



Recurve to Compound Bow

Presenter: Gary Critchlow-Smith
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Berkshire Archery Coaching Group



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The intentions of this seminar is:

- To supply archers with a useful information source to enable them to change from a recurve to a compound bow.
- To provide 'Continuous Professional Development' for coaches and enhance their knowledge.
- To check the knowledge that candidates have gained and to register their attendance. Certificates will then be sent to participants 14 days after submitting an E-mail.

If you are familiar with a compound bow make-up, the technical aspects of a compound bow and with compound accessories then after reading the next slide go to Part 4: Choosing a bow



A **recurve bow** is a bow with limbs that curve away from the archer when unstrung. A recurve bow stores more energy and delivers energy more efficiently than the equivalent straight-limbed bow, giving a greater amount of energy and speed to the arrow.

In modern archery a **compound bow** is a bow that uses a levering system, usually of cables and pulleys to bend the limbs. In general, compound bows are widely used in target practice and hunting.

Subject matter

Part 1: Compound bow make-up

- The Compound bow
- Types of cam
- Draw force curve(s)
- Technical terms
- A narrow or wide valley
- Cam comparison

Part 2: Technical considerations

- Axle-to-axle length
- Draw length
- Ensuring 'Proper Fit'
- Limb types
- Draw weight

Part 3: Accessories

- Release aid choices
- Arrow rest choices
- Stabilizer's
- Sight
- Arrows (in brief)

Part 4: Choosing a bow

- Before shopping
- Draw weight ranges
- Key considerations

Part 5: Shooting

- A Shot routine
- Do I need a coach?

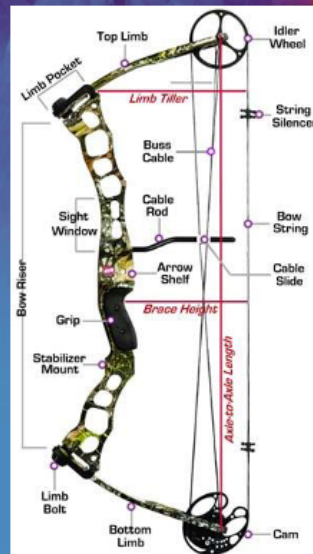
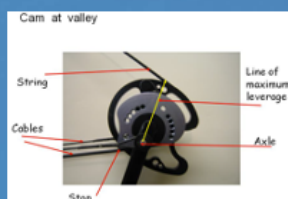


Compound bows are initially just as difficult to pull back as other **bows**; however, you'll only have to pull against the full weight of the **bow** for a few moments, making it **easier** to hold for longer periods of time.

The Compound bow

PART 1: COMPOUND BOW MAKE-UP

A compound bow uses cables and cams to store energy and reduce the holding weight at full draw. Note the red lines donating limb tiller, brace height and axle to axle length; these attributes are mentioned later in this guide.











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This reduction in holding weight at full draw is called “let-off”. Example: A 40-pound bow with a 75 percent let-off would be ten pounds at full draw.

Let-off is especially helpful for competition or hunting because it allows shooters to hold a bow at full draw – and place an accurate shot – longer than if they were using another type of bow.

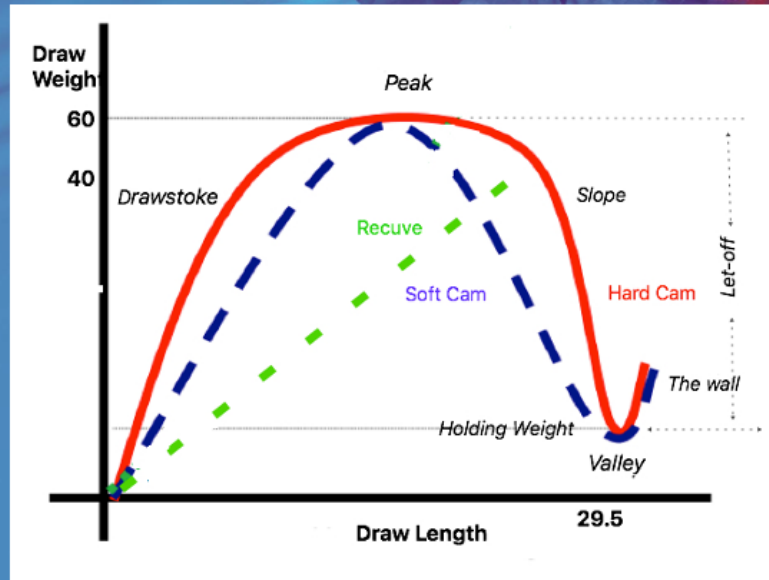
The bow shown as a Deflex riser - Slower speeds but more forgiving

