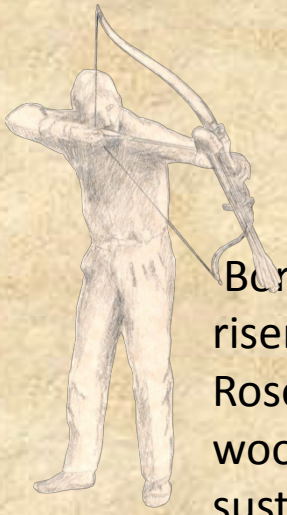
Black Douglas Recurve Bows

Welcome to one of the most powerful and smoothest recurves on the market today. The range of bolt down Recurves. Limbs include the CVX with the performance of a Super recurve and with the draw of an exceptionally smooth conventional draw feel. The next limb model being offered is the HEX7.2 with full super recurve performance and smoother draw feel. All limbs are available with the Hyper flex composite core or the rock maple wood core. Limbs are available in lengths short, medium, longs and extra longs offering bow lengths on a 25” riser from 66” through to 72”. Riser lengths 17” through to 25” in 2” increments. Riser lengths 17”, 19”, 21”, 23” and 25”.

Superb performance combining exceptional value.



Black Douglas Carbon Hybrid Bows

Border Wood carbon Hybrid risers are available in 17” through to 25”. The wood carbon hybrid risers, the woods available are Shedua, Bubinga, Zebrano, Honduras walnut, Burmese Paduk, Indian Rosewood, Santos rosewood. Then we have our Heritage range of coloured laminated woods. Many wood species are on the endangered species listings the Shedua and heritage wood are all from sustainable forestry practice. Our Wood Hybrid risers can also be crafted with carbon reinforced Cotton based Phenolic.

The risers have generous level of deflex helping to reduce the effects of bow hand torque and heavily strengthened with our triple carbon spines that run the length of the riser.

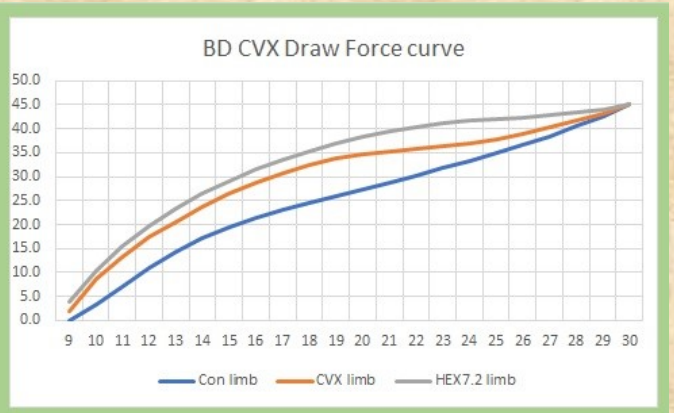
Phenolic risers showing Black Douglas Covert Hunter and ILF models

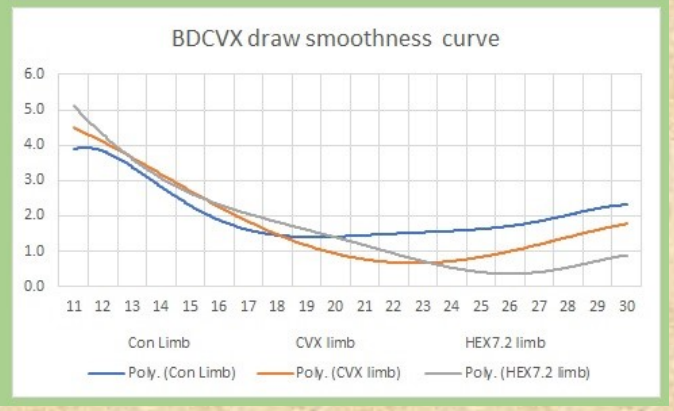
Black Douglas risers 17” to 25”

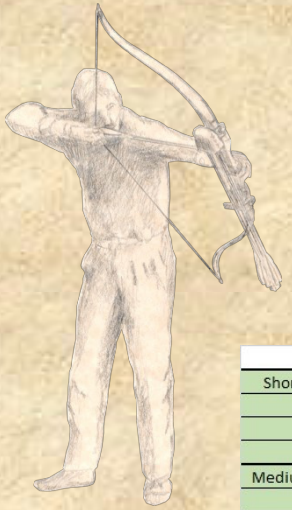
How they compare

Set out below is the Draw Force Data for the CVX , the HEX7.2 and that is set against the average DFC information for conventional profiled limbs to form a comparison base. The four columns to the left give the draw weight generated for every inch of drawlength. The columns to the right give the incremental weight gain for every inch of draw from 11” through to 30”. Beneath the left hand columns gives the total stored energy and then the stored energy for every pound of draw weight for 28” through to 30”. Under the right hand columns you have the draw weight incremental gain from 23” to 30”, from 25” to 30” and from 29” to 30”. You have the comparators for performance and draw smoothness.

