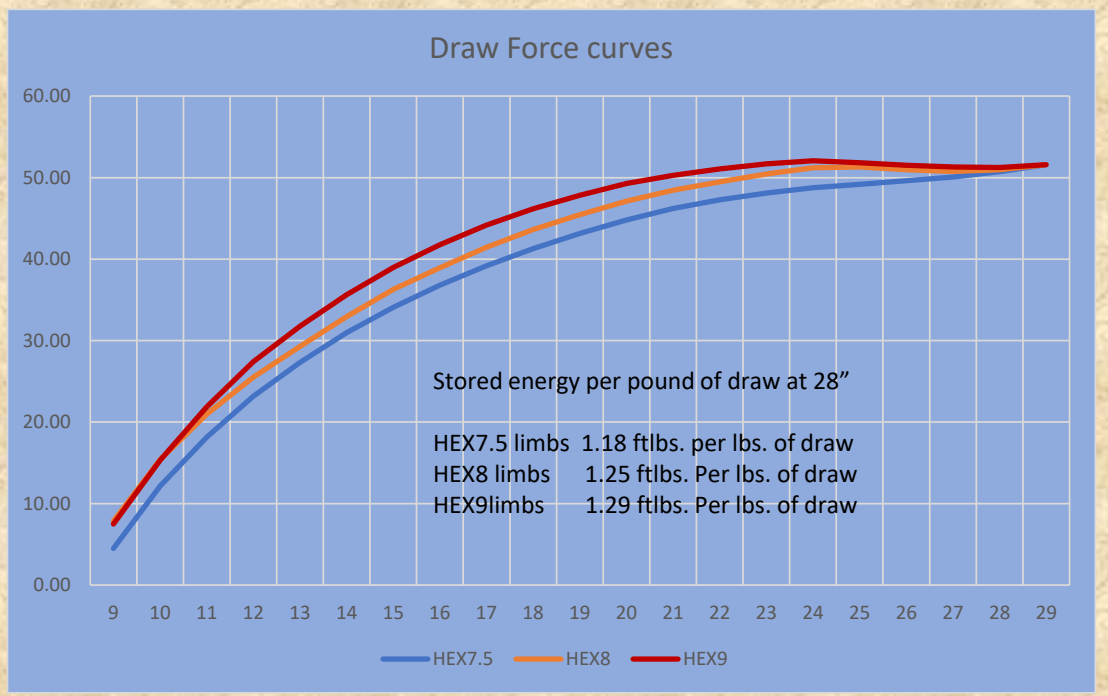
Covert Hunter Catalogue

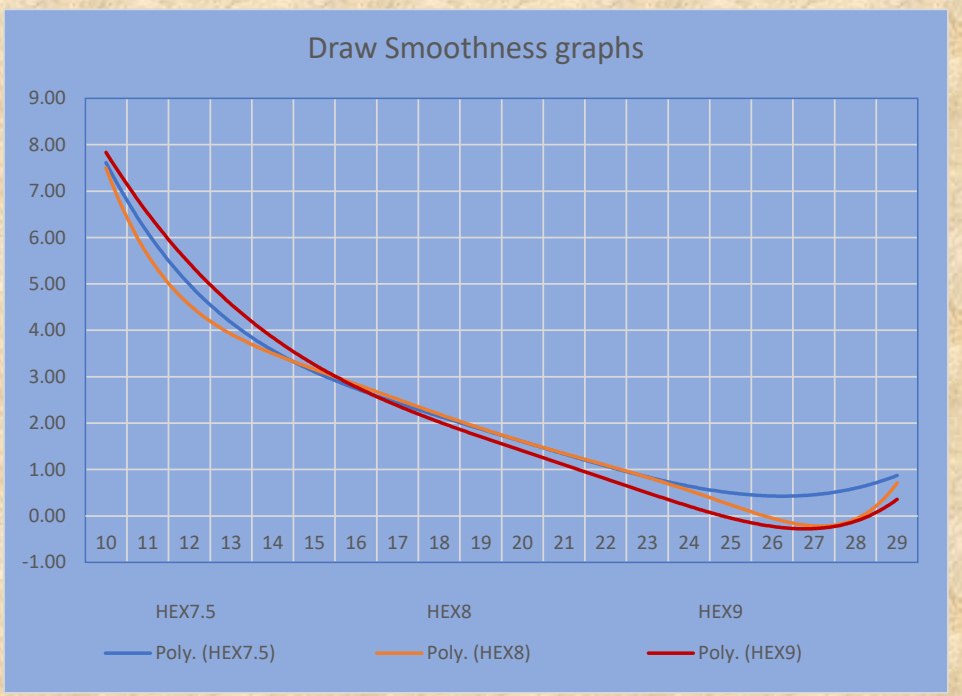
Thank you for your interest in the Covert Hunter recurve. This presentation is here to help you get the most from this revolutionary bow design. The Covert Hunter's highly advanced design is the culmination of one continuous design development program under the heading of HEX High Energy eXpress. The program started in 2001 with the HEX1 flight limbs. The program covers limb material technology, (Complex Carbon structured bow facings), (high performance core material),(limb geometry, the interaction between bow string and limb shape) and how these interact with the overall bow geometry. The outcome of this continuous and intense development program , is a unique design with an outstanding performance, smoothness, shooting stability and speed.