Type of CAM	Features	Advantages	Disadvantages
Single/Solo Cam 	 Idler wheel at the top. Elliptical "power-cam" at the lower end.	Easy to draw. Quieter. No synchronisation issues. Generally smooth.	Harder to tune than other designs . Nock travel issues Lower power.
Hybrid Cams. 	 Control cam on top end. Power-cam at bottom end.	Easy to tune. Less maintenance. Very precise. Very fast	Reduced nock travel.
Twin/Dual Cams. 	 Uses two cams which can be round or elliptical, on each end of the bow.	Accuracy. Level nock travel. High velocity/power.	Highly complex design , frequent maintenance and tuning. Noisier.
Binary Cams. 	 Similar to twin cams but top and bottom cams are slaved to each other instead of the bow's limbs.	Very high power & speed. Level nock travel.	Highly complex design translates to frequent maintenance and tuning.

Mathews: Single cam, Solid limbs.
 Hoyt: Hybrid cams, Split limbs.
 Prime: Twin/Dual.
 Bowech: Binary cams.

AXA 38", " BH 7.5", DW. IBO 328FPS
 AXA 35", " BH 7", DW. IBO 335FPS
 AXA 36", " BH 7.2", DW. IBO 315FPS
 AXA 35", " BH 7", DW. IBO 335FPS.

Draw-Force Curves (DFC)



In the valley the bow is at full draw and weight supported by its mechanical relaxation system (let off).

With soft cam the valley is often wide a whilst with hard cam the valley is narrow near the wall (stops).

Technical terms

- The curved line on the draw force curve represents the bow's draw stroke, commonly known as the power stroke. The power stroke represents your effort. It begins as you pull the string back from the resting position and is completed when the bow reaches full draw.
- The valley is the distance between full draw and the peak weight of the bow at which you only have to hold a percentage of the draw weight.
- Let-off of a bow is the percentage of draw weight held while the bow is at full draw. Let-off enables the archer to accurately shoot a compound bow with a much higher peak draw weight than other bows.
- Axle-to-axle or ATA, is the distance measured between each axle of a compound bow
- The bracing height is distance from the back of the grip to the string in inches. Generally speaking, bows with shorter brace heights tend to be faster and produce more energy than bows with larger brace heights.
- Draw weight is the poundage you will have pull to shoot the bow



Let-off example: A bow with a peak draw weight of 60 pounds, that has a full-draw holding weight of 12 pounds, is a bow with 80-percent let-off. Twelve pounds is 20 percent of the peak draw weight, which means 80 percent of the bow's peak draw weight has been shed or let off.

A narrow or wider valley

- Bows with a narrow valley have more aggressive cams and tend to be at the higher end of the speed ratings.
- Forces shooters to have to use constant backpressure which supports good shooting technique.
- There is little room to relax.
- Many shooters feel more comfortable shooting with a wider valley.
- Can make them feel like they need to push their bow-hand forward.
- Gives shooters room to creep which causes draw length to vary and vertical arrow dispersion.

Neither valley is really “better,” than the other. The final decision on the valley will come down to what feels the best. In front of a boss draw the bow back with an arrow nocked and let it down. You need to feel relaxed and secure.