	Draw Force Data				Draw Smoothness Data		
	Con limb	BD CVX	HEX7.5		Con limb	BD CVX	HEX7.5
9	0.0	2.0	3.8				
10	3.3	8.6	10.4				
11	7.1	13.2	15.5		3.8	4.7	5.1
12	11.1	17.4	19.8		4.0	4.1	4.3
13	14.4	20.6	23.4		3.3	3.3	3.6
14	17.1	23.8	26.5		2.8	3.1	3.1
15	19.5	26.5	29.2		2.3	2.7	2.7
16	21.3	28.8	31.5		1.9	2.3	2.3
17	23.0	30.8	33.5		1.7	2.0	2.0
18	24.5	32.5	35.3		1.5	1.7	1.8
19	25.9	34.0	36.9		1.4	1.4	1.6
20	27.2	34.6	38.3		1.4	0.7	1.4
21	28.6	35.2	39.5		1.4	0.6	1.2
22	30.2	35.8	40.4		1.5	0.6	0.9
23	31.7	36.3	41.2		1.6	0.5	0.7
24	33.2	37.0	41.7		1.5	0.7	0.6
25	34.9	37.9	42.1		1.7	0.9	0.4
26	36.6	39.0	42.4		1.7	1.1	0.4
27	38.5	40.2	42.8		1.8	1.3	0.4
28	40.5	41.8	43.4		2.0	1.6	0.6
29	42.7	43.3	44.1		2.2	1.5	0.7
30	45.0	45.0	45.0		2.3	1.7	0.9
Total Stored energy	44.5	53.5	58.7				
Energy per lbs of draw weight at 28"	0.923	1.107	1.183	Draw weight gain 23" to 30"	13.3	8.7	3.8
Energy per lbs of draw weight at 29"	0.957	1.151	1.246	Draw weight gain 25" to 30"	10.1	7.1	2.9
Energy per lbs of draw weight at 30"	0.989	1.188	1.305	Draw weight gain 29" to 30"	2.3	1.7	0.9





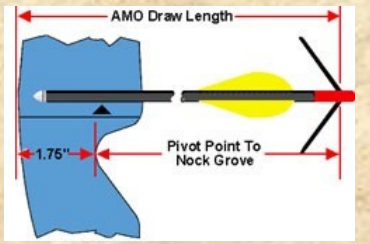


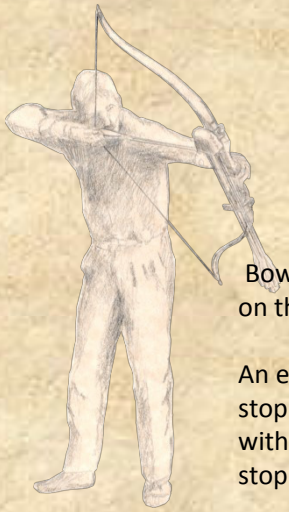
Draw lengths and Bow lengths

	Riser Lengths	17"	19"	21"	23"	25"
Short CVX	Bow lengths	58"	60"	62"	64"	66"
	Draw lengths	to 26"	25" to 26.5"	25.5" to 27"	26" to 27.5"	26.5" to 28"
	String lengths	56"	58"	60"	62"	64"
	Brace heights	6.5" to 7"	6.5" to 7"	6.5" to 7"	6.5" to 7"	6.5" to 7"
Medium CVX	Bow lengths	60"	62"	64"	66"	68"
	Draw lengths	26" to 28.5"	26.5" to 29"	27" to 30"	27.5" to 30.5"	28" to 31"
	String lengths	58"	60	62	64	66
	Brace heights	6.5" to 7"	6.5" to 7"	6.5" to 7.25"	6.5" to 7.5"	6.5" to 7.5"
Long CVX	Bow lengths	62"	64"	66"	68"	70"
	Draw lengths	26.5" to 29.5	27" to 30.5"	27.5 to 31	28" to 31.5	28.5" to 32"
	String lengths	60"	62"	64"	66"	68"
	Brace heights	6.5" to 7.5"	6.5" to 7.5"	6.5" to 7.5"	6.5" to 7.75"	6.5" to 7.75"
Extra Long CVX	Bow lengths	64"	66"	68"	70"	72"
	Draw lengths	27.5" to 31"	28" to 31.5"	28.5" to 32"	29" to 32.5	29.2" to 33"
	String lengths	62"	64"	66"	68"	70"
	Brace heights	6.5" to 7.75"	6.5" to 7.75"	6.5" to 7.75"	6.5" to 7.75"	6.5" to 7.75"