To attain this exceptional performance the design has taken on some unconventional characteristics so most of the conventional thinking on spine and arrow weight as expressed in GPP grains per pound of draw weight won't apply. We are here to help with those early set up procedures and early tuning approaches. Should you require further help don't hesitate to get in touch with us. For technical help contact sid@borderbows.com and for shipping and payment and scheduling enquiries ann@borderbows.com.

You now have the most advanced bow at your disposition. ☺

To help understand the differences In limb development the following graphs ,DFC and inch increment (draw smoothness graphs) shows limb development From The HEX7.5 through the HEX8 to todays latest HEX9 development . And another example of Super recurve limbs. These examples are based on 60" bows medium limbs and 17" riser. You can see the considerable difference in the stored energy and the extended smoothness of the draw feel. In addition the HEX9 the Torsional stiffness has been increased 16%.





Draw lengths and Bow lengths

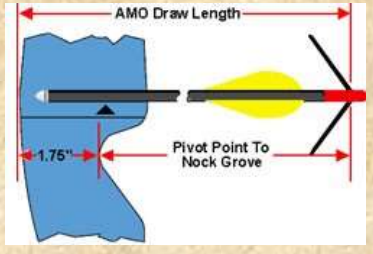
	Riser lengths	17"	19"	21"	23"	25"
Shorts	Bowlengths	58"	60"	62"	64"	66"
	Drawlength	to 26.6"	25" to 27.5"	26" to 28"	27" to 28.5"	27" to 29"
	String lengths	57"	59"	61"	63"	65"
	Braceheights	6.5" to 7"	6.5" to 7"	6.5" to 7"	6.5" to 7"	6.5" to 7"
Mediums	Bowlengths	60"	62"	64"	66"	68"
	Drawlength	25" to 28.5"	27" to 29"	28" to 29.5"	28" to 30"	28" to 30.5"
	String lengths	59"	61"	63"	65"	67"
	Braceheights	6.5" to 7"	6.5" to 7"	6.5" to 7"	6.5" to 7"	6.5" to 7"
Longs	Bowlengths	62"	64"	66"	68"	70"
	Drawlength	26" to 29.5"	27" to 30"	28" to 30.5"	29" to 31"	29" to 32"
	String lengths	61"	63"	65"	67"	69"
	Braceheights	6.5" to 7.25"	6.5" to 7.25"	6.5" to 7.25"	6.5" to 7.25"	6.5" to 7.25"
X longs	Bowlengths	64"	66"	68"	70"	72"
	Drawlength	27" to 30"	28" to 31"	29" to 31.5"	30" to 32"	30" to 33"
	String lengths	63"	65"	67"	69"	71"
	Braceheights	6.5" to 7.25"	6.5" to 7.25"	6.5" to 7.25"	6.5" to 7.25"	6.5" to 7.25"

Operating the bow outside of recommendation voids warranty support!

Operating the bow at Max or Min's , MAX draw for shortest bow length. MAX braceheight, Min arrow weight. Each of these places the bow on an individual MAX stress. Combinations of MAX / MINS may shorten the life of the limbs. Select your bow setup to the midpoint of the setup recommendations.

Being forced to MAX braceheight is often a sign of arrows that are too weak. MAX braceheight slows the bow down and is harder on the limbs. Lower Braceheights are kinder on the bow and offer a smoother and higher performance.