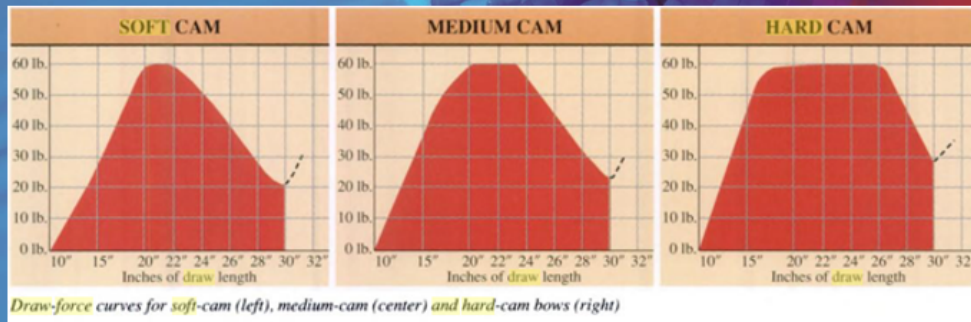


The DF curve is basically flat at the bottom of the valley.

The width of the valley is the amount of play shooters have after reaching the wall and can vary by considerable (1/4 to 1/2 inch)

A bow draw length can be usually be adjusted in ¼” or ½ “ increments.

Cam comparison



Draw-force curves for soft-cam (left), medium-cam (center) and hard-cam bows (right)

Smooth and easy to draw. The force required to draw the bow builds up gradually.

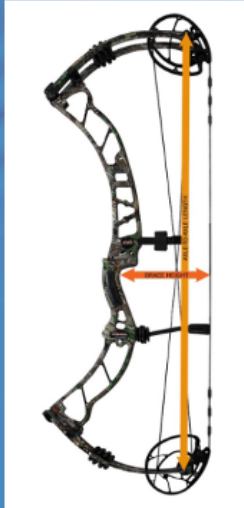
Relatively smooth to draw.

Requires greater strength to draw initially and have a tendency to jerk as draw dropped into the valley. **Not all archers can cope.**

Max draw weight limited to 60lb in Archery GB.

Some manufacturers have a wide valley and the anchor tends to be spongy.

Axle-to-axle length (A2A) PART 2 : TECHNICAL



- Axle-to-axle or A2A, is the distance measured between each axle of a compound bow. Each cam operates on an axle and taking the length between those two axles is going to be your A2A measurement. There are bows with a long A2A, short A2A and some with a middle of the road ATA.
- The Brace height for target bow needs to be 7+” whilst for field archery is around 6”.

An extra-long 45 inch axle-to-axle competition bow would certainly be easier to shoot accurately than a super-short 28 inch axle-to-axle hunting bow.

The A2A an Archer chooses is dependent what the bow is going to be use for, and the persons physical physique.

... ATA continued

- ATA length needs to be 34" to 37" for a draw length of 29" or greater. Draw length can vary depending on the size of the bow.
- With a shorter ATA the string angle is greater and the string is slightly further back on the archers face, (away from mouth) this can cause anchor issues as the string needs to touch the archer's nose.
- Longer length bows are recommend for beginners as the are more forgiving and more stable.
- Shorter length bows are faster (more speed) and have a smaller brace height (6 "). Note: A shorter brace often cases clearance problems particularly when wearing lots of clothes



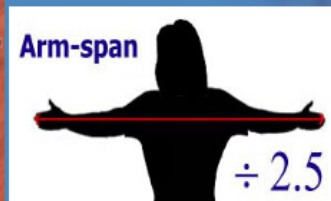
Longer length bows weigh more.

Draw-length

Draw length is the distance between the grip and the bowstring when you're at full draw. It is probably the most important factor when choosing a bow. In the main most bow draw-length can be adjusted to suite the archer.

Caution: Many compound bow owners set their bows for too long a draw length, which results in poor shooting form and inaccuracy.

