Also you can only check or set your brace and axle to axle at max poundage.

you are right once the bow is set into spec and you shorten the draw by moving the string on the draw post you **DON'T** go back and reset the cam or any other of the bows specs.

## Bow Specifications

The weights on the dampers as follows:

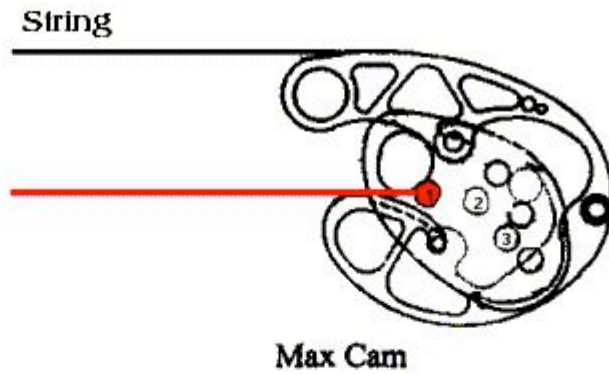
Aluminum .509 OZ

Brass 1.390 OZ

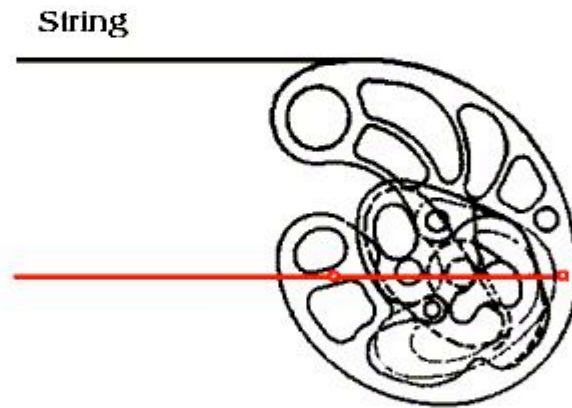
Carbide 2.950 OZ this is per each one

Bow	ATA	Brace	Virtual Mass	SE/PDF	String	Cable
LX	35 5/8	6 5/8	115	1.366	98 5/8	37 5/8
Legacy	34	7 1/2			91 3/4	36 1/4
Outback	31 1/2	7 5/8			90 3/8	33 3/4

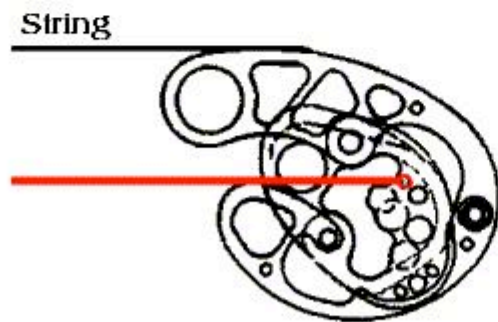
Optimum Cam Location



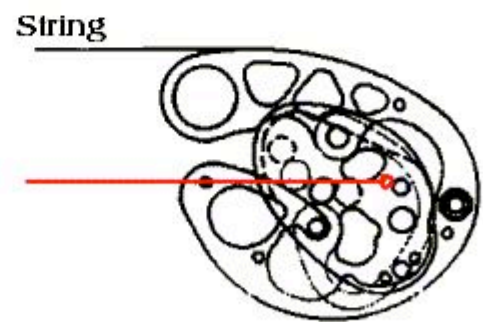
This is the optimum rotation for this cam in the longest draw length at peak weight.  
Note : If you shorten the draw length or change the draw weight the rotation will ch



**StraightLine, StraightLine2 and Black Max**



**Mini Max Cam**



**Mini Max Cam**

## Definitions

Axle-to-Axle (ATA)

Brace Height

Draw length

Burger button

Center shot

Timing

Quick-Connect-Clips Couplers - QCC

Tiller

Yoke

Serving

Wall

valley

[ add picture of bow with parts description]