Fort recommendations on string materials and strand count refer to the section "Making Sense of Bow Strings . Next chapter



AMO draw length standards have been around for many decades and most bow making companies adhere to this standard. The measurement is taken to the far side of the riser as shown in the diagram . Use AMO draw-lengths when choosing arrows. Giving your drawlength as measured to the pivot or plunger button is the wrong measure and you will end up with underspined arrows and a bow that is too short for your drawlength resulting in possible damage to the limbs!

	Working envelope (overall length of bow when braced)							
Bow length	58"	60"	62"	64"	66"	68"	70"	72"
HEX7.2 Overall length	51.5	53.5	55.5	57.5	59.5	61.5	63.5	65.5
HEX8 Overall length	49.5	51.5	53.5	55.5	57.5	59.5	61.5	63.5
Conventional recurve	55	57	59	61	63	65	67	69

Riser-limb Options

The model range give a massive complexity of riser length to limb length designed to give an optimum fit to maximise both ergonomic need and the practical usage of the bow.

Accuracy demand is a way longer bows as it opens up the string angles on the release finger. Discomfort Is the most noticeable result of acute string angles. However the smoother release from longer bows does aid accuracy and consistency. Refer to drawlengths and bow lengths and you will see that a 32” drawlength can be accommodated by a 17” riser with Extra Long limbs and a 66” bow. Which superficially can be though of as long for some applications. However the working envelope, the overall length of the bow when strung is only 57” approximately the same length as many 60” conventional bows.

Equally some one with a 24” draw looking for a longer bow to maximise accuracy can opt for a 25” riser and short limbs giving a 66” bow with an overall working envelope(length when strung of 57” same as a conventional 60” bow).

The options are there to ensure the optimum fit for all archers and their build and effective us of the bow

Riser Options

Risers as said before are available in 17” to 25” I two inch increments Picture low left are the triple carbon spine wood risers. Riser 1 is a 17” with Indian rosewood outers and Shedua centre. No 2 the outers is Heritage Jacaranda Shedua centre. No 3 Shedua outers and Heritage Cocobolo Ctr. No 4 is Heritage walnut outers Heritage Cocobolo Ctr. No 6 is Heritage Jet with a Shedua centre and No 6 is heritage Midnight outers with Shedua Ctr. Many of the more exotic wood species are in danger of extinction. We stock Indian Rosewood Honduras Walnut, Santos Rosewood, Zebrano, Boire, Bubinga and Shedua. The rosewoods have recently entered the Cites 2 level of endangered species listed as under threat and so while we can offer these wood species we feel much happier using wood species that are not listed. The Heritage woods are made up of Birch veneers That are impregnated with a colours and the glued up into blocks. These are 100% harvested from sustainable forestry practice. In addition to those mentioned above we have Heritage mountain Camo.

The picture below on the left offers pictures of covert hunter riser, Black Douglas risers and ILF risers. These are constructed with Carbon reinforced Phenolic outers And Shedua centres. The phenolic material is cotton based. This construction adds around 20% more in weight than wood risers do. We are also able to add weight to The risers to conform with the needs of the archer

Making sense of bowstrings

Bow strings and their interaction with limbs. Obviously it is the string that stops the limbs moving forward on shot termination. This creates a very high spike/shock loading 0n the bow, on limb closure.
We are discussing all single stringed bows not just Border bows. The physics in stopping any moving object is the same.

An example; an egg falling from a table hits the floor and breaks. If it falls onto something soft like a pillow the egg does not break and that is because the egg takes longer to stop as the stopping forces are applied over a greater distance. When it falls directly onto the floor it stops immediately and the stopping forces are massively greater than As the case with the pillow.
One hard and excessive and the other gradual and way more gentle. Another example of this is shoot an arrow into a target and the arrow takes up to 6" to stop. Now shoot the arrow into Concrete, the arrow stops immediately and damage occurs.

Your bow limbs are no different. Stop them immediately and you will damage your limbs! Allow them to slow down over longer distances and the force generated to stop the limbs is much less. Bow string materials; Dacron has an elastic elongation of 10%. 10% represents the potential distance it takes to absorb the shot and that is why it is recommended for older bows. FastFlite Plus, its elastic elongation is 3.6% 2.8times less so the force to stop the limbs is around 2.8 times higher. So don't use FF+ on older bows! 452X has an elastic elongation of 2.4%, 32% less than FF+ and so the shock loadings will be 32% higher than FF+.