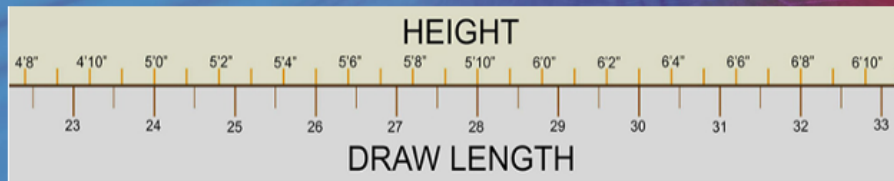
1. Stand naturally, with your arms out and palms facing forward (don't stretch).
2. Have someone else help you, and measure from the tip of one middle finger to the other measure (inches).
3. Divide the number by 2.5. The quotient is your proper draw length.



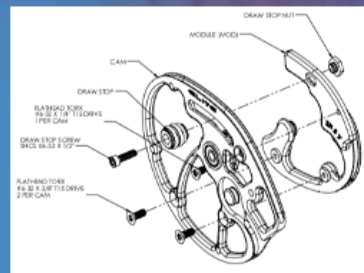
Too short and you will be moving your head forward to see through the peep sight and too long you will struggle to reach full draw. Too much draw length will have a more negative impact on your speed and accuracy.

... Draw length verses height

There is a collaboration between draw length and the person's height. It is worth checking.



Whilst draw-length is very important, making a minor draw length change is usually pretty simple. So it's not quite a life or death decision to start. Think carefully about buying a bow with modular-cams. These are cams that have to be purchased to adjust draw length.



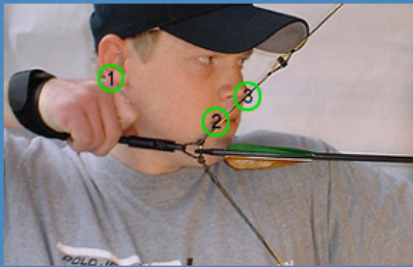
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The majority of bows have an adjustable draw length.

The draw-length on Modular-cam bows can be adjusted to a limited extent by adding or subtracting twists to the string.

Ensuring a 'Proper Fit'

1. Firstly your bow-arm should be straight but relaxed and not bent. Use a 'T' draw.
2. With a wrist release aid the knuckle of drawing hand is just behind the ear. It is finger operated.
3. With a trigger release aid the knuckle is in front of the ear and is either thumb operated or back tension operated.
4. The string is near to the corner of the archer's mouth and is touching the tip of their noses. The archers head are upright.

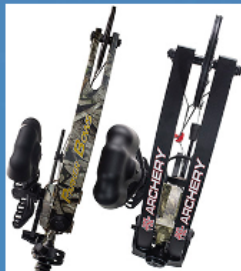


If you cannot anchor as shown either the ATA or draw length is incorrect

Solid limbs

Cons: Solid limbs are known for their ruggedness, simplicity and stability.

Cons: Solid limbs are known to fail in the v-notch for the cam; the limbs can split and run up through the centre. **With the development of compression moulded limbs the chances of splitting has very much reduced.**



Split limbs

Pros: Split limbs are very strong, they spread stress, are a little bit lighter and if the limbs have wide stance they can reduce torque.

Cons: For the limbs have to be built exactly the same. If there are slight differences between them it can cause numerous problems from; cam lean, riser torque, limbs twisting and it can make tiller tuning a real bear.

Draw weight

Choose a draw-weight that will be comfortable for you to shoot over the course of the round and not the maximum weight you can pull for a few minutes. If the draw weight is too heavy your form will suffer when you get tired. It is vital that you choose a bow-poundage that you can pull back easily. You need to be able raise the bow to the target and then using a 'T' draw, draw to your face (anchor) with ease without having to raise your arm really high.



Most bows have adjustable draw weight so choose one that has a range suited to you.

Release aid choices

PART 3: ACCESORIES

A release aid should not have a lot of travel.

Three styles are available:

1. A finger operated or wrist release aid.
2. A hand held trigger thumb operated release.
3. A hand held back-tension (rotation) operated release.



Once you have cocked the release aid, raise, draw, secured your anchor, aim, continue drawing and execute.

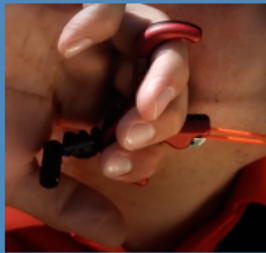


1. Releases on the amount of travel.
3. Releases on the amount of pressure that is applied.

... Handheld release aids:

Three or four-finger aids with three being the most popular.