## Web Tech Info

A good source of trajectory and kinetic energy calculators  
[www.bowjackson.com](http://www.bowjackson.com)

A good guide for Bow tuning from Easton  
[http://www.eastonarchery.com/downloads/pdfs/tuning\\_guide.zip](http://www.eastonarchery.com/downloads/pdfs/tuning_guide.zip)

Arrow Trajectory  
<http://www.longbow42.giointernet.co.uk/gbag.applet1.htm>

**AMO Speed Rating**

The Archery Manufacturer's Organization set this standard for evaluating arrow speed. To discover the AMO Speed a bow is set at 60 pounds, with a 30-inch draw and shooting arrows that weigh 540 grains. For today's compounds, speeds over 240fps are considered fast while anything under 220fps are relatively slow.

**Anchor**

You should draw the bow and hold the string in the same location every time--(anchoring) the bowstring. Many people who shoot with fingers use the corner of their mouth as an anchor point.

**Archer's Paradox**

Describes the movement of the arrow as it bends and flexes around a riser when released.

**Armguard**

Placed on the arm that holds the bow, an armguard protects your arm from being slapped by the bowstring on release.

**Arrow Length**

Arrows are cut to a specified length. Measured from bottom of nock to the end of the arrow shaft.

**Arrow nock**

The notch at the end of the arrow designed to fit around the bowstring and hold the arrow in place on the string.

**Axle**

The axles are the shafts on which a compound bow's cams rotate.

**Axle-to-Axle Length**

The distance from one axle of a compound bow to the other. This is an important number because it tells you two things: 1) Generally if you want a finger bow, it should have an axle-to-axle length of at least 42 inches to avoid drastic finger-pinch. 2) A really short axle-to-axle length makes the bow more extreme and a little more difficult to shoot but may make it faster.

**Blunt**

An arrow tip that is not pointed. Usually used to hunt small game or to stump shoot.

**Bow Press**

A device used to hold the bow in a bent position so you can work on the bow or remove its string.

**Bow Square**

Used to measure brace height or to align nocking points.

**Brace Height**

Is the length of a direct line from the back of the grip to the string of a bow. Generally, the lower the brace height, the faster the bow is. It is faster because the shorter brace height means that the power stroke is longer. But, because a shorter brace height provides a longer power stroke it can be much more difficult to shoot accurately.

**Broadhead**

Arrow tips meant for hunting big-game. They generally feature at least one-inch of cutting diameter and may be fixed blades or mechanicals.

**Brush Button**

For recurve and longbows, these rubber round items are placed on a bowstring to prevent brush from catching between the bowstring and the bow.

**Cable Guard**

Holds the cables to the side to ensure arrow clearance.

**Cable Slide**

Fits on the cable guard and helps the cables move smoothly across the cable guard. New Teflon cable slides are said to add speed to your bow because they reduce the friction greatly. Pure Teflon is a clear or milky white color. If the slide is not white, it's not Teflon.

**Center Serving**

The center portion of the bowstring is wrapped (or served) to protect the bowstring from damage, either from the release aid or from the string hitting the cable guard.

**Center Shot**

Is the point that places the arrow shaft directly in line with the string grooves on compound eccentrics or the center of the limb tips on recurve or longbows.

**Creep**

The arrow moving away from the wall or your anchor point as you aim or get ready to release.

**Cresting**

The colored designs on the end of an arrow shaft. Cresting tools are available.

**Deflex**

Design where limbs or riser are angled toward the archer. Deflex designs are generally slower but easier to shoot accurately than reflex designs

**Draw Length**

The distance at full draw from the nocking point to the back of the grip. The AMO draw length is the distance from the nocking point to a point 1 3/4 inches past the back of the grip.

**Draw Weight**

The amount of force in pounds required to draw the bow.

**Eccentric**

The cam or part of the bow that is designed to control the stored energy of the bow.

**Efficiency**

The amount of kinetic energy of the arrow just as it leaves the bow divided by the potential energy that went into drawing it, multiplied by 100.