Other factors such as strand count needs consideration. Too many strands makes and overly strong string and reduces elasticity or cushioning effect thereby increasing the shock loadings on the bow on closure on every shot. Thread strengths of FF+ is 76lbs per strand, Rhino is 122lbs, Dacron 48lbs so care is needed. So you can see it is easy to overcook things. Strings with more twists offer greater elasticity and are more friendly than strings with no twists so ensure that endless loop strings have at least 15 to 20 twists.

For bow string recommendations refer to charts on next page. Our feelings are that FF+ gives the better all round performance but the other SK75 Dyneema type strings will do well providing the strand count is adhered to as these string materials have a strand strength between 105lbs and 110lbs breaking strength. These charts take into account the Extremely high stored energy levels from HEX6.6, Hex6.7 and the Ch Hex 7.5 limbs. It also takes into account the added stretch that is a function of longer strings on longer bows.

The use of low stretch strings greatly increase shock loadings on limbs and risers. There is no proven performance gain other than the difference between Dacron and the Dyneema Based products available. If there is it is negligible! Why subject your bow to greater risks especially on a Dry fire / misfire accident. Low stretch or overly strong strings probably won't affect your bow immediately, it may take 1 to 3 years of use before the damage becomes apparent. How long exactly, well that will depend on many factors; intensity of use, brace height (high, increases loadings) arrow mass (low increase loadings), drawlength longer on shorter bows (increase loadings), Low stretch strings increase loadings. Dry fire and misfire caused perhaps by a nock slip or broken nock can be bow killers so set your bow up with this in mind. Overly strong strings or low stretch string materials are to be avoided. Many well known bow makers advise as we do. Consult with the bow manufacturer before using anything other than the string materials and strand count that they recommend. The longevity of your bow is at stake.

Making sense of bowstrings

Recommended Bow string material and strand count

These recommendations cover Target bows lengths 66" through to 74"

The following recommendations are based on stored energy levels and also takes into account bow string length needed for longer bows.

Draw length		26	27	28	29	30	31	32	33
Bow weight	35	14	14	14	14	16	16	16	18
	40	16	16	16	18	18	18	18	18
	45	18	18	18	18	18	18	18	18
	50	18	18	18	18	18	18	20	20

FF+ Spectra Approx. strand 76lbs max strength

Draw length		26	27	28	29	30	31	32	33
Bow weight	35	8	8	10	10	10	12	12	12
	40	10	10	10	12	12	12	12	12
	45	12	12	12	12	12	12	12	12
	50	12	12	12	12	12	12	14	14

D75 D97 Astro 8125 Approx. strand 110lbs max strength

Recommended Bow string material and strand count

These recommendations cover field and Hunting bows 56" through to 68"

The following recommendations are based on stored energy levels and also takes into account bow string length needed for longer bows.

Draw-length		26"	27"	28"	29"	30"	31"	32"	33"
Bow weight	35	12	12	14	14	14	14	16	16
	40	14	14	16	16	16	16	16	16
	45	14	16	16	16	16	16	18	18
	50	14	16	16	16	16	18	18	18
	55	16	16	16	16	18	18	18	20
	60	16	16	18	18	18	18	20	20

FF+ Spectra Approx. strand 76lbs max strength

Draw-length		26"	27"	28"	29"	30"	31"	32"	33"
Bow weight	35	8	8	10	10	10	10	10	10
	40	10	10	10	10	10	10	10	10
	45	10	10	10	10	10	10	10	10
	50	10	12	12	12	12	12	12	12
	55	12	12	12	12	12	12	12	14
	60	12	12	12	12	12	12	14	14

D75 D97 Astro 8125 Approx. strand 110lbs max strength

Suggested minimum arrow weights

Arrow weight is another area where the Covert Hunter departs from convention. Shooting your CH at minimum arrow weight is a performance driven decision and depending on the rest of your bow set up such as Max brace height, Max draw lengths and a string type out side of our recommendations may over time shorten the working life of the limbs.

The Covert Hunter is a very powerful bow and is designed to shoot a heavier arrow faster than a conventional bow with light weight arrows. To ensure you get a long and useful life from your bow, set your bow up well inside the recommendations and use arrow weight at least 10% over those listed here.

Providing your bow is set up inside recommendations you can use the minimums listed here but you will get a better overall performance with heavier rather than lighter arrows, smoother to shoot, kinder on the bow and shoot quieter.