- The trigger style uses the thumb and a continuous motion to activate.
- Archers sometimes operate the release prematurely.
- The hinge-style or back-tension release uses rotation/back tension to operate. It fires to a pre-set point.
- Archers can be prone to activate hinge-style releases in the wind.



You could spend lots of money but you do not need to. It may be better to invest in the future.

Arrow rest choices

1. A fallaway or limb driven rest (drop-away) will avoid the fletching's ever contacting the arrow rest.
2. The alternative is a Launcher. Blade with a micro adjustment.

.008 - Total arrow weight under 325 grains
.010 - Total arrow weight 325 to 425 grains
.012 - Total arrow weight over 425 grains
For use on Trophy Taker's Spring Steel 2 Series



3. Whisker Biscuit
Good for
juniors & field.



- 1) Notice the cord on the drop-away rest.
- 2) The blade should be replaced regularly
- 3) For field archery consider a “Whisker Biscuit Rest”

Stabilizer's

They are not actually essential to shoot a bow, but you will see every compound archer and many recurve archers using them. **Why because they help archers achieve greater shooting precision**

Stabilizers help maintain a steady hold on the target, provide stability when aiming, maintain balance and slow down movement. They direct the momentum of the bow upon release, eliminating any torque and uncontrolled movement and finally they dampens the vibration in the bow when the arrow is released.

Choose stabilizers that reduce vibration and noise.

Objective tests

- Score and check your group size.

Subjective tests

- Shoot with different stabilizers to feel how it balances the bow.
- Listen and feel to the bow after each shot.

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Initially try a 30" front stabilizer (long-rod) with a 1-ounce weight and 15" rear stabilizer (short-rod) with a 2-ounce weight.

Check your bow's balance using the sight bubble. Pull your bow to full draw, close your eyes, and then open them and look at the bubble. If it's level, your bow is balanced. If the bubble drifts anywhere besides centre, you must make adjustments.

Please view:

1) YouTube video:

https://www.youtube.com/watch?v=XaEiyGFskAI&feature=emb_title

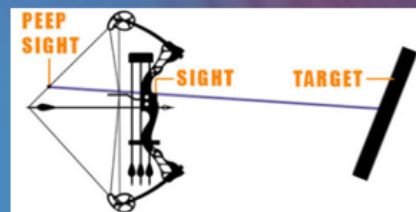
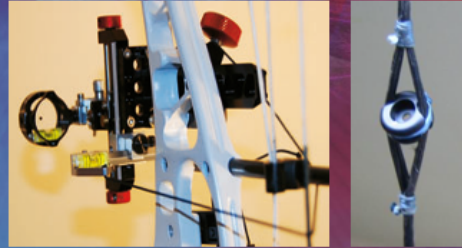
2) Article by Matthews

<https://www.mathewsinc.com/ultimate-stabilizer-guide/>

Sight

A high quality sight is essential one that does not move once set, is easy to move and adjust.

- The sight is usually fitted with a scope containing a magnifying lens and spirit level bubble.
- The Peep sight is a part of the aiming system and helps with lateral and vertical alignment of the bow. It is relatively small 1-3 mm.



Do not buy a sight constructed of a plastic. A disabled W1 archer shoots with a quality robust recurve sight. The magnifying lens is available in a variety of magnifications X4, X6 and X8 typically. Start with the lower power.

Arrows

- Your arrow length should be your draw length plus $\frac{1}{2}$ ' to 1".
- Use the dealers expertise to choose suitable arrows once you are satisfied with your bow choice (draw length, AXA and poundage).
- Focus on an arrow that is within your price range and consider buying cheaper one to start with.



It is best to visit your archery supplier and use the expertise tell choose the set of arrows.