	Riser Lengths	17"	19"	21"	23"	25"
Short HEX7.2	Bow lengths	58"	60"	62"	64"	66"
	Draw lengths	to 26"	25" to 26.5"	25.5" to 27"	26" to 27.5"	26.5" to 28"
	String lengths	57"	59	61"	63"	65"
	Brace heights	6.5" to 7"	6.5" to 7"	6.5" to 7"	6.5" to 7"	6.5" to 7"
Medium HEX7.2	Bow lengths	60"	62"	64"	66"	68"
	Draw lengths	26" to 28.5"	26.5" to 29"	27" to 30"	27.5" to 30.5"	28" to 31"
	String lengths	59"	61"	63"	65"	67"
	Brace heights	6.5" to 7"	6.5" to 7"	6.5" to 7"	6.5" to 7"	6.5" to 7"
Long HEX7.2	Bow lengths	62"	64"	66"	68"	70"
	Draw lengths	26.5" to 29.5	27" to 30.5"	27.5 to 31	28" to 31.5	28.5" to 32"
	String lengths	61"	63"	65"	67"	69"
	Brace heights	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"
Extra Long HEX7.2	Bow lengths	64"	66"	68"	70"	72"
	Draw lengths	27.5" to 31"	28" to 31.5"	28.5" to 32"	29" to 32.5	29.2" to 33"
	String lengths	63"	65"	67"	69"	71"
	Brace heights	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"

AMO/ATA 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 /ATA 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!





Making sense of bow strings

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 on the bow on limb closure. **We are discussing all single stringed bows not just Border bows**. The physics in stopping any moving object are 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 doesn't break and that is because the egg takes longer to a 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 the other gradual and way more gentle. Another example shoot your arrow into a target and the arrow takes say 6" to 10 " to slow down and stop. Now shoot the arrow into concrete, the arrow stops immediately and damage occurs.

Your bow limb tips are no different. Stop them immediately and you will damage your limbs! Allow them to slow down over a longer distance and the forces generated to stop the limbs is much less. Bow string materials; Dacron has an elastic elongation of 10%. The 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 3.5% 2.8 times 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 FastFlite Plus and so the shock loadings on the limbs at closure will be 32% higher than FastFlite Plus.

Other factors such as strand count needs consideration. Too many strands makes a string overly strong and reduces elasticity or cushioning effect thereby increasing the shock forces on the bow on closure, on every shot. Thread strengths of FastFlite Plus 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 bow 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 FastFlite Plus 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 105 and 110 lbs breaking strength. These charts take into account the extremely high stored energy values from the CVX and HEX 7.2 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 the 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 become 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.

Suitable strings

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"
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

Bow weight

FF+ Spectra 8125 Approx. strand 76lbs max strength

Draw-length	26"	27"	28"	29"	30"	31"	32"	33"
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

Bow weight

D75 D97 Astro Approx. strand 110lbs max strength

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
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

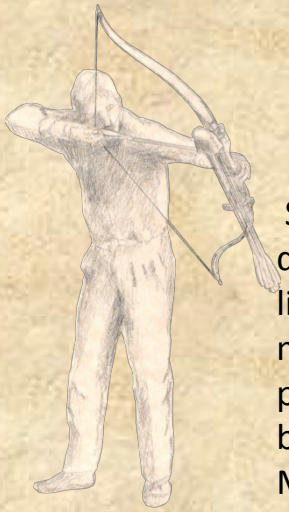
Bow weight

FF+ Spectra 8125 Approx. strand 76lbs max strength

Draw length	26	27	28	29	30	31	32	33
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