Absolute minimum total arrow weight for Covert Hunter and ILF HEX7.5

Draw weights									
70	616	618	623	630	642	656	672	690	711
68	592	594	598	605	617	630	647	665	686
66	567	570	574	581	592	606	622	640	660
64	543	546	550	557	568	582	597	615	636
62	520	522	527	533	544	558	573	591	611
60	497	499	503	510	521	534	550	567	587
58	474	476	481	487	498	511	526	544	563
56	452	454	458	465	476	488	503	521	540
54	430	432	436	443	453	466	481	498	517
52	409	411	415	421	432	444	459	476	495
50	388	390	394	400	410	423	437	454	472
48	367	369	373	379	389	402	416	432	451
46	347	349	353	359	369	381	395	411	429
44	327	329	333	339	349	361	375	391	408
42	308	309	313	319	329	341	355	370	388
40	289	290	294	300	310	321	335	350	368
38	270	272	276	281	291	302	316	331	348
36	252	253	257	263	272	284	297	312	329
34	234	236	239	245	254	265	278	293	310
32	216	218	222	227	236	247	260	275	291
30	199	201	205	210	219	230	243	257	273
Draw lengths	25	26	27	28	29	30	31	32	33

Covert Hunter and arrow spine

Difficulties in setting up a Covert Hunter usually starts with arrows that are too weak. Spine charts are based on bow weight. They work well when all the bows achieve a similar level of performance as they have done for decades. However in reality spine has more to do with arrow acceleration than bow weight and so the revolutionary performance from the Covert Hunter now means that these charts no longer give good advice for arrows matched for this bow. We suggest a better starting point on achieving a good tune is better served from this information given here. Other spine charts choose arrows one spine over the recommendations for conventional recurves as a starting point for trials.

The limbs themselves cannot produce a harsh noise and are in fact designed to be quiet. Many managed to find a set up that is quiet so if your first attempts at a setup, if noise is harsh then the issue is setup and usually under spined arrows are the cause.

Another symptom of a bad setup occurs and is often seen when the bow itself seems to be demanding a high brace height. What is happening here is that the arrows are marginally weak and are themselves the cause of noise. Increasing brace height slows the bow, choking off performance and is slowing the bow down until a tune is achieved. Over braced bows will wear the limbs down with possible impact on durability and longevity of the limbs. <u>This applies to all bows!</u>

Bow weight					Spine							
Point weight and bow weight in Grains and l					Draw length to plus or minus 1/2"							
100 gr	125 gr	150 gr	175 gr	200 gr	25	26	27	28	29	30	31	32
28 32					700	700	700	600	600	500	500	400
33 37	30 34				700	700	600	600	500	400	400	400
38 42	35 39	32 36	29 33	26 30	700	600	600	500	400	400	400	340
43 47	40 44	37 41	34 38	31 35	600	600	500	400	400	400	340	340
48 52	45 49	42 46	39 43	36 40	600	500	500	400	400	400	340	340
53 57	50 54	47 51	44 48	41 45	500	500	400	400	400	340	340	300
	55 59	52 56	49 53	46 50	500	400	400	400	340	340	300	250
	60 64	57 61	54 58	51 55	400	400	400	340	340	300	250	250
		62 66	59 63	56 60	400	400	340	340	300	250	250	250
			64 68	61 65	400	340	340	300	250	250	250	250

Tuning tips

The characteristics of these limbs (larger recurves and massive torsional stiffness) is that the initial nock/string movement from the bow when shot is less than for conventional limbs. We therefore suggest starting the tuning process with the arrow on centre as opposed to the convention of setting up outside centre. This effectively means that the arrow point jumps less outwards than it would if positioned farther out from centre as you have with conventional thinking. Final adjustment of arrow position relative to centre should be left to last and then only for fine tuning adjustments.

A simplified approach to tuning is all about adjusting/controlling the jump of the arrow point on release so that it harmonises with the arrow nock position as the arrow leaves the string. The arrow nock position is determined a) by limb design and b) by the archer's technique. The arrow point jumps up and out from the bow on release and is a function of dynamic spine starting out with the shaft's static spine, arrow length, point and insert weight and also the arrow's position on the bow relative to the bow's centre and the spring pressure if a plunger is being used.

Before you can draw any conclusions about the bareshaft's reaction to the shot the bare shaft must firstly clear the bow cleanly with no contact with shelf, arrow rest or window. As said before harsh noise from a bow such as a clack or click can only be the arrows contacting some part of the bow and any contact renders the bare shaft analysis completely useless.

