

## Merlin Bows

### Technical Advice Sheet

#### Reflex or Deflex?

This has always been an area of interest when trying to decide which is the best style of riser.

Let's just make a clear definition of what constitutes each design. First of all, draw an imaginary line between the points on the riser where the limbs exit at each end. Now, the position of the throat of the grip in relation to that line determines the amount of reflex or deflex you have. If the grip is in front of the line, towards the target, then it is deflex. If it is behind the line towards the bow string, then it is reflex.

It has always been assumed that a re-flex riser torques more than a de-flex riser. It is also always assumed that a re-flex riser is faster than a de-flex riser.

This area was of most interest. Although breakthrough would be too strong a word to use, in designing anything, you take certain things for granted, as with the deflex riser. Always being more forgiving to shoot than a reflex riser due to the assumption that it is less easy to torque a deflex riser than a reflex riser. It was always assumed that the torque on a reflex riser was exhibited due to the fact that the pressure points of the limb, i.e. the point it exits the riser was in front of the fulcrum point of the grip. Eureka! This is not the case.

On designing any bow, if we were looking for a target bow, for example, the first thing we would do is decide on the riser length. A 22" riser would allow for good sight window between 20 and 90 meters. This coupled with limbs creating a 44" axle bow resulted in a naturally larger brace height than a reflex riser. And as reflex risers were always shorter, for example, 18" and a shorter limb, the brace height became naturally lower.

Now here is the discovery. It is not the reflex riser by itself that creates a bow more critical to shoot, it is the brace height that effects the torque of the bow.

A lower brace height results in the string being further away from the archer before he draws the bow. Therefore the distance the string travels to reach the full draw position is longer. The larger the brace height, the shorter the distance the string has to travel to reach the same draw length.

When you torque a bow from left to right, the only point of rotation is the joint where the string connects to the cam. Imagine the riser and limbs as one solid entity, and as you rotate the bow, you force the cam to push against the end of the string. The movement is at the joint between the two.

Now, if the amount of string between the nocking point and contact with the cam is longer, for example on a lower brace height bow, then it requires less pressure to push the

cams the same distance to the side. The best way to imagine this is if you hold an arrow by the nock parallel to the floor, and ask a fellow archer to push the point to the side a couple of inches, it would be done with no problem. But if you were to hold the shaft half way down, and repeat the same, you will notice it requires a little more pressure to move the point to the side.

It is the same effect as with torquing the bow. The less the amount of string behind the cam at full draw requires more pressure to force the cams to push the end of the string out of line. This becomes magnified the higher the let off becomes.

The important point we are making, is that it is possible to produce a reflex riser with a larger brace height then most deflex risers, and also a deflex riser with a very low brace height. The difference being in the angle the limb leaves the riser.

A reflex riser with a larger brace height would give then the same characteristics as a deflex riser of the same brace height.

We make a range of bows that cover a wide range of brace heights. With everything I have said, why then, would any one want a bow with a low brace height? The answer is speed.

Having a low brace height generates higher speeds, which has its own advantages. Deciding on your own needs will help you make your own decision on which brace height you prefer. There is no getting away from the fact, no matter what some people might claim, that lower brace heights are harder to shoot.

If you have good technique, then you will shoot well with one, and the increased speeds will have a benefit, but it is up to you to be honest about your own abilities.

The information I have given you will allow you to make a more informed choice.