Bow weight

D75 D97 Astro Approx. strand 110lbs max strength



The Importance of brace heights

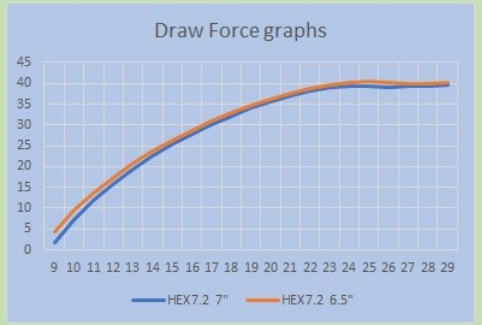
So the importance of Brace Heights affects all bows! All bows are designed to operate within the strict parameters of design . In other words within the designers recommendations. Setting bows up outside these recommendations (design limits) usually voids warranty support. Operating bows over the recommended Brace Heights over-stresses the limbs and may eventually cause limb damage and possible premature failure. Operating at MAX brace height means MAX permissible stress levels. Combining bow set up characteristics that MAX can cause damage, for example combining MAX brace height, min arrow weight and max draw length for min bow length. Each of these individually is working the bow at MAX and so combinations can overstress the bow. Try and stay away for anything that drives the bow at MAX.

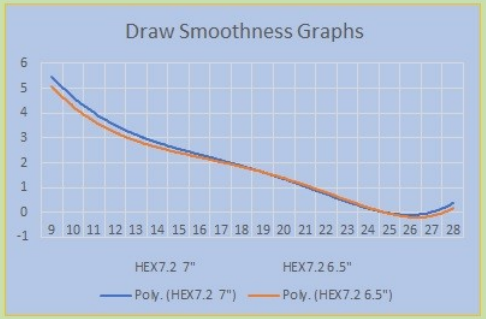
The highest performance and smoothest draw will always be achieved at the minimum brace height it is also the most gentle for the bow. Bottom right is the data derived from HEX limbs. Bow; 60” with 17” riser and provides the draw force curve and also the incremental increase in bow weight for every inch of draw shown on the graphs. Here you can see clearly that the lower brace height achieves approx. 2.3% greater stored energy than the higher brace height.
You can also note that the lower brace height is smoother to draw.
The Bows are designed to operate best at lower brace heights so start off at lowest and proceed from there. When properly set up the limbs are designed to be quiet when Operated within the brace height range that they are designed for.
Noise usually results from set up issues either arrows too weak or issues with bow hand Position on the grip. Refer to section on recurve bow hand position.

If when tuning you are being pushed towards higher brace height it is usually a sign that your arrows are weak.

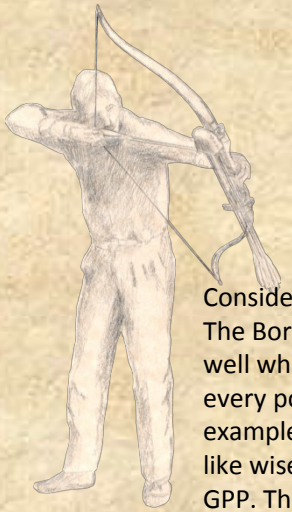
The effect of Braceheight on performance

	DFC Data			Draw smoothness Data	
	7" BH	6.5" BH		7" BH	6.5" BH
		CV9 in			
9	1.7	4.5			
10	7.15	9.65		5.45	5.15
11	11.8	13.75		4.65	4.1
12	15.85	17.45		4.05	3.7
13	19.35	20.8		3.5	3.35
14	22.45	23.65		3.1	2.85
15	25.4	26.3		2.95	2.65
16	27.8	28.65		2.4	2.35
17	30.15	30.9		2.35	2.25
18	32.15	32.9		2	2
19	34.1	34.65		1.95	1.75
20	35.7	36.25		1.6	1.6
21	37.1	37.7		1.4	1.45
22	38.2	38.85		1.1	1.15
23	39.05	39.7		0.85	0.85
24	39.4	40.2		0.35	0.5
25	39.4	40.4		0	0.2
26	39.15	40.1		-0.25	-0.3
27	39.35	40		0.2	-0.1
28	39.4	40		0.05	0
29	39.7	40.1		0.3	0.1
	49.54	51.37			
	1.1738	1.2008	2.3%		
	1.2479	1.2811	2.7%		