**Fletch**

The plastic vane or feather that is at the end of the arrow used to stabilize the arrows flight path.

**Grain**

The measure of weight usually used when weighing arrows or arrow tips. 7000 grains make a pound.

**Helical**

refers to the way fletching is laid on an arrow. Rather than straight, helical fletching curves slightly around the arrow shaft.

**IBO Speed Rating**

The International Bowhunter's Organization has a speed rating that is generally measured with a bow set at 70 pounds, 30-inch draw and shooting a 350-grain arrow. Today's fastest bows will shoot over 310fps using the IBO rating.

**Insert**

The adapter that is placed into a shaft to make a nock or arrow point fit the shaft. Outserts are the opposite, they fit around the shaft. Some people believe outserts make an arrow fly less true, but if all other factors are the same, outserts shouldn't effect an arrow's flight much.

**Kinetic Energy**

$\text{Kinetic Energy} = (\text{arrow weight}) / 450,800 \times (\text{arrow speed})$ . Kinetic energy measures the level of penetration your arrow possesses.

**Kisser**

Allows you to anchor consistently by placing the kisser on the bowstring and making sure it touches the same part of your lips each draw.

**Nocking loop**

Loop placed around nocking point. This protects your string from being damaged by the release aid but the downside is, it reduces speed slightly and some people find it difficult to quickly attach their release aid to it when "the big bucks a' comin"

**Nocking Point**

Location where arrow sits on the bowstring.

**Nocking Points**

Objects placed on the bowstring used to keep the arrow in place and keep the nocking point consistent.

**Peep Sight**

used as the rear sight of a gun is used. The peep sight is placed on or in the bowstring and the sight pins and target are viewed through the peep. Sight pins should be centered in the peep. Small peeps help you gain accuracy but don't let a lot of light in. Hunters generally apt for larger diameter peeps.

**Quiver**

Holds arrows, the most popular for bow hunting is the bow-quiver which holds arrows on the bow. But some say that makes the bow too heavy and makes it harder to hold the bow steady in the wind. Other options are hip quivers and back-quivers.

**Recurve**

a bow design which features limbs that bend away from the archer at the tips.



**Reflex Riser**

Features a grip which is closer to the archer than the ends of the riser. This results in a short brace height and a longer power stroke. Thus creating a faster bow but generally more difficult to shoot than deflexed risers

**Shelf**

The part of the riser that is cut out and where the arrow rests.

**Power Stroke**

Refers to the motion of the bowstring after it is released. The longer it is, the faster the arrow leaving it. But the longer the power stroke, the longer the archer must hold steady after releasing the string.

**Serving Jig**

Tool used to wrap center serving.

**Shoot-around Rest**

Rest which features the arrow shaft sitting on the rest and as it is released it bends around the rest.

**Shoot-through Rest**

Shooters using release aids use shoot-through rests. These feature two prongs holding the arrow shaft. When the arrow releases, the cock vane flies through the two prongs.

**Spine**

Refers to the strength of the arrow shaft and its ability to resist bending and to recover after bending or experiencing archer's paradox.

**Stabilizer**

Placed on a bow for the purpose of reducing torque and shock after releasing the arrow. Also, it helps level out the bow and hold it steady prior to releasing.

**Tiller**

To measure the tiller is to measure the perpendicular distance from the bowstring to the points where the riser and limbs meet. The tiller is the difference in these two measurements.

**Torque**

is to turn the bow to one side when aiming or releasing the arrow.

**Valley**

When at full-draw, the area between a compound's wall and the point where the let-off ceases to exist.

**Wall**

Term used to describe the back of the drawing motion of a bow. A solid or hard wall is when the drawing motion comes to a sudden and precise end. If the back of the drawing motion is nondescript, it is called a soft or mushy wall. A solid wall is usually preferred because it makes it easier to anchor consistently. Now, some bow companies offer a draw-stop that helps make the wall more solid

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