Merlin Bows

Technical Advice Sheet

Valley or Stops

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To be? or not to be?: That is the question.

Whether to shoot from the stops or in the valley.

I think most people are familiar with the term ‘valley’ but for those who are not, the valley is the position at full draw where the eccentric wheel has rotated through the draw stroke giving the lightest possible holding weight.

This can be checked using a bow scale and marking the wheel at the exact point where the string leaves the wheel when holding the bow at full draw.

The ‘stops’ is the term when you draw further, past the valley, to where the wheel will no longer rotate.

So which position will be the best? Depending on who you ask or what articles you have read there are a variety of opinions on where to draw. So first of all, lets clear up a few of the misunderstandings of how the system works.

It has been said that if you draw past the valley to the stops there is a dramatic increase in poundage, causing the speed of the bow to vary considerably should your draw length be less than consistent.

The fact is the increase in draw weight does not actually happen. If you were to weigh the bow on a scale, and pull down to the stops, you can force the scale to weigh as heavy as you like depending on how hard you pull. But its your own physical weight that is causing the scale to read more, not the bow

You could put a coat hanger on a scale and make it weigh 40#, but if you have ever tried to shoot with a coat hanger you will see that the arrow speed leaves a lot to be desired.

Does this change the speed?

We have found a variance in speed between shooting from the valley and pulling hard on the stops (up to 40# extra pressure) of only 1-2 f.p.s, and this increase is not due to the extra pressure, but to the increased power stroke as the draw length increases.

Does the extra pressure make the limbs bend more?

As you draw a bow the wheels rotate causing the cables to wrap around the cable track, causing them to shorten, and as a result bends the limb. The further you draw the more the limbs bend, but once you pass the peak weight and drop into the valley the majority of the limb movement has been completed. There is a very slight increase in limb movement from the valley to the stops, as the cables wrap slightly more round the wheel but the extra limb movement, compared to the extra draw length gained is much smaller in proportion to the same amount of draw length increase at any point before the valley, through the draw cycle and over the peak weight.

The same applies if you pull hard against the stops, as you cause the cable to wrap further still round the wheel and so bending the limbs as the has draw increased slightly.

It is important to mention that the average 50# compound requires limbs in excess of 400#, and you are physically incapable or bending the limbs without the assistance of the cables.

So the conclusion to draw from this is the limbs do bend more from the valley to the stops, but only as a result of the increased draw length, not from your own physical pressures

So do I shoot from the valley or the stops?

The answer to this depends on this type of wheel you shoot, as the more important thing to consider is what will give you the most consistent draw. For example, a completely round 50% let off wheel with a very ‘spongy’ feel at full draw will make shooting off the stops difficult as they will be hard to find. The sensible thing to do with this type of wheel is to shoot from the valley as this can be easily found by using a bow scale.

Cams and wheels with higher let-offs, such as 60-80%, have much more pronounced drop-offs, and therefore feeling for the stops more obvious. This type of wheel would be more beneficial to shoot from the stops, as the stop itself acts as a reference to enable more consistent draw length location.

The problem with attempting to shoot wheels from the valley is that high let-off wheels usually have shorter valleys, and some cams have almost no valley, due to the peak weight moving back into the draw stroke.

This makes the draw length more critical, and if you were to inadvertently creep forward on the draw you will rapidly start gaining the peak weight, and if you were not expecting it you are in for a shock!!

But if you were to creep from the stops, it would be towards the valley rather than the peak, minimising any effect to the shot.

So on summing up, there are bows that should be shot at the valley and others that should be shot from the stops.

As compound bow design continues to move towards faster bows and higher let off wheels, the valley is becoming shorter and shorter, and as repeatability is the most important thing with archery, then should your wheels allow you to shoot from a positive location on the stops, then it could only be advantageous to do so.