<u>Never ever over-brace your bow , any bow!</u>



Arrow Weight, Spine & Point Weight

Consideration –
The Border range of Black Douglas limbs store significantly more energy than conventional recurve limbs. However spine is considered by bow-weight. Spine, bow-weight, works well when all bows have a similar performance. The CVX, and HEX7.2 are all exceptional limbs. Let's look at an example. A conventional limb store around . 0.92 ft. lbs of energy for every pound of bow weight. The CVX stores 1.086 ftlbs per lbs of DW, 18% more than the average conventional limb. The HEX7.2 it is 1.15 ftlbs per lbs of DW, 25% more. For example based on these energy levels a 40lbs pair of HEX7.2 would have a performance similar to a conventional limb with a draw weight 50lbs and so arrow weight has to follow like wise. The table below on the left, shows the equivalent GPP for the energy levels in each limb type. As you can see a conventional limb at 8 GPP the equivalent on a CVX is 9.4 GPP. This is based on actual energy. At 9.4 GPP The CVX would shoot the arrow faster. You can see how the other limbs compare using energy rather than bow weight.

When you read about bow reviews don't place too much trust in grains per pound comparisons. It is assumed that the same GPP will result in same speed irrespective of bow weight. This thinking is seriously flawed. To lose 5lbs in bow weigh is the equivalent of reducing the limb cores, the lowest weight structure in the limb by 8 thousands of a inch, same bow facings and string mass. So with less energy available and proportionally heavier limbs and string they absorb more of the energy and less goes into the arrow and so speed drops with decreased efficiency. The table below on the right gives the speed differences that result for the same GPP over different bow weights and the bottom half of that table shows the speed difference between 30lbs and 35lbs it varies between 4.7fps and 8.8fps and at 55lbs it is 1.9fps and 3.4fps. Lower weight bows are less efficient than higher weight bows the limb mass and string mass is lower proportionally than with low poundage bows.

The Equivalent GPP adjusted to represent energy rather than just draw weight

	SE per lbs of draw	Grains per pound				
Con limb av	0.92	8	9	10	11	12
CVX	1.086	9.4	10.6	11.8	13.0	14.2
HEX7.2	1.15	10.0	11.3	12.5	13.8	15.0

Bow performance based on drawlength and arrow weight. These speed values have been produced by a computer bow and so bow tune is perfect something that you would probably never see in reality. However comparatively accurate These results are representative of the best possible results zero losses due to Medium limbs 17" riser

Grains per pound and speed		Bow weight					
		30	35	40	45	50	55
Best possible speed	8GPP	192.6	199.4	205	209.7	213.6	217
	9gpp	186.6	192.7	197.8	202	205.5	208.5
	10GPP	181.1	186.7	191.3	195.1	198.3	201
	12GPP	171.5	176.2	180	183.1	185.8	188
	14GPP	163.2	167.2	170.5	173.2	175.4	177.3
Speed difference per 5lbs of b	8GPP		6.8	5.6	4.7	3.9	3.4
	10GPP		6.1	5.1	4.2	3.2	2.7
	12GPP		5.6	4.6	3.8	2.7	2.2
	14GPP		4.7	3.8	3.1	2.2	1.9

Suggested minimum arrow weights

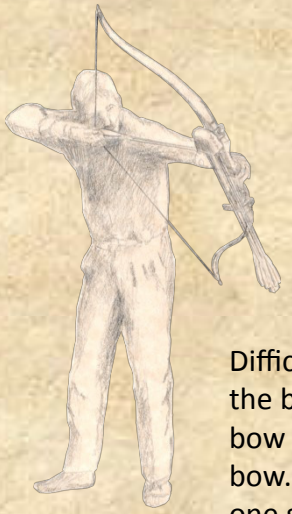
Arrow weight is another area where high performance limbs depart from convention. Shooting minimum arrow weight is a performance driven decision and depending on the rest of your bow set up such as Max brace height, Max draw lengths and a string type out side of our recommendations may over time shorten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

The Border limbs are a very powerful and are 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.