Nock point height, how high? Well it needs to be high enough to balance out where the arrow point will be at arrow separation from the string. Stiffer shafts will jump higher than weaker shafts, heavier arrow points won't react/ jump as lighter points will and how the bow hand pressure is applied to the bow grip also affects the outcome. Bow hand fully down pressuring the grip low down will demand a much higher nock point height than the pressure applied closer to the throat of the grip. Bow hand pressure is covered later on in greater detail.

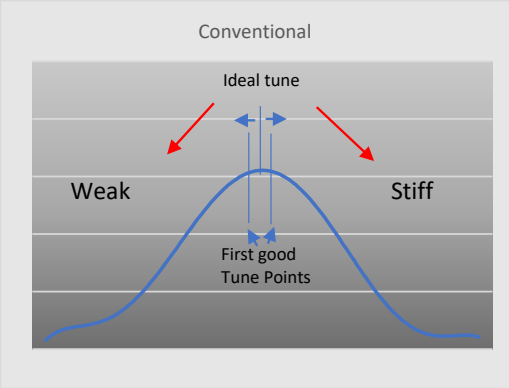
For a RH shooter bare-shaft example nock to the right of the point in the target. Then think reduce dynamic spine. Possible action:- use weaker shaft or higher point weight or use existing shaft spine but cut the shafts longer. Probably combinations of these suggestions will be needed as you adjust the arrow point's position relative to the nock at arrow separation from the string. Nock high and persistently right can be an indicator of contact with the riser. Nock high usually means lower nock point and the shaft is weak but if the nock high and right is caused by arrow contact then lowering the nock point makes things worse not better as the nock point should have been higher initially to ensure arrow clearance . Only with clearance can you then asses shaft spine, point weight shaft length etc.

For RH shooters nock left of point in target. Dynamic spine has to increase to get the point to jump farther out from the bow to align with the nock. Possible actions to correct arrow point location at arrow separation are:- stiffer shaft, lighter point weight or shorten the shaft. Last resort reposition arrow to be outside of the bow's centre line

Note that since stiffer arrow, the arrow points will jump higher and farther out from the bow than weaker shafts will. Different specs of arrow spines will require different nocking point heights so don't just swap out arrows with differing dynamic spine setups without considering nocking point height as well.

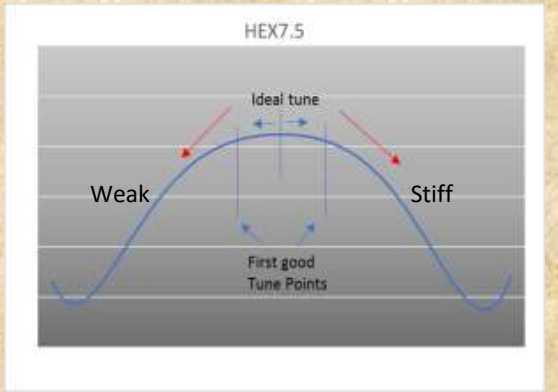
Tuning tips continued

The HEX8 limbs are ultra stable and very forgiving of arrow spine and point weight. Conventional limbs much less so and so tuning convention, as conditioned everyone to continue tuning until good flight and the job is done. However as said the HEX9 limbs are very forgiving and so good flight is achieved from a variety of setup conditions but how do you get the best, most stable setup. Graphically tune can best be described by a standard distribution graph as shown.



Conventional recurve limbs, the diagram of tune depicted left, has a much narrower tolerance to spine and set up. Most archers tune until they get good flight and the job is done. As tolerance band is narrow, variations in technique will push or pull the tune out and left and right impact occur at the target.

The HEX9 limbs are way more tolerant and good flight is found early on in tuning. We have had repeated feed back from archers letting us know that they are getting tighter groups than they have experienced before with other limbs but they are getting the odd out of group flyers. This results, as convention dictates, they tuned until good stable flight. They have achieved **First Good Tuning Point** So shooting variations that push or pull arrows towards ideal tune fly in group and shooting variations that pull or push arrows out of tune are fliers. Once **Ideal Tune** is found the reports have confirmed the groups tightening further as it requires greater variance in technique before tune is compromised and out of group fliers occur.



So best results are achieved by finding the weakest shaft that tunes well and then experimenting to find the stiffest shaft that tunes well and then bisecting the results to achieve Ideal tune. But be aware retuning from weaker to stiffer shafts will probably require a nock height adjustment i.e. a full tune!