Choosing a bow

PART 4: CHOOSING A BOW

Before shopping:

1. Carry out some research before going shopping, ask other compound archers opinions and have a budget in mind.
2. Know your eye dominance.
3. Measure and check your draw length.
4. Depending on your draw length select an initial ATA value. Remember the longer a bow the more it weighs which may be an important factor in your selection.
5. It is vital that you choose a bow-poundage that you can pull back easily. You need to be able raise the bow to the target and then using a 'T' draw, draw to your face (anchor) with ease without having to raise your arm really high.
6. Purchase a bow with an adjustable draw length.
7. Consider asking a compound trained coach to go to the dealers with you.
8. Choose a day when the dealer is quite.

A longer length is more forgiving but heavier.

Draw weight ranges

Description	Recommended bow weight
Very Small Child (55-70 lbs) (31kg).	10-15 lbs.
Small Child (70-100 lbs) (45kg).	15-25 lbs.
Larger Child (100-130 lbs) (59kg).	25-35 lbs.
Small Frame Women (100-130 lbs) (69kg)	25-35 lbs.
Medium Frame Women (130-160 lbs) (72kg)	30-40 lbs.
Large Frame Women (160+ lbs) (72kg)	45-55 lbs.
Athletic Older Child (Boys 130-150 lbs) (68kg)	40-50 lbs
Small Frame Men (120-150 lbs) (68kg)	45-55 lbs.
Medium Frame Men (150-180 lbs) (81kg)	55-65 lbs.
Large Frame Men (180+ lbs) (81kg+kg)	65-75 lbs.

Please apply your common sense here and interpret this chart with due respect to your own age, general physical condition, and Body Mass Index (BMI).



Key considerations

Attribute	Minor consideration	Somewhat Important	Very Important	Critically Important
Budget			X	
Draw Length (adjustable)				X
Axle-to-axle length			X	
Draw weight				X
Bow weight			X	
Proper fit				X
Bracing height			X	
Let-off-choices			X	
Brand name	X			
Power/Speed		X		
Cam type		X		
Accessories		X		

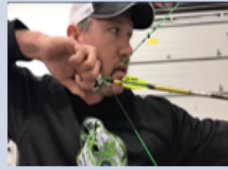
Brace height for target bow needs to be 7+”

A shot routine

PART 5: SHOOTING

Steps	Notes
SET	Feet shoulder width apart and open slightly. Check alignment to the target.
	Nock the arrow Secure the release aid to the 'D' loop
	Locate the bow-hand in the grip at 45° 
	Set your posture. Shoulders down hips forward
SET-UP	Raise the bow. Keep the back of drawing hand flat. Bow arm horizontal and in line with nose. 
	Set alignment by rotating the upper chest.
	Draw the bow back to the face using a 'T' draw, keeping the head vertical.

... A shot routine continued

Steps	Notes	
ANCHOR	Secure your anchor using the back of your hand, check that the string lightly against the corner of your mouth and lightly touches your nose.	
TRANSFER	Transfer the shot onto your back and continue to hold.	
AIM	Come into peep alignment, align with the scope in the centre of the peep, level the bubble and get your sight pin onto the scoring ring.	
EXECUTE	'Draw through the shot' and execute. Let off should surprise you.	
FOLLOW THROUGH	On execution your elbow should travel back in a straight line and move downwards. Keep the bow arm raised yet relaxed.	

Do I need a coach?

Coaches provide expertise and guidance to help you achieve what you want by observing, listening, asking questions, helping you plan and stay motivated.

They do this by assisting you to:

- Plan your training, enhance your existing skills, develop new skills, prepare you for competition, and help you evaluate your performance.

Coaching is all about helping archers achieve.



To be honest if you change your bow style then I personally think you would benefit from impartial voice from a knowledgeable person such as an experienced Level 2 coach.

The alternative is an experienced compound Archer one that preferably competes.

What is performance coaching?

Over time performance coaching helps archers develop the ability to consistently execute an accurate shot and compete under pressure, in a variety of conditions. Improving their self-confidence, self-belief and commitment.

Performance coaching about helping archers achieve their full potential.





Check the knowledge you have gained, then register your attendance and receive your certificate of attendance.



Thank you for watching this CPD PowerPoint session.