CVX	26	27	28	29	30	31	32
60	366	393	420	445	466	500	530
58	354	380	406	430	450	483	512
56	341	367	392	415	434	466	495
54	329	354	378	400	419	450	477
52	317	341	364	385	403	433	459
50	305	328	350	370	388	416	442
48	293	315	336	356	372	400	424
46	280	302	322	341	357	383	406
44	268	289	308	326	341	366	389
42	256	275	294	311	326	350	371
40	244	262	280	296	310	333	353
38	232	249	266	282	295	316	336
36	219	236	252	267	279	300	318
34	207	223	238	252	264	283	300
32	195	210	224	237	248	266	283
30	183	197	210	222	233	250	265
28	171	184	196	207	217	233	247
26	158	171	182	193	202	216	230
24	146	157	168	178	186	200	212
22	134	144	154	163	171	183	194
20	122	131	140	148	155	167	177
	26	27	28	29	30	31	32

HEX7.2	26	27	28	29	30	31	32
60	386	412	435	456	474	508	537
58	373	398	421	441	459	491	520
56	361	385	406	426	443	474	502
54	348	371	392	411	427	457	484
52	335	357	377	395	411	440	466
50	322	343	363	380	395	423	448
48	309	330	348	365	380	406	430
46	296	316	334	350	364	389	412
44	283	302	319	335	348	372	394
42	270	289	305	319	332	355	376
40	258	275	290	304	316	338	358
38	245	261	276	289	300	322	340
36	232	247	261	274	285	305	322
34	219	234	247	259	269	288	305
32	206	220	232	243	253	271	287
30	193	206	218	228	237	254	269
28	180	192	203	213	221	237	251
26	167	179	189	198	206	220	233
24	155	165	174	183	190	203	215
22	142	151	160	167	174	186	197
20	129	137	145	152	158	169	179
	26	27	28	29	30	31	32



Suggested arrow spine

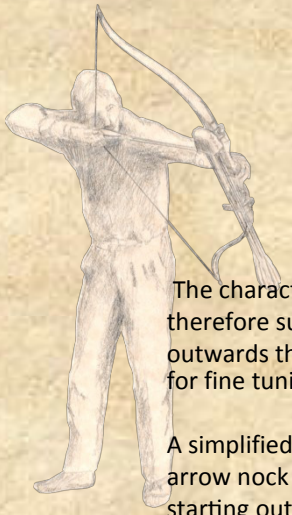
Difficulties in setting up super recurves usually starts with arrows that are too weak. Spine charts are based on bow weight. They work well when all the bows achieve a similar level of performance as they have done for decades. However in reality spine has more to do with arrow acceleration than bow weight and so the revolutionary performance available 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 I					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 is a plunger is being used.

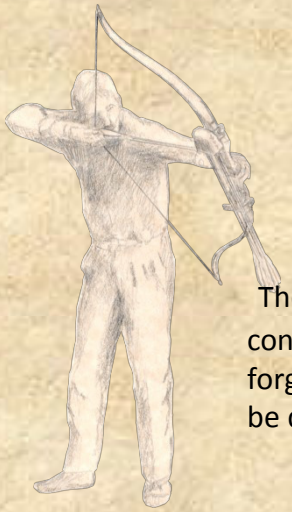
Before you can draw any conclusions about the bareshaft's reaction to the shot the bare shaft must firstly clear the bow cleanly with no contact with shelf, arrow rest or window. As said before harsh noise from a bow such as a clack or click can only be the arrows contacting some part of the bow and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

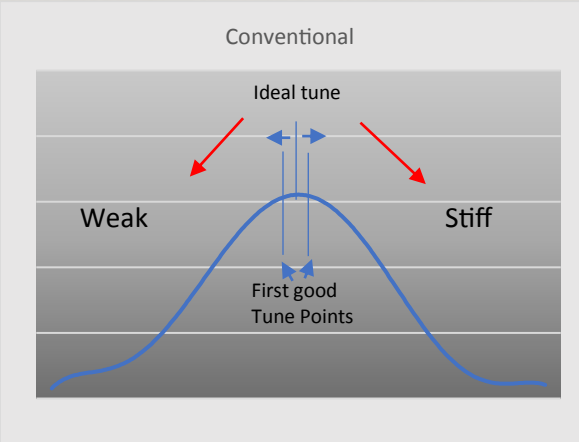
For RH shooters nock left of point in target. Dynamic spine has to increase to get the point to jump farther out from the bow to align with the nock. Possible actions to correct arrow point location at arrow separation are:- stiffer shaft, lighter point weight or shorten the shaft. Last resort reposition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