Stringing Techniques

We would not advise trying this bow stringing technique. The recurves while torsionally stiff enough are way too deep for any concept of stability and so the bow is likely to twist out of the archers control and injury could result. A violent unstringing of the bow could also cause damage to the limbs so please just don't try it.

This method is way safer as the recurves point away from the archer however there is a distinct possibility that the metal work on your boots could damage the limb surface of the lower limb. In addition with the size of the super recurves the limb nock may be forced into the hard ground and be damaged on rocks, gravel or sand

By far the best method is in the use of a bow stringer usually provided with the bow. Always place both feet on the stringer approx. shoulder width apart as it gives the stringer a much better angle of attack on the limbs and helps prevent the limb loop sliding. Loop slide when stringing and unstringing should be avoided as it will eventually cause wear to the limbs surface and especially the limb edges.

Bow hand position on the grip

With the popular rise in compound bows there seems to have been a demise in proper shooting technique that used to be taught to recurve shooters. The Complete Archery Book the reprint version I have is from 1975 but the first print was in 1957. The publication covers good bow hand technique showing good grip position for recurve shooters as taught when recurves were the go to bow and many more interesting archery related topics. Another book from the 1970's is Fred Asbell's Instinctive Shooting. Shown In the second version is a chapter where Fred explains proper bow hand positioning and the reason why and the pitfalls of wrong bow hand positioning.

Drawing left shows proper relaxed bow hand positioning where the hand pressure is mainly applied closer to the throat of the grip. This technique balances the limb timing and results in faster arrow speeds, a smoother shot with the lowest levels of limb vibration. Picture left shows evenly balanced limbs resulting from good bow hand positioning.

In a compound the cams are synchronised by a cable that links both and controls the cams. The cams in a recurve are the recurves and it is the archer's shooting technique that keeps these synchronise through his bow hand position. Books from the 1970's The complete archer and in the 1990's Instinctive archer 2when recurves were coached by those who knew recurves the go-to-bow at that time all display and emphasise this vital technique.

Wrong bow hand pressure, griping the bow tightly and with the heal of the hand pressuring lower in the grip. This type of grip generally results in the lower limb being drawn farther than the top limb shown in the drawing left of text. String angle to the limb being closer to the top recurve starts wrapping string first and the shot terminates with the bottom recurve catching up, forcing the top recurve to unwind partially resulting in limb vibration and loss of speed as the recurves fight each other.

This is all happening just as the arrow is leaving the string. So wrapping is still happening on the bottom recurve and as a reaction the top recurve is partially unwrapping and this is significant to the nocking point, as the nock location goes forward it is also following the downward wrapping action and the arrow nock is thrown downwards as it leaves the string and a possible cause of noise as the nock contacts the riser shelf or arrow rest and a source erratic arrow flight.

Border Support Packages

The set up guide as you have gathered by now is not just a list of things to do and not do, but an attempt to explain why and how, as there are many ways to set a bow up successfully. Knowing and understanding gives a deeper insight and so greatly helps the process along. Archery is held back by the unchallenged assumptions that have surrounded archery for decade upon decade; resulting myths and misconceptions that hinder change and improvement. It is now time to move on and challenge the way it has always been!

If it cannot be measured then it is unlikely to exist in reality and probably only in the mind.

Our returns policy . This applies to archers who have bought directly from us. Its aims are a) a satisfaction guarantee, b) a chance to refine the order after some experience with the product.

The program offers a refund of the product price providing the product reaches us within 28 days and in a new condition. For a small re-order fee the product can be returned for small changes in spec. This applies globally and irrespective of the level of customisation.

Warranty Cover is a three year write down period with full 100% cover over the first 12 months, reducing to 50% cover during the second 12months and the final 12 month period reducing further to 25%. This applies to products sold from us directly to the customer and applies to the first owner only providing the bow has not been modified and has been used and set up in accordance with our recommendations. It covers workmanship and materials only! For products sold through a dealer then your warranty cover is with the dealer.

CRSP Crash Replacement Support Program, **at our discretion** can be applied to the original owner only while he owns the product . The program offers a 20% discount for the replacement of a product that has been damaged beyond repair resulting from accidental damage that renders the product unusable. The product has to be returned to us for this to apply and can be applied during the full ownership period however long that may be.