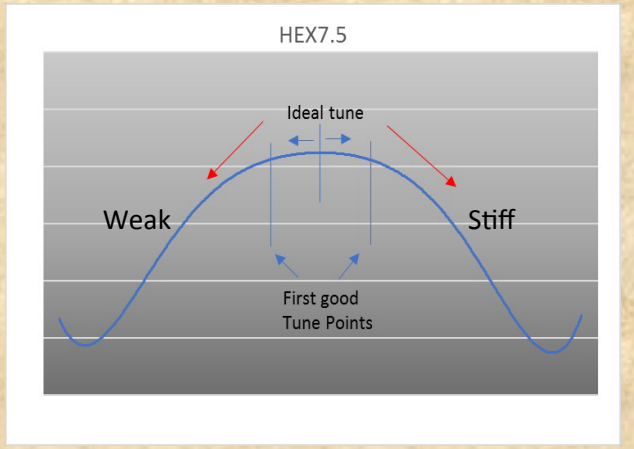
Tuning tips continued

The HEX8, HEX7.2 and CVX limbs are ultra stable and very forgiving of arrow spine and point weight. Conventional limbs much less so and so tuning convention, as taught every one, to continue tuning until good flight and the job is done. However as said the HEX7.2l and CVX 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.



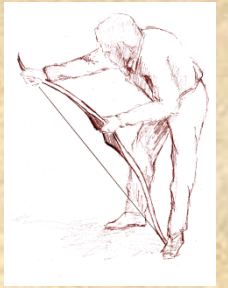
Conventional recurve limbs, the diagram of tune depicted left, has a much narrower tolerance to spine and set up. Most archers tune until they get good flight and the job is done. As tolerance band is narrow variations in technique will push or pull the tune out and left and right impact occur at the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

The BORDER 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



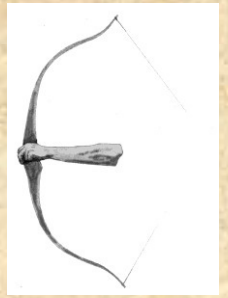
We would not advise trying this bow stringing technique. The recurves while torsionally stiff enough are way too deep for any concept of stability and so the bow is likely to twist out of the archers control and injury could result. A violent unstringing of the bow could also cause damage to the limbs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

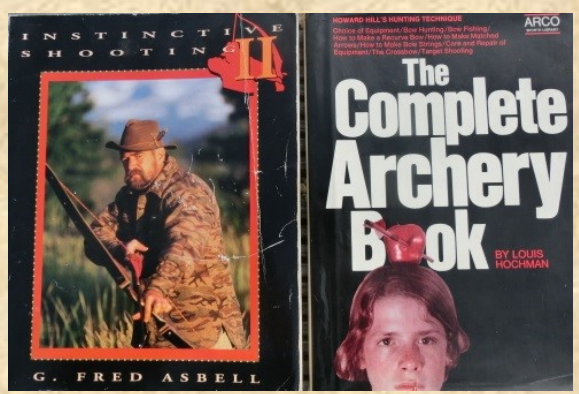
Bow hand position on the grip

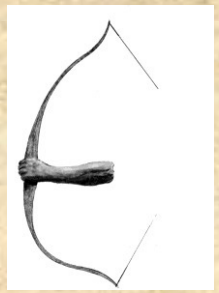
With the popular rise in compound bows there seems to have been a demise in proper shooting technique that used to be taught to recurve shooters. The Complete Archery Book the reprint version I have is from 1975 but the first print was in 1957. Here is an example picture. Pictures from the publication showing good grip position for recurve shooters as taught when recurves were the go to bow. Most of these people illustrated were state or national champs at the time. Another book from the 1970's is Fred Asbell's Instinctive Shooting. Shown here Is Version 2 and in that Fred explains proper bow hand positioning and the reason why and the pitfalls of wrong bow hand positioning.



Drawing, right 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.

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 when recurves were coached by those who knew recurves the go-to-bow at that time





Wrong bow hand pressure, griping the bow tightly and with the heal of the hand pressuring the grip low. This type of grip results generally in the lower limb being drawn farther than the top limb. String angle to the limbs being closest 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. There are further negatives here. This is all happening just as the arrow is leaving the string. So wrapping happens on the bottom recurve and as a reaction the top recurve is unwrapping and this is significant to the nocking point as it goes forward and is also following the downward wrapping action and the arrow nock is thrown downwards as it leaves the string.

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 